A We Got Served Step by Step Guide

Terry Walsh & Jim Clark

Using Windows Server 2012 R2 Essentials

eBook Edition

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Jim Clark is a frequent contributor to We Got Served, a website established by Terry Walsh in 2007 to cover the Windows Home Server platform. Since then, the site has grown to cover a wide range of digital home, consumer electronics, and small business product categories but retains at its core the mission to help users make the most of technology.

When Jim first heard about Windows Home Server, he developed an immediate interest in this new platform as a centralized storage product for the home. We Got Served became an outlet to document his experiences with this Microsoft product, review software written specifically for the Windows Home Server platform, and review hardware related products for use in the digital home. His interest in Windows Home Server and the digital home continues to this day.

Jim was born and raised in Marion, Iowa. Except for short stints in Cedar Rapids and Waterloo, Iowa, he has remained true to Marion. All four of his children have graduated from the same high school he went to. Jim has a degree in Mechanical Engineering from the University of Iowa and has spent his entire career in various design engineering positions in the manufacturing industry.

Jim's interest in computer technology started with the original IBM PC. PCs have been an integral tool at work, and a hobby for over 25 years. Jim has been awarded Microsoft's Most Valuable Professional Award for Windows Home Server each year since 2009 for his work with Terry on the We Got Served website.

Jim is the co-author of *Windows Home Server 2011 Step by Step*, *25 Essential Windows Home Server Projects*, *25 Essential Windows Home Server Projects Vol 2*, and the author of *Using Windows Server 2012 Essentials* and *15 Essential Windows 8 Projects*.

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Since then, the site has grown to cover a wide range of digital home, consumer electronics, and small business product categories but retains at its core the mission to help users make the most of technology.

Terry graduated from the University of Durham in 1995 with a Bachelor of Arts in English Language and Literature and currently works in the telecommunications industry, writing about technology in his spare time. Prior to starting WGS, Terry cut his teeth online in 1993 building and operating a number of successful alternative music websites and communities for UK artists.

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Over the last two years, Terry has authored a number of Mac and Windows home server guides, including *Using OS X Yosemite Server at Home, Using OS X Mavericks Server at Home, Windows Home Server 2011 Step by Step*, *Using OS X Lion Server at Home*, *Using OS X Mountain Lion Server at Home*, *25 Essential Windows Home Server Projects* and *Building a Windows 8 Home Server.* He has also edited a number of titles, including *Using Windows Home Server*, *25 Essential Windows Home Server Projects Volume 2* and *15 Essential Windows 8 Projects.*

You can contact him at terry@wegotserved.co.uk, or via Twitter at @wegotserved.

About We Got Served

We Got Served is a popular technology news and community site which was founded in February 2007. It is written, edited and moderated by a dedicated and knowledgeable team of technology enthusiasts across the world who are focused on bringing you the latest news, reviews, tutorials and support for the products you're using today and tomorrow. We created We Got Served as a place to learn about new technology, help readers make the most of the products and services they use, and most importantly to create a community where readers can learn, discuss and share their experiences and knowledge with others in need of support. However you use the site, we hope you enjoy it.

Other Guides by Terry Walsh & Jim Clark

We Got Served publishes a wide range of guides for Windows and Apple Mac OS X. Click the titles below to view online or visit http://store.wegotserved.com.

- 25 Essential Windows Home Server Projects
- 25 Essential Windows Home Server Projects Volume 2
- Build a Computer From Scratch
- Building a Windows 8 Home Server
- Building a Windows Home Theatre PC
- Manage Your Music and Video Metadata
- Using OS X Lion Server at Home
- Using OS X Mavericks Server at Home
- Using OS X Mountain Lion Server at Home
- Using OS X Yosemite Server at Home
- Using Windows Server 2012 Essentials
- Windows Home Server 2011 Step by Step

Using Windows Server 2012 Essentials Reviews

A big thank you from the authors to every reader who takes a couple of minutes to share their feedback on the book. Writing these books is a labour of love, with a few busy months invested in each title, so your thoughts and suggestions are always welcome - wherever you choose to express them!

Outstanding Investment

For only a couple of bucks, this book provided the necessary information to get Server 2012 up and running with some real value-added functionality. The tag line is 'written by non-IT people; for use by non-IT people' and it is absolutely true. In short order anyone can follow the steps provided and get a home network on a backup schedule, monitor updates, start serving web pages & media.

A Great Book to Get You Through the Initial Setup

Windows Server 2012 Essentials takes a little more time to setup. The book provided me with the needed instructions to get me through the build. Detail was good for the things that I needed to set up. I loved all the pictures of the different screens, that really helped to be sure that I was in the right place. Once completed everything has worked flawlessly. This is a great resource for future work on my server.

Perfect for a Newbie

I found this guide to be just what I needed for my first experience configuring a new server for the church where I volunteer. The level of detail was just right for me.

About this Book

Back in January 2013 we launched our seventh Home and Small Business Server eBook, *Using Windows Server 2012 Essentials*. Whilst following a successful formula perfected over the course of previous releases, this guide was somewhat of a watershed for We Got Served - principally as it was the first guide covering the "Post Windows Home Server era".

Windows Server 2012 Essentials and its update, known as Windows Server 2012 R2 Essentials, are both server platforms fully targeted at small business users. That said, we know there are tens of thousands (if not hundreds of thousands) who are actively using the platform in the home - such was the allure of Windows Home Server that any close kissing cousin of that product is going to be gobbled up by the WHS community.

So, that meant the eBook had to cater to two distinct audiences with overlapping, but often differing needs, and would need to introduce new concepts to the WHS crowd - Active Directory, Windows Server Update Services and more. Jim did a great job with the original book, which continues to be a best-seller two years on.

Then there's the cloud and the concept of the "hyrbid server". Microsoft continues to build out a range of cloud-based subscription services for small business, including Office 365 and Windows Intune, that they hope will appeal enough for you to spend your money on. Integrating "off-premise" services with "on-premise" server features offers enhanced power and flexibility for sure, but is it right for you and your organisation?

That is where we come in. For those new to Windows Server 2012 R2 Essentials, we'll walk you step by step through your first few weeks with the platform. More experienced hands will get the low down on what's new, what's hot and what's not. But you can be sure we'll explain everything clearly with illustrative screenshots to help you configure your own server.

Our thanks, once again, are extended to Tim Dondlinger who has completed another valiant job in copy-checking this latest revision. He has supported us not only with numerous corrections but with valuable advice along the way. Thanks Tim!

We hope this eBook helps you get up and running and on your way to a successful first implementation of Windows Server 2012 R2 Essentials, or indeed a smooth journey from the previous release.

Written by non-IT people; for use by non-IT people.

Terry Walsh & Jim Clark
December 2014

Revision History

v1.0	**March 2014**
	Initial release
v1.0.1	**March 2014**
	Minor text fixes
v1.1	**July 2014**
	Higher resolution ePub images
v1.2	**April 2015**
	Text fixes

Using Windows Server 2012 R2 Essentials

Contents

Using Windows Server 2012 Essentials Reviews 6

About this Book 7

Revision History 8

Introduction 11

Please Register This Book 15

What's New in Windows Server 2012 R2 Essentials? 16

Windows Server 2012 R2 Essentials Installation Requirements 22

Install Windows Server 2012 R2 Essentials 30

Choosing Off the Shelf Hardware 82

Introducing the Windows Server 2012 R2 Essentials Dashboard 96

Connect Client PCs to Windows Server 2012 R2 Essentials 163

Connect Apple Macs and Other Computers to the Server Network 204

Connect and Manage Mobile Devices on Windows Server 2012 R2 Essentials 224

The Launchpad 287

A Trip Around the Dashboard 307

The Dashboard Home Tab 335

Managing Users, User Groups and Accounts 352

Managing Devices and Group Policy 391

Managing Hard Drives, Storage and Storage Spaces 446

Extending Windows Server 2012 R2 Essentials With Add-ins 514

Remote Access 527

Enhancing Windows Server 2012 R2 Essentials Media Support 553

Protect and Restore Your Data 574

Integrating Windows Azure Online Backup 630

Managing Office 365 Accounts With Windows Server 2012 R2 Essentials 664

Managing Client PCs With Windows Intune 729

Supporting Applications and Features 742

Glossary 779

Introduction

"Welcome to Using Windows Server R2 2012 Essentials. Essentials - as I'll refer to it in the book - is touted by Microsoft as the "Ideal First Server" for those small businesses, with less than 25 users, who want to focus their time on running their business, and not have to become an IT expert or rely on an IT consultant to maintain their server. "

If you are an advanced home user (sometimes known as a "Prosumer" to the Marketing *cognoscenti*), Windows Server 2012 R2 Essentials provides you with a robust media and central storage platform that can grow as your home network grows. If you are a SOHO (Small Office, Home Office) user, Essentials provides you with that same robust platform providing a central storage unit and the ability to back up and restore data to and from any client computers you have, alongside advanced remote access capabilities.

In writing this book, we believe you're going to be in one of four camps:

For those of you upgrading from the previous release of Windws Server 2012 Essentials, you'll have a good understanding of the platform, so we'll walk you through the key changes and improvements in the R2 release, and walk you step by step through your migration choices - unlike Windows Home Server and common client platforms, it's important to consider and plan your upgrade carefully.

If you are new to the Windows Server platform, we hope this book will help you quickly discover how easy it is to install, configure and use Windows Server 2012 R2 Essentials, and how useful its

features are in both the home and small business environments.

If you are migrating from the Windows Home Server platform, you will find a few changes that will require some new methods to join and access your Essentials server. You will also find quite a few similarities to the WHS feature set. Different, yet similar; perhaps even familiar.

If you're visiting from the Windows Small Business Server platform, and in particular SBS 2011 Essentials, you will find many similarities and the removal of various complexities in the SBS feature set which make it as simple and easy as possible to set up and maintain 2012 Essentials server.

Whether you are interested in Windows Server 2012 R2 Essentials:

- As a file server
- To stream music, video and photos around your home/business and beyond
- As an easy way to share files with friends and colleagues
- As an application server
- Or you're simply looking for an easy way to protect your PCs and Macs

or all of the above, you will learn that your First Server can indeed play an "essential" role at the heart of your network.

We assume, however, that you are more than just passively interested in the technology behind Windows Server 2012 R2 Essentials. If you're reading this book, you may be either at the purchase point or you have already pulled the trigger to buy. Whether you're moving from another Microsoft Server platform (such as Windows Home Server or WHS 2011), an Small Business Server platform, or this is your first venture into the server world, our goal in this book is to guide you through the first few weeks of life with your server. The decision process of matching hardware to software, the installation/migration process, deployment, and other basics of getting Windows Server R2 Essentials up and running. Once set up, we will demonstrate the capabilities of Windows Server 2012 Essentials and what you need to do from a maintenance perspective to keep things running smoothly.

When we talk about *deployment*, we're referring to both *clients* and *users*. A server, whether in the home, small business or a large corporation "serves" no purpose without clients (devices that connect to the server, such as PCs, printers and other devices). If you are a home user, you may want to know how to set up the media features of Essentials and connect such devices as an Xbox One, or

other game console. If you are a SOHO user, you may want to set up Remote Web Access so that you can access your computers from anywhere you might find yourself. If you are running a small business, you may be interested in Line of Business (LOB) applications and Cloud services. No matter which profile you fit, you should most definitely be interested in connecting users and configuring their access to information stored on the server.

Why Would You Want to Read This Book?

When writing a guide such as this, it is useful to envision who will be reading and why. My assumption is that you will have at least heard of Windows Server 2012 R2 Essentials, or in more general terms, servers and network attached storage devices. You are interested in finding out what a server can do for your home or business. Whilst each of you will have specific areas of interest, your basic needs are the same: provide a central storage device from which to serve data and a means to protect that data.

You may have tried storing your growing collection of files on an external hard drive, but find it difficult to share files around the home or business. That hard drive is filling up, and you're wondering what to do next with your data. You may own or work for a small business with up to 25 PCs and/or Macs being used around the office, and have need of a server that can backup and protect your vital data with ease,and allow centralized file sharing, user account management and remote access.

You may know a lot about computers, you may know just a little - but I am going to assume that your home or business includes more than one PC, that you have a growing mass of data to look after, and you are interested in knowing if Windows Server 2012 R2 Essentials is right for you. If you're coming from the Windows Home Server or the Small Business Server world, I'm sure you have a pretty good idea of what a server can do for you, and the features you need.

My job is to help you get started with Windows Server 2012 R2 Essentials, but more importantly, prepare you with the knowledge you need to begin your own adventures with the platform, at home, at work, or on the road.

Just Who Am I to be Talking About Windows Server 2012 R2 Essentials?

I am that home computer enthusiast that started many years ago with one computer. As my kids grew, that one computer became multiple computers. As the world started becoming more and more digital, I found more of my information and media going on to my computer. No more CDs, no more printed pictures, no more home videos on VHS tapes. I soon figured out that if those digitized

pictures or home videos got lost, I was not going to survive the repercussions. I needed to protect that data. I also wanted a central "device" from which to serve all my media to any computer, or other media device, in my home.

About that time, Windows Home Server came to market. This was the perfect solution for my situation, and it included an array of additional features that I soon found quite useful, or essential. WHS was specifically designed for the consumer and for home use - inexpensive, with modest hardware requirements. Over time, I became an expert of sorts, began writing about my experiences with Windows Home Server on the We Got Served (http://www.wegotserved.com) website, all of which eventually led to my selection as a Microsoft WHS MVP (Most Valuable Professional - Microsoft's award program for technical expertise in the community).

As a computer enthusiast, I am always looking forward to the latest and hopefully greatest thing coming from the computer hardware and software, world. With the demise of Windows Home Server, my attention turned to its replacement - Windows Server 2012 Essentials, and subsequently this new "R2" release of the platform.

The gist of that last paragraph is I am most definitely **not** an "IT person" and this is not a book for geeks (well, not *hardcore* geeks, anyway!). Corporate servers are an area in which I have had minimal interest or expertise. As a small business server replacement however, Essentials is being touted as the server for a business without an IT department. Install it; configure it; deploy it; job done; no experience required - if that's good for business, then it's good for home.

So, the challenge is to determine how true a statement that is. If I can do all that, so can you. The goal of this book is that it can become your guide on the ABCs of how to get you up and running with Windows Server 2012 R2 Essentials. It'll be easier if you know *something* about computers, in general, but hopefully this book can get you there regardless of your level of expertise.

Just remember, this is a book *written by* non-IT people; *for use by* non-IT people. With that said, let's dive in!

Please Register This Book

Whilst the concept of registering a book may sound a little strange, I heartily invite you to do so! Registering your email with us allows us to inform you of updates and amendments to the book, and let you know about new books we're writing as well as some offers on our other titles.

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What's New in Windows Server 2012 R2 Essentials?

"Before we start our journey to install Windows Server 2012 R2 Essentials, for those of you who are familiar with its predecessor, we should take a brief look at the additional features included in the new version of the operating system"

I'm going to let you into a little secret. In this release of Windows Server 2012 Essentials, Microsoft haven't been fully focused about adding features for prosumers and small business owners - sure, there are certainly a number of enhancements and the usual "under the hood" fixes that, as users, we'll never really be told about. But the big, strategic push with Windows Server 2012 R2 Essentials is all about extending the platform for use in larger businesses and enterprises.

That's right, "the little server that could" has been enhanced to become "the slightly larger server that most definitely can".

That said, despite Microsoft's strong, recent emphasis on cloud infrastructure, there's still a lot to interest regular users with "on-premise" servers. Let's walk through the bigger changes that bring the new version of Windows Server 2012 R2 Essentials to life:

Windows Server Essentials Experience Server Role

While Windows Server 2012 Essentials has done a great job supporting and protecting small businesses and prosumers since its release, its features have not been available to all. Enterprise IT administrators have jealously watched from the sidelines as we've enjoyed all of those unique features that they could could access on the *more advanced* Standard and Datacenter versions of Windows Server they use.

So, Microsoft has created a new server role called the *Windows Server Essentials Experience* (sounds like the name of the world's worst rock band, right?) which enables all the features and dependent services and roles of Windows Server 2012 R2 Essentials on Standard and Datacenter releases of Windows Server - without all of the locks and restrictions that Microsoft place on the cheaper Essentials product. In short, Windows Server Standard and Datacenter users get every feature they need, including the Windows Server Essentials goodness.

That means Enterprise admins can now install a Standard or Datacenter edition server running the Windows Server Essentials Experience role as a domain member rather than as the root domain controller as well as the possibility of adding the Essentials Experience role to an existing domain environment with multiple servers running Windows Server. Up to 200 devices and PCs are supported via the Essentials Experience role on Standard and Datacenter.

Good for them you're probably thinking - but there are some benefits for Windows Server 2012 R2 Essentials owners. If your needs grow and you want to move up to Microsoft's Windows Server Standard or Datacenter releases then you'll have an easier upgrade path and can retain all of the features you love about your current server, with the added features of the bigger products.

If the above means nothing to you yet, then don't worry, we'll explain some of these terms a little later!

Virtualization Enhancements

While virtualization (running one or more instances of the Windows Server operating system on one physical piece of hardware) is all the range in the Enterprise, take-up is slower in small business (and certainly in the home). Now, that may well be because there's less financial benefit to smaller operations from virtualization, but Microsoft are guessing that it's also because configuring and managing virtual environments is also pretty complex.

So, with Windows Server 2012 R2 Essentials, they're seeking to make virtualization easier. You can now create a Windows Server Essentials guest virtual machine (VM) on a Windows Server Essentials host server - so, you get two servers for the price of one. Hurrah! Setup, configuration and management of client PCs is conducted via the guest operating system.

Run Windows Server 2012 R2 Essentials in the Cloud

Microsoft's march to the Cloud continues, and manifests itself in Windows Server 2012 R2 Essentials with improvements to how the operating system can be run via a cloud-hosted (Azure-based as well as other private hosting solutions) virtual server, rather than utilising your own hardware. That takes away the headache of managing hardware and network performance and have your server hosted with commercial SLAs in place.

In this release, Microsoft have tweaked configuration options for hosted environments - features like PC backup and Storage Spaces are disabled by default as moving large slabs of data to the cloud on a regular basis would be slow and expensive.

To further convince you, the user, of the need to rush to the Cloud you'll also see additional Cloud-oriented features and services integrated into the Windows Server 2012 R2 Essentials Dashboard. They include:

- **Windows Azure Active Directory** - allows single sign-on and password synchronization between the local Active Directory and cloud services such as Office 365. User Group management and synchronisation have also been enabled.

- **Microsoft Office 365 Enhancements** - Deeper integration with Office 365 in the Dashboard - again targeted at larger environments (with hundreds of users - remember, enterprises can now use the Dashboard, right?). These include the ability to create and manage email distribution groups and mobile device management (MDM) features such as remote wipe, policy and access management. There's also a new SharePoint Online library management feature which will allow you to create and manage SharePoint libraries for your organisation.

- **Windows Intune Integration -** that's right, you can now buy and use even more Microsoft cloud management features directly from your Dashboard! Windows Intune is a cloud-hosted solution for managing client PCs. You can manage devices, security configuration, endpoint protection, patch and application distribution and much more. In Windows Server 2012 R2 Essentials you can manage users, security groups, and licenses for Windows Intune services. Find out more about Windows Intune here: http://www.microsoft.com/en-us/server-cloud/products/windows-intune/

Connect Mobile Devices to Windows Server 2012 R2 Essentials

Alongside PCs and Macs, you can now connect mobile clients to Windows Server 2012 R2 Essentials. Supported platforms include Windows Phone, iOS devices such as iPhones and iPads, and Android devices. With Office 365 integration (as mentioned earlier), you can enable management features for those devices including remote wipe, et al.

Connect Clients From Remote Locations

If you want to connect a client to your server, you can now do so whilst you're out and about. Simply point the client to your server's Connect virtual folder using Remote Web Access and the Connector will kick in.

The Connector Gets Slimmer and Fitter

Talking of the Windows Server Essentials Connector, the new release improves performance in this area too - reducing the client connector's memory and CPU usage.

Create and Manage User Groups in the Dashboard

A much needed feature arrives at last - you can now create User Groups and add user accounts to those groups from the Dashboard. With that enabled, you can easily manage permissions for multiple users simultaneously.

Updated Apps for Windows 8 and Windows Phone 8

You may remember Microsoft releasing an app called My Server for Windows 8 and Windows RT, which allows access to key features of the server from Microsoft mobile devices and desktops. A new release of the app - My Server 2012 R2 - is available for Windows 8 and Windows Phone devices from their respective app stores.

Funnily enough, the new release enhances cloud services with the ability to access and manage Office 365 documents on both local, on-premises servers and on SharePoint Online in the cloud. The Windows release also enables access to the server via Remote Web Access.

You'll find enhancements to server alerts and user management - activating/deactivating network users and account password reset are now supported on mobile devices, allowing you to manage the server from anywhere.

Media Streaming Separation

Not so much a new feature, but an important change for media enthusiasts. Windows Server 2012 R2 Essentials gets less fun! Media Streaming features have been removed from Windows Server 2012 R2 Essentials and now have to be downloaded and installed separately. Here's the link to the Windows Server Essentials Media Pack (http://www.microsoft.com/en-us/download/details.aspx?id=40837)

Downloading and installing the pack enables:

- Streaming of media (photos, music and videos) to DLNA-compliant receivers

- Smooth streaming to HTML5-compliant browsers by using Remote Web Access and to web service applications

- UI elements associated with the configuration of media streaming in the Windows Server Essentials Dashboard

A More Touching Remote Web Access Experience

Plug-in haters rejoice! Microsoft Silverlight is out and Windows Server 2012 R2 Essentials' Remote Web Access experience has been fully rebuilt in HTML 5. That brings improvements in consistency between browsers (particularly with regard to improving mobile browser support), and importantly allows you to control your RWA experience using touch on compatible devices.

Yes, and it looks a lot like SkyDrive - erm, I mean *OneDrive*.

Launchpad is Closed By Default

There must be someone somewhere who loves Launchpad, but I'm yet to meet anyone who lives to see the Launchpad window pop up when they boot their PC. Perhaps noting that the World hates the Launchpad, Microsoft now ensure it's closed by default.

Stay Connected to the Office via VPN

A neat enhancement to VPN features allows your PCs to stay remotely connected to your main office network over VPN. You can trigger auto-VPN dialing which will keep you connected at all times.

Health Monitoring Now Included

In Windows Server 2012 Essentials, you needed to install an add-in to enable health monitoring features. That's all now included in the new release. The server monitors its own health and that of client computers running Windows 7, Windows 8, Windows 8.1, and Mac OS X version 10.5+.

You'll hear of any problems related to backups, server storage, low disk space, and much more. You can generate reports on a regular schedule or ad-hoc basis, email them out to administrators and other interested parties and view them on a range of devices, including mobile hardware.

Server Folder Management Improvements

New to Windows Server 2012 R2 Essentials is the ability to specify space quotas on your Server Folders - once a folder grows beyond that quota, you'll be hit up with an alert. Also new is the ability to create server folders on a second server in the network whilst keeping the same UNC path prefix.

File History Gets More Granular and Restore Options Improve

File History Backups are now configured per user rather than per device, allowing much more granular configuration of preferences. Files can now also be restored to new computers using File History - handy (read: essential) in the case where an old computer is decommissioned/breaks and you need to get a new one set-up. The first time you log on to your new computer in the network, you are prompted to restore your files from your File History backups.

Client Full System Restore

Client Full System Restore is now supported by Windows Deployment Services (WDS). That means you can create a client restore service using the **Set up Client Restore Service** task and perform restores over the network with WDS instead of using an image saved on DVD.

Phew! That's actually quite a few enhancements - obviously, not every new feature, bell and whistle will be relevant to every reader and, as you can now see, improvements have been definitely weighted towards opening up Windows Server Essentials to larger environments and pushing Cloud Services. But it's clear that, thanks to the success of Windows Server 2012 Essentials, Microsoft are continuing to invest in the product with R2 and that's good news for existing and new users alike.

Shall we get Windows Server 2012 R2 Essentials installed and see what the fuss is about?

Windows Server 2012 R2 Essentials Installation Requirements

"Before we can install, configure, and deploy Windows Server 2012 R2 Essentials, we need to purchase the hardware that will become our Essentials server. So, this chapter deals with the basic hardware and associated software requirements to create a server and your network of client computers."

Depending upon the type of user you are (Home/Prosumer, SOHO, Small Business), your hardware needs and feature requirements will be somewhat different.

Home users may wish to build their own machines or re-purpose old computers; a SOHO user may only need a basic OEM computer to serve data, back up clients and permit remote access; the needs of a small business may require more advanced features than just the basic hardware requirements - if the server needs to be always available, you'll be interested in redundant power supplies with automatic failover, twin network ports for link bonding, managed network switch support and so on.

Whichever the case may be, there are some basic requirements you need to meet to for Essentials to run. Let us start there and then decide what you need in addition.

Hardware Requirements

Once you have made the decision that you need Windows Server 2012 R2 Essentials in your home or small business, you have some decisions to make on matching the operating system to the computer hardware. First and foremost, you will a need server hardware with a 64-bit CPU. As most modern CPUs are 64-bit capable, you should be covered. However, it is always best to verify this requirement as Essentials will most definitely not install on a 32-bit system.

Processor

This brings us to the actual CPU. The minimum requirement is a 1.4 GHz single-core or 1.3 GHz multi-core CPU and the recommended requirement is a 3.1 GHz multi-core CPU. Microsoft limits installation of Windows Server 2012 R2 Essentials to computers (motherboards) with a maximum

of two processor sockets - again, that should not cause most users any issues.

There's a healthy degree of variation from minimum specification to recommended; your decision basically comes down to the following:

- The number of computers and users that will need access to the computer at any given time. More pull on the server equates to more power needed.

- Additional requirements you may have for processor-intensive tasks. You may wish to run line of business (LOB) applications on the server which need heavy CPU support or want advanced media features such as transcoding (real-time conversion of media from one format to another) particularly for use in conjunction with Remote Web Access media streaming.

RAM

Next, we come to system memory. The minimum is 2 GB (or 4 GB if you're going to deploy a virtual machine) and the recommended is 16 GB. Once again, the number of computers, users and applications running simultaneously will provide a guideline in determining actual needs. For modern systems, we would never recommend anything less than 4 GB, so that would be our "recommended" minimum.

Please note that ECC (Error-Correcting Code) memory is required for OEM hardware in order for that hardware to carry the Windows Server 2012 R2 Essentials logo, but is an optional investment.

Storage

Regarding storage space, Essentials will simply not install on anything smaller than a 160 GB hard disk but I'd be surprised if you went that low. You'll need to use 60 GB for the system partition holding the Windows Server operating system but after that, it's up to you. Remember, those client backups can take up a lot of space (even with all of the cool tricks Microsoft employs to optimise backup storage) so stock up. Three and four TB hard drives are now easily affordable so look to see what Western Digital and Seagate are offering at your favourite retailer.

The recommended hard disk space is based partially upon how much data you think you might need storage for. So double that figure, then double that figure once again if you plan on using a data redundancy feature such as RAID or Storage Spaces.

With regard to storage type, I strongly recommend you use standard hard drives with physical platters rather than Solid State Drives as the cost per gigabyte still heavily favours traditional drives - most users simply don't need the rapid speeds offered by SSDs.

The decision process at this point is whether to obtain consumer-grade hard disks or enterprise-grade hard disks. Enterprise-grade hard disks offer increased reliability, improved time limited error recovery (TLER) and in some cases, longer warranties. Basically, if you plan to use RAID or another storage pooling technology, choose Enterprise-grade hard disks; otherwise use consumer-grade alternates.

Networking

Finally, in order to communicate with your clients, you must have a network interface card (NIC). This needs to be a gigabit wired Ethernet adapter (sometimes listed as 10/100/1000baseT on specification sheets).

These requirements are summarized in the following table.

Table1: Basic System Requirements for Windows Server 2012 Essentials

Component	Minimum	Recommended
CPU (must be 64-bit)	1.4 GHz single-core or 1.3 GHz multi-core	3.1 GHz or faster multi-core
Memory (RAM)	2 GB	16 GB
Hard disk	160 GB	No limit
Network Interface Card (NIC)	Gigabit Ethernet adapter	Gigabit Ethernet adapter

Build or Buy?

Once you have settled on your rough specifications, it now comes down to what your budget is, whether you want to buy an OEM system, or build your own.

One very popular choice for a home user, Small Office Home Office (SOHO) user, or even a Small Business user is HP's Gen8 MicroServer.

The HP ProLiant Gen8 MicroServer

This particular machine weighs in at slightly above the minimum requirements but at a cost of only $350 without an operating system. Featuring ECC memory and Enterprise hard disks, this machine is designed and built for those looking for their first server-grade computer. This type of computer, however, would not be considered a powerful media server.

Higher up the price and power spectrum is Western Digital's excellent Sentinel DS range. Various specifications are available to meet different budgets but you can expect to pay in the thousands for this more powerful option.

The Western Digital Sentinel DS6100 Server.

For total 24/7 guaranteed uptime, line-of-business (LOB) applications, and more, the sky is the limit when choosing a system. Higher-end servers such as the Western Digital Sentinel contain such advanced components as Xeon CPUs, redundant power supplies, hardware RAID, and more. If you might be considering a system containing these types of features, it imay be best to seek out the advice of local small business IT consultants with the knowledge and experience to guide you. Of course, the cost of these systems and consultant fees are more likely limited to the needs of a more complicated small business environment.

Additional Requirements

Hopefully, you now have a feel for your preferred server specification. In order for this server to be useful, you'll need some additional items, as noted in the following table.

Table2: Additional Requirements for Windows Server 2012 R2 Essentials

Feature	Description
Modem/Internet Access	Needed for software updates, access from and to the Internet.
Router	IPv4 NAT or IPv6 support with Gigabit Ethernet ports and Wi-Fi. No router = no internal network, no Internet
Support hardware	• Computer Monitor • Keyboard and Mouse • DVD-ROM drive

I do not believe that any of the above would be a surprise to anyone. A few additional recommendations:

A DVD drive is beginning to become somewhat of an afterthought in "required" support hardware. If a computer comes with one, great. For maximum flexibility, buy an external drive that can be attached to a computer through a USB port.

If your business depends upon access to a computer, consider obtaining a second router for use as a fallback device. Routers do fail, and as indicated above: "no router = no internal network, no Internet".

A "headed" computer has the ability to attach a monitor and input devices; a "headless" computer does not. If you need to debug something, you will wish you had that "headed" model.

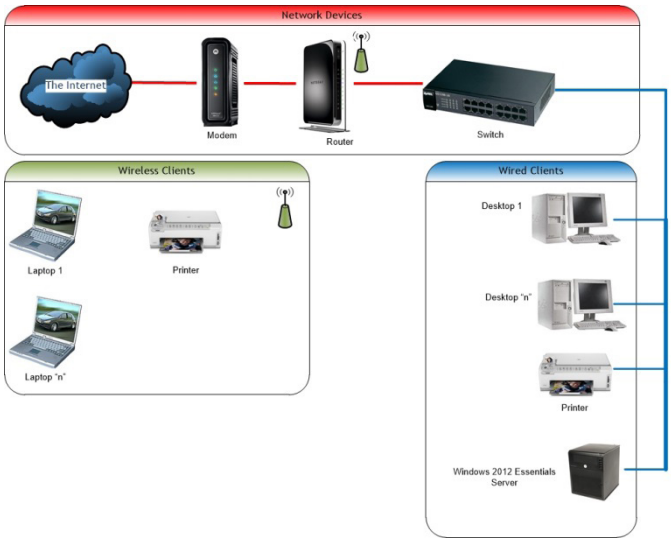
Networking Configuration

As noted above, "no router = no internal network, no Internet". We really need to go one step further and state "no router = no server". You can set up a Local Area Network (LAN) with a router and survive without access to the internet, but without a router, computers simply cannot communicate with each other. The server must have a wired Ethernet connection to the router - yes, Wi-Fi would be very convenient, but also very unreliable, so wire-up!

Suggested router configurations are as follows:

- The router should be a UPnP-certified device (most are).
- The router should be configured in the 192.168.x.x subnet.

A typical LAN setup with access to the Internet can be illustrated as follows:



Please note that the above illustration includes both wired and Wi-Fi devices. In addition, a switch is illustrated and is required if you have more wired devices than connections on your router. Without getting bogged down with technical jargon, a switch is most easily described as a device that adds additional wired Ethernet ports to your network.

Supported Client Operating Systems

Finally, we come to the computer operating systems that can connect to, and be managed by Win-

dows Server 2012 R2 Essentials:

Windows 7 operating systems

Windows 7 Home Basic SP1 (x86 and x64)

Windows 7 Home Premium SP1 (x86 and x64)

Windows 7 Professional SP1 (x86 and x64)

Windows 7 Ultimate SP1 (x86 and x64)

Windows 7 Enterprise SP1 (x86 and x64)

Windows 7 Starter SP1 (x86)

Windows 8 operating systems

Windows 8

Windows 8 Professional

Windows 8 Enterprise

Windows 8.1 operating systems

Windows 8.1

Windows 8.1 Professional

Windows 8.1 Enterprise

Apple Mac client computers

Mac OS X v10.5 Leopard

Mac OS X v10.6 Snow Leopard

Mac OS X v10.7 Lion

Mac OS X v10.8 Mountain Lion

While Microsoft does indicate Windows Server 2012 R2 Essentials supports starter and home versions of Windows 7 and 8, these systems lack the ability to join a domain so support is somewhat limited.

This takes care of the basic hardware and software requirements to get you ready to install your server and set-up your network. How do you decide what your hardware configuration will be? First and foremost, what is your budget? Second, what features do you need? Third, how many users do you have or plan to have? Fourth, is this going to be a media server in addition to being a file server? Fifth, how critical is this machine to your business? All these questions (and more) are your guide. If you answer "yes" to the above questions and/or maximize the number of users, you will need/want more power and component redundancy.

In the end, your budget controls everything. Based upon that budget, you may want to start small and upgrade your hardware as needed over time - the beauty of a reasonably open hardware architecture is that you can configure the hardware you need today (and perhaps tomorrow) and then build over time as your needs evolve.

Install Windows Server 2012 R2 Essentials

"Once you have obtained a computer for use as your server, it is time to put your Server 2012 R2 Essentials installation disk into your optical drive and install the operating system. "

I am making a few assumptions here in that:

- You are using physical DVDs.
- You are installing Essentials on a physical machine, not as a virtual machine.

Some may ask, why these limitations? The simple answer is that if you're using downloaded ISOs from an MSDN or TechNet account, you probably do not need this guide. If you are looking to install Essentials in a VM, you almost certainly do not need this guide.

The real answer is that this guide is designed for those who are installing Server 2012 R2 Essentials in their SOHO or small business. The desire here is to set up the server software on a computer, configure the operating system, add users and computers to the network, set up user permissions, and customize the server to meet their specific needs. While we will cover more advanced topics later, the desire here is keep this process as simple and concise as possible.

So, time to settle in, give yourself a few hours of uninterrupted time, and get this server installed and configured for use!

First things first. Place the server where you have comfortable access to the physical box, keyboard, and monitor. You do need access to the Internet, so make sure you can connect to an Ethernet port on your network. Remember, you need a wired connection to your router, **not** a Wi-Fi connection.

Turn the computer on and insert the installation DVD into the optical drive. At this point, you may (or may not) see the following message:

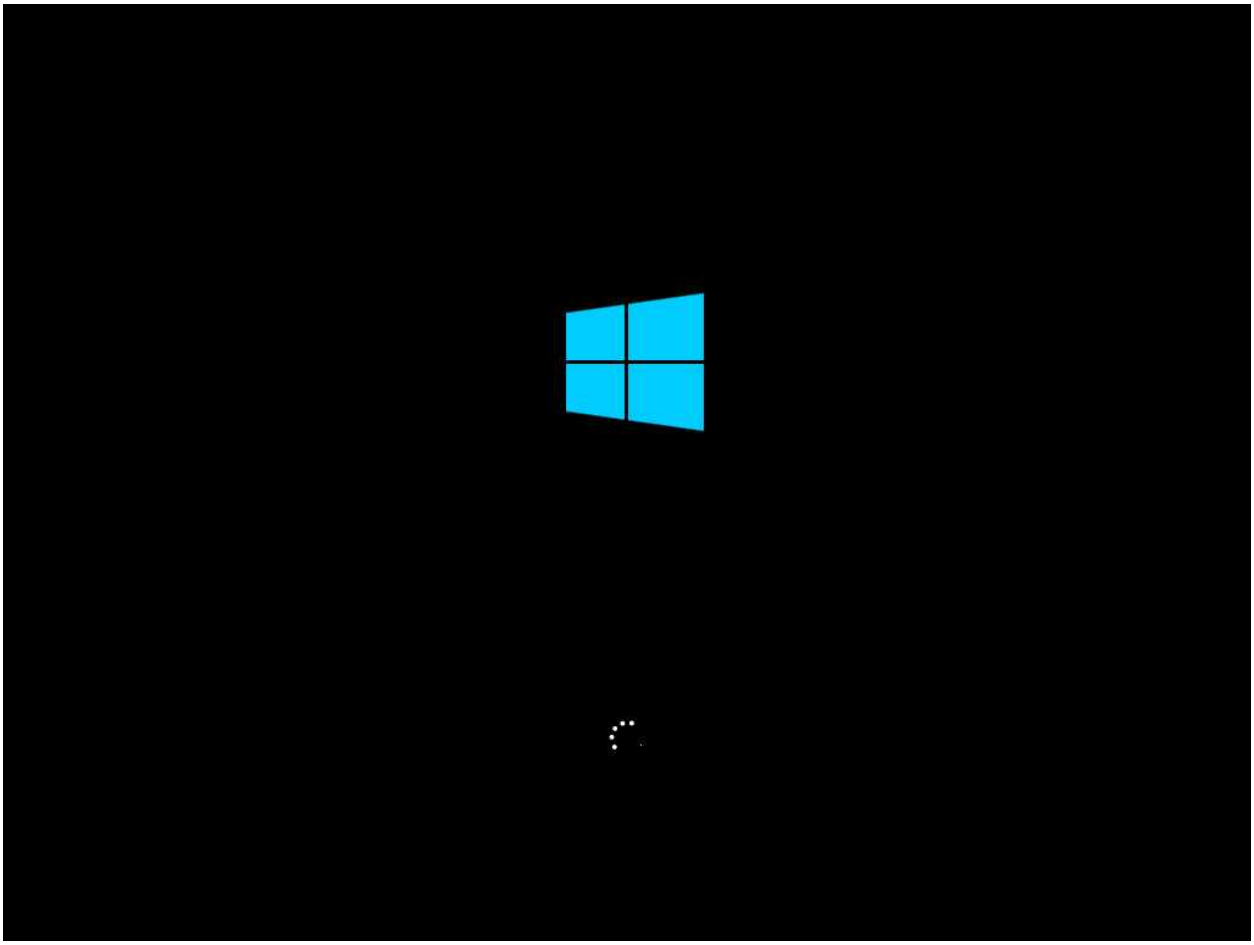
A familiar sight to regular OS-installers.

Whether you see this or not will depend upon a few factors. If your BIOS is not configured to boot from this optical drive, you may have to reboot and configure the BIOS to boot to an optical drive. If you currently have an operating system installed on this computer, you may have to ensure that the BIOS is set to boot to the optical drive as the first option. To access the BIOS, you typically press the **<Del>** key during the computer boot-up (or a Function Key if guided to on screen). If you are unsure how to access or configure the BIOS, please refer to the manual that came with your computer.

If you do not have a previously installed operating system and the BIOS is configured to boot to the optical drive, you will most likely not see this screen. Assuming that you see the "P**ress any key to boot from CD or DVD**" message, **press any key** to start the operating system installation.

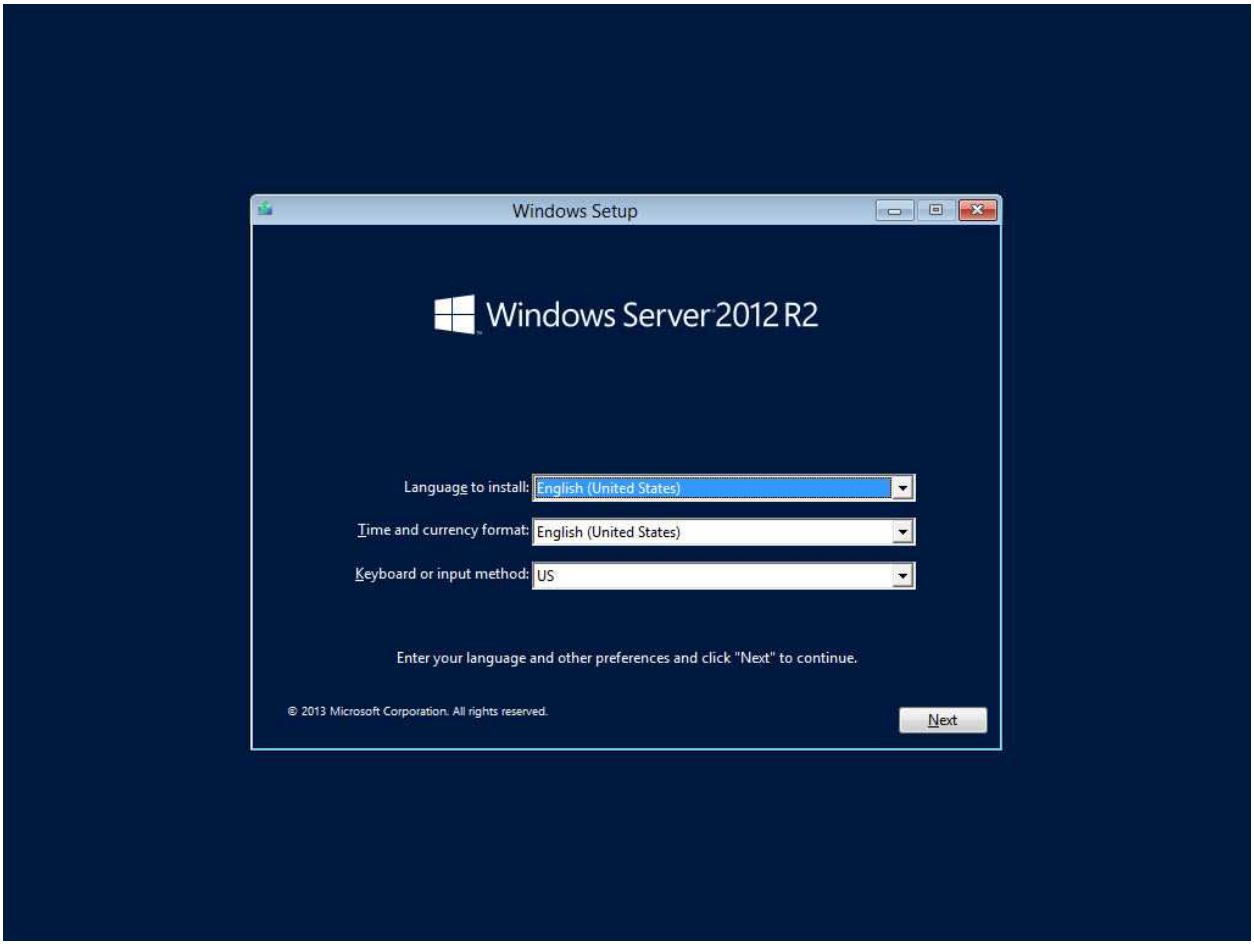
After a few preliminary screens are automatically displayed:

I'm not sure how accurate the progress bar actually is, but it's something to look at while we're waiting!



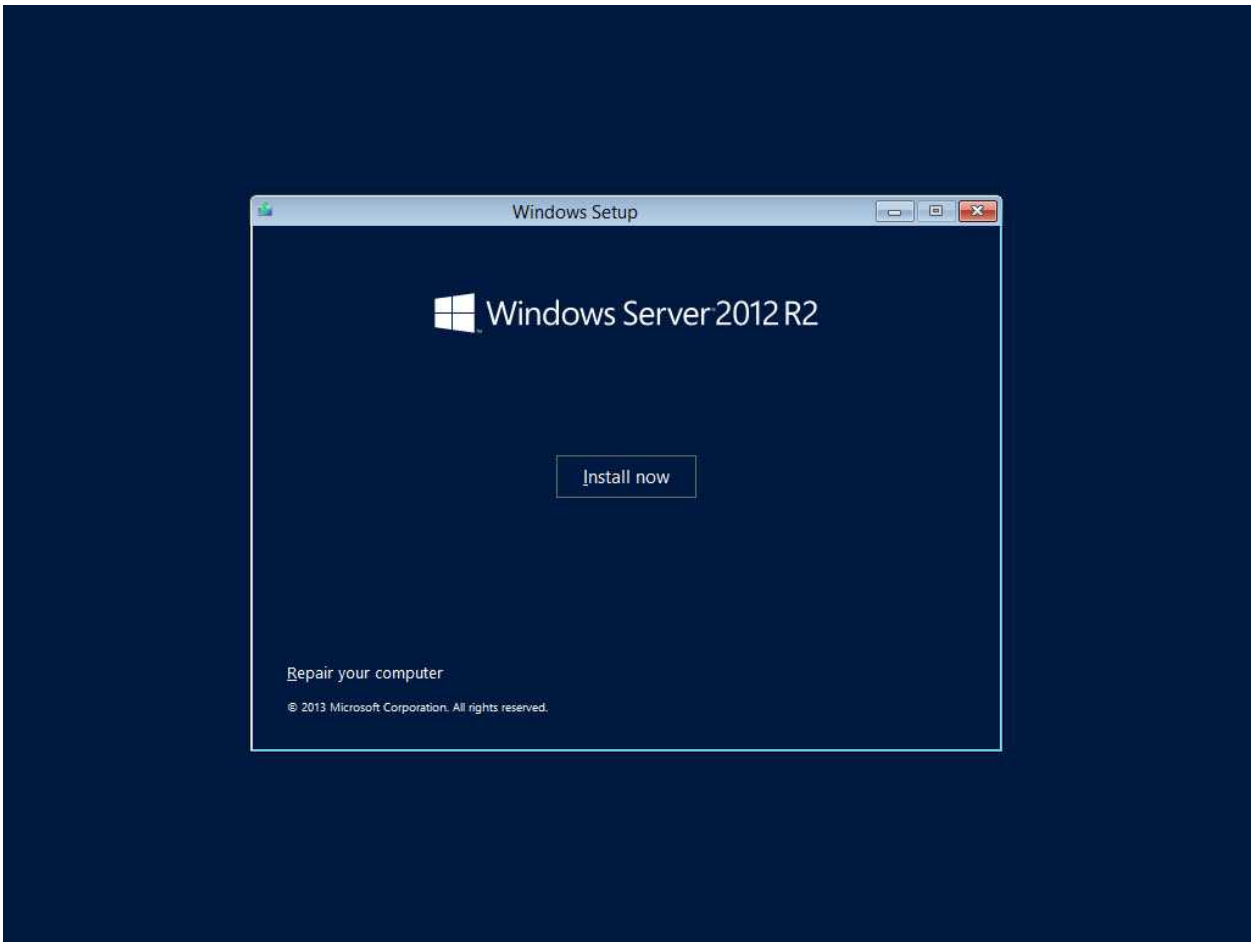
Booting Windows.

The installation process will stop to allow you to verify regional information.



Regional settings for language, time and currency format and keyboard.

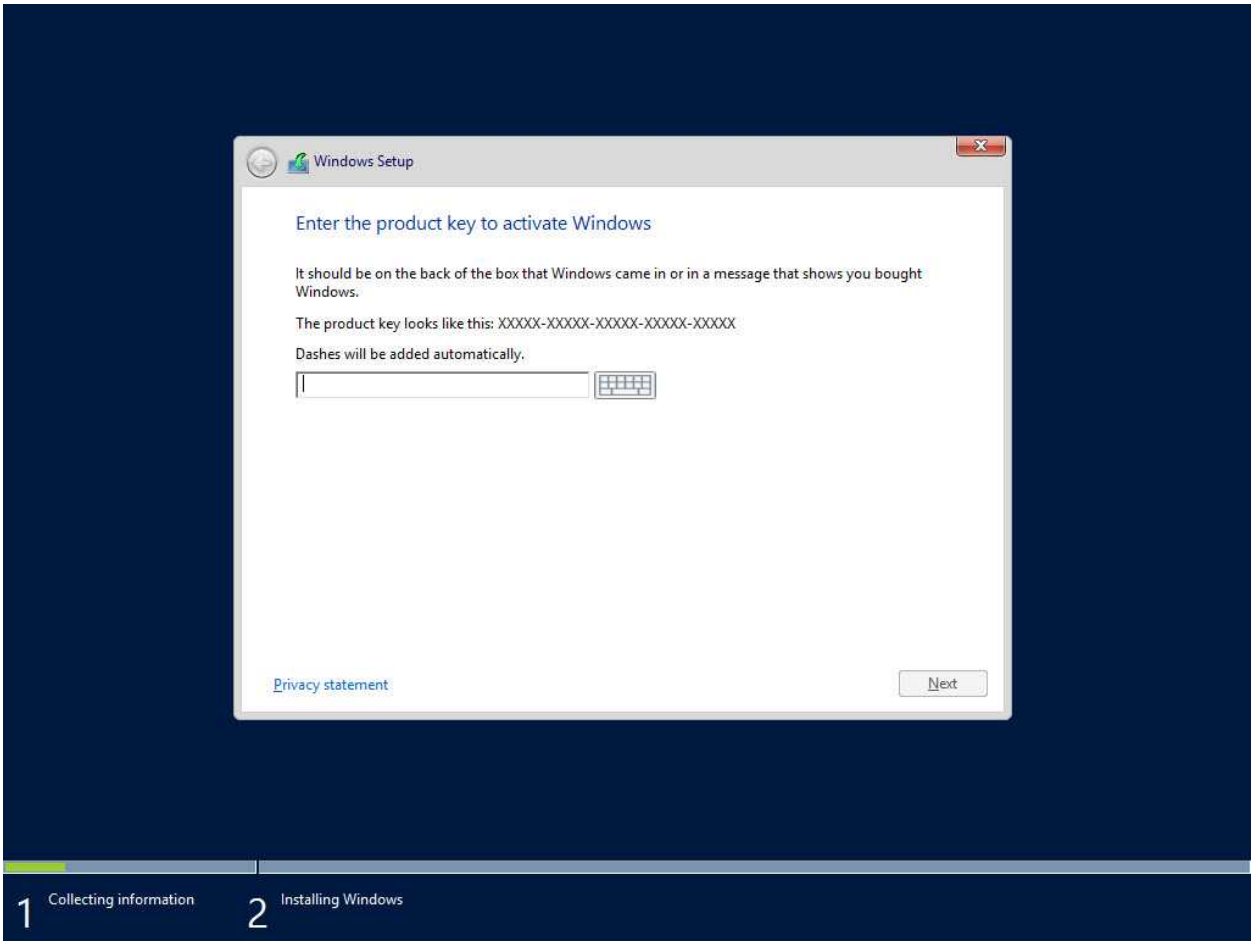
Select the language, time/currency, and input method for your locale. Click **Next,** then click **Install now**.



That lovely Windows Server 2012 R2 logo, seen for the first time - note that it doesn't mention Essentials at this point.

You will see another automated screen:

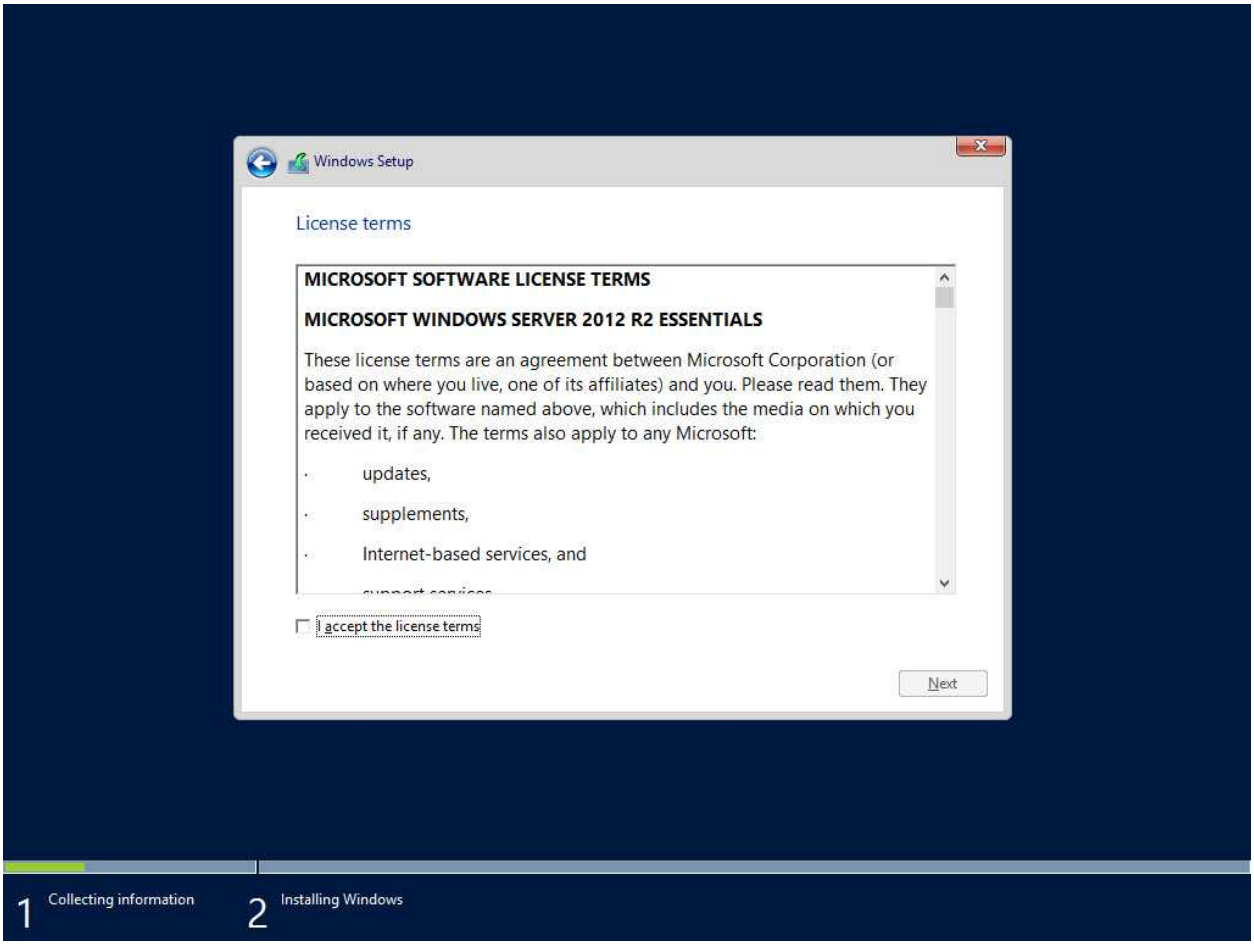
This is followed by a screen asking for a product key.



Unlike previous versions of Windows Server, you must enter your product key at this point.

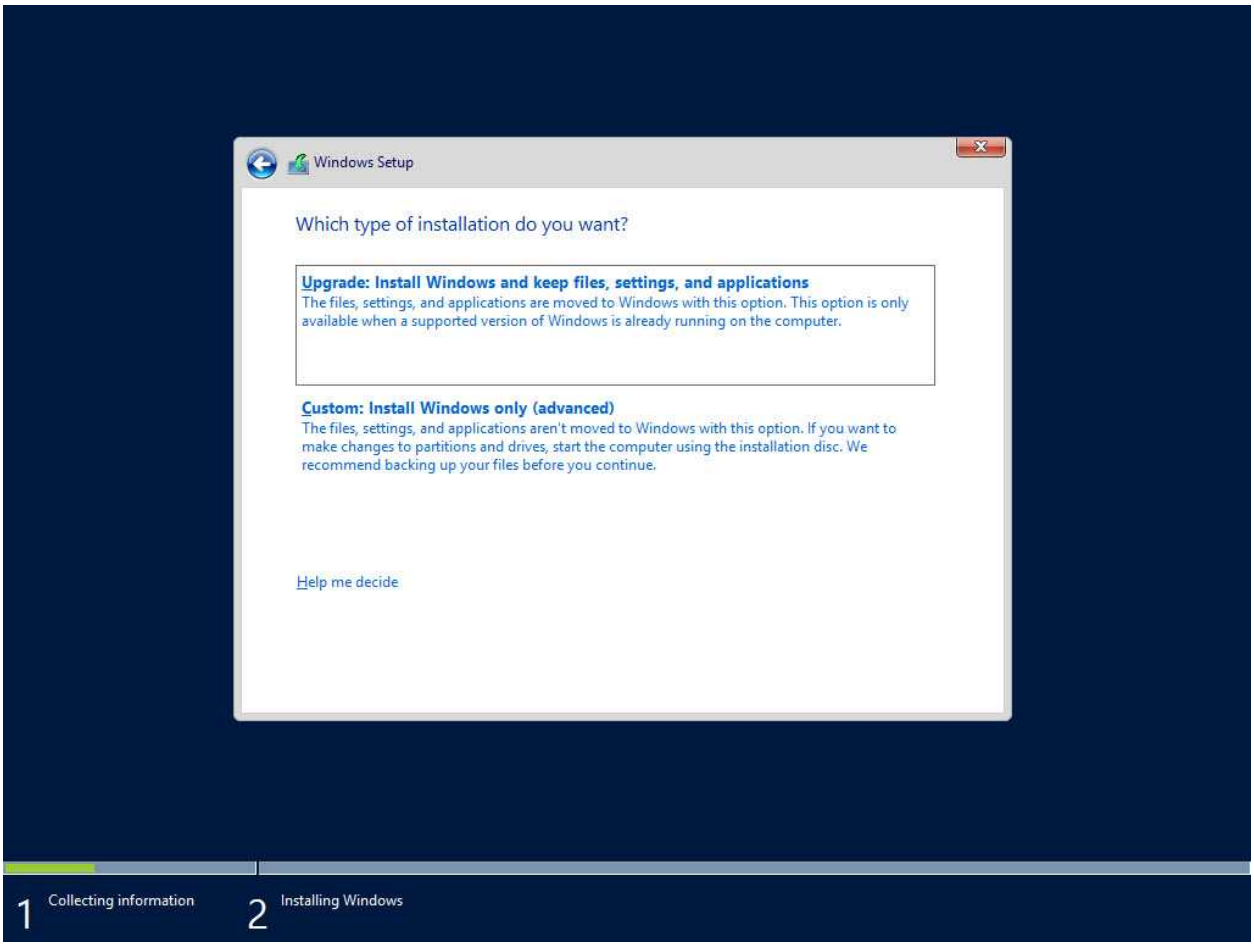
You must enter your product key here, as you do not have the option to enter it later. Once entered, click **Next**.

Tick the "**I accept the license terms**" box and click **Next**.



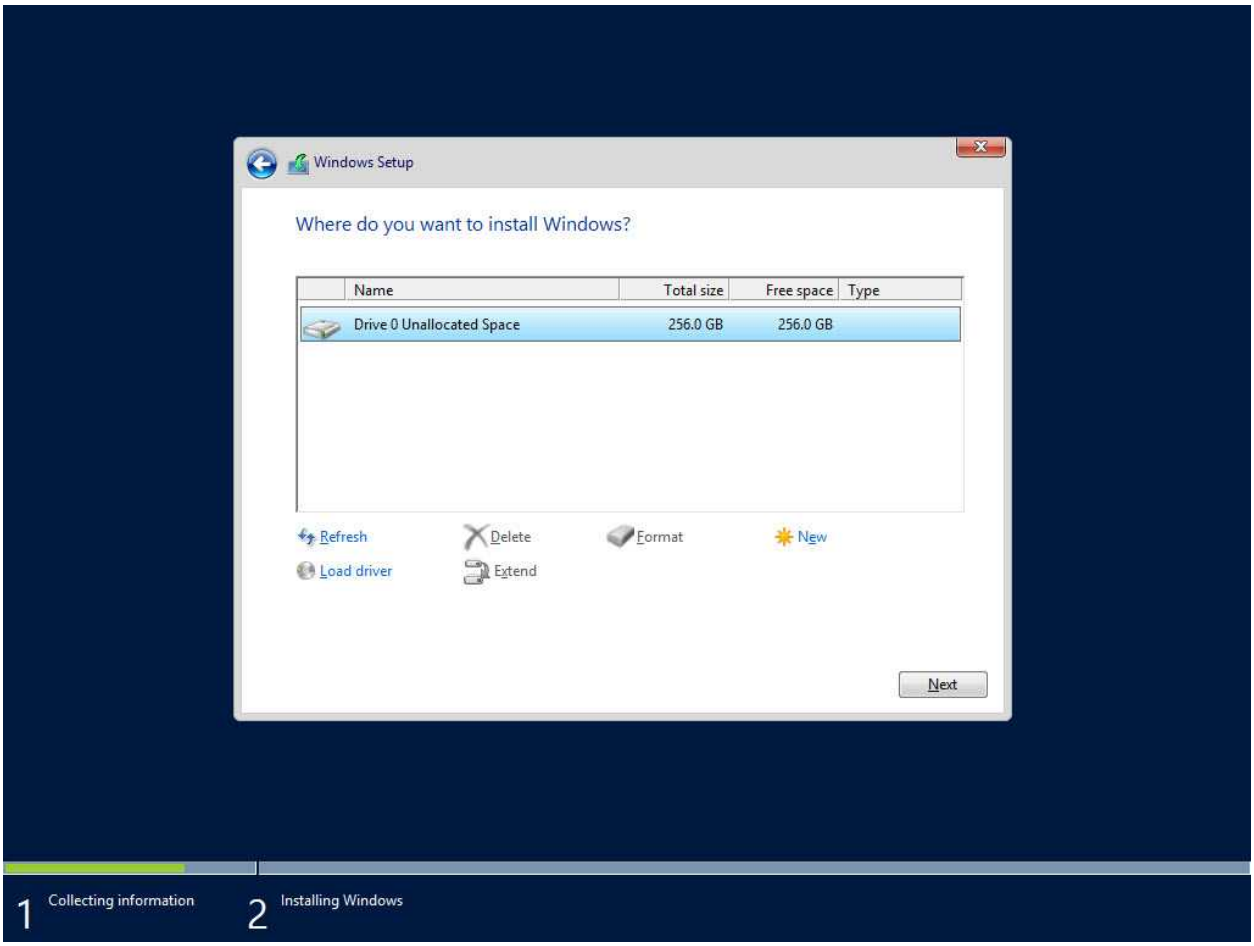
The Windows Server license agreement.

You are doing a new install, so choose the second option (**Custom: Install Windows only (advanced)**).



Selecting your installation type.

Assuming that you have put in a single new/blank drive into your computer, you will see a screen like the following:



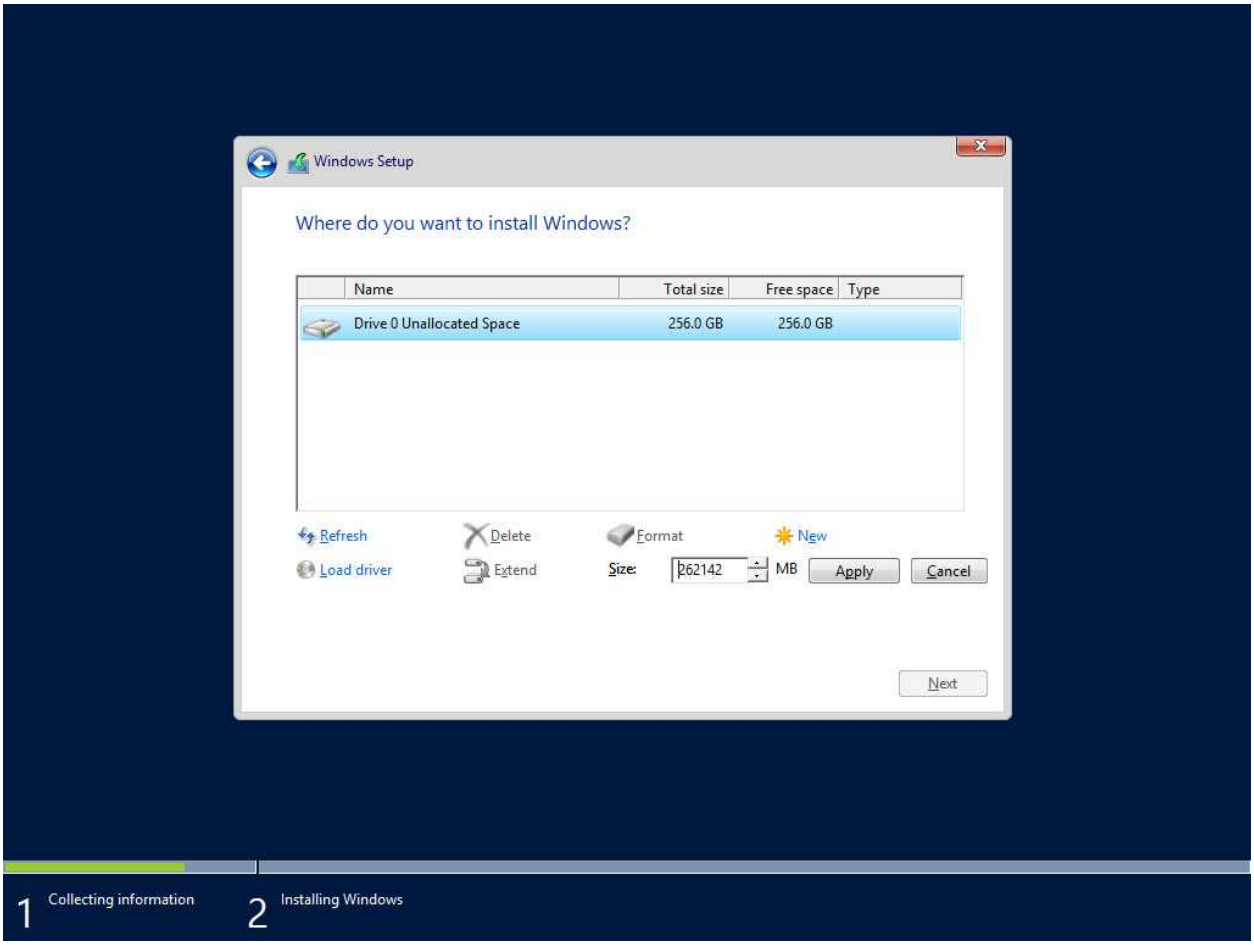
Nominating a location.

Obviously, with multiple drives on board you'll be offered the option to install the operating system on any of those drives.

Partitioning the Hard Drive

If you click **Next**, Windows Server 2012 R2 Essentials will install the operating system on the full 256 GB drive, leaving nothing for the data drive. It is recommended that the shared, or data, folders be separated from the system drive, so we need to partition this hard drive accordingly. In this particular arrangement (256 GB drive), this may not be a significant loss of hard drive space, but when installed on terabyte sized drives, you are wasting a very large amount of space if you do not partition.

To partition the hard drive, click **New**.

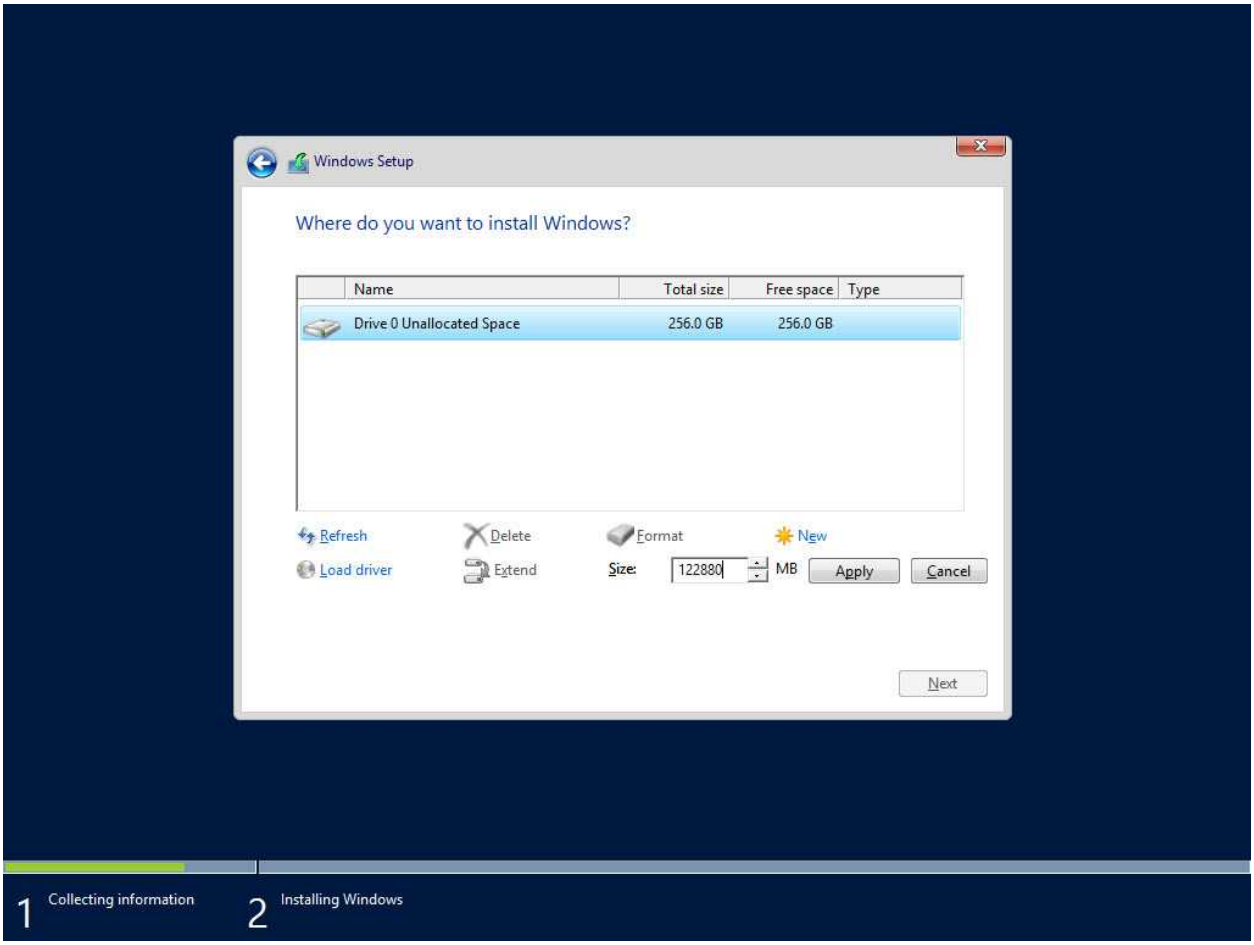


Partitioning your system drive.

This allows you to partition the drive to the desired size. A 60 GB drive is the minimum size for the operating system, and should be satisfactory for most installations. For future expansion, there is certainly no reason to start out with a somewhat larger system partition. In this installation, I chose a 120 GB partition which provides ample room for any future system needs and takes only a small amount away from the total hard drive space as additional hard drives are added.

Please note that if the drive was previously formatted, you will need to "delete" the drive/partition to reconfigure/repartition the drive!

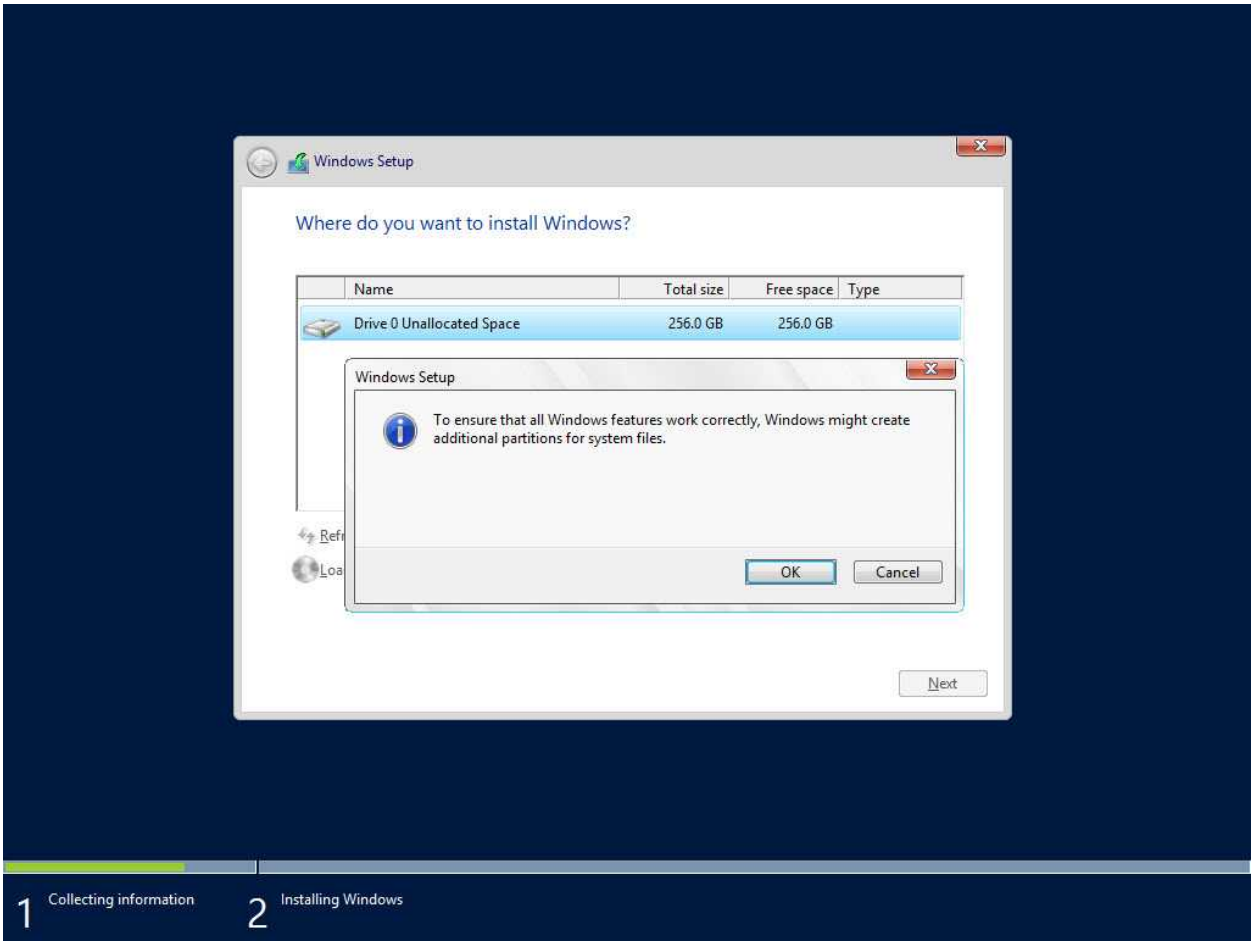
To set the system drive size, simply enter in the amount desired and click **Apply**.



Sizing the partition.

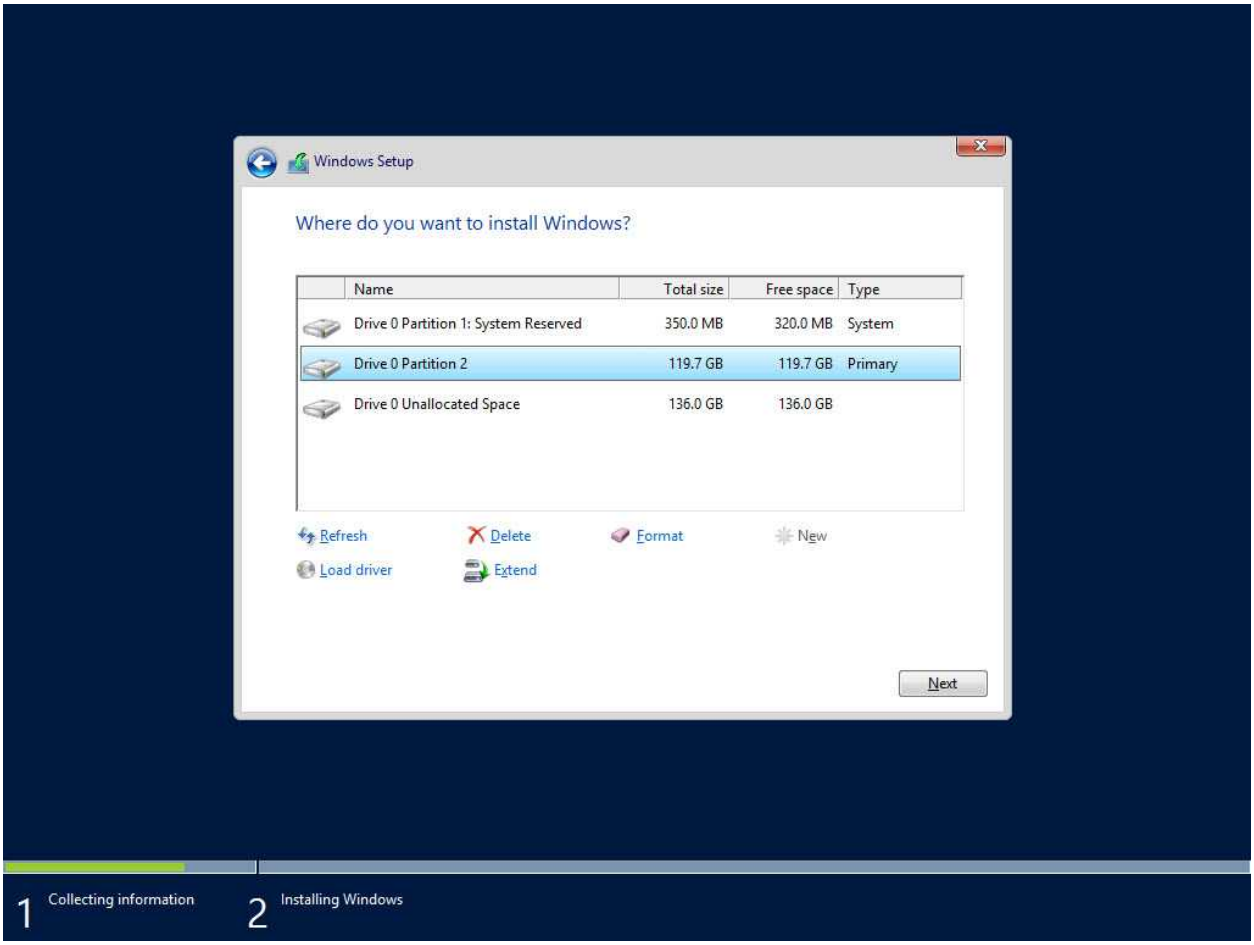
Note how the **Size** entry has been altered in the above screenshot.

When you click the **Apply** button, you are provided the following information:



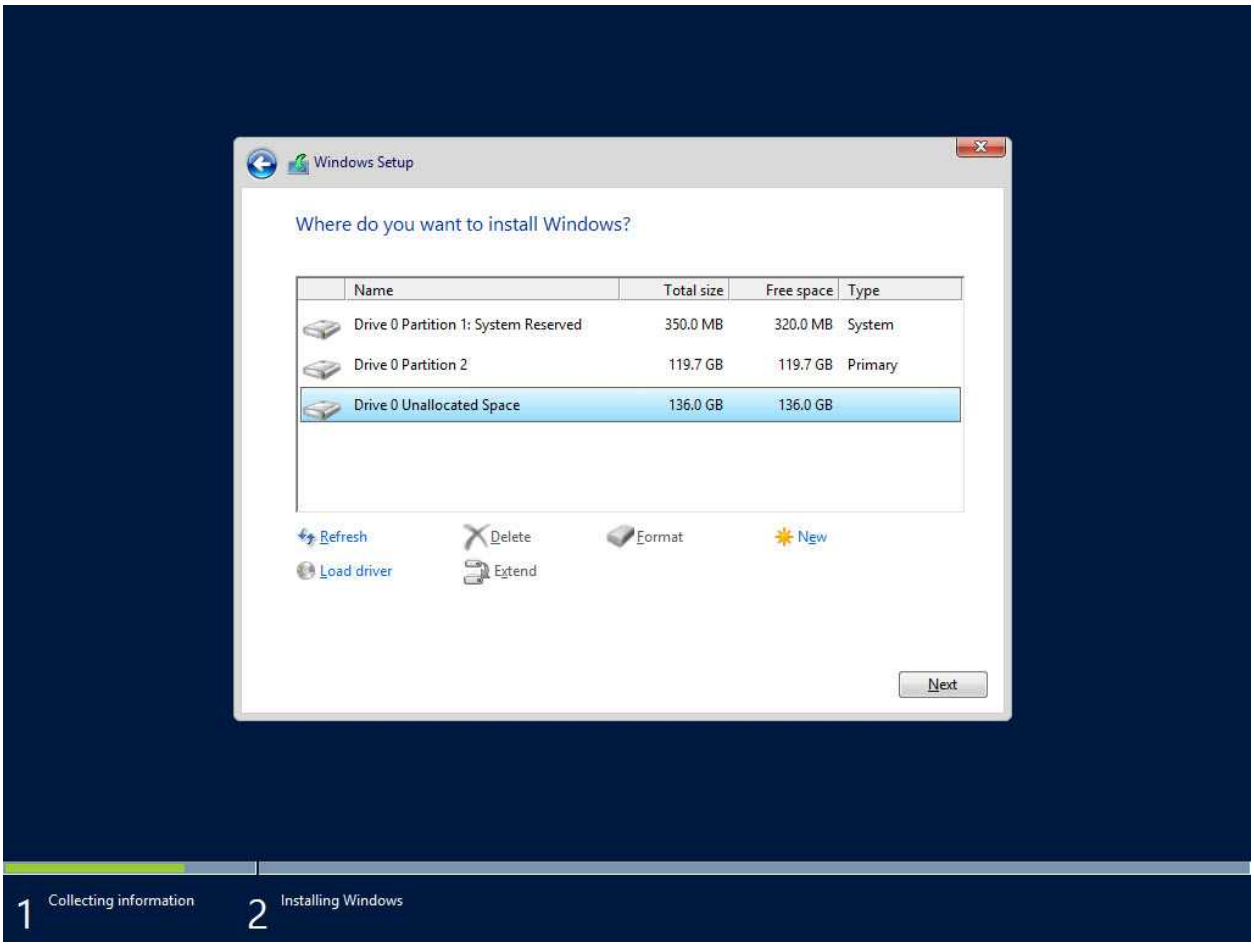
Click **OK** to proceed.

The result at this point is thus:



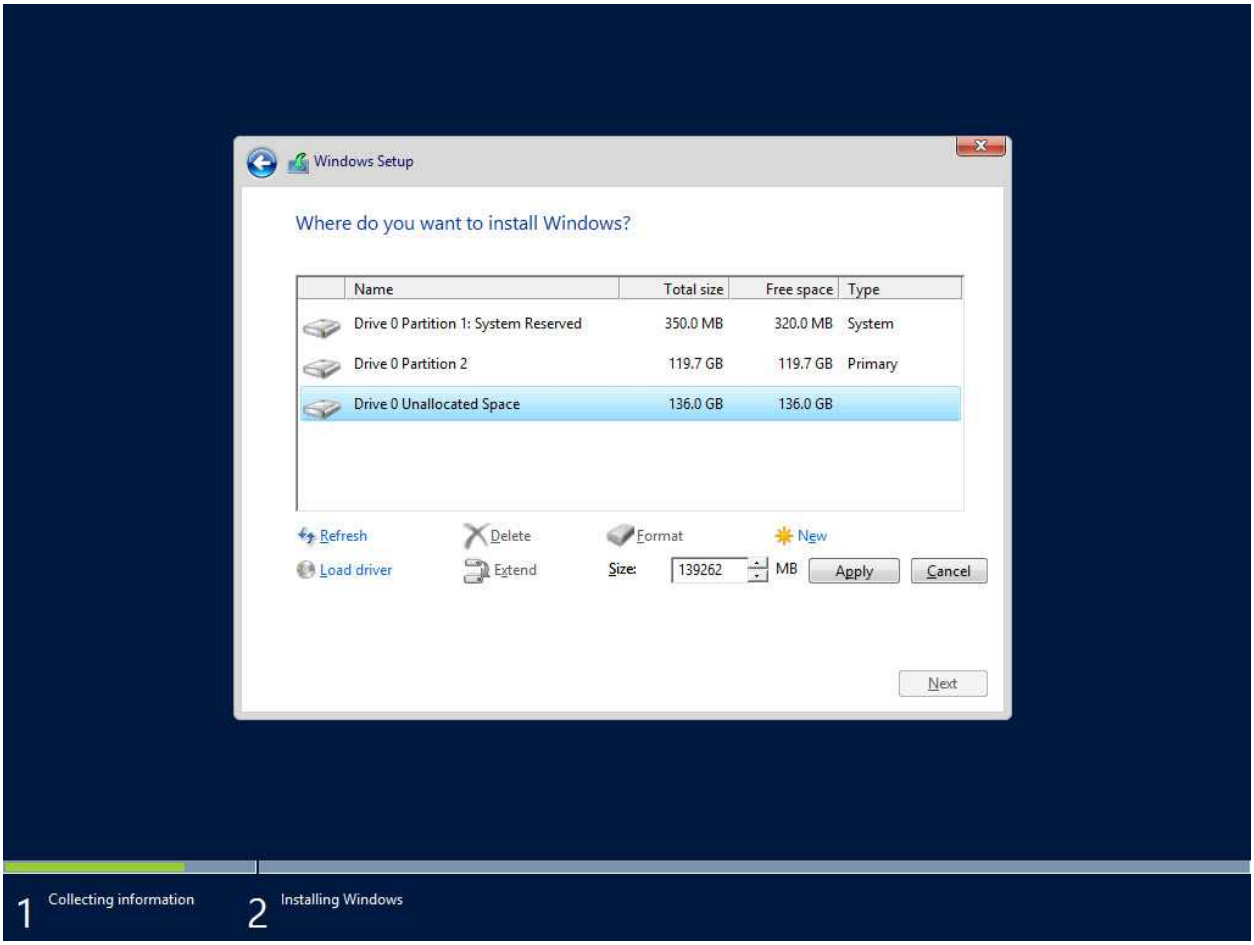
Our drive has been partitioned.

For the server installation process to make use of the remaining drive space for the D: drive, we need to highlight the last portion:

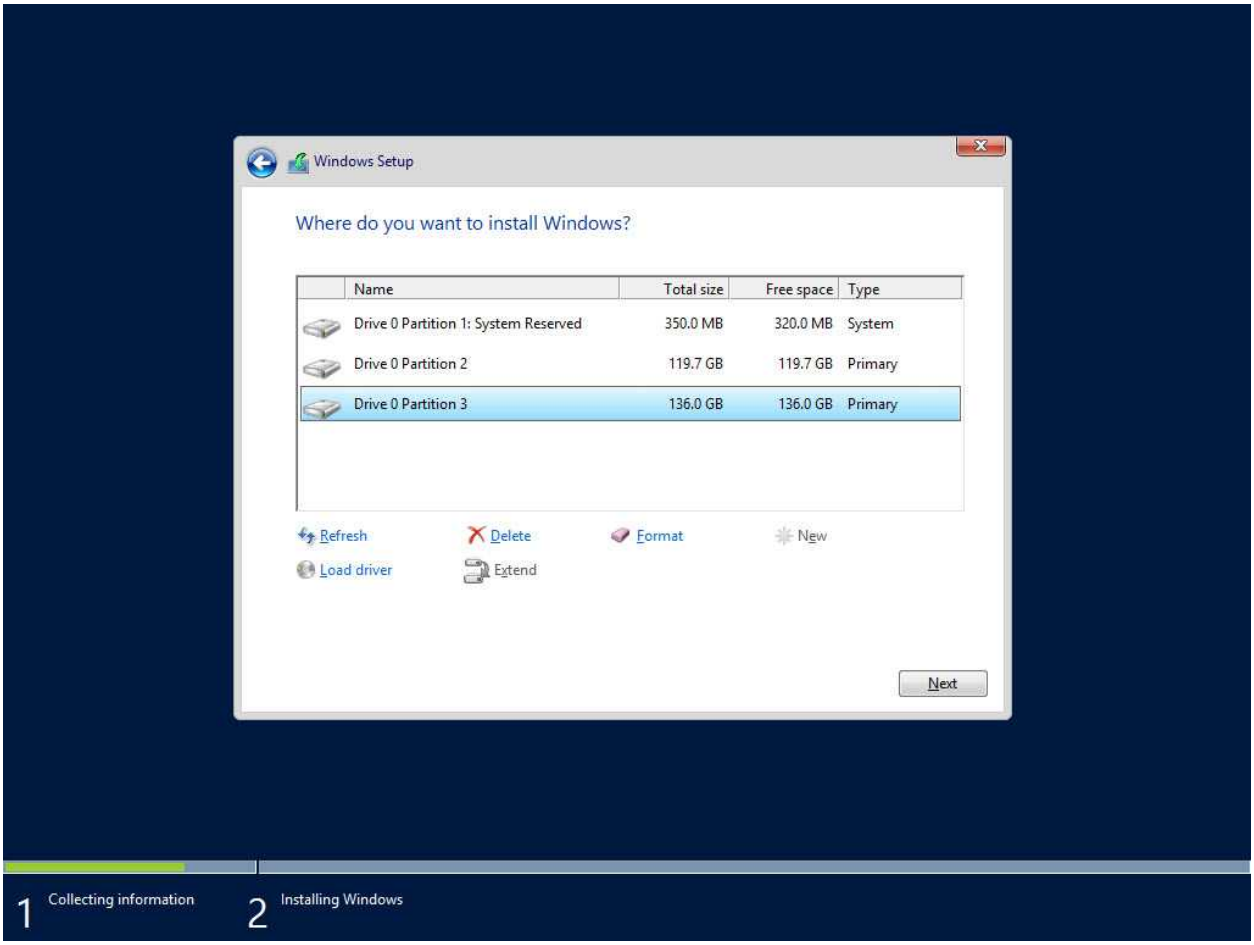


One more task to do...

Click the **New** option:

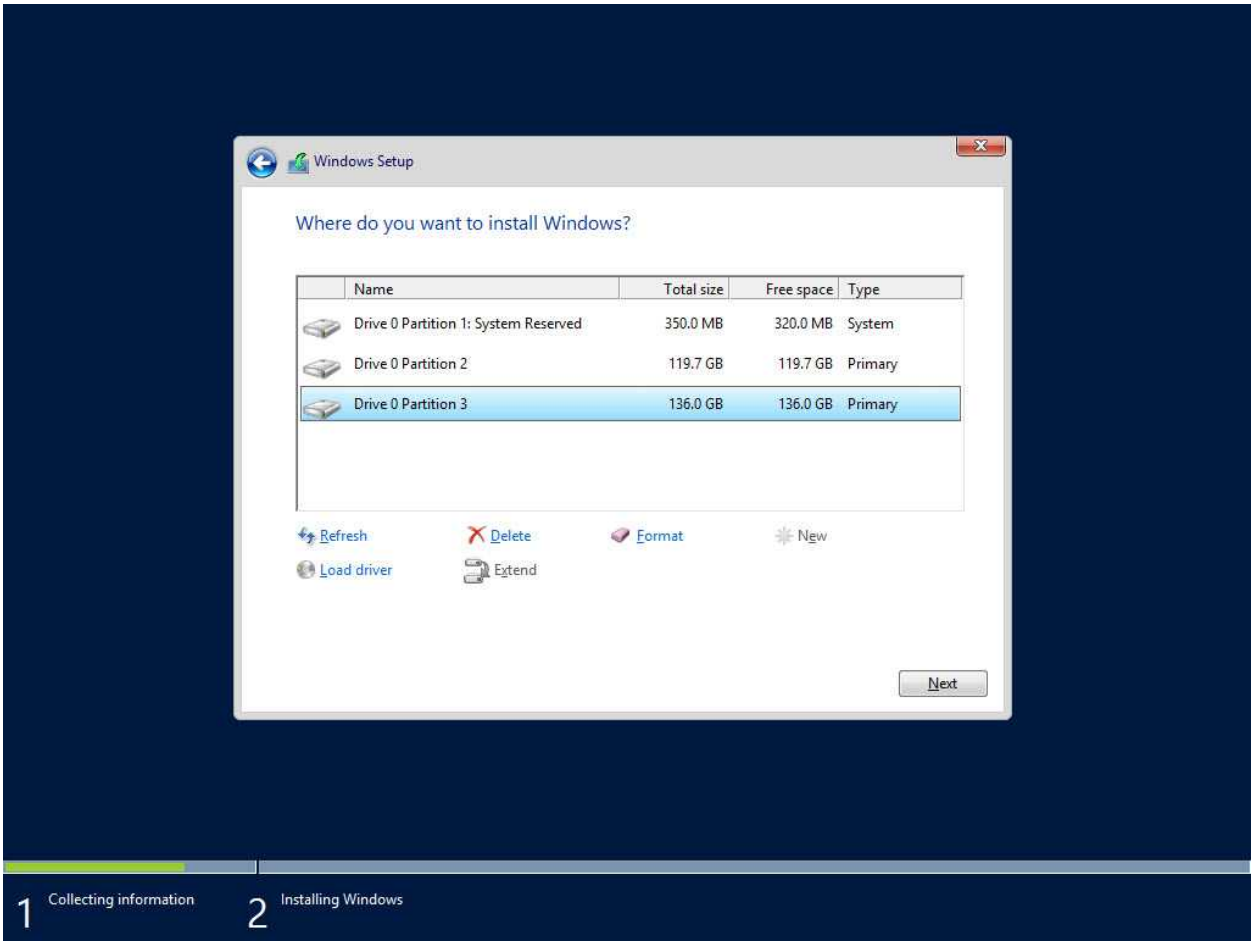


Now click **Apply** one more time.

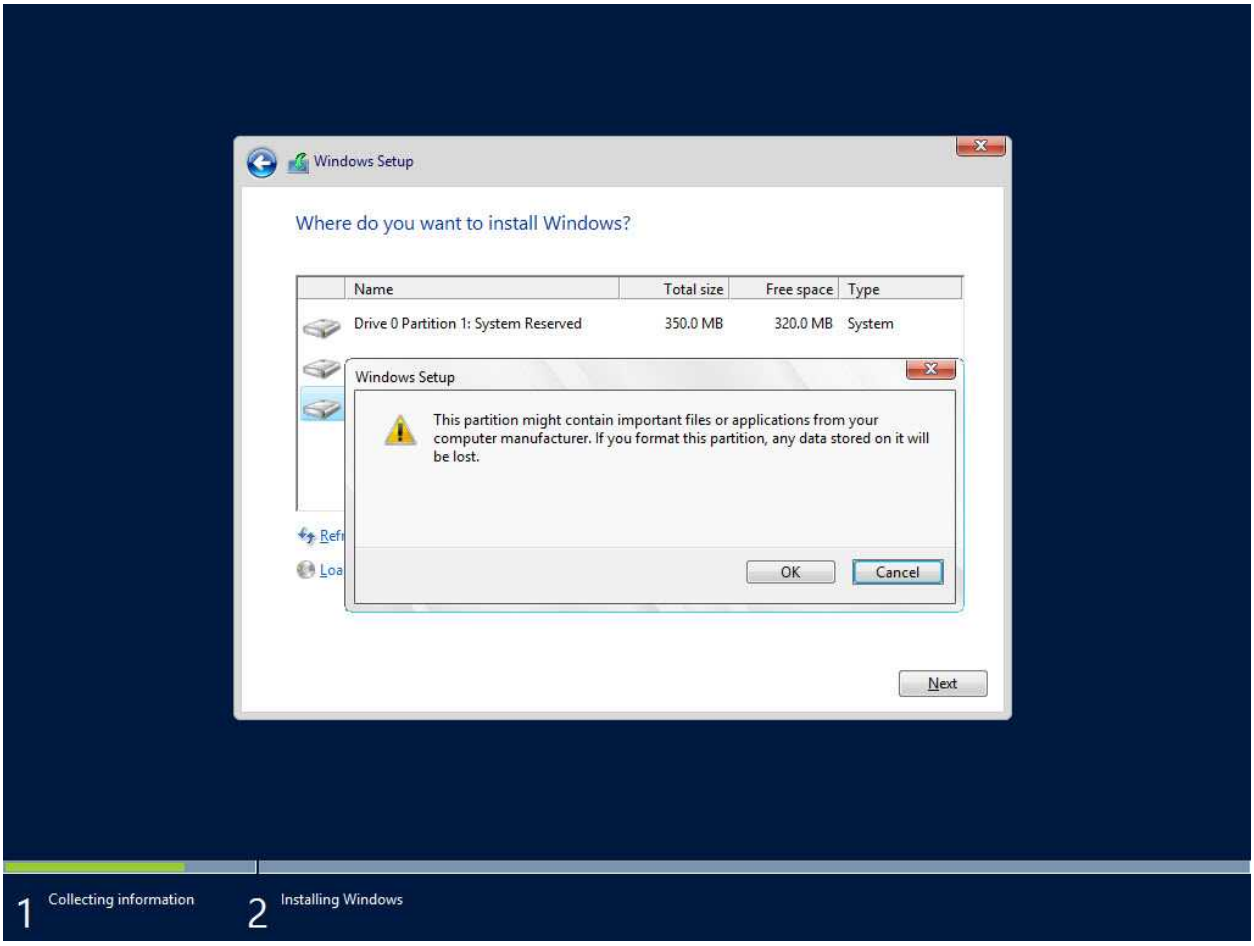


You will need to perform one more task for any data folders to be placed on the D: drive, which is to format it.

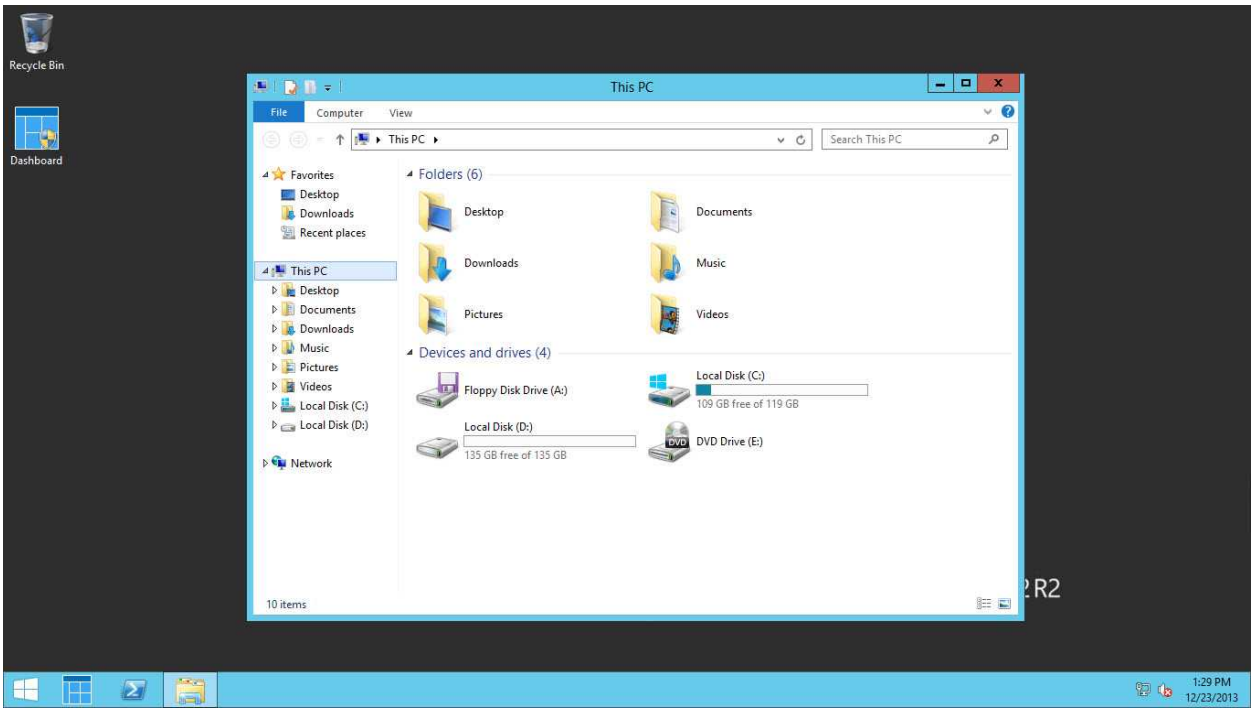
Highlight that drive, and click the **Format** option.



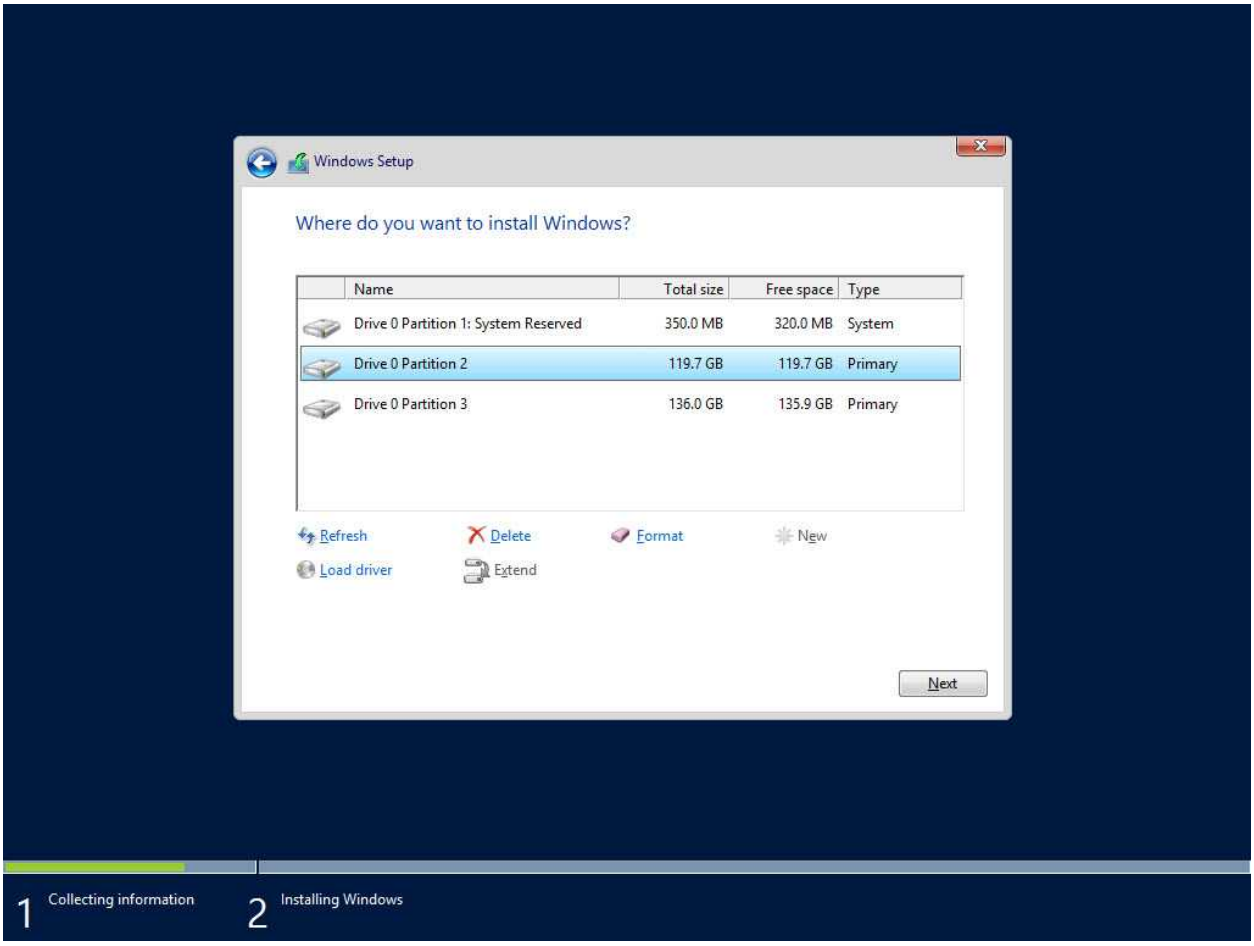
Formatting the drive.



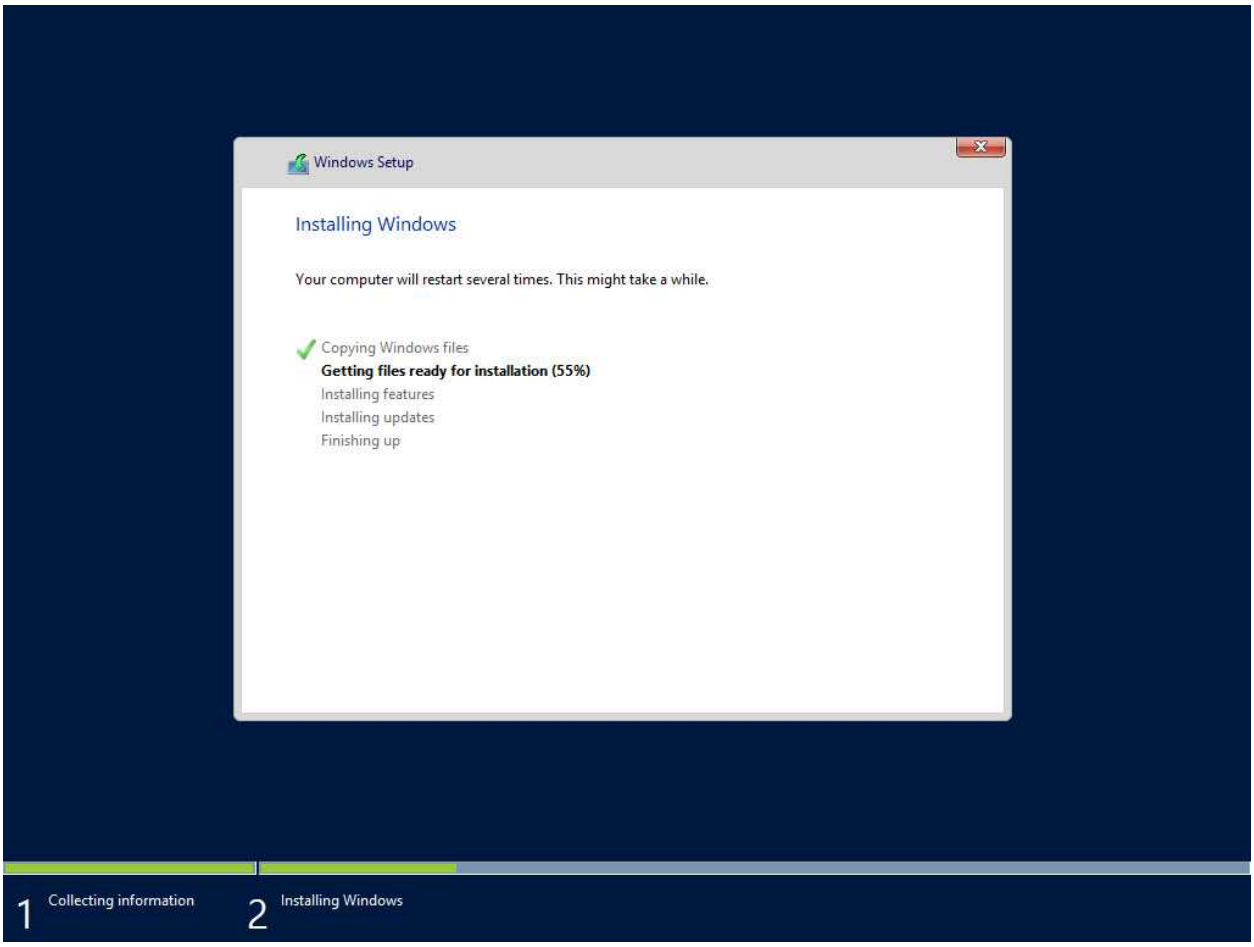
Once the server installation is complete, the **Drive 0 Partition 2** will become the **C:** system drive, and the **Drive 0 Partition 3** will become the **D:** drive - as seen in the following picture taken after the complete server install.



Moving back to the server installation, highlight **Drive 0 Partition 2** (if needed) and click **Next** to start the actual installation process.

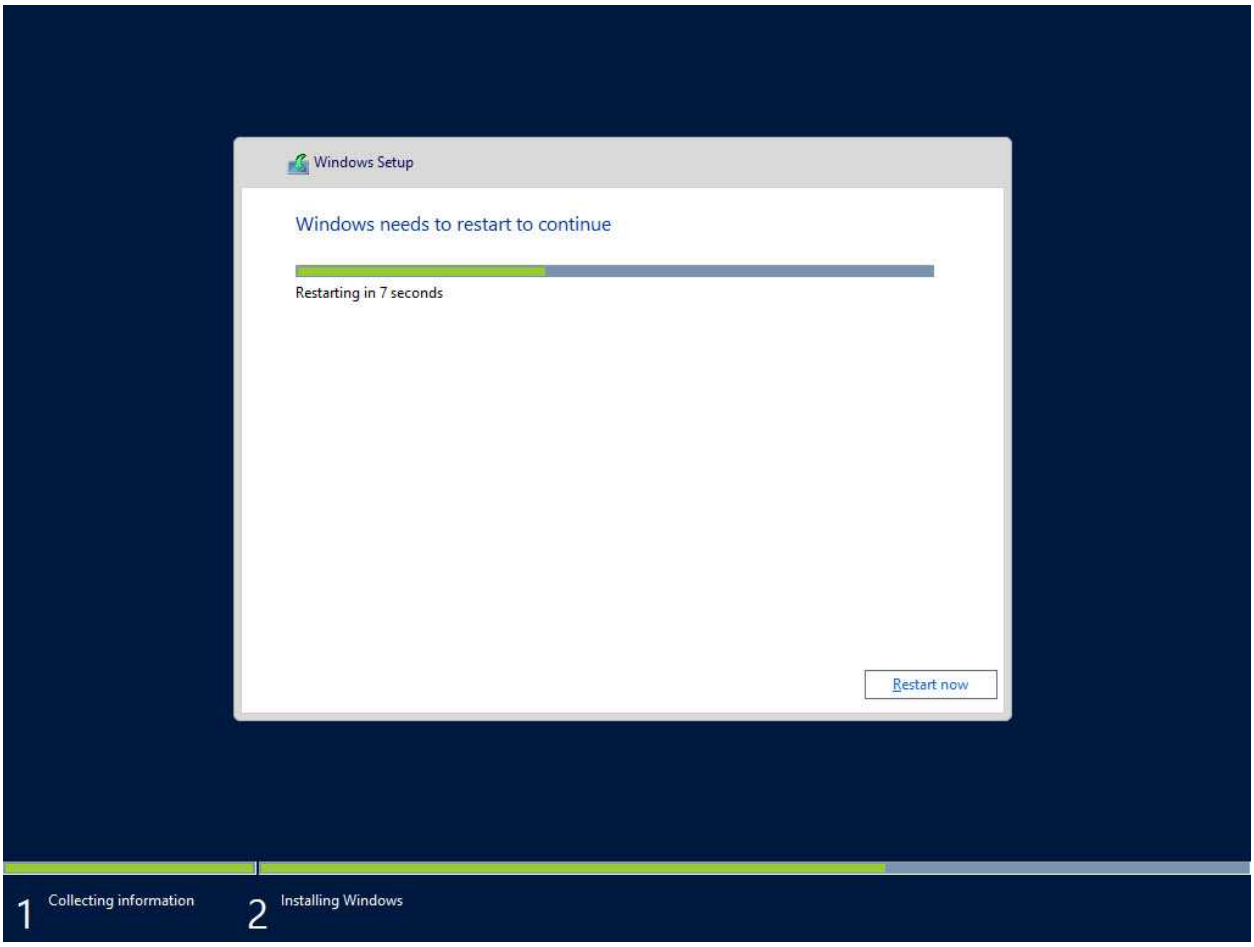


Assuming you have got to the following screen without incident, it is time to sit back, relax, and wait for the installation process to finish.



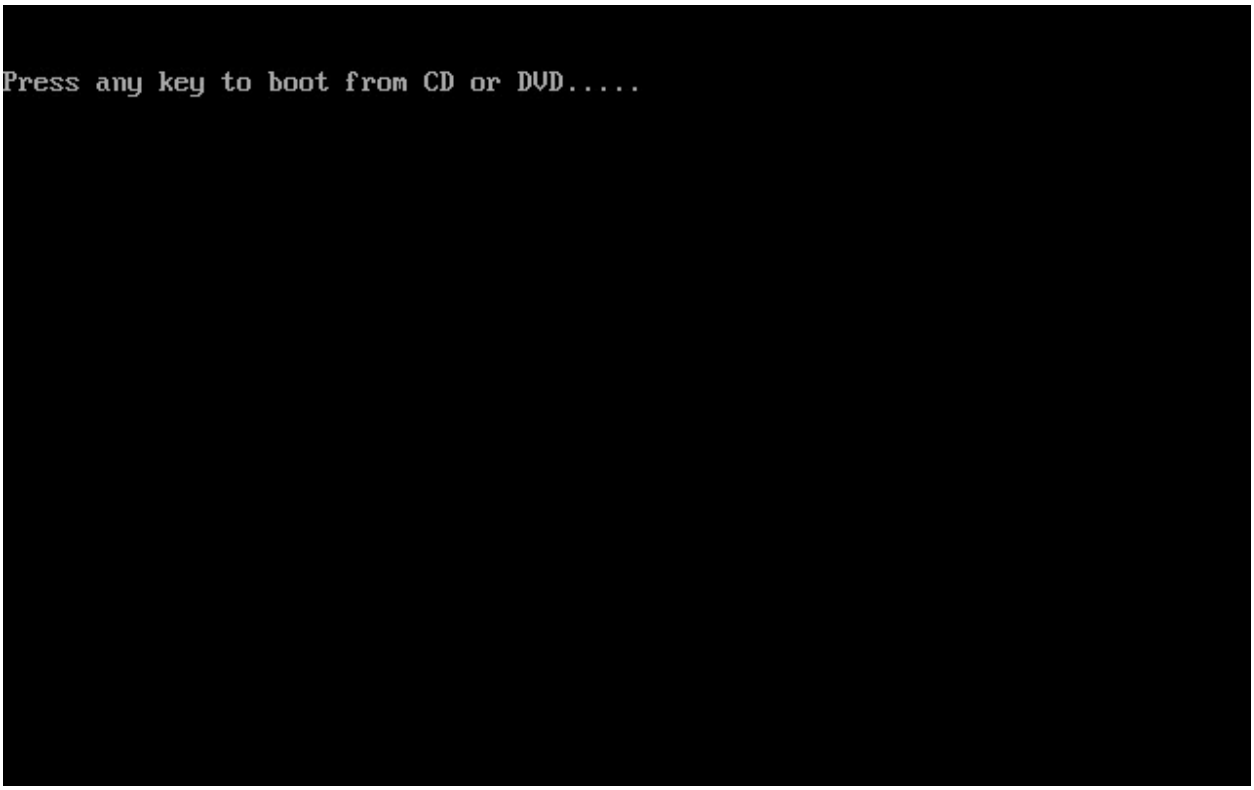
The installation process is mostly automated, but there are a couple of tasks for us to complete.

Once the above tasks are completed, and if you are still sitting in front of the screen, you may see the server reboot itself.

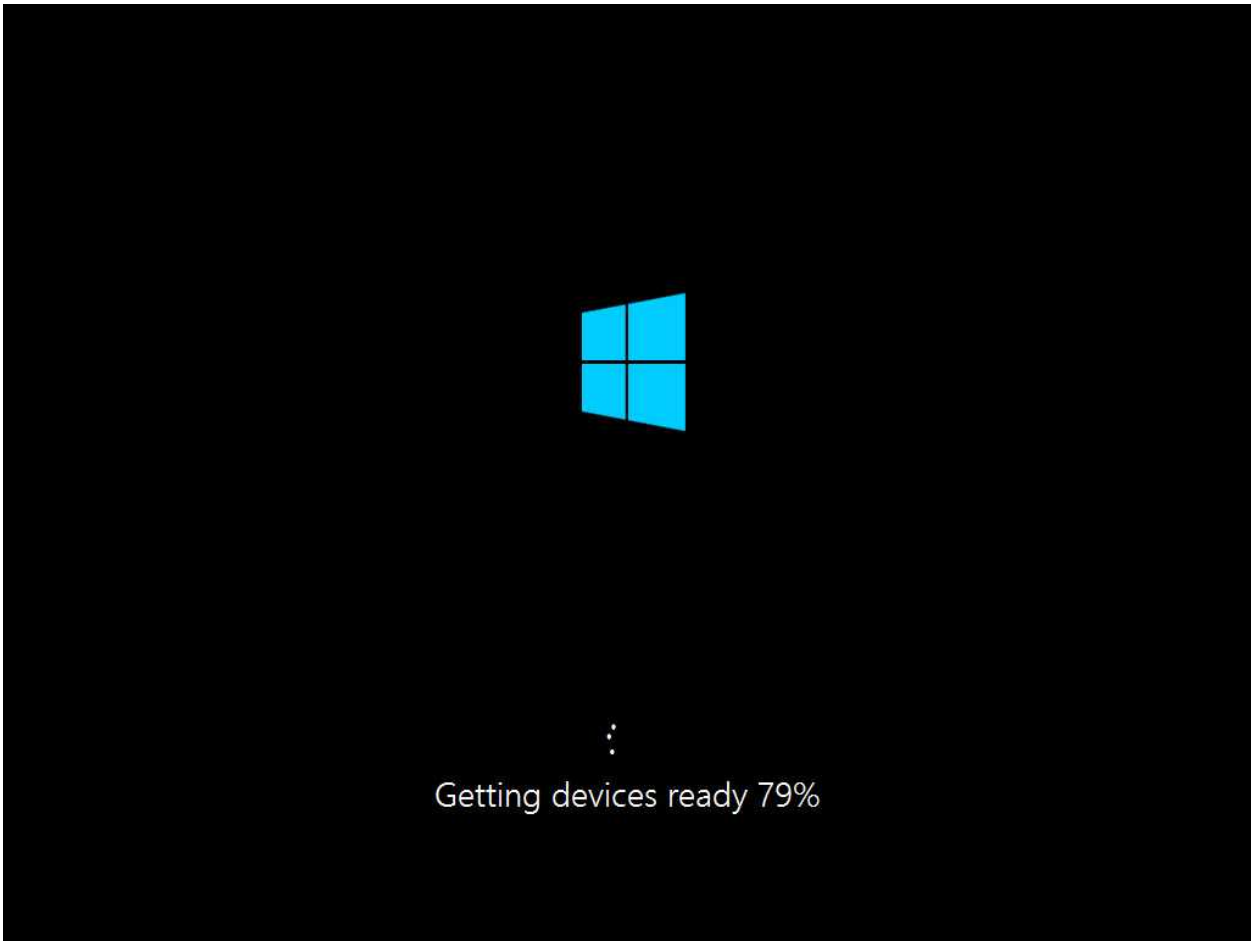


Automatically rebooting.

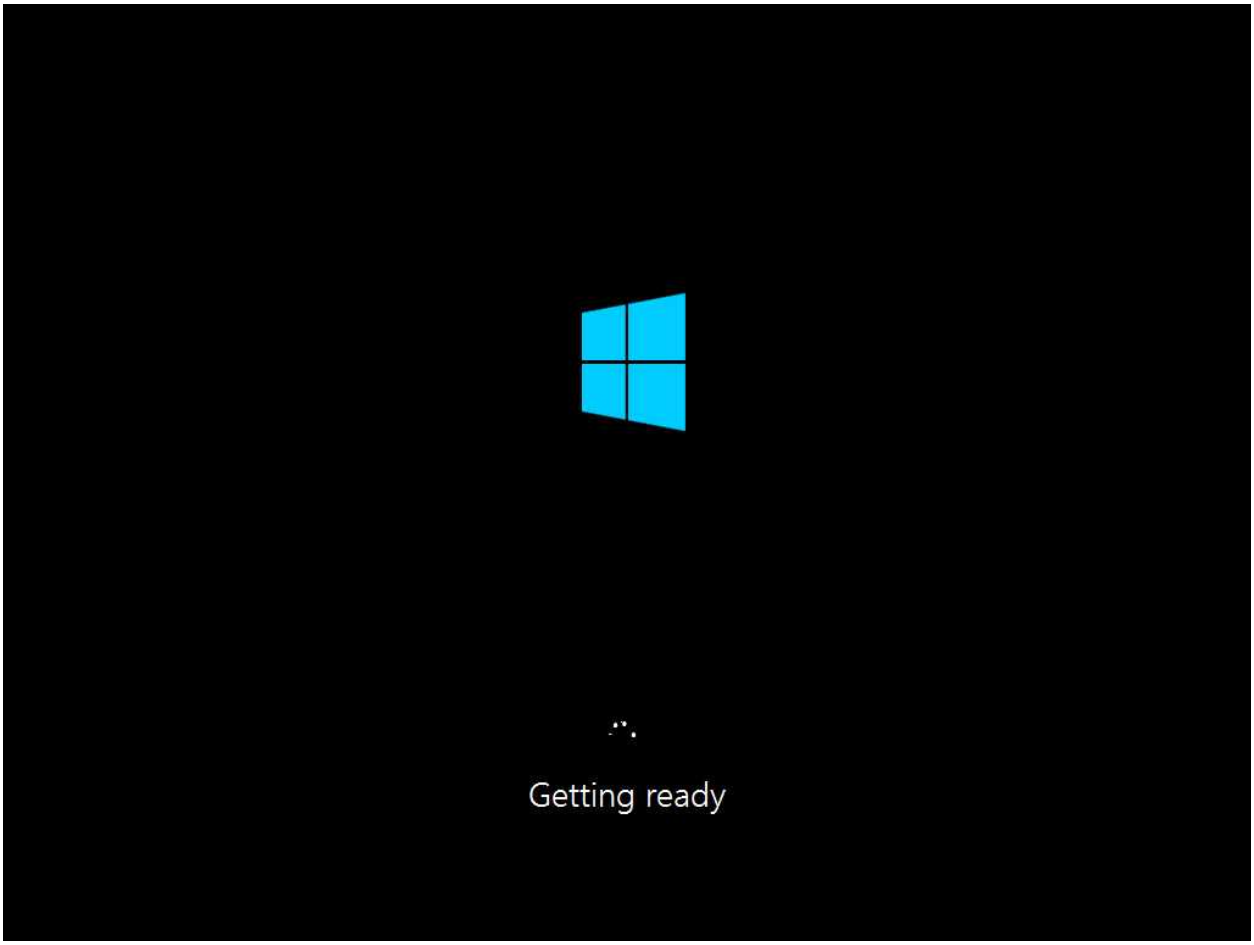
If you see the following screen come up, do **not** "press any key" to boot to the optical drive. Simply leave the server alone to do its thing.


Press any key to boot from CD or DVD.....

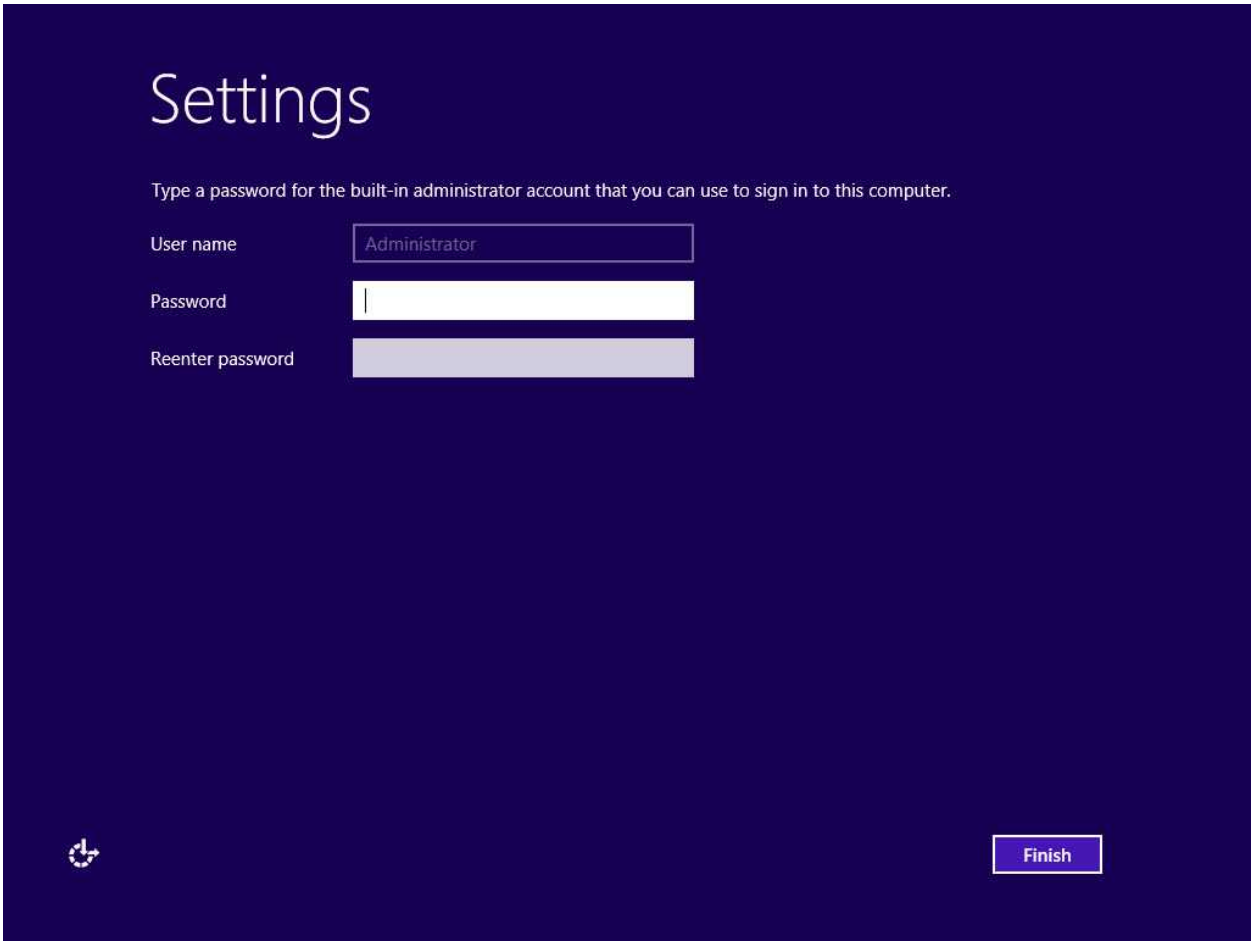
The computer begins to prepare the hardware:



Then it finishes device preparation:

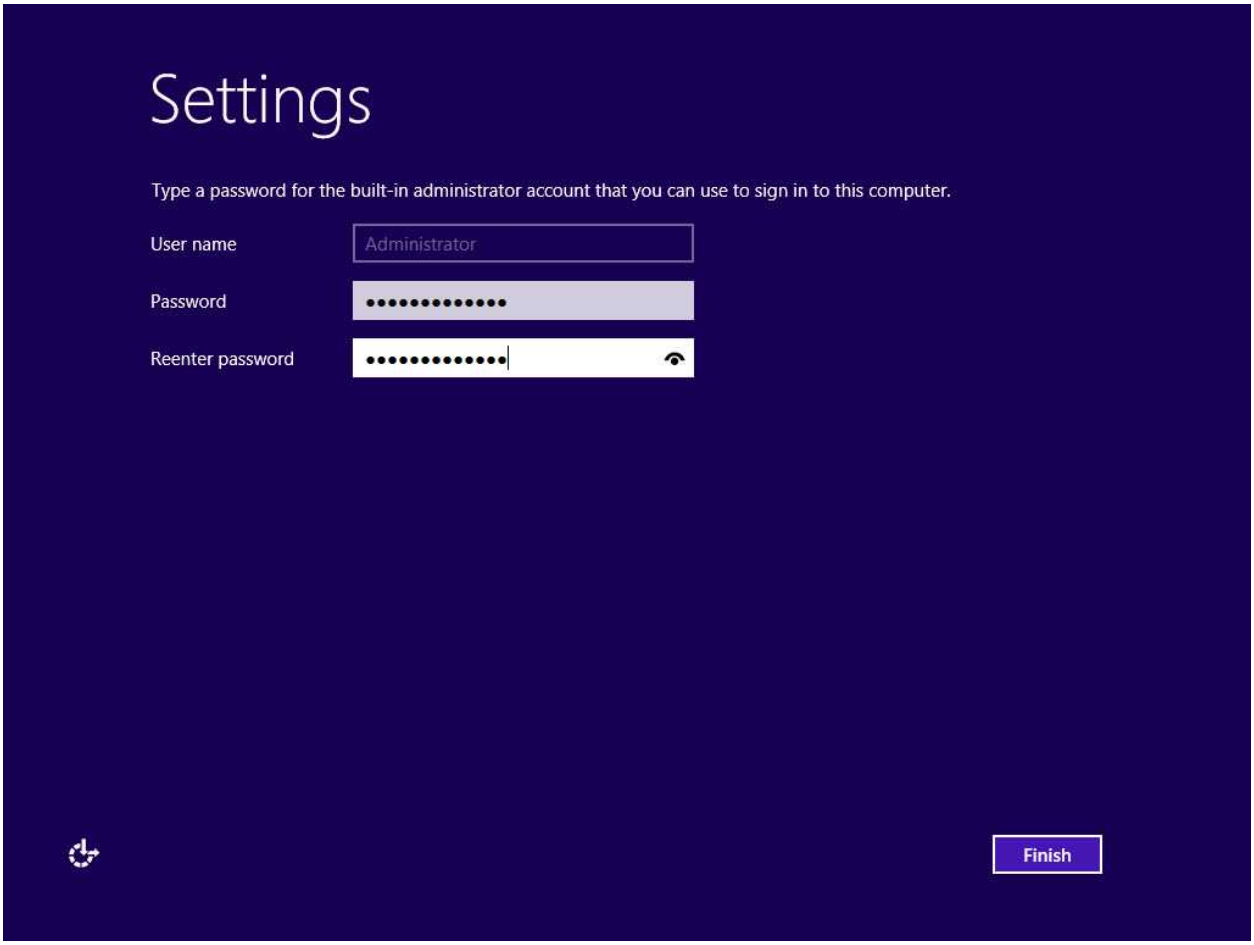


Finally it reboots one more time to this screen where you enter an initial **administrator password**.



Make your administrator password a tough one to guess.

Enter an appropriately strong password:



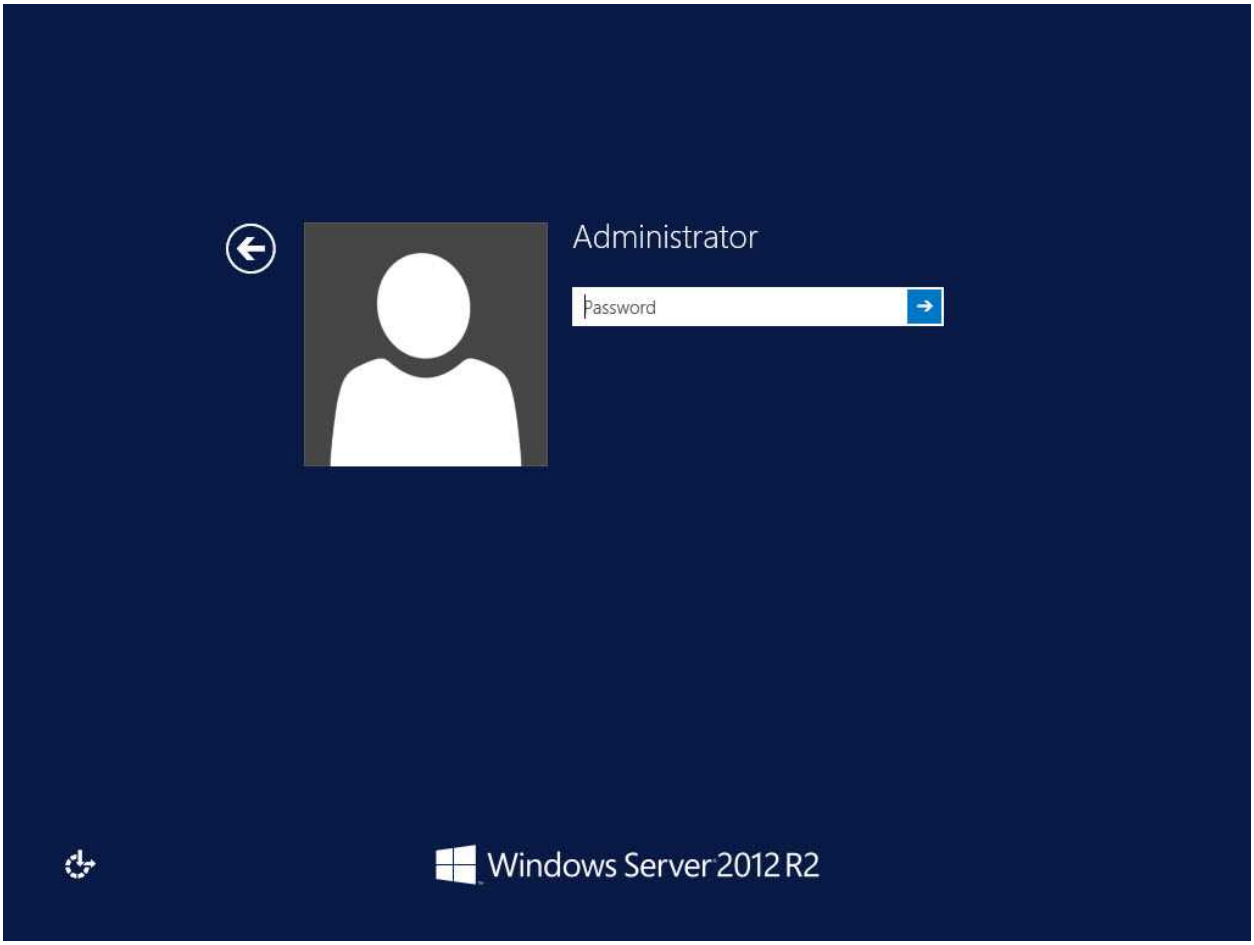
Click the eye icon to see what you typed.

Click **Finish** to complete the initial installation.

Setup is nearly complete.

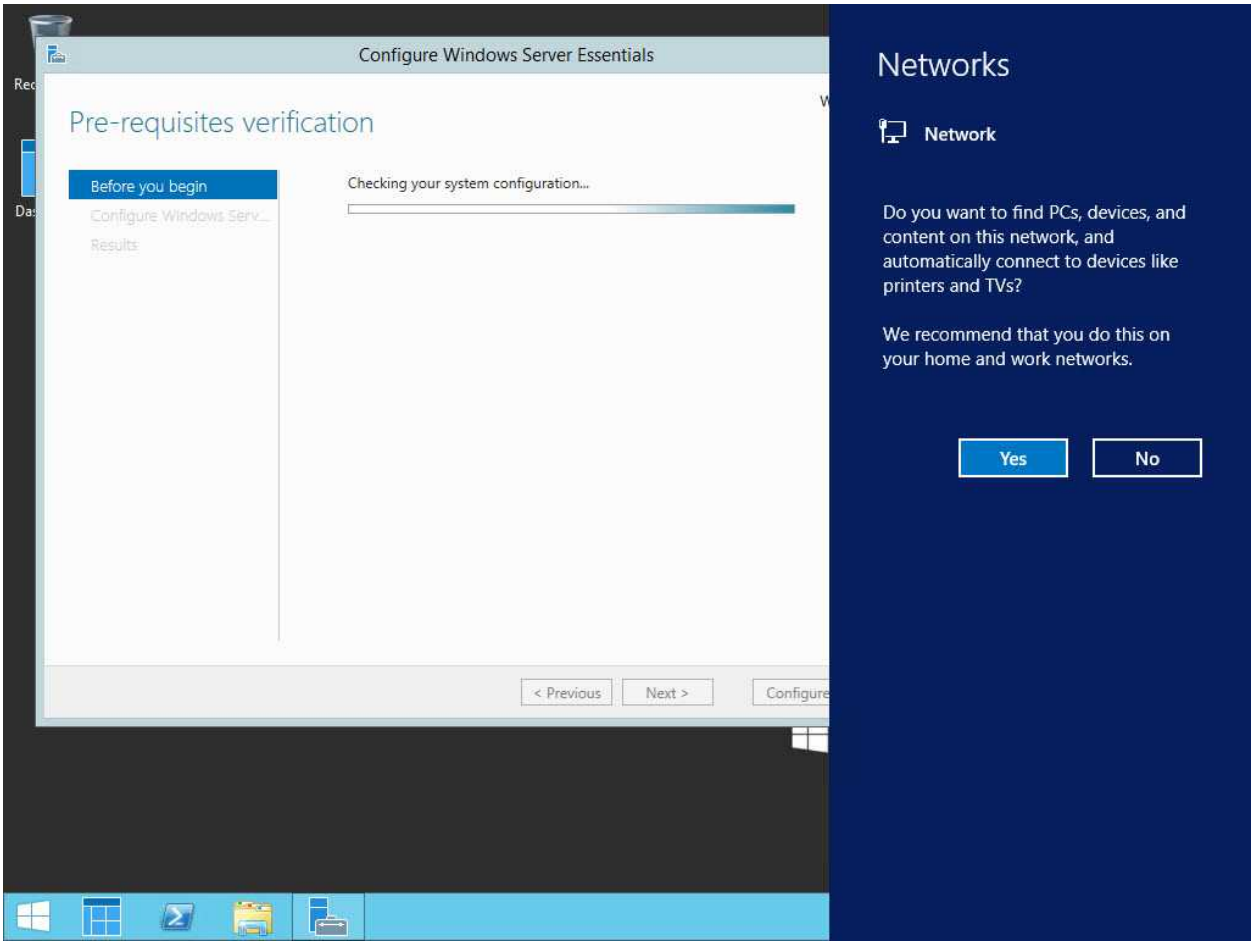
This will bring you to your first Sign In screen:

Press **Ctrl+Alt+Delete**, and sign in to your server.



The log-in screen.

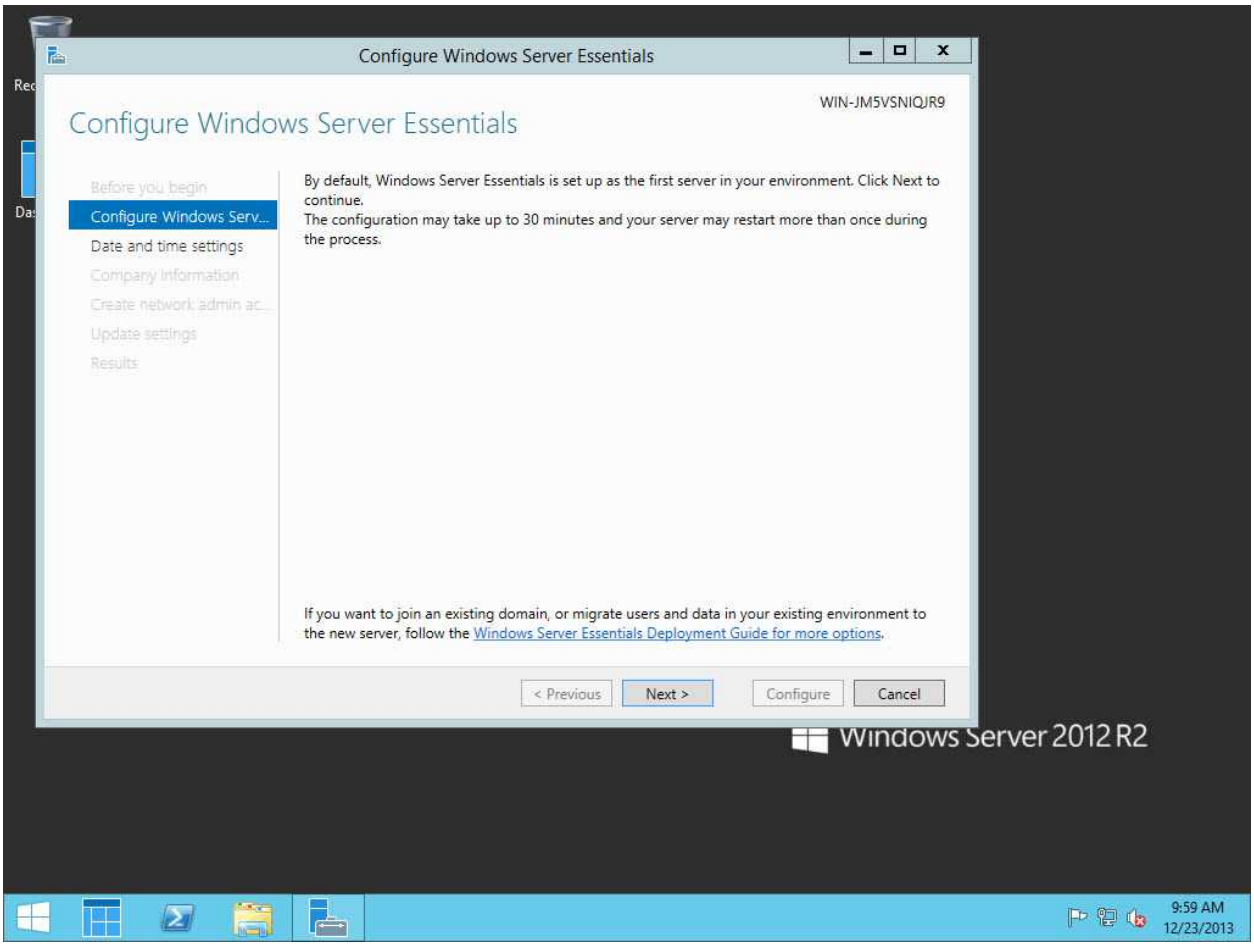
After a few initial setup screens, you will boot to the desktop:



The Windows Server 2012 R2 desktop.

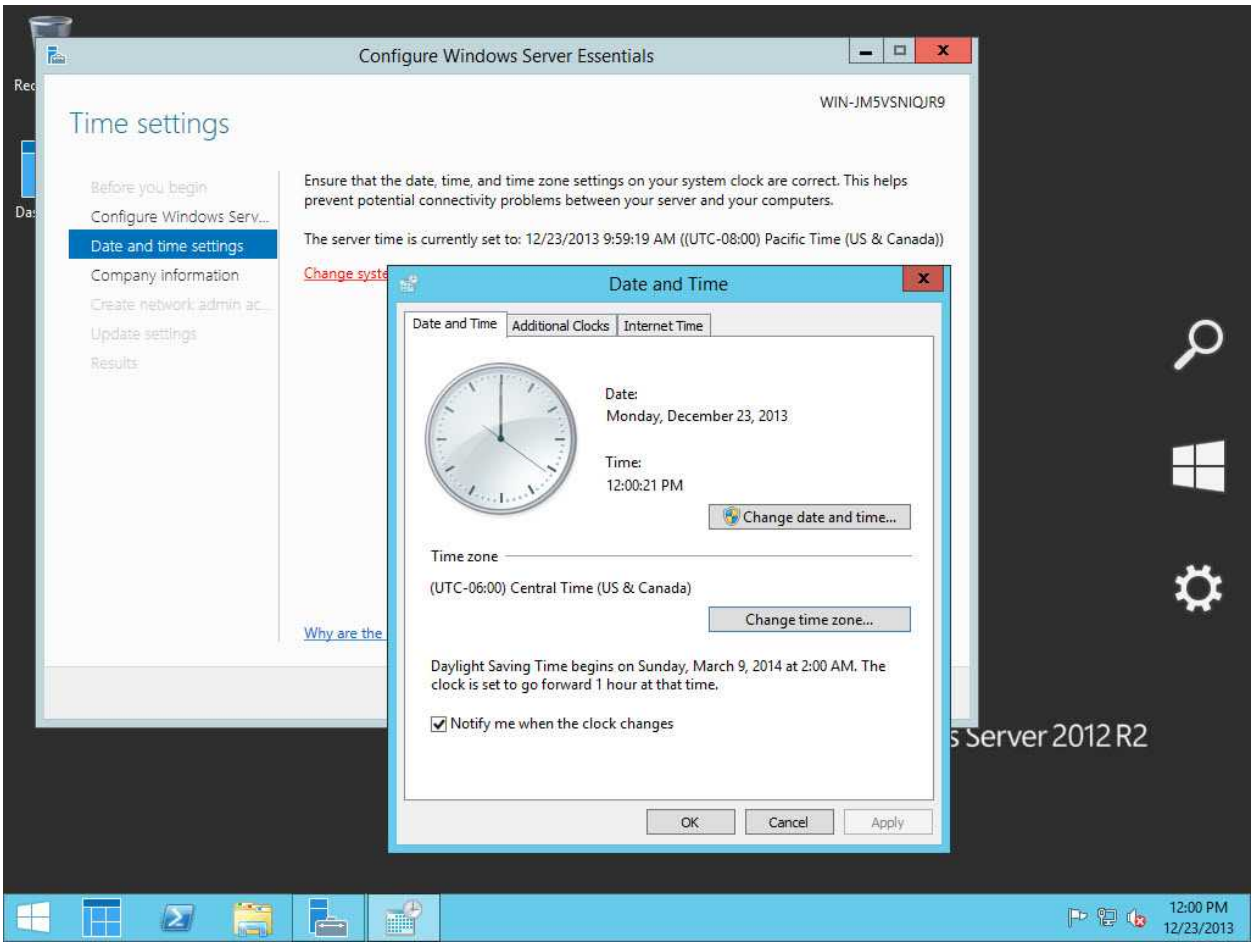
The installation continues. In this particular scenario, I chose to find PCs and other devices on the network later, so I clicked on **No** to cancel this action.

It does take some time (somewhat less than 30 minutes) to get to this point, but you finally have something to do to complete the initial server configuration.



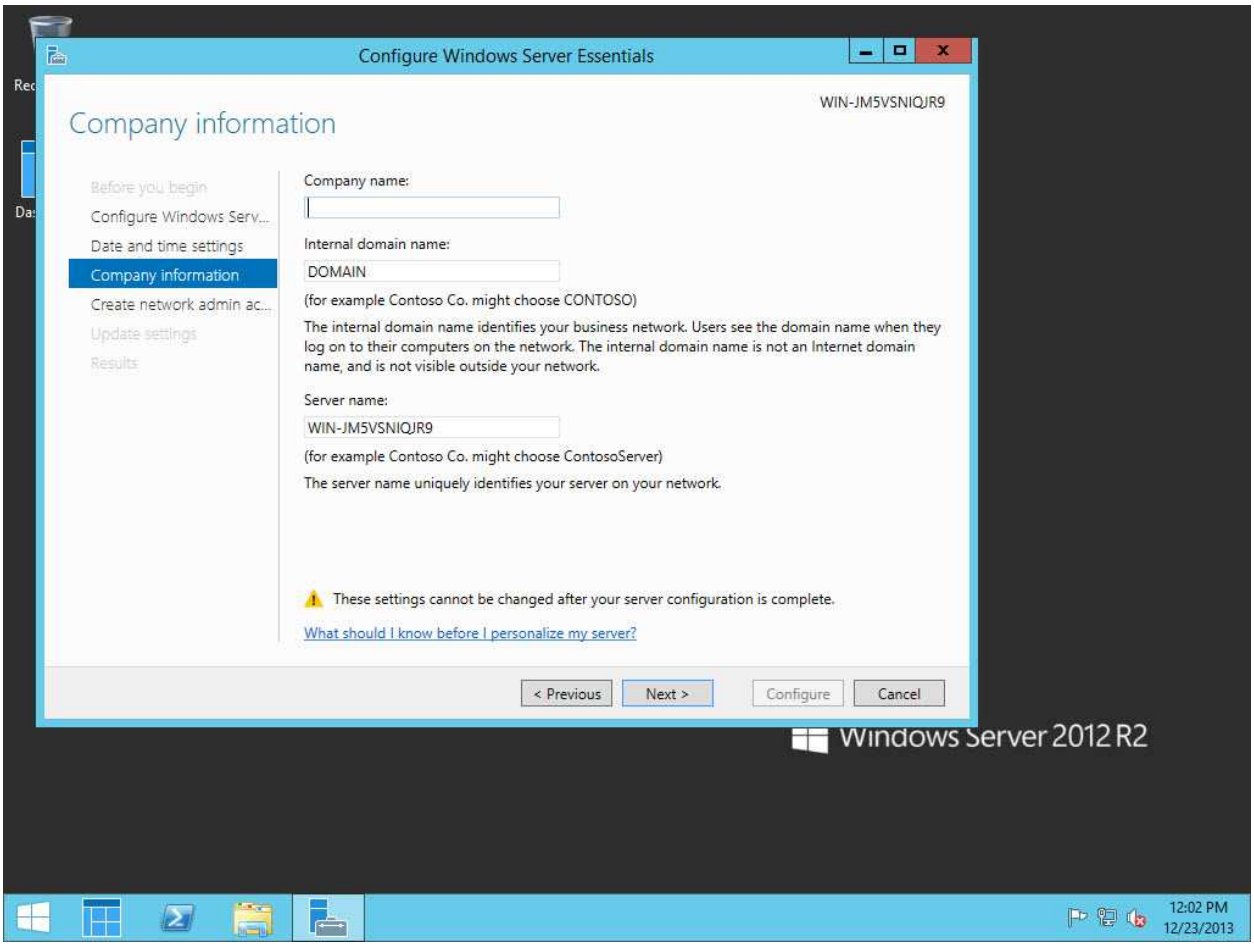
You'll become very familiar with wizards like this over the next few weeks.

Verify/change the time and date settings.



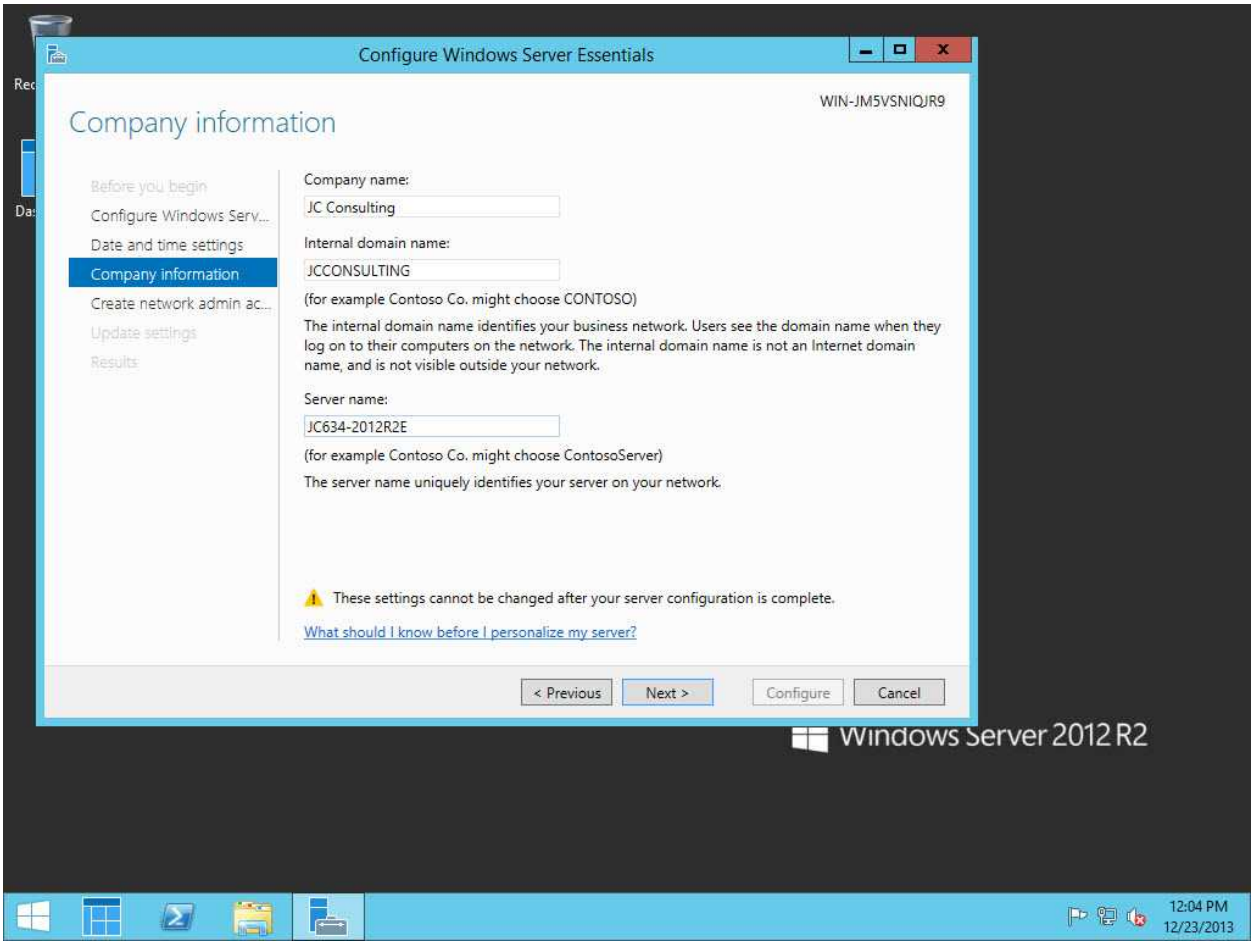
Setting the correct time zone is essential.

Once satisfied, click **OK** and then click **Next**. This will bring you to the **Company information** screen where you will enter your Company name (or "home" name), and the Server name that will allow it to be identified as a unique entity on your internal network. Please note that these settings cannot be changed once entered, so choose wisely!



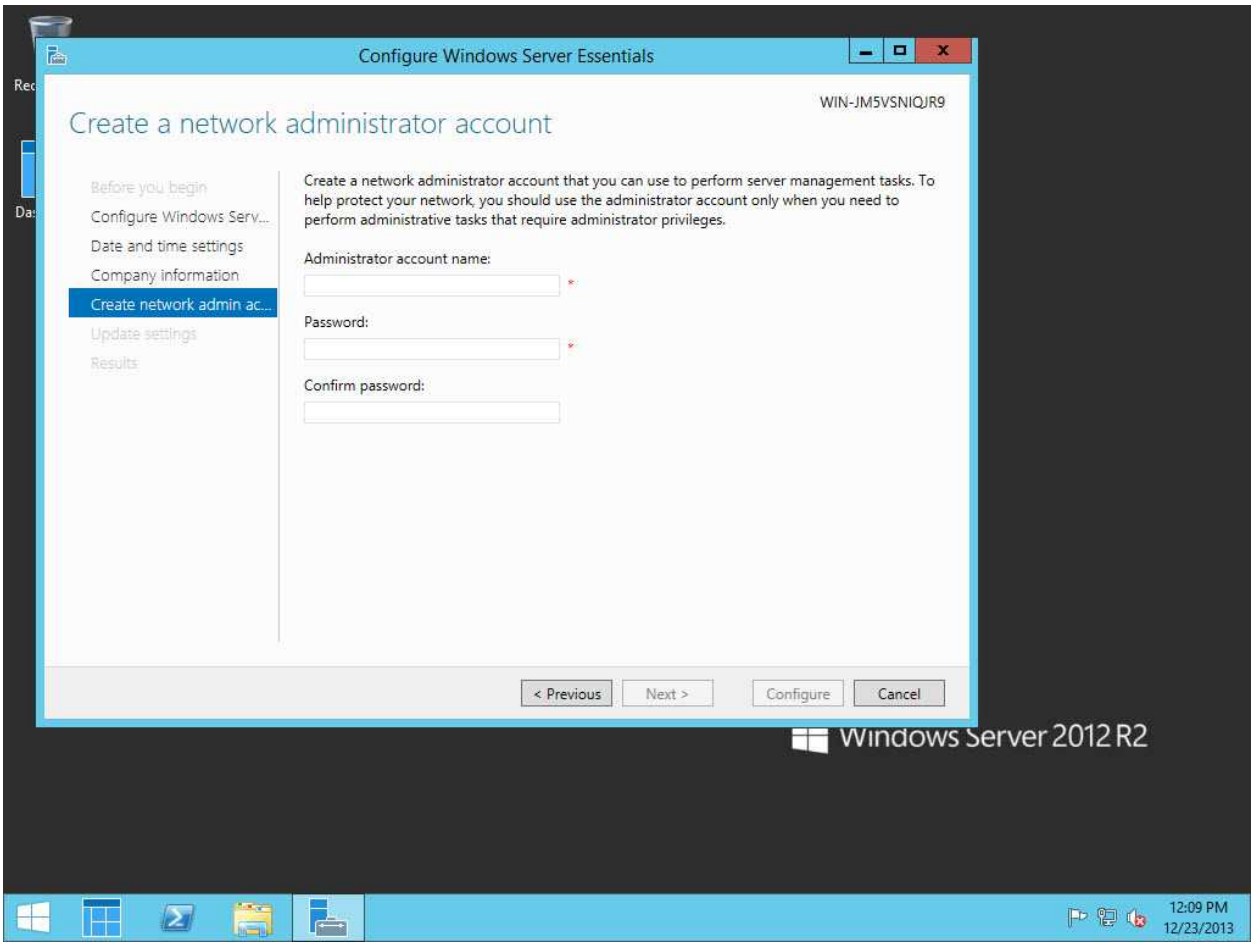
Entering Company information personalises your server.

My choices:



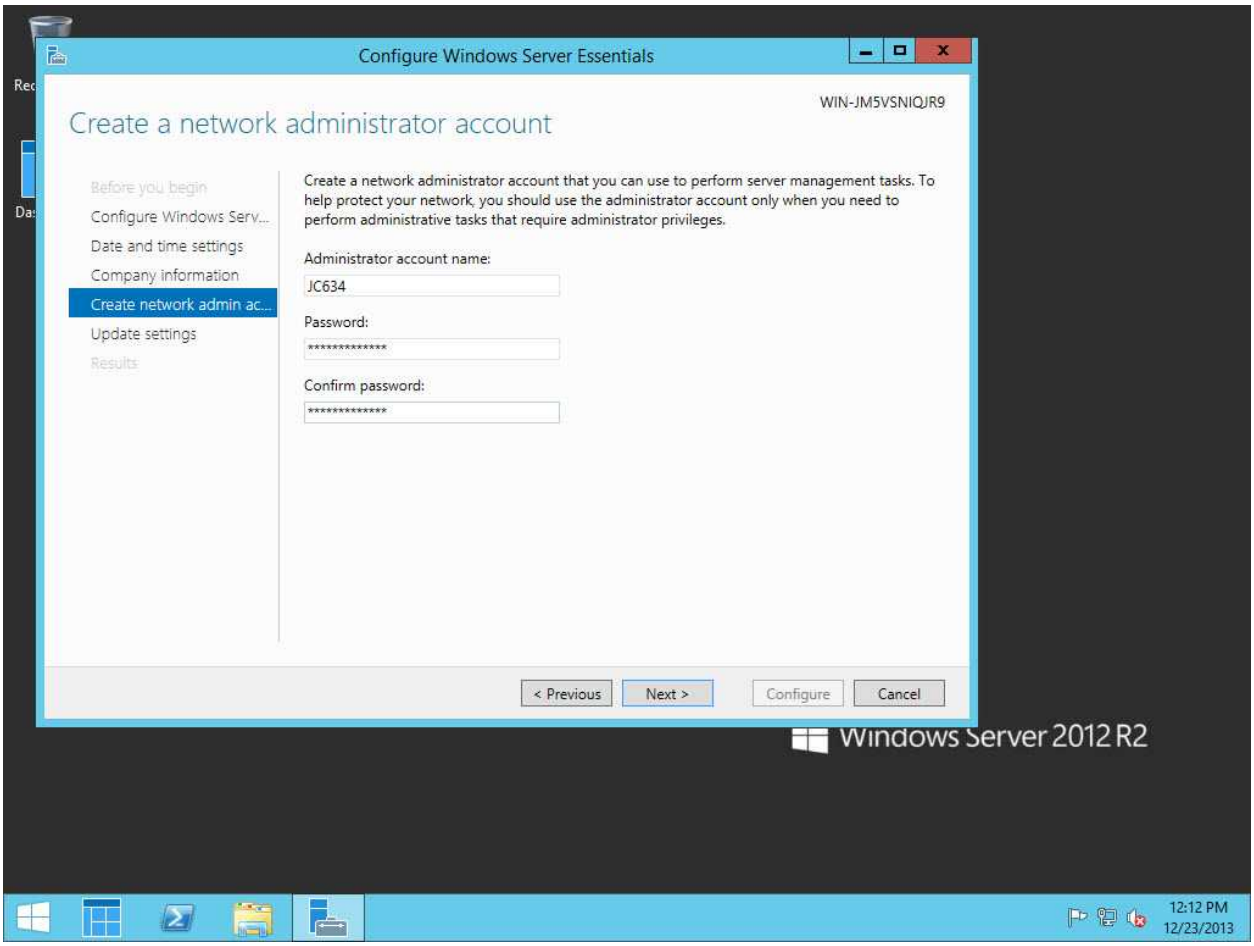
The Company information screen.

In the next screen, **Create a network administrator account**, you will be asked to supply an **Administrator account name** and **password**.

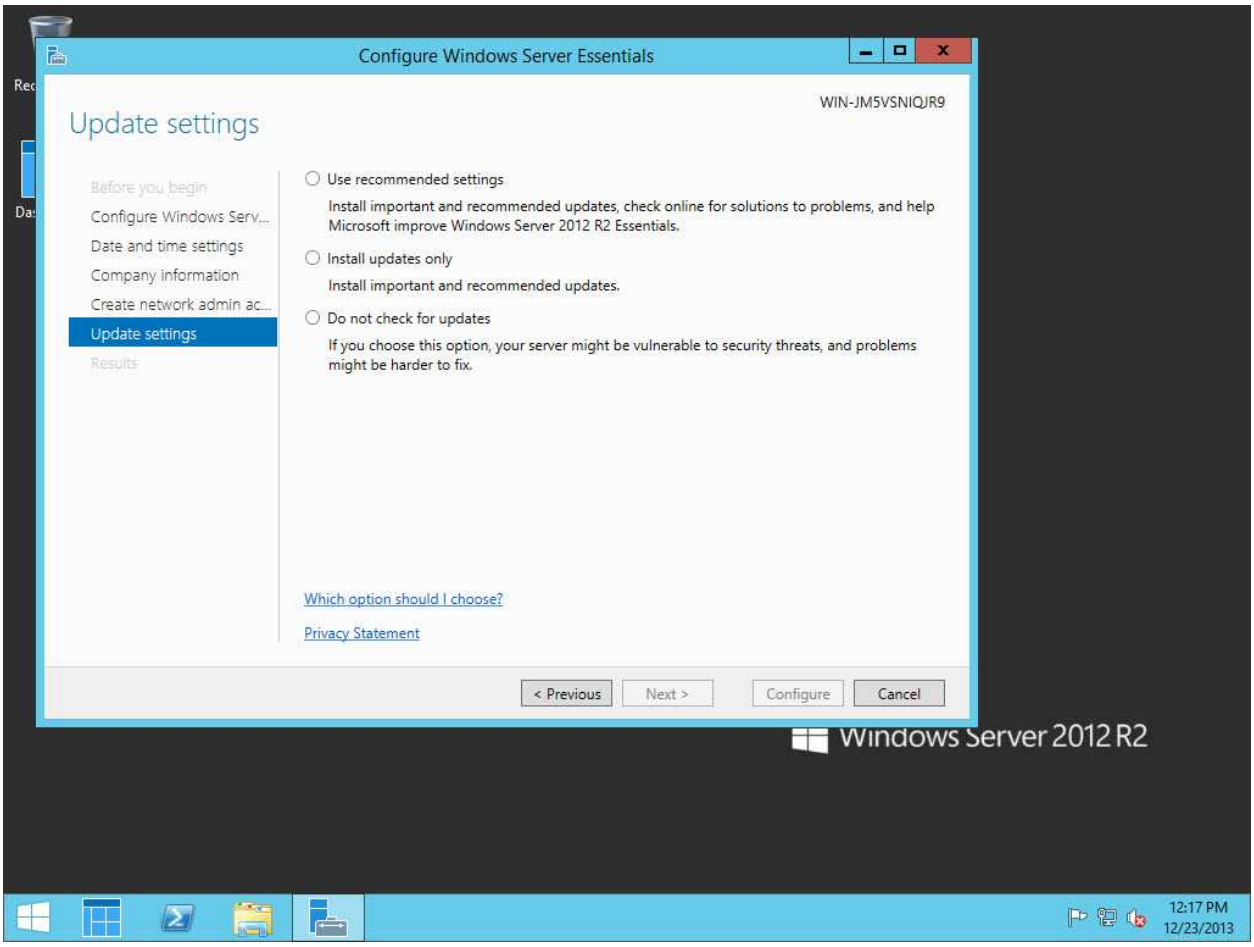


Creating the administrator account.

When choosing the Administrator account name, for security I'd always recommend being a bit more creative than simply going for "Administrator" as indicated below.

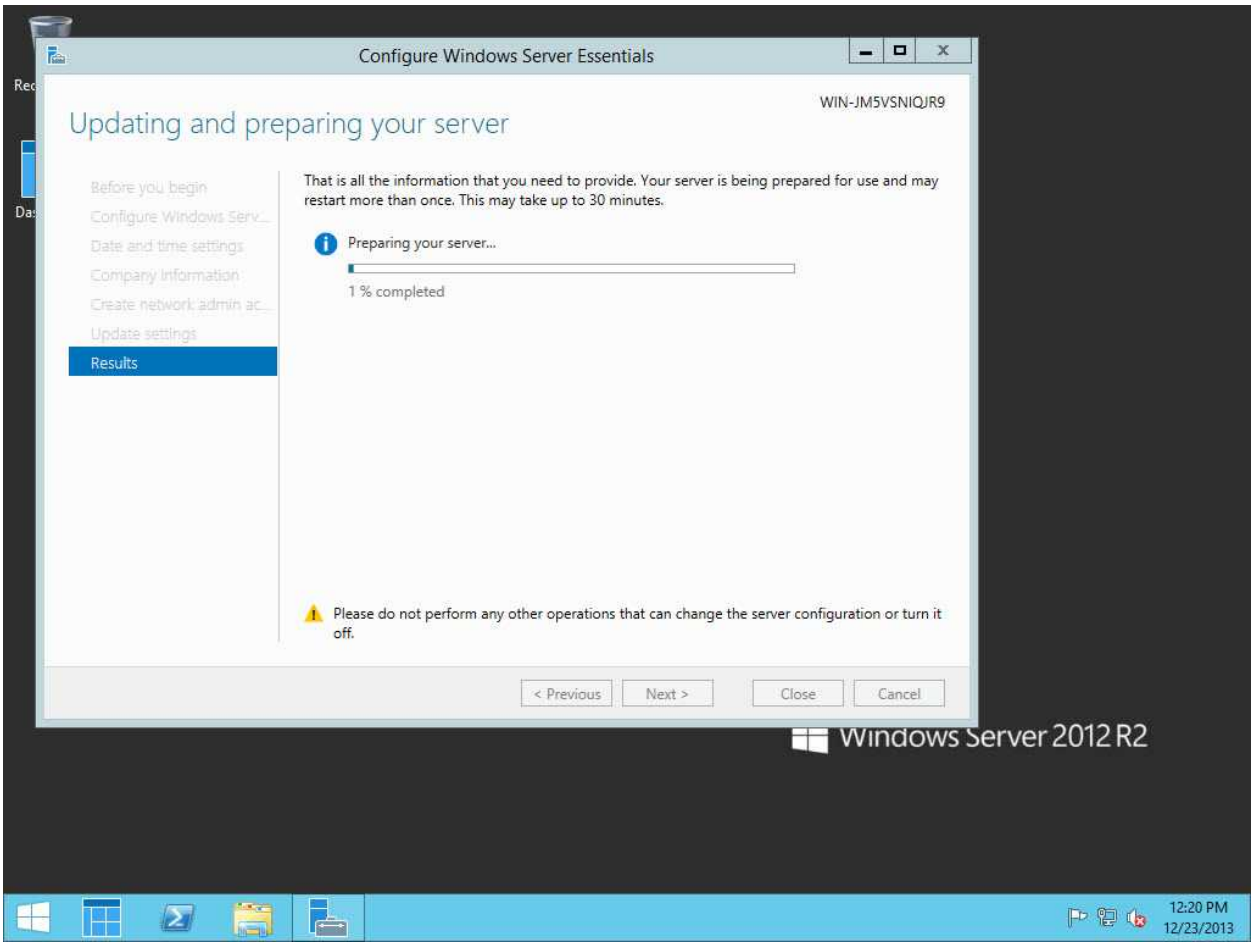


In the next screen, **Update settings**, I would suggest that you use the **recommended settings**. If desired, you can choose to not send Microsoft any data by choosing the second option. Do **not** choose the third option unless you have an aversion to keeping your server updated and secure!



Update settings.

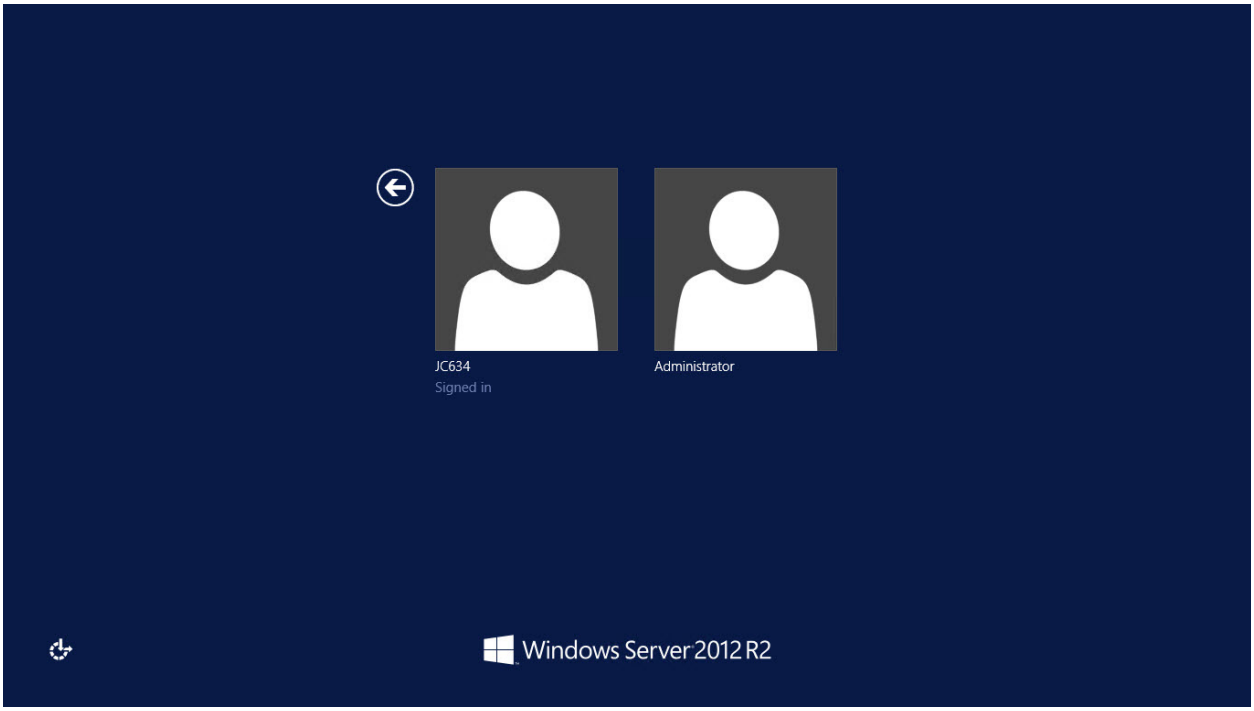
Once you have chosen an option, click **Configure** to start the final stage of server configuration.



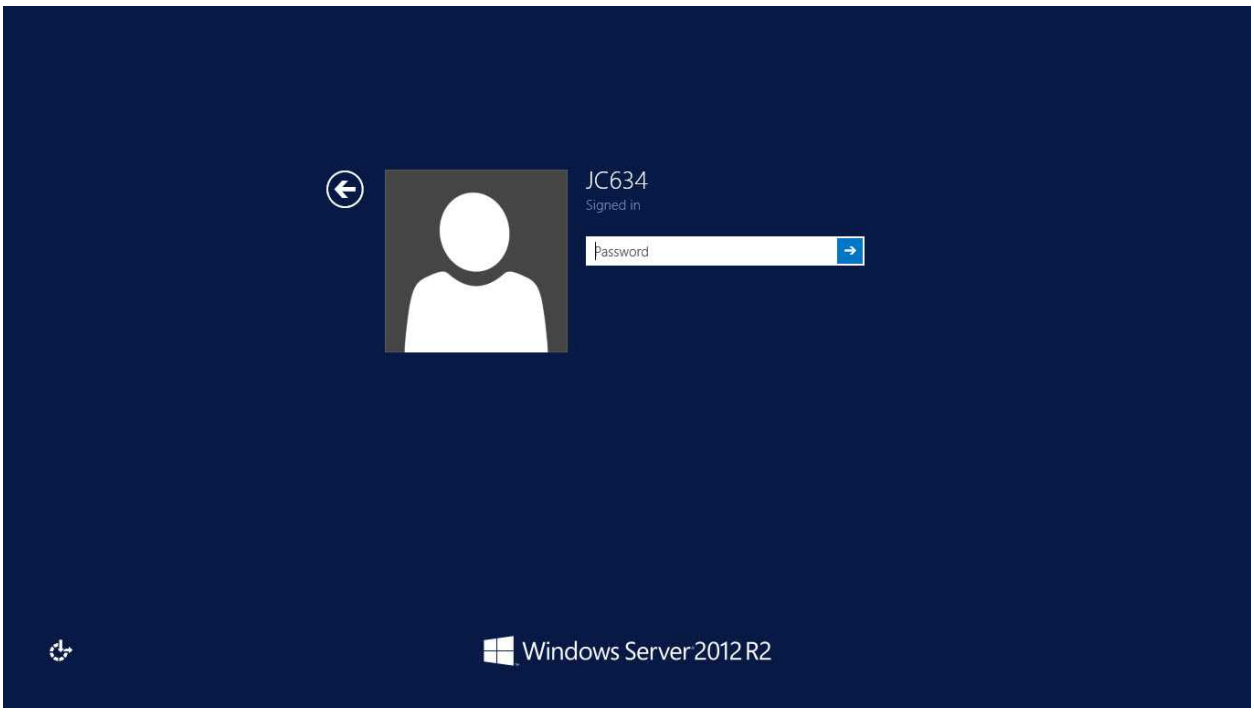
Time for a cup of tea.

The computer will reboot once again.

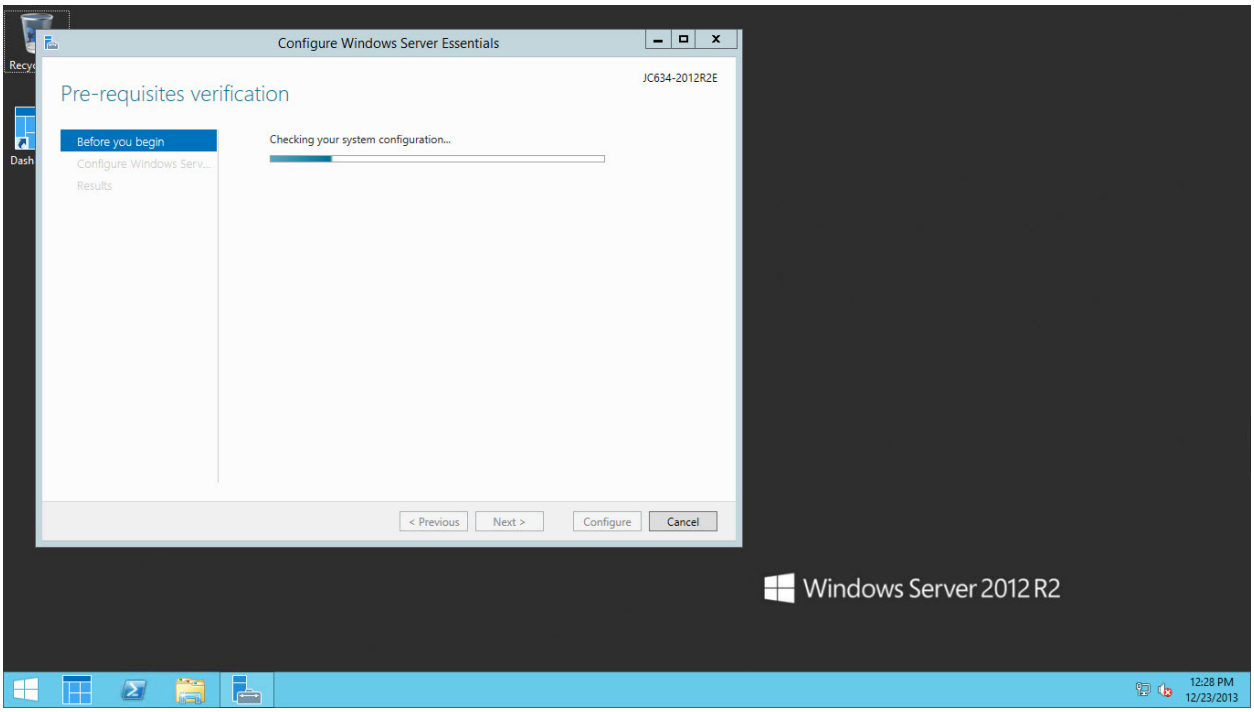
Sign back in to continue the configuration:



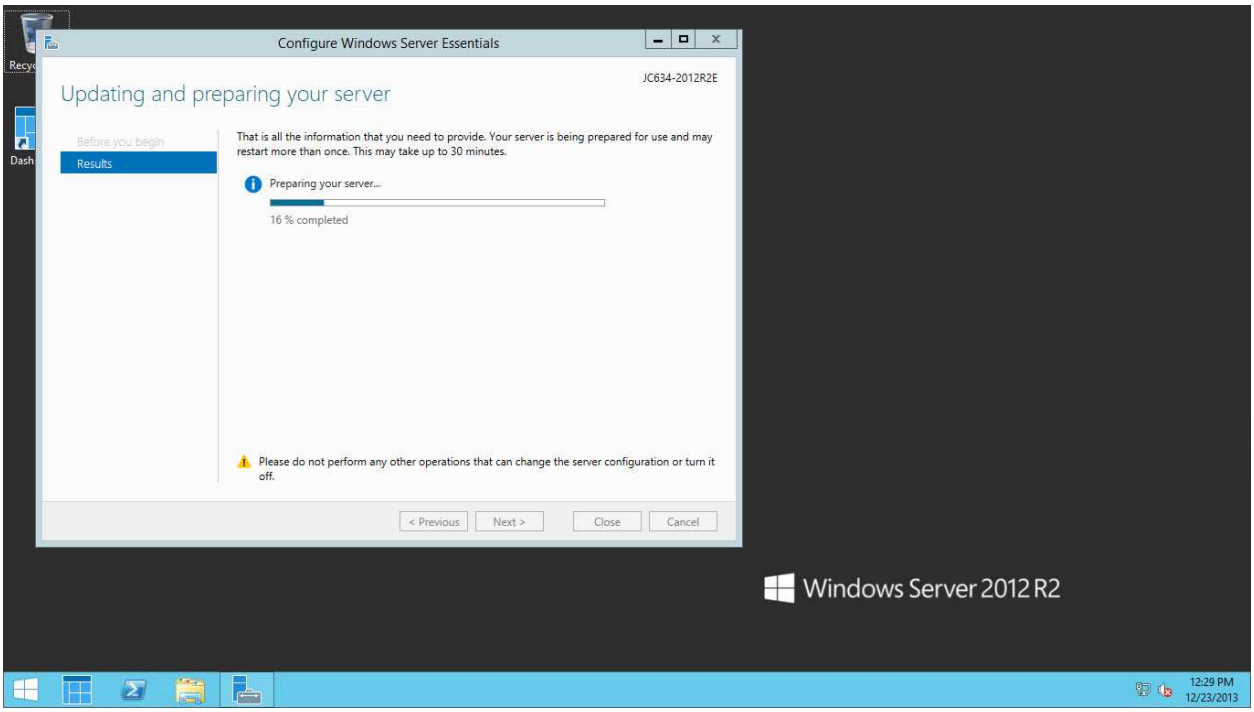
Select your account.



Signing in.



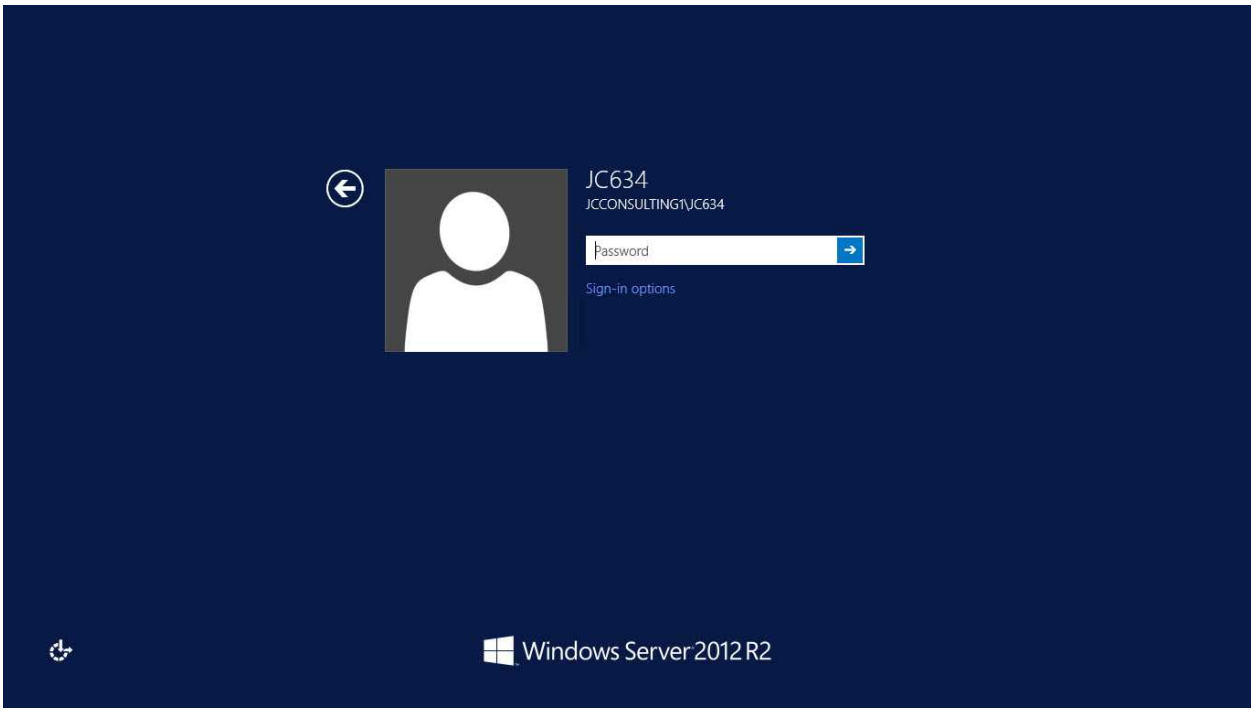
Configuration continues.

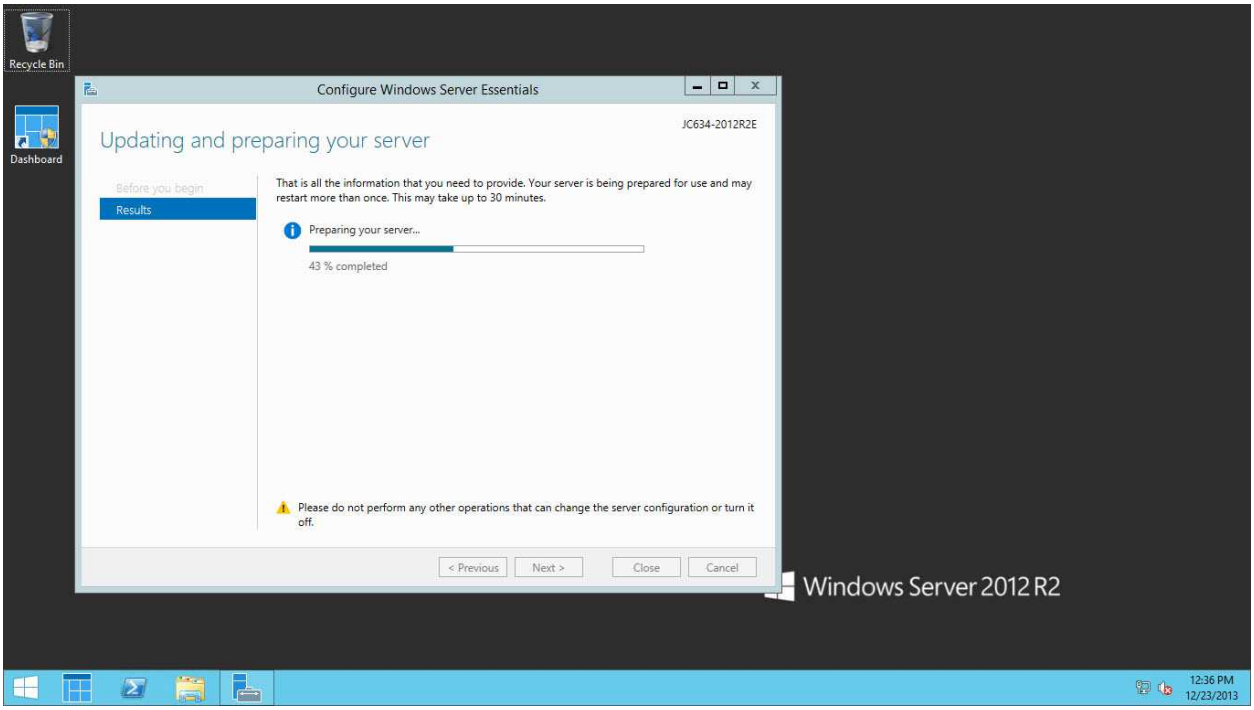


Other than signing in when required, there's little to do at this point.

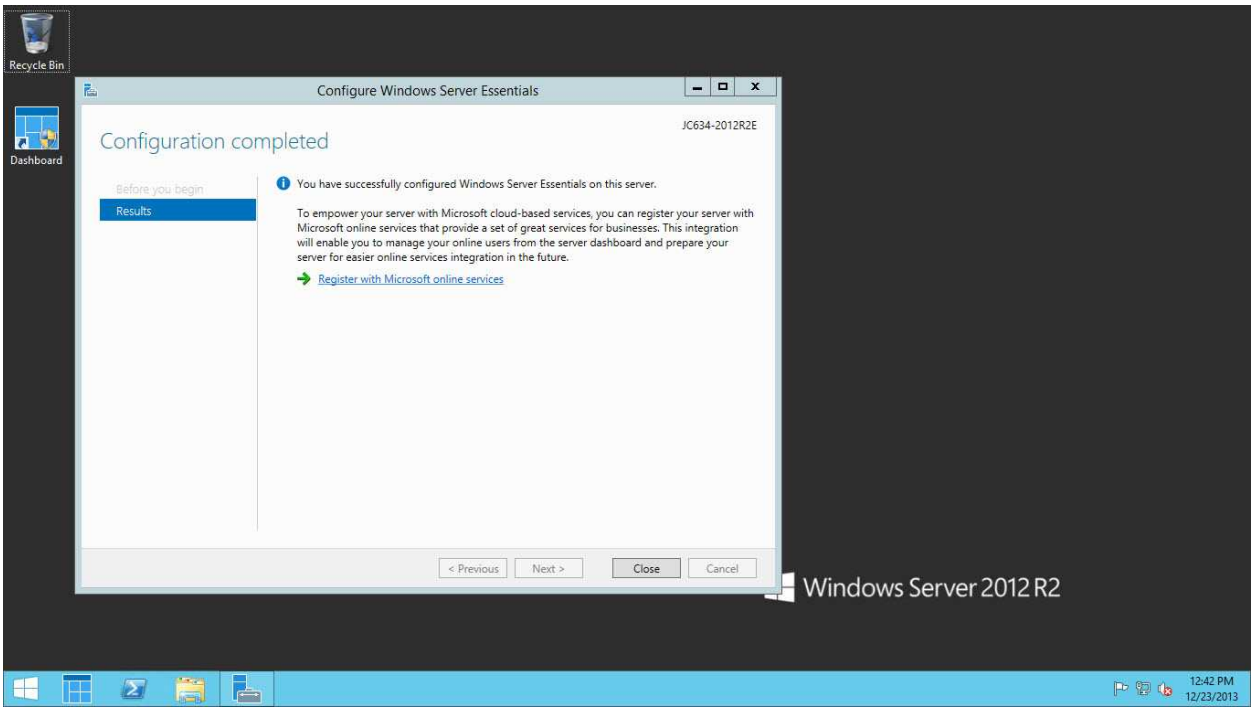
The computer will restart once again:

Sign back in:

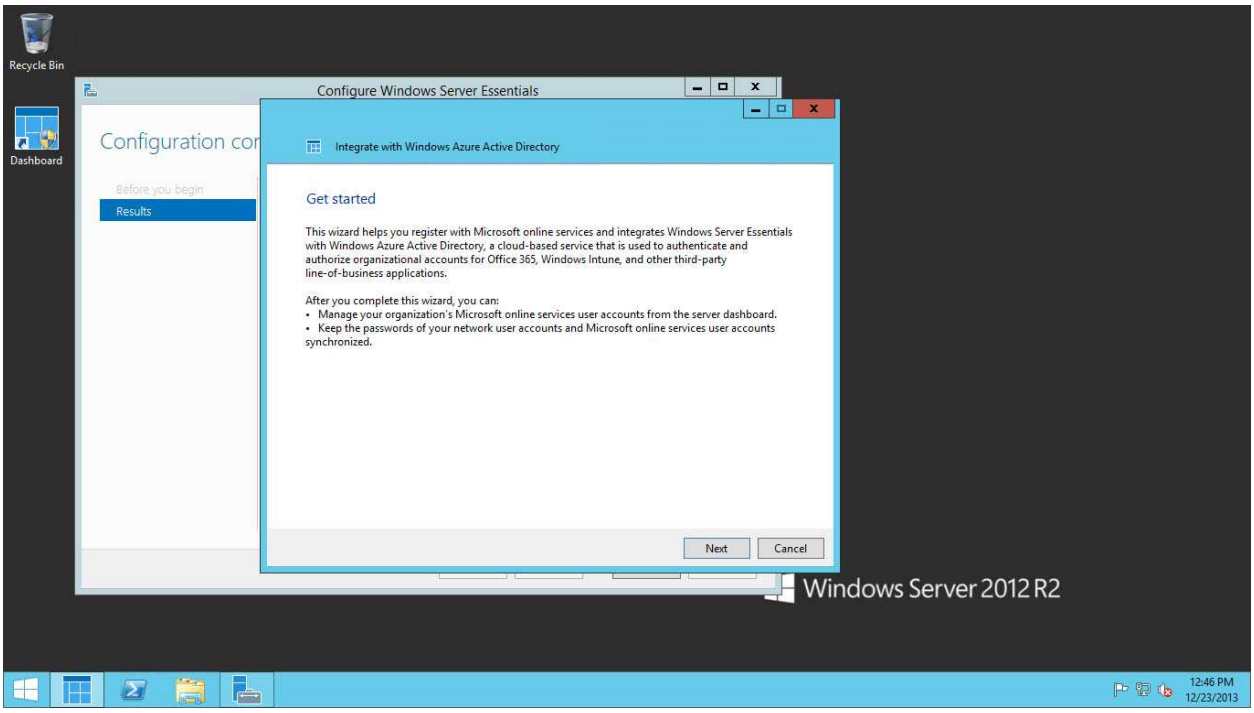




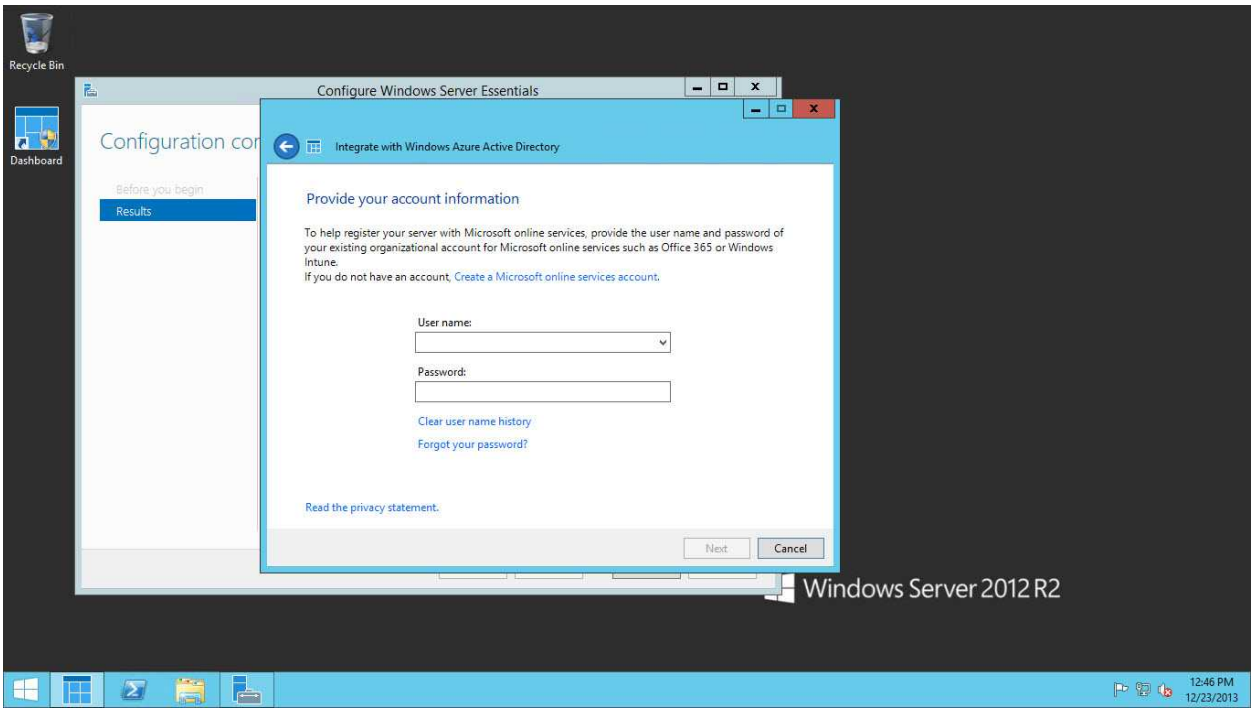
The operating system configuration is complete.



You now have the option to register with Microsoft. Clicking "**Register with Microsoft online services**" will walk you through a series of screens to allow you set up **Office 365**, **Windows Intune** and additional applications.



You can configure Cloud apps at any time.



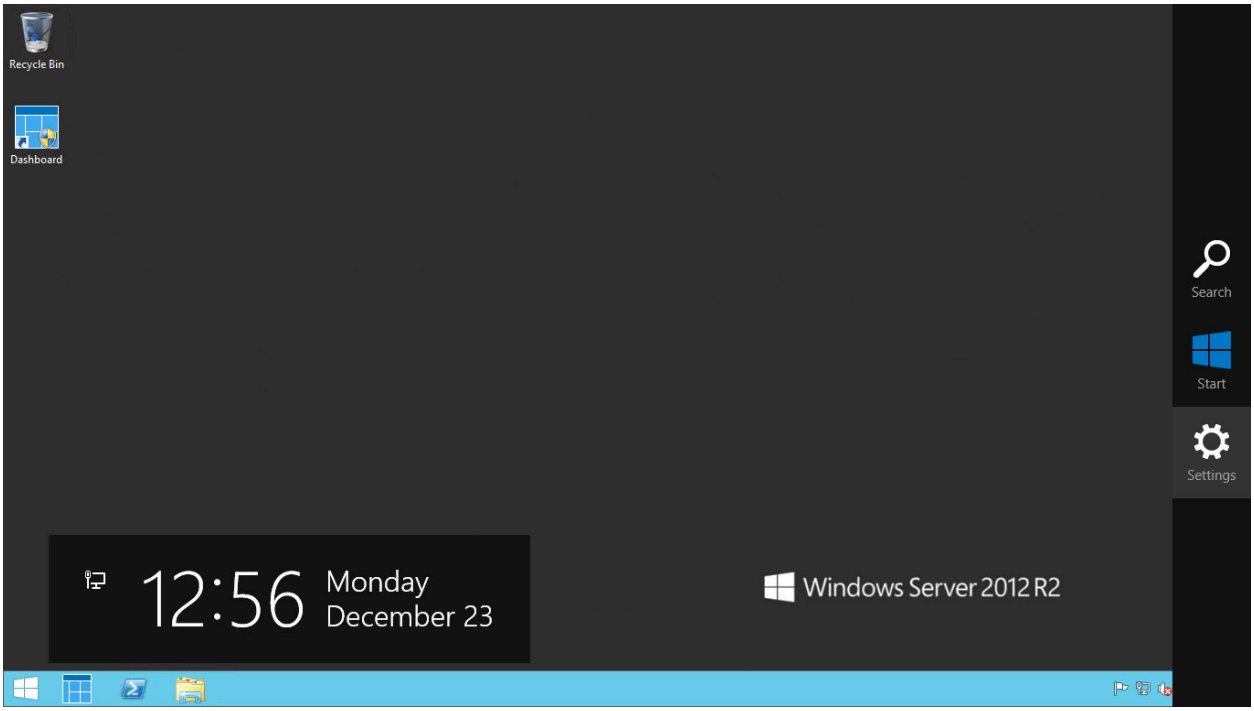
As this can be done at a later date, we will bypass it for now, using the **Cancel** button.

Installing Windows Server 2012 R2 Essentials may seem a little tedious, but it's really not as bad as it seems when reading through this chapter! Most of it is automated, and you simply have to be patient towards the end as the computer reboots several times.

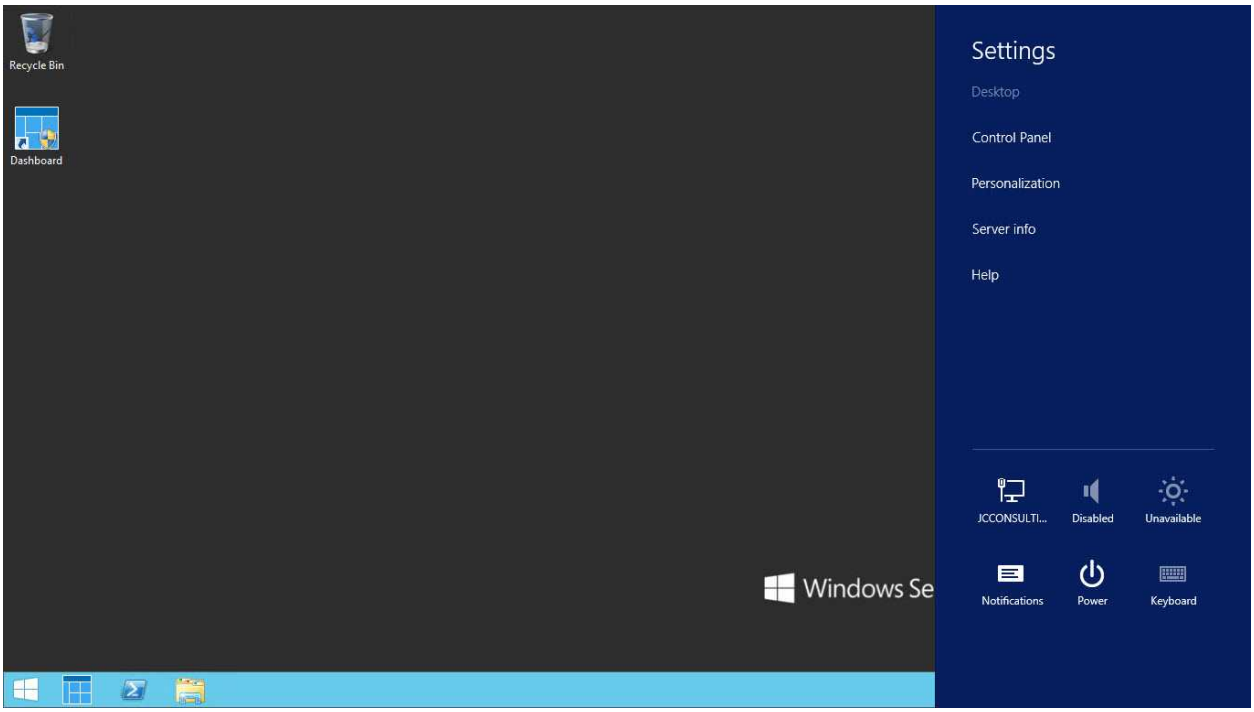
Checking For Windows Server Updates

Before moving on to the next chapter, we should do some final server maintenance and check to see if we need to install any OS updates.

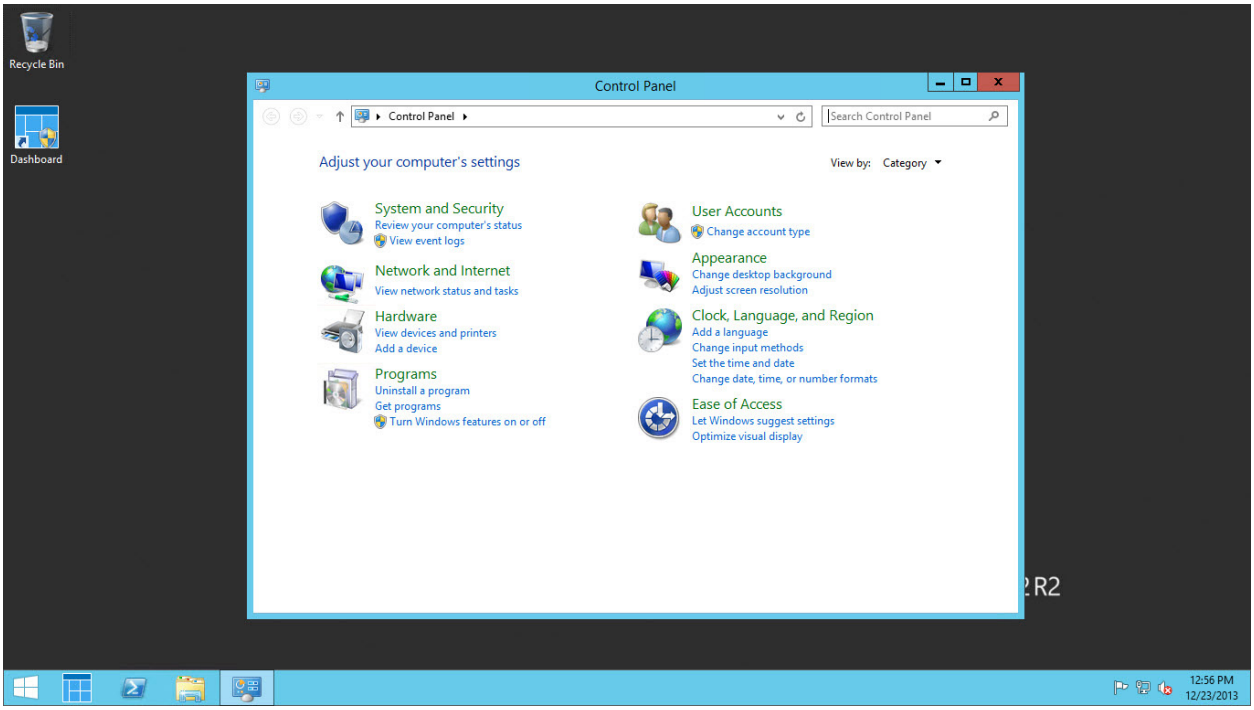
From the server desktop, bring up the Charms bar and click **Settings** and then click **Control Panel**. Alternatively, press **CTRL-X** followed by **P**.



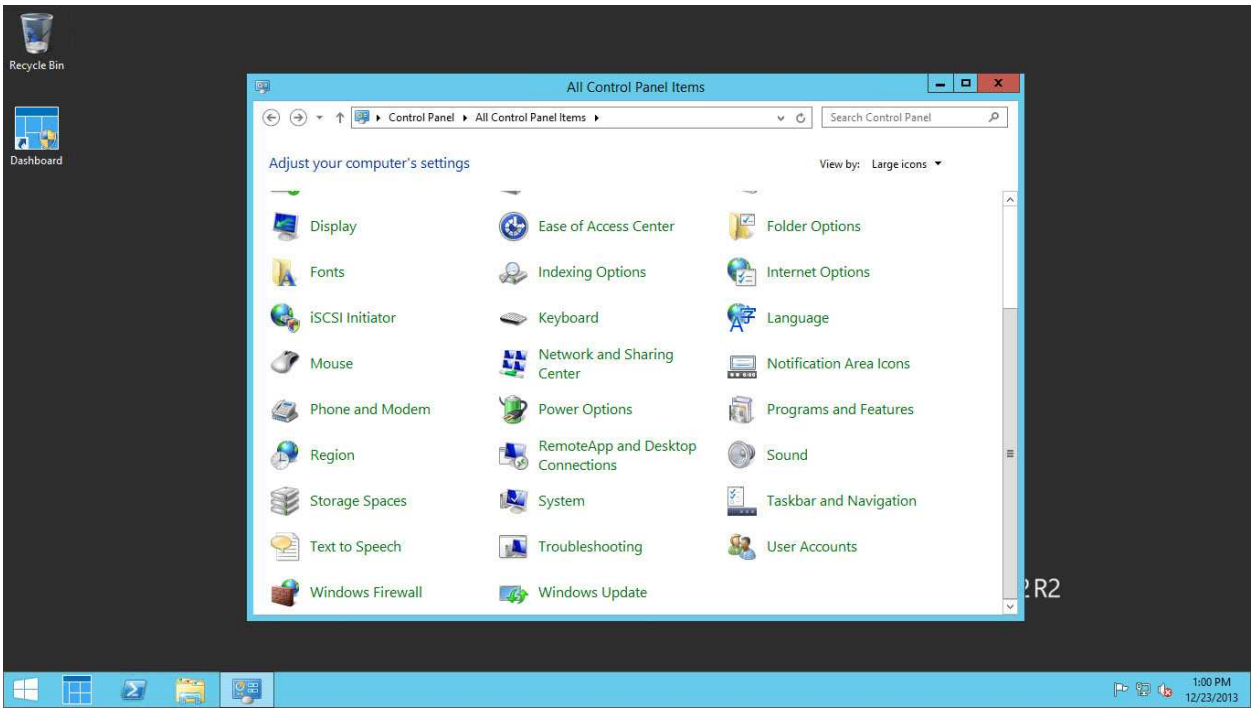
Hover the mouse to the right of the screen to bring up the Charms bar.



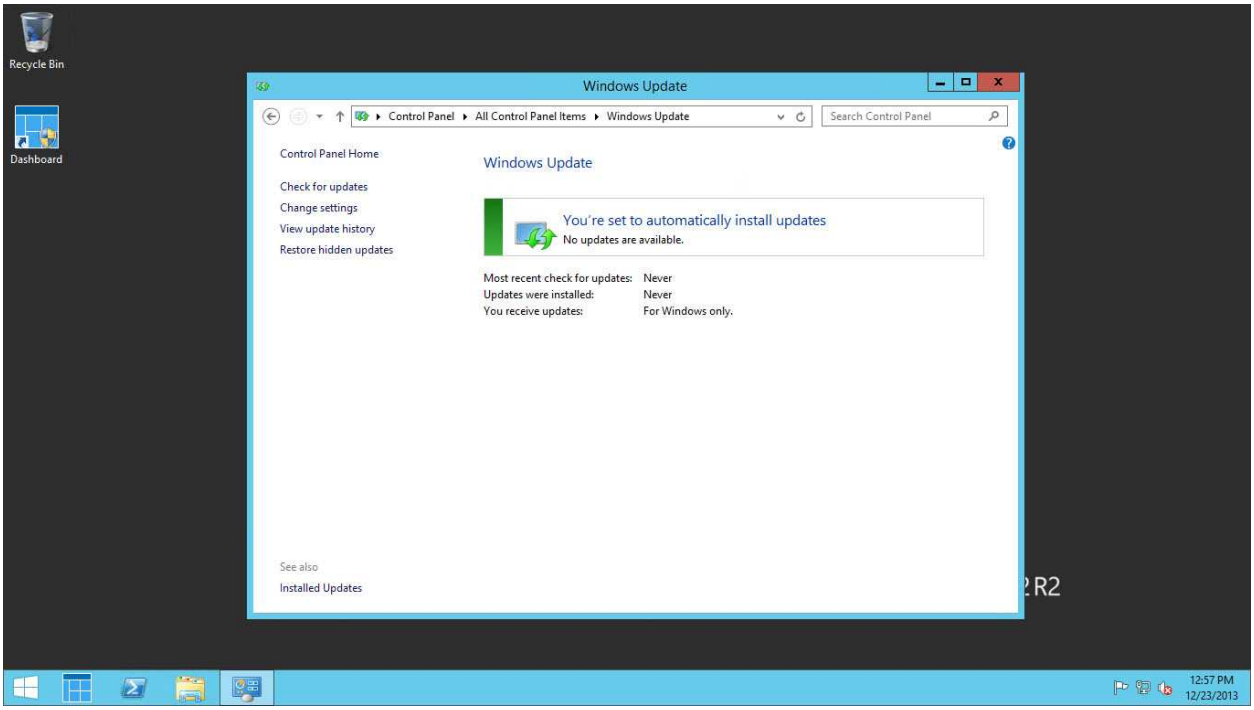
From here, it is easiest to change from **Category view:**



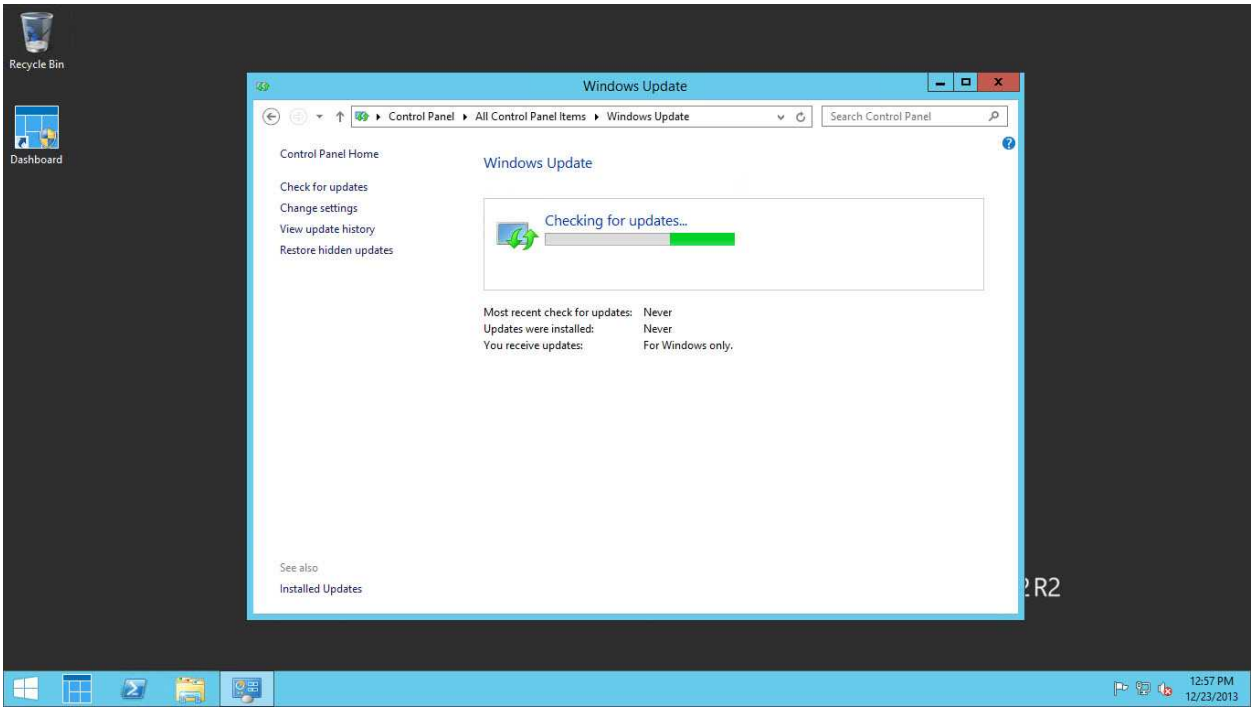
to **Large icons view**, and scroll down to **Windows Update**.



Once you bring up this window:

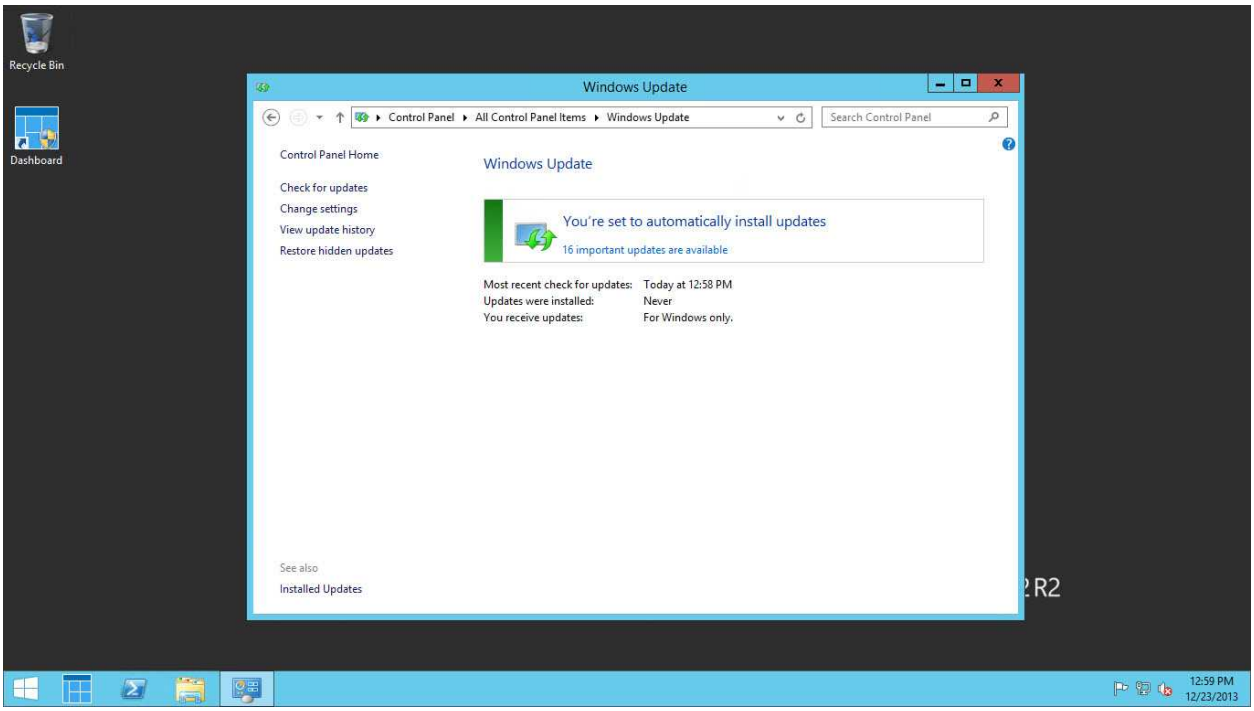


Click **Check for updates**:



Checking for updates.

and install any needed updates.



Once any updates have been installed, restart the computer if requested.

The time to get to this point was less than an hour, but your mileage may vary depending on the hardware you have selected. The good news is that we can **finally** proceed to setting up the server for use by your users and client computers.

Choosing Off the Shelf Hardware

"Of course, if you're lazy - or as I like to call it, "smart" you'll forego installing the operating system yourself and instead buy an off the shelf server with Windows Server 2012 R2 Essentials pre-installed. In this chapter, we'll take a look at one such example - the Western Digital Sentinel DS6100."

Introducing the Western Digital Sentinel DS6100 Server

The key differences between the £2400 (8TB) WD Sentinel DS5100 and £2600 (8TB) DS6100 are in their hardware specification. Both are four bay servers - indeed, from the outside you'd be hard pressed to tell them apart. Inside, it's a different story.

The Sentinel DS range is powered by your choice of an Intel Xeon E3-1220LV2 2.3 GHz Dual Core processor (DS5100) or the faster Intel Xeon E3-1265LV2 2.5 GHz Quad Core processor on the DS6100.

Both processors come from Intel's 3rd generation "Ivy Bridge" family (at the time of writing, we're still awaiting the 4th Generation 'Haswell' Xeon processors to trickle into the market) and are clearly marked as business-class chips (variously used in both business desktops and servers). If you need virtualization support or you have a suite of line of business applications to run on top of the basic storage server roles built into the platform, then the DS range will offer what you need.

The Sentinel DS range also supported error-correcting ECC RAM - earlier in the book I mentioned this was required to satisfy Microsoft's certification requirements. The DS5100 ships with 8GB and you'll find 16GB available on the DS6100 with both models upgradable up to 32GB.

Other notable enhancements on the Sentinel DS range include four USB 3.0 ports for storage expansion and peripheral connectivity, a VGA port which will enable you to hook up a monitor as well enhancements to RAID support.

This latter feature makes sense for a server designed for greater flexibility – Western Digital makes no secret of recommending RAID 5 configurations on their cheaper prosumer and entry level serv-

ers – the four bay MyCloud EX4 offers RAID 5 as does the Sentinel DX4000 – it offers a great combination of storage capacity and data protection. However, the Sentinel DS series offers a much greater suite of RAID options, with JBOD, RAID 0, 1, 5 and 10 all available to serve businesses with varying needs. If I've just lost you with this talk of RAID, then don't worry - we'll be covering storage management later in the book, when all will be explained.

If you're buying a WD server, you're going to buy it populated with their disks. No diskless version of the Sentinel DS is available at retail – your options on the DS5100 include 4TB (2 x 2TB) and 8TB (4 x 2TB) whilst the DS6100 offers 8TB (4 x 2TB), 12TB (4 x 4TB) and 16TB (4 x 4TB) – all designed to take advantage of the server's RAID management feature (and add a bit of additional margin for Western Digital, no doubt).

That said, those drives are Western Digital's WD SE Enterprise and Datacenter class hard drives which include a five year Enterprise warranty, so at least you're paying for quality (and peace of mind). Also included in the mix are two additional 2.5" "boot drives" (configured in a RAID 1 array) which hold the Windows Server 2012 R2 Essentials operating system, so all of the capacity available across those four bays will be dedicated to storing (and protecting) your data, alongside your Line of Business apps.

So, make no mistake – whilst the cheaper WD Sentinel DX line is positioned to do a great job for prosumers and micro-businesses alike, the Sentinel DS line is a more powerful business class solution for more demanding, more complex operations – with a price ticket to match. The obvious question in many readers minds will be what performance premium you get for your money over a "roll your own" option such as the new HP MicroServer Gen 8 (roll your own in terms of installing an operating system as we saw in the last chapter, that is). Whilst there's definitely more horsepower tucked away in the Sentinel DS range, Western Digital are positioning the Sentinel more of a high end *solution* (with a more convenient out of box setup, extended warranties and value added services) than a mere *server* – as such, the two devices are positioned to cater for different needs.

The Sentinel is a great looking device – small, compact and professional. One immediate plus you'll notice on the Sentinel DS is a front door lock to add a layer of physical protection to your data. A front-mounted display offers basic reporting when a remote desktop session isn't to hand.

The Western Digital Sentinel DS6100.

Open up the business-formal Sentinel box (no glossy graphics here) and you'll be able to pull out the server (which is heavy when populated with drives) along with the rest of the contents – twin (large) power bricks, power cables, an Ethernet cable and a quick start guide.

The Sentinel's outer packaging.

Opening the box.

The Sentinel feels very solid in your hands, with a full metal construction, save for the drive bay door which is plastic (and as a result feels a little flimsy compared to the rest of the hardware).

Open up the drive bay door and you'll spot the screwless drive bays which come with a simple latch which allows you to access your drives.

Opening the drive bay door.

The drives pull out easily.

The drive bay mechanisms are solid and well built, opening and closing with a satisfying click. The 4TB WS Se drives supplied with the DS Sentinel slide in and out with ease.

A high capacity, enterprise-class hard drive.

Pop out the drives, and you can see right into the guts of the server. Look closely to either side of the motherboard and you'll notice the twin 2.5" drives which hold the operating system. The sharp-eyed amongst you will notice they're 320GB Western Digital WD-AV25 drives. Why twin drives? Well, you'll find that Western Digital mirrors the operating system on a second drive which makes it very easy to recover in the case of a serious problem. Handy!

Using separate hard drives for the operating system ensures you can use the maximum capacity of the storage drives you've purchased.

Closing the server up, and swinging around the back you can take a look at the Sentinel DS6100's connectivity. The main section of the rear is taken up by a large exhaust fan design to cool those four hard drives whilst your ports are positioned at the top for easy access. Alongside the four USB 3.0 and two USB 2.0 ports previously mentioned, you'll see twin Ethernet ports and twin power inputs offering increased reliability (and optimised throughput in the case of the network sockets).

Connect up your power, data, monitor, keyboard and mouse and you're ready to power on the Sentinel DS. The server fan will kick out a racket for a few seconds, but fortunately that dies down quickly and you won't notice any noise from the server in normal operation – it's really quiet.

Rear connectivity.

The rear of the Sentinel DS6100.

The aforementioned VGA port allows you to hook up the server to a monitor, unlike other "headless" servers (which have no monitor port and must be managed from a client via remote desktop). A recovery button completes the rear line-up, in case the server ever needs to be completely restored from a backup.

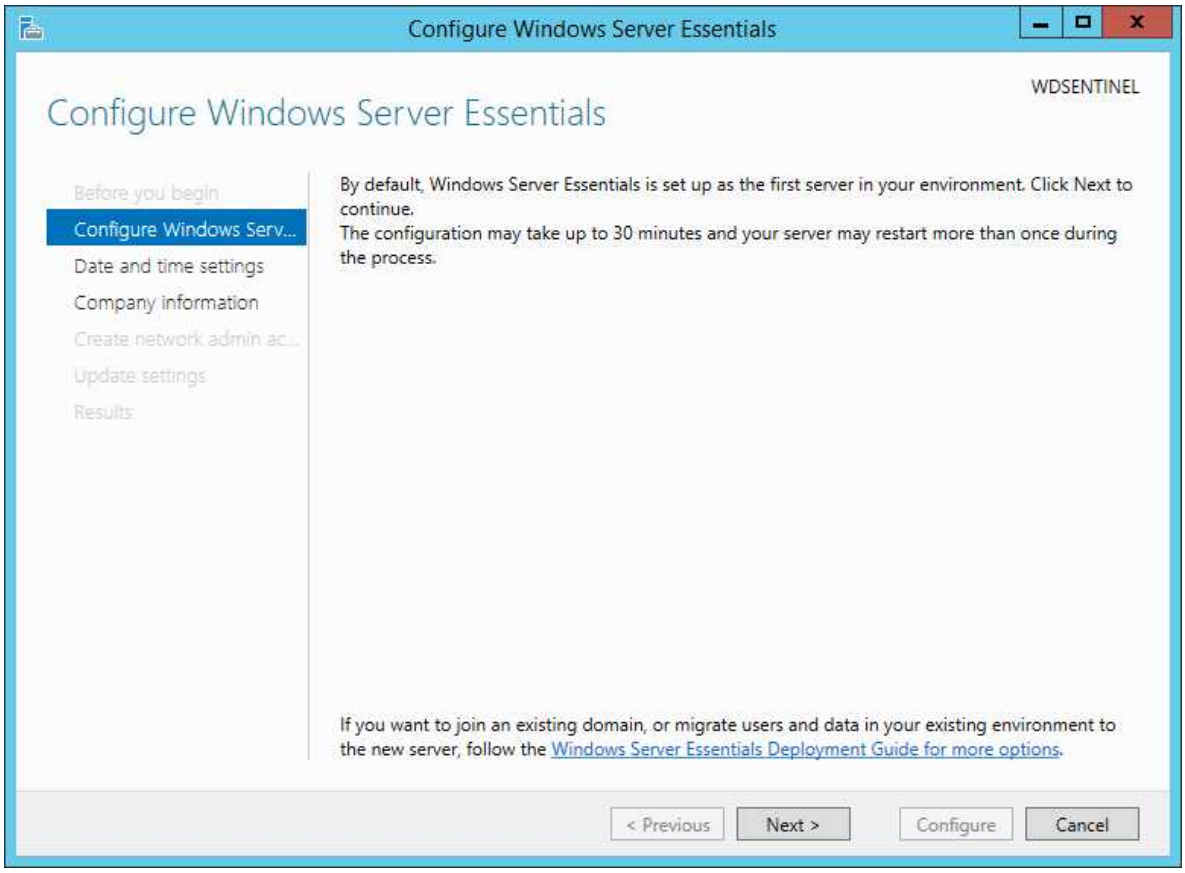
Let's get it up and running.

Initialising the Western Digital Sentinel DS6100

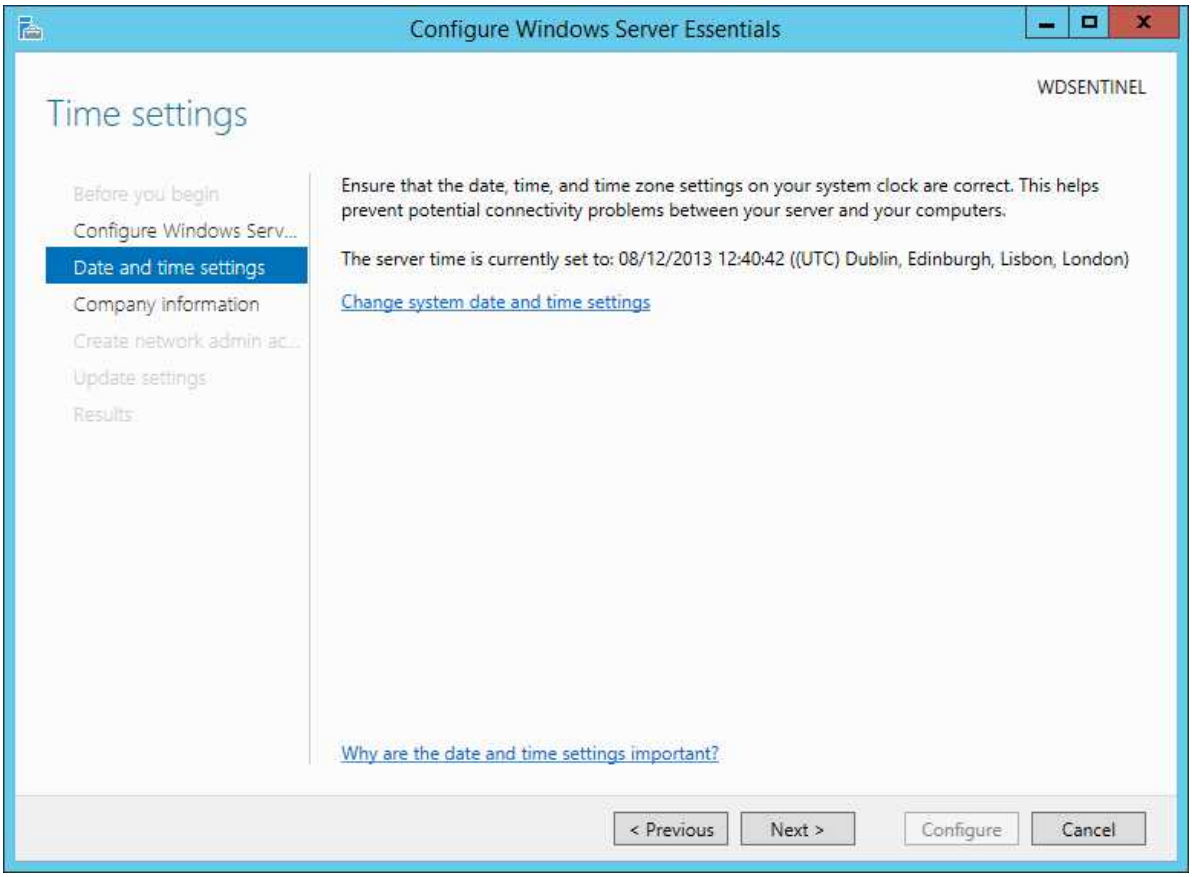
The benefit of buying off the shelf hardware is that a healthy chunk of the operating system installation is done for you, but you'll still need to initialise the server before you can get going with the Dashboard and other features.

Connect up your power, data, monitor, keyboard and mouse and you're ready to power on the Sentinel DS. The server fan will kick out a racket for a few seconds, but fortunately that dies down quickly and you won't notice any noise from the server in normal operation – it's really quiet.

The device boots into Windows Server 2012 R2 Essential's standard first run configuration wizard, which guides you through key settings such as language, region and keyboard settings.



Windows Server 2012 R2 Essentials "first-run" wizard.

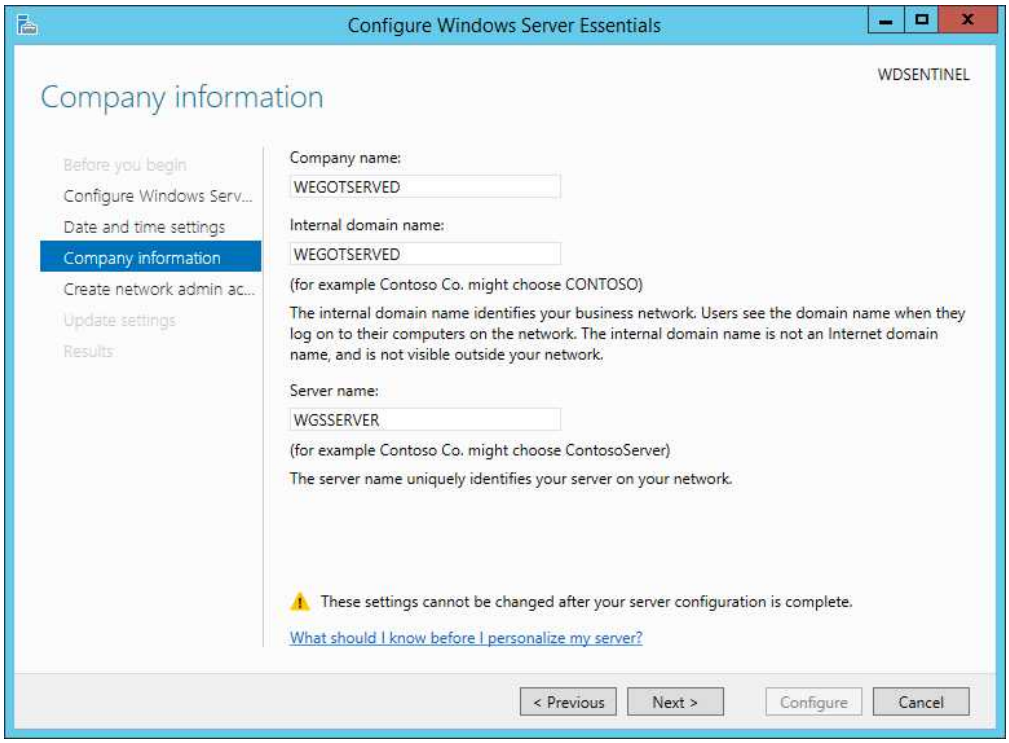


Changing the time settings.

A quick reboot after agreeing the End User License Agreement and you're straight into server configuration.

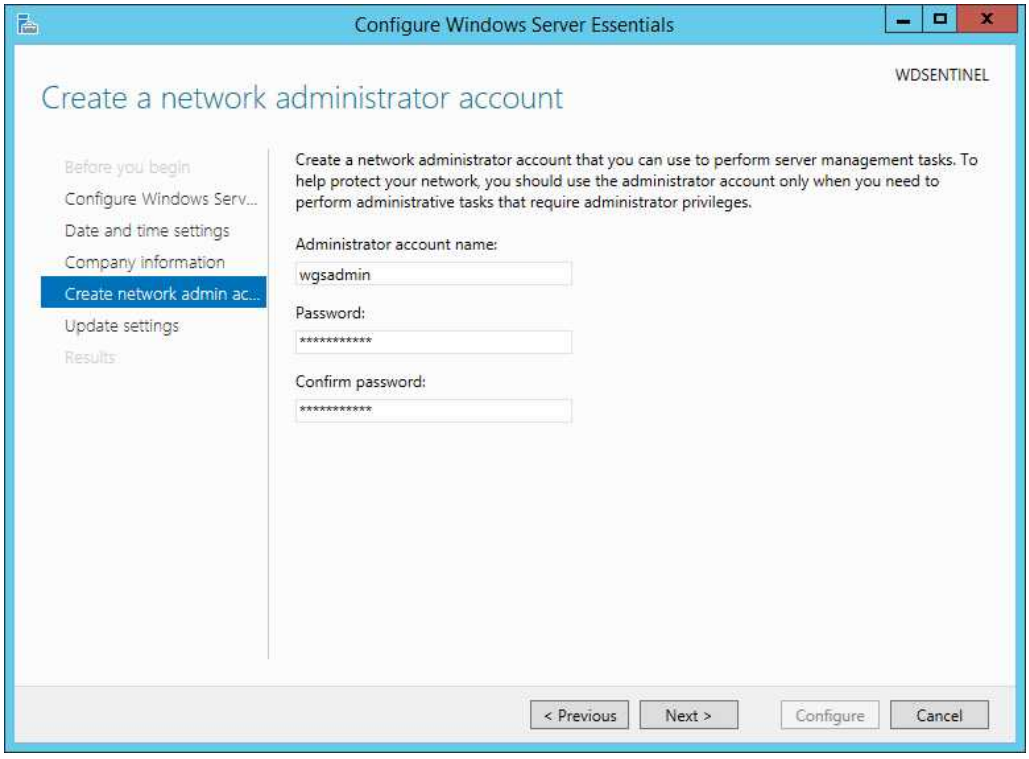
For those who have used a simpler server platform like Windows Home Server, Windows Server 2012 R2 Essentials will look and feel very familiar but with includes advanced features such as Active Directory support to allow easier identity and security profile management across the network. Your Sentinel will need to be set up as the first server in the network – that is a pre-requisite built into the platform by Microsoft.

Your first task is provide your **company name** and internal **domain name.** In this dialog, you also **name your server**. As you may remember from the last chapter, these settings cannot be changed once entered without re-initialising the server, so choose wisely!

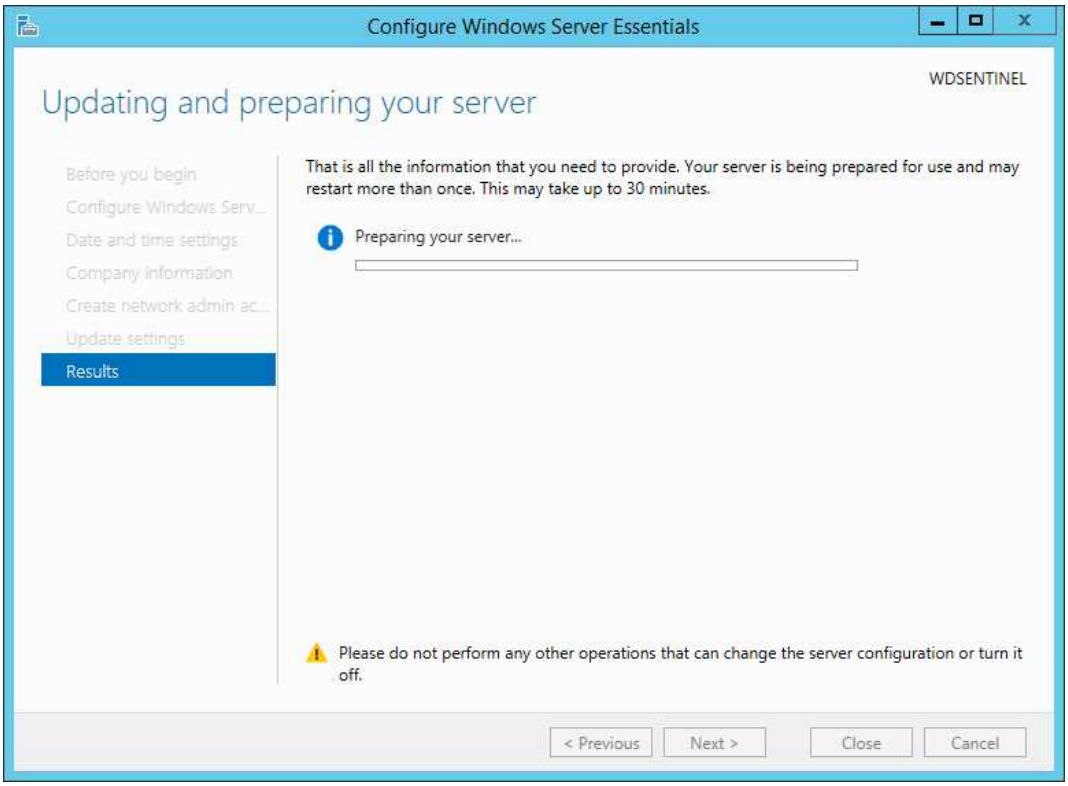


Entering Company information personalises your server.

In the next screen, **Choose a network administrator account**, you will be asked to supply an **administrator account name** and **password**.



Next up, select your update settings (as I mentioned previously, **Recommended** will ensure you receive vital enhancements and security updates for your server.) You can choose to install updates only or not to check for updates at all. Once that's done, it's time to complete installation.



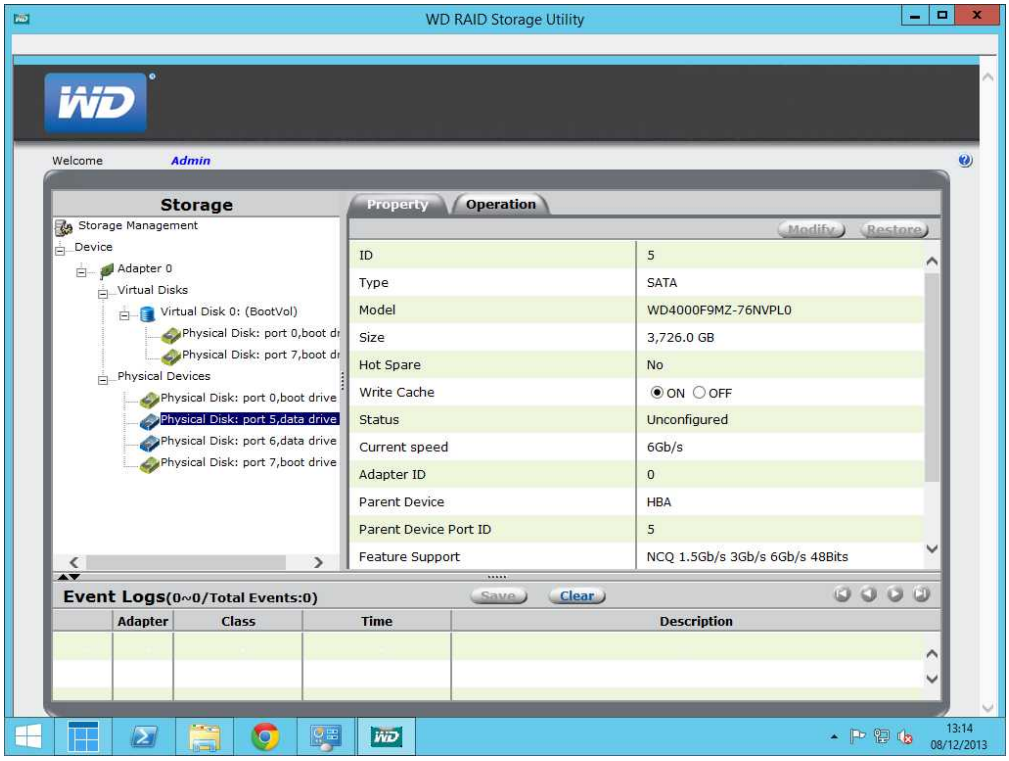
It's a simple start that should take a couple of minutes before the Sentinel then runs its final configuration routines, resulting in multiple reboots. That configuration does take a little while (Windows quotes 30 minutes but the Sentinel does it a little quicker – around 15 minutes), so worth brewing up a drink whilst it churns away.

As a nice usability touch, the Sentinel's LCD display will keep you up to date with configuration with a percentage completion message reflecting what is being shown by Windows on screen. The Sentinel's LCD panel comes in handy again if Western Digital issue any software updates for the Sentinel. You'll receive an alert on the panel telling you an update is available, following which you can download and install the bits directly from the Dashboard. That makes life for the part-time IT administrator (that's you, the business owner) pretty straightforward indeed.

That completes the setup and initialisation of your Sentinel server (yes, it's pretty quick!) and you can now dig into the rest of the book - and indeed, the server! Whilst there isn't space here to walk through the Sentinel's added value features in depth, I'll highlight a couple of features to look out for.

With regard to storage configuration and management, you can opt to use Microsoft's own **Storage Spaces** feature, which provides pooling capabilities to transform multiple hard drives into a single volume of storage space. Alternatively, for best performance, you can opt for Western Digital's own RAID configuration utility (available from the Taskbar) which allows you to configure a variety of RAID flavours depending on your needs and drive complement.

Both are very easy to use for the uninitiated – which is useful, as your data drives will need to be configured and formatted before they're recognised by Windows. That's involves a trip to **Computer Management** in Windows which isn't the most intuitive method for getting up and running, but is a one-time deal. We'll talk a look at Computer Management later in the book.



Western Digital's RAID Management console.

In terms of performance, put simply, the WD Sentinel 6100 is easily the most powerful small server I've reviewed at We Got Served over the last seven years. From a benchmark perspective, the Intel Xeon processor simply blows away the Atoms, Celerons and Pentiums that you've generally found in prosumer and micro-business servers – and that includes the older WD Sentinel DX4000. Admittedly, the Sentinel DS6100 is at the top end of small business servers, and you'll pay for that performance, price wise. But for those seeking an off the shelf, convenient and powerful small business server, the Western Digital Sentinel offers an incredibly strong package in a very small footprint.

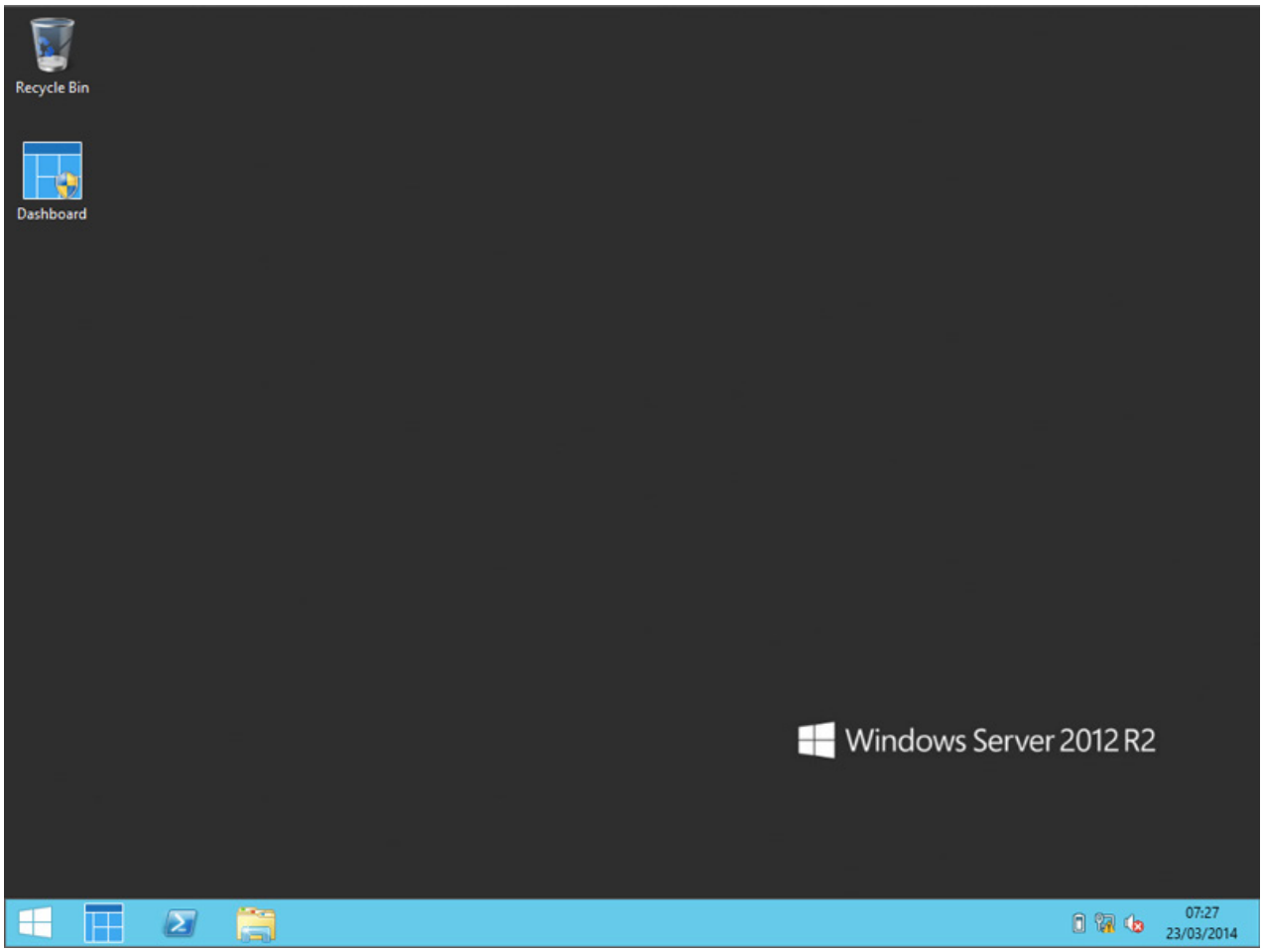
Introducing the Windows Server 2012 R2 Essentials Dashboard

"It took a while, but we finally have the server operating system installed and initial configuration completed. We now need to fire up the server Dashboard to configure and customize the system for our specific business needs."

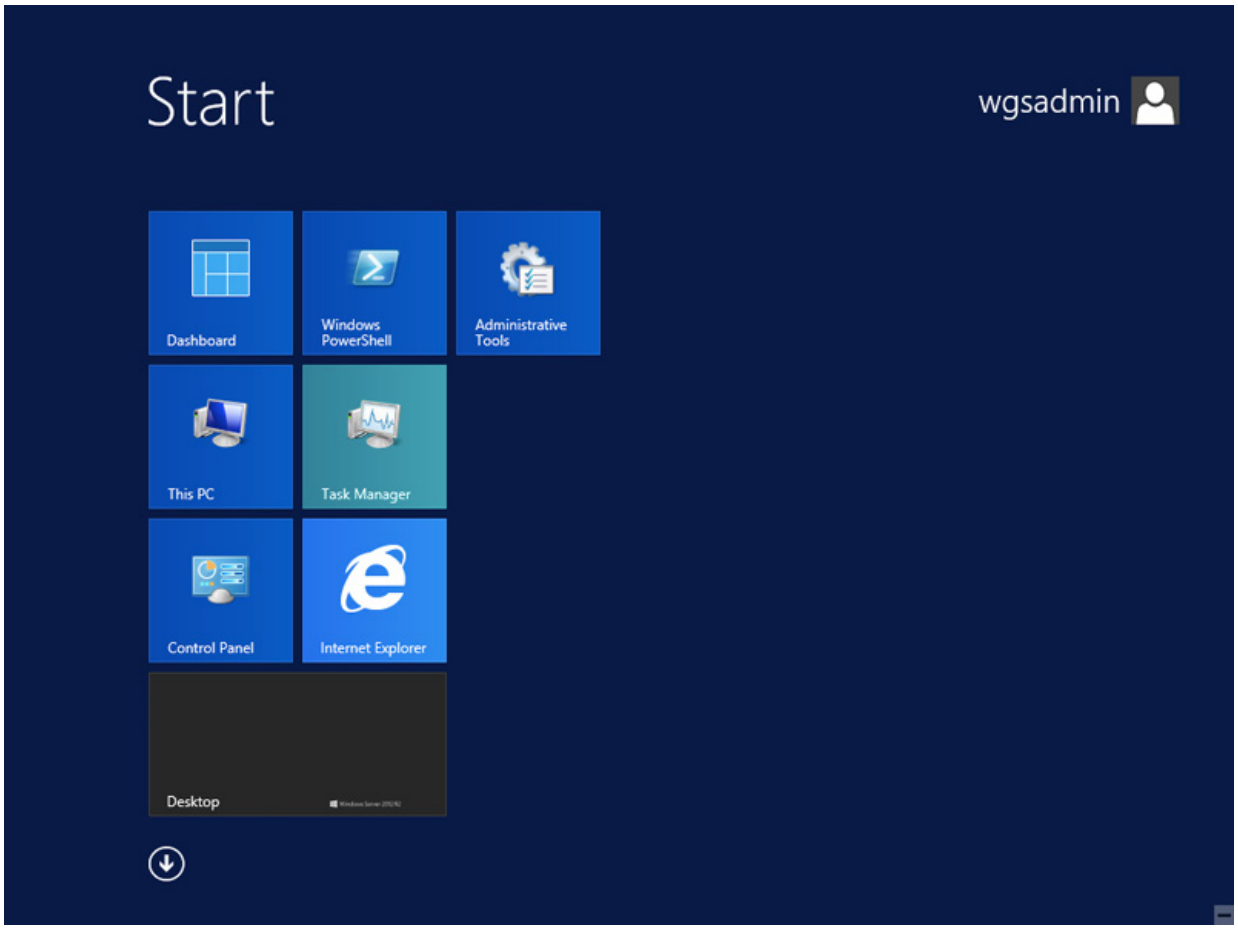
The Dashboard is an administration console, which simplifies most of the tasks needed to manage your Windows Server 2012 Essentials network and server. From the Dashboard, you can:

- Finish setting up your server
- Perform common administrative tasks
- View server alerts and act on them
- Set up and change server settings
- Access or search for Help topics on the Web
- Access Community resources on the Web
- Manage user accounts
- Manage computers and mobile devices as well as backups
- Manage access and settings for server folders and hard drives
- View and manage add-in applications
- View and manage integrated cloud services such as Office 365, Windows Intune and Windows Azure

You can open the Dashboard from either the desktop or Windows Start screen.

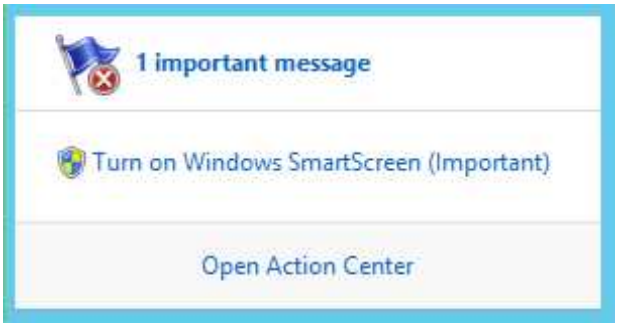


The Windows Server 2012 R2 Essentials desktop, with Dashboard icon.

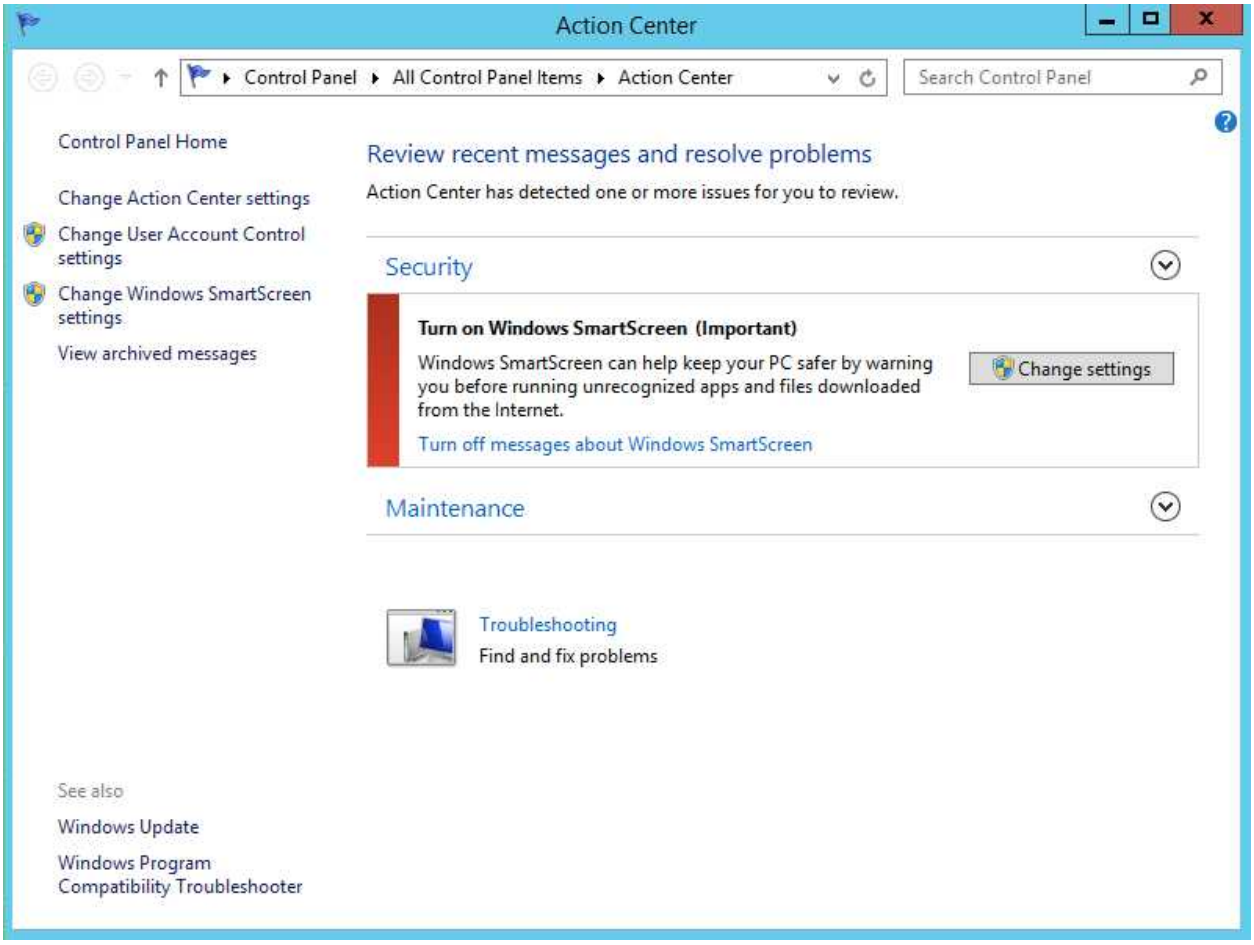


The Start screen.

Before we actually get to the Dashboard, one simple task before going further is to take a peek at the taskbar in the lower right corner of the taskbar and click on that flag with the X on it. This is the Windows Action Center and lets you know of any issues it may find with the operating system and installed programs it may find. When clicked on, a window like the one that follows will open up to with a short message as to any issues the Action Center has encountered.



Click **Open Action Center** to get the complete details on the issue and includes a suggested solution for any issues found.

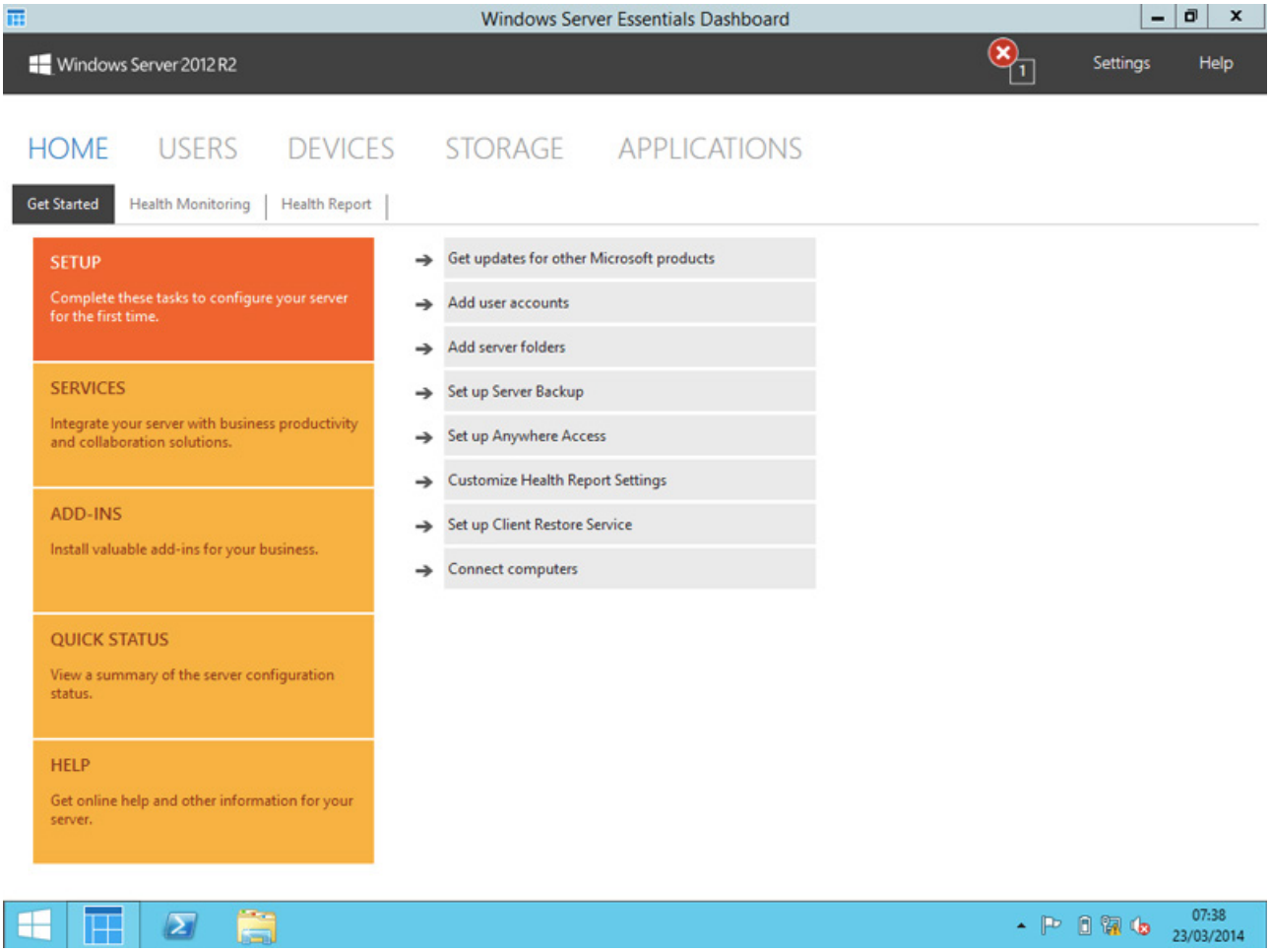


The details and the suggested solutions:

Regarding Windows SmartScreen, it is best to use the first option as indicated below.

You may have different messages in the Action Center or perhaps none at all. If a message deals with security, it is typically the best policy to choose the most secure option. You can always change it later if needed.

Moving back to the Dashboard, once opened you will notice a series of setup tasks for you to complete.

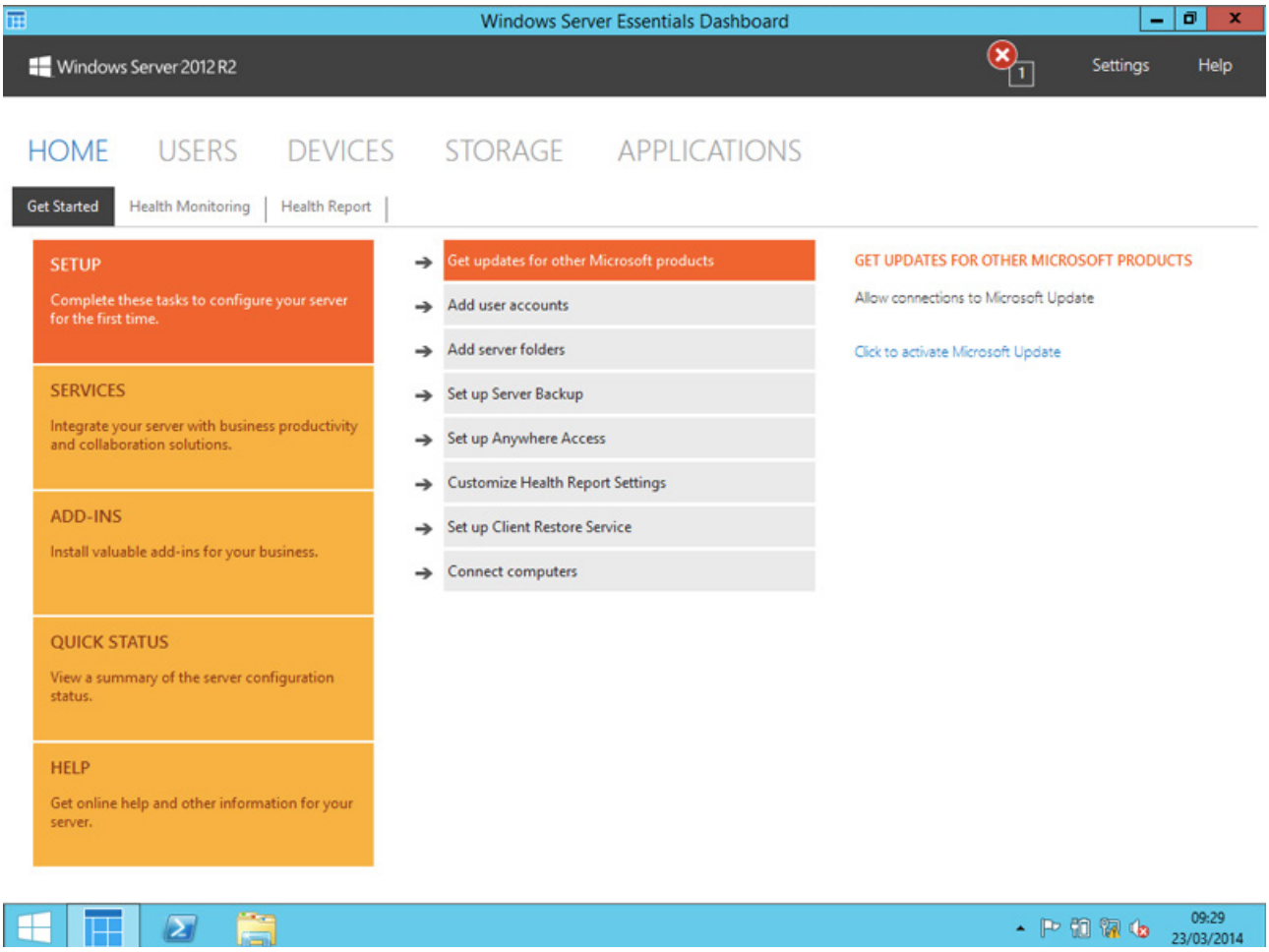


Setup tasks in the Dashboard.

Let's go down this list one by one and perform the necessary tasks to fully configure and prepare your server for deployment in your organization.

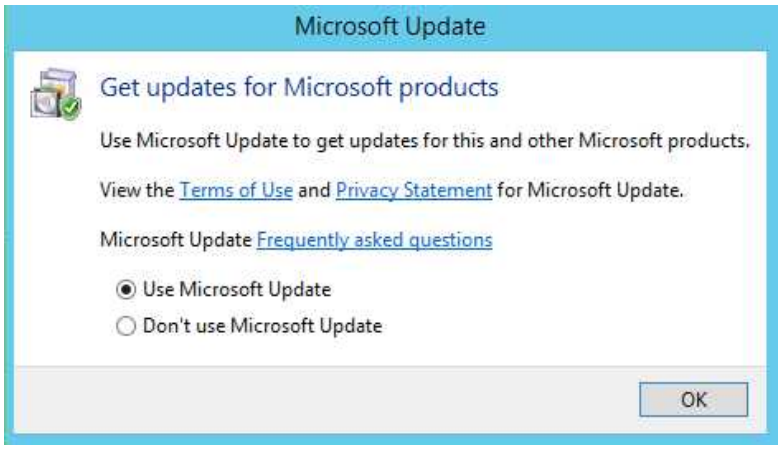
Get updates for other Microsoft products

First up on the list is configuring operating system and "other" product updates.



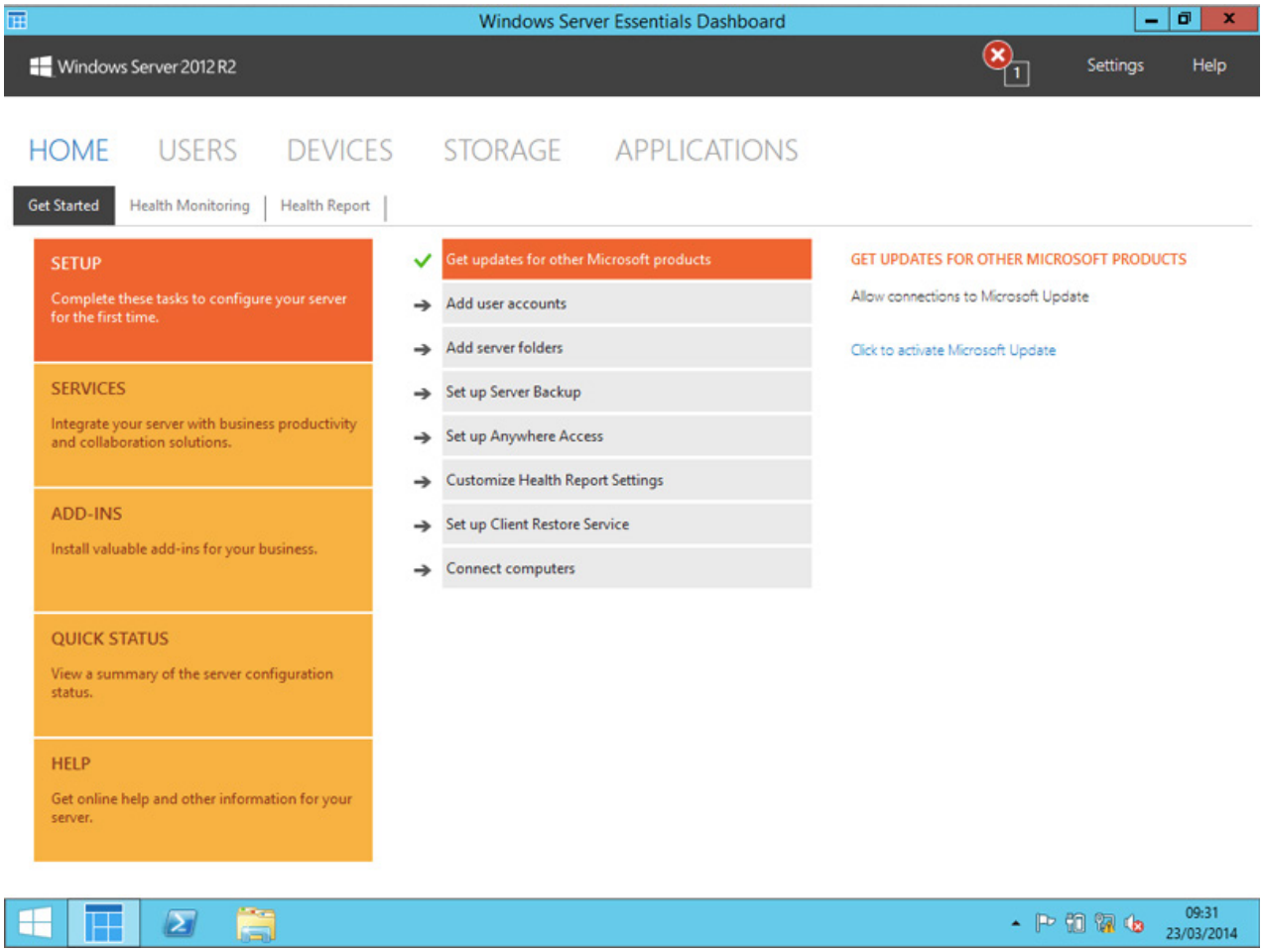
Configuring updates.

This one is a no-brainer. Clicking the option to **activate Microsoft update** allows you to configure the type of updates your server will receive. Make sure that the **Use Microsoft Update** option is enabled:



Configuring updates.

and click **OK** to finish this very simple task. The result is the Green "completed" check-mark as indicated in the following screen.



First task completed!

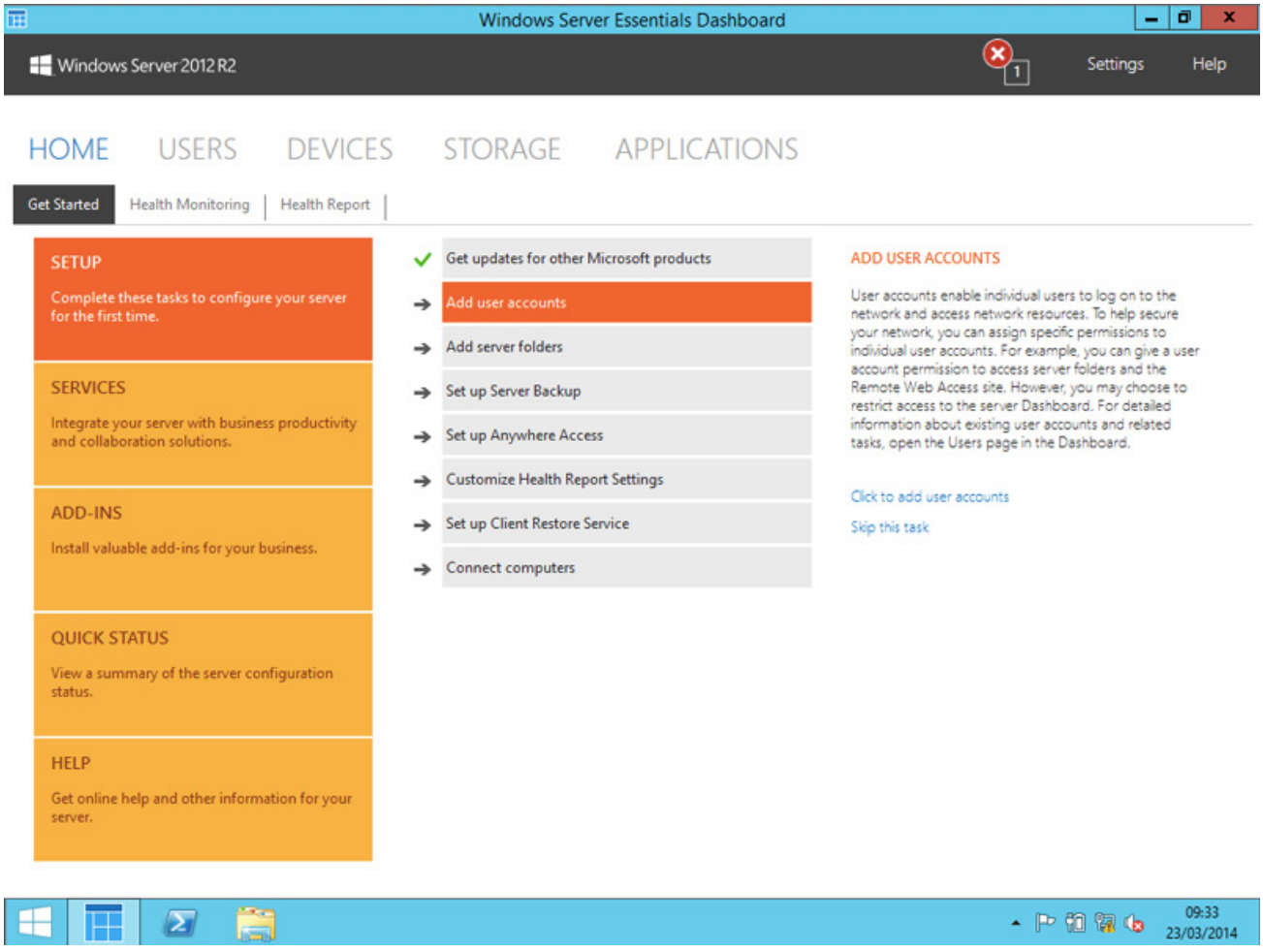
That was the easy one! Not that the other setup tasks are difficult; this is just *fast* and easy.

Add user accounts

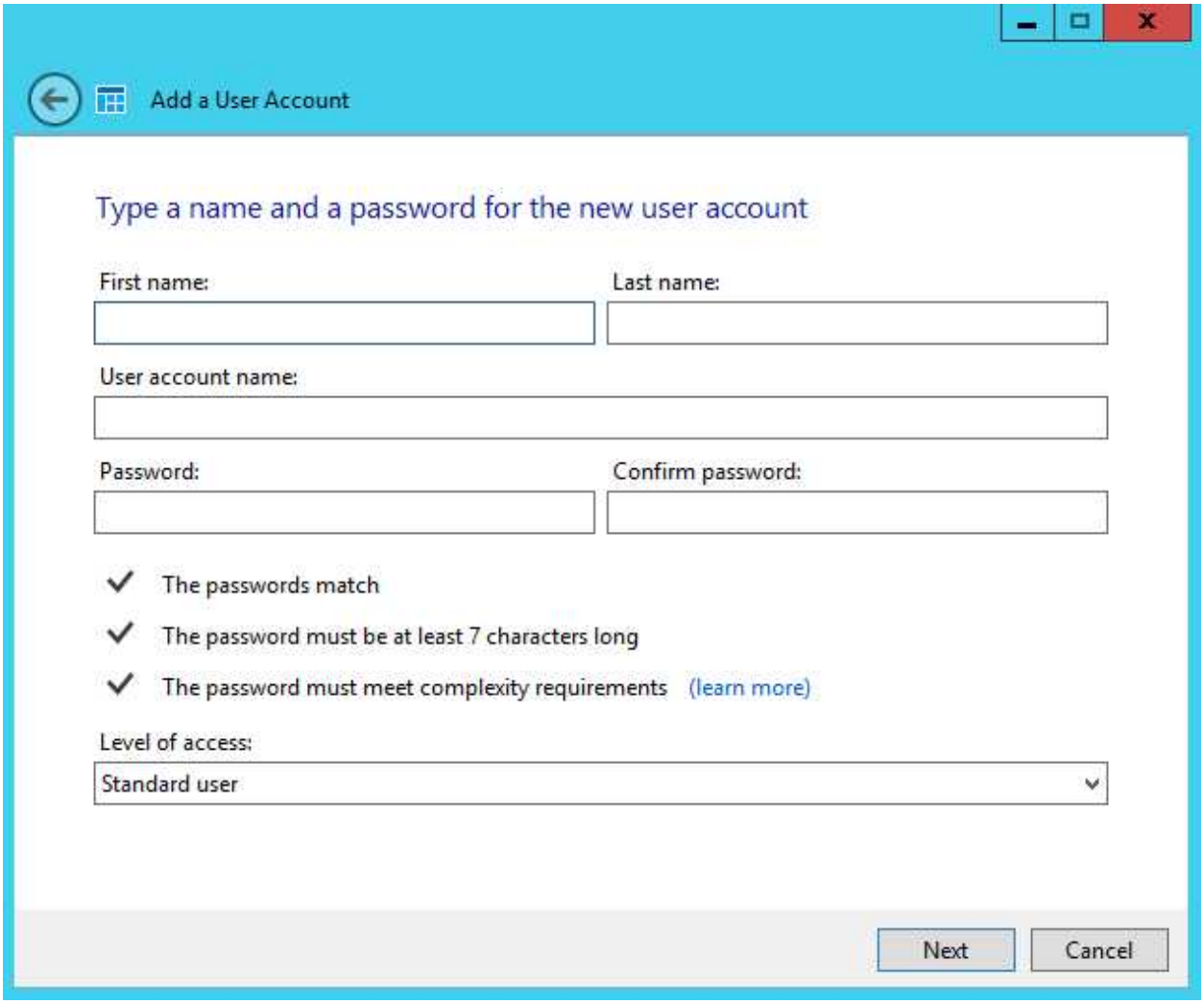
This task is also easy to perform, but it does take some time as you need to sit down, make a list of employees and determine how to name them. Then you'll need to give them an initial password and determine the level of access to provide them with.

If you have an existing user/employee base, you might want to get a list of existing passwords from them so that accessing the server with the server account (vs. a local user account) is more seamless.

Remember, Windows Server 2012 R2 Essentials allows you up to 25 user accounts. To start, click on the **Add user accounts** link, then click on the **Click to add user accounts** task.



This brings up the following dialog in which you put in a first name, last name, and initial password.



Creating a user account.

The User account name is entered automatically as you can see. You can use this one or change it as desired. A common method would be to use first name/last name first initial. Be sure to set-up your users as **Standard** users rather than **Administrators**.

Remember, you set up two accounts during the initial installation of Essentials. One was the administrative account and one was your standard user account. These accounts are for the remaining employees of your company.

When configuring user passwords, you need to follow the criteria set by the operating system. First up is the easy one:

The passwords match

This simply means that you need to enter the same password in both fields. Transposing characters and/or hitting the wrong key is easy to do, and this requirement simply reduces that potential.

The password must be at least 7 characters long

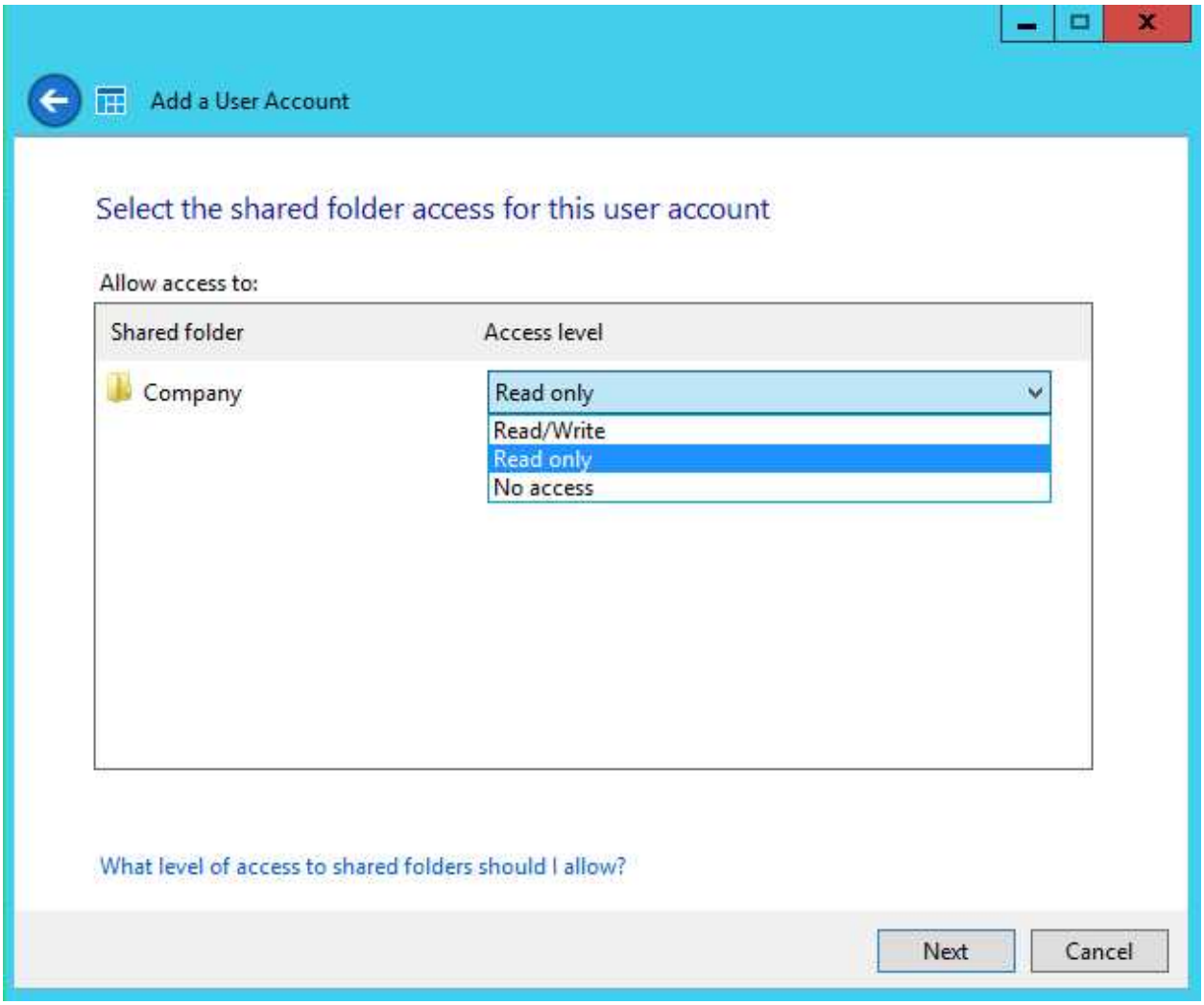
This is your business. You certainly do not want to have a user with no password or a simple one-character password. The longer the password, the harder it is to decipher.

The password must meet complexity requirements

Once again, you do not want someone to have an easily decipherable password. The complexity requirements dictate that passwords must contain a mixture of uppercase and lowercase letters (a-z, A-Z) base numbers (0-9), and non-alphabetic symbols (such as; !,@,#,_,-).

You have the option to change these requirements, if so desired, in the **Users** tab of the Dashboard but this is simply not recommended. If you are trying to make use of existing passwords, and they do not meet the above requirements, this is simply a good time to provide an "upgrade" for your users' passwords.

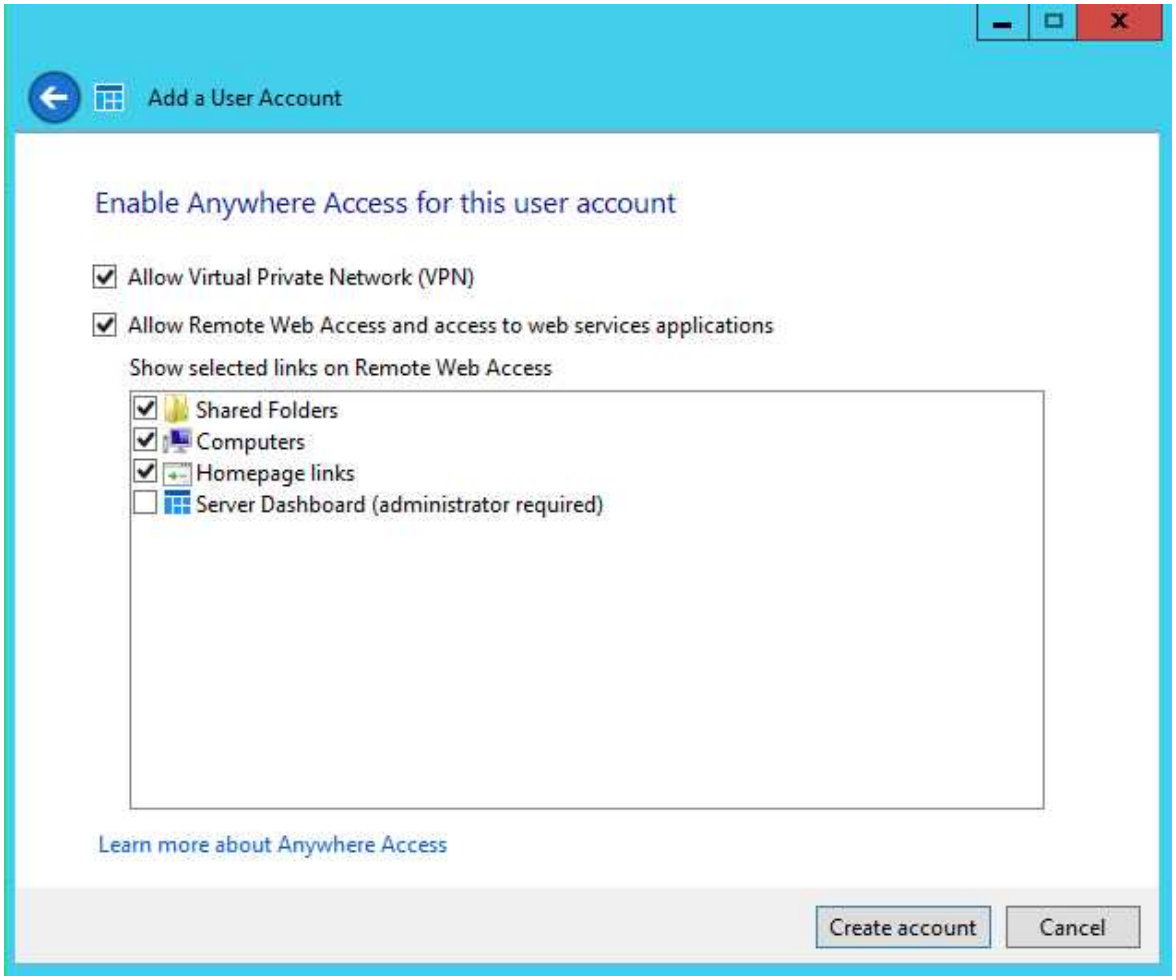
When you click on **Next**, you bring up the following window which determines the access rights granted to the user. The default is **Read only**. I would suggest that for an initial setup, you create all users with the **No access** option until you have determined your company folder structure and what rights a particular user should have for a particular folder.



Setting user access rights.

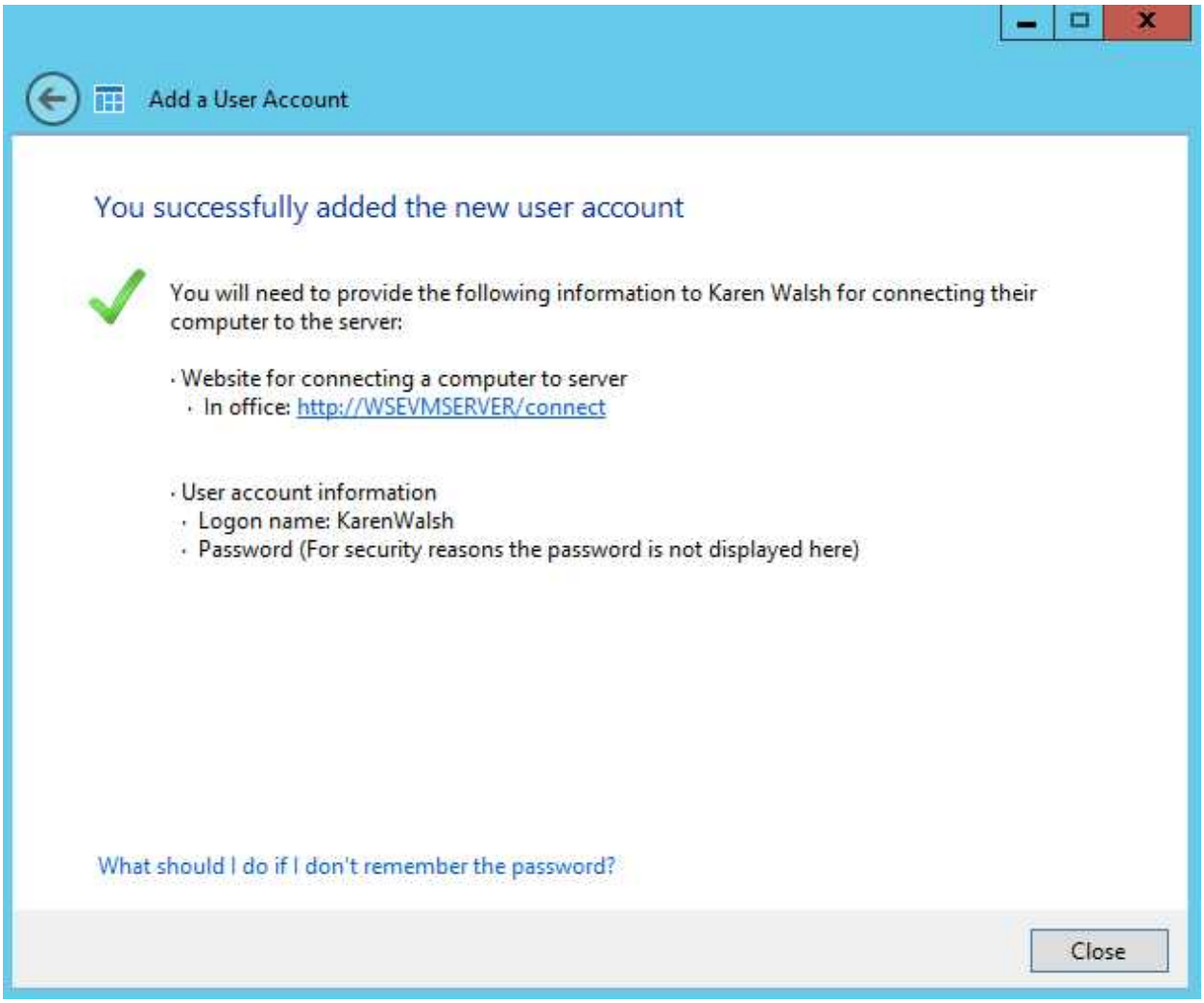
For example, I doubt you would want to have all your employees have access to an accounting folder, or human resources files for that matter. If you set up each user initially with the **No access** option, and you forget to change their access rights later, you would rather them come to you and ask why they have no access as opposed to the potential that they have some level of access to areas that you did not intend.

Another click on the **Next** button bring up the **Anywhere access** user settings. This is where you can tailor remote access settings for the user, with options to grant remote access to Shared Folders, Computers, Media, Homepage links and the Dashboard - if the user has Administrator rights. Simply check the boxes as required.



Configuring remote access privileges.

Click **Create account** to set up the account.

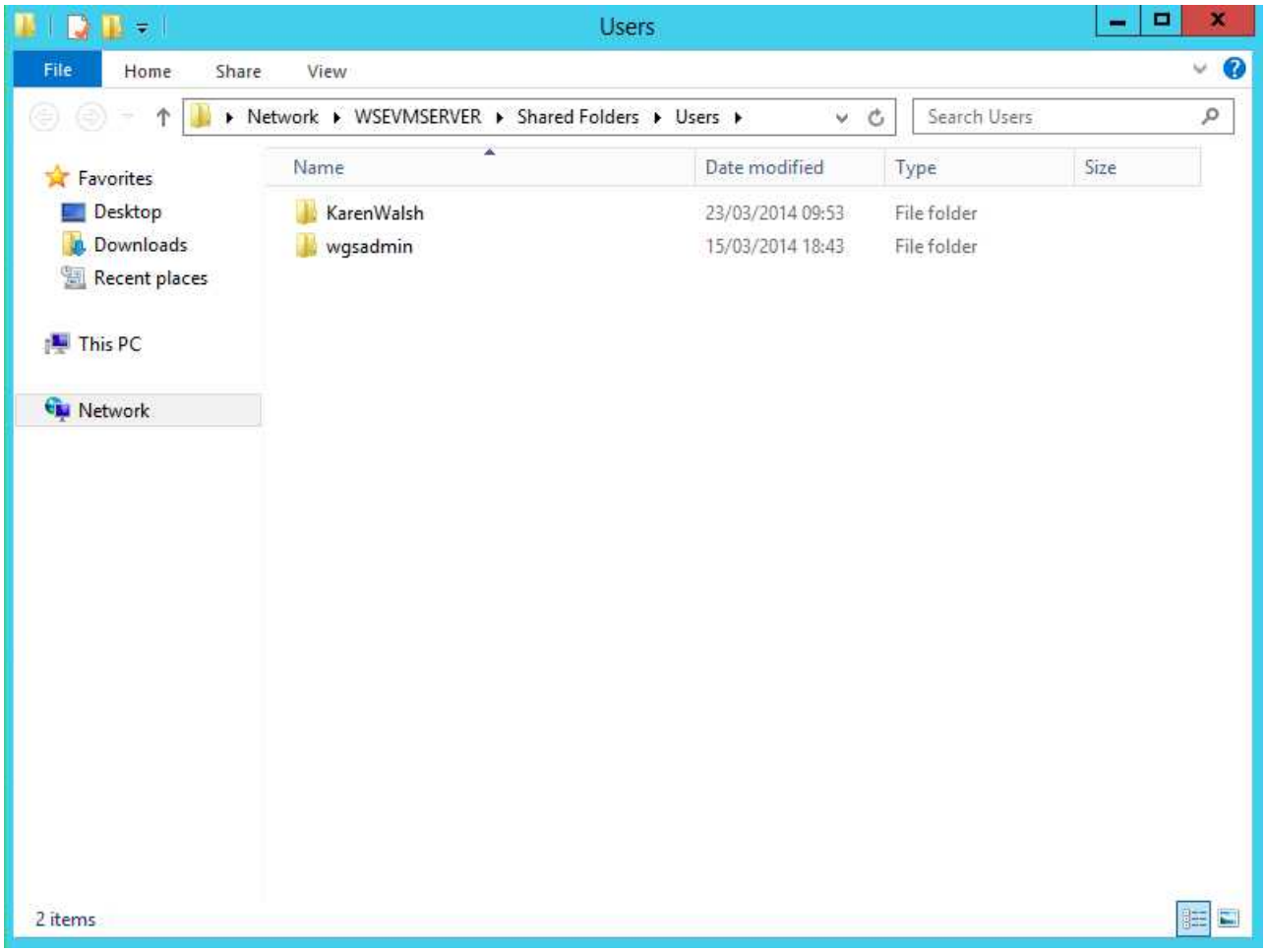


The account has been created.

Click on the **Close** button to take you back to add your remaining users.

Before finishing up, there is one item to make note of in the previous screen. When you are ready to start connecting computers to the server, you will perform this task by using your browser. Make note of the URL that is displayed (your link will have your own server name, rather than mine) as this is what is needed to connect a client computer to the Windows Server 2012 R2 Essentials network.

Each user folder gets a personal server folder during setup in which they can store any files or sub-folders as required.



User folders are created for each account you set-up.

No other user is able to access the files stored in each user folder - it's a private folder for each individual.

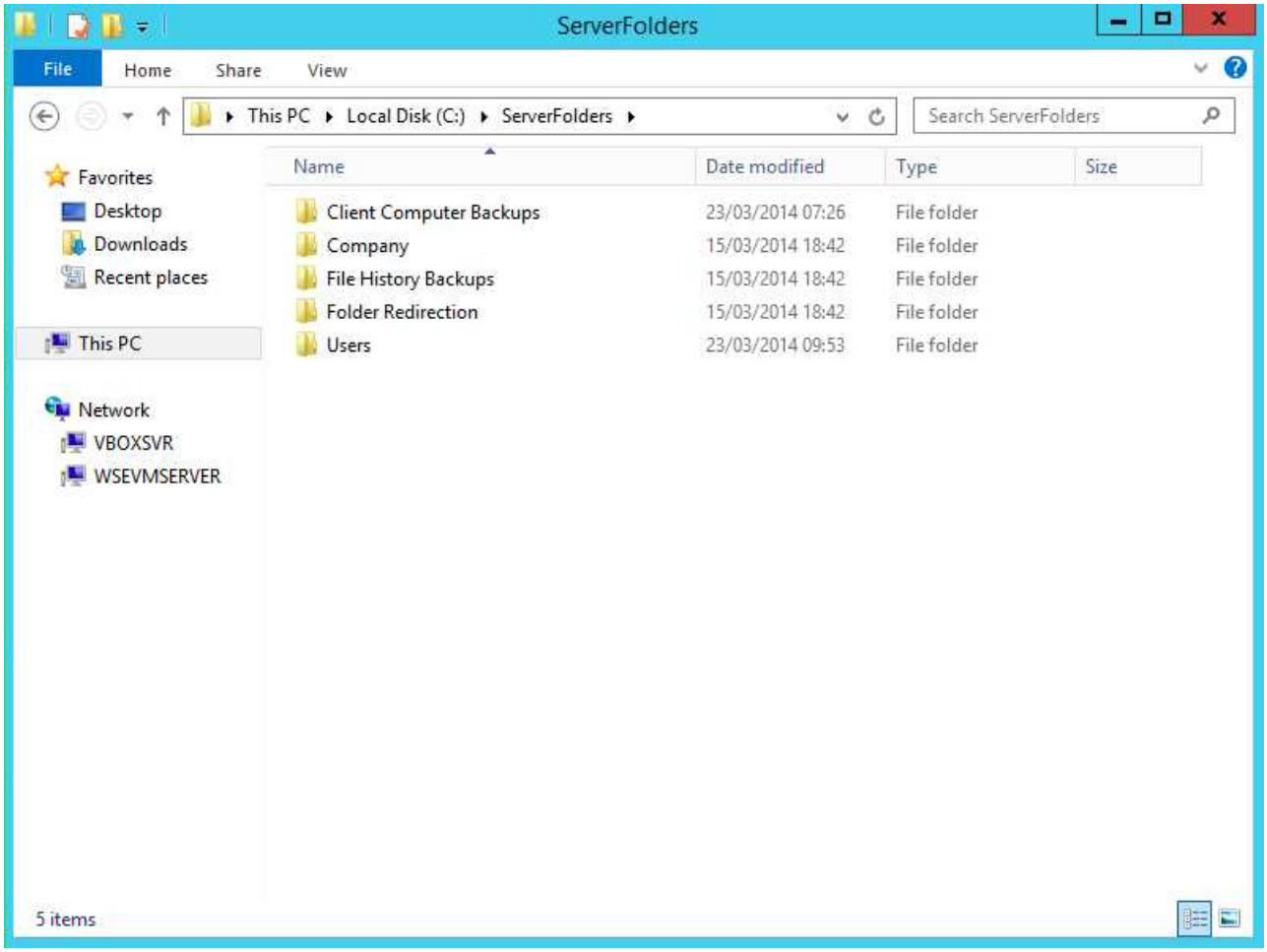
Repeat the user account setup process for the remaining users/employees of your company to complete this task.

Add server folders

Microsoft has made your setup tasks as simple to perform as possible. Adding server folders is also easy to perform, but this is one area where you really need to sit down and determine the folder structure your company required so you can make it as simple as possible for your employees to find the files they need.

During the initial server installation, Essentials creates the following basic folder structure for

you:



Your server folders.

Client Computer Backups

As the name implies, this is the folder in which the server stores client computer backups. This folder should be accessible only by administrators.

Company

This folder is used to store and access general documents needed by the users of your organization. Users should be given various levels of access to these folders based upon how you set up your specific company folder structure.

File History Backups

File backups using File History that are created by Windows Server 2012 R2 Essentials are stored in this folder. This folder should be accessible only by administrators.

Folder Redirection

Used to store and access folders that are set up for folder redirection by network users.

Users

Used to store and access files by network users. A user specific folder is automatically generated in this Users server folder for every network user account that you create.

Your Folder Structure

As indicated above, the "Company" folder is basically a general purpose folder that can be used by any user to store and access documents needed across your organization. If you so desire, you could create sub-folders to categorize your files. A couple of examples might be:

- company holiday schedules
- work schedules
- human resources documents

This folder should be a living documents folder that changes as needed. Most users should be given read access to this folder, and some users should be given read/write rights. In addition, you can configure access privileges for your sub-folders, restricting access to sensitive data as required.

There are some company folders that you might want to add as separately managed folders. Examples of these folders might be:

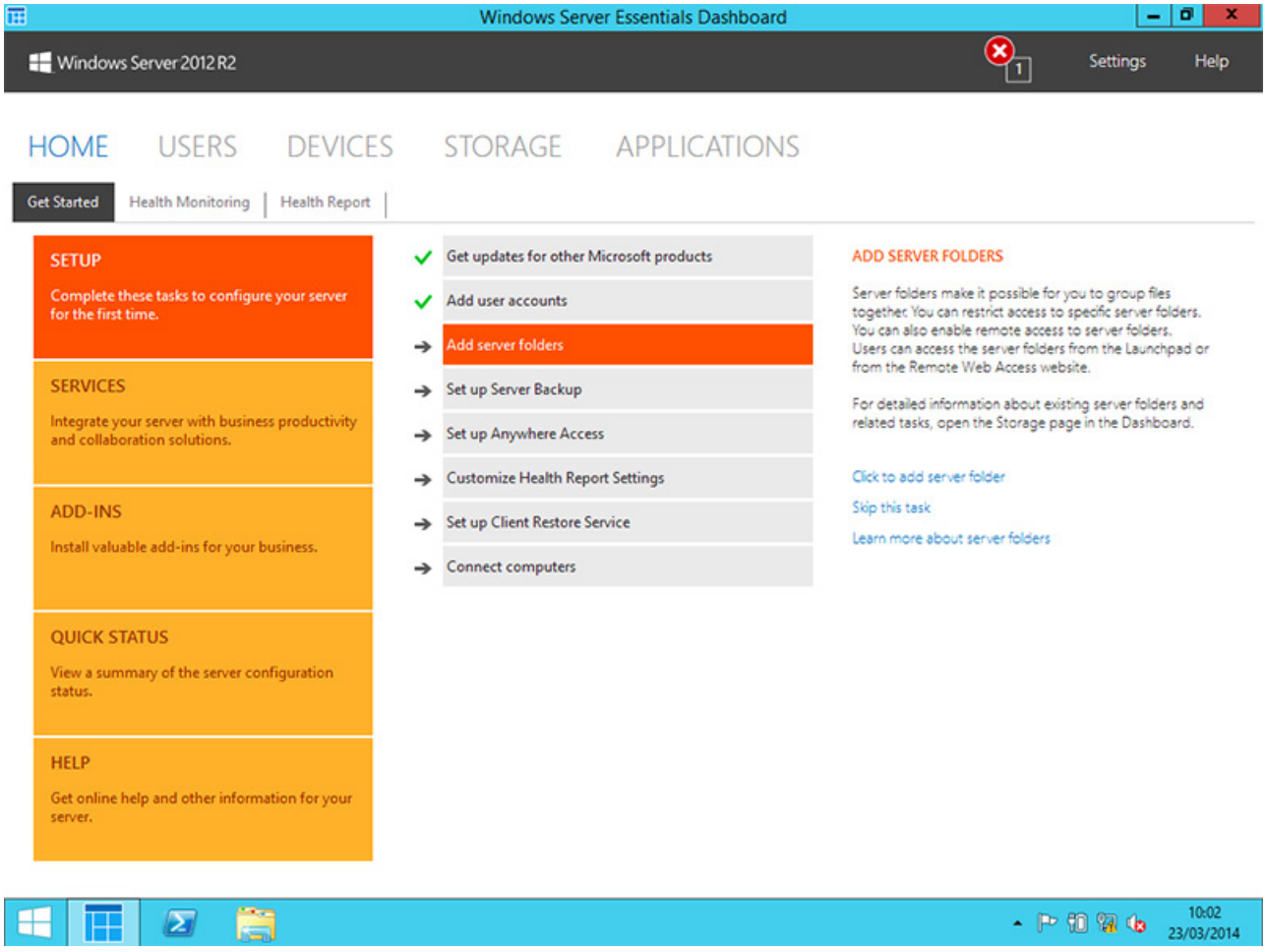
- Accounting
- Human Resources
- Sales

You could add these folders under the main "Company" folder. However, access rights are easy to administer using the Dashboard even if you place the folders elsewhere.

As part of your server setup, you are given the ability to create new server folders based upon the

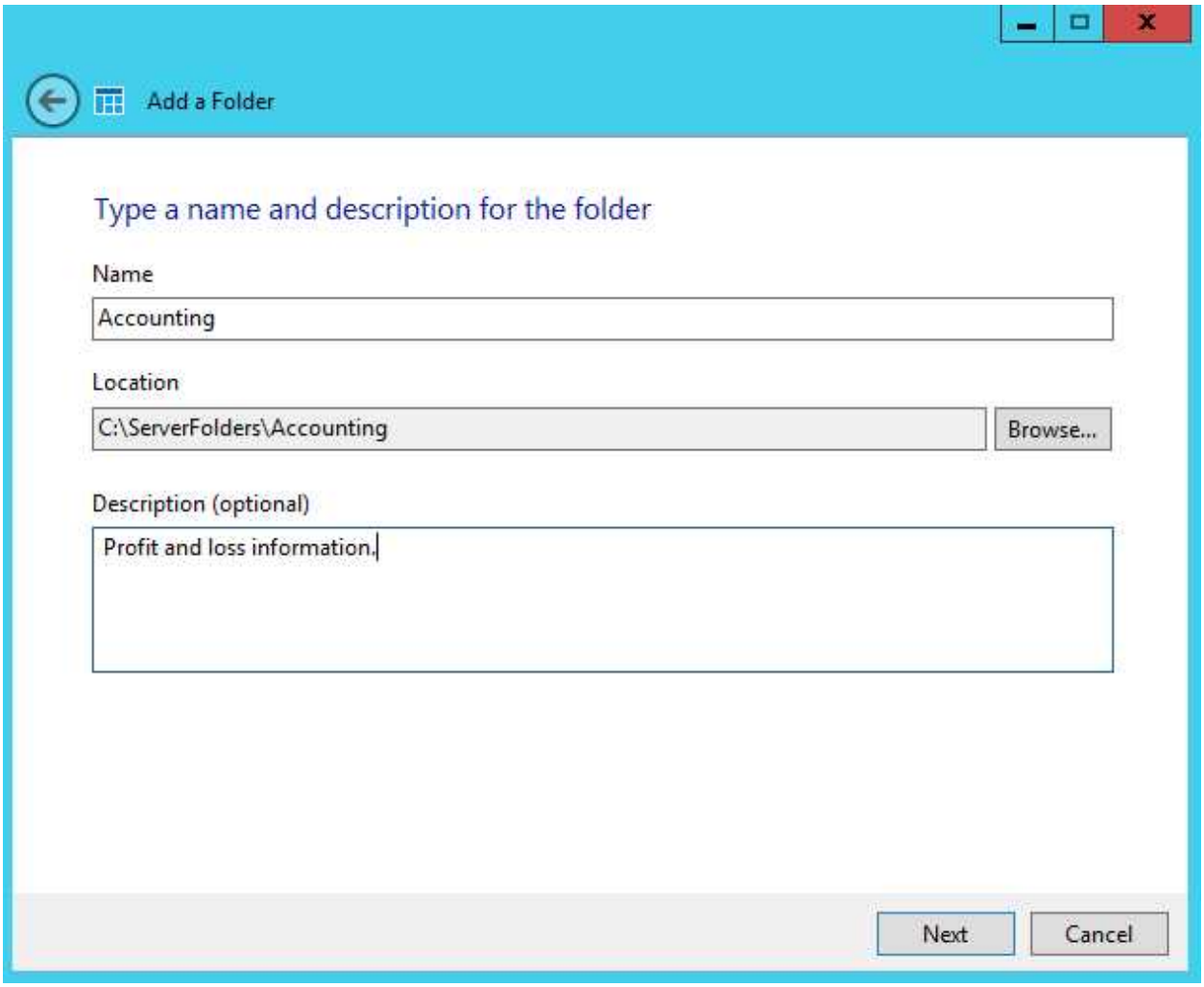
specific needs of your organization. To add a new server folder, select the **Add server folders** option in the Dashboard and then click on the appropriate action in the lower right section.

If you have determined that you do not need to change the server folder structure at this time, you can click the **Skip this task** option. If needed, you can always add more folders later via the **Storage** tab.



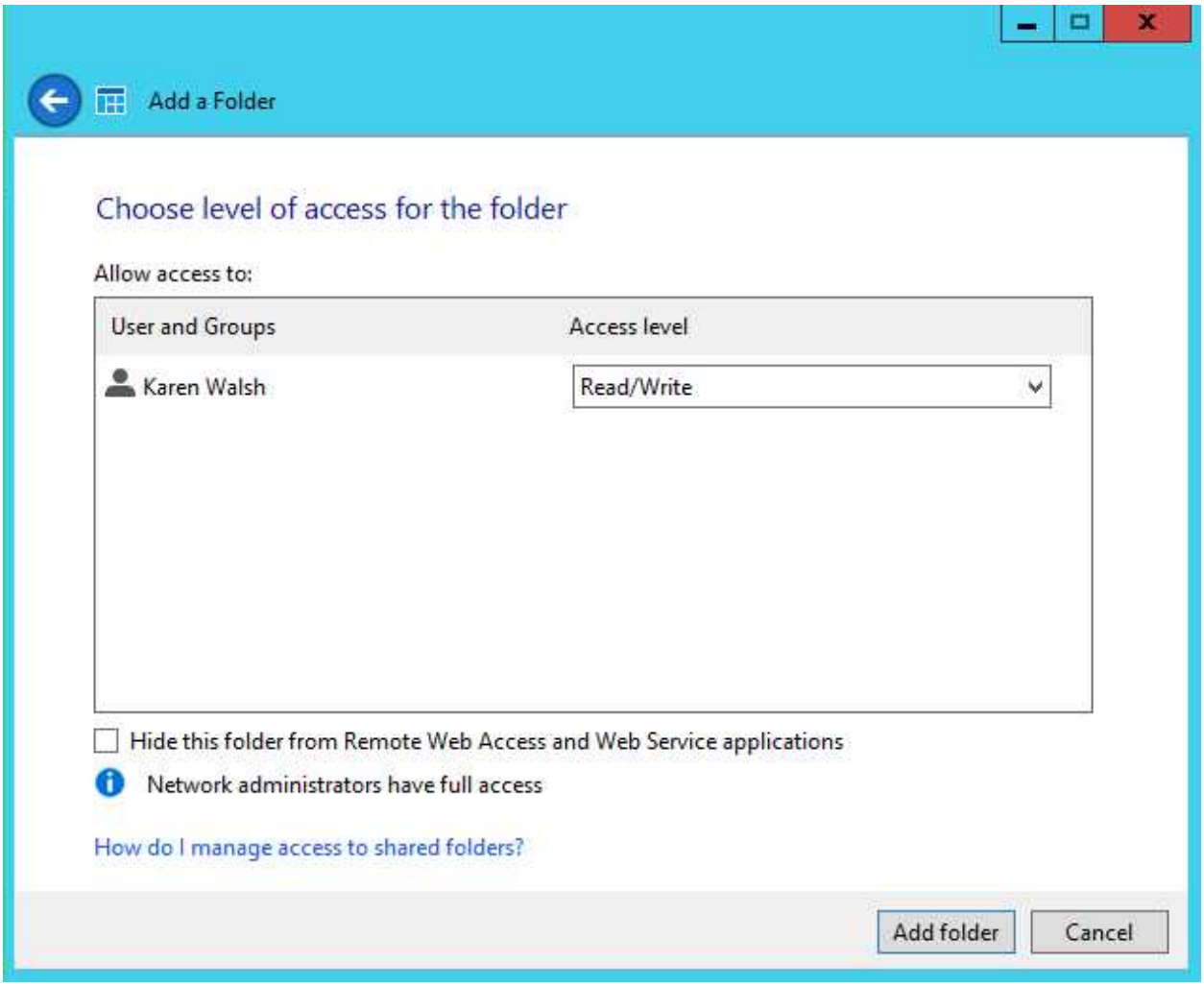
The Add server folders task.

Assuming that you are adding a server folder, the wizard opens a window into which you add a name, location and description.



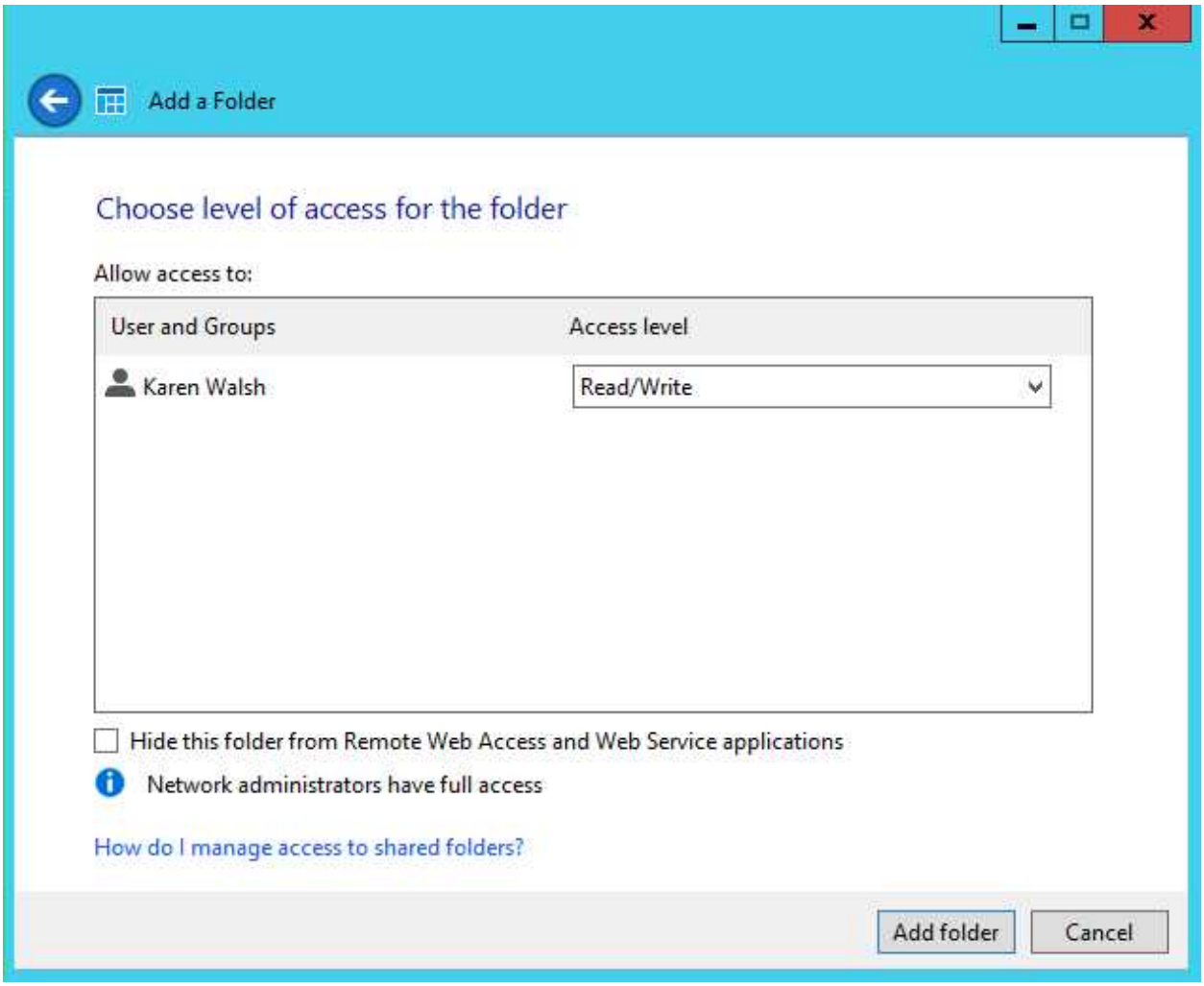
The Add a Folder wizard.

We are adding an Accounting folder, so will name it as such. The server automatically creates the location, which you can change if so desired. Finally, you can optionally add a description. While the purpose for some folders may be self-explanatory, others may not be.



Our folder details are populated.

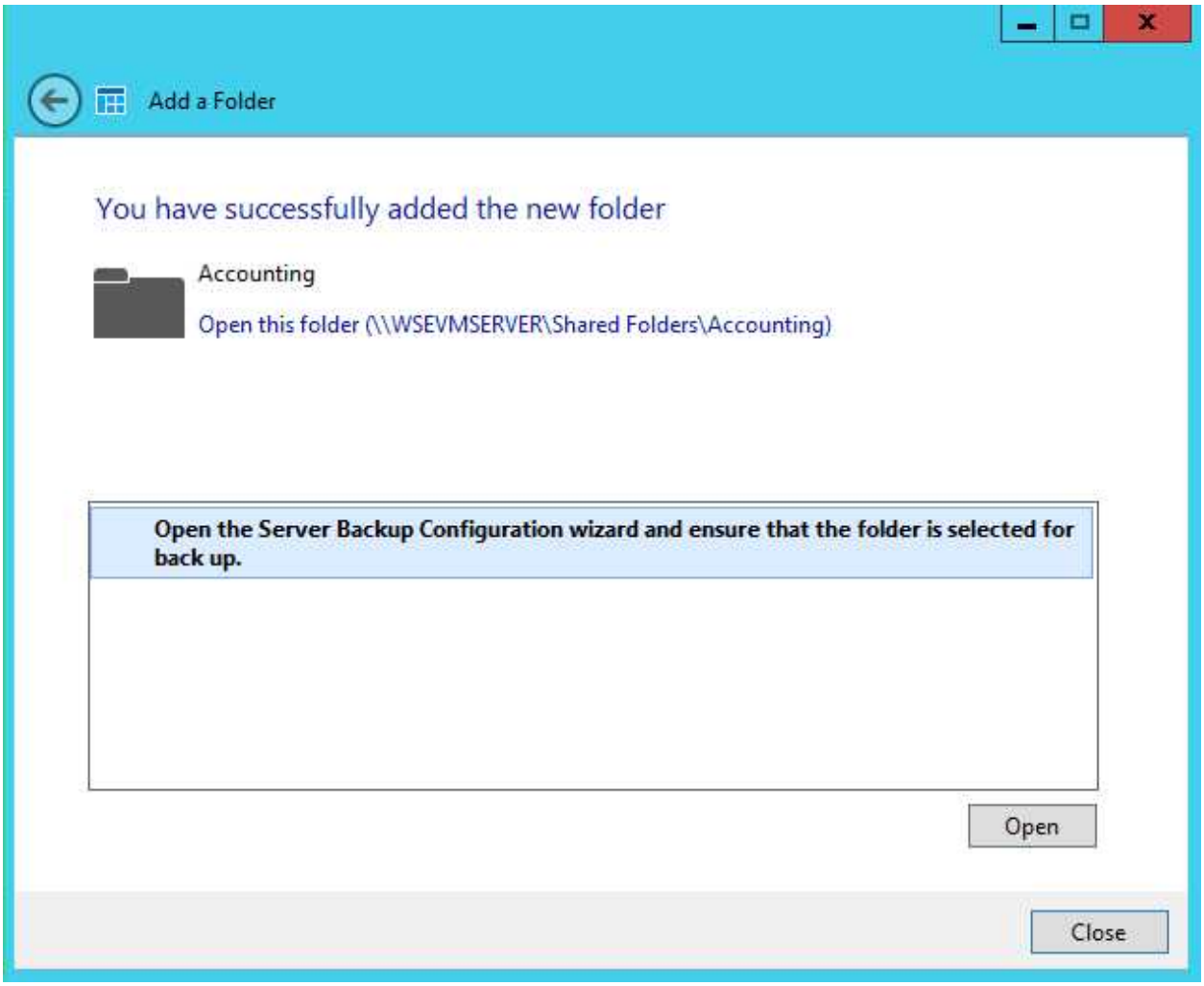
Click **Next** and you can easily change the folder's access rights, from the default Read Only setting to No access or Read/Write.



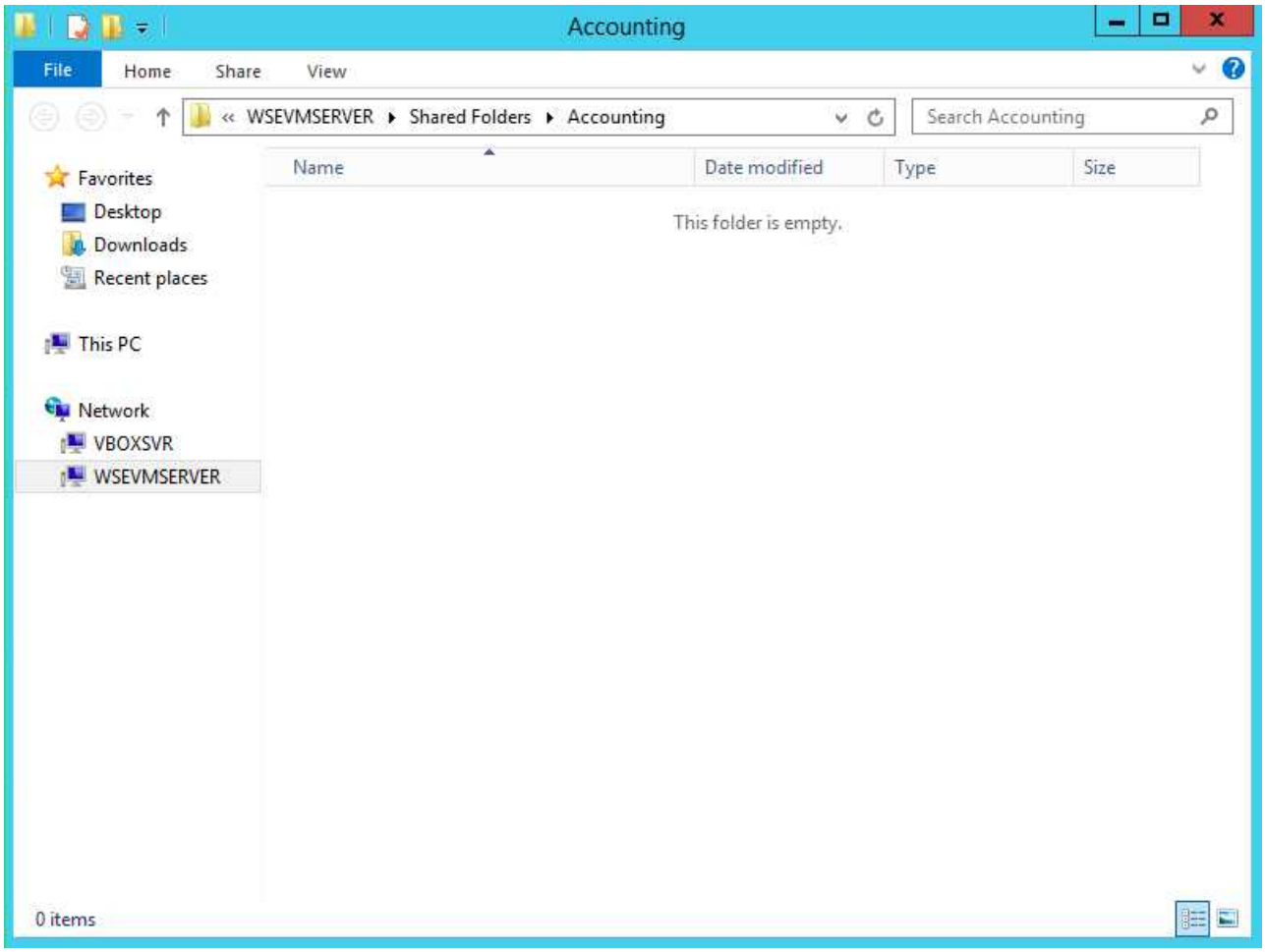
For security purposes, you can choose to hide server folders from Remote Web Access sessions and Web Service applications. Just check the relevant box before clicking **Add folder**.

The folder is created and you're given the opportunity to perform additional tasks such as to open the folder in File Explorer and/or set backup requirements for this folder. As we are in the process of creating various folders at this time, we can perform this task a bit later.

To finish up, click the **Close** button.



The result in Explorer:



Create any additional folders as needed. Once completed, we can move on to the next setup task.

Set up Server Backup

One of the most important functions of a server is the ability to back up the data stored on that server. In Windows Server 2012 R2 Essentials, not only do you have the ability to back up the server data, you have the ability to back up the server operating system itself. That means if the server's system volume is damaged in some way, you can perform a complete **Bare Metal Restore** of the server from a backup.

The server backup service included with Essentials is relatively straightforward. Attach an external drive, or multi-drive module, to a USB or eSATA port; run the wizard; done.

Before you do so, think about your backup strategy. First, you need to determine how critical your server is to you for the minute-by-minute operation of your business. If the server is absolute-

ly essential, and a catastrophic failure or loss of the server itself were to occur, you would need a redundant server. If that is your situation, I would suggest you locate and retain the services of a Small Business Server consultant, who could assist you in setting up the system to provide this level of protection.

For protection just short of that level, I would suggest the following setup:

Create a RAID 1 configuration for your C: boot drive (also known as the **system volume**). This is the simplest form of redundant RAID which requires only two hard drives, but is quite satisfactory for use on the boot drive. This can be done using one of several methods.

- Software RAID, typically a feature of the motherboard
- Hardware RAID which typically requires a separate RAID card
- A specialized enclosure such as the **Icy Dock MB982SPR-2S**, which turns a single 3.5" drive bay into a RAID 1 solution using two 2.5" drives.

Create a RAID array for your server data folders. You can create an array using:

- Software RAID, typically a feature of the motherboard and typically limited to RAID 1 for use as a redundant drive setup
- Hardware RAID which typically requires a separate RAID card (more expensive) but is usually better performing, more efficient and can be normally be configured to run in an industry standard RAID 5 configuration.
- Storage Spaces, which is the storage pooling technology first introduced in Windows 8, Windows Server 2012, and Windows Server 2012 Essentials. While not a classic RAID service, Storage Spaces can be considered equivalent to a RAID 1 or RAID 5 software-based RAID array. The most easily understood major advantage of Storage Spaces for many users is the ability to pool drives of various sizes.

Using this scenario will require you "move" your server folders from the system boot drive and on to separate data drives. This is a very simple process which if done during the initial server setup is also fairly quick to do.

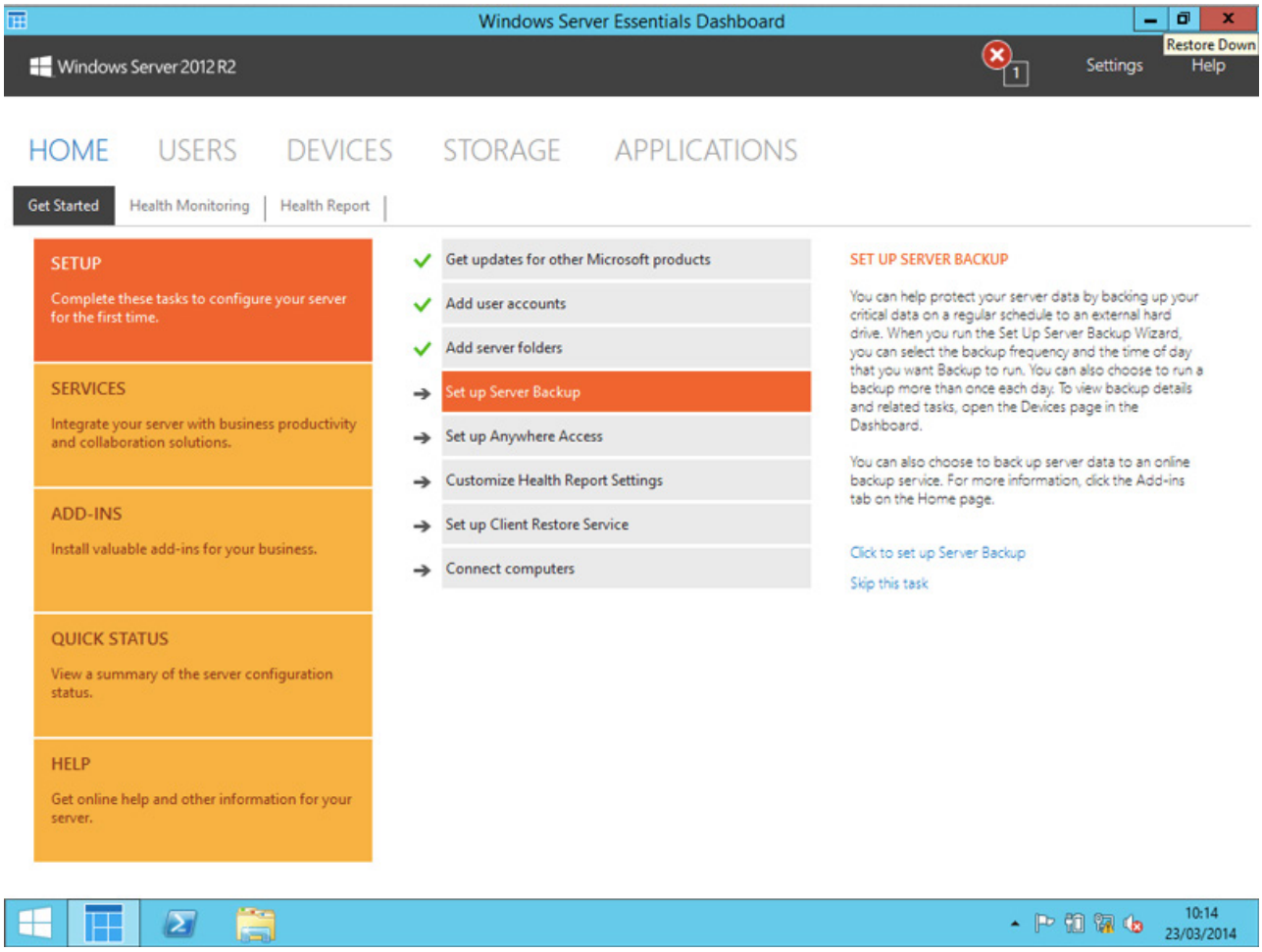
Which method you use is up to you and the specific needs of your business, however, the important feature you need to have is some form of real-time redundancy. If a drive fails, you lose nothing; just make sure you have the ability to replace that drive quickly in the event of a failure.

The purpose of a redundant drive array is simply instantaneous data duplication, while a backup is a snapshot in time. Without a redundant drive array (RAID or Storage Spaces), the result of the loss of a drive will be the loss of any data written to that drive since the last backup. In addition, drive arrays create large contiguous virtual drives and do not suffer the limitation of running into the single hard drive size restrictions. Using a RAID array, or Storage Space, certainly does not exempt one from having that snapshot backup. For file recovery, you have a feature in Essentials called **File History**. This feature can be used to restore a lost or accidentally erased file. A separate backup using the Windows Server 2012 R2 Essentials Backup function is essential if you need to perform a bare metal restore, or recovering from a catastrophic loss of data.

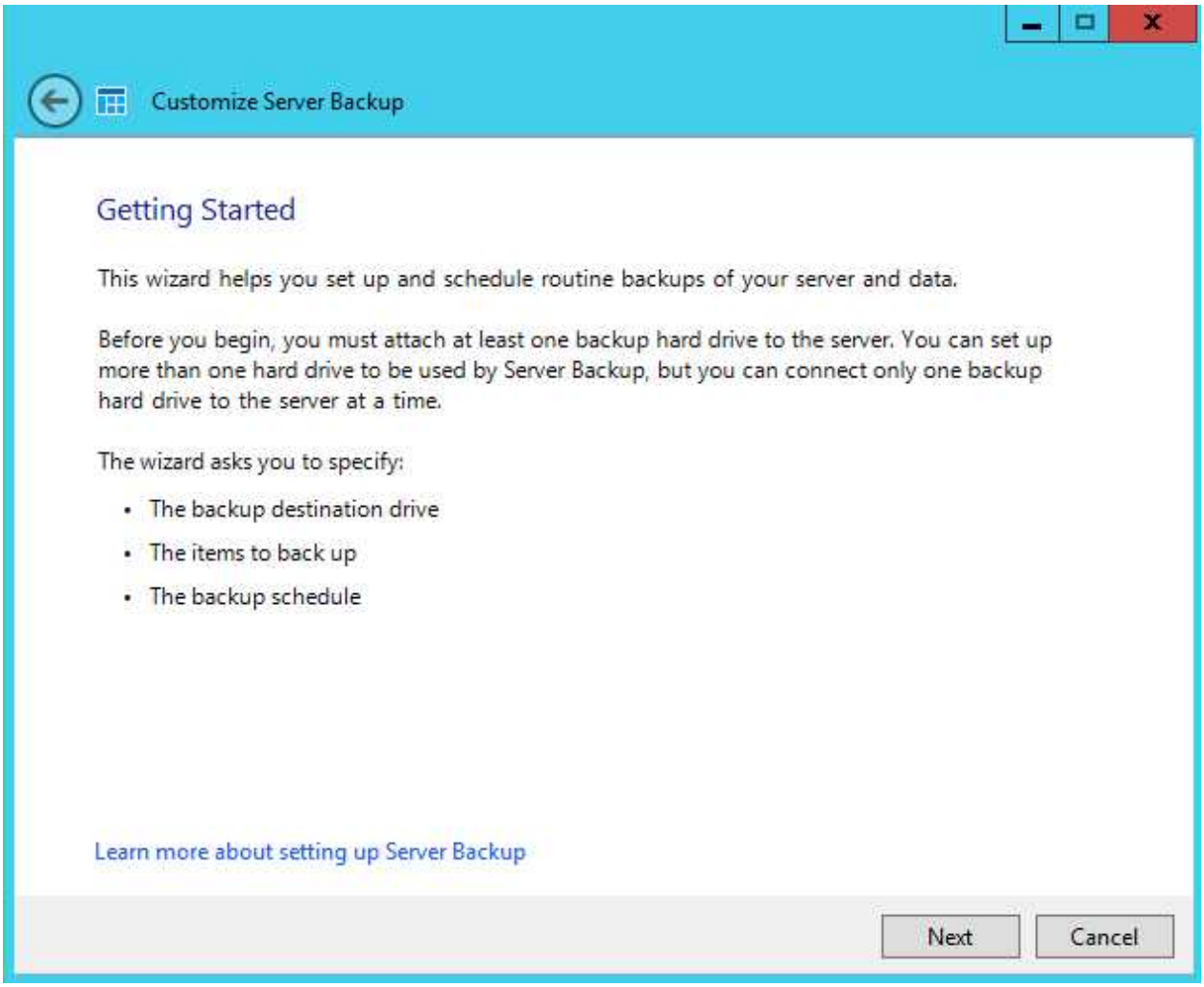
The most important aspect of having at least a data backup is the ability to maintain an off-site backup - used to protect business data from hardware theft, fire or flood. A business can recover from the loss of a physical building. Can the same thing be said of the data associated with that business?

For the purpose of backing up a server, many methods exist. Microsoft includes a server backup feature in Essentials. That allows one to perform that bare metal restore feature mentioned previously. So, without further ado, let's get this backup feature up and running.

To start, select **Set up Server Backup** in the Dashboard, then click on the **Click to set up Server Backup** task.



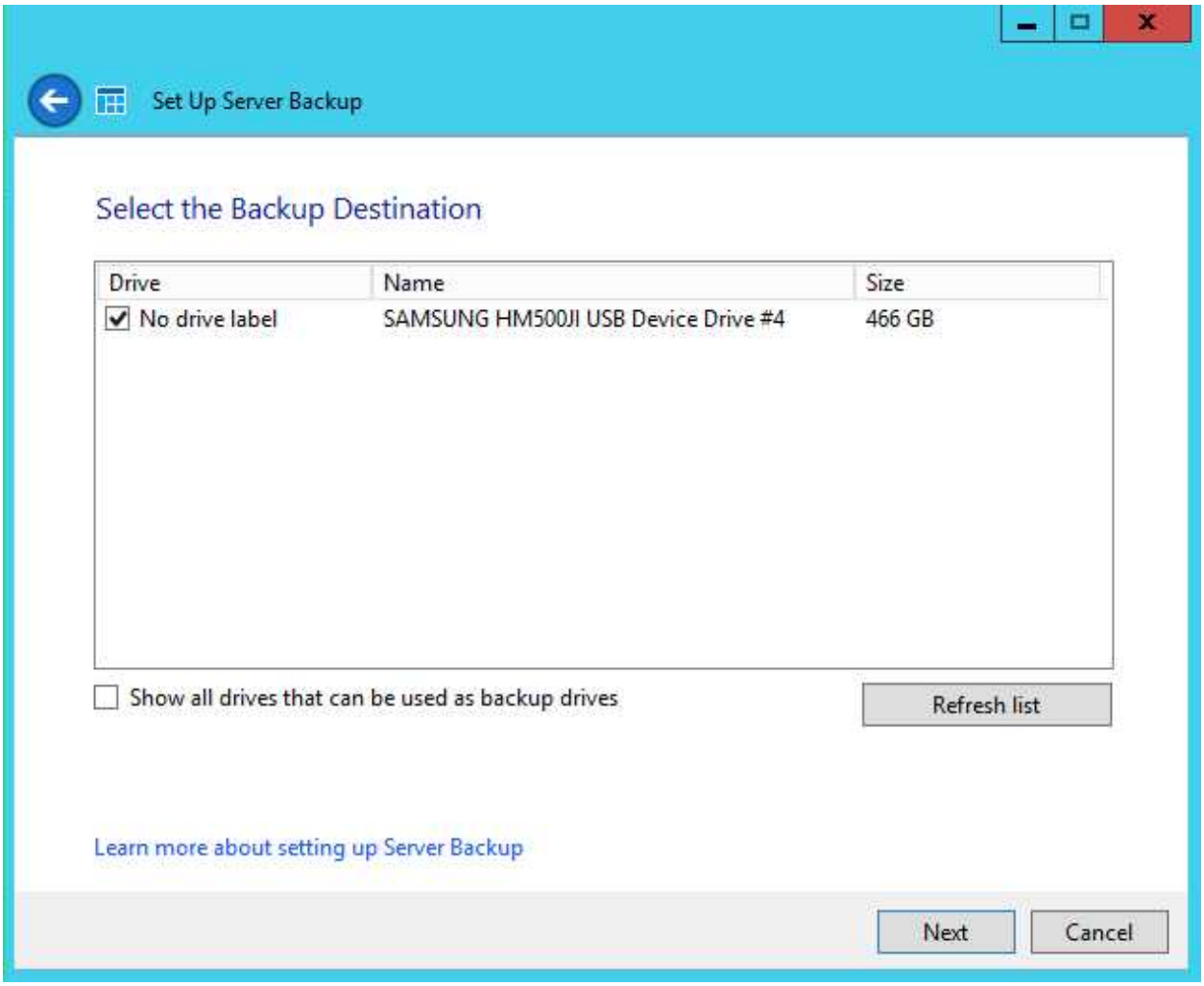
The process starts with Essentials loading the Backup wizard and outlining the drives and data required to perform a complete server backup. A **Getting Started** message lets you know what is required on your part to successfully set up a backup routine for your server. Take note of the requirements and click on **Next**.



For this scenario, I have an external hard drive attached to a free USB port on the server. If you are storing large amounts of data, I would suggest you pick up a pair of multi-bay docking stations, one for on-site backups and one for off-site backups. This will require a total of three sets of drives:

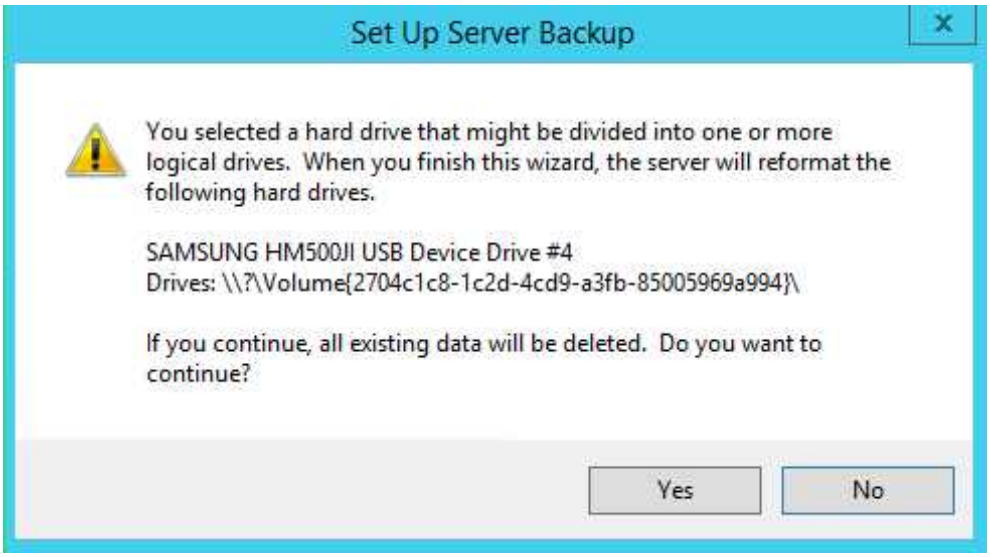
- one on-site backup drive set
- two sets of rotating off-site drives

In addition, Microsoft recommends that your backup drives have 2.5 times the capacity of your data (once data is fully loaded on to the server) which simply provides room for future data expansion.



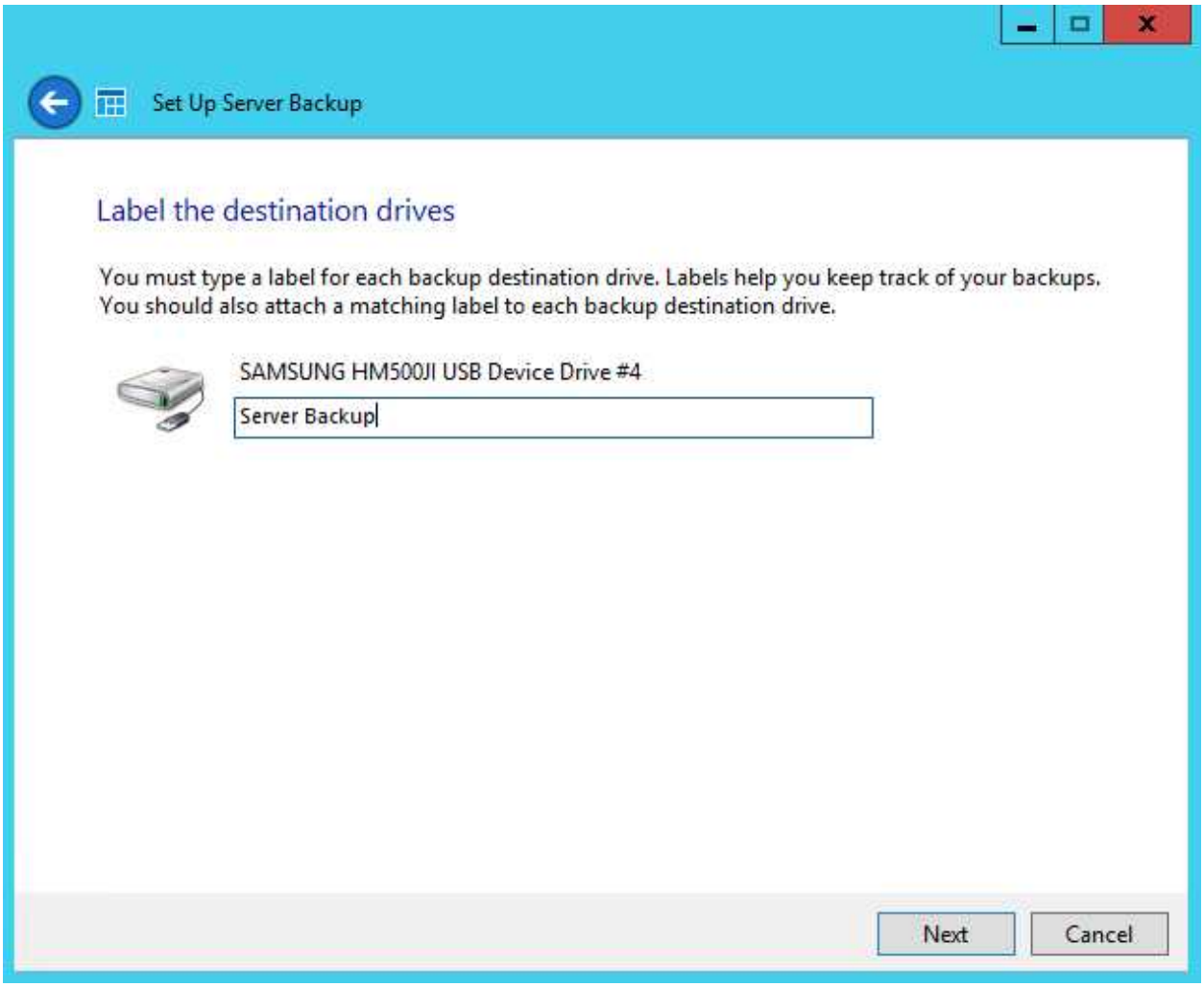
Our external drive is shown.

Getting back to this particular example, tick the box associated with the drive to be used for back-ups and click on **Next**. Acknowledge the potential loss of any data on that drive.



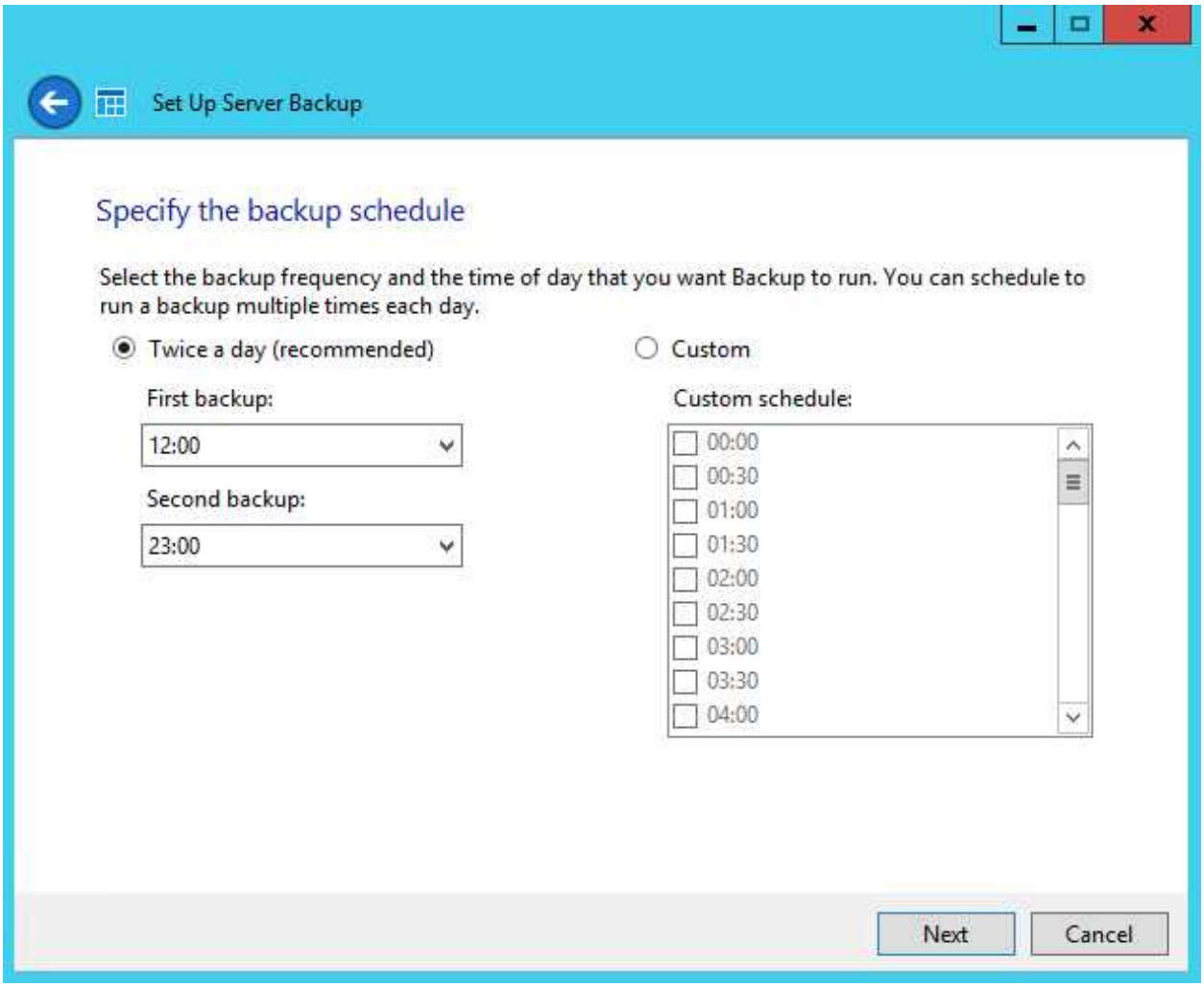
As you may have guessed, the drive must be formatted before it can be used.

Next, fill in the required data to add a drive label.



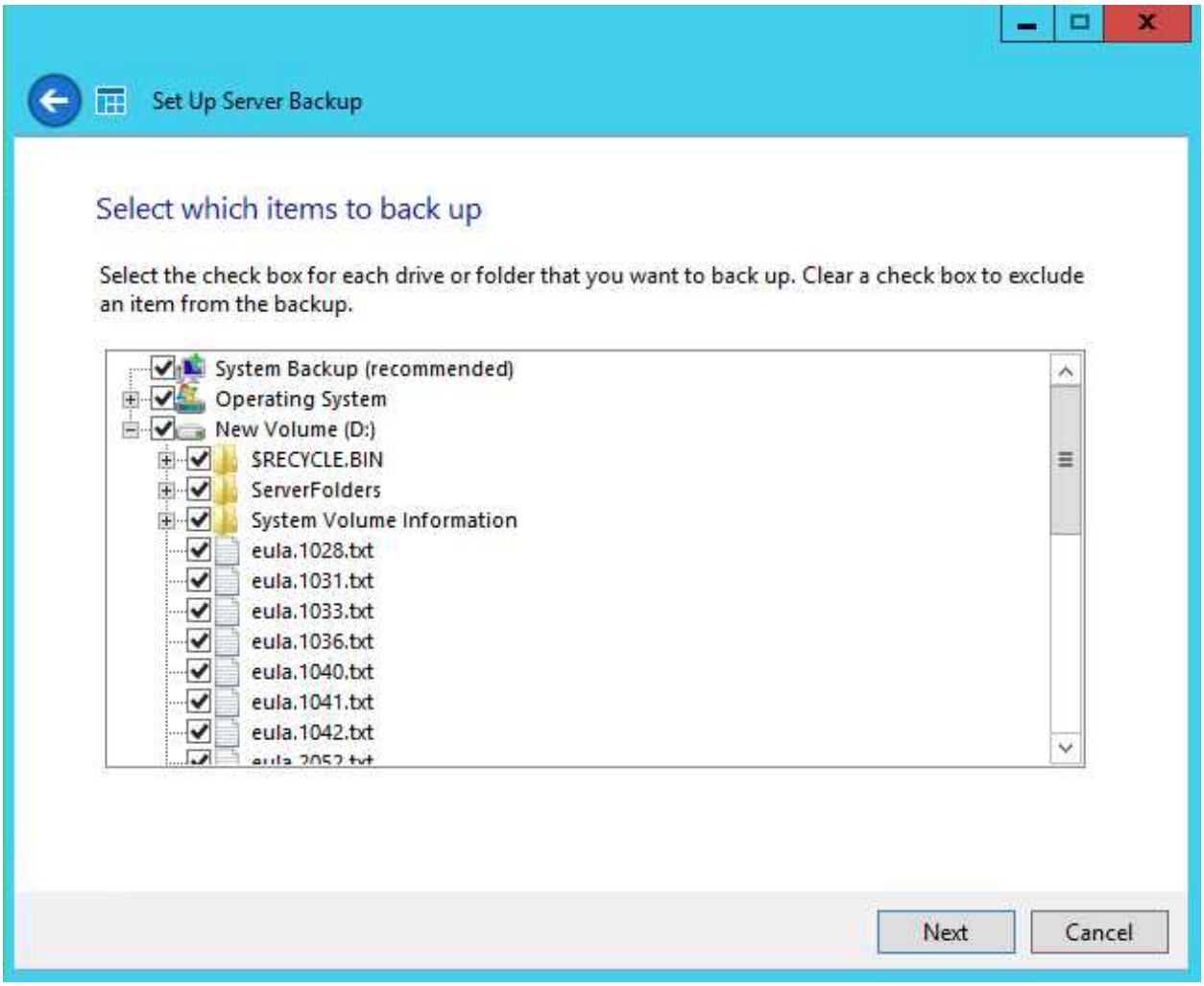
Click **Next** once you have named your backup drive.

You will need to specify a backup schedule. You can accept the default, which backs up twice a day, or create your own schedule. Click **Next**.

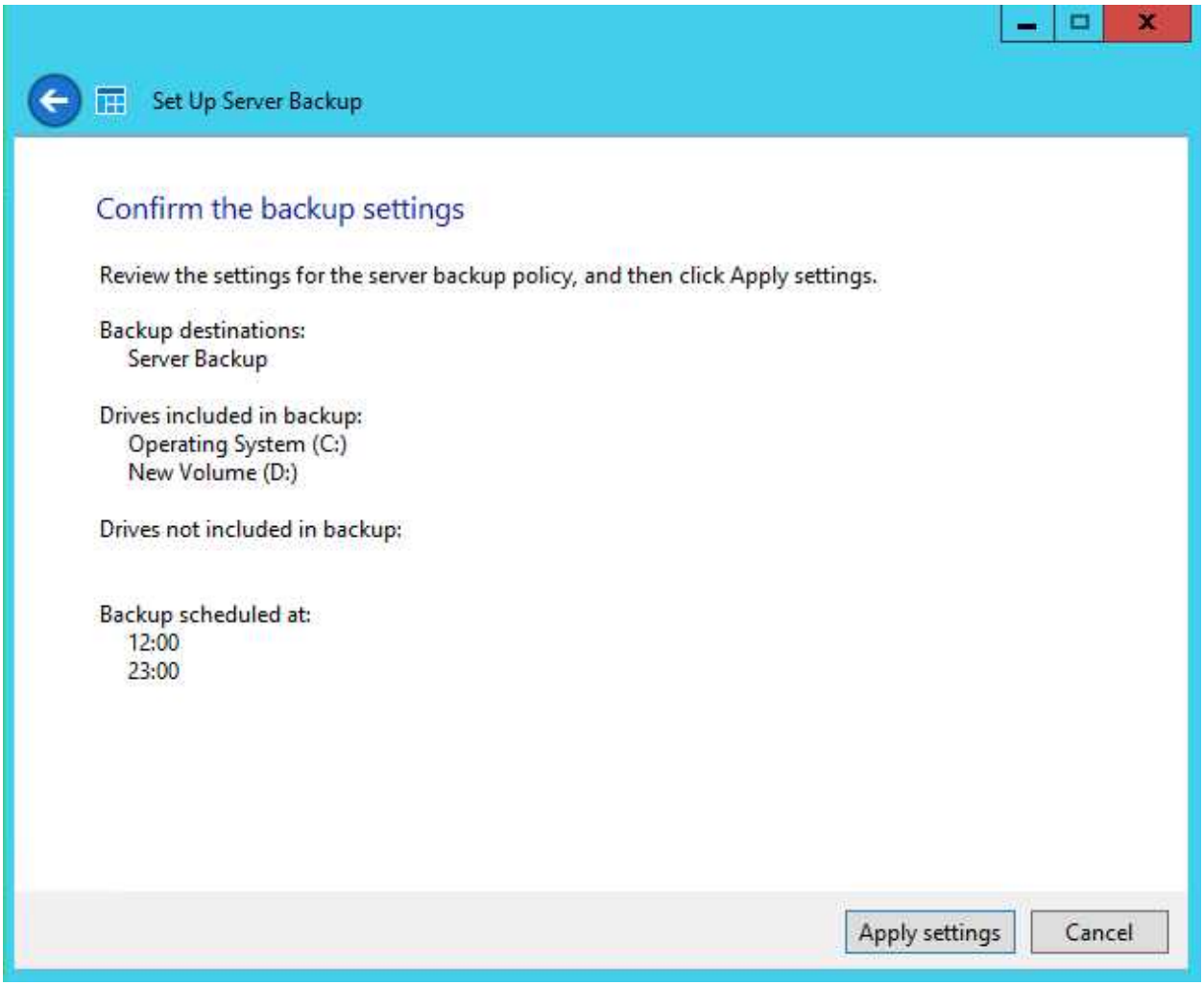


In the next screen, you need to decide what you wish to back up. As I noted at the beginning of this section, I would separate the system drive from your data folders. This way, you can break up these potentially large chunks of data into manageable blocks. I do recommend that you back up the complete C & D system drive in the event that you need to restore the server itself.

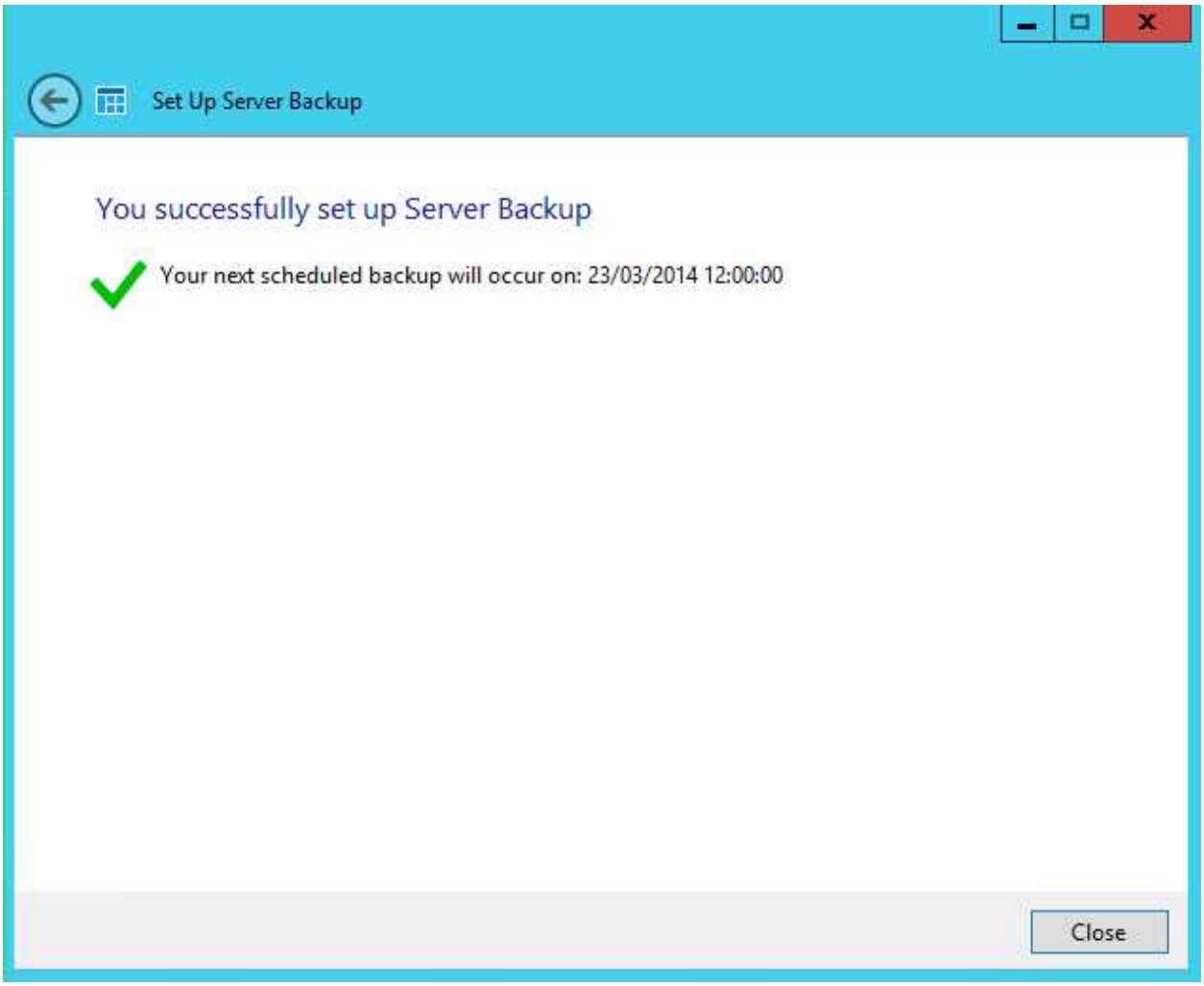
Once you selected what you want backed up, click on **Next**:



and confirm/apply your settings.



The wizard applies your desired settings and finishes up. Click on **Close** to exit this wizard.



Please note that this is one section you may want to initially skip and return to set up later once you have completely set up your server. Just make sure you do not delete any data from your original sources until you have a successful backup!

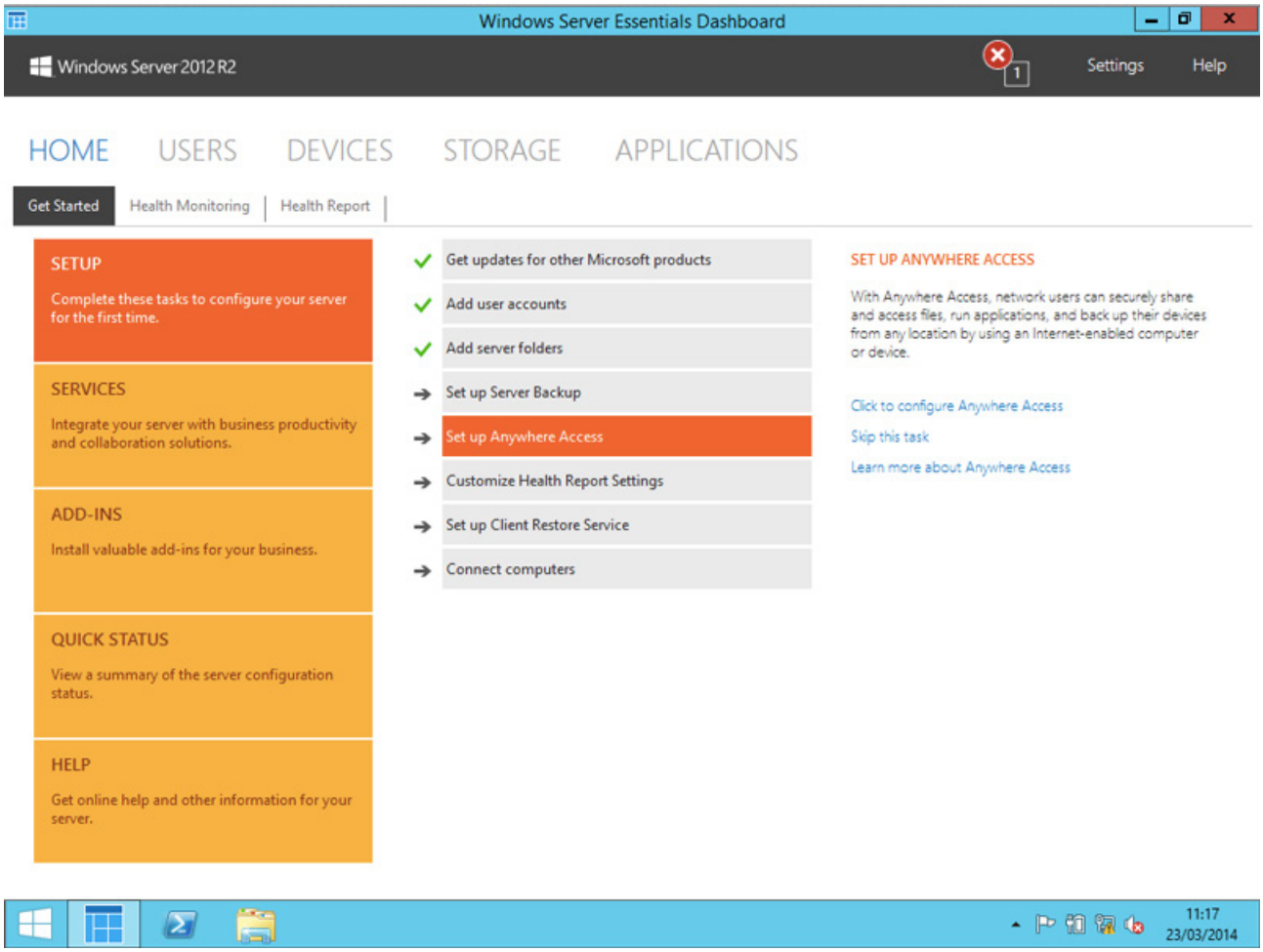
Set up Anywhere Access

Anywhere Access on a Windows Server 2012 Essentials computer consists of two components, **RWA** (Remote Web Access) and **VPN** (Virtual Private Network). From a computer that has the Dashboard connector installed, one can securely access the server and computer desktops on the LAN from any remote location through a web browser. You can still access the computers on the Local Area Network from computers that have not had the connector installed, the downside is that the connection is not a secured connection. This is the RWA side of Anywhere Access.

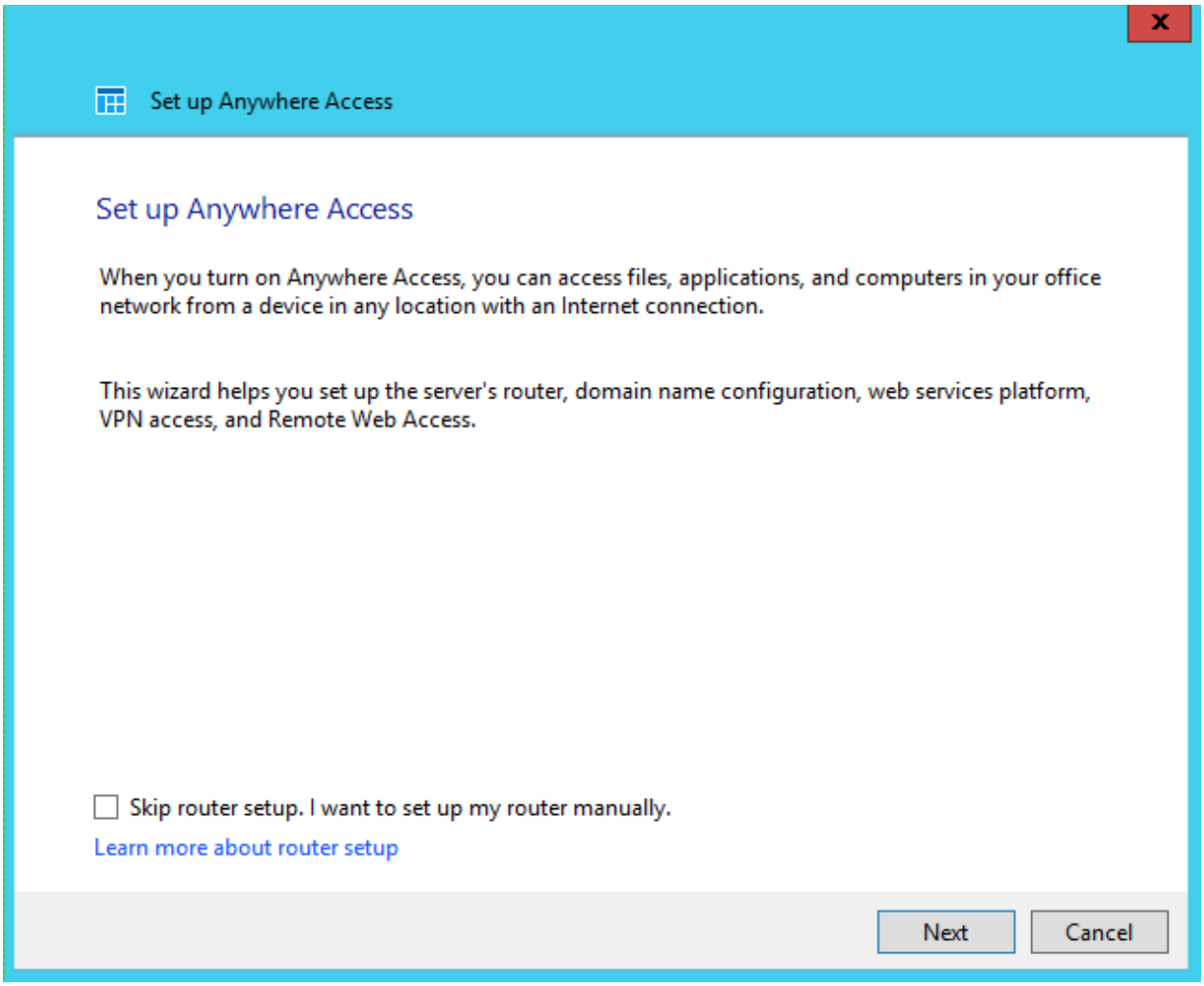
The VPN half of Anywhere Access uses a protocol that is basically a network connection similar to your NIC adapter connection. However, using VPN, instead of connecting directly to the Internet, a

remote computer actually accesses the local network from that remote location through the Essentials server and then back out to the Internet. This connection is encrypted and is therefore secure. When dealing with potentially sensitive material, you want that secure connection when using a public network.

To set up your server for Anywhere Access, select the appropriate setup option in the Dashboard, then click on the **Click to configure Anywhere Access** item.



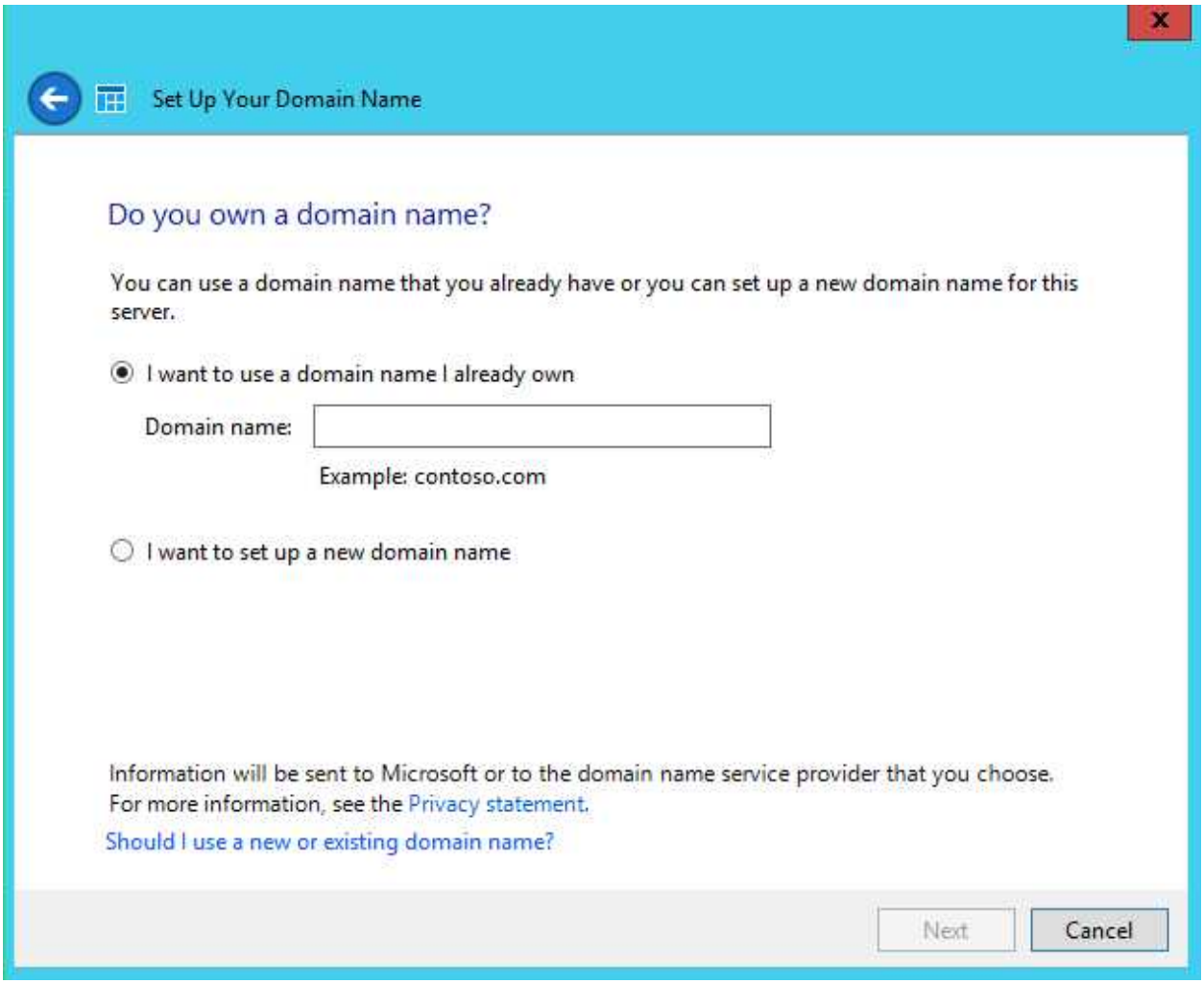
A wizard opens to begin the Anywhere Access process. Click **Next**.



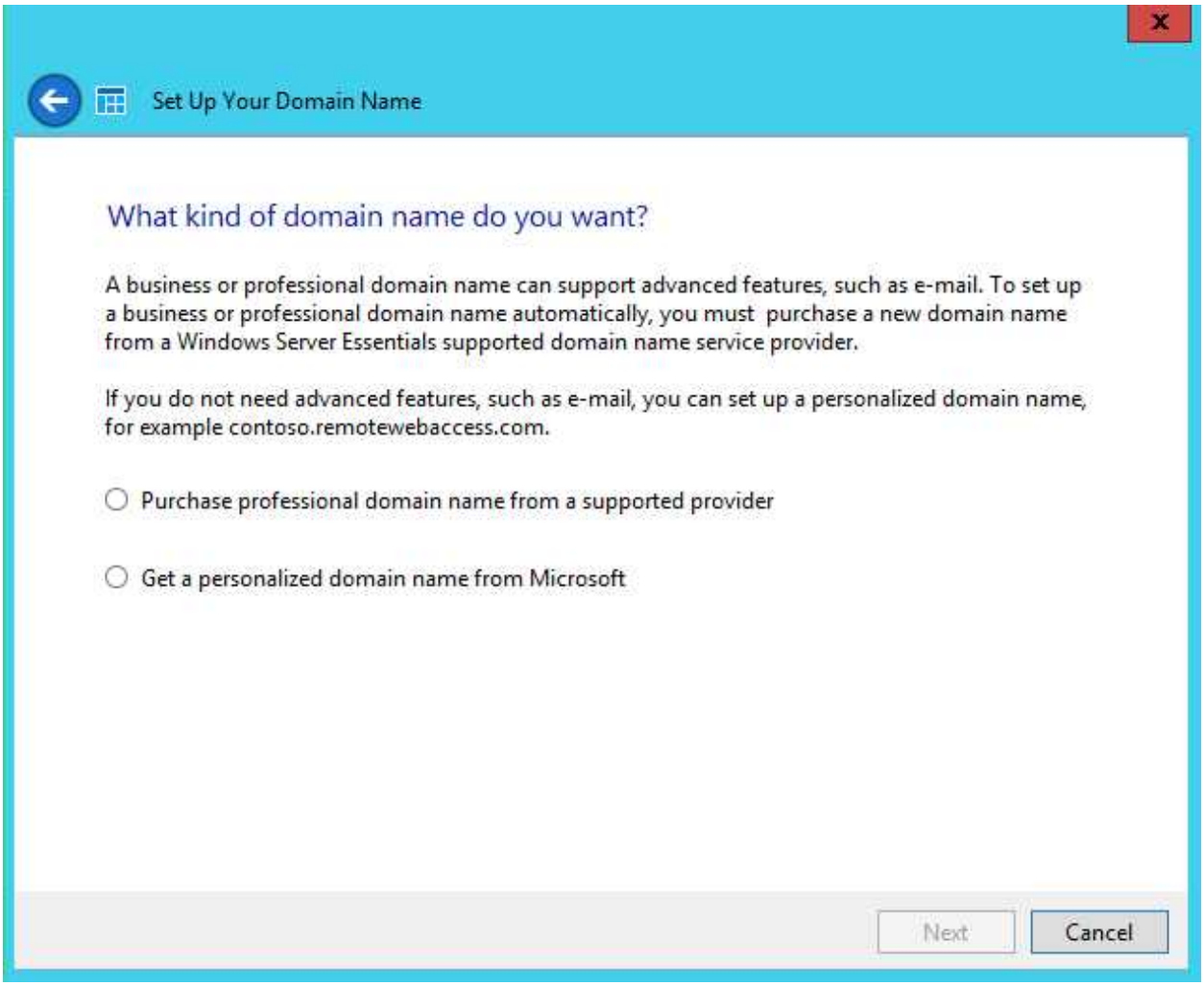
Configuring Anywhere Access.

As you'd expect, the Anywhere Access wizard offers an automated method to configure your server - and indeed your router - for remote access. On the server side, the wizard works well however, automatically configuring routers can be problematic. It's worth attempting the automatic setup, but if you struggle you'll see an option is included to skip the router setup. Select this and you'll need to manually forward the relevant ports on your router to the server's IP address.

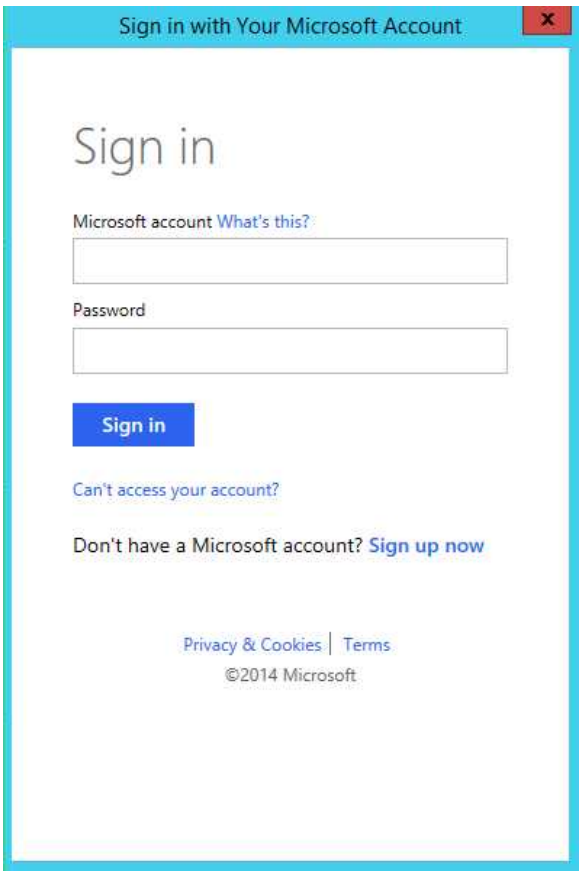
The first task is to configure a domain name for the server. In the following screen, you are given the choice to use a domain name you already own or to set up a new domain name. We are going to use the second option:



So click on the "**I want to set up a new domain name**" radio button and click **Next**. In the next screen you are asked if you want to purchase a domain name or get one from Microsoft. As the Microsoft route is the easiest way and cheapest (free) way to go, we will select that option.



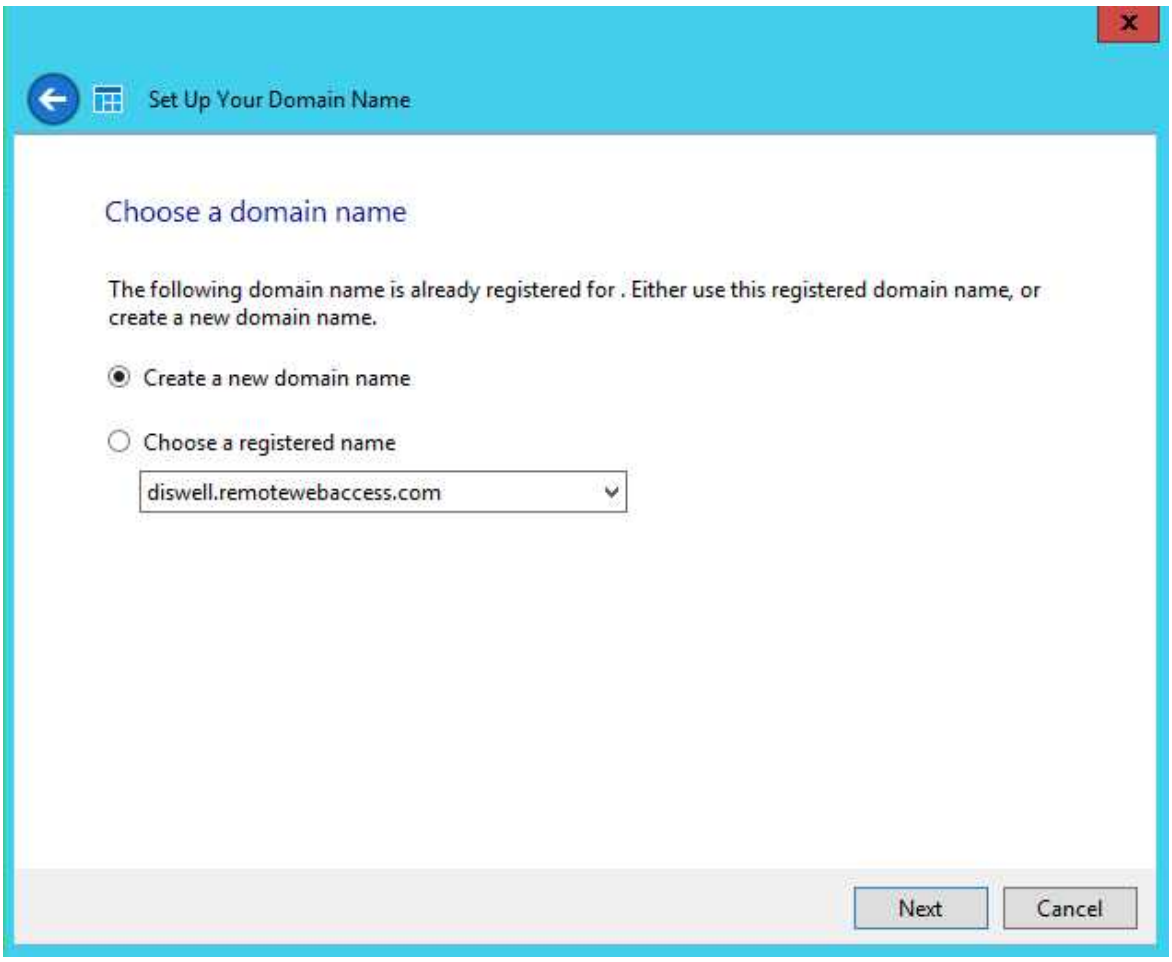
Click on **Next** once again.



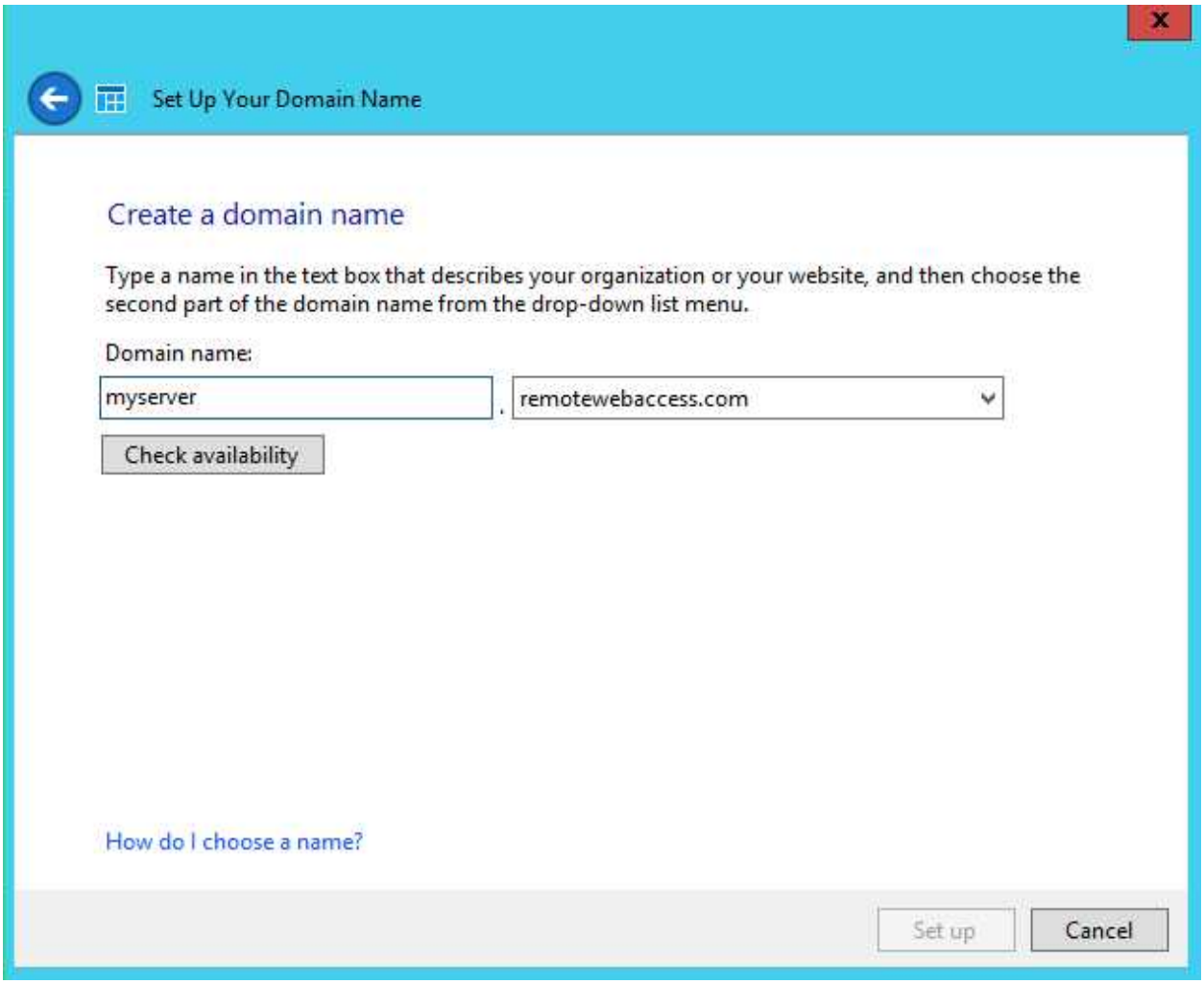
A Microsoft account is required to get a free domain.

For some, this may be an all stop moment, as you need to have a Microsoft account to use this path. However, as with the domain name from Microsoft, this costs you nothing. To obtain an account, click the **Sign up now** link and register. Be sure to record the account name and password and save it in a secure place for future use!

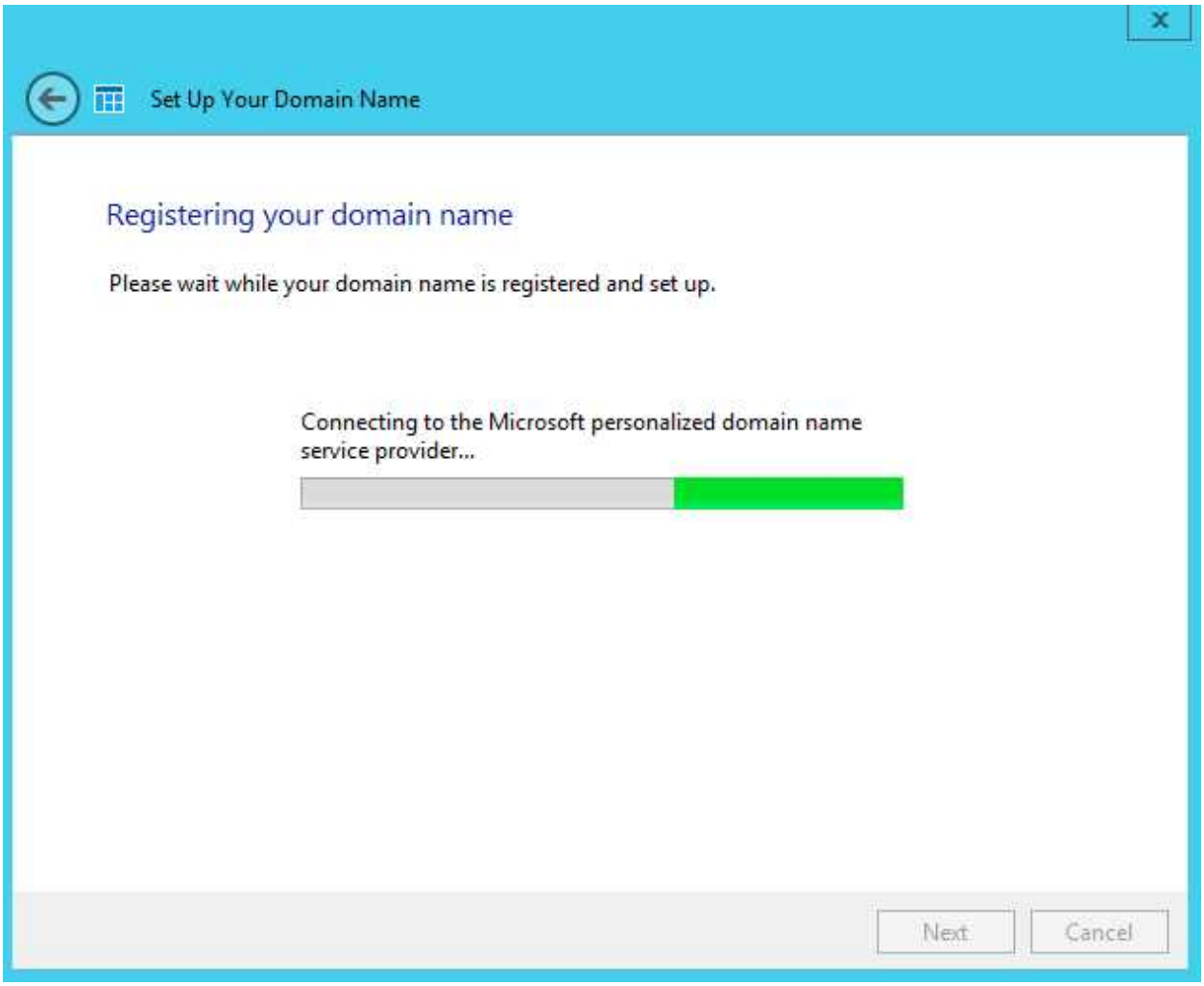
Once you have your account, enter the details and click **Sign in**. The wizard begins the process, and in this case produces a list of domain names associated with my particular Microsoft account. I am going to create a new domain name, so I will use that option.



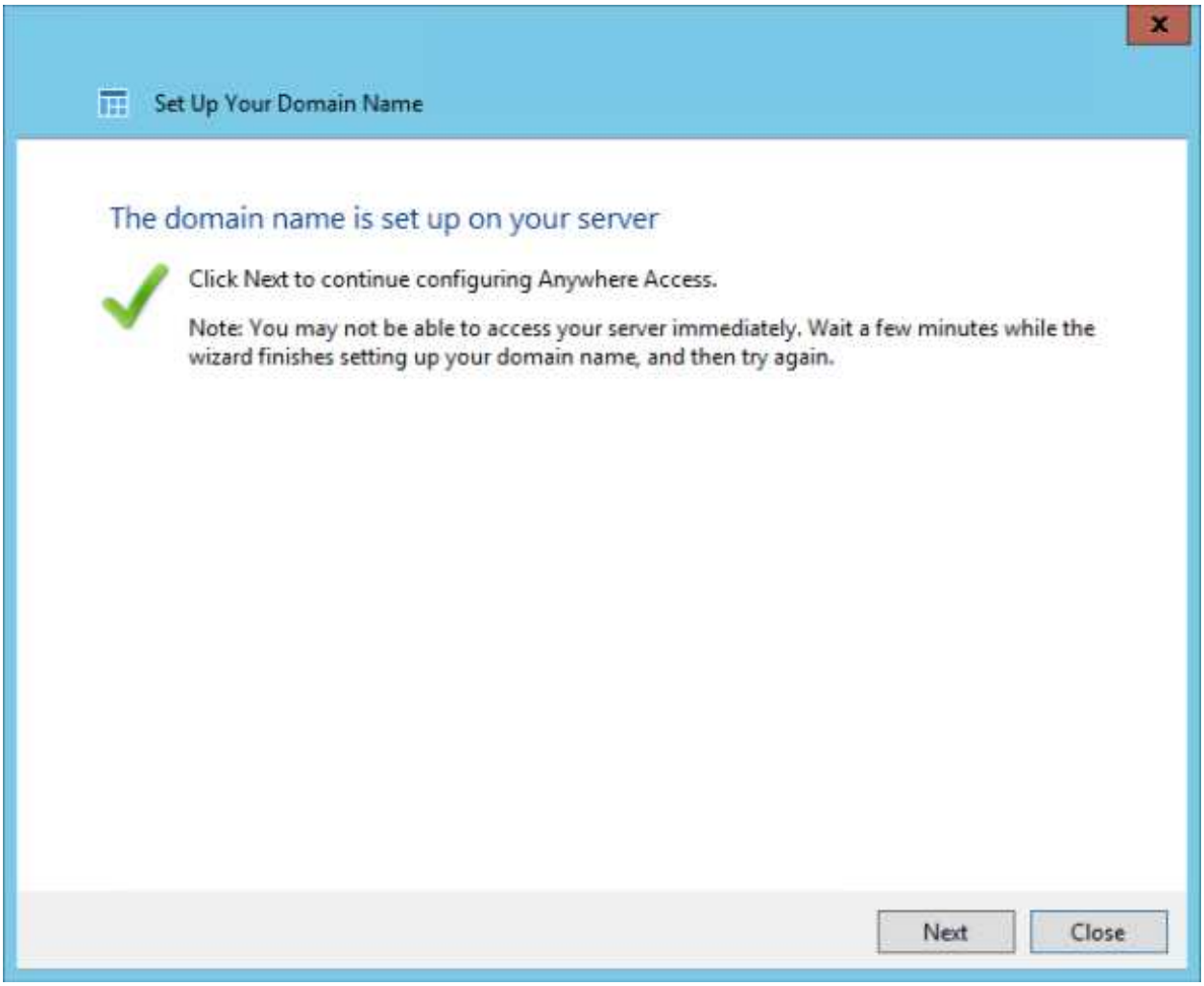
Click on **Next**, type in a new domain name, and click on the **Check availability** button. If that domain name is available, you will get the message as noted below, and it is time to click on the **Set up** button.



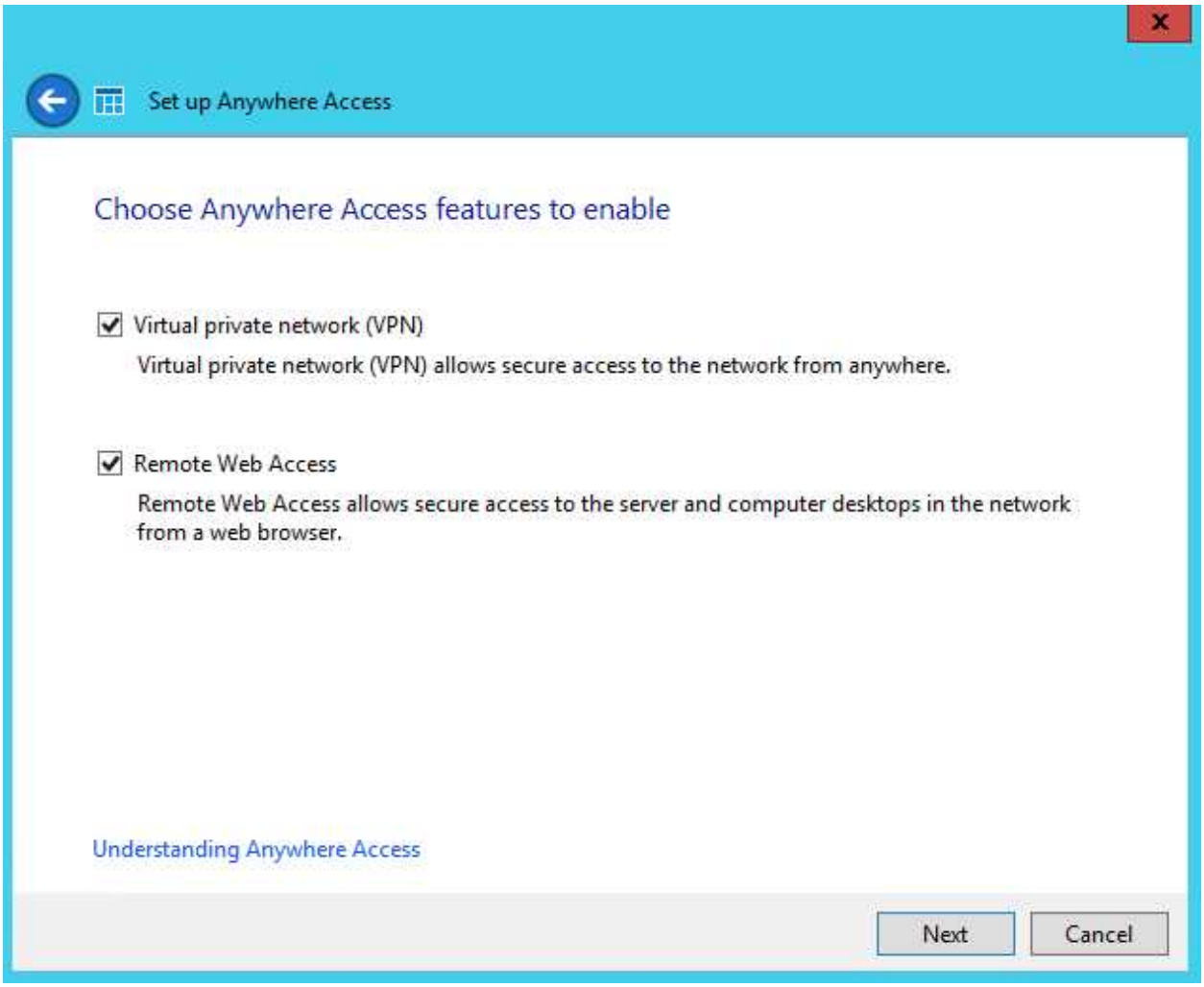
The registration process begins:



and if all goes well you get the following screen. You now have your Domain set up for remote access, and all that is left to do is click on **Next** to enable the Anywhere Access features.

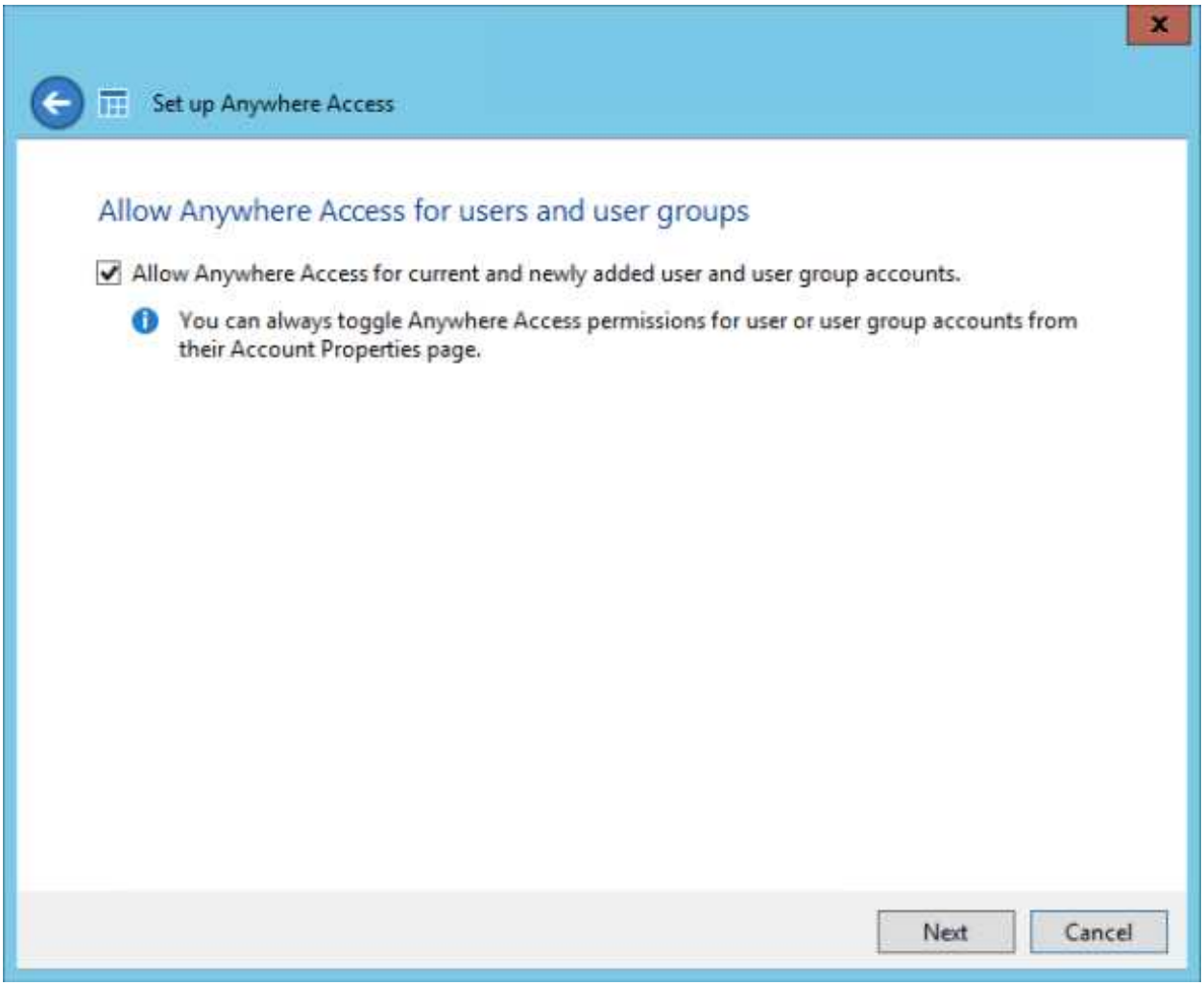


Based upon your particular needs are for remote access, you can set up a VPN connection and access to the server from a web browser.

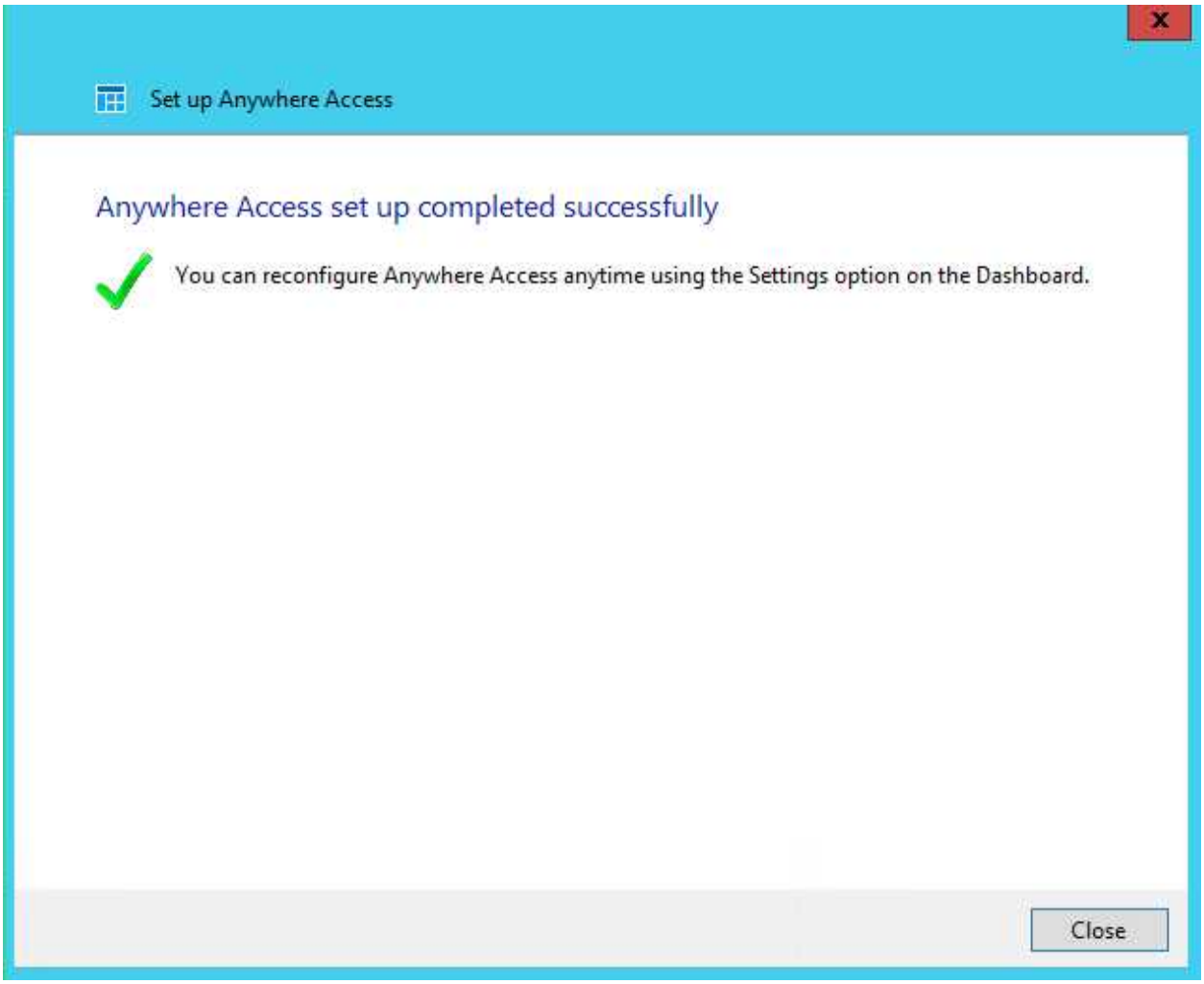


Tick the appropriate boxes and click **Next**.

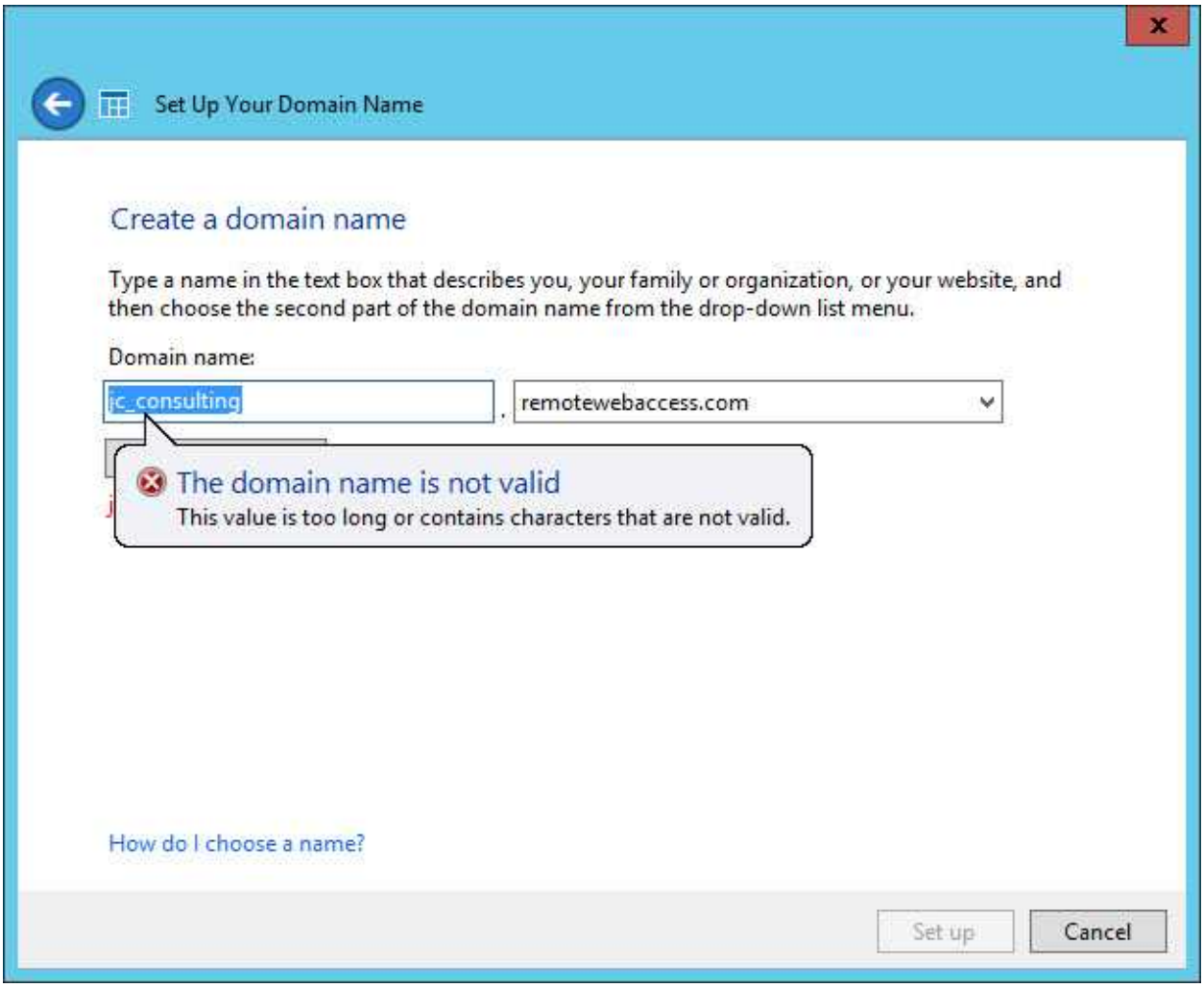
In the next screen, the default option is to allow remote access to anyone with the appropriate credentials. You may want to uncheck this box and decide on a per user basis whether remote access is needed.



Once decided, click **Next** to finally complete this task. Click on the **Close** button to take you back to the Dashboard.



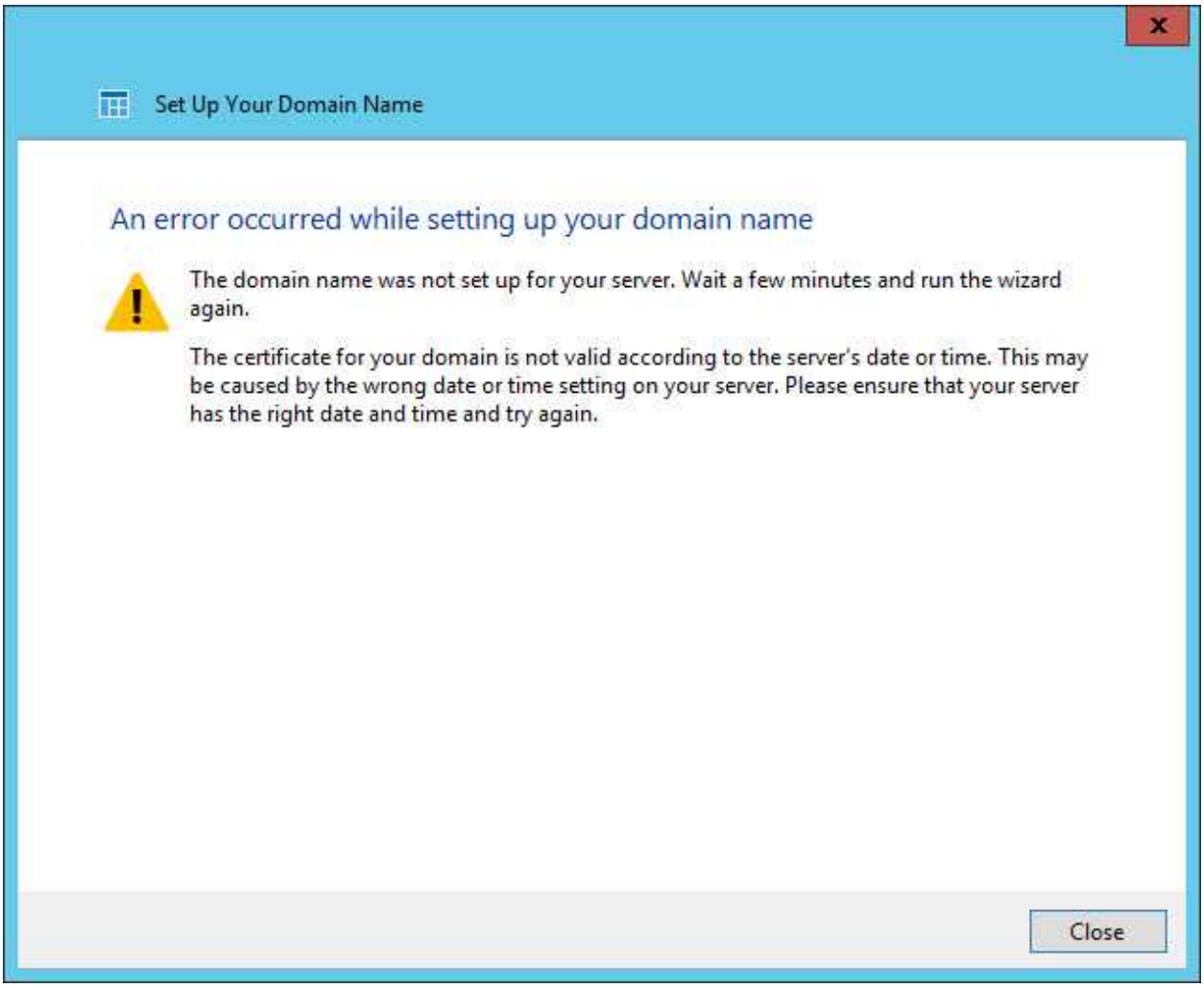
Before moving on, you might take note of few common errors. If you attempt to use an invalid character for the Domain name, you will get this message:



- The name can contain a maximum of 63 characters.
- Only letters, numbers, or hyphens (-) are allowed. The name must begin and end with a letter or a number.

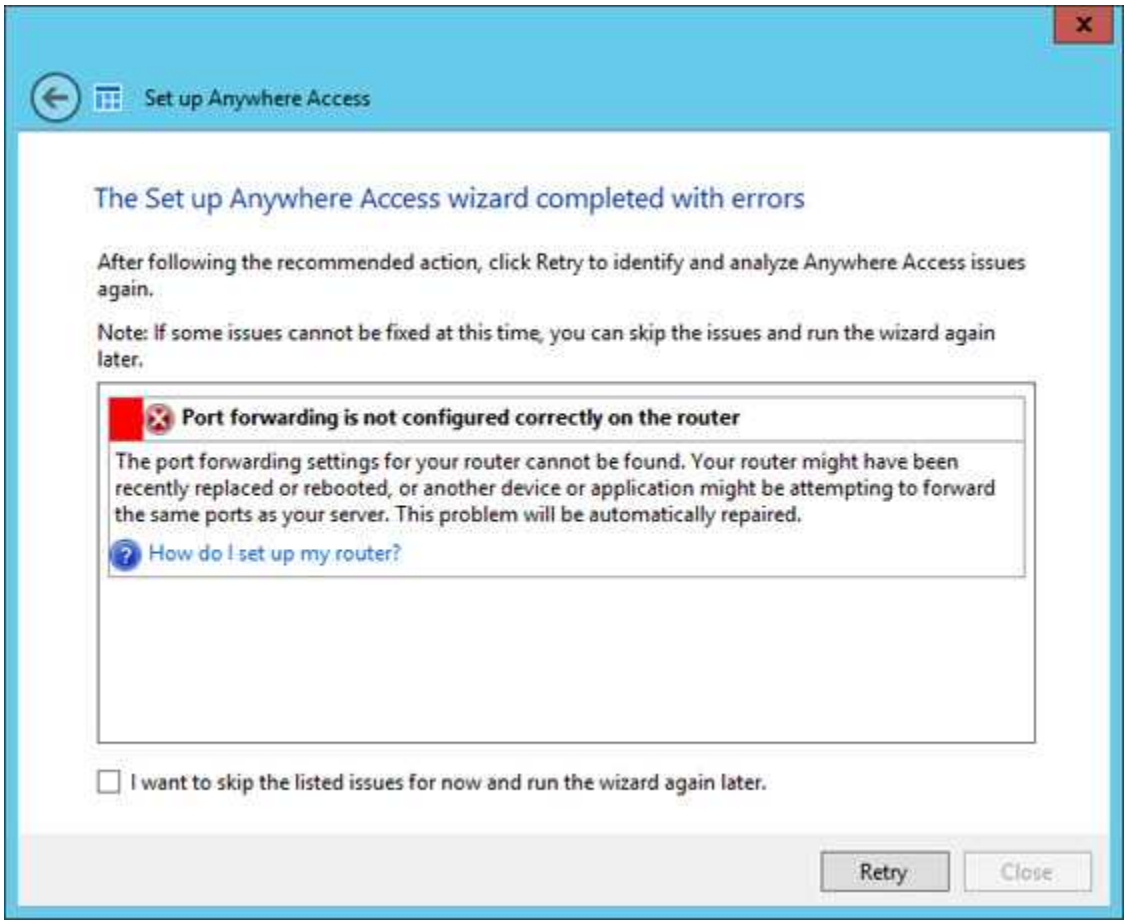
Please note that the Domain names are not case sensitive.

If you get an error message such as this one:



you might want to check your date and time setting as suggested.

If you get the following error:



The server was most likely unable to automatically configure your router. You will need to configure port forwarding yourself. To do this, you will need to open your router configuration settings web page, typically by typing in 192.168.0.1 or 192.168.1.1 into your browser. Please check with your router documentation on the specific method to access your router settings.

To properly set up port forwarding, you will need to know the IP address of your server. You can obtain this address by opening a PowerShell window on the server (there's an icon on the desktop task bar and on the Start screen) typing **ipconfig** and pressing the <Enter> key.

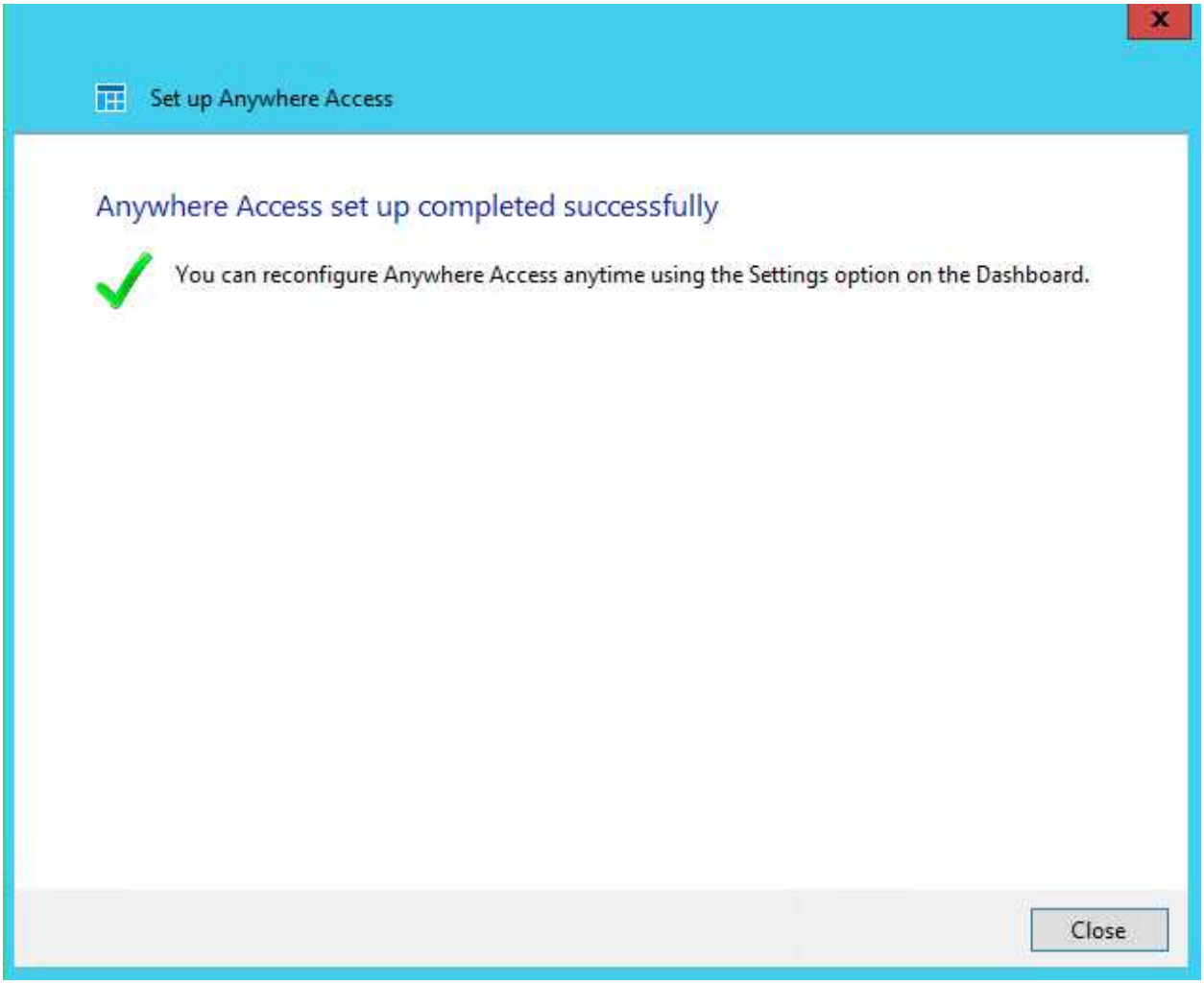
Make note of the IP address and proceed to your router setting page. You will need to forward the following ports:

TCP protocol: Port 80

TCP protocol: Port 443

Once these ports are configured, you should be able to get past the port forwarding error.

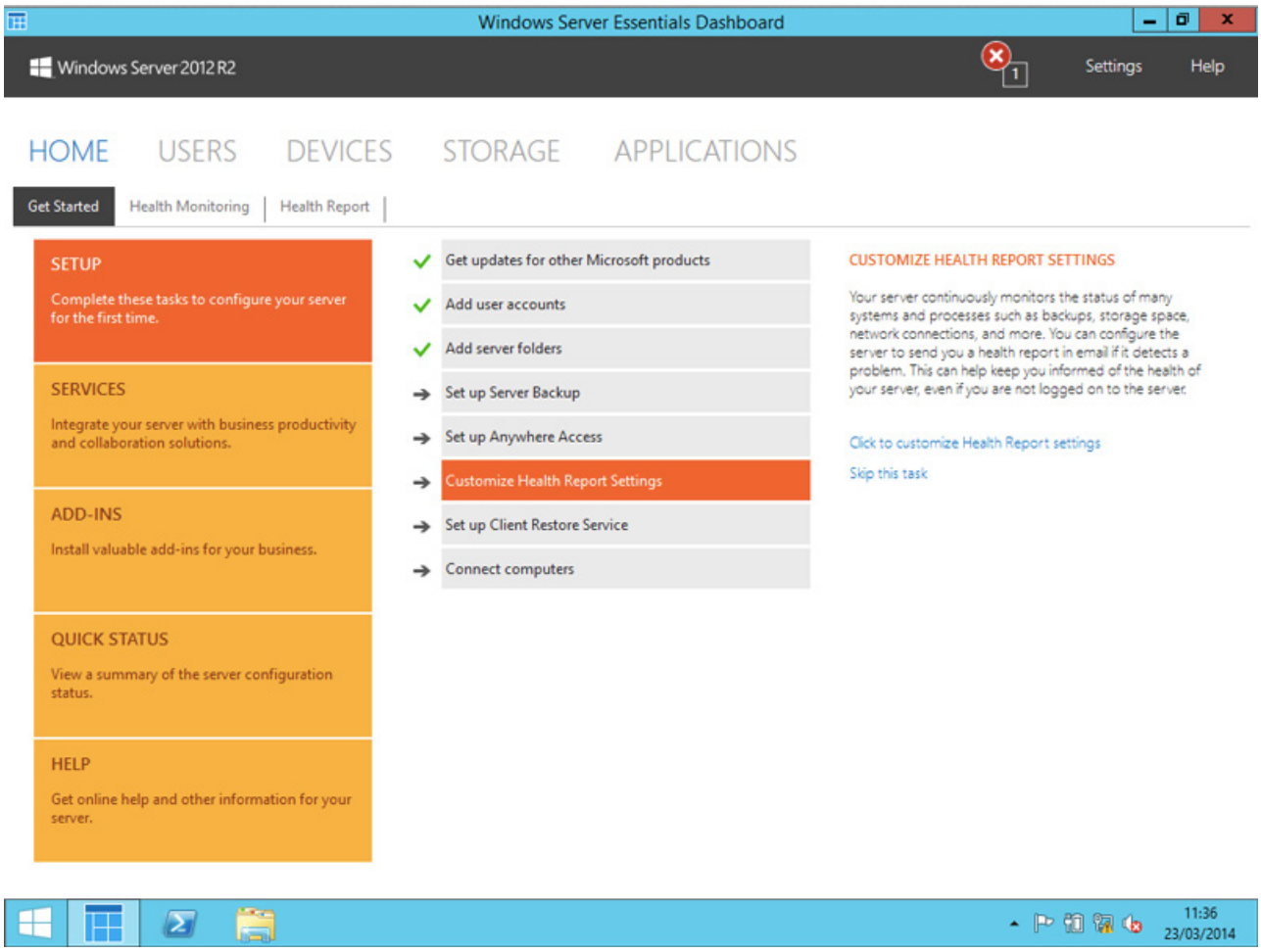
Assuming that you got to this point unscathed:



you will now be able to access your server remotely. We'll cover remote access in detail a little later on.

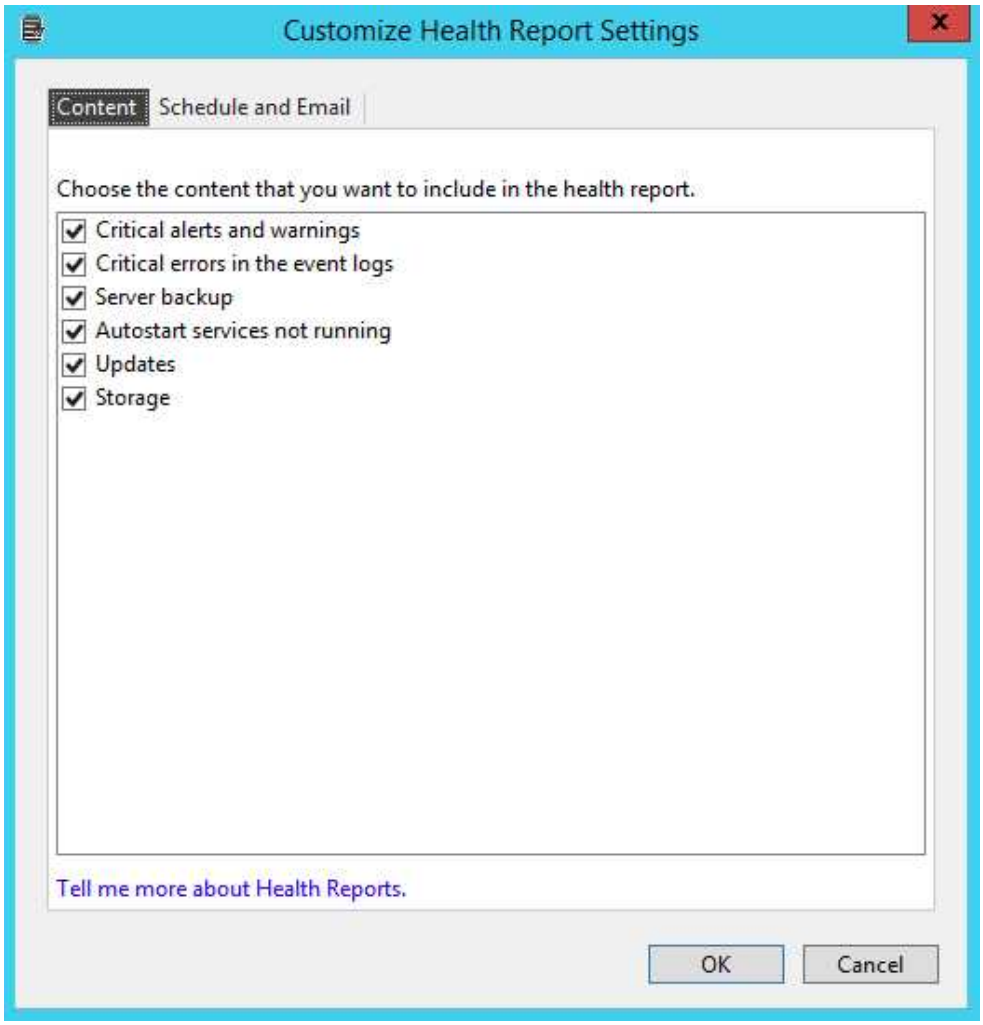
Customize Health Report Settings

New to this release of Windows Server Essentials is integrated health reporting (which superceded the alert emailing feature from the previous release). A popular feature in previous editions of Microsoft's small business server lines, Health Reports were available in Windows Server 2012 Essentials, but only via an add-in. With the benefit of a little extra development time, Microsoft has been able to fully integrate Health Reports into the main release and as a result, **Customize Health Report Settings** is now listed as a setup task.



Health reporting is an integrated option in Windows Server 2012 R2 Essentials.

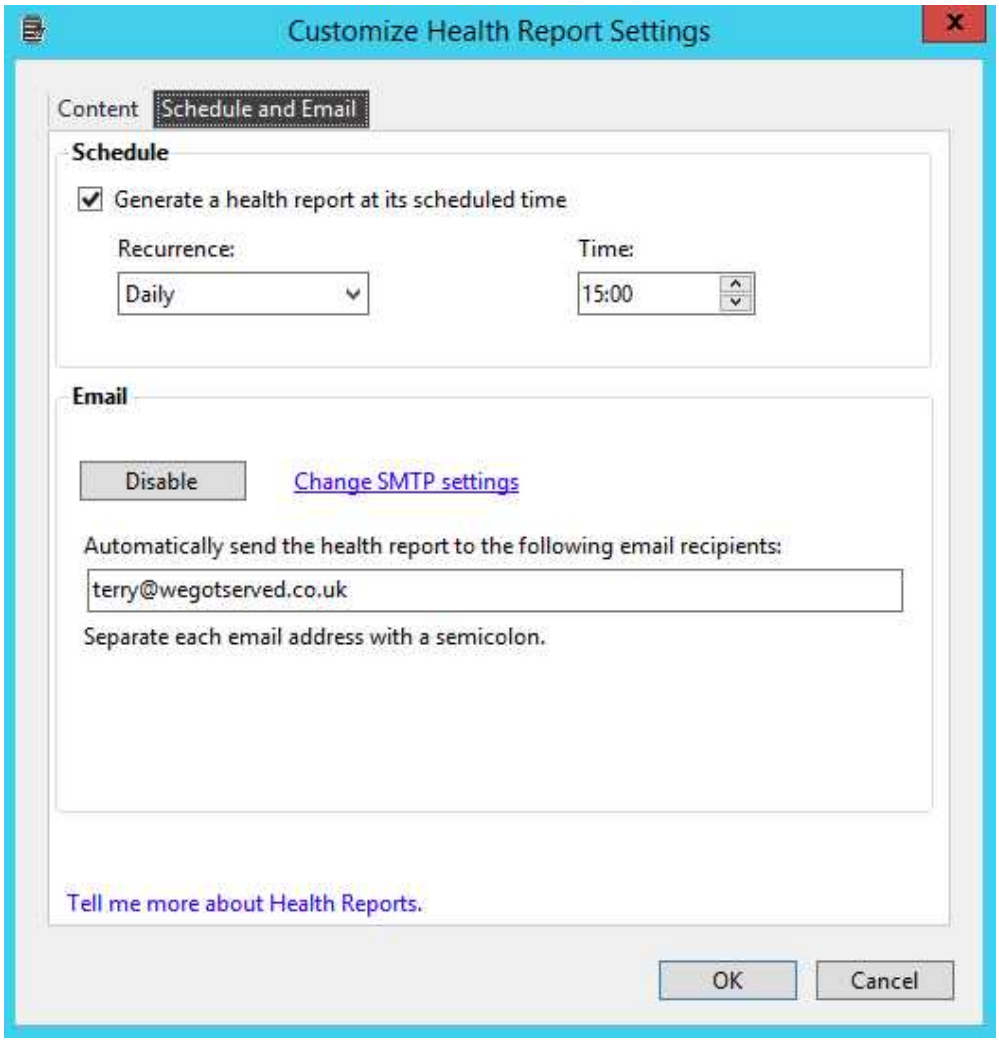
Click the task named **Customize Health Report Settings** and then, on the right hand side of the screen, click the aptly named **Click to Customize Health Report Settings** link**.**



Customizing health report settings.

The straightforward dialog box that appears is split into two tabs. The first tab, Content, allows you to choose the content that is included in the health report. You can include or exclude critical alerts from the server, critical errors in the event logs, server backup messages, alerts about services not starting when you boot the server, software update messages and storage health updates. Simply check the boxes you wish to exclude - everything is included by default.

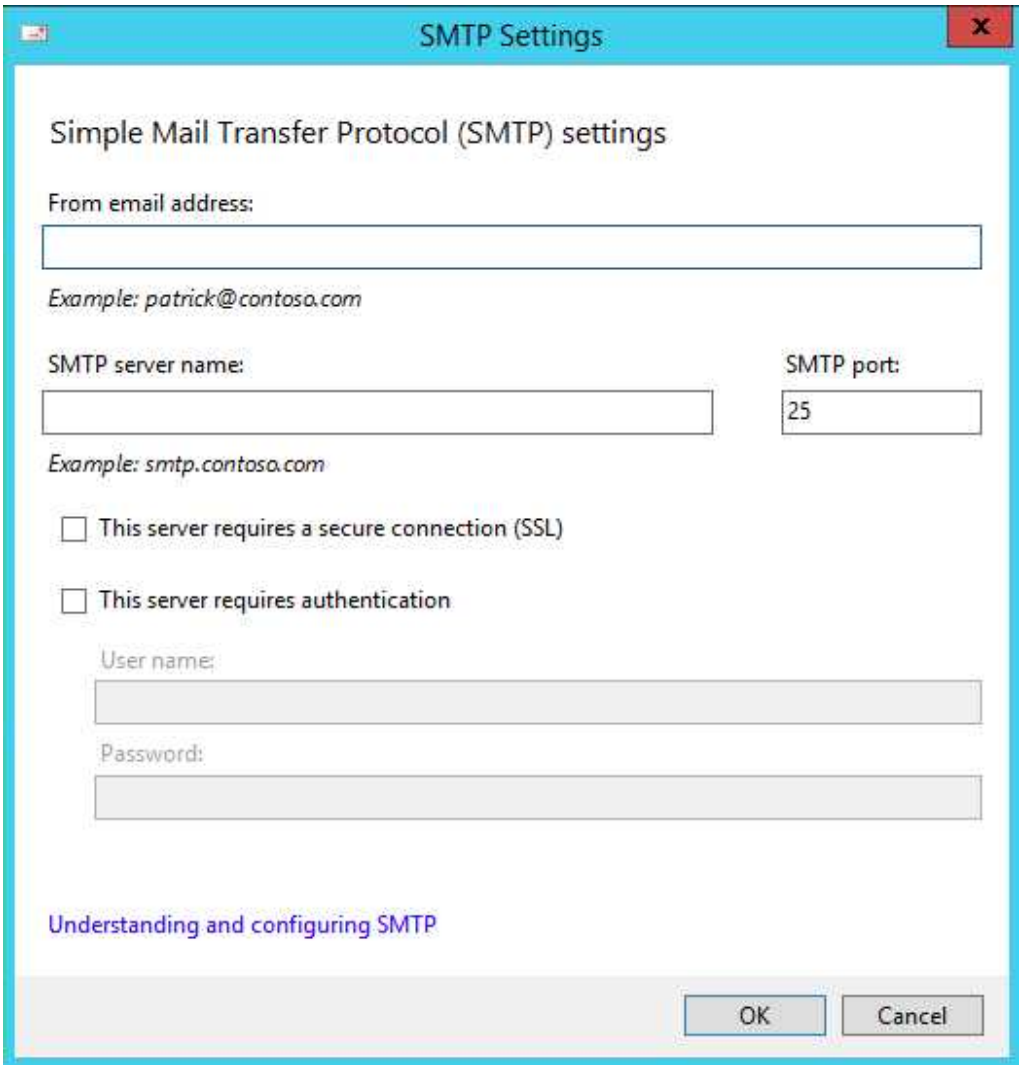
The second tab, **Schedule and Email** allows you to customise when the report is run and configure an email address to which the report is sent.



The Schedule and Email tab.

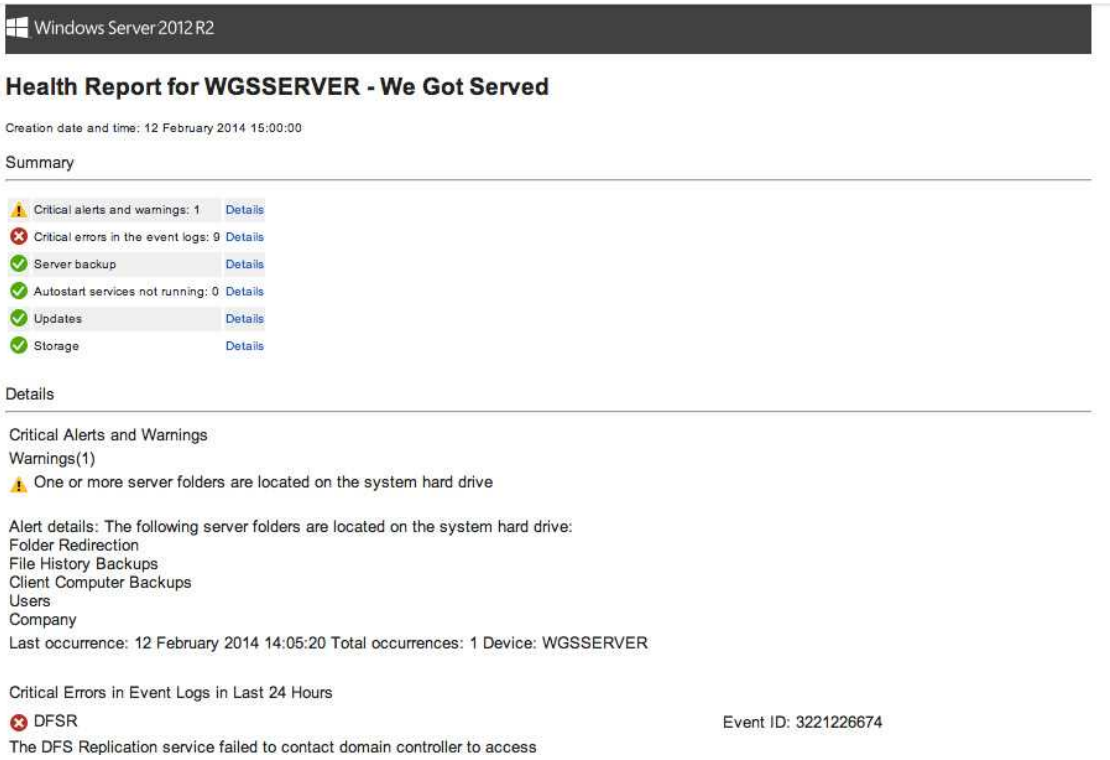
In terms of scheduling, you can choose a daily or hourly report (for the most critically essential servers out there) and set a time for the report to run. Just click the check-box next to **Generate a health report at its scheduled time** and the drop-downs spring to life for configuration.

Then, click the **Enable** button underneath Email and you'll be able to configure your email server details.



You'll need to add your email provider's details to send out health reports.

Enter the sender's email address (you can use your own address), and your email provider's SMTP server details, your username and password (if required by your service provider) and click **OK**. You'll be returned to the previous dialog where you can enter an email address, or addresses (split with a semi-colon) for the users you wish to receive the health report. Click **OK** and you're done.


Windows Server 2012 R2

Health Report for WGSSERVER - We Got Served

Creation date and time: 12 February 2014 15:00:00

Summary

Critical alerts and warnings: 1	Details
Critical errors in the event logs: 9	Details
Server backup	Details
Autostart services not running: 0	Details
Updates	Details
Storage	Details

Details

Critical Alerts and Warnings
Warnings(1)
One or more server folders are located on the system hard drive

Alert details: The following server folders are located on the system hard drive:
Folder Redirection
File History Backups
Client Computer Backups
Users
Company
Last occurrence: 12 February 2014 14:05:20 Total occurrences: 1 Device: WGSSERVER

Critical Errors in Event Logs in Last 24 Hours
DFSR Event ID: 3221226674
The DFS Replication service failed to contact domain controller to access

An example of the Health Report email.

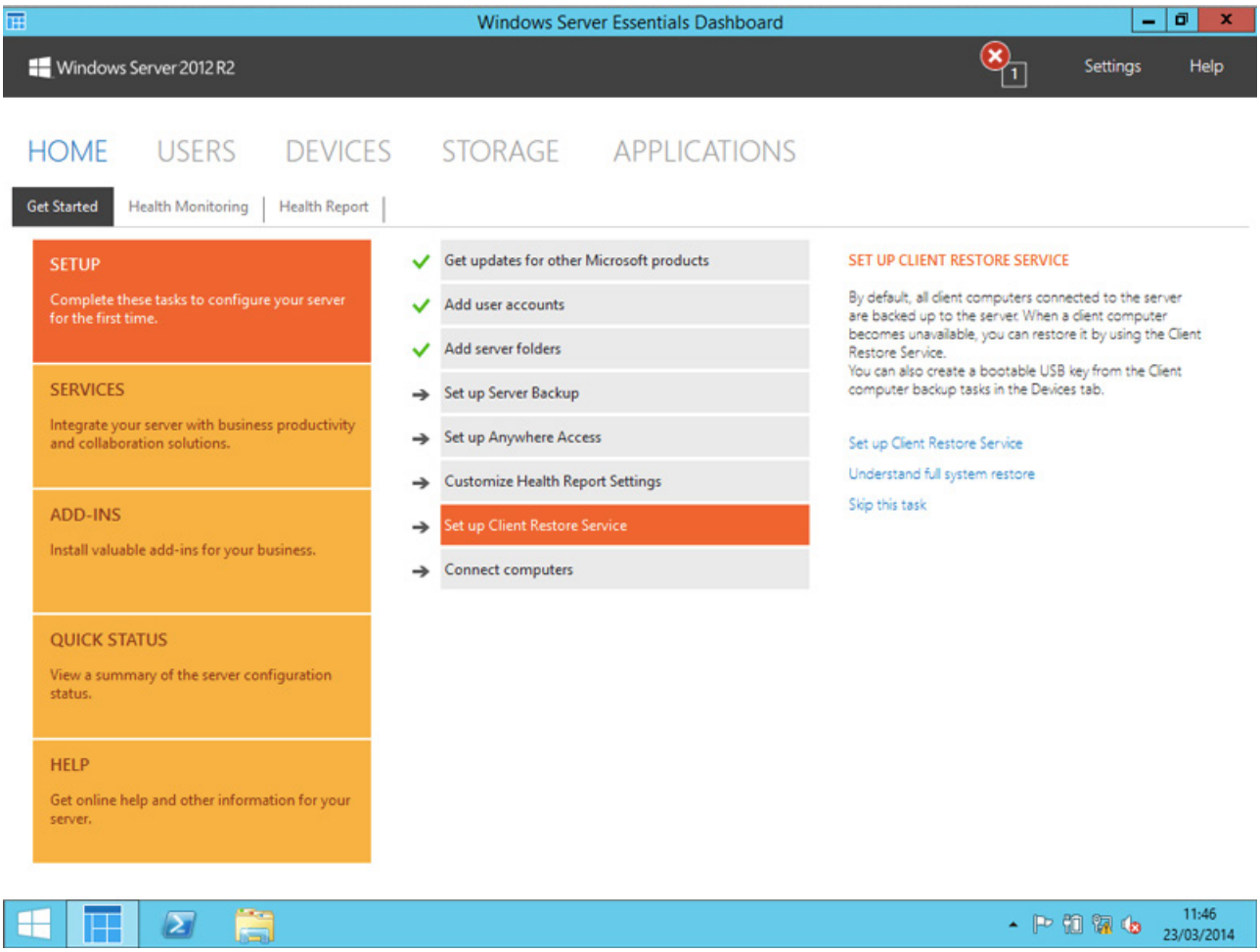
Back in the Dashboard's Home screen, you'll see two tabs at near top of the screen called **Health Monitoring** and **Health Report** which are used to manage and monitor your Windows Server 2012 R2 Essentials system health. We'll take a detailed look at managing system health a little later in the book. For now, let's continue through our setup tasks.

Set up Client Restore Service

Also new to the setup tasks list in Windows Server 2012 R2 Essentials is **Set up Client Restore Service** and your first question is undoubtedly, "Hey, what's the Client Restore Service?" Client Restore (also known as a Full System Restore) allows you to fully restore a client PC from a client backup that has been stored on the server. So, if one of your client PCs has a fatal error - say, the hard drive crashes - you can simply pop in a new hard drive and install the backup image.

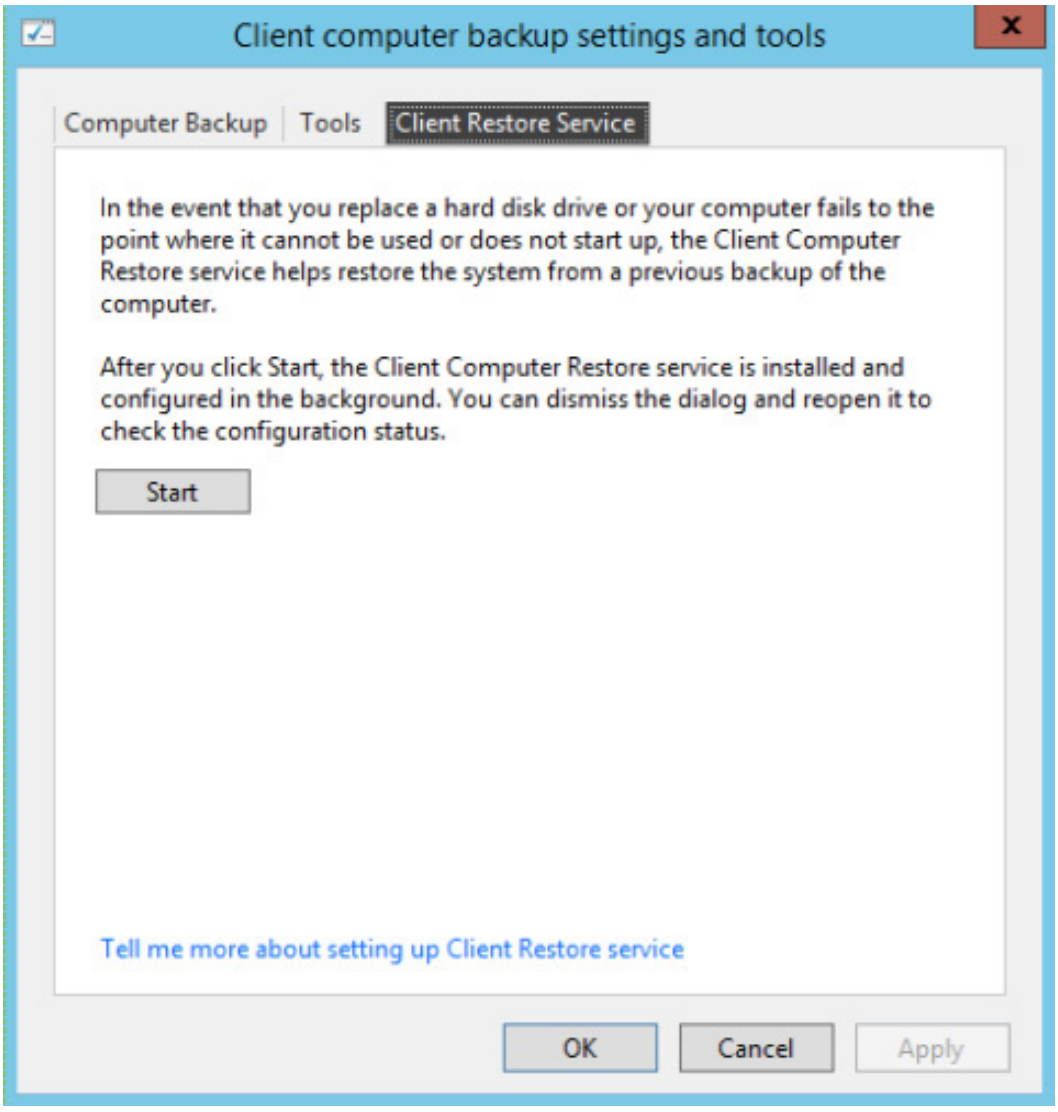
In a very short time, that PC is back up and running with all apps, settings and data restored just as it was when the backup was taken. Yes, it's where Windows Server 2012 R2 Essentials truly saves the day.

Click the **Set up Client Restore Service** task and then the similarly named link over on the right.



The Client Restore Service Setup task.

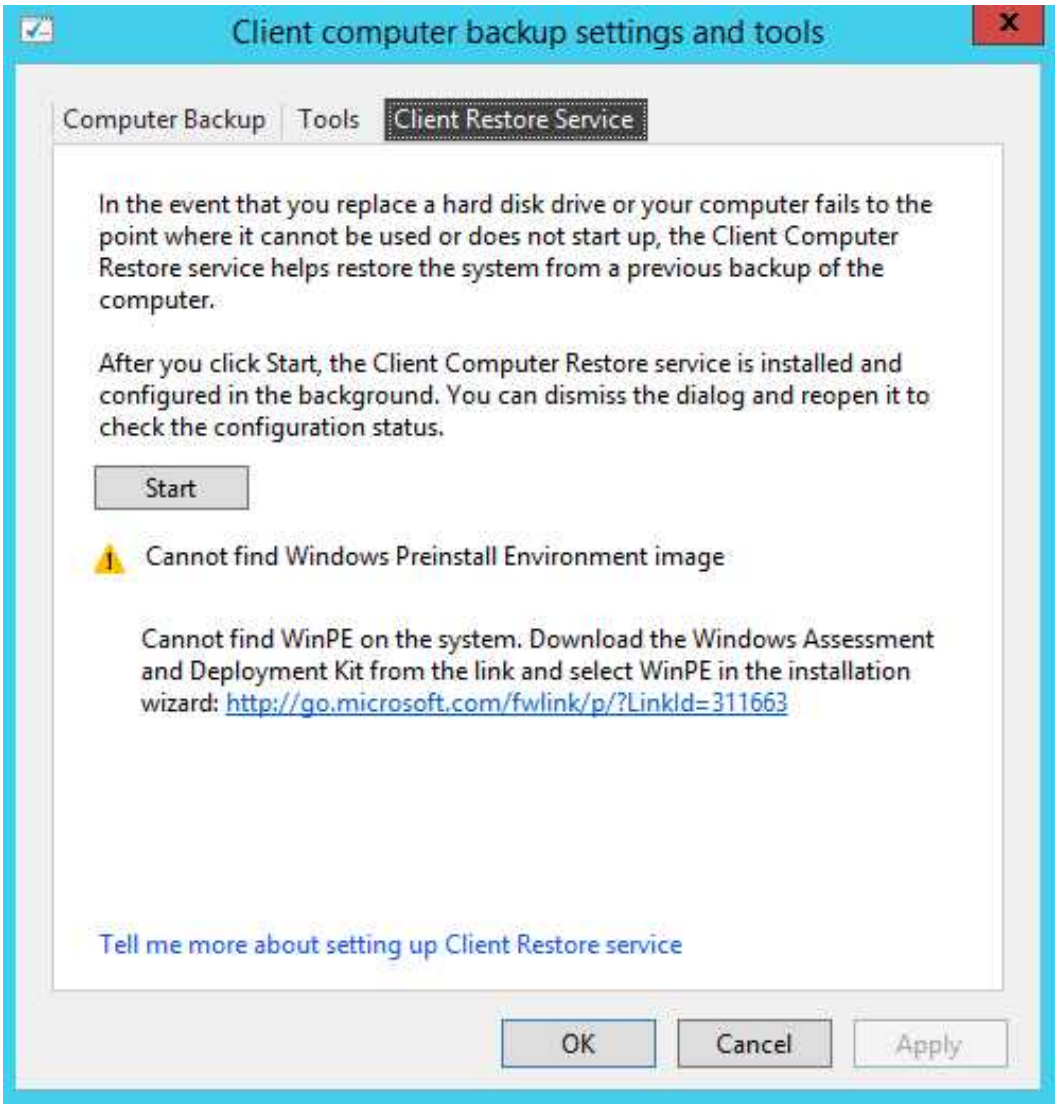
Now, not every Windows Server 2012 R2 Essentials owner may wish to take advantage of Client Backup (maybe they have an alternative method of backing up, or maybe they're just crazy) so the service is switched off by default. The setup task switches it on, via a dialog box called **Client computer backup settings and tools** which will open up.



Configuring client restore.

Hit that Start button, and the service begins. Right? Wrong. You'll get a message asking you to download and install something called a **Windows Preinstall Environment** image. If you're lucky, your server manufacturer may have already installed the necessary bits on the server, so you're good to go. Everyone else, follow along!

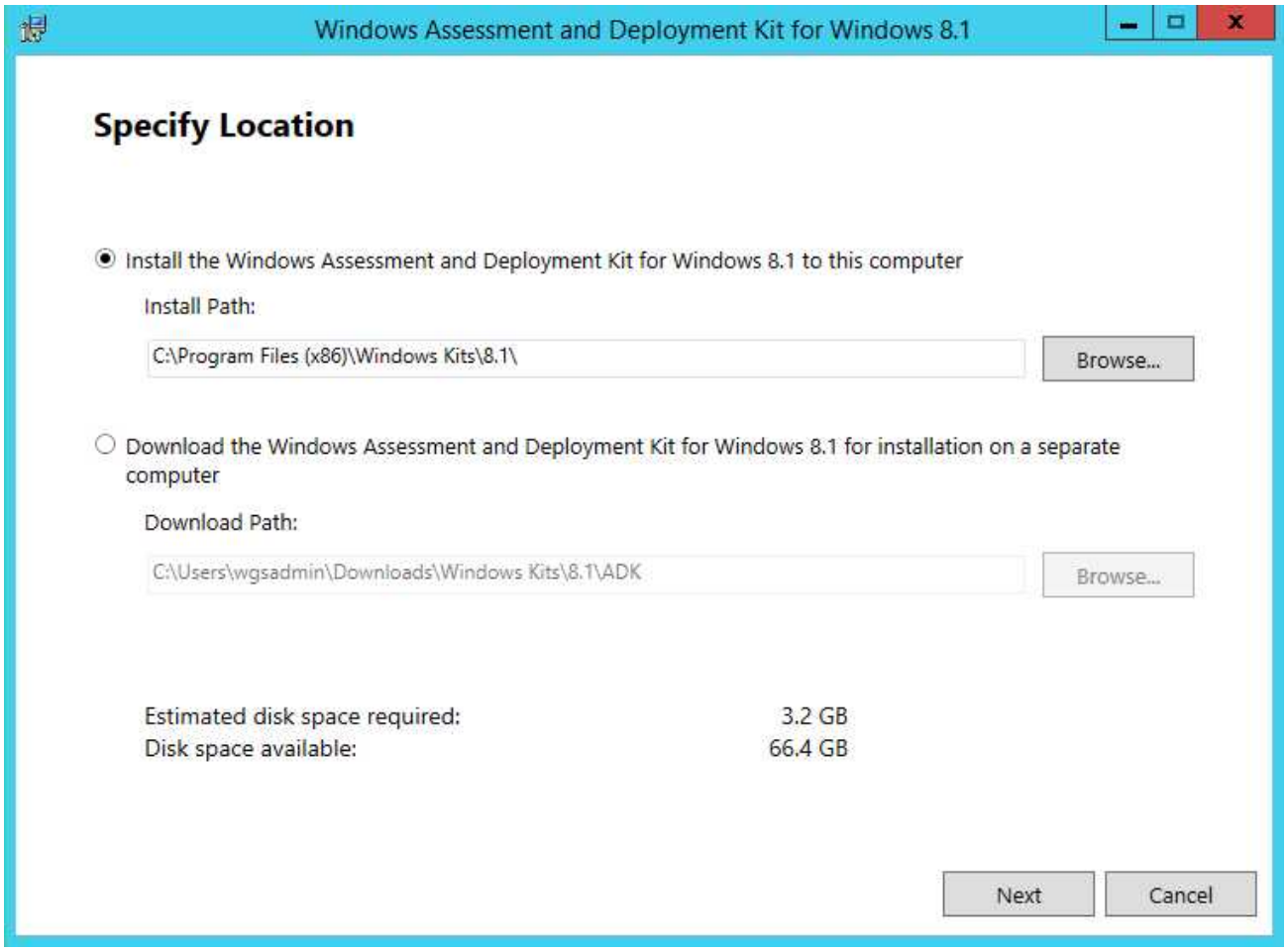
Known as **Win PE** to its friends, you can think of the Windows Preinstall Environment as a mini, feature-limited operating system which runs in advance of the client backup being installed. It's a standalone environment used to prepare a computer for Windows installation, to copy disk images from a network server, and to initiate Windows Setup. So, it's essential to have it available on the server if it isn't installed already.



More work to be done!

In the error message that appears, you should see an embedded link which will take you to the Microsoft website to download the **Windows Assessment and Deployment Kit**.

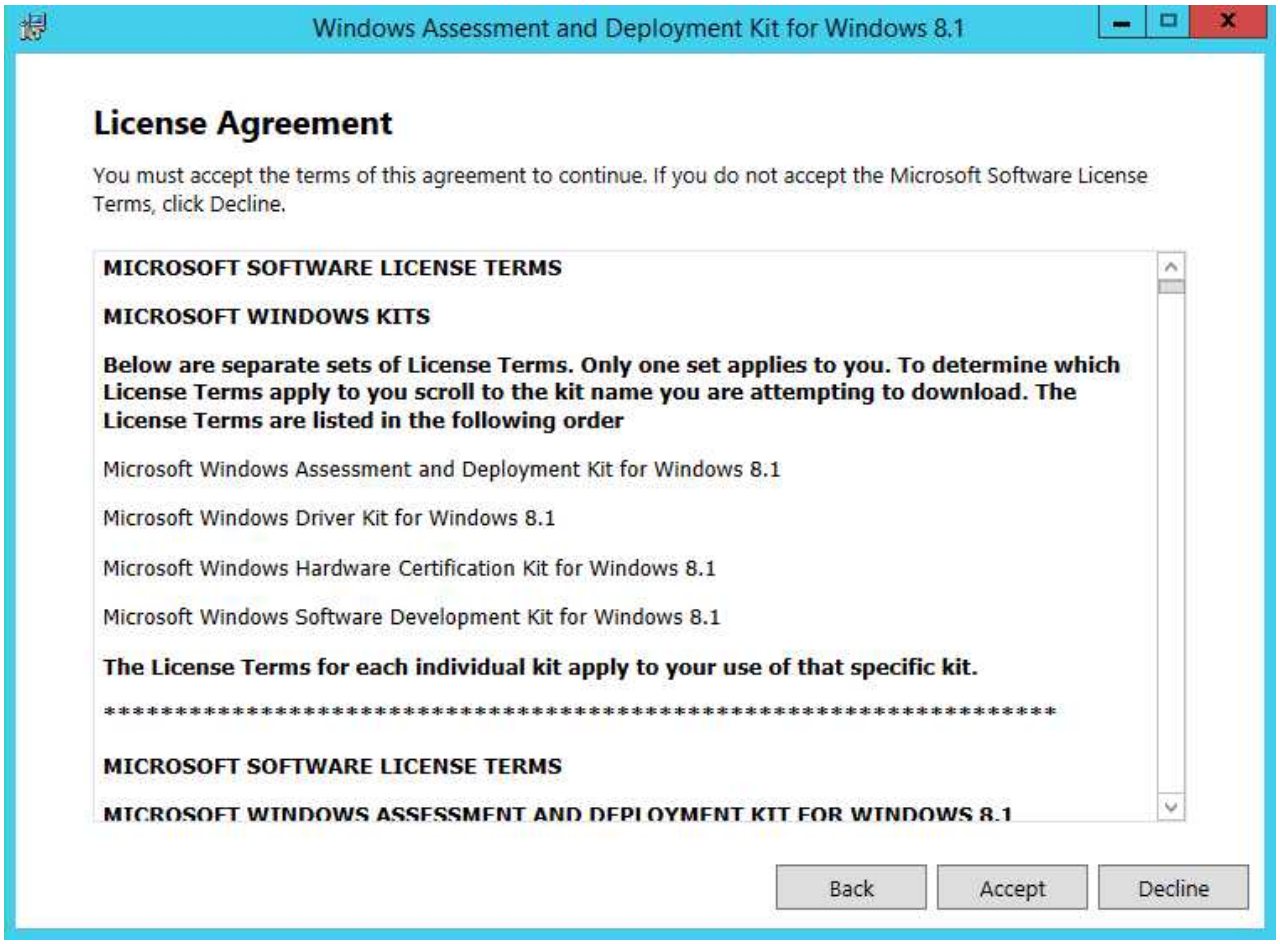
Open the .exe file that downloads, and you'll be greeted with a dialog box asking where you'd like to install the Windows Assessment and Deployment Kit (ADK). You can choose to download it as a package for installing on other computers, but we'll need it installing on the server, so leave the default option in place and click **Next**.



Downloading the Windows ADK.

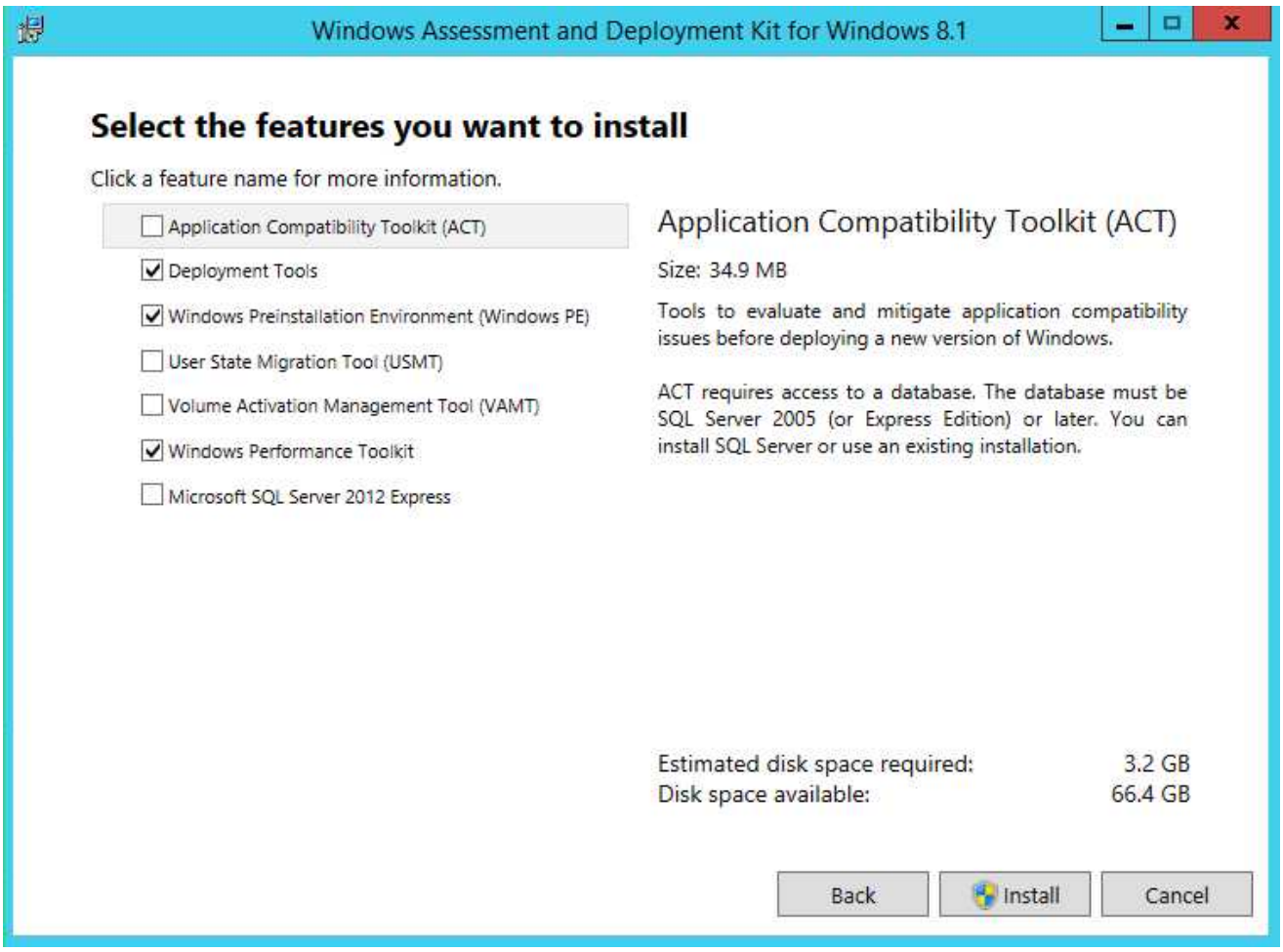
If it's a Microsoft product then it probably has a Customer Experience Improvement Program and the Windows ADK is no exception. You'll be asked if you're happy to submit anonymous data to Microsoft about your usage of the ADK - this diagnostic information is aggregated and used to improve Redmond's services - take your pick and click **Next**.

Now, you have a License Agreement to read and accept...



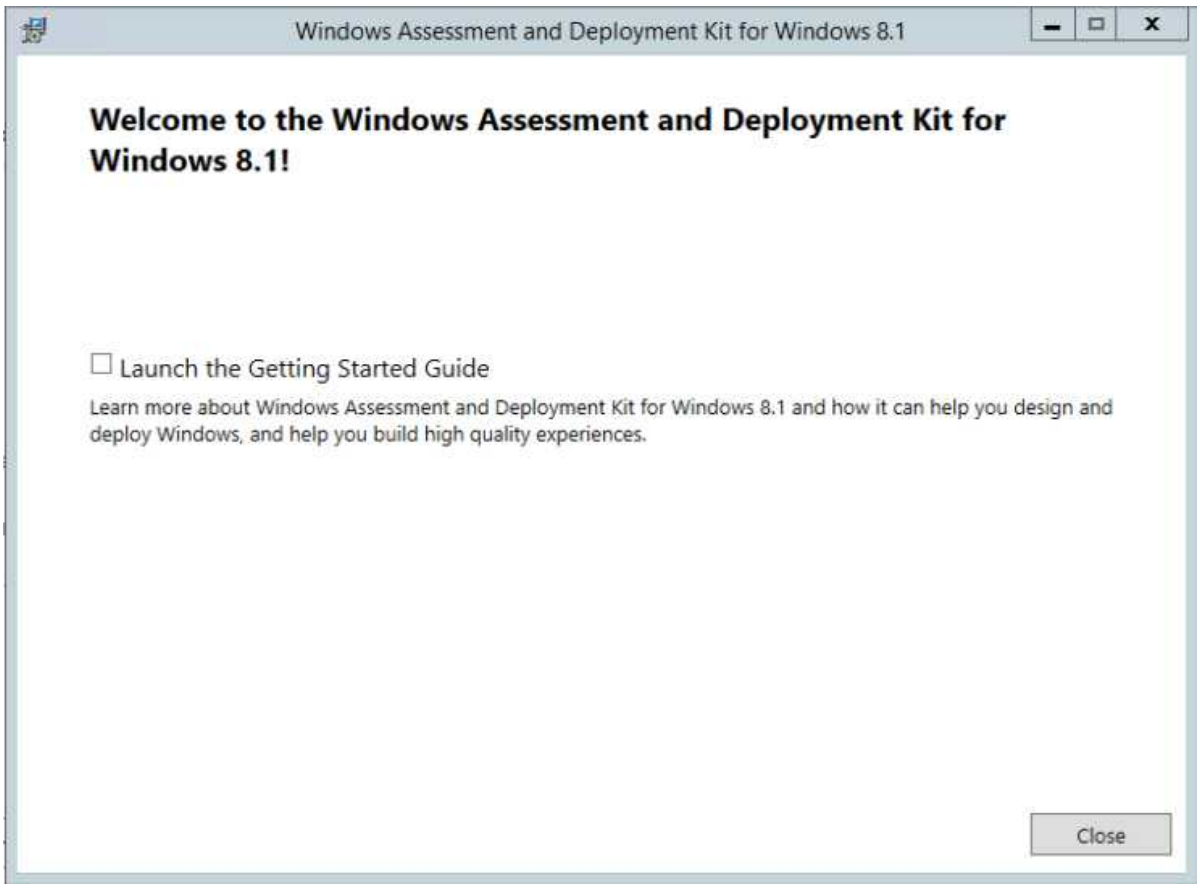
The Windows ADK License Agreement.

OK, hopefully that License Agreement didn't set you snoozing, as you'll need to pay attention to the next screen! We now need to select the features to be installed. Check back to the Dashboard and you'll see that you've been asked to download Windows PE. Joy, it's a 3 GB download.



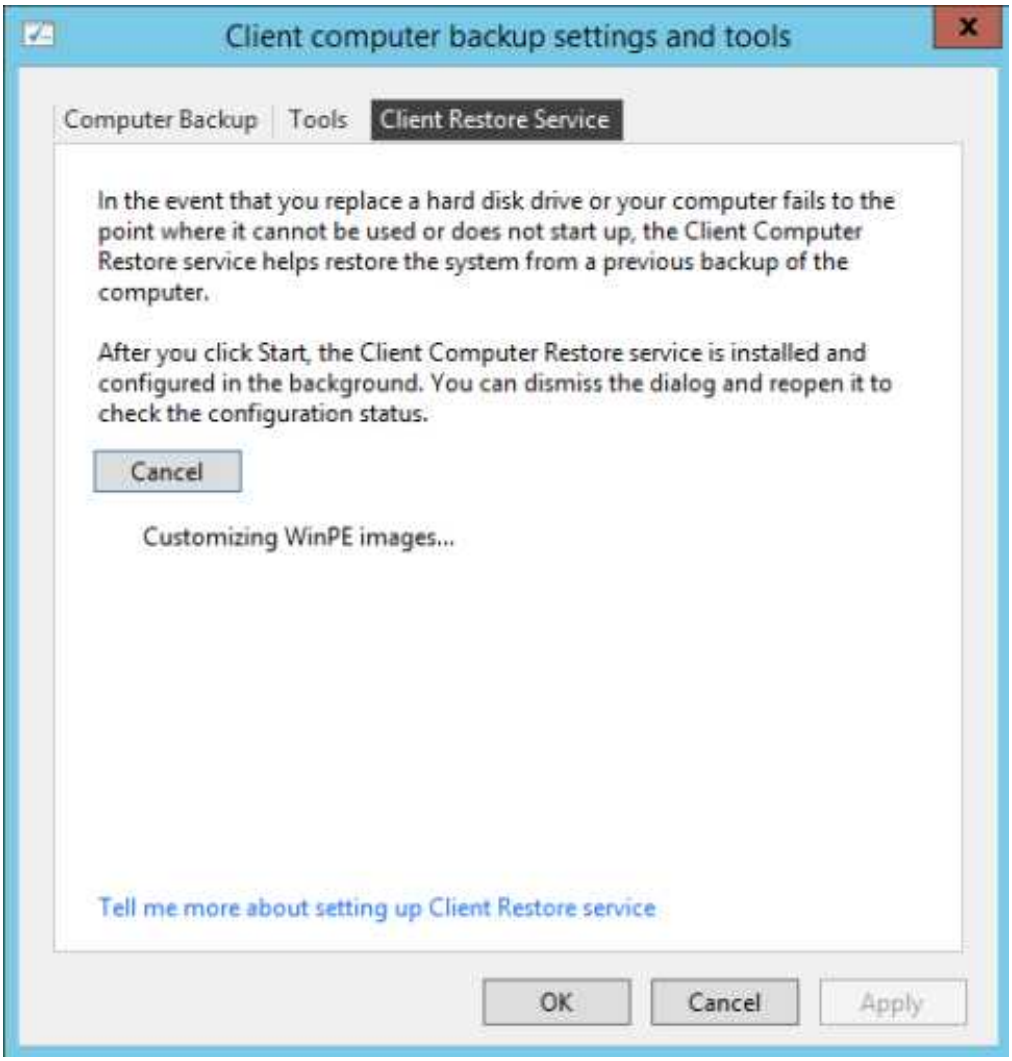
Windows PE is selected by default.

Ensuring that Windows PE is selected, go ahead and click **Install**. You'll see some other tools have been selected by default too as they're required by Windows PE. OK, take a break and let the download finish up.



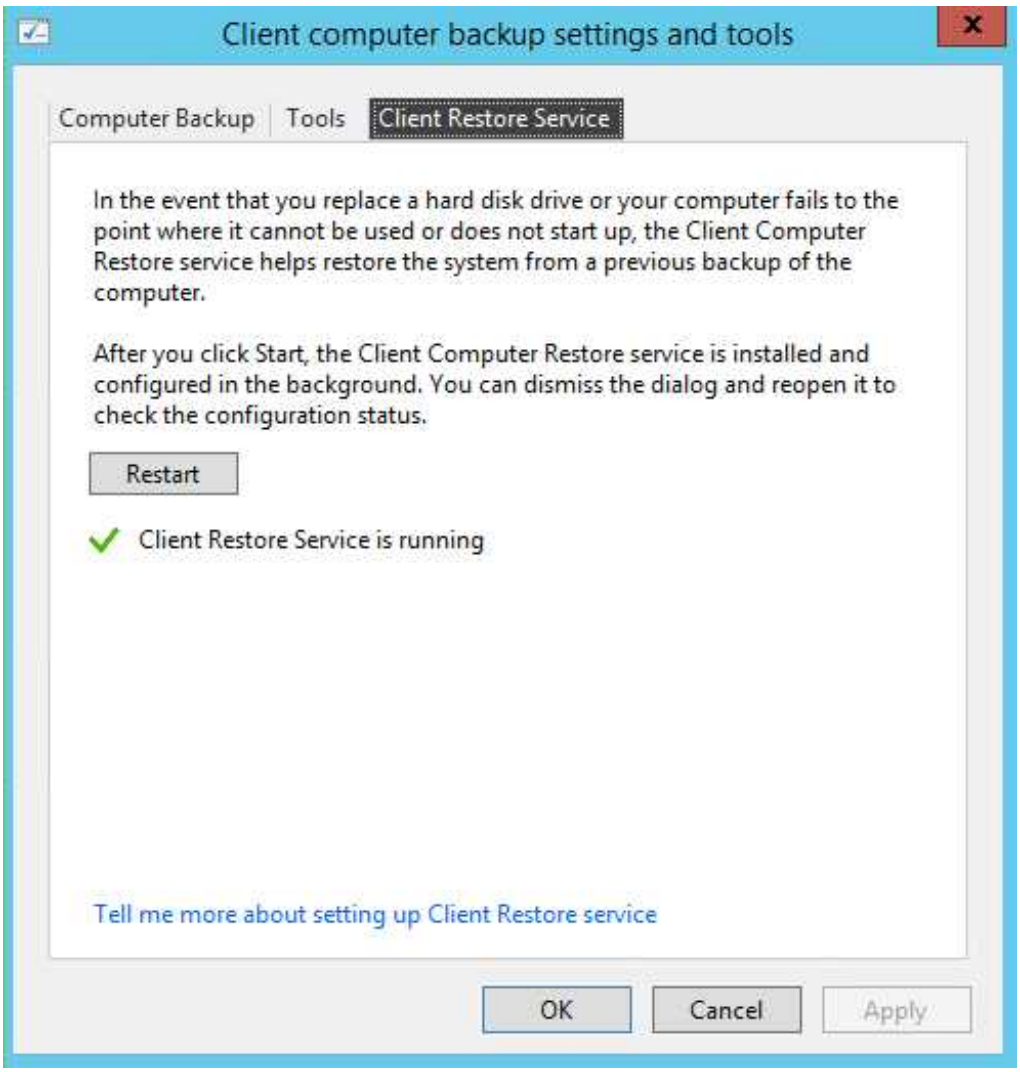
After a long download, the kit is installed.

Once the download and installation has completed, click **Close.** We should now be able to start the Client Restore Service. Head back to the relevant tab in the Dashboard and try the Start button again - you'll see a message stating that Windows is Customizing the PE images.



Starting the Client Restore Service.

This customization process takes a little time so you may want to leave the server alone for a little while and go for a walk. Or something. A few minutes later, you'll see the Client Restore Service is running.

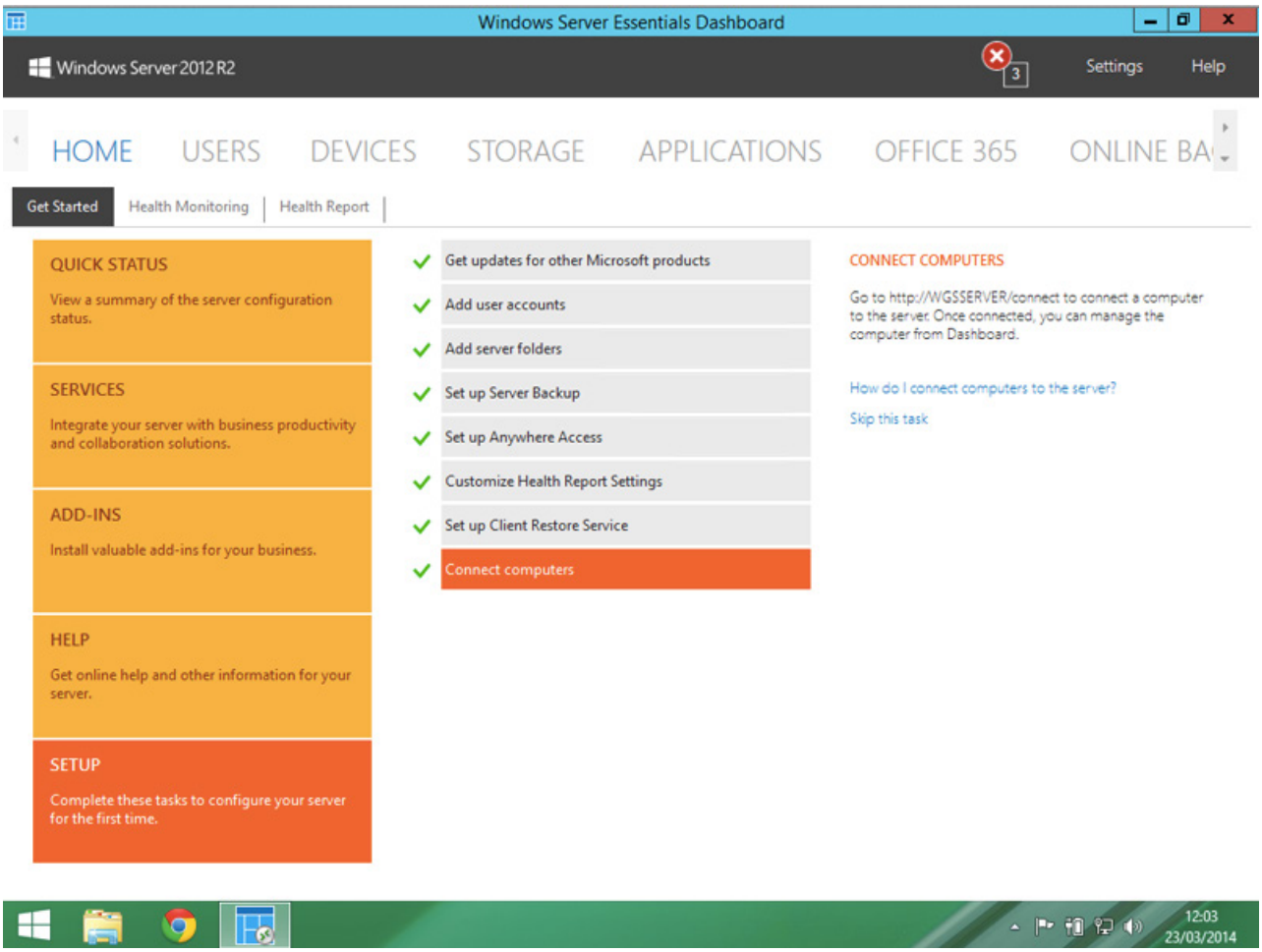


It took some doing, but the Client Restore Service is now running.

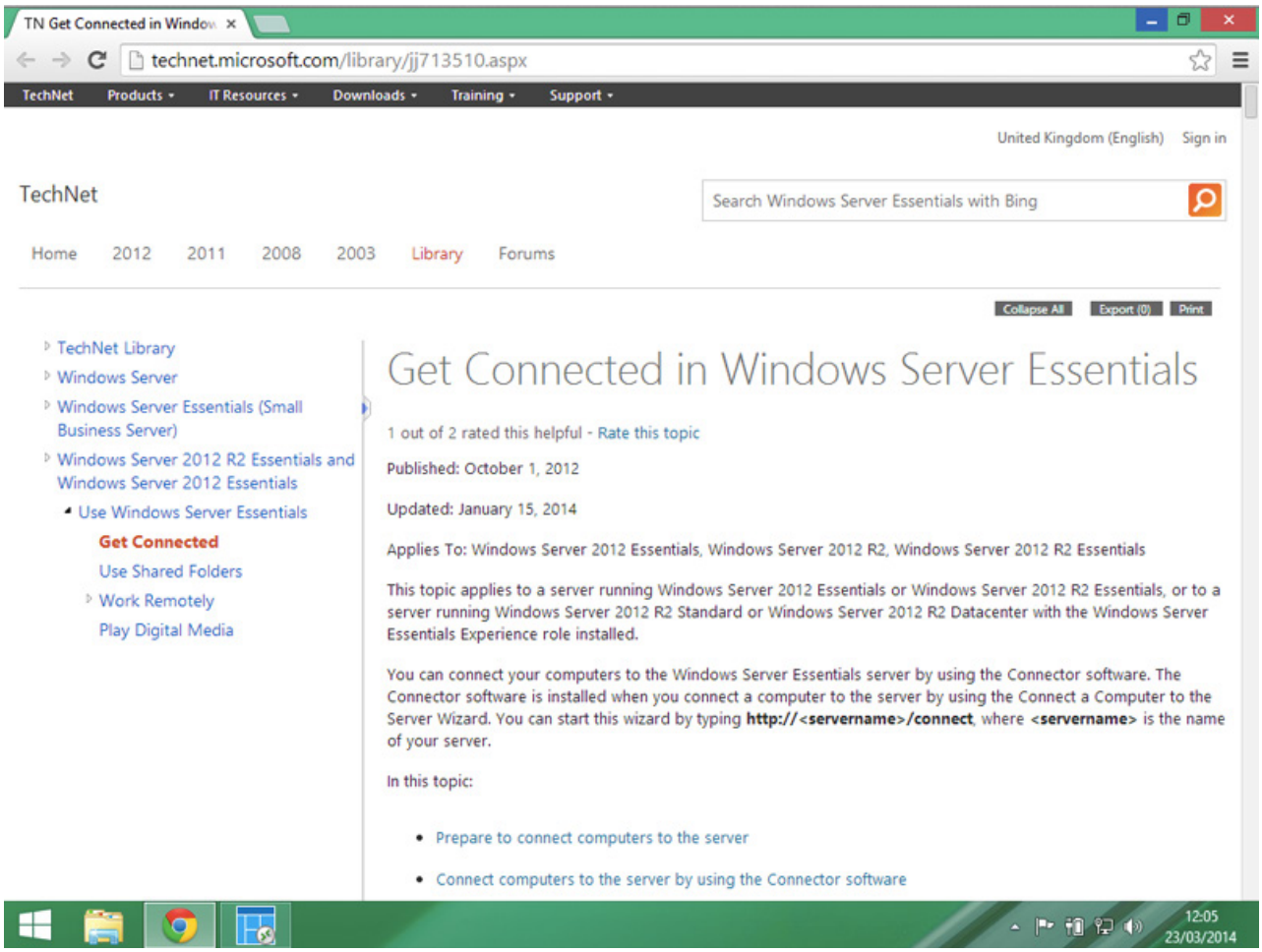
Click **OK** and that completes the penultimate startup task. You'll be returned to the main Dashboard window, where you will find one final, but very important task to perform:

Connect Computers

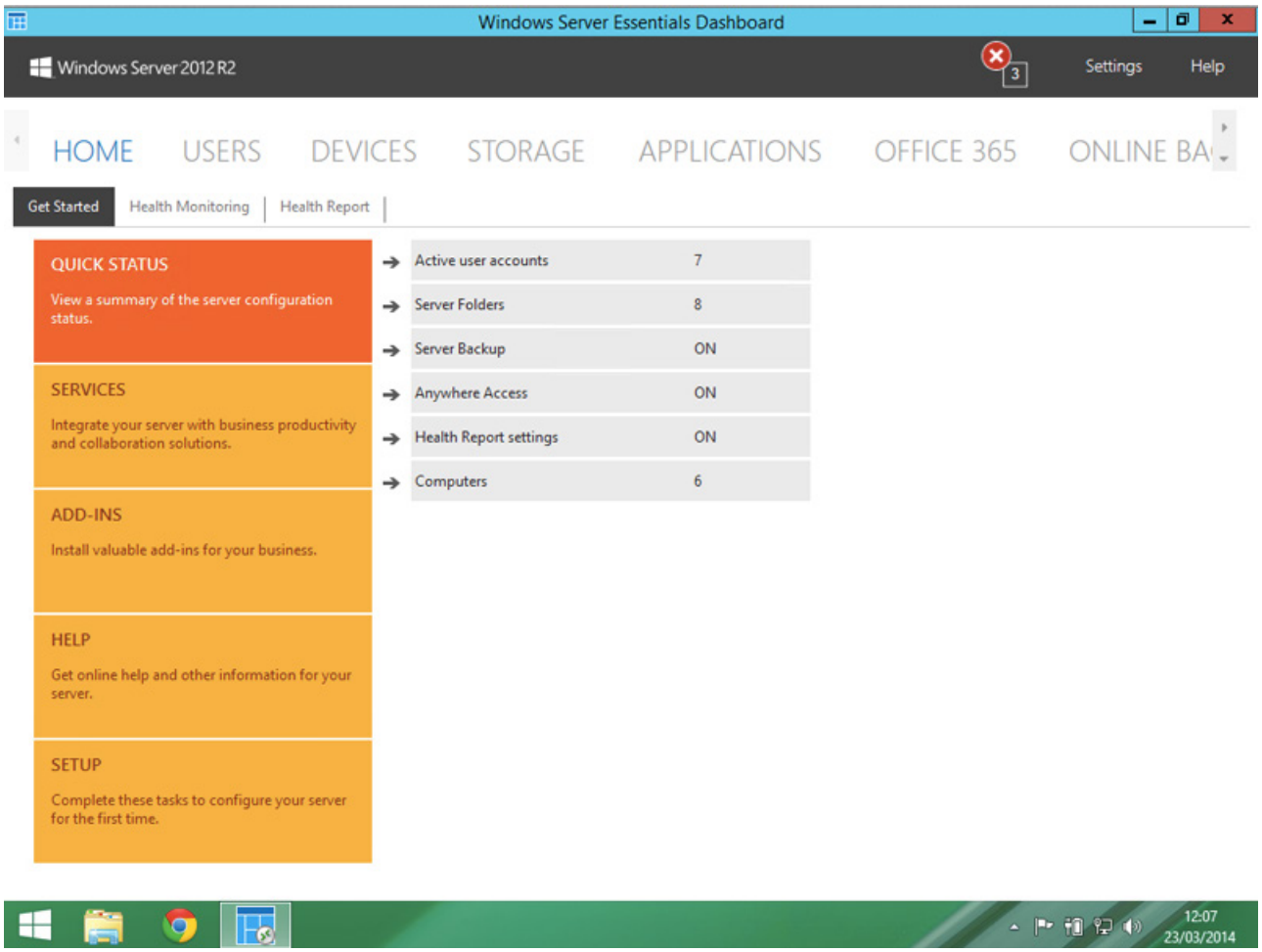
This task is not something you perform on the server. It is now time to go to each computer in your organization and install the connector which will allow these computers to be managed and backed up by the server.



When you click on the How do I connect computers to the server option, this simply opens a browser window so you can read an online Windows Server 2012 R2 Essentials help files.



Reading the help file gives you the last green check mark in the Dashboard Setup section. What you really need to take note of is the comment in the upper right on how to connect a computer to the server, which is the subject of our next chapter. One final note; once you have completed the Setup section, the Dashboard reorganizes slightly. You will find the Setup section now at the very bottom of the list, and the Quick Status section has moved to the top.



Your slightly reorganized Dashboard Home tab.

Congratulations! You are well on your way to making your organization much easier to organize from one central location.

Connect Client PCs to Windows Server 2012 R2 Essentials

"In the last chapter we performed a number of initial steps to get the server ready for action. Having a server without clients that can access it, however, is simply an inaccessible box wasting your electricity."

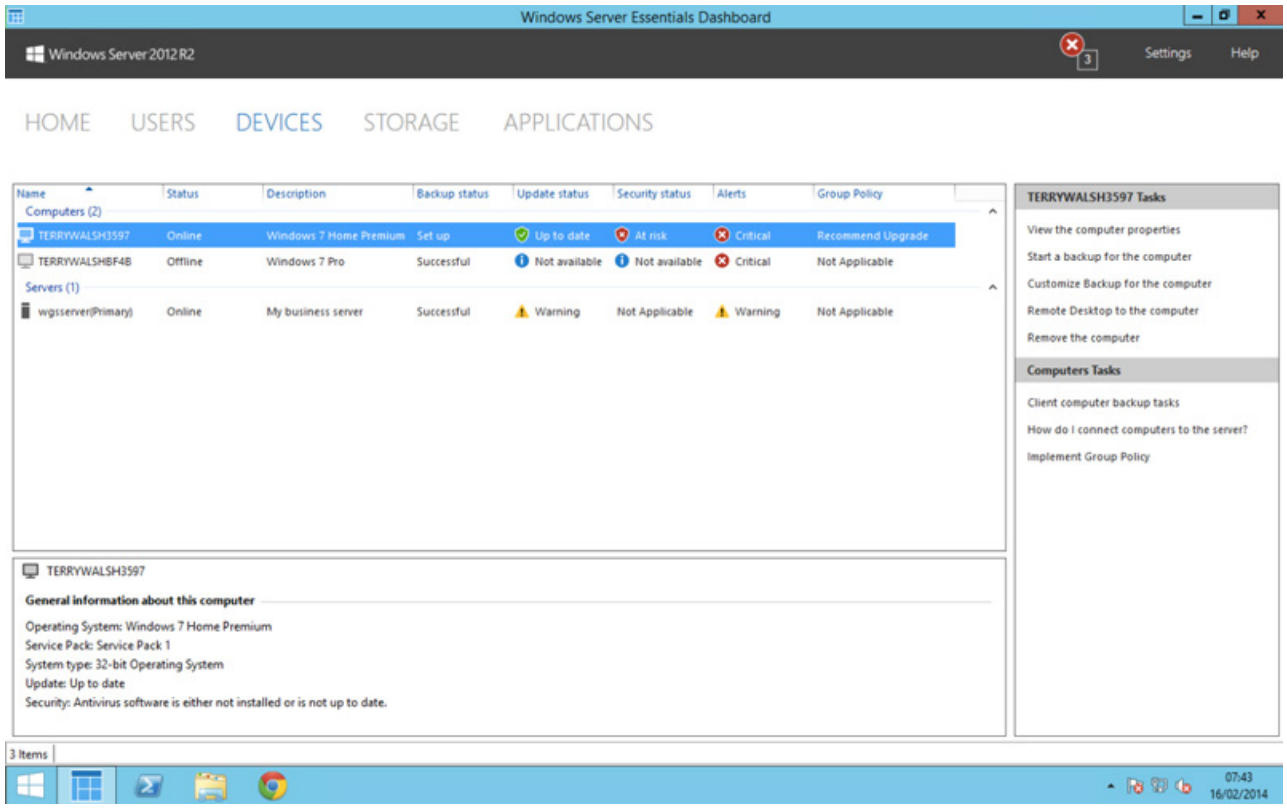
As a **domain controller** (a technical term for a server that manages network access across a collection of devices, computers and services), Windows Server 2012 R2 Essentials requires you (or rather, your computer) to join a **domain** so that you can have full access to the services and data that the server can provide.

The whole shebang is managed by a Microsoft service called **Active Directory**, which you may have heard of. Active Directory runs on the server and manages secure access to the server for network users, devices and more.

So, it's time to begin the process of connecting your computers to the server domain. As part of this process, you will also be adding at least one domain user account to each computer that supports joining a domain. *Domain* user accounts can be used to log into **any** computer on the network - they're more powerful than *Local* user accounts which can only be used to log into a single PC.

Not all versions of Windows can join a domain. You'll generally find that Professional, Enterprise and Ultimate editions of Windows can join a domain-based network just fine. Home editions unfortunately cannot. Don't worry though, you can still connect computers that do not support joining a domain to Windows Server 2012 R2 Essentials - but access to the server and resulting features may be limited.

For example, in the following devices section the Essentials Dashboard, you will find two client computers.



Windows Server 2012 R2 Essentials' Devices Panel

The first one on the list is a computer running Windows 7 Home Premium and the second computer is running Windows 7 Pro. While the Windows 7 Pro computer can join the domain and install the Dashboard you will only be able to log on the Windows 7 Home Premium computer using a local account. You can see under the Group Policy entry that an upgrade is recommended - Windows 7 Home Premium computers cannot be managed via Group Policy.

We will explore this more in just a little while, but first let us go through the process of adding a computer with full "domain join" capabilities to the server.

However...

Before doing so, remember the Golden Rule of any computer upgrade: **BACK UP YOUR COMPUTER**. This may not mean every bit on the hard drive, but you really need to make sure you have any and all important data saved in the case of a major catastrophe.

Connecting a PC to the Server Domain

In this chapter, we will go through the process of adding Windows-based computers that have the

ability to join a domain. These versions would be:

Windows 7 operating systems

- Windows 7 Home Basic SP1 (x86 and x64)
- Windows 7 Home Premium SP1 (x86 and x64)
- Windows 7 Professional SP1 (x86 and x64)
- Windows 7 Ultimate SP1 (x86 and x64)
- Windows 7 Enterprise SP1 (x86 and x64)
- Windows 7 Starter SP1 (x86)

Windows 8 operating systems

- Windows 8
- Windows 8 Professional
- Windows 8 Enterprise

Windows 8.1 operating systems

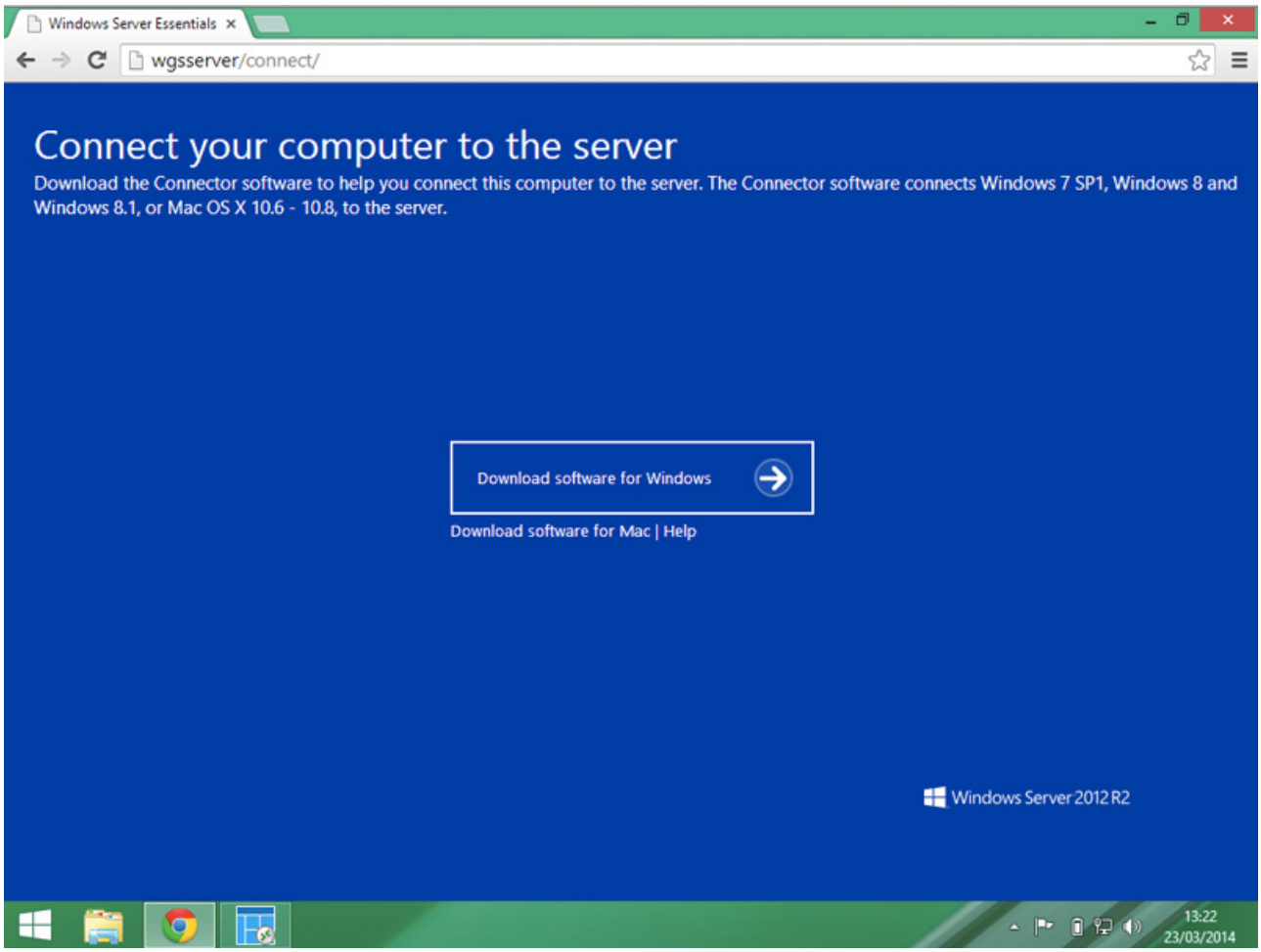
- Windows 8.1
- Windows 8.1 Professional
- Windows 8.1 Enterprise

Apple Mac client computers

- Mac OS X v10.5 Leopard
- Mac OS X v10.6 Snow Leopard
- Mac OS X v10.7 Lion
- Mac OS X v10.8 Mountain Lion

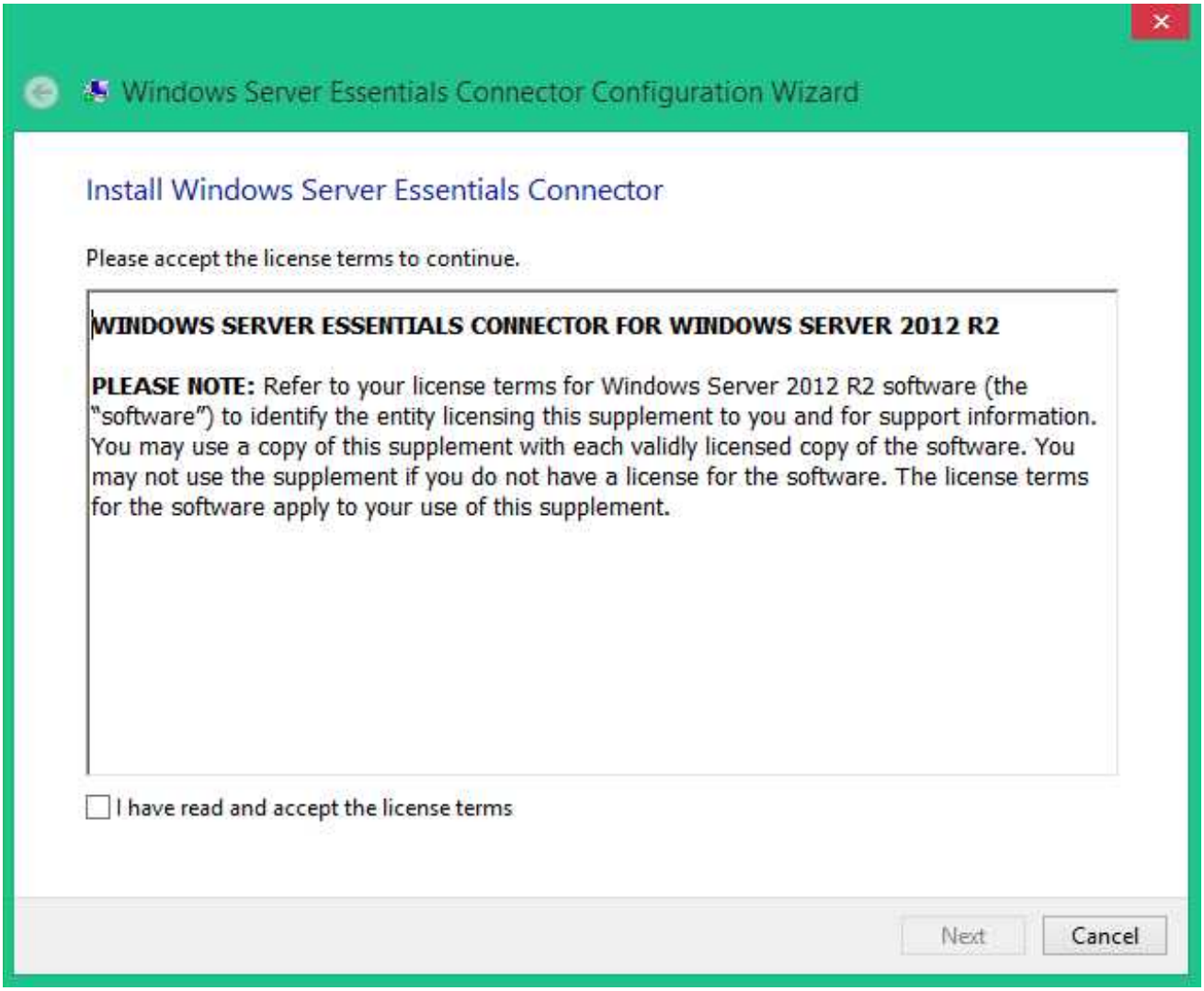
To start the domain join process, we need to open **Internet Explorer** from the computer that you

want to connect to the server. Type in **http://<servername>/connect** in the browser bar where <servername> will be replaced by your actual server name.



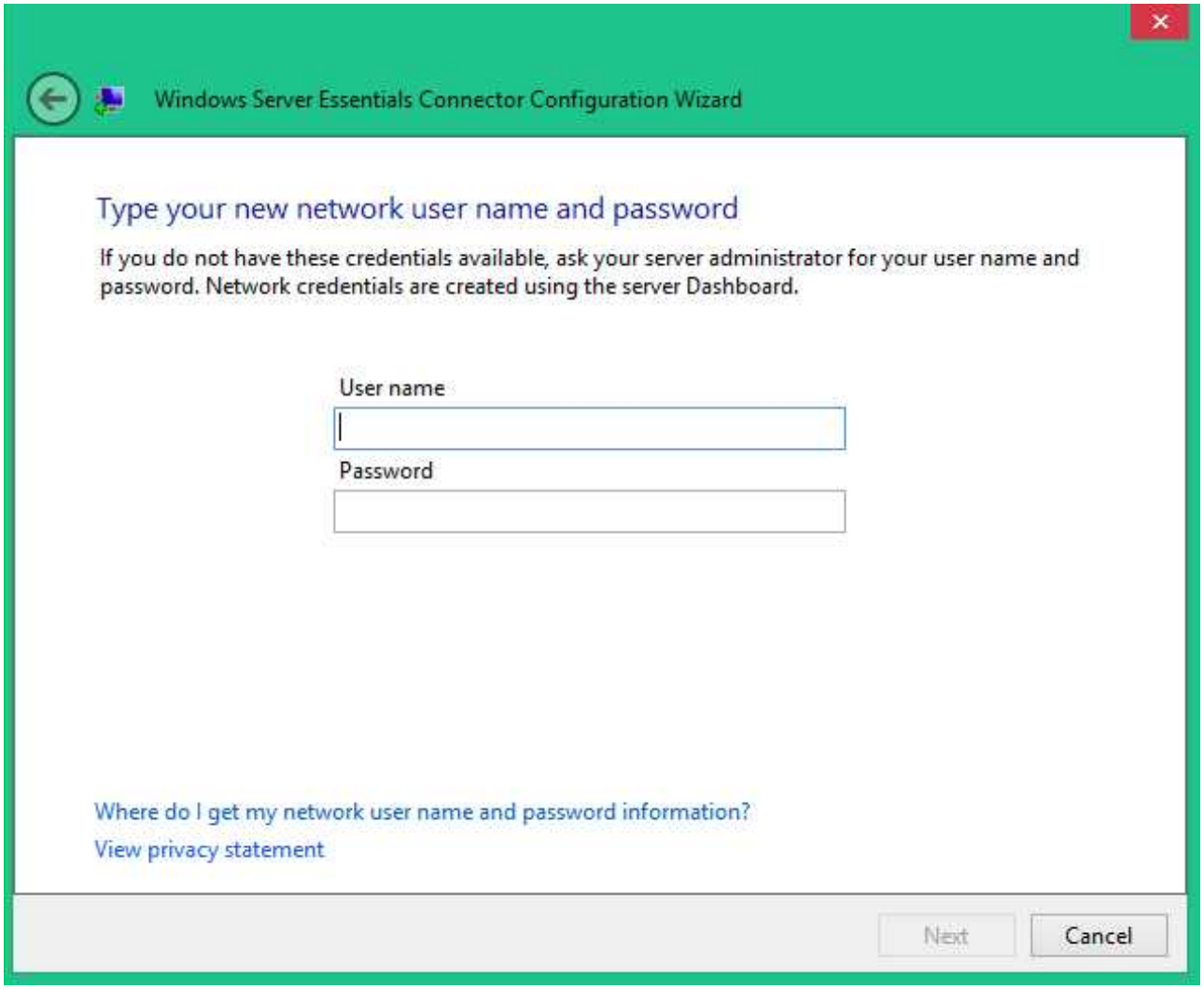
Connecting a client in the browser.

The following web page opens up from which you can download and run the connector software, which will allow you join the Essentials domain. The process starts by showing you the inevitable license agreement, which you'll need to accept to continue.



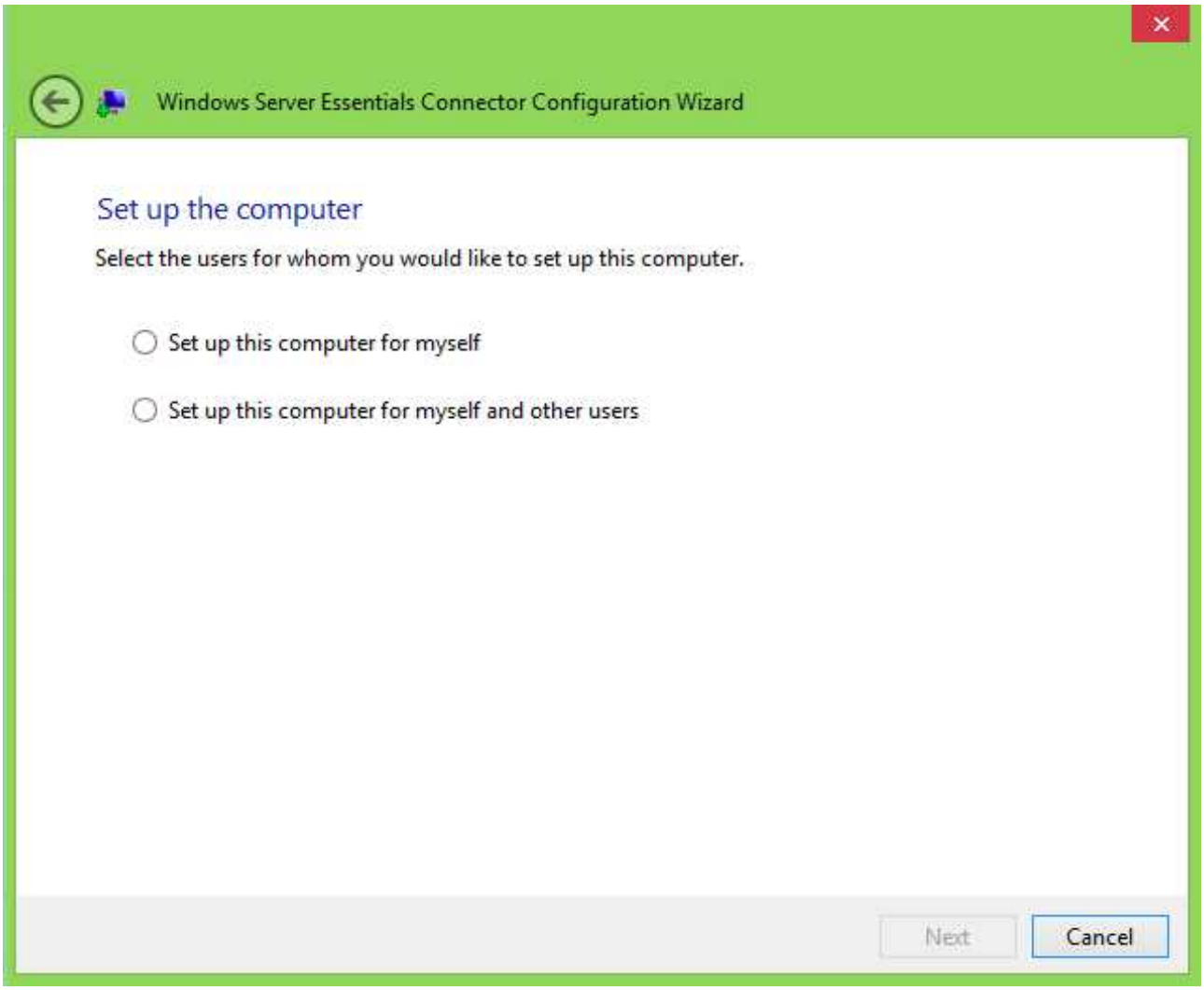
Yes, it's another license agreement.

The Connector software will then be installed on the client - note that if you have any Windows Updates installing when you try to install the Connector, installation will most likely fail. The next dialog requires you to enter a network user name and password. This is a user account held on the server; **not** your local PC account user name/password. If you have not yet set up any additional users on the server, try using the standard server user account that you created during installation in Chapter 3. Alternatively, skip ahead to our later chapter that deals with Users, and we'll walk through creating a new user account.



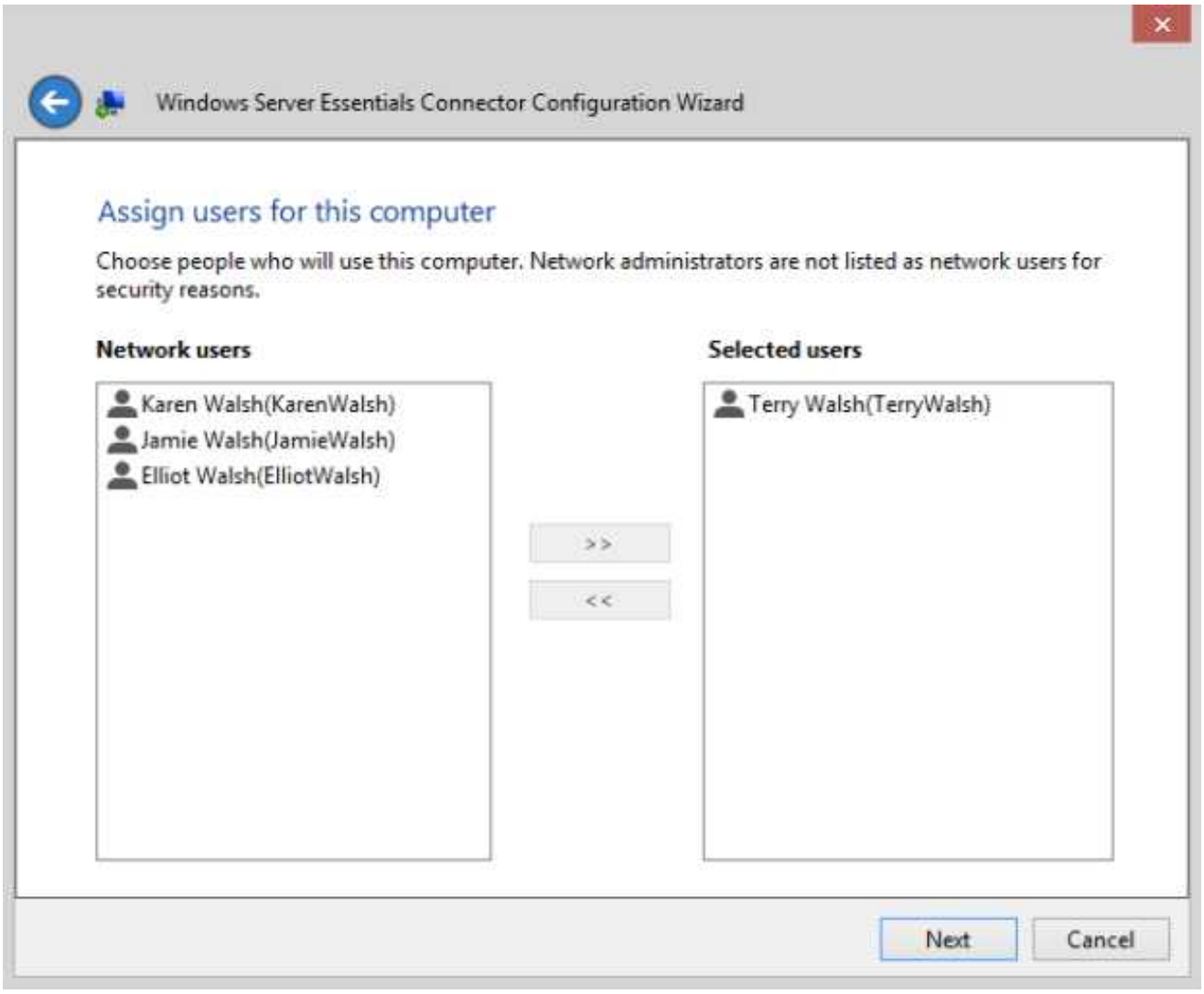
You'll need a user account on the server to continue.

The process continues and finishes up, at which point you must restart the computer. Once past this point the first time, you are asked if you are setting up one account or more.



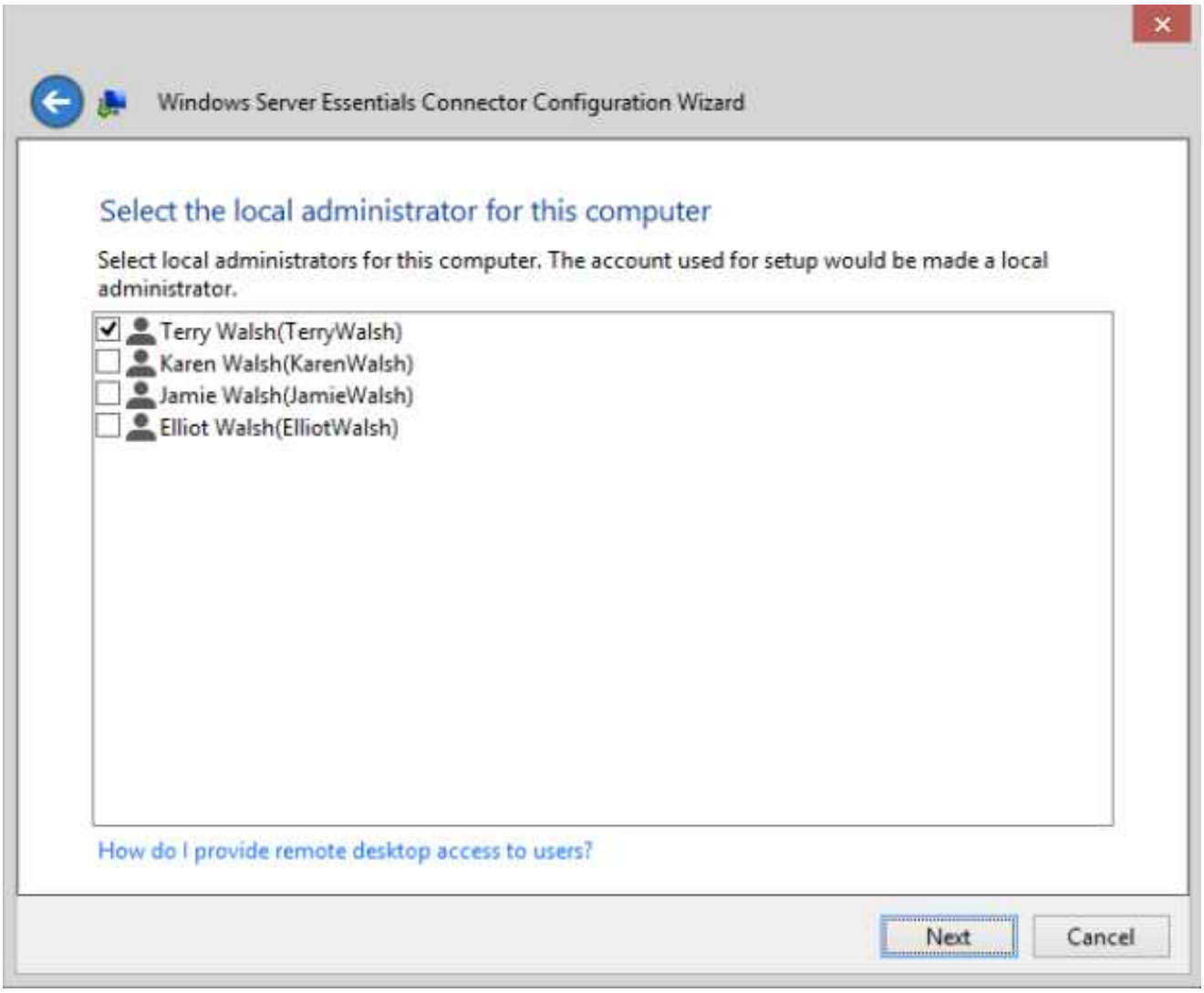
If you have multiple accounts on the server, use the second option to configure network accounts to use on the client.

If you choose the second option, you are taken on a slight detour to determine what accounts you want to add to the computer and which account will be the local administrator account.



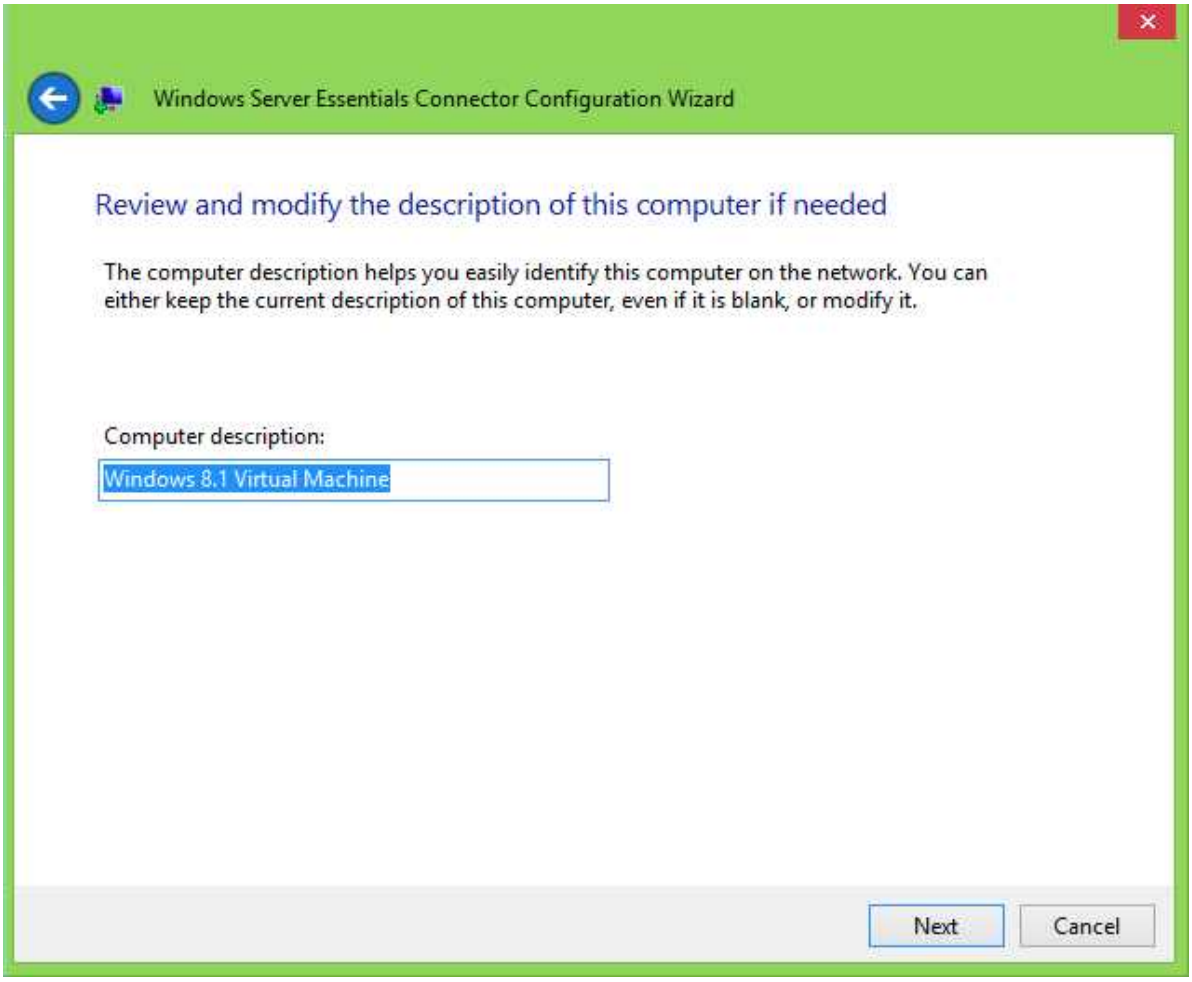
Assigning network users to the client.

Simply highlight the network accounts you wish to use on the client and click the arrow to move them over to the Selected users panel. You'll then be asked to select accounts to be configured as local administrators on the client. Check the relevant boxes and click Next.



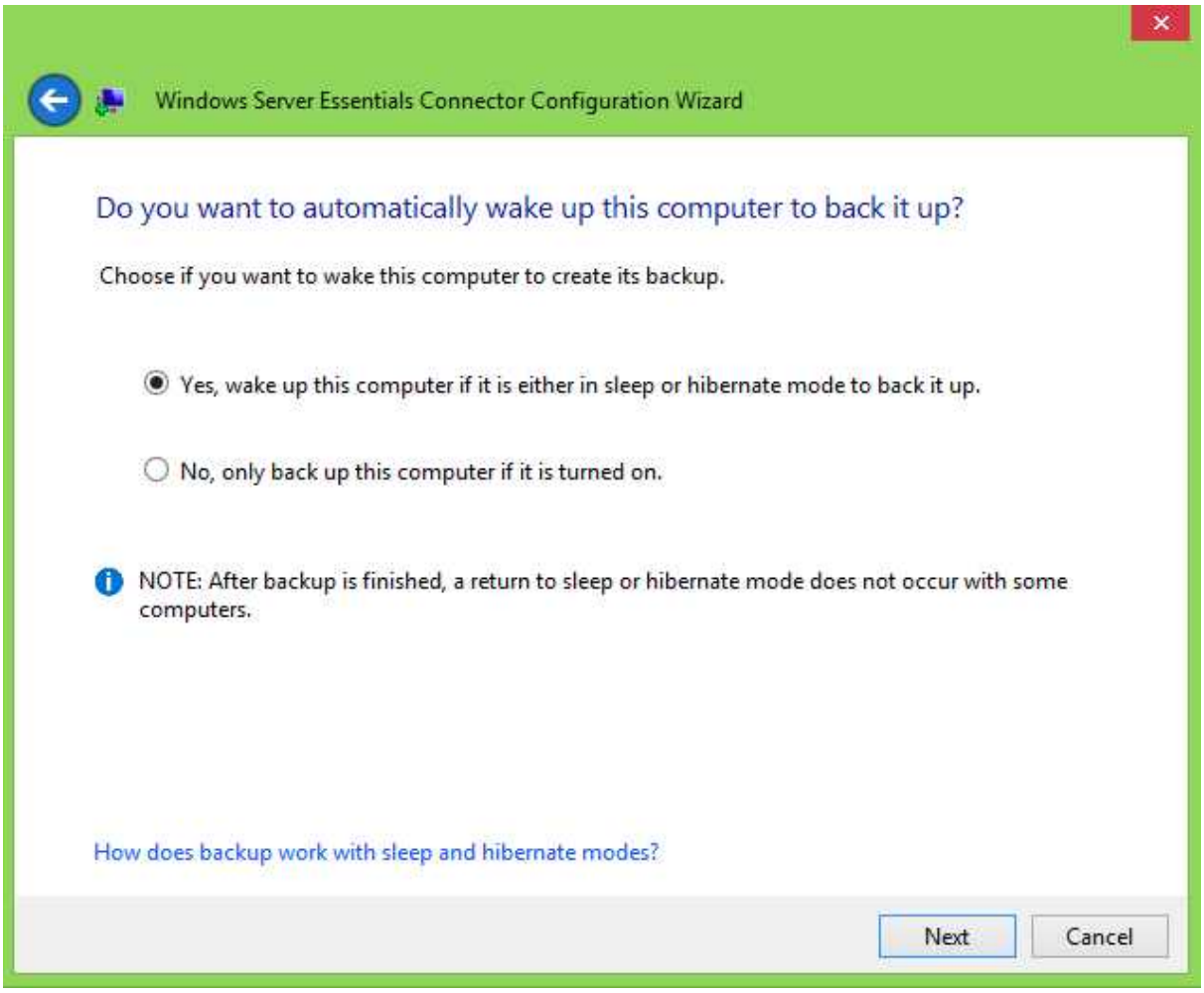
Selecting network users to hold local administration rights for the client PC.

Enter a computer description, if needed, for easy identification later:



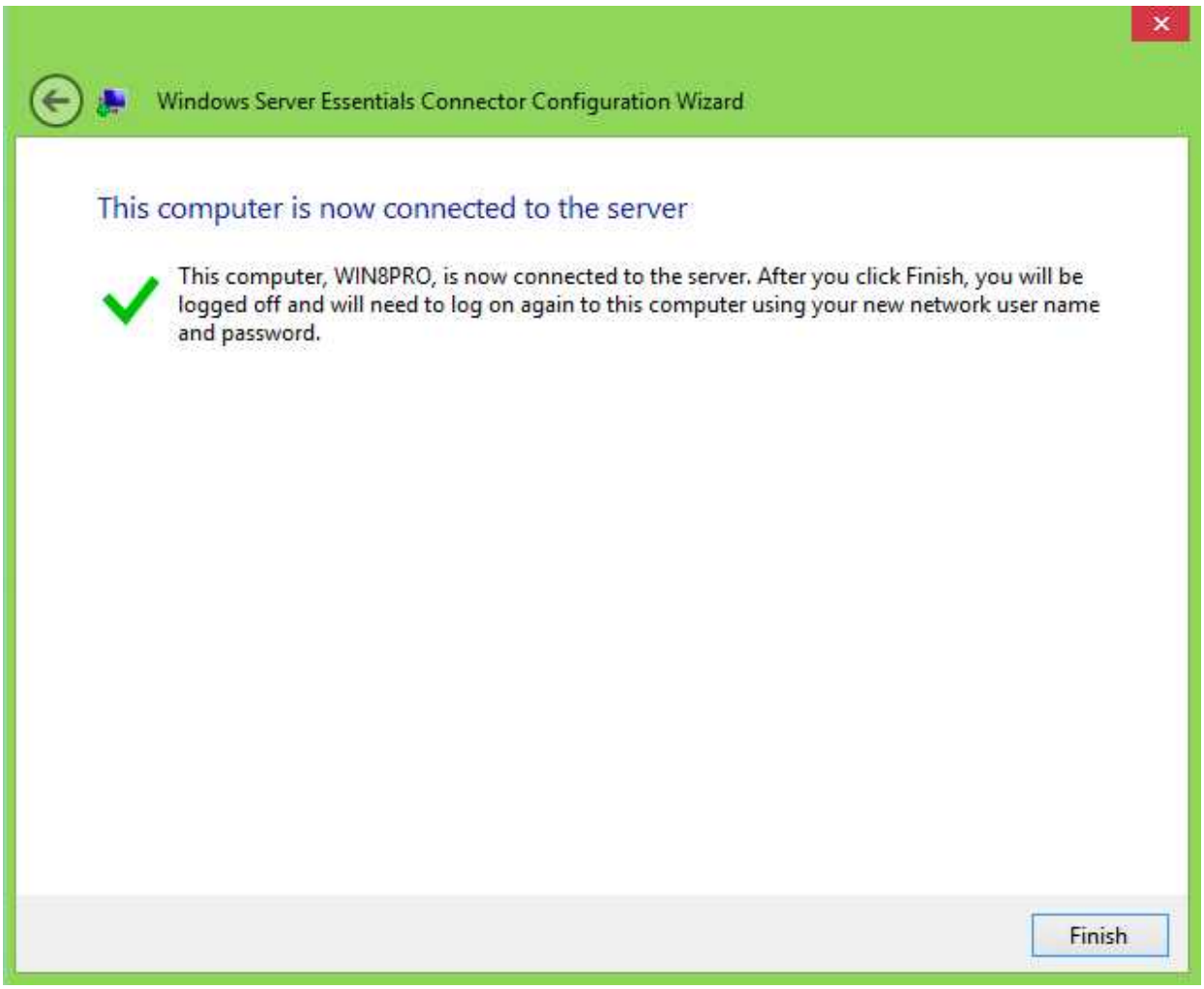
The description is shown in the Dashboard, so ensure it's... well... descriptive!

Select a backup option (I recommend you select the first option, so the computer is woken for back-up):



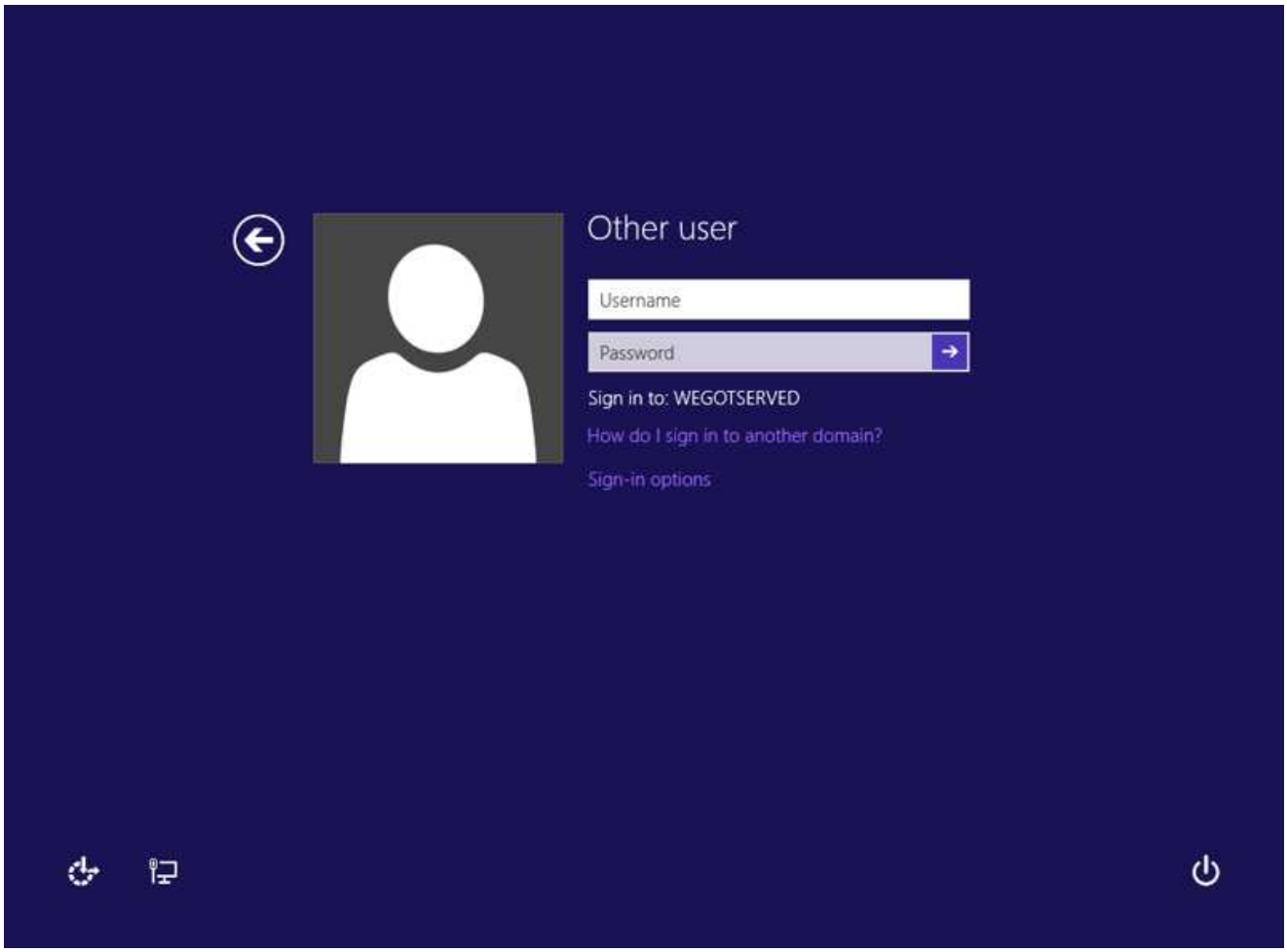
Choosing your backup options.

and finally finish up.



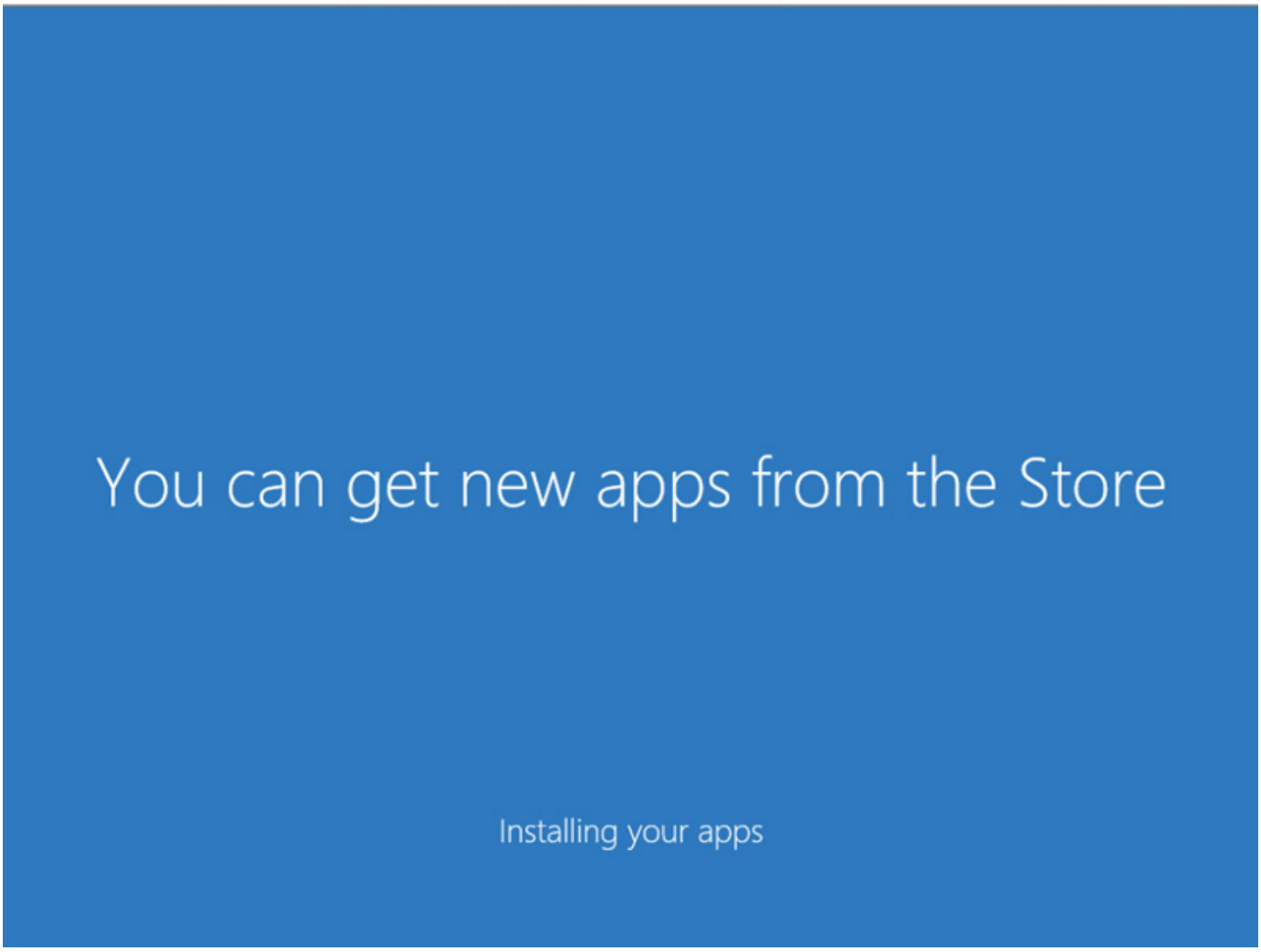
The client is connected to the server.

Once completed, click on the **Finish** button to take you to the Windows 8 log on screen. This screen has now changed to indicate you are signing in using a network account rather than the "old" local account. If desired, you **can** sign into the PC using your old local account which can be particularly useful if you're working off-site from where the Essentials server is located.



The Windows 8 PC tells you that you're signing into a domain.

As indicated earlier this is a bit of a Déjà vu moment on a Windows 8 machine, as we are then taken back through the "We're getting your PC ready" sequence once again.

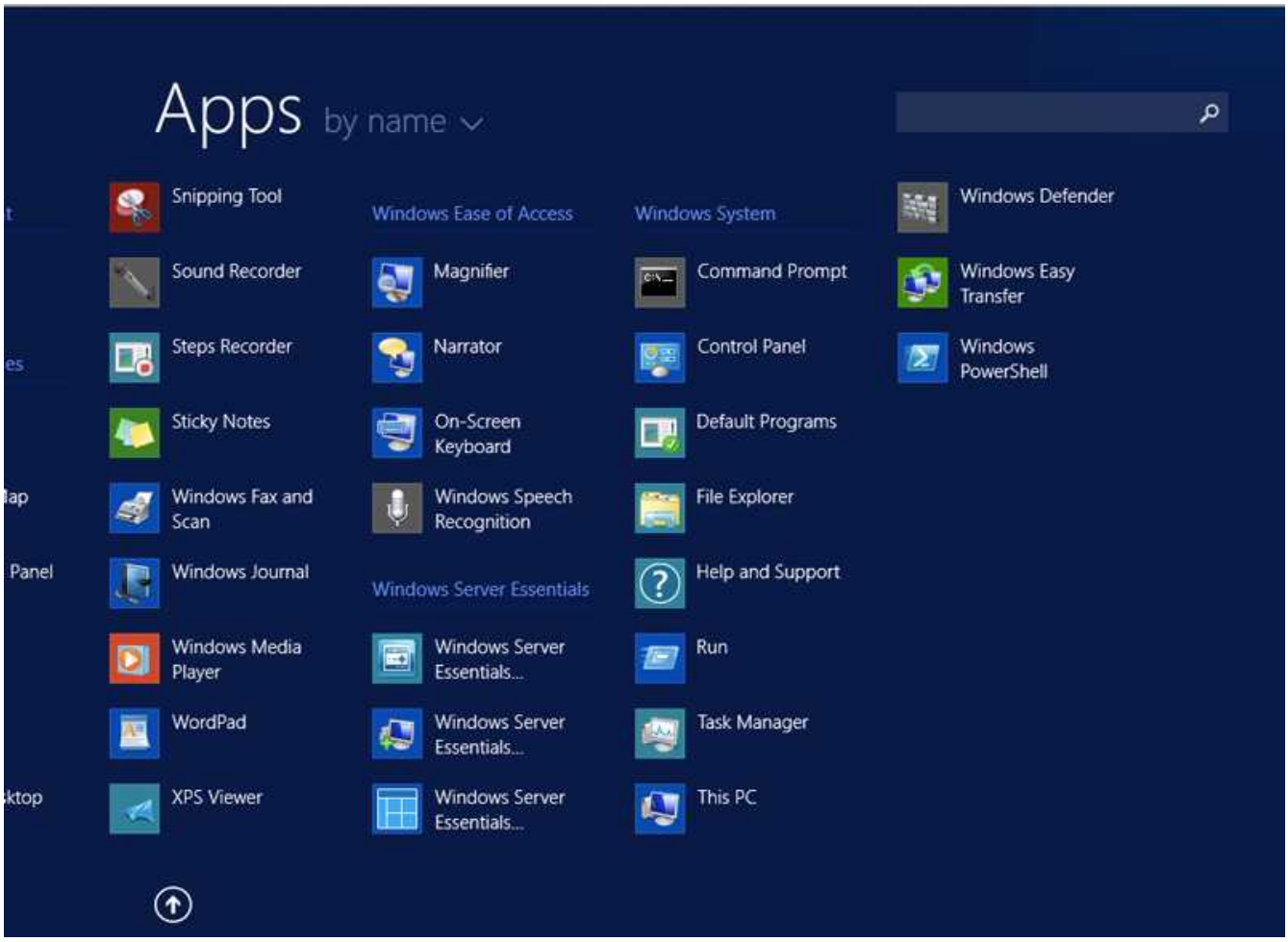


A little more setup is required, but don't worry, it's all automatic.

Finally, we are up and running once again on the client computer, except we are now using the network user account rather than the local user account. If this computer has been actively used, you will quickly find out that shortcuts to your applications, your old user settings, and data are no longer available to you.

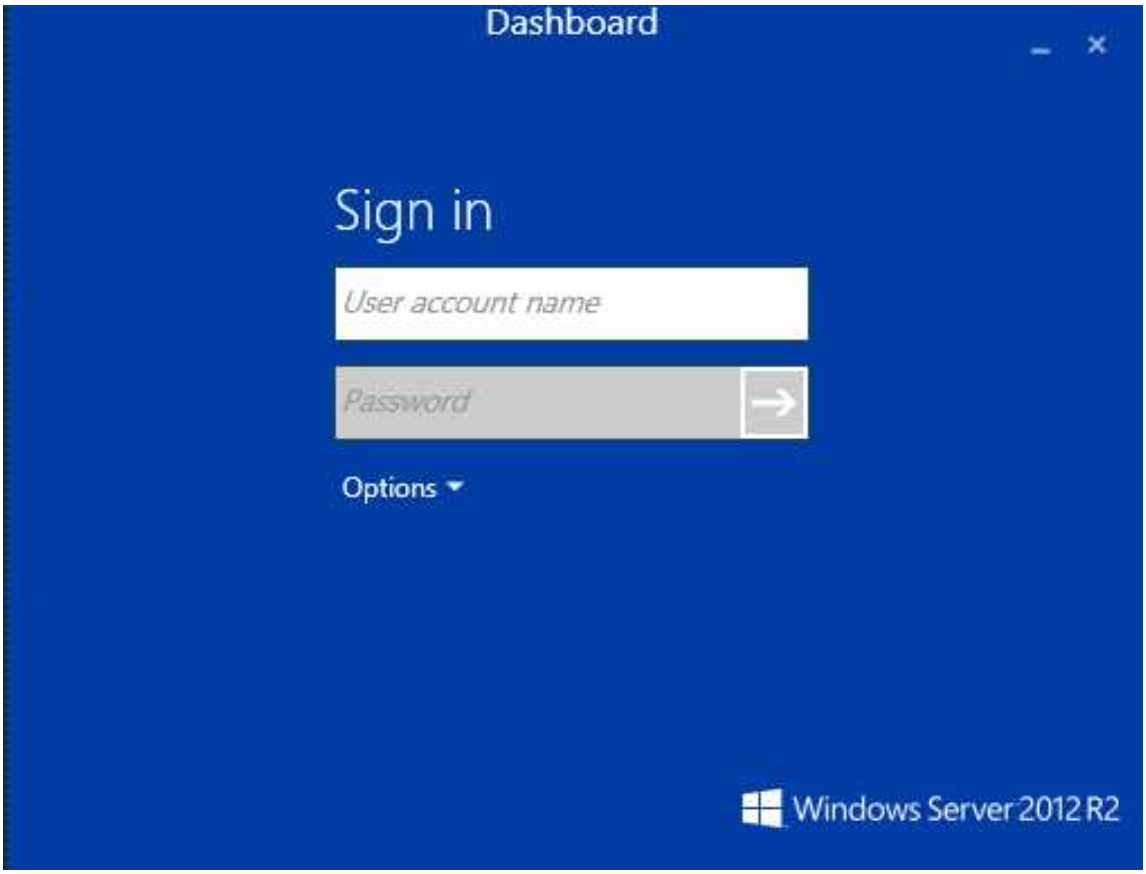
The Windows 8 Start Screen.

In Windows 8 or Windows 8.1, you'll need to expose All Apps to see the tiles for the Windows Server Essentials Dashboard.

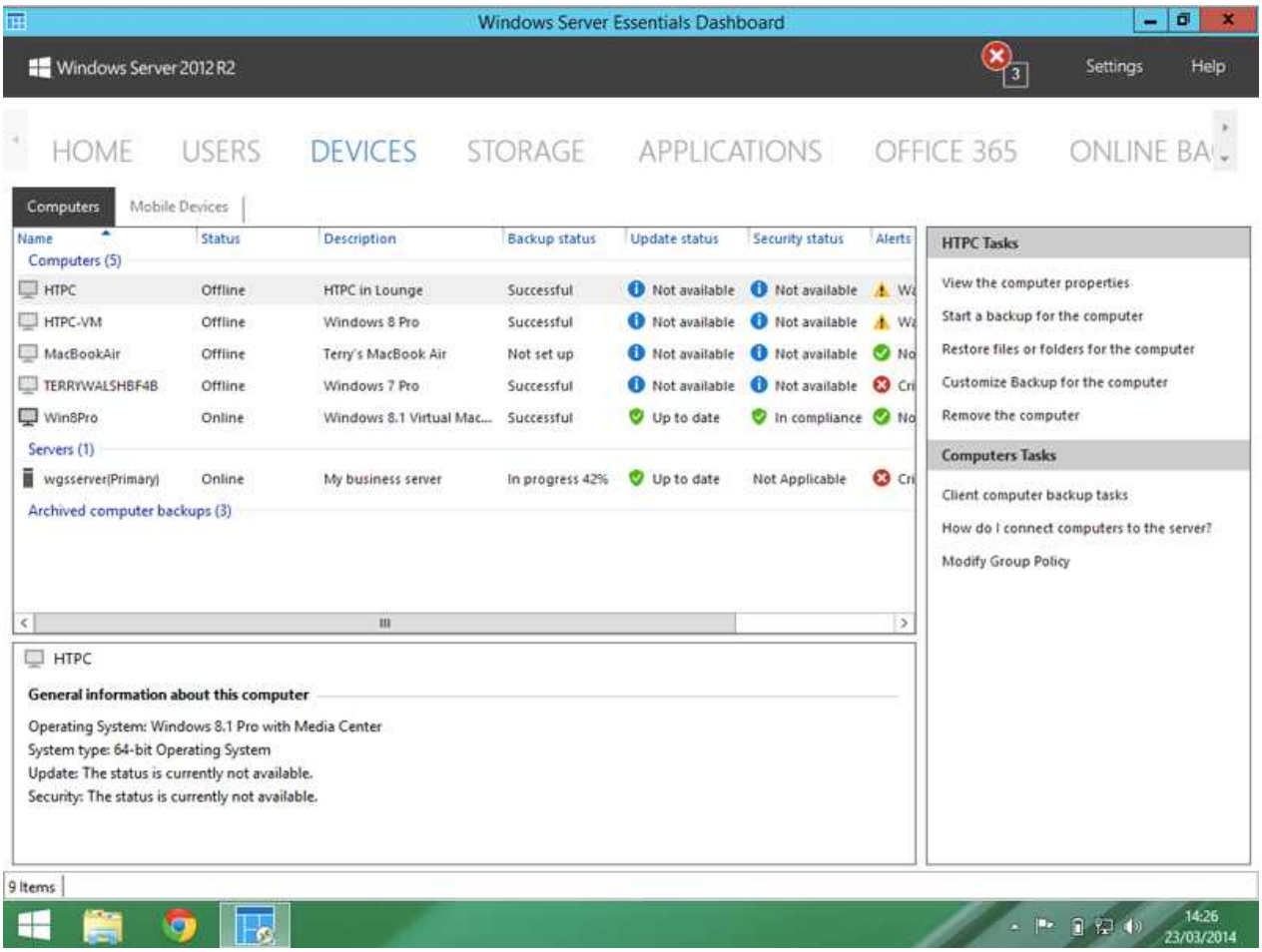


The Dashboard tile.

Clicking the Dashboard tile takes you to the Desktop and a Dashboard sign-in window. Enter your server administrator username and password to view the Dashboard.



The Dashboard sign-in window.



The Dashboard as viewed from a Client PC.

You can proceed to install the Windows Server 2012 R2 Essentials Connector on your remaining PCs and continue on to the next chapter. Before we leave this chapter, however, there is one more item to take a quick look at, which is our growing "devices" list in the Dashboard. Remember, you can save up to 50 devices in Windows Server 2012 R2 Essentials. If you lose a hard drive on a computer, you can perform a Bare Metal Restore of that computer in only a few hours. If you lose the complete computer, you can restore any of the data needed to a new PC.

Migrating Local Account Files and Applications to Your New Network Account

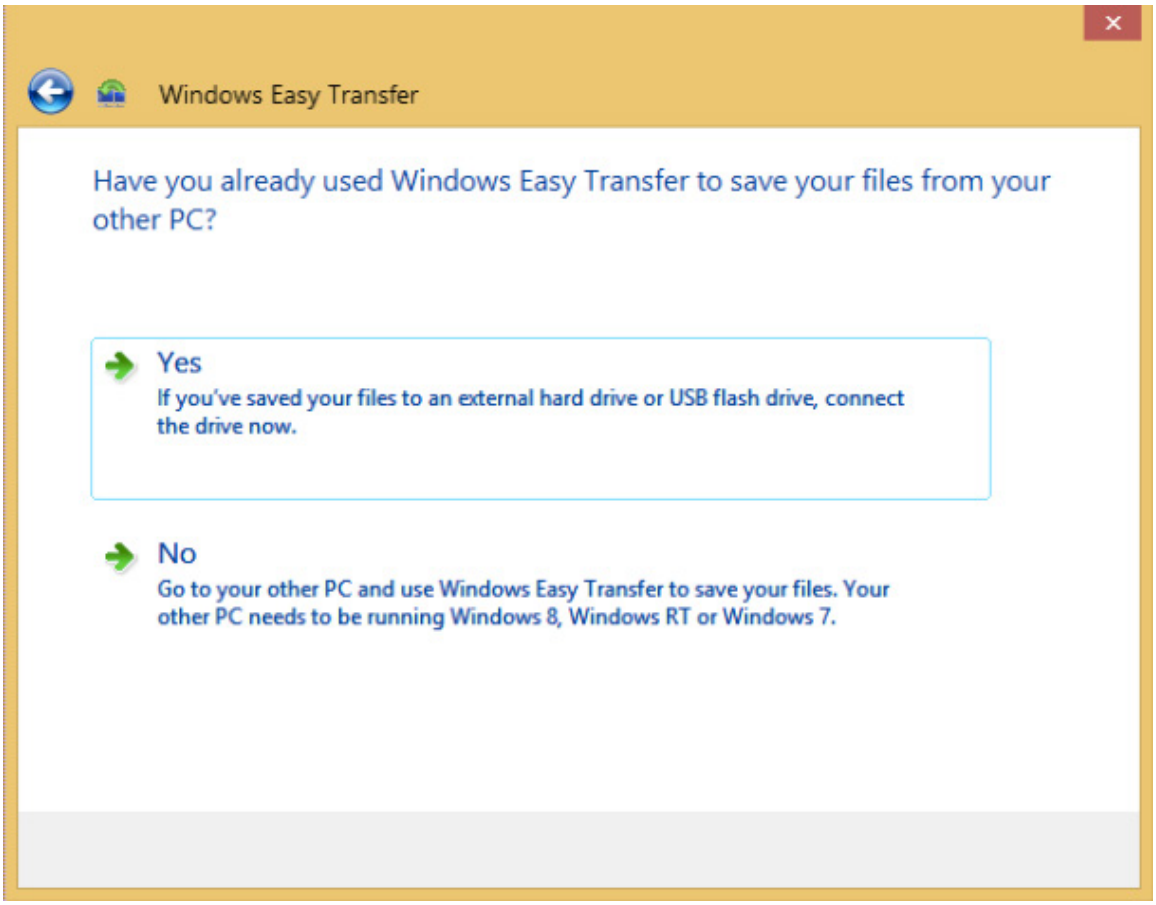
On a PC that was previously using local accounts, you'll realise that your applications and files are not migrated to your new network account. In the previous release of Windows Server 2012 Essentials, you were automatically shown a dialog that would recommend using an app called Windows

Easy Transfer to migrate those files and settings to your new account. That dialog is missing in Windows Server 2012 R2 Essentials - principally because Microsoft have publicly stated that they are deprecating (read: getting rid of) Windows Easy Transfer. Why? Well, because going forward they want you to hold all of your most important files in the Cloud (using their own OneDrive service, of course) rather than store them locally. If everything is in the Cloud, then you can sync that data to your new account. Yes, I know - that's fine for data but not necessarily applications. Please write to Microsoft about their decision, not me!

The good news is - for now - Windows Easy Transfer does still exist in Windows 8.1 (earlier editions of Windows are fine) but you can only transfer files from Windows 8, Windows 7 or Windows RT - not Windows 8.1 local accounts to Windows 8.1 network accounts. You'll also need to hunt for Windows Easy Transfer in the Start Screen by searching for "Easy". So, log back into the PC using your old local account and then find Windows Easy Transfer, load it and let's take a look.

Windows Easy Transfer in Windows 8.1.

You'll be first asked if you have previously saved your files using Windows Easy Transfer.



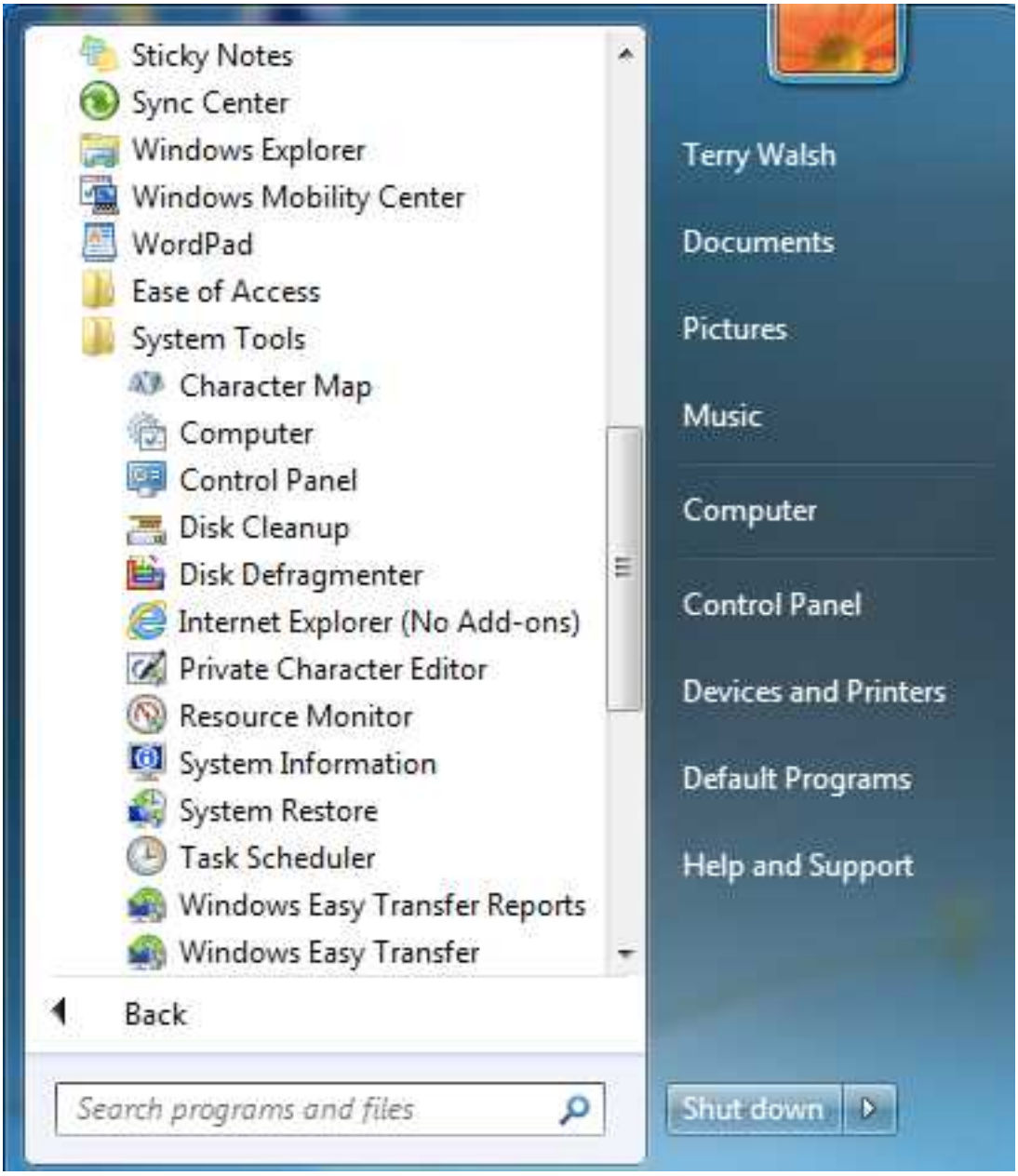
If you click No, then Windows Easy Transfer will simply exit. You'll need to go to your older Windows 7, RT or Windows 8 PC to save your files using Windows Easy Transfer.

From here, we'll take a look at two solutions for migrating account settings and data to a new Windows 8.1 network account. The first, using Windows Easy Transfer, is restricted to migrating from an older PC to a new Windows 8.1 network account. The second solution, using the **User State Migration Tool**, can also be used for migrating older accounts to new accounts but is also relevant for migrating local Windows 8.1 accounts to network accounts.

Migrating Files from a Local Windows 7, 8 and RT Account to a Network Account

Please note that on a Windows 8 machine that is tied to a Microsoft Account, you will be able to save the data, however, you will not be able to transfer that data to a network account. If the local account is not tied to a Microsoft Account, you will be able to transfer settings and data from the local account to the network account. Microsoft doesn't like to make things easy!

In the Start Menu of your old machine, look in System Tools for the **Windows Easy Transfer** option. Click it to begin.

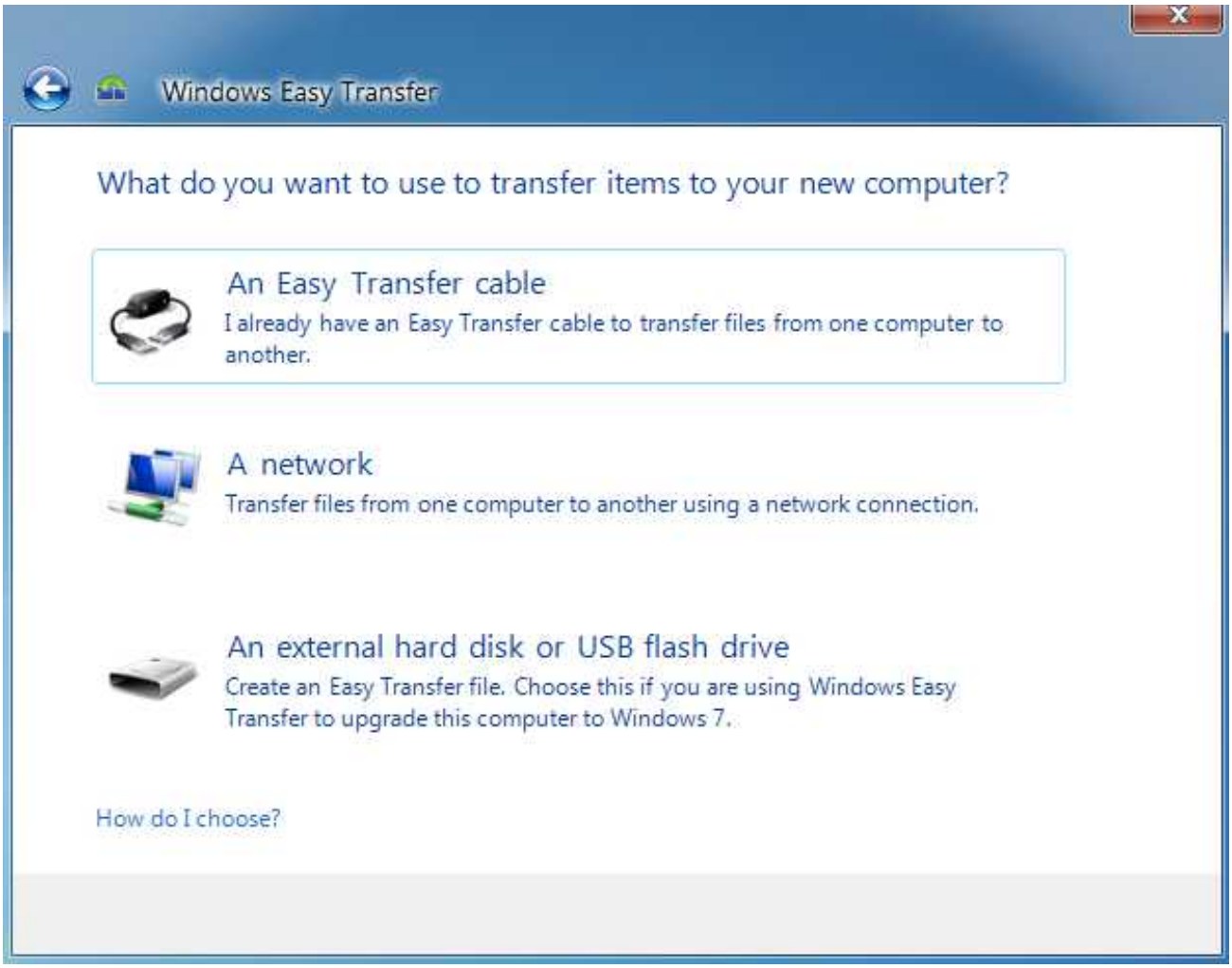


Windows Easy Transfer in the Start Menu.

From the wizard introduction, click on **Next**.

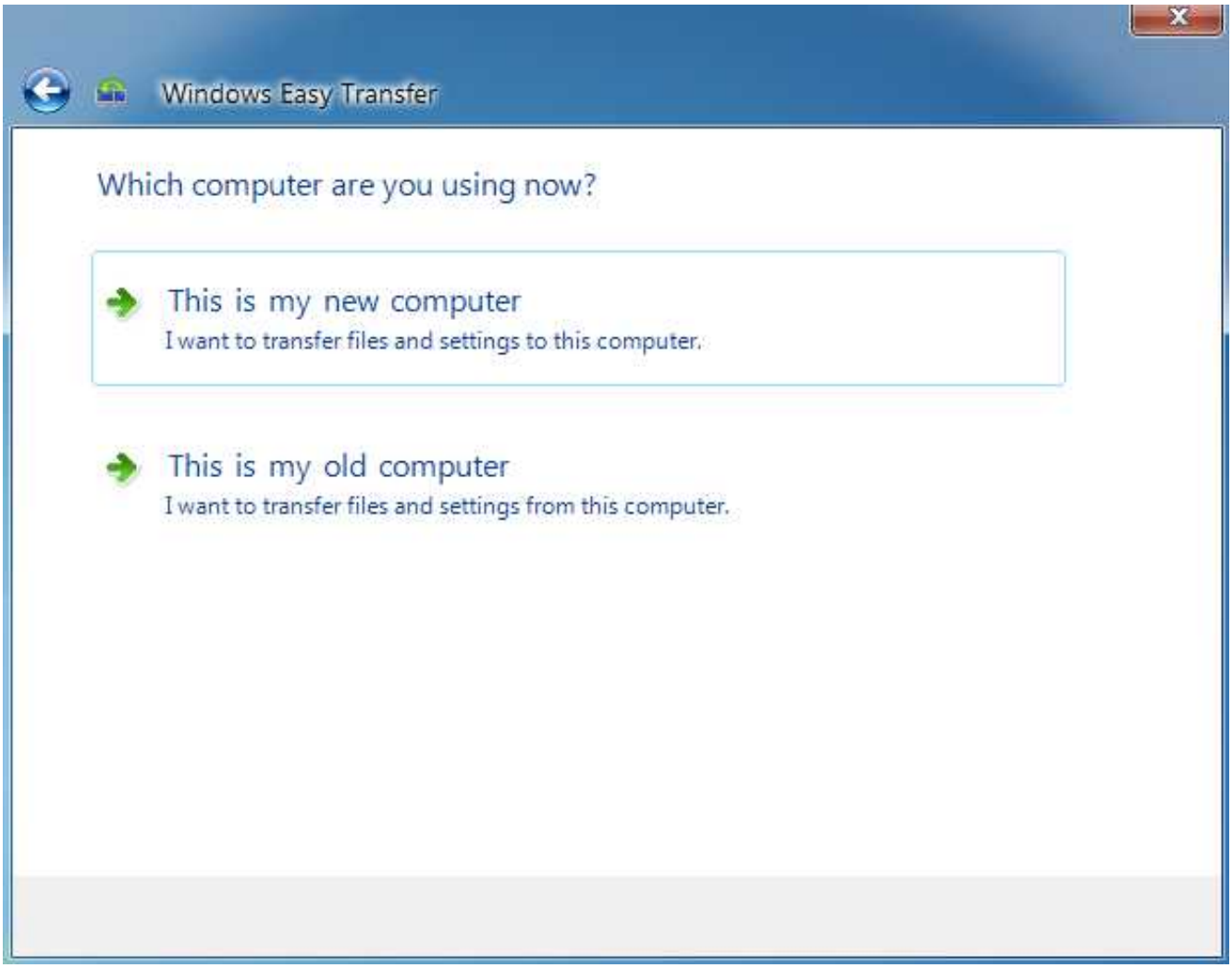
Windows Easy Transfer in Windows 7.

In the following screen, we decide where to save the data files. Select **An external hard disk or USB flash drive.**



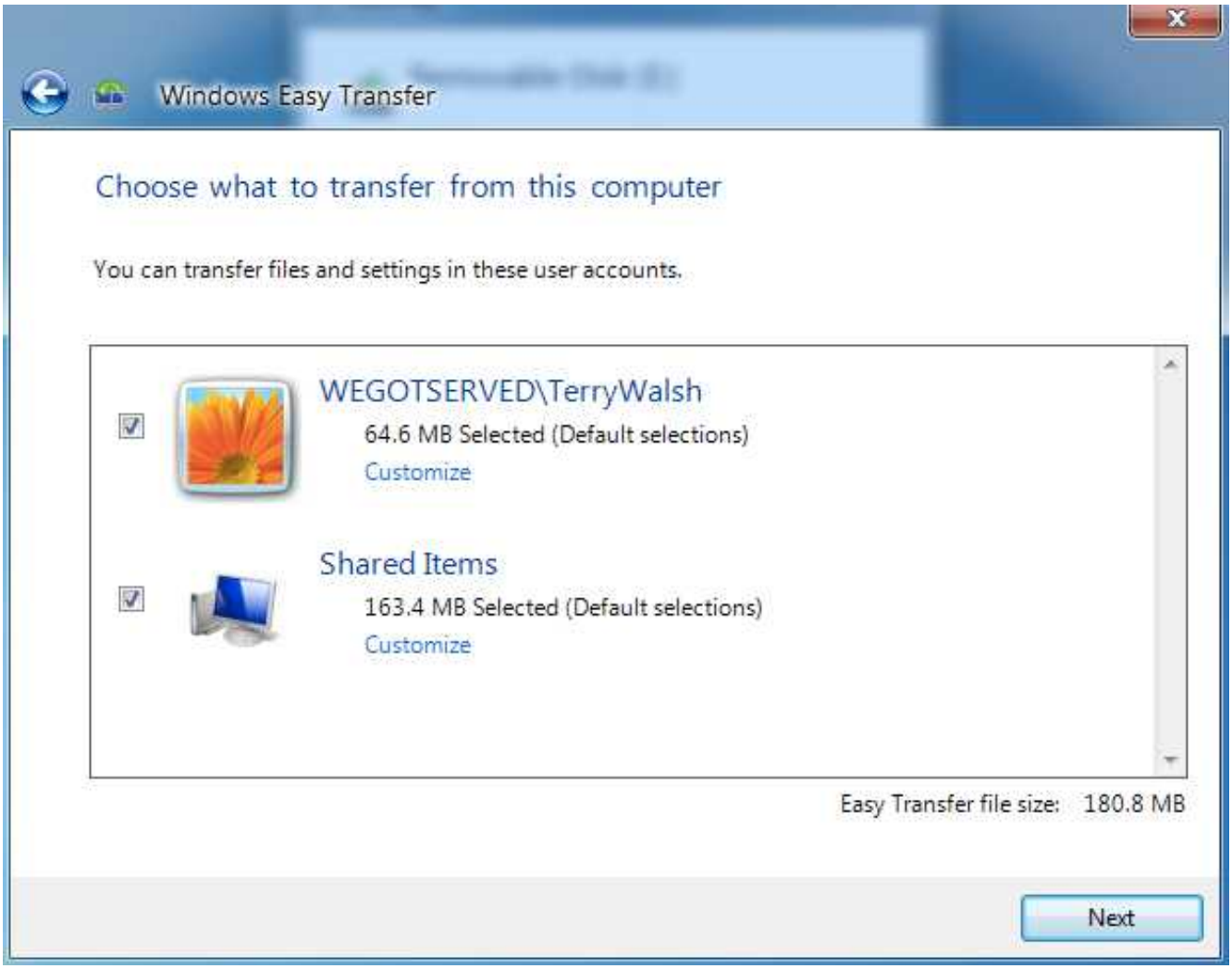
We'll save our files and settings on an external drive.

You'll be asked which PC you're using right now - the old PC or new PC. We need to use the second option.



We're migrating from the old computer, so the second option is the order of the day.

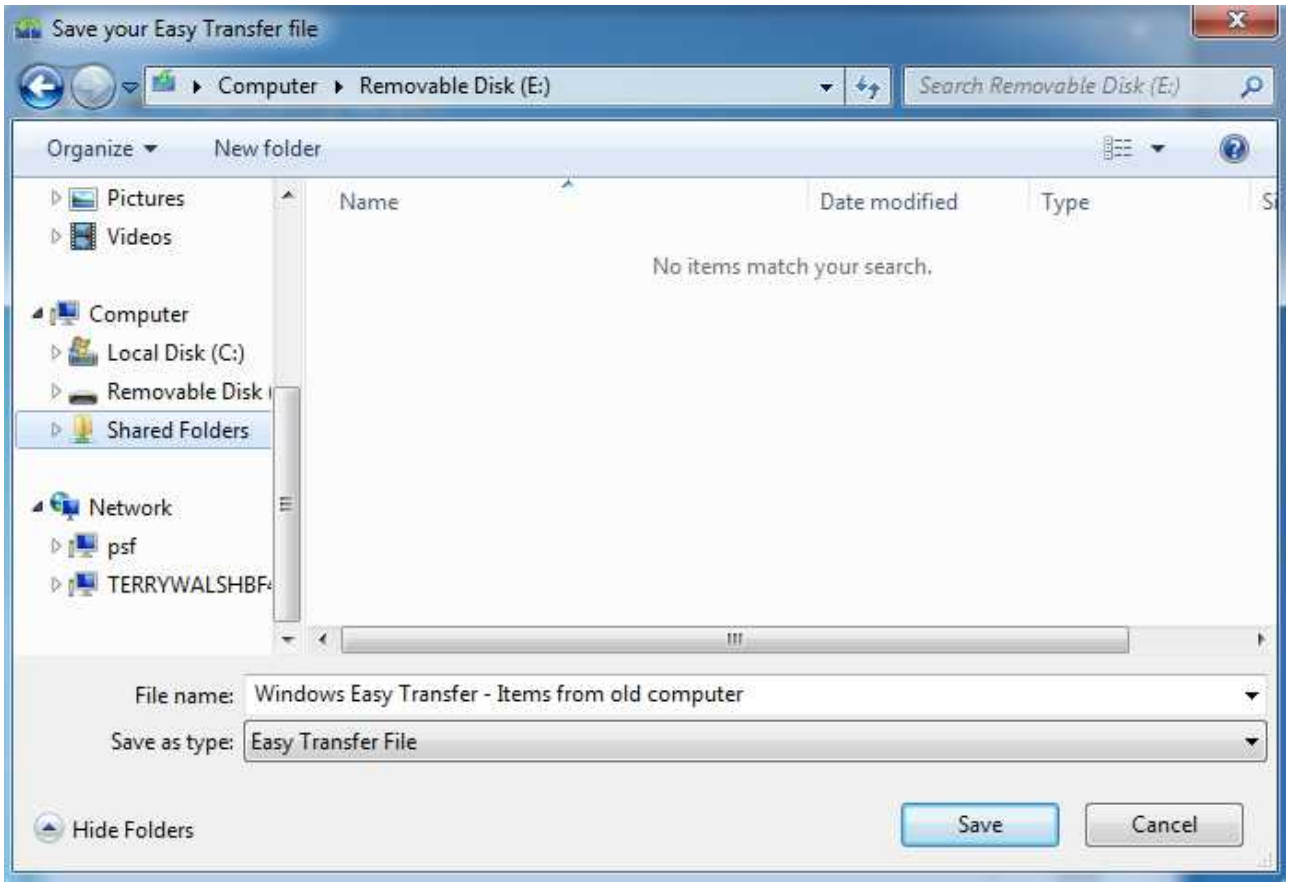
The wizard scans the existing account details:



Once scanned, we can choose which accounts that we need to transfer. We will leave everything checked so all of our data is transferred. Once we click on **Next**, we are given the option to create a password protected file. Leave the fields blanks and click **Save** if you do not wish to protect.

Protecting our migrating files.

Next, we select a location - I've plugged in a USB drive to the old PC and will save the migrated files there. Navigate to your chosen location (you can save to a network location if you don't have a spare USB drive handy) and click **Save**.

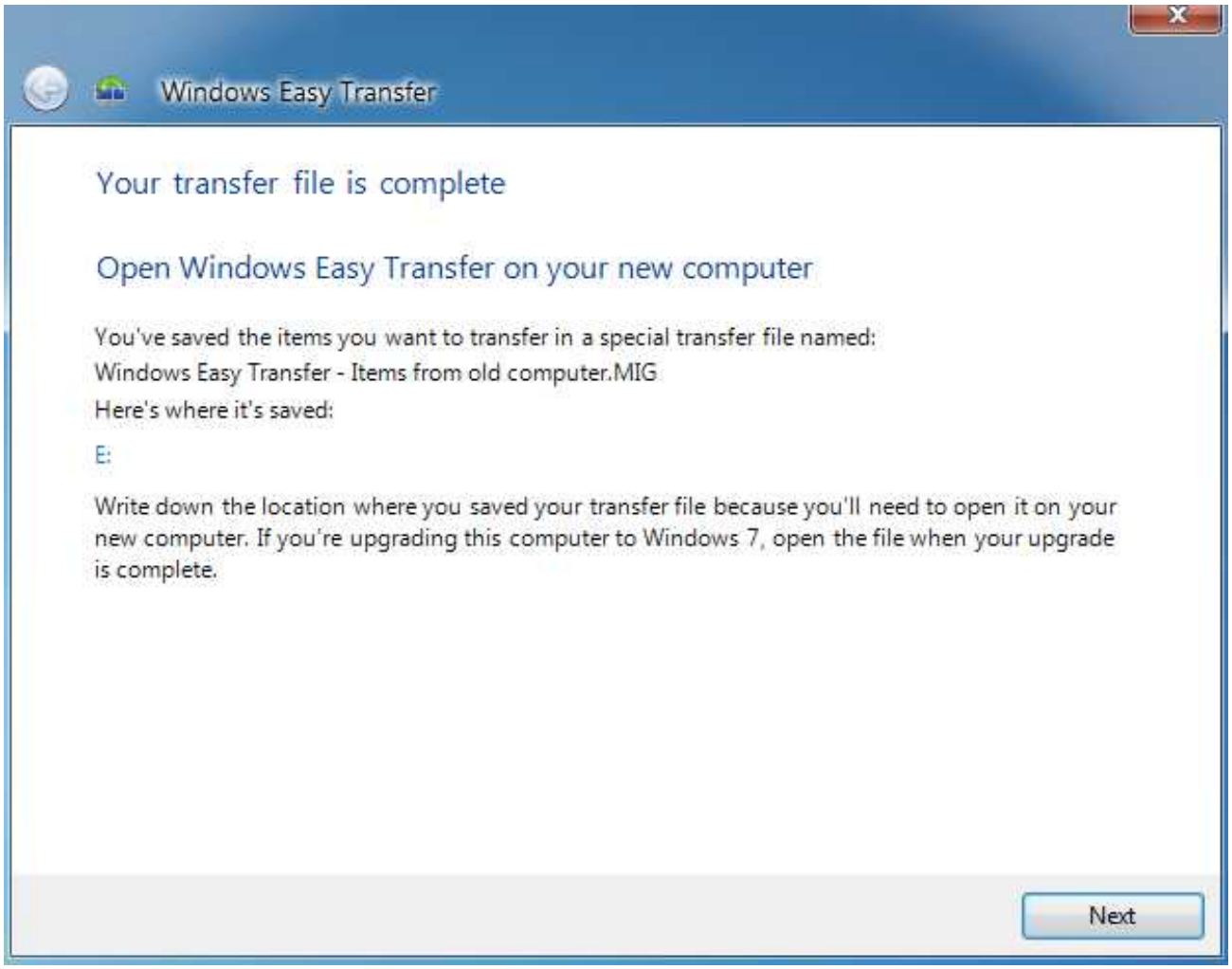


Selecting the Save destination.

The files will be saved to your chosen destination.

Saving the files.

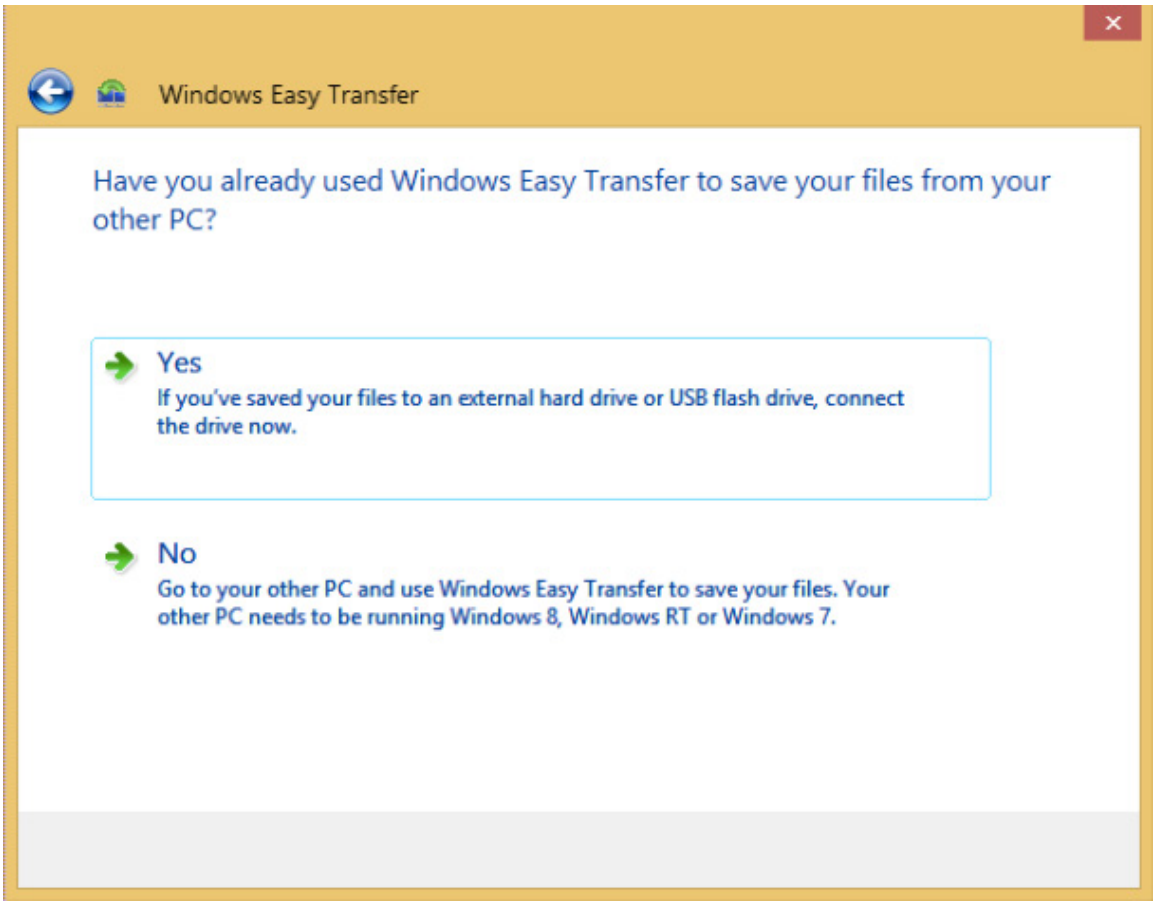
In a short while, the migration file has been saved.



The file has been saved.

We are now ready to transfer settings and data from our old local account to our new server account. Click **Next** and close Windows Easy Transfer on your old PC.

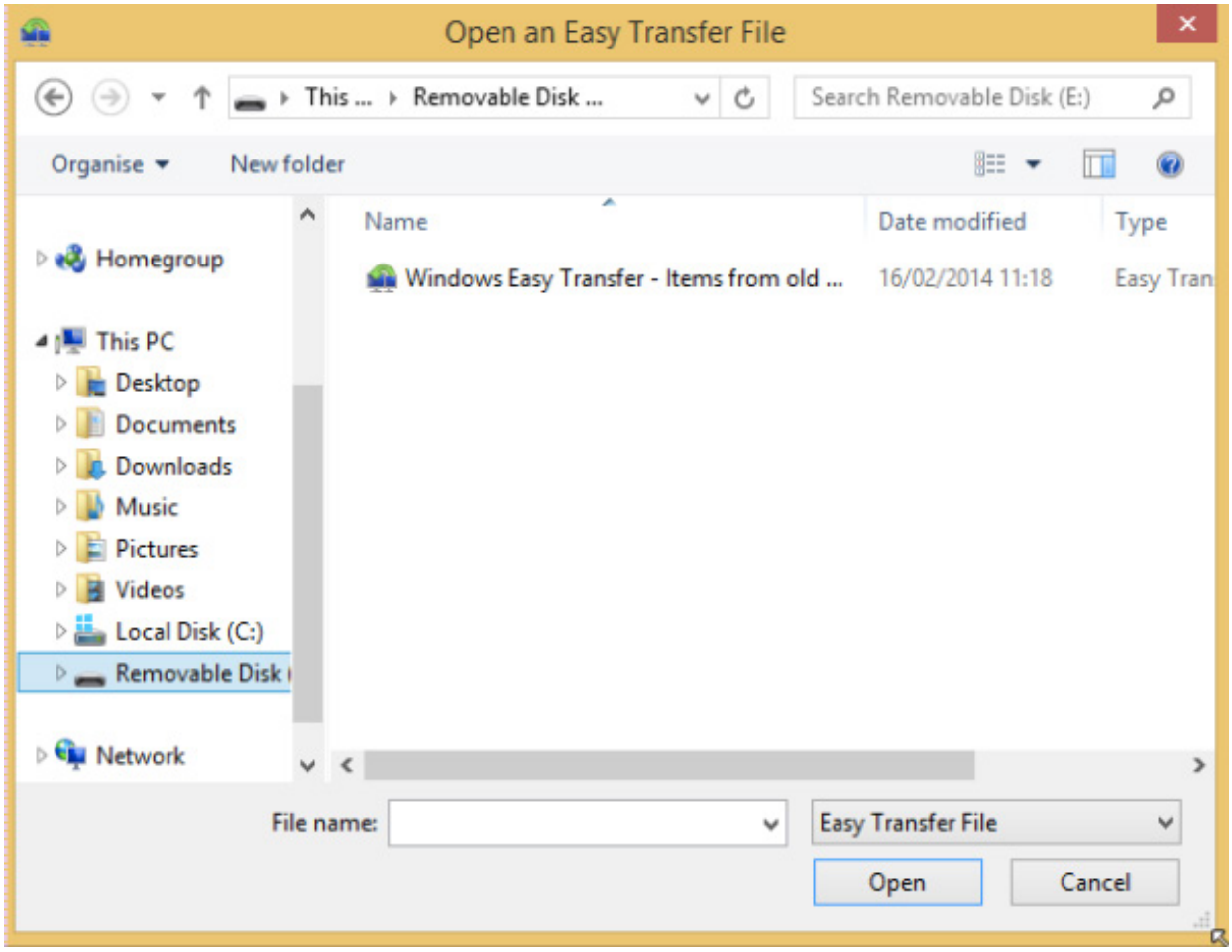
We open the Windows Easy Transfer program once again on our Windows 8.1 Client PC. This time, we use the first option as we now want to transfer data to this computer.



Select Yes to continue the transfer.

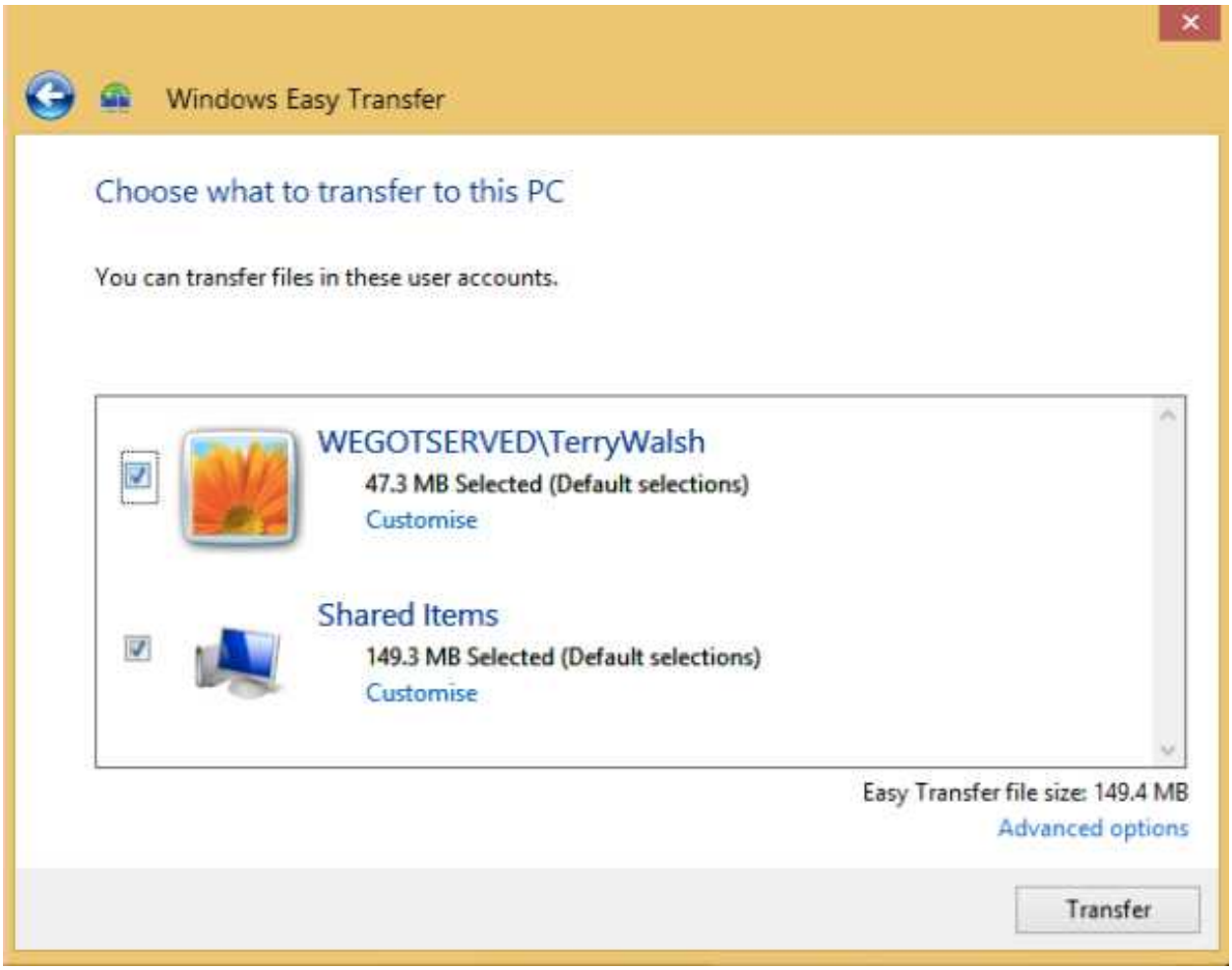
Plug in your USB drive (if that's what you used to save your files) and you'll be asked to point to the

.MIG migration file that we just saved. Locate it and select **Open**.



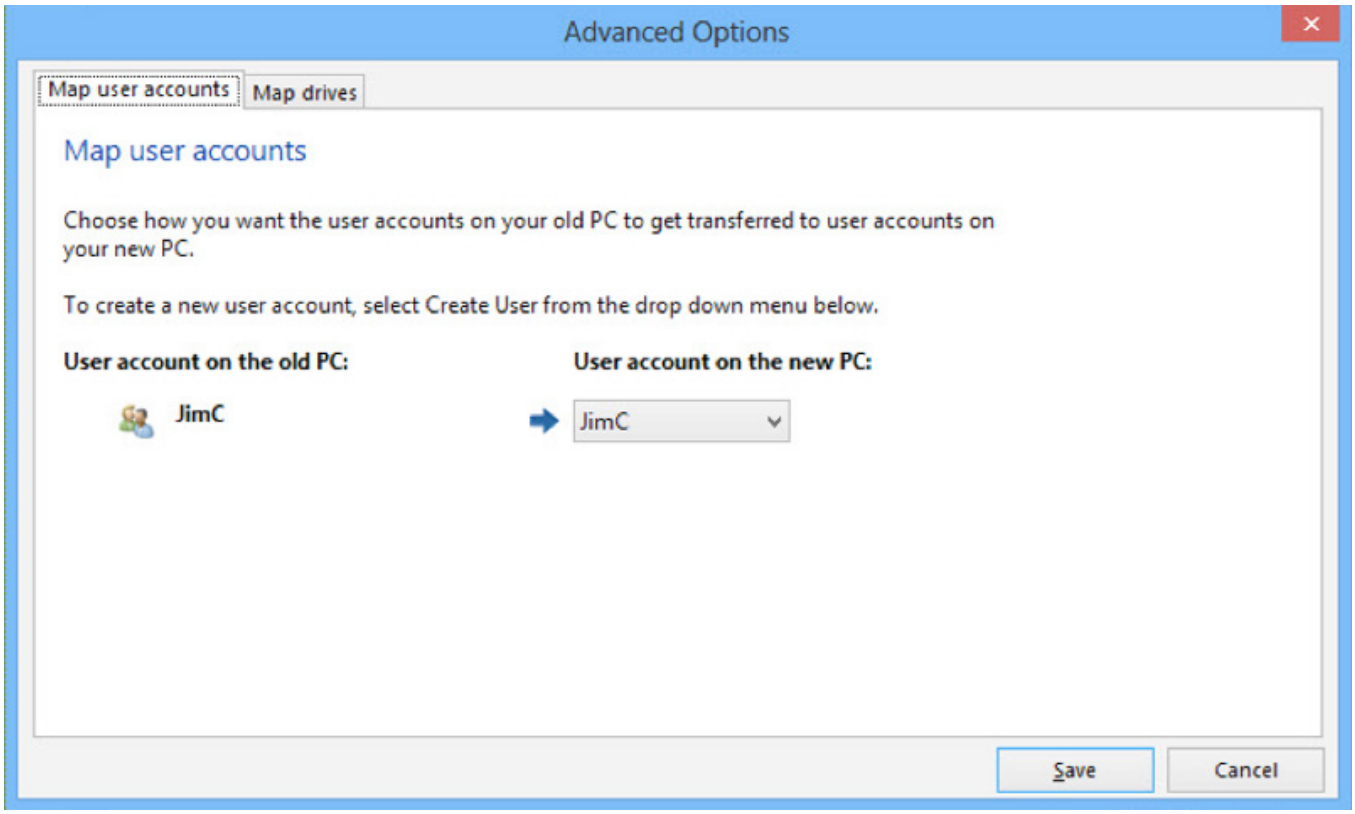
Opening the migration file.

Next, we choose what to transfer to the new account.



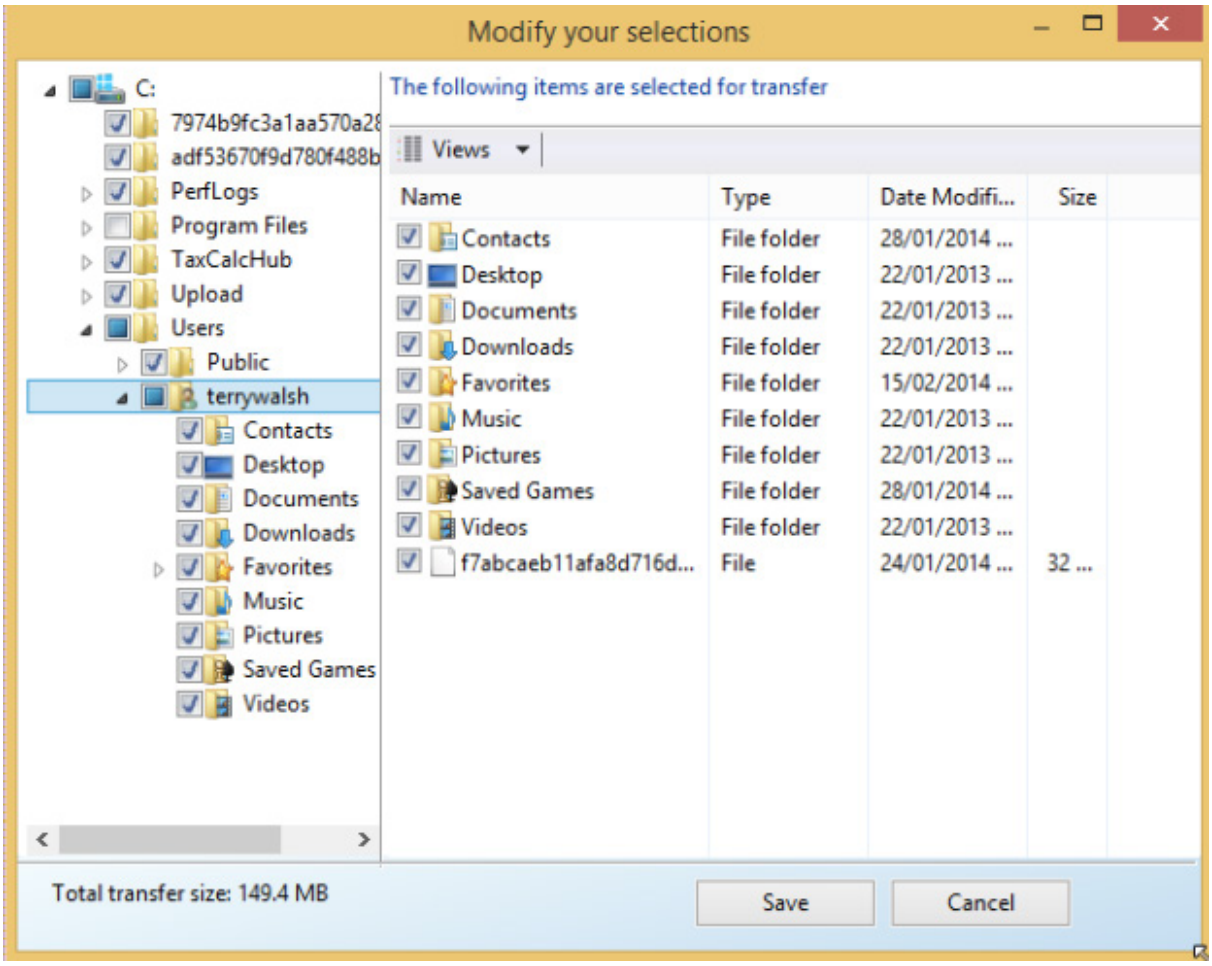
Choosing items to transfer.

On eligible operating systems, you can transfer account settings as well as data. In this scenario, you'll need to map the old account to the new network account:



Mapping accounts.

If you wish to view and tailor the files and folders that are transferred over then click the **Customize** link and you'll be shown a tree view of your data. Simply uncheck what you don't wish to move.

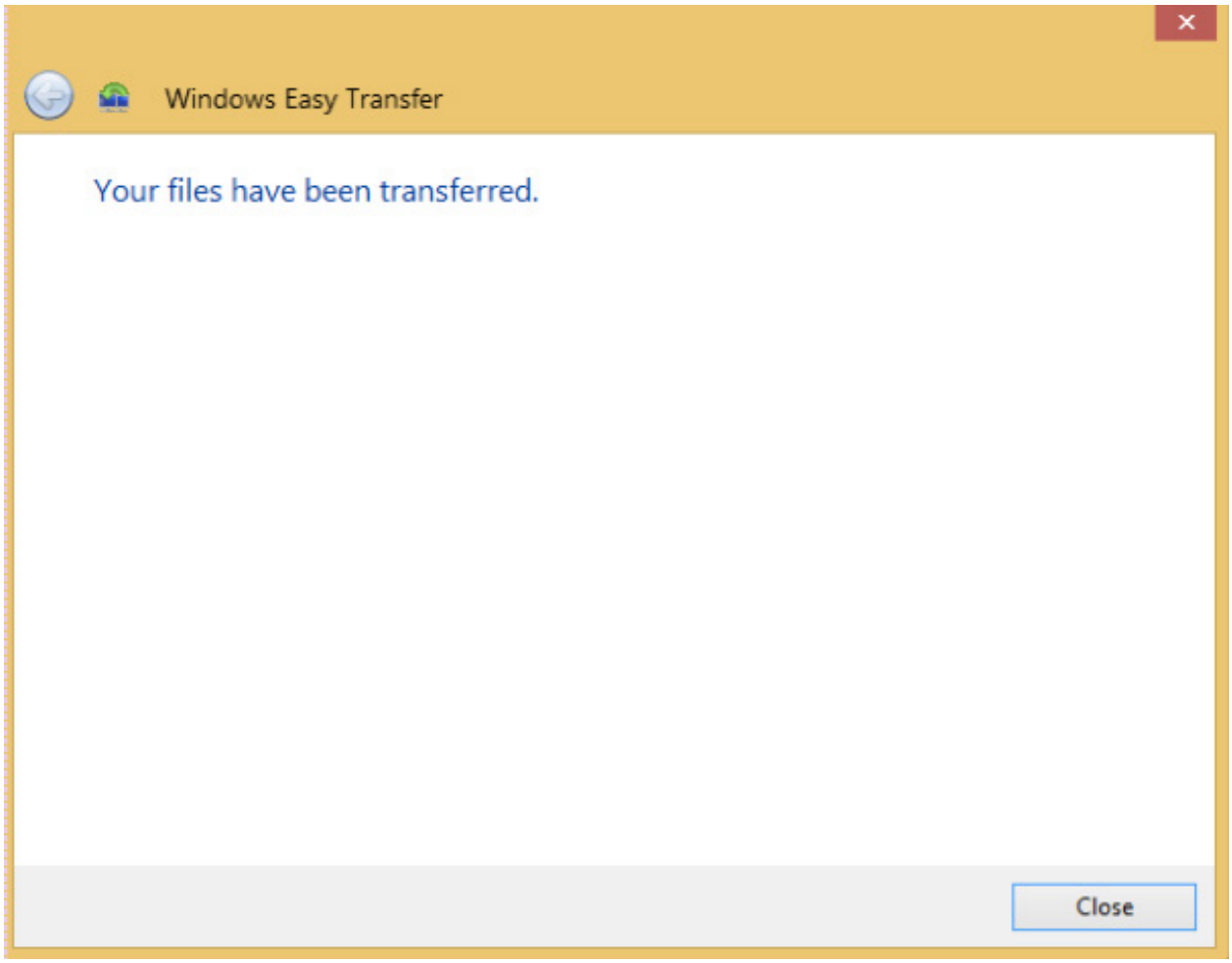


Customizing the transfer.

Once you're ready to transfer, then click the **Transfer** button to migrate your files.

Transferring the data.

Leave the PC to do the transfer and in a short while it'll be complete.



We're done.

Migrating Files from a Windows 8.1 Local Account to a New 8.1 Network Account

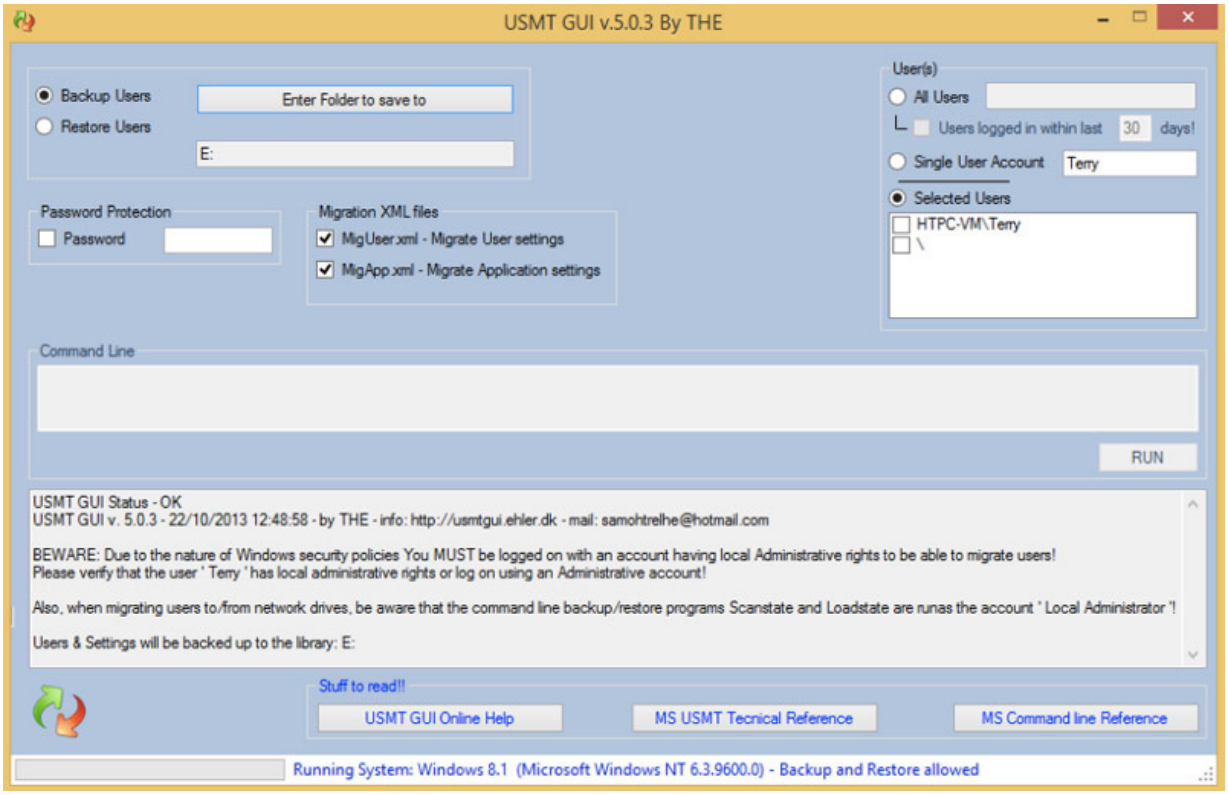
Whilst Windows Easy Transfer is still (just about) around, it may have its place in your migration approach - but we're going to need to find a new solution for migrating local Windows 8.1 account files and settings to a new Windows 8.1 network account.

There are a plethora of options available on the market to support migration of local Windows 8.1 accounts to domain accounts - some are commercial applications, some are free with donations requested.

If you have time on your hands and wish to learn a little (actually, a lot of) scripting, then Microsoft's

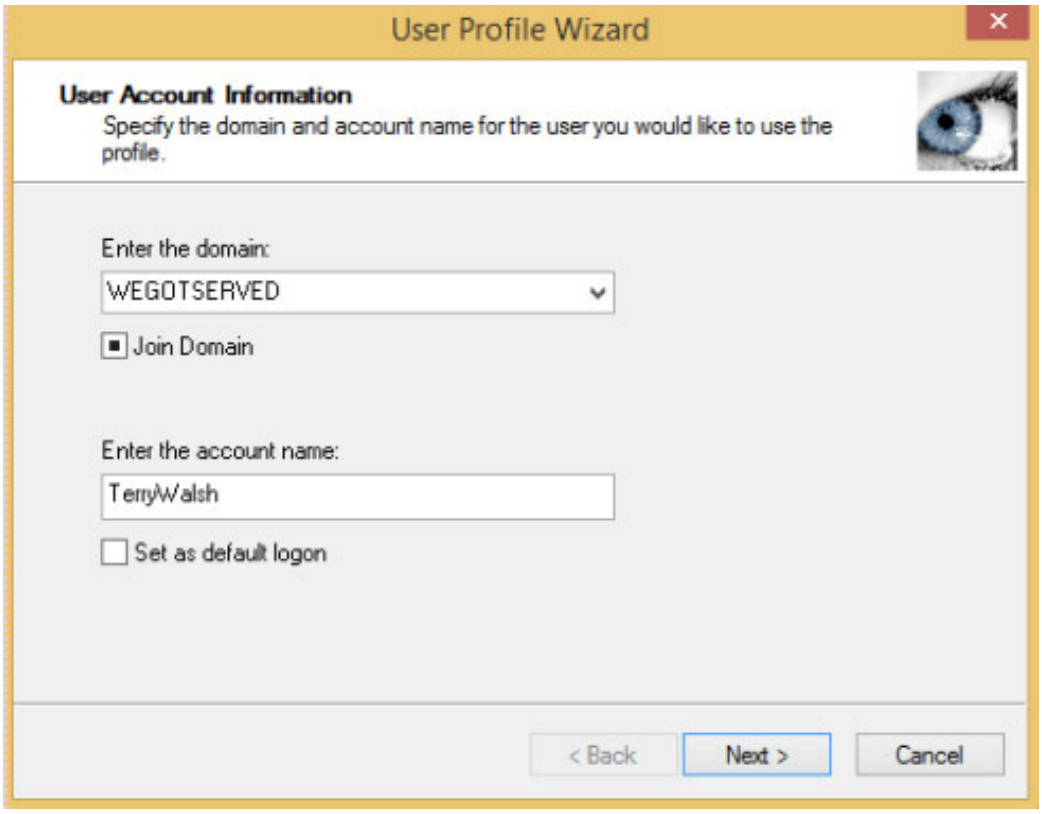
User State Migration Tool (http://technet.microsoft.com/en-us/library/hh825256.aspx) is an advanced tool for migrating local to domain accounts.

A number of developers have created graphic user interface (GUI) overlays for the User State Migration Tool, allowing a more wizard-based approach to migration. A couple of examples include **Workstation Migration Assistant** (http://dcunningham.net/applications/workstation-migration-assistant/) and **USMT GUI** (http://usmtgui.ehler.dk/)



Migrating local accounts with USMT GUI.

Another free tool to check out is ForensIT's free **User Profile Wizard 3.7 Personal Edition** (http://www.forensit.com/downloads.html) which also boasts the ability to migrate accounts to your new domain.



User Profile Wizard 3.7 Personal Edition.

Of course, if it all feels a bit confusing, there's always the manual route of copying user data from the local account to an external hard drive and copying back to the new domain account - but remember this route only works for data and not application settings.

OK, that takes care of the basics - PCs that support being joined to a domain-controlled network. Cast your mind back to the start of the chapter, and you'll remember that Windows "Home" operating systems do not support being joined to a domain. So what are we going to do with them? Let's

take a look in Chapter 7.

Connect Apple Macs and Other Computers to the Server Network

"In the last chapter, we added Windows PCs to our Windows Server 2012 R2 Essentials network - these were Windows Enterprise, Professional and Ultimate PCs that can be easily joined to a Windows Server domain."

However, small business and prosumer environments are becoming ever more complex with multiple devices and operating systems in use. In the past, life was a little easier as most devices would be running some kind of edition of Windows but in the last couple of years, the world has seen a shift.

We're still using Windows PCs, of course, but they've been joined by Apple Mac desktops and notebooks, iOS and Android mobile devices, a growing number of Windows mobile devices and computers running Linux.

Even on the Windows PC side, not all versions of Windows are created equal. Home editions of Windows cannot be joined to a Windows Server domain, as we mentioned earlier in the book and in the last two years we've seen Windows RT and Pro tablets hit the market. If you're confused about what devices will work well with Windows Server 2012 R2 Essentials and what won't, then I completely understand - it's a mess of fragmentation out there. My job in the next two chapters is to help you answer that question. So, in this chapter, we'll walk through connecting some of the more popular alternative computer operating systems to the server (that unfortunately aren't able to use the full Essentials feature set like Windows Enterprise, Professional and Ultimate PCs we connected in the last chapter. Then, in the next chapter, we'll switch to mobile devices.

Connecting Windows "Home" PCs to the Essentials Server Network

When we talk Windows "Home" PCs, we're talking computers (notebook and desktop) running:

- Windows 7 Home Premium
- Windows 8

- Windows 8.1

While it may well be possible to join Windows 7 Starter and Windows 7 Home Basic editions, we made no attempts to add a computer running these more niche versions of the operating system. If you're running even older editions of Windows on your network, then I'd recommend to upgrade them to at least Windows 7 to ensure they retain support from Microsoft for security patches and updates.

To connect a Windows 7 or 8 "Home" PC, the process to install the Dashboard and join these computers to an Essentials domain is the same as we experienced in the last chapter with two exceptions:

- Once the Windows Server Connector software has determined that you have a "home" based operating system, you will be asked to provide the server administrator user name and password to complete the process.

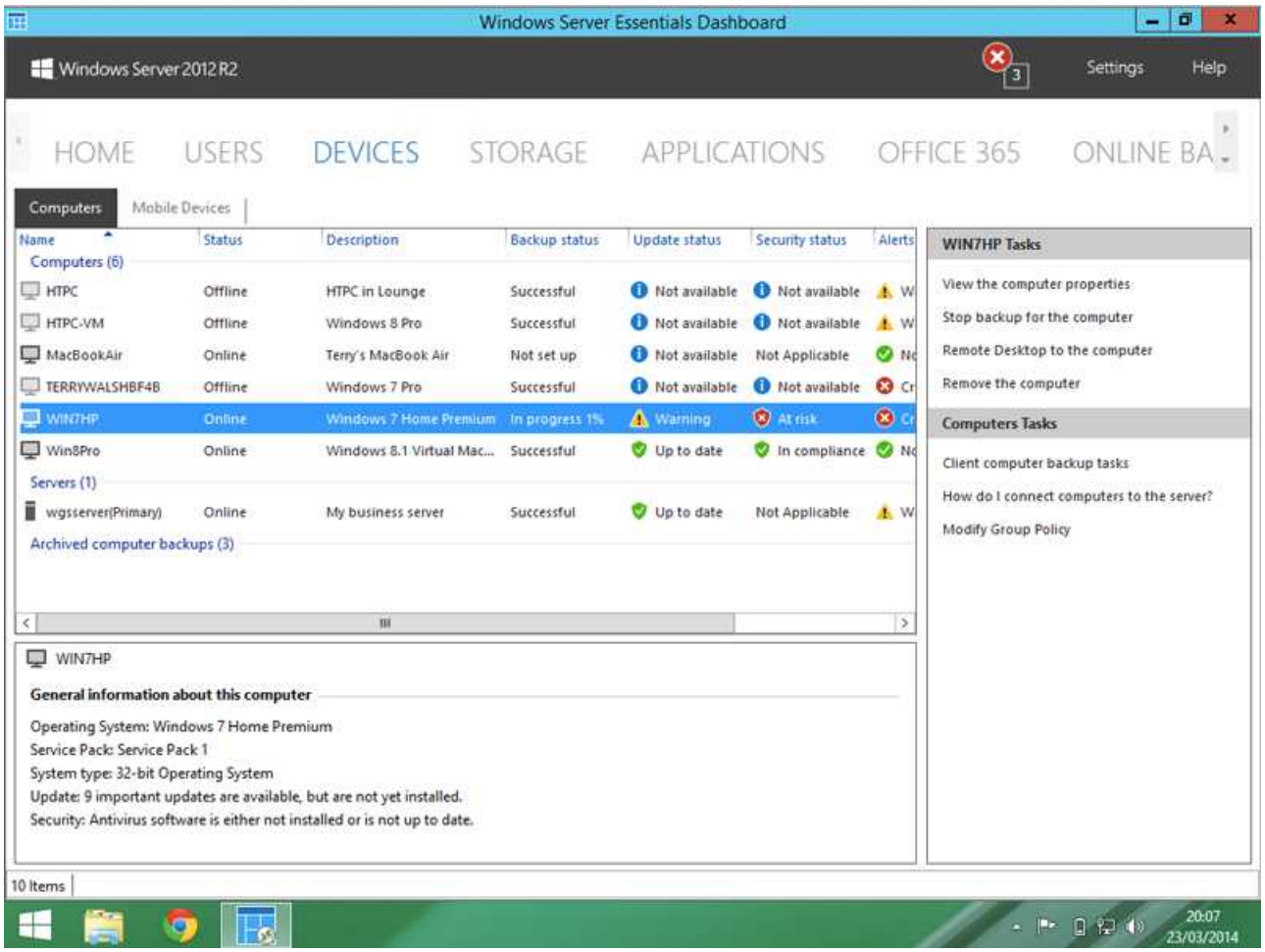
- You will **not** be asked to provide a domain user name and password.

Other than that, the process is identical.

You might ask now how does one log-in to these computers and how does one access the server shares? The answer is quite simple and involves one very simple trick.

First, you will use a **local** account to log in to these computers. Second, create that local account with a user name and password that is **identical** to one of the server user names. Of course, if you are using Windows 8 or 8.1, this local account **cannot** be a Microsoft Account.

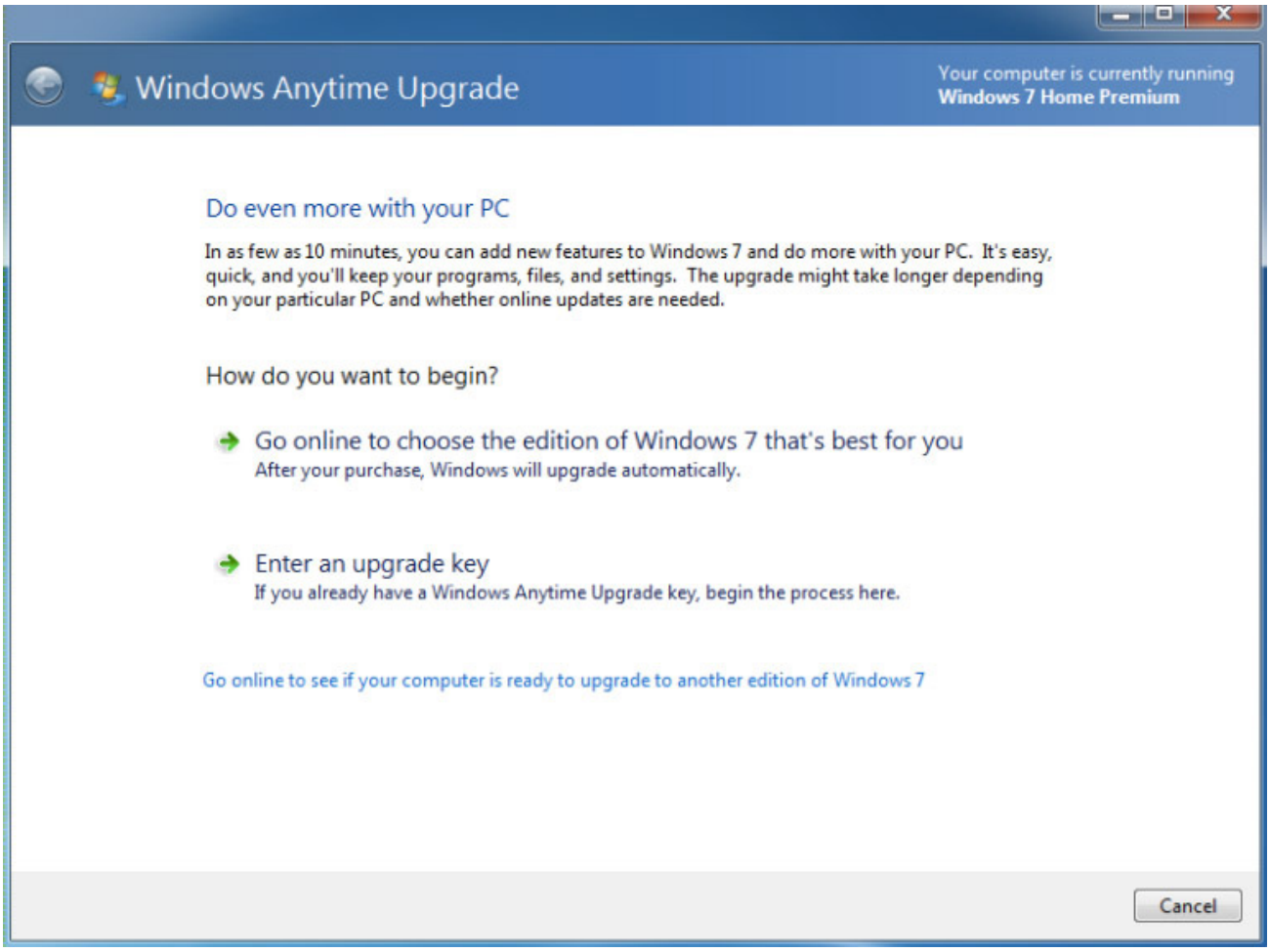
The downside of using a "home" based operating system with Windows Server 2012 R2 Essentials is that you are unable to manage the local user account from the server. But you can still use the Windows Server 2012 R2 Essentials Dashboard and Launchpad from a Home Edition Windows PC, back-up those PCs to the server for protection and use Anywhere Access through the web browser, and that may be all you need.



Backing up Windows 7 Home Premium to the server.

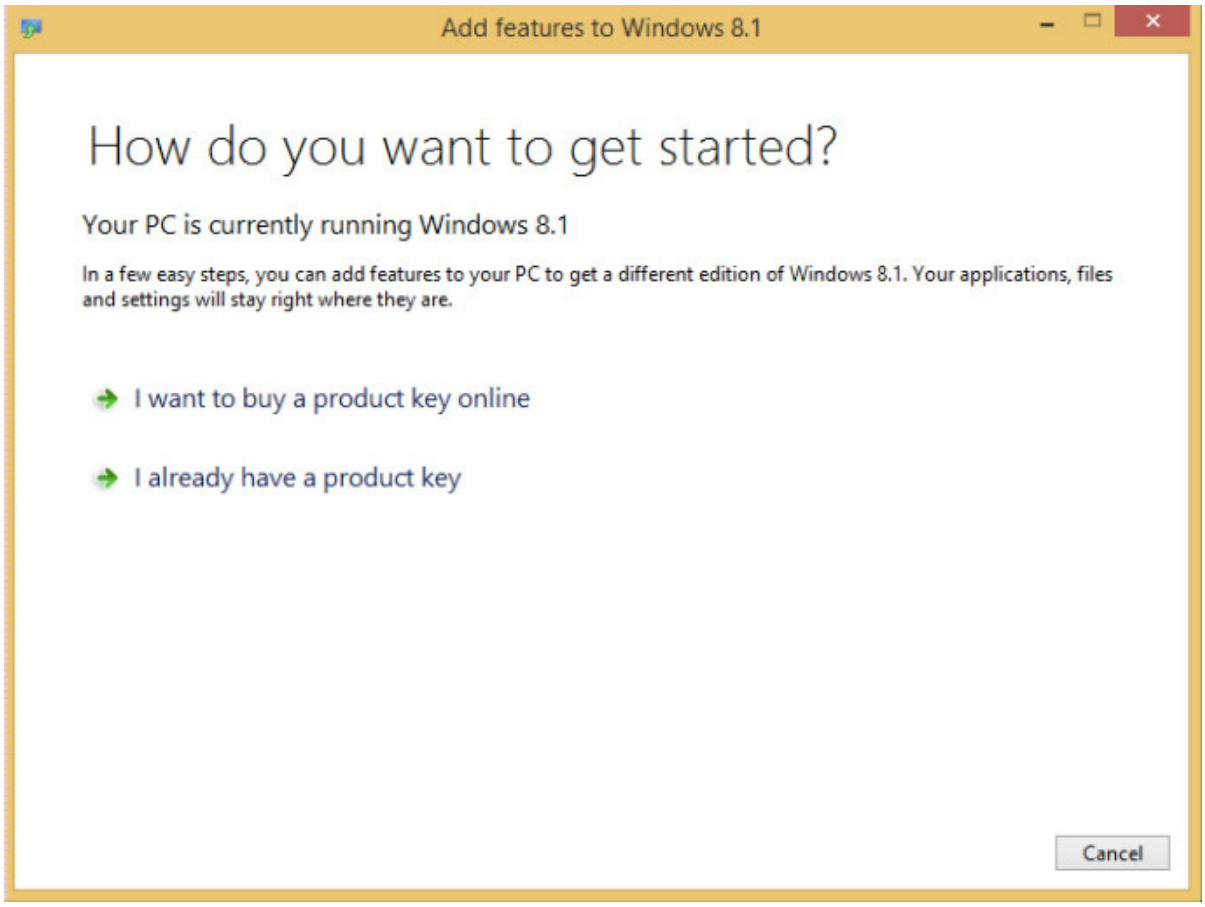
Upgrading Windows Home and Standard Editions

If you're using Windows Server 2012 R2 Essentials as a prosumer in the home and/or for home office use, the trick above will work absolutely fine for accessing files and folders stored on the server and other basic features of the operating system. But for business use, I'd recommend upgrading your client operating systems to a compatible edition - both Windows 7 and Windows 8 offer easy "in-place" upgrade paths to convert a Home edition of the operating system to Pro. On Windows 7, just search for "**anytime upgrade**" and then click on **Windows Anytime Upgrade**.



Windows Anytime Upgrade.

On Windows 8, hover the mouse pointer at right edge of the screen, and then click **Search**. Enter "**add features"** in the search box, and then tap or click **Settings.** Select **Add features to Windows 8** and you can proceed to upgrade your version of Windows. Both Windows 7 & Windows 8 offer a wizard-based installation option so there's no need to go to the shops and buy a DVD - everything's handled for you on the PC. All you need to do is hand over your money to Microsoft!



Upgrading Windows 8.1.

Connecting Apple Macs to the Windows Server Network

Windows Server 2012 R2 Essentials officially supports the connection of Apple Macs running

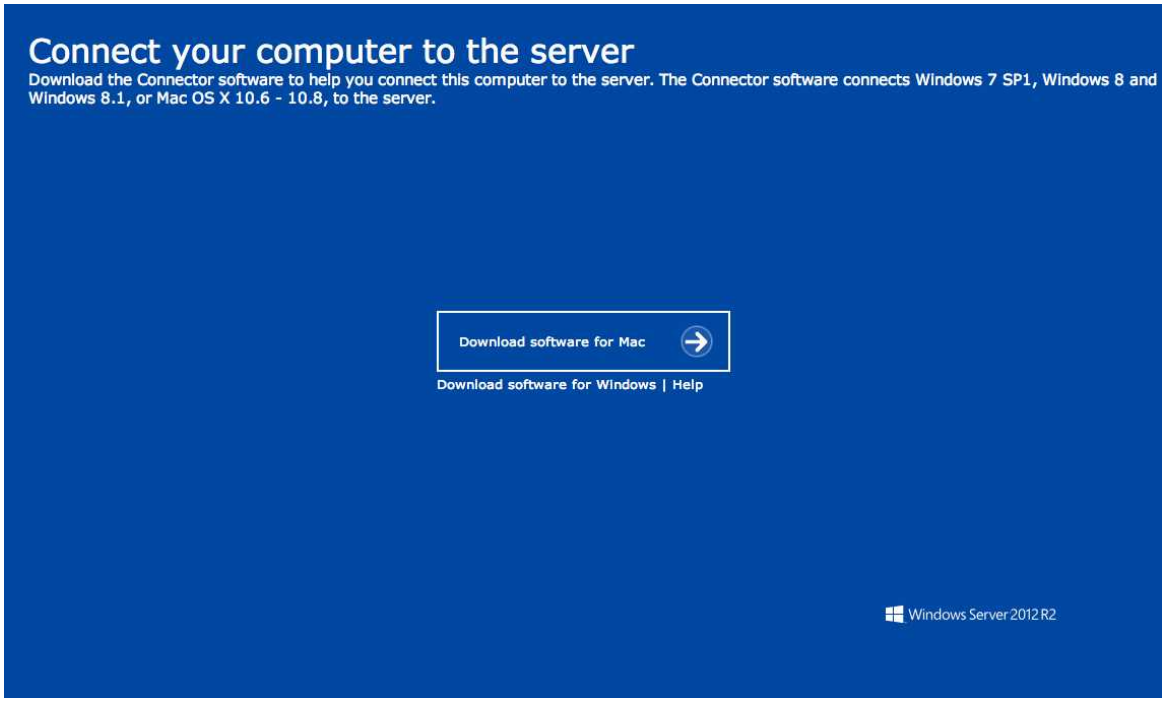
- Mac OS X v10.5 Leopard
- Mac OS X v10.6 Snow Leopard
- Mac OS X v10.7 Lion
- Mac OS X v10.8 Mountain Lion

The current edition of OS X, 10.9 Mavericks is not officially supported by Microsoft and most likely won't be until we see a new edition of Windows Server Essentials hit the market. That said, you can try connecting a Mac running OS X 10.9 Mavericks and if your experience is anything like mine,

you'll see that it works just fine. Should anything go awry, you're using an unsupported configuration and so Microsoft/your server manufacturer may not be able to help you out, but otherwise, you can choose to proceed, or wait until official support is announced.

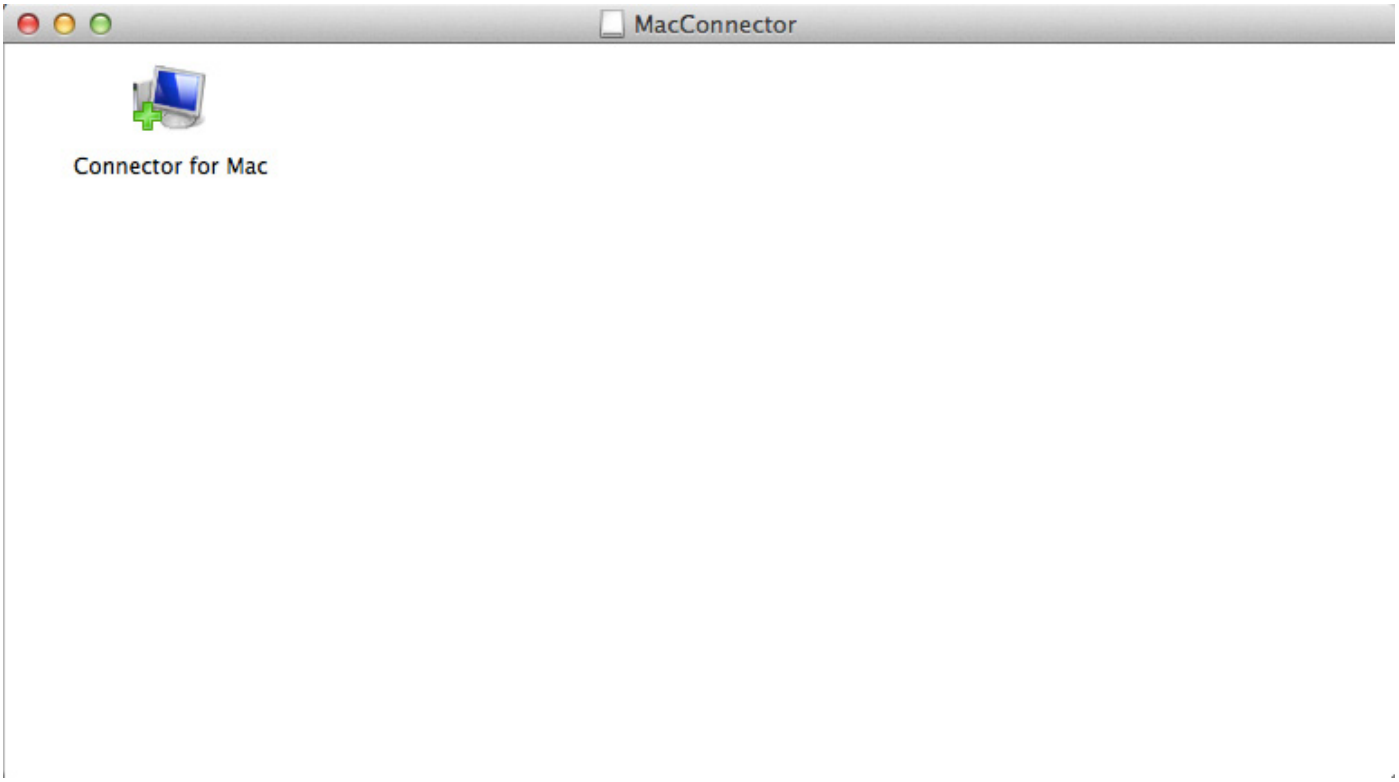
Once connected to the network, you can view the health and backup status for a Mac computer from the Windows Server 2012 Essentials Dashboard. However, you cannot configure computer backup or start a backup from the Dashboard. Nor can you use Remote Web Access to connect a Mac computer to the network (as you can with a Windows PC).

Installing the Windows Server Essentials Connector on a Mac does require a bit of ingenuity however. You may not initially be able to access the server using the **server name** to download and run the connector from your web browser. If this occurs, try swapping the server name for its IP address in the address bar (so http://myserver/connect becomes http://192.168.1.xxx/connect). If that fails, you can get the process started by download the Mac Connector software on a Windows PC using the **Download software for Mac** link and copy it over to the Mac.



Connecting a Mac.

Opening the .dmg file allows you to install the Connector software. When you open the .dmg file, you can double click the Connector for Mac app to start your installation.

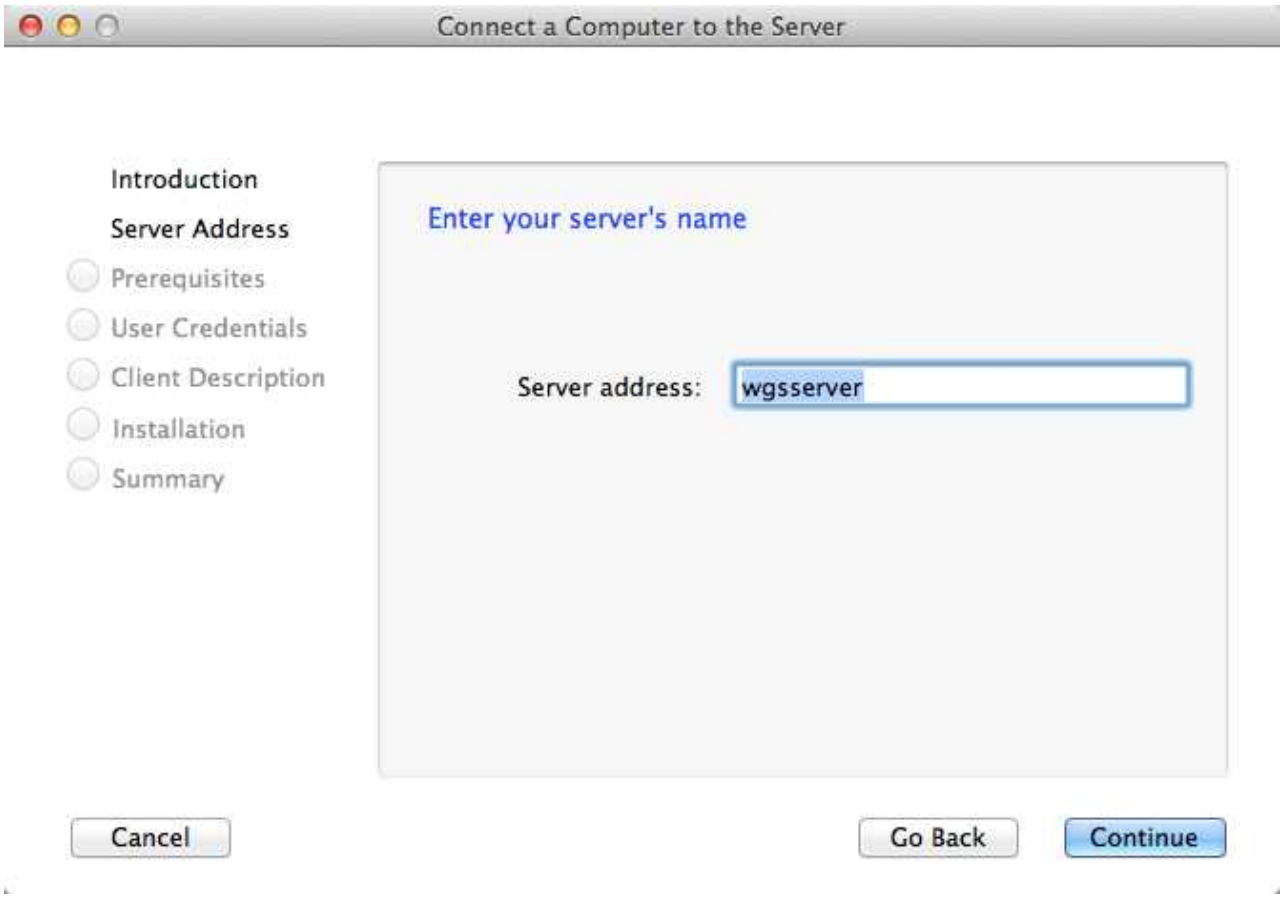


The Connector for Mac application.

You are asked for your Mac administrator password to proceed, following which this installation wizard begins.

The Connect a Computer to the Server wizard.

You are then led through a series of wizard screens to install the connector on the Mac. Click **Continue**. We start by being asked to enter the name of your Essentials server.



If your server name isn't found, try its IP address.

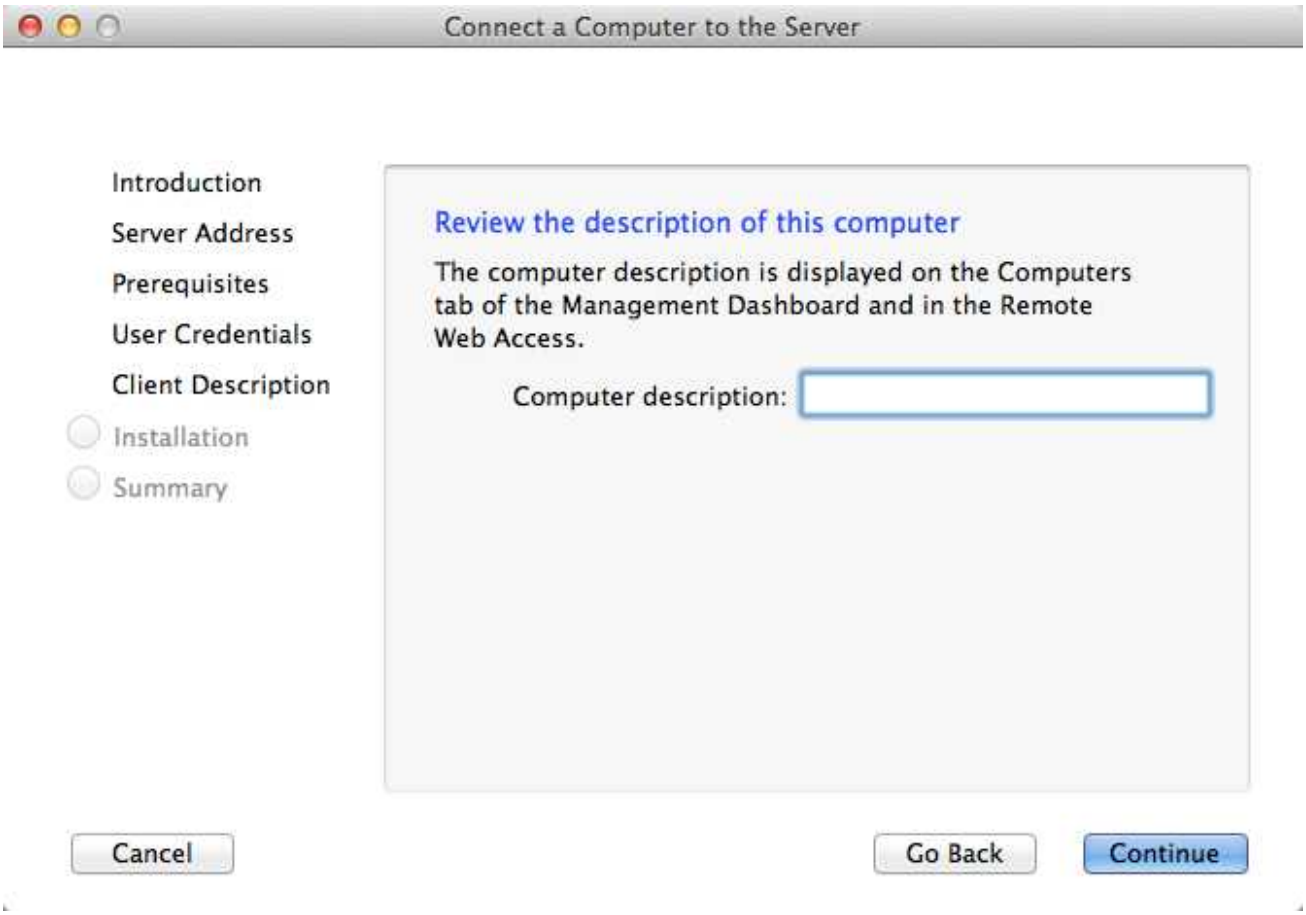
If you receive a message stating that your server cannot be found, then try again but use the server's IP address rather than its name. That usually does the trick. Next up type in an identifier for your Mac (paying attention to the naming rules mandated - 15 characters or less, no names that are numbers only, no spaces or special characters) and then **Continue**.

Naming the Mac - this name will appear in the Windows Server Dashboard.

Now you'll be asked to type in your **network user name and password** - do so and click **Continue**.

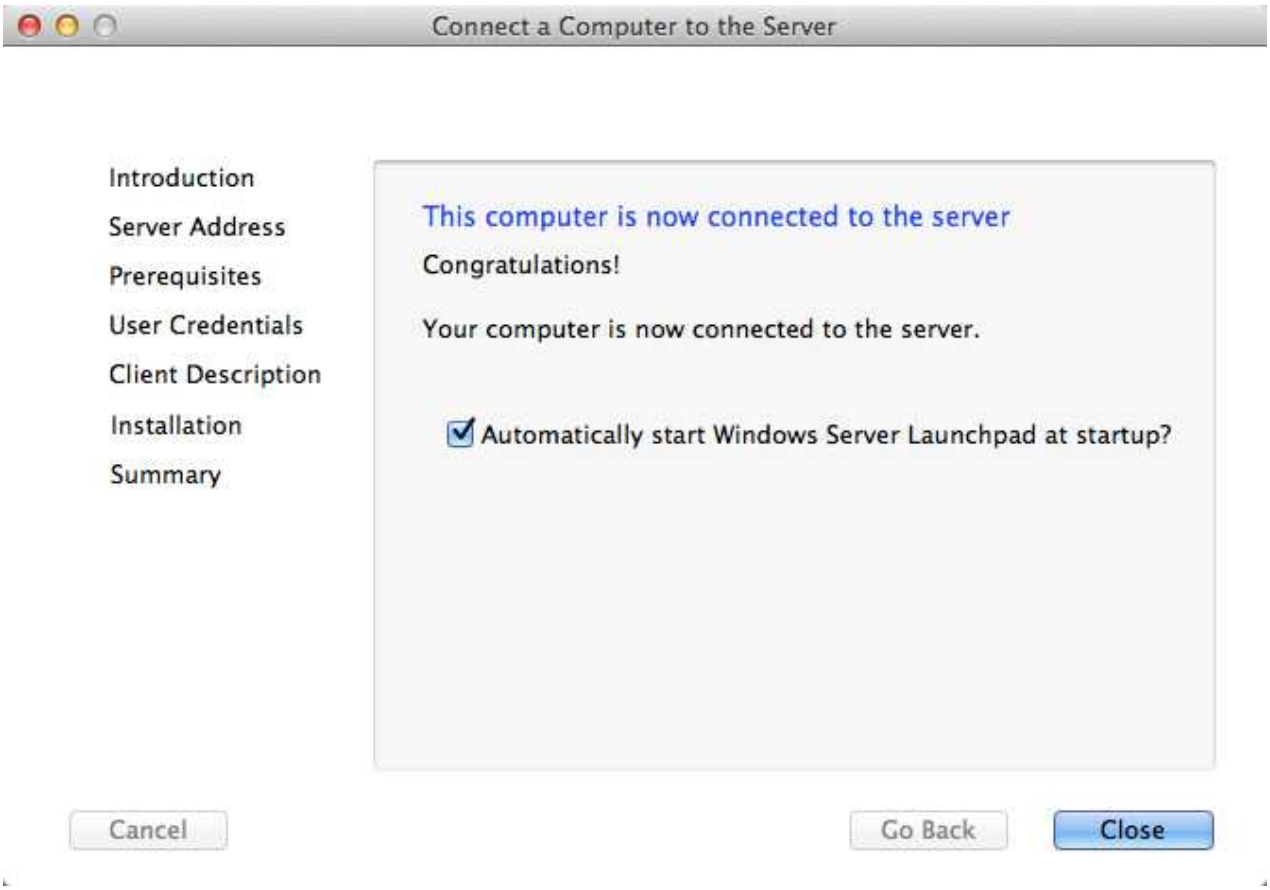
You'll need your server administrator credentials to make the connection.

Next, you need to enter a description for the computer, then click **Continue**. This description will be visible in the Windows Server Dashboard as well as your Remote Web Access site.



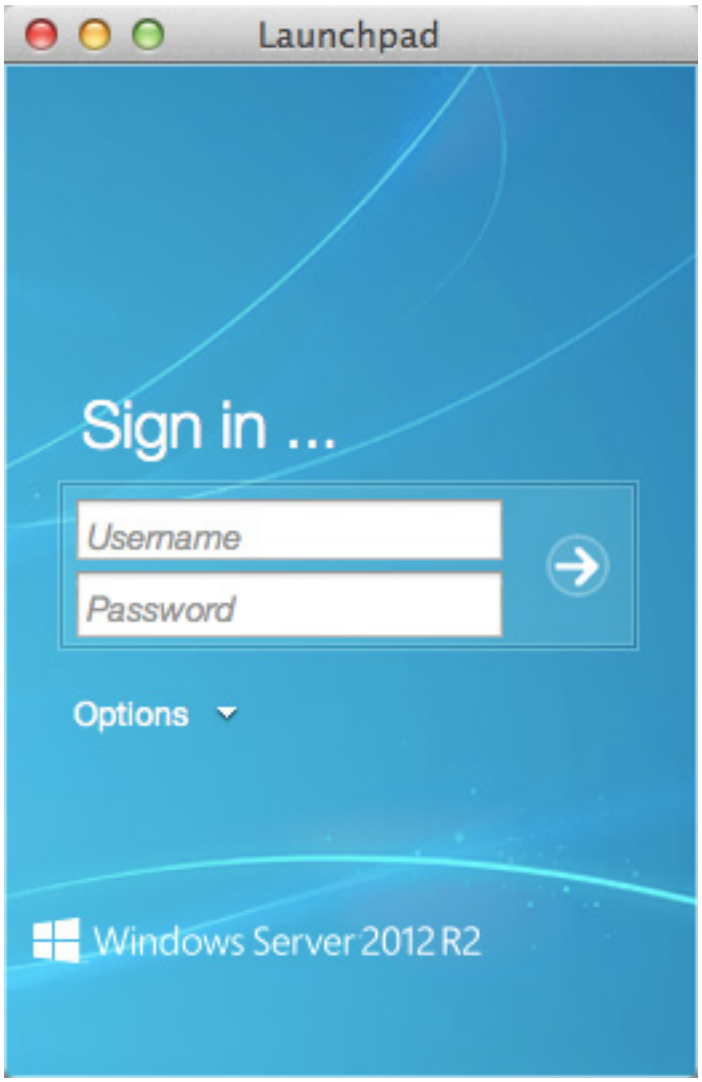
Creating a description for your Mac.

The installation proceeds and in no time at all, you'll be connected to the server.



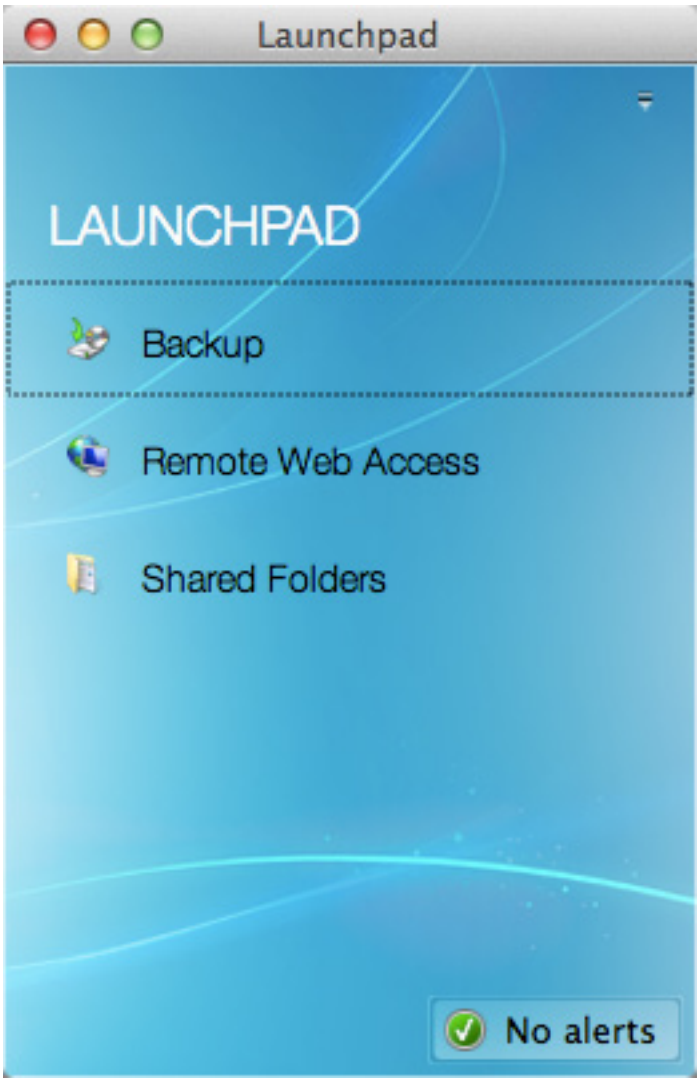
All done!

You can choose whether or not to have the Windows Server Launchpad open when your mac boots up. I choose not to - but whichever way you go, you can amend your decision later in the Launchpad settings. Click **Close** to finish the installation wizard, and the Windows Server Launchpad will open.



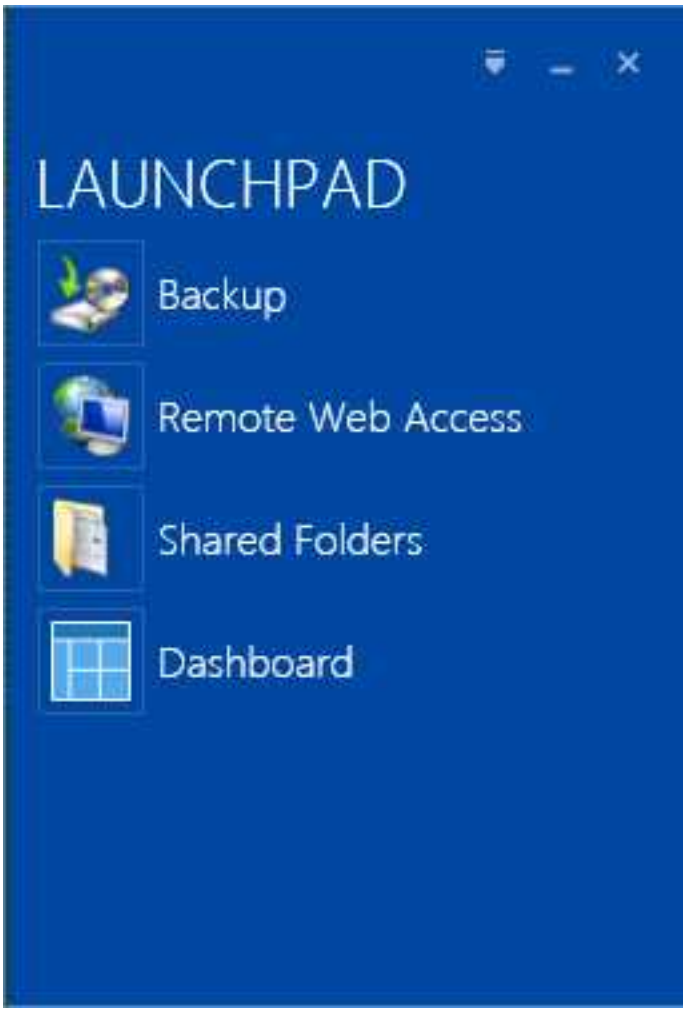
It's the Windows Server Launchpad!

Enter a network user name and password (with administrator privileges) to connect to the server.



The Launchpad provides convenient access to a few of the most regularly used Windows Server 2012 R2 Essentials features.

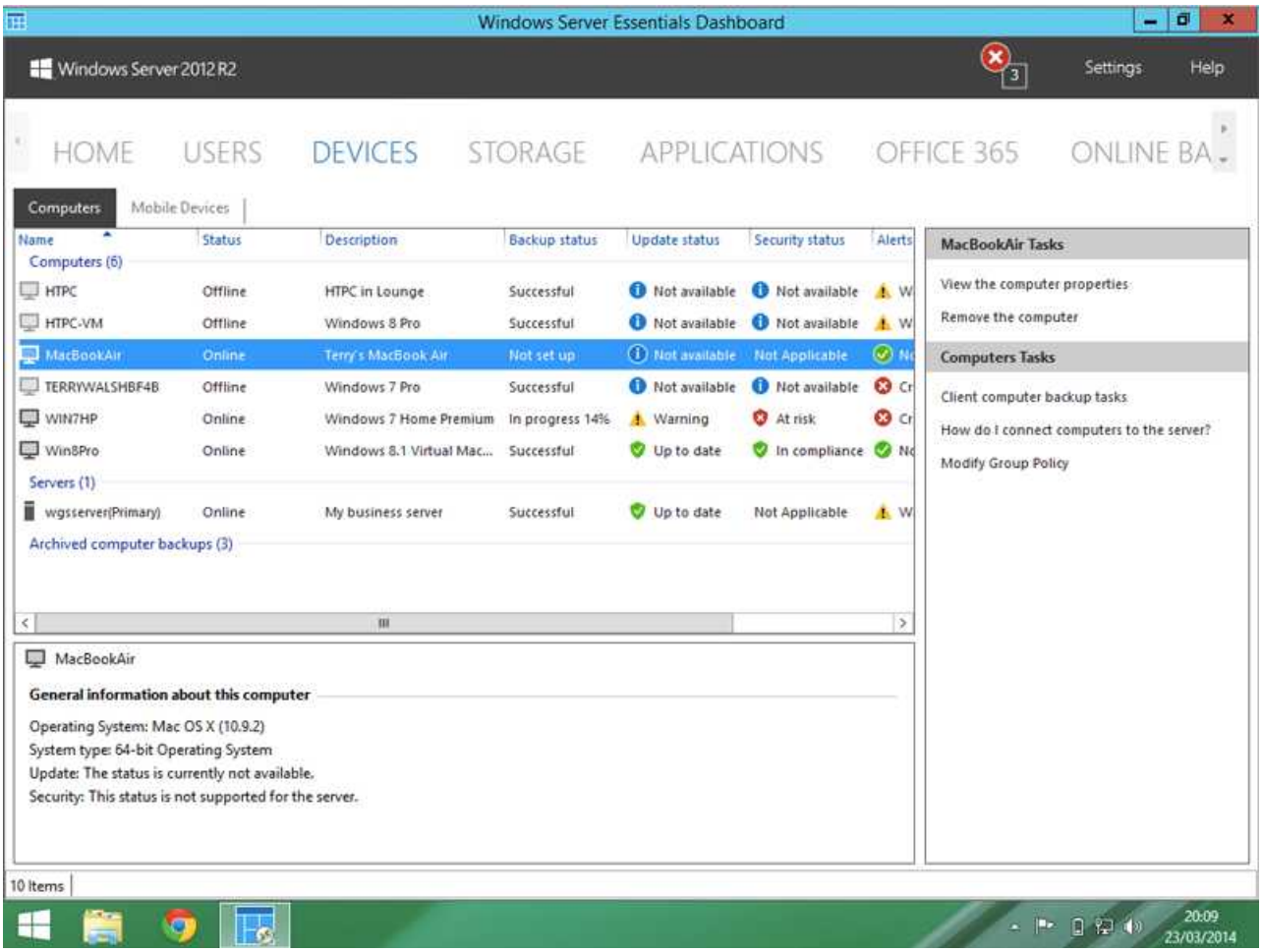
While we have not actually discussed the Launchpad yet (coming up soon!), you may notice a difference between the Mac version and the Windows version; there is no Dashboard option in the Mac version.



The Launchpad on Windows offers a link to the Windows Server Dashboard.

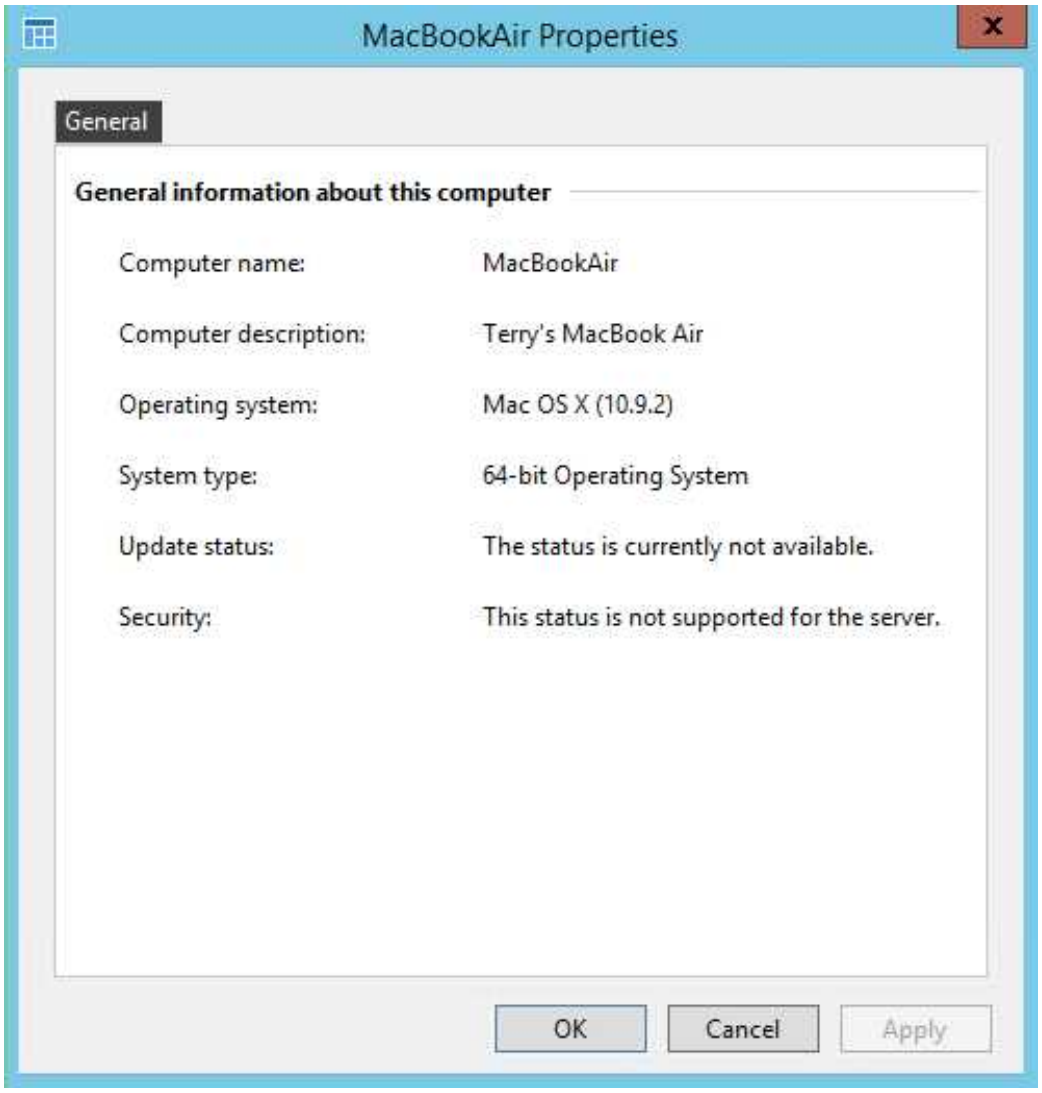
The simple fact is that a Mac can simply **not** connect to the Essentials server through the Dashboard. Any Dashboard administration you need to do will need to be performed on a Windows PC or directly on the Server.

Back in the Dashboard on a Windows computer, the number of devices on my Essentials network is beginning to grow.



Windows PCs, Home Edition PCs and a Mac all connected to the server.

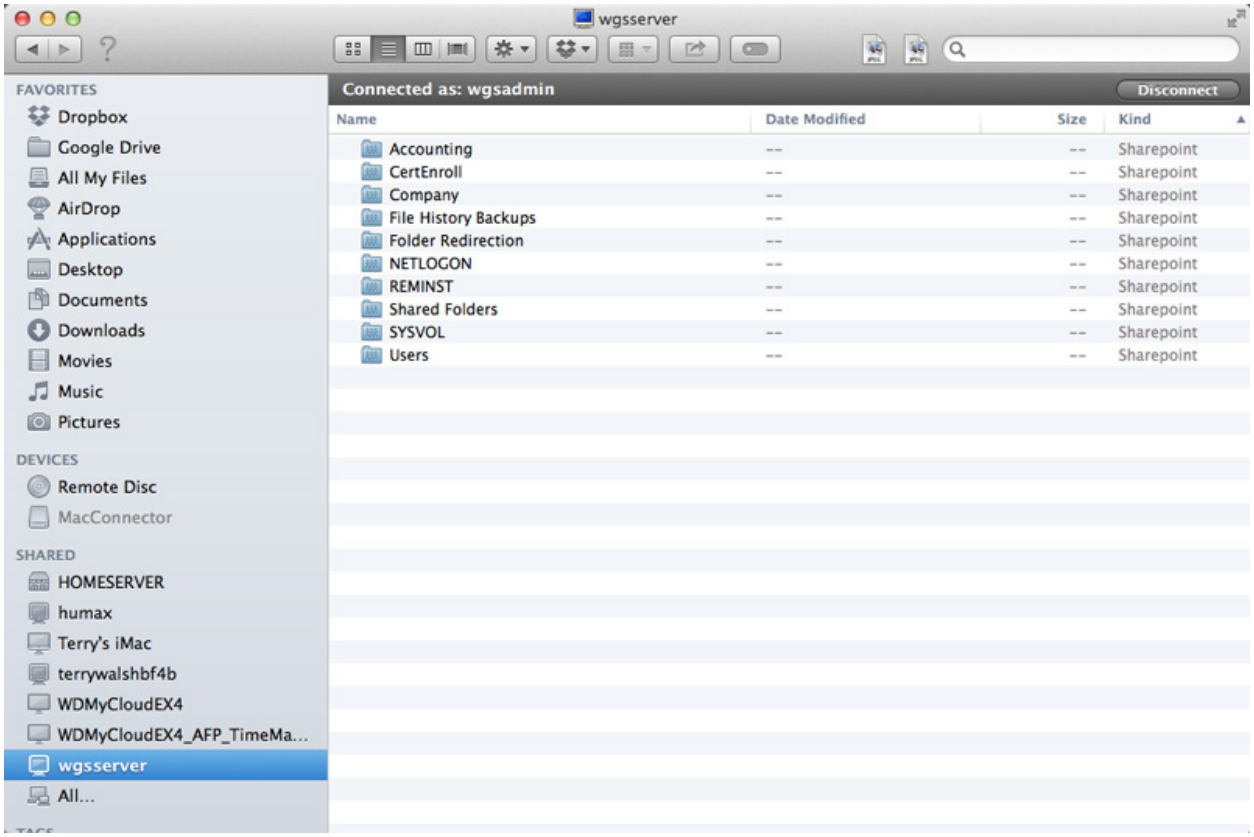
Double click on your Mac in the Dashboard to view its properties.



Our MacBook Air Properties.

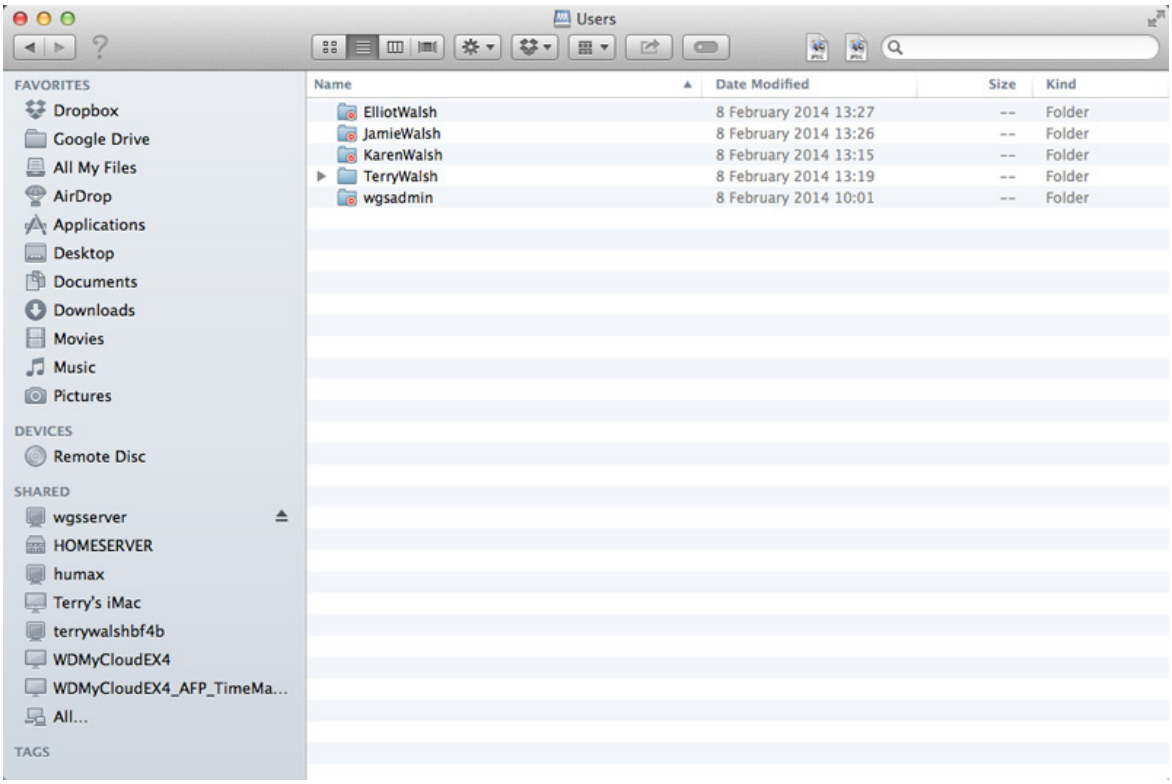
Accessing Windows Server 2012 R2 Essentials Files and Folder With Finder

Of course, with you Mac and server located on the same network, you should be able to see and access your server files and folders in Finder on the Mac. Use the **Connect As...** button to enter your server account credentials.



Accessing the server administrator's files and folders.

With a standard user account, you'll see that server access restrictions are maintained in the Mac - I've logged in with my account (TerryWalsh) and you can see everyone else's account is blocked for me (note the "no entry" icons).



Accounts are kept secure in OS X.

For you, this task may only have just begun. You have some work to do, so take your time and finish up adding your remaining computers to the Windows Server 2012 R2 Essentials domain. Once completed, come back here to the next chapter in our book where we'll take a look connecting mobile devices.

Connect and Manage Mobile Devices on Windows Server 2012 R2 Essentials

"In the last few years we've seen a real explosion in smart mobile devices in the home and the workplace. As the number of devices in the organisation grows, we increasingly need to manage and secure those devices - particularly if they are to connect to our network."

Our work is no longer solely restricted to desktop and notebook computers - smartphones and tablets most definitely have their place in the arsenal of devices we use to get work done. As a result, those devices need access to the same files and folders we'd expect to be able to access easily on our server network.

The good news is that in Windows Server 2012 R2 Essentials, Microsoft has added new features that enables administrators to manage the server using mobile devices and allows management of mobile devices connected to the server network. There are however a number of caveats - mobile device management most definitely feels like a "work in progress" step in Windows Server 2012 R2 Essentials, but if you're using compatible kit there are some valuable features to discover.

Let's Clarify "Mobile" Devices

To avoid confusion between this chapter and the last, allow me to briefly clarify what we mean by mobile devices. In the last two chapters, we discussed Windows PCs and Apple Macs - those chapters should be followed for Desktop and Notebook computers of either operating system flavour.

In this chapter, we're going to deal with SmartPhones and Tablets, running operating systems like Windows Phone and Windows RT from Microsoft, Apple's iOS as seen on iPads and iPhones and of course, Google's Android operating system. All of these devices can be connected to a Windows Server 2012 R2 Essentials network and managed (to a degree) through the Dashboard.

Managing the Server With Windows Phone and Windows 8 and Windows RT Apps

Core to Microsoft's business playbook is a "Windows First" strategy. It's slowly changing, but deep within Microsoft's corporate psyche is a belief that platform features should be extended across the

Windows & Office ecosystem (exclusively if possible) to sell more Microsoft devices and software licenses. It's a strategy that has been supremely effective for the last thirty years, crushing all competitors, but with Microsoft being heavily outsold by iOS and Android in the mobile space, it's most certainly a strategy that has a shelf-life.

But, we'll see that strategy pop up a couple of times in this chapter - firstly when it comes to managing the server on your mobile device. Rather than have to administer the server on a PC with the Dashboard, or on the server itself, wouldn't it be cool if you could do so on your tablet? Or on your smartphone?

The answer is... you can! Well, if you're using one of Microsoft's mobile devices, running Windows RT, Windows 8 and above or Windows Phone 7/8, that is. That's because Microsoft has developed an app called "**My Server**" which allows you to access the server from your Windows mobile device and perform "light administrative tasks" (in their words).

Unfortunately (and predictably) there are no such apps for Android or iOS, so if you're determined to use these device to administer the server, you'll be forced to use a Remote Desktop app, connect to a PC or the server directly and use the Dashboard. It can be done, but perhaps isn't the most fun.

So, if you're using a Windows mobile device, then you'll definitely want to check out Microsoft's My Server app, which is available for Windows 8, Windows RT and Windows Phone. With this app you can manage users, devices, alerts, and access shared files on the server. Features include:

- Browse, edit and search files stored on your server
- Manage users, devices, and alerts
- Reset passwords
- Share local resources to server or save server resources locally
- Access files that you opened recently even without an Internet connection. The changes made offline will be automatically synchronized to the server when online
- Playback of media files stored on server

As you'd expect, some of those features are available to all users, with the administration tasks restricted user users with the necessary privileges.

Let's take a look at the My Server app, or to give it its full name, "**My Server 2012 R2**" in more

depth.

My Server 2012 R2 for Windows 8/RT

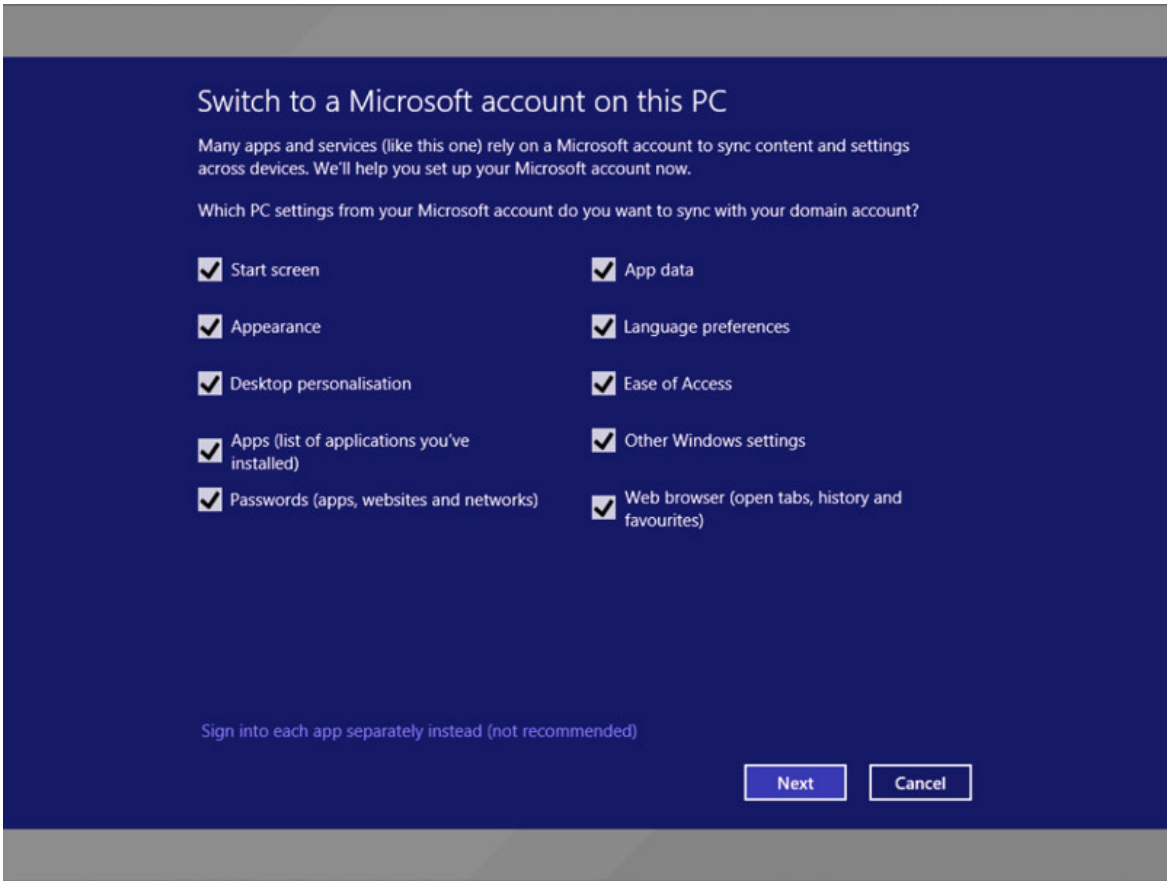
We'll kick off with My Server 2012 R2 for larger devices. Tablets such as Microsoft's Surface running Windows RT, other tablets running Windows RT or Windows 8 and above and indeed other devices running those same operating systems can all take advantage of My Server 2012 R2.

As a pre-requisite, you will need to have Remote Access configured and working on the server before you can set-up My Server 2012 R2, so if you haven't already, skip ahead to our Remote Access chapter (Chapter 18) and configure Remote Web Access before continuing here.

On your mobile device, open up the Windows Store and search for **My Server 2012 R2**. Make sure you don't install the older version (simply called "My Server" which was designed for the previous version of Windows Server Essentials).

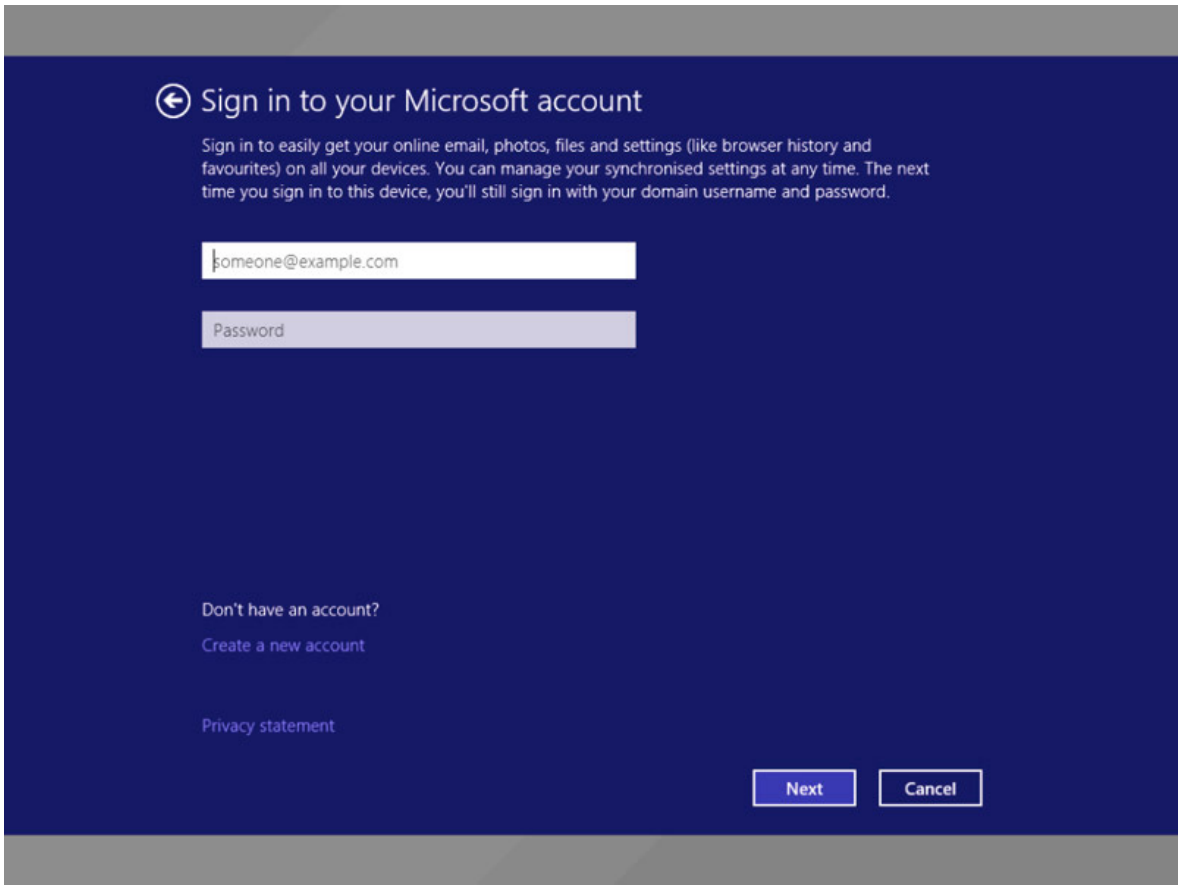
My Server 2012 R2 in the Windows Store.

Click the **Install** button to install the app on your device. You may be asked to set up or synchronise a Microsoft account with your domain account.



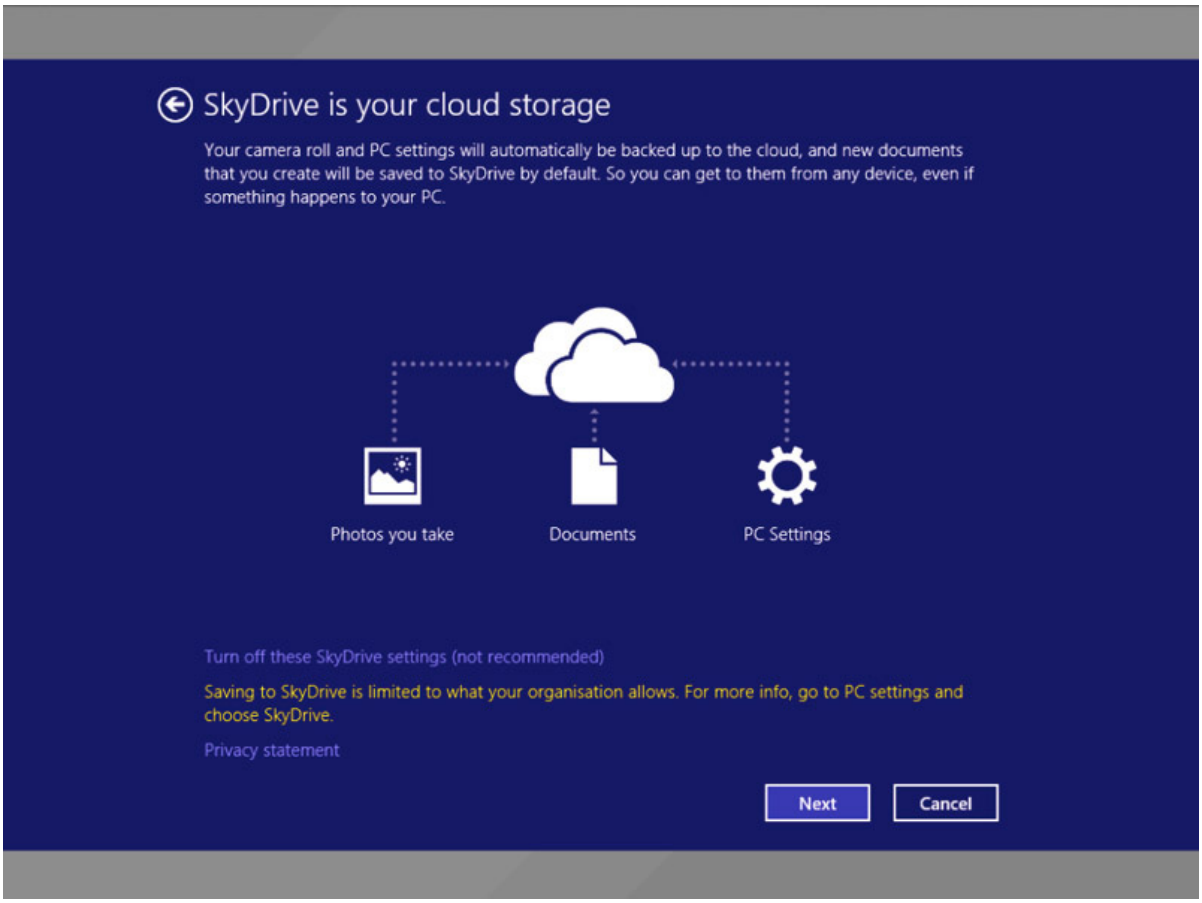
Some apps and services need a Microsoft account.

Use the checkboxes to select the items you'd like to synchronise between your domain account and the Microsoft account, then click **Next**. You can choose from an array of options including the Start Screen configuration, Windows' Appearance, Desktop Personalization options, Apps installed, Passwords for apps, websites and networks, App data, Language preferences, Ease of Access settings, other Windows settings, and Web browser settings.



Signing into your Microsoft account.

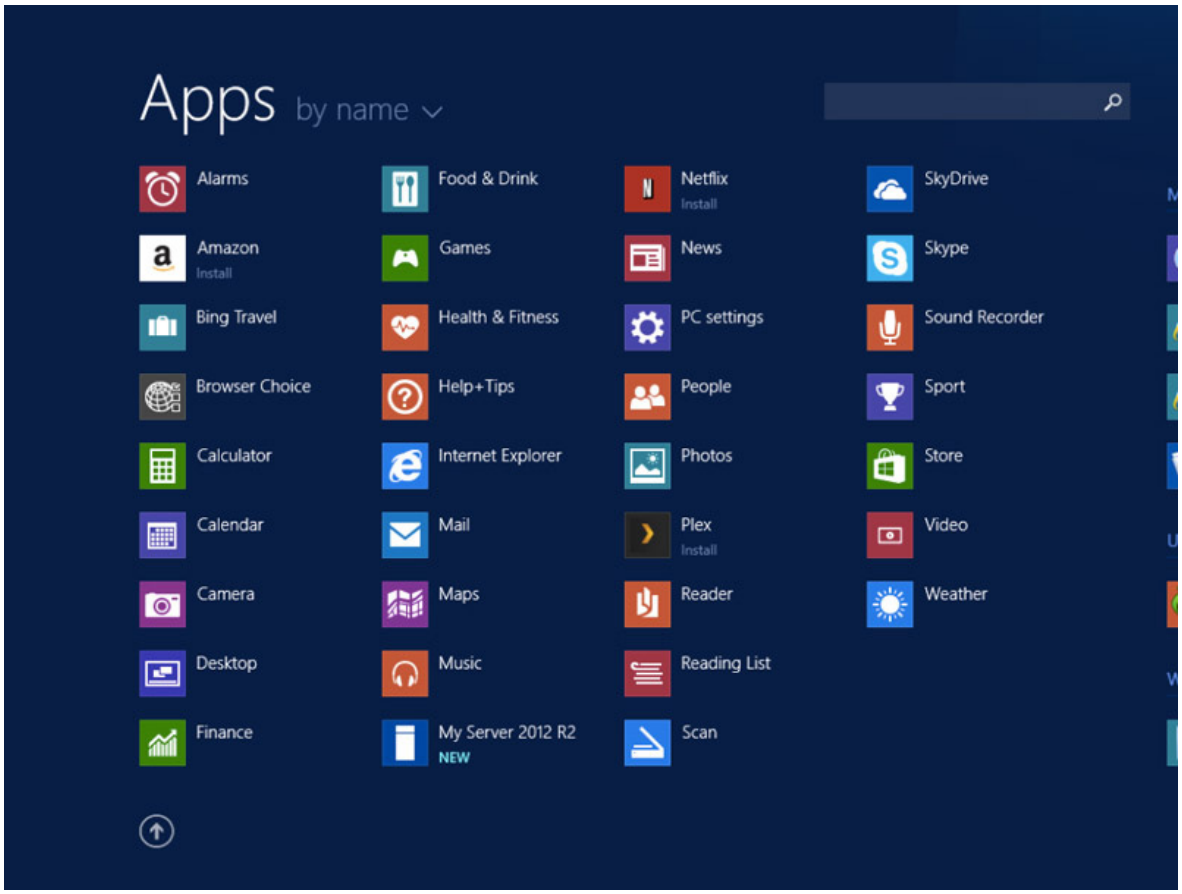
You'll be asked to sign into a Microsoft account - if you have one - or create an account if you don't. Proceed either way, then click **Next**. Run through the verification settings and you'll then be able to sync your Microsoft account with a Microsoft OneDrive (or as it's shown here with old branding, SkyDrive) account. For the uninitiated, this is a Cloud based service that will backup and synchronise specific client folders to Microsoft's servers online.



Enabling Microsoft SkyDrive.

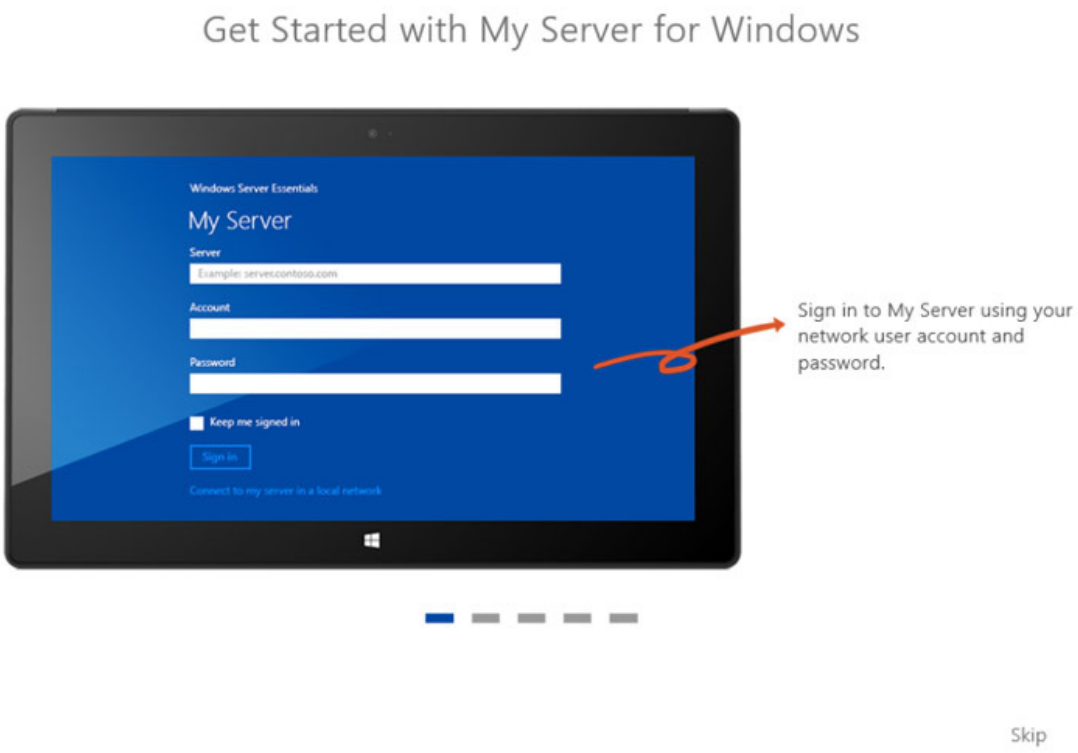
You can, of course, choose not to use OneDrive by selecting the relevant option.

Once connected, the My Server 2012 R2 app will install on your client, and will be listed in Apps on the Start Screen with a "New" icon.



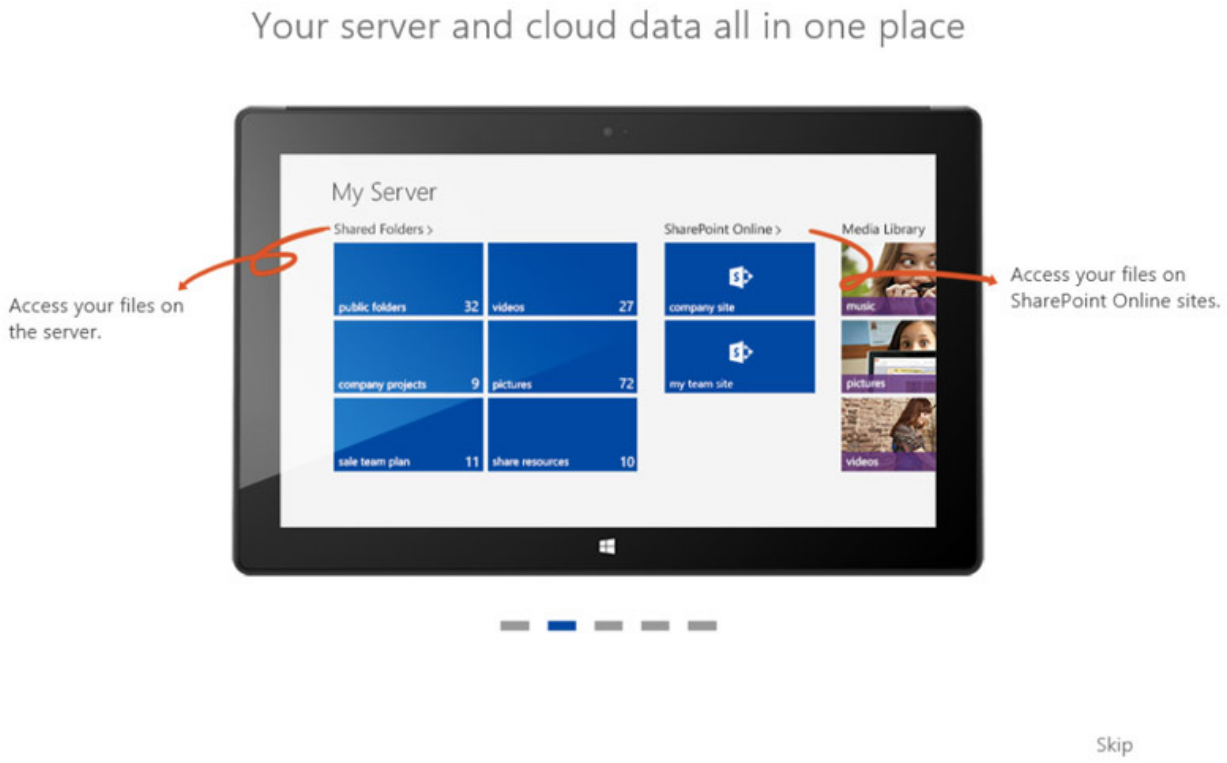
You may need to show all apps to see the new My Server app you've installed.

When you're ready, click the icon to open up the app. You'll be treated to a few **Get Started** screens, which show you the basics of how to use the app.



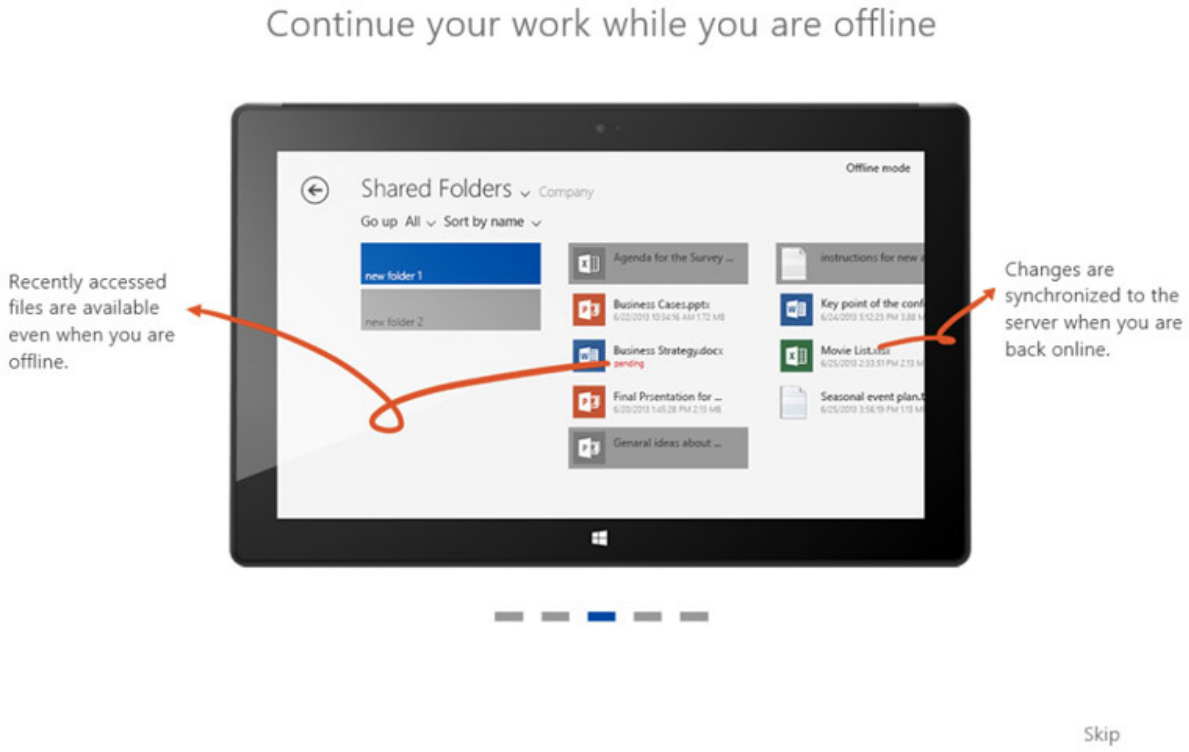
Getting started with the app.

Swipe or click through the screens, or if you want to **Skip**, there's an option there for you too. The screens showcase features of the app, including the ability to view server files and files stored on SharePoint Online (if you have Office 365 installed):



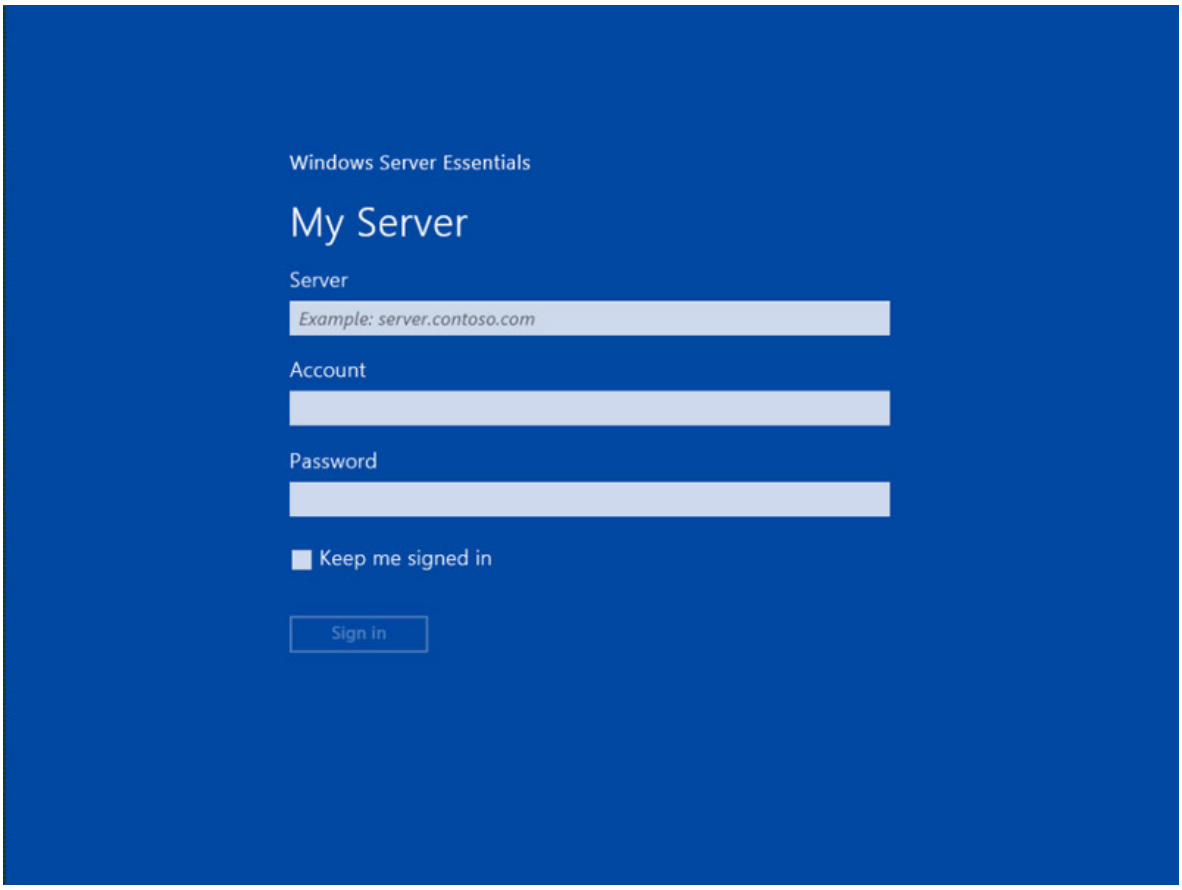
Server and Cloud data together is often referred to as the "hybrid cloud".

The ability to work on your files offline and then sync them back to the server when connected is also mentioned:



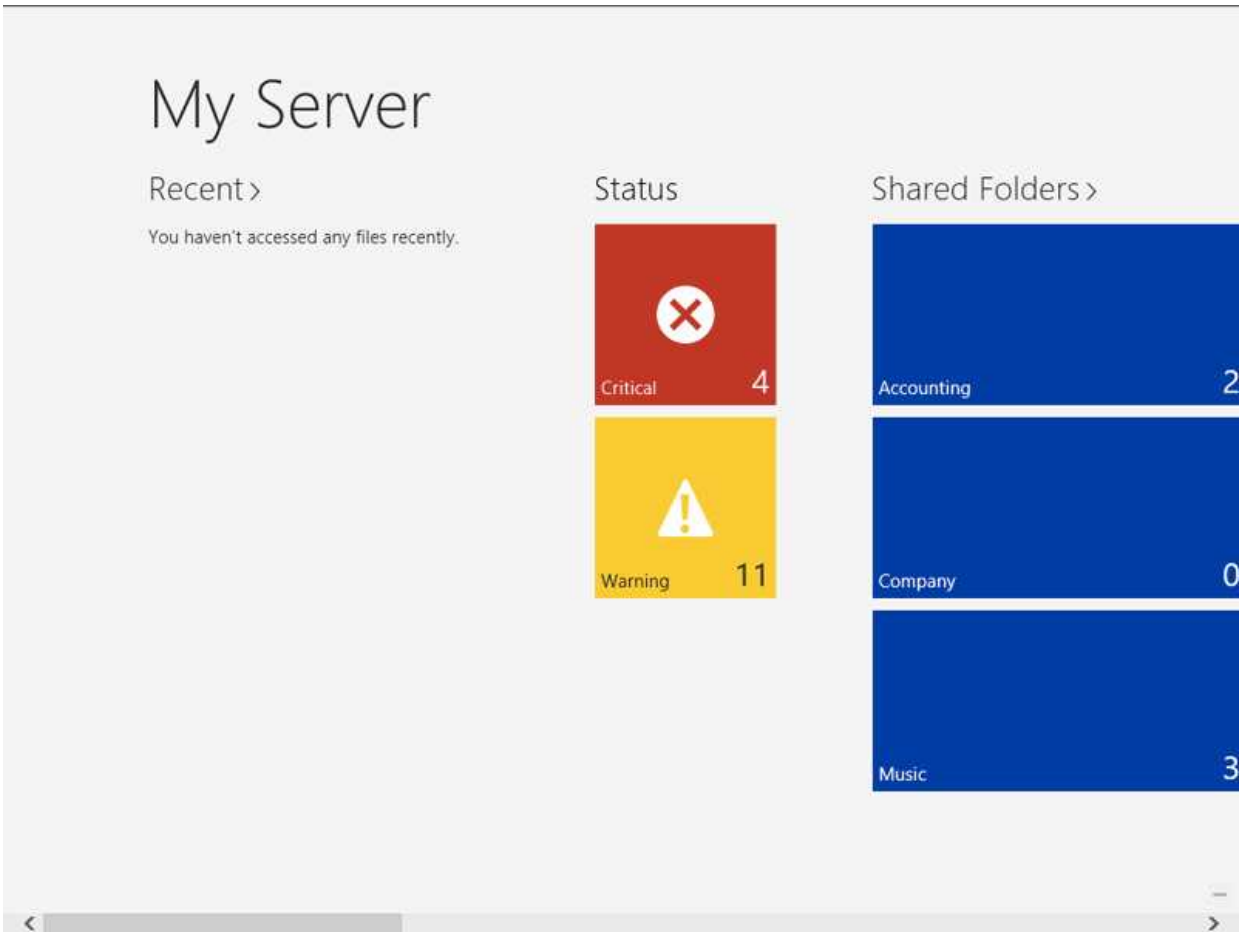
Offline files is another great reason to combine Windows Server 2012 R2 Essentials with Office 365.

When you've viewed the splash screens, you'll be asked to log-in to your server through the app. As mentioned, you'll need to have previously configured Remote Web Access on the server because we need to enter the server's URL, plus a network account name and password.



Log-in to the server with your Remote Web Access details.

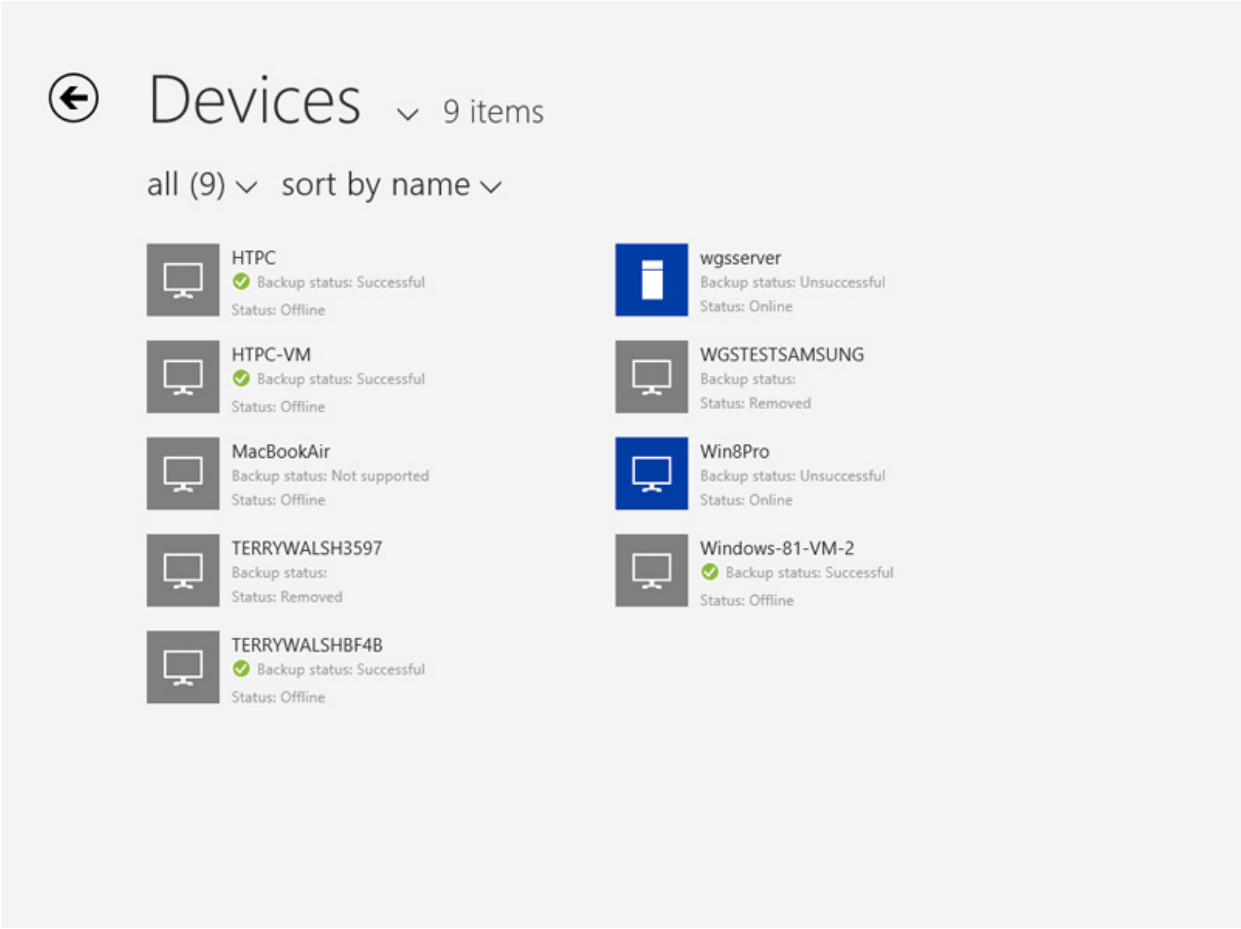
Once you've entered your details, you can finally view your server folders and connected through the app.



We're in!

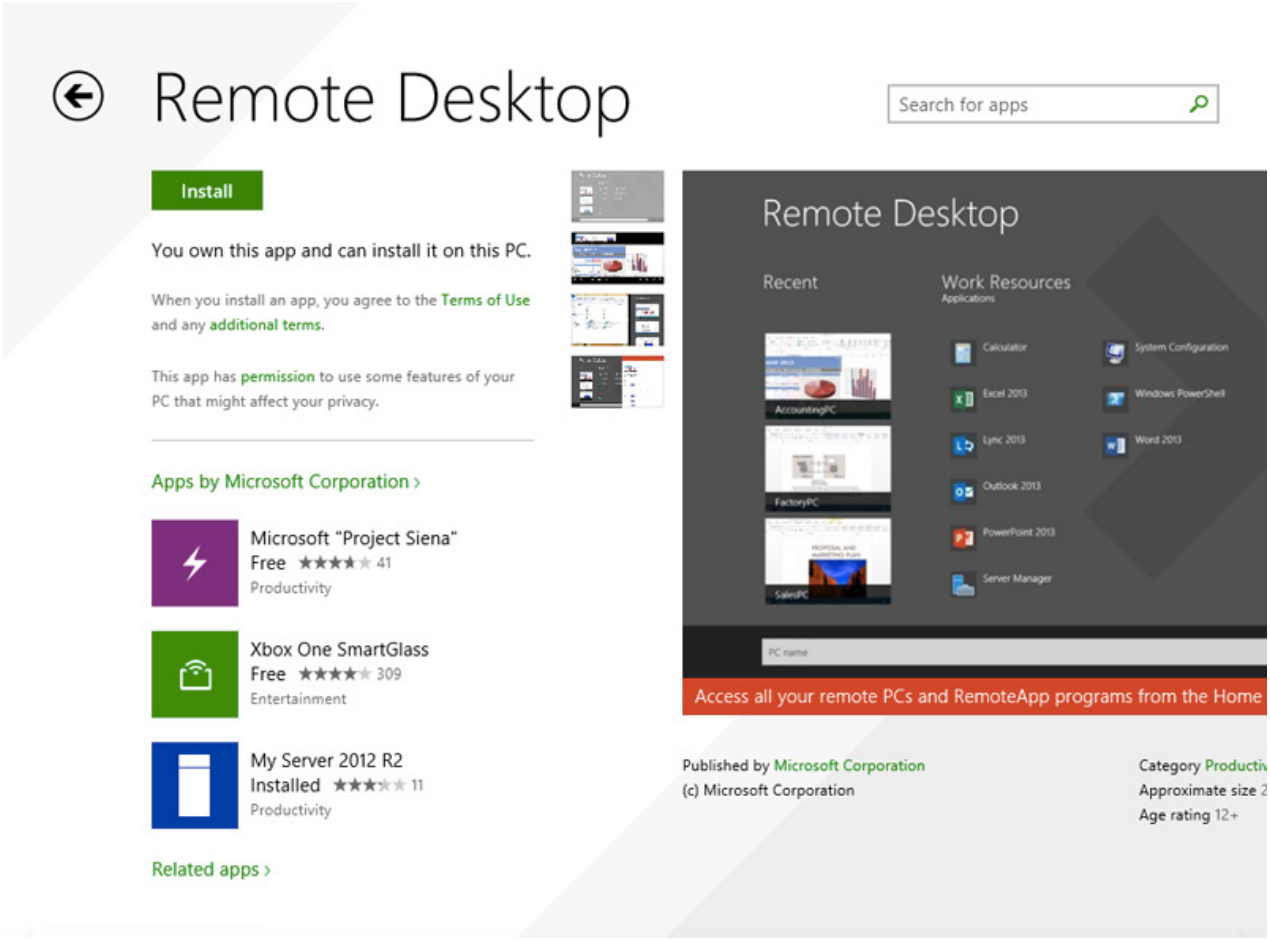
The view here is a little sparse as we're yet to populate our server folders with files, but simply tap or click on your folders to navigate and view.

In **Devices**, you're shown a list of PCs connected to the server and available for a remote desktop connection. Simply click on one of those devices, and select **Remote Connection** to control from your tablet or Windows 8 machine.



Viewing connected PCs on your tablet.

You'll need to have Microsoft's **Remote Desktop app** installed (also available from the Windows Store) to make a remote desktop connection.



Downloading the Remote Desktop app.

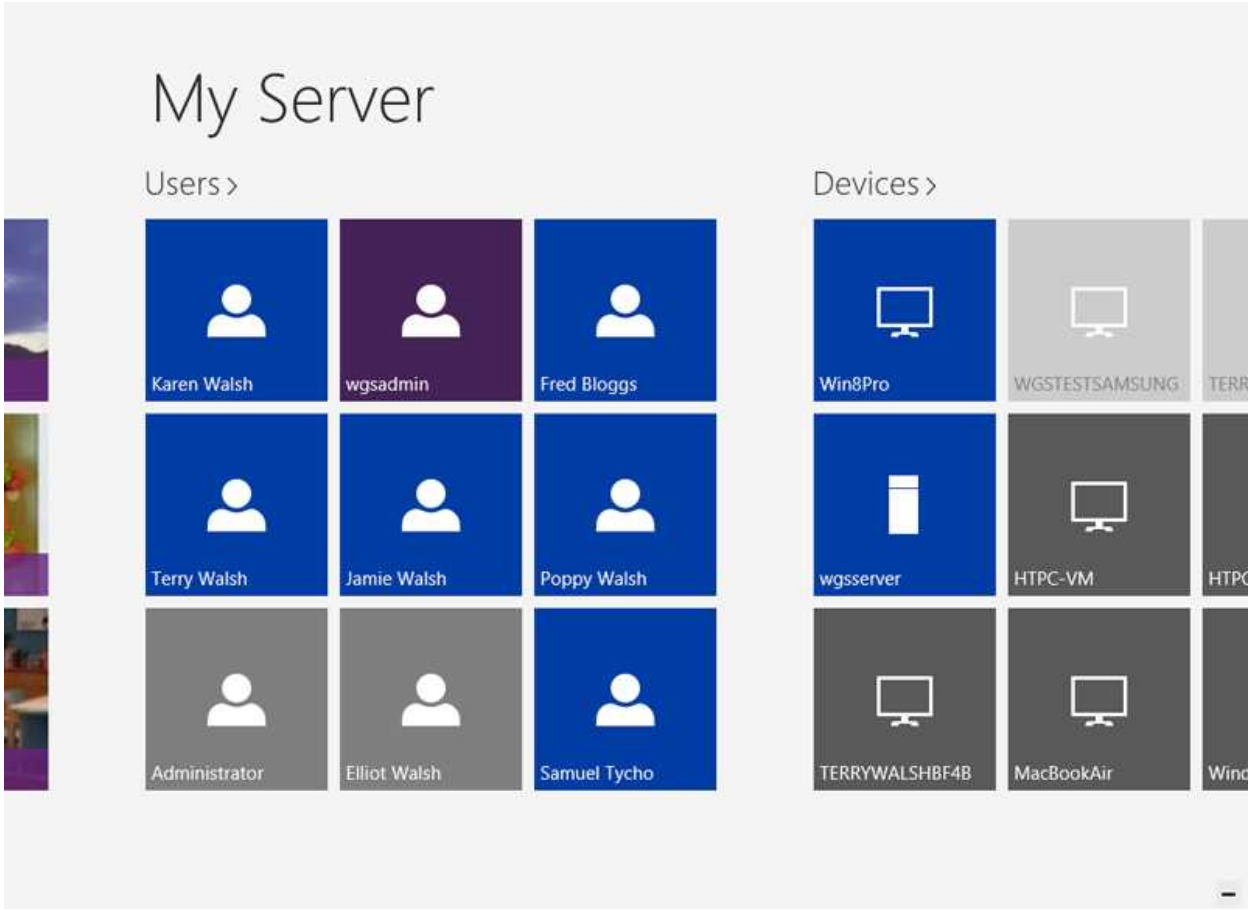
Once installed you can go ahead and control your clients from the app.

You can view both your clients and the server from your Windows 8 device.

In the Devices panel, you can also initiate a backup of the server and your clients, using the **Start backup** button.

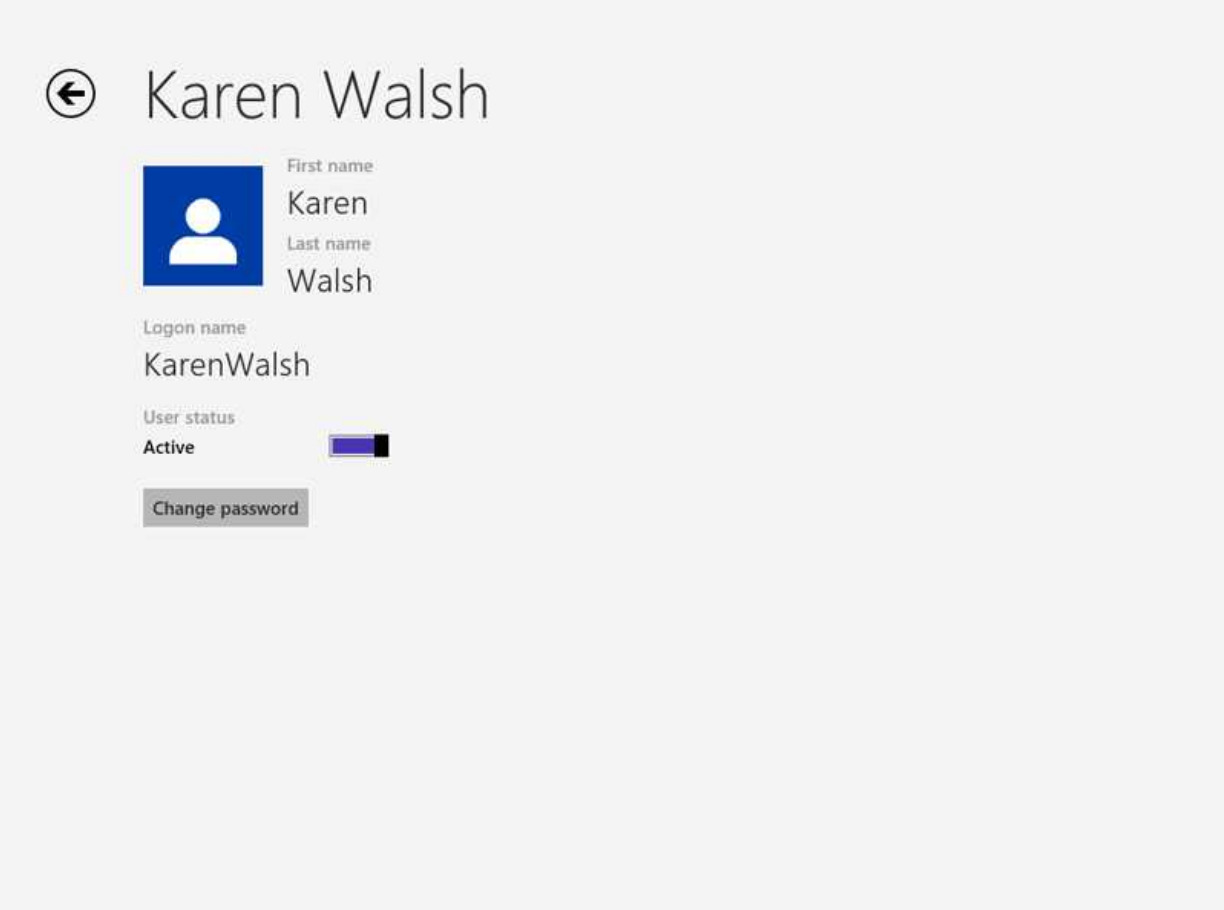
A manual backup is in progress.

Basic user account controls are also available in the My Server app.



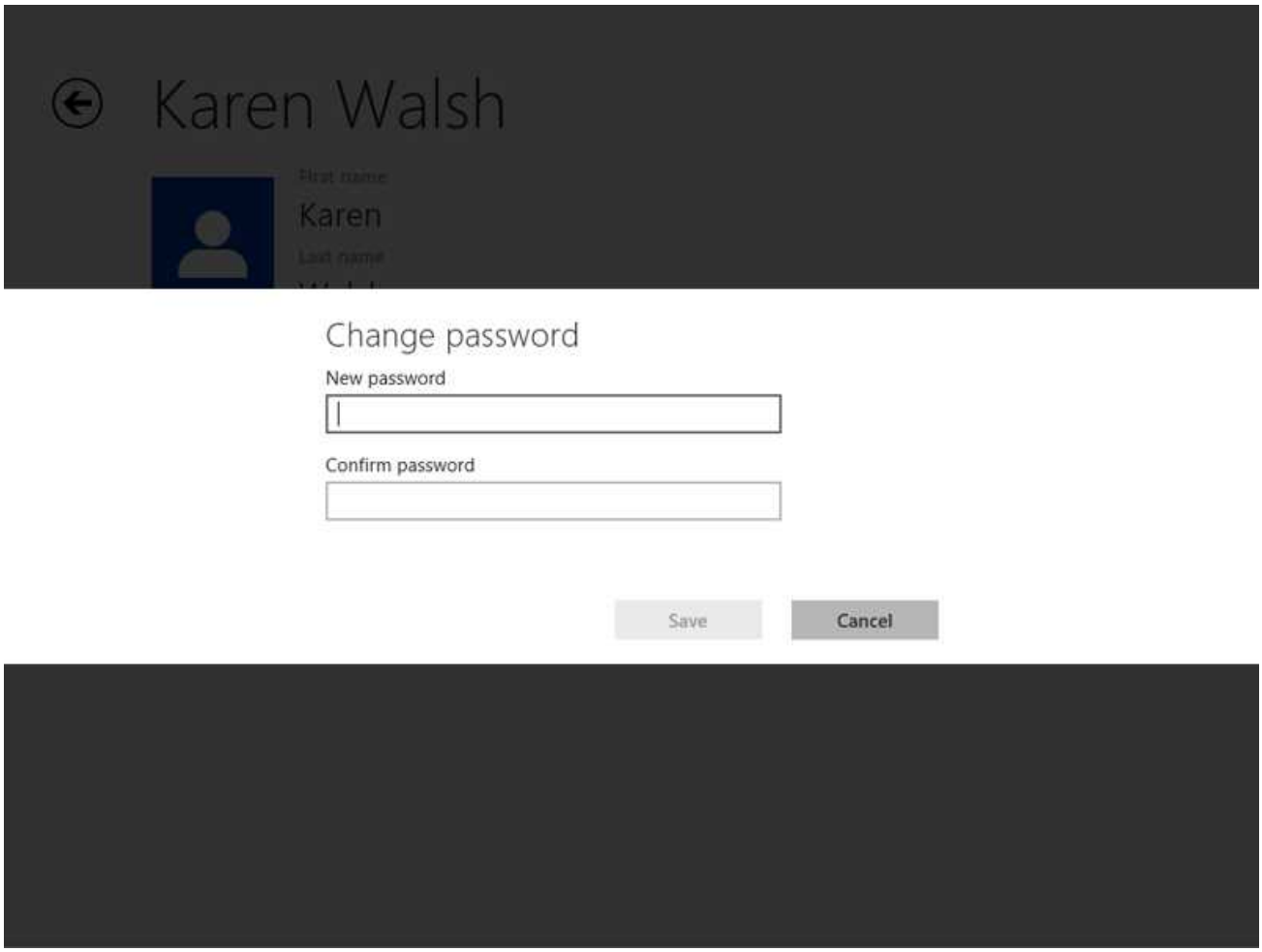
All of your user accounts are displayed in the app.

Click or tap on a user and you're able to deactivate/activate the account or change the password.



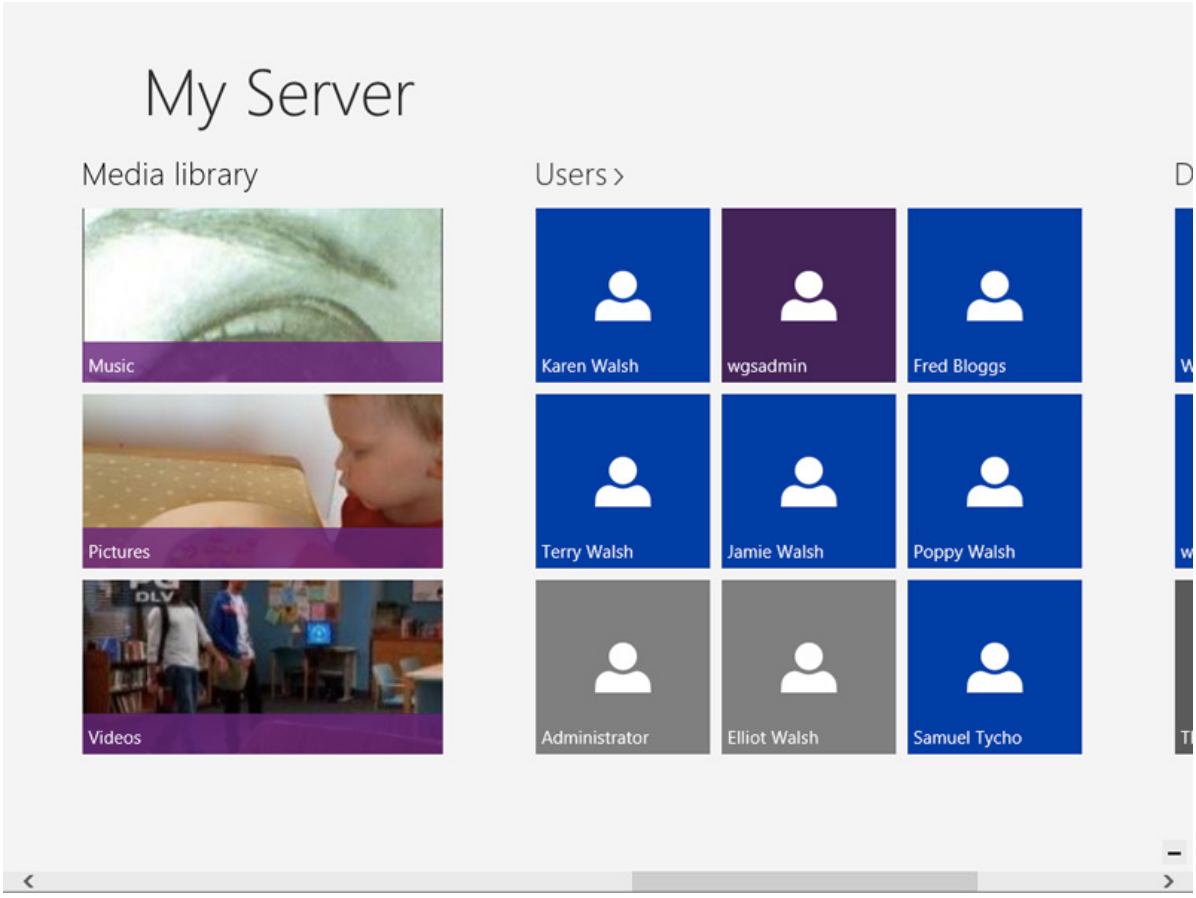
Viewing a user account.

Simply flick the switch next to **User status** to toggle whether that account is active and tap **Change password** to provide a new password for the user.



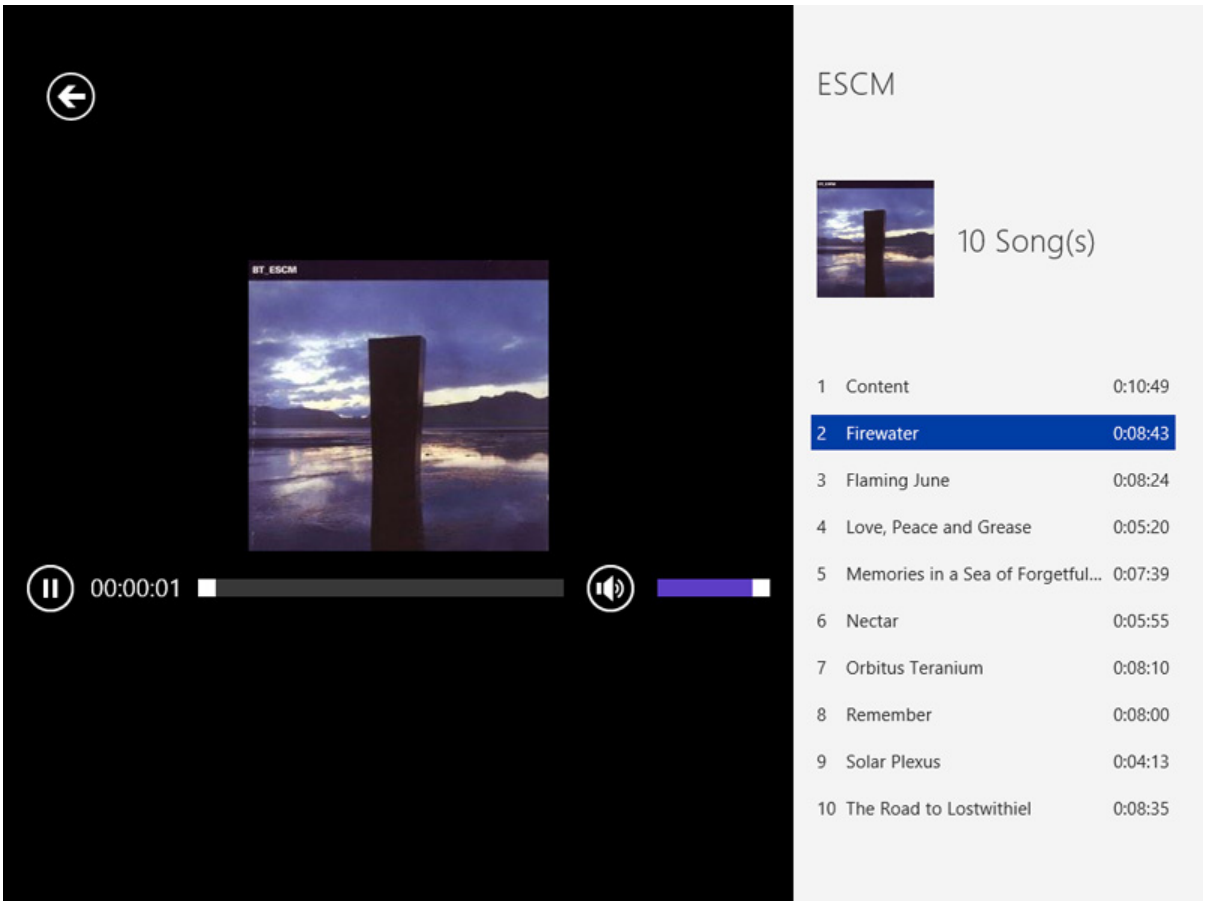
Changing the password.

If you've enabled Windows Server 2012 R2 Essentials' media features (see Chapter 17 for the steps to do so) then you'll see your media library is accessible from the My Server app. Music, Video and Photos can be viewed by tapping the respective tile.



The Media Library tiles.

Your music library can be viewed by album, artist, genre, rating or individual songs. Sleeve artwork, if available, will be displayed. Navigate your way to your favourite album and you'll be pleased to see that you can stream your music directly to the device - yes, remotely too.



Streaming music in the app.

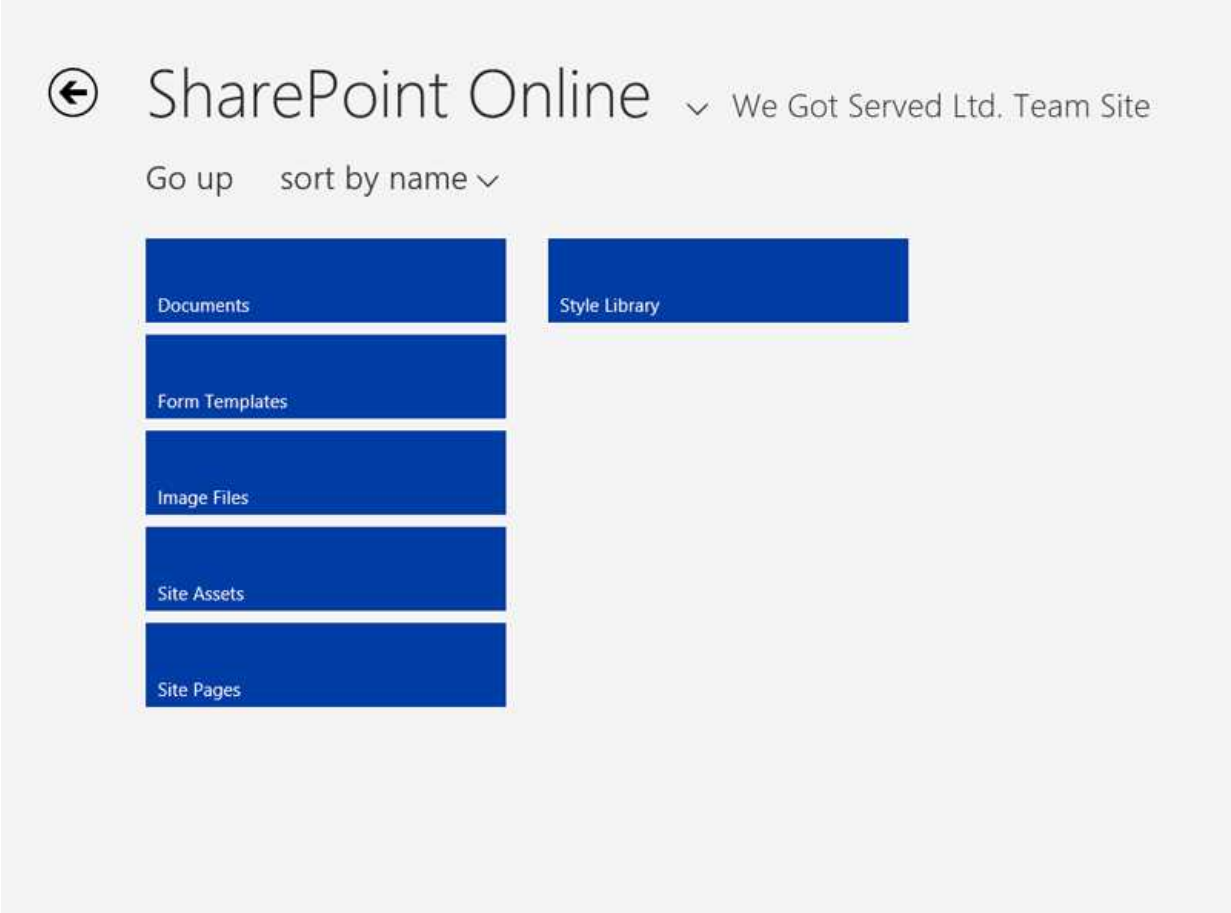
It's a similar story with Photos:

Photo slideshows are available on your mobile device.

Video streaming is also available, if you have compatible files:

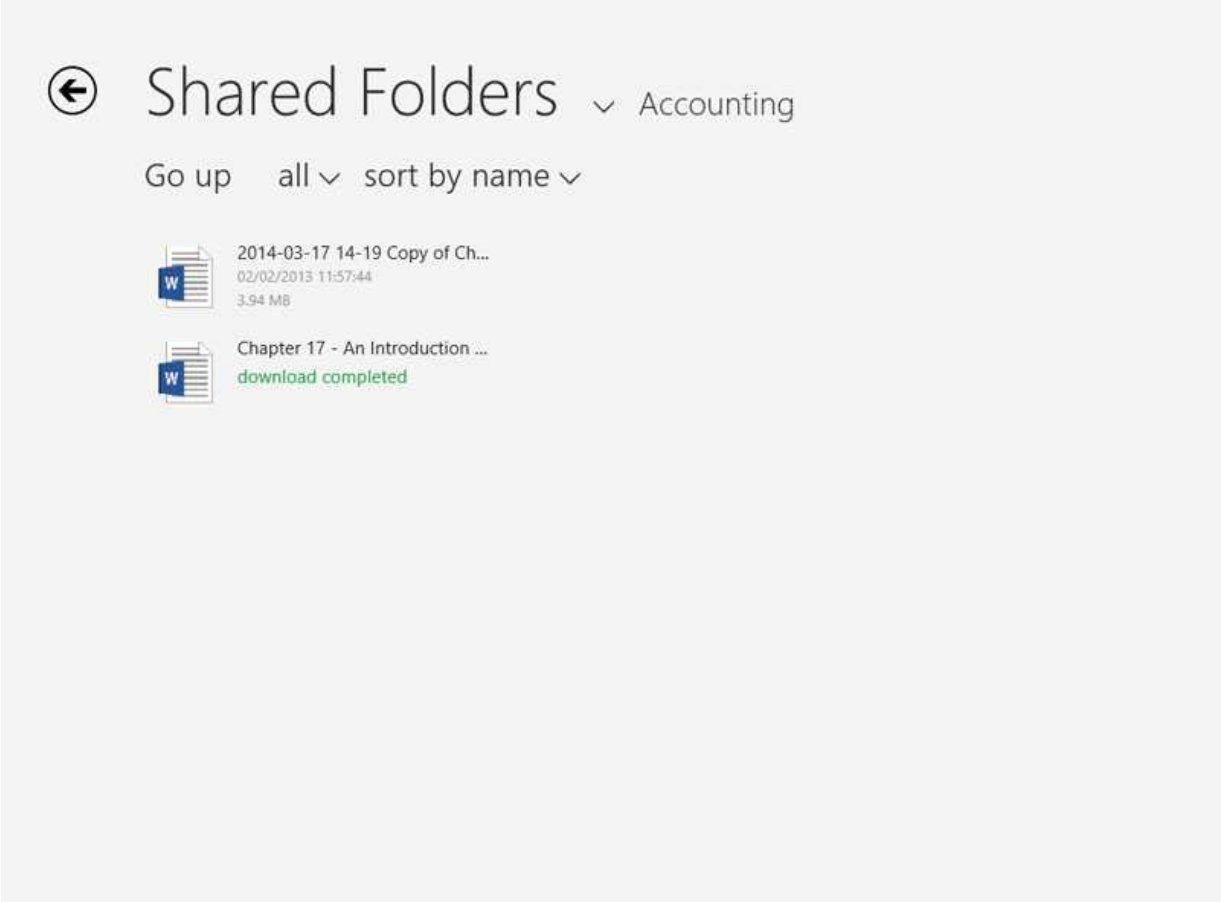
Streaming videos in the My Server app.

With Office 365 integrated with the server (you can find out more about this in Chapter 20) your organisation's SharePoint Online site is available directly from the app, with files and folders accessible for viewing.



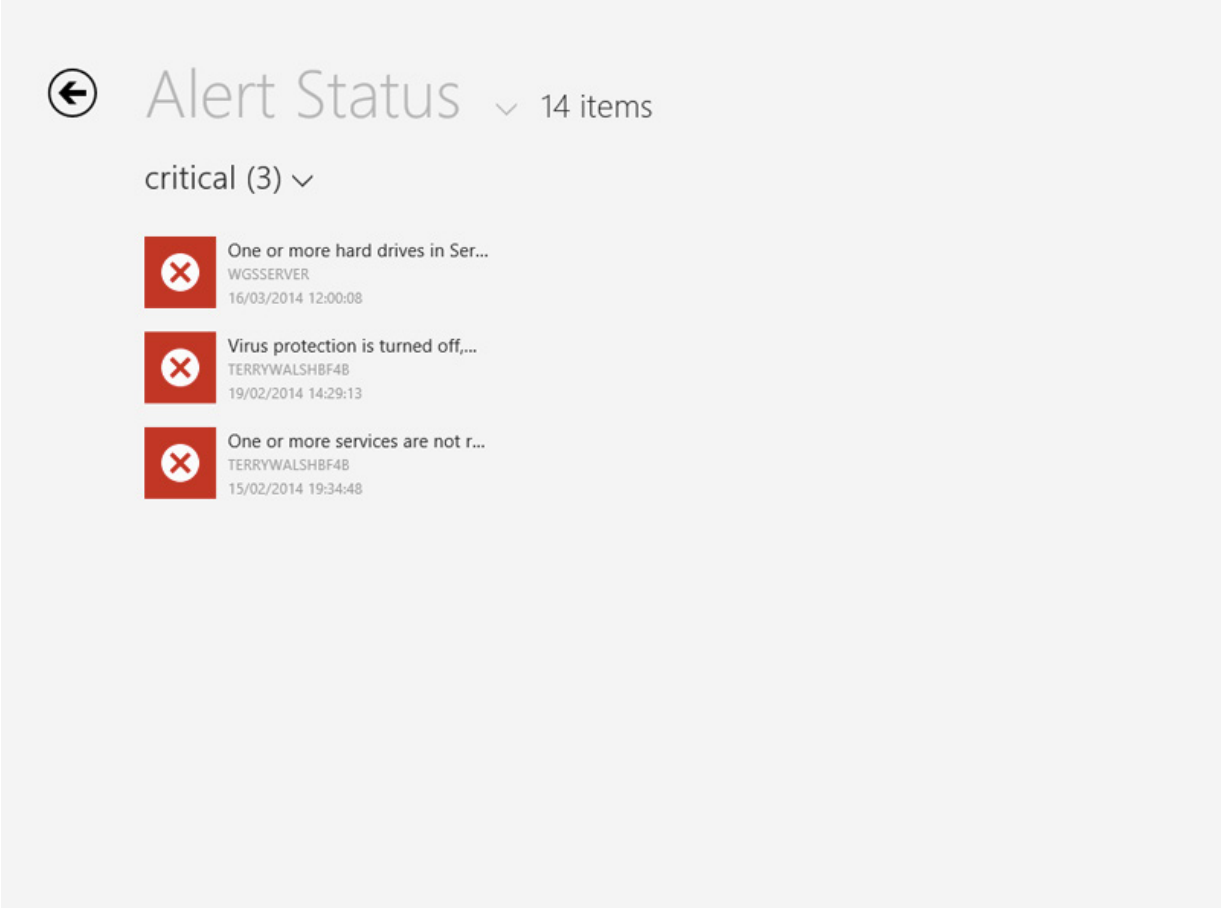
SharePoint Online is available if you have Office 365 integrated with your server.

When it comes to your Shared Folders, as you'd expect, they're all available in the My Server app. You and your users will be able to navigate through the organisation's files and folders (depending on user permissions applied) and if you wish to view and edit a file, simply tap to download it to your client.



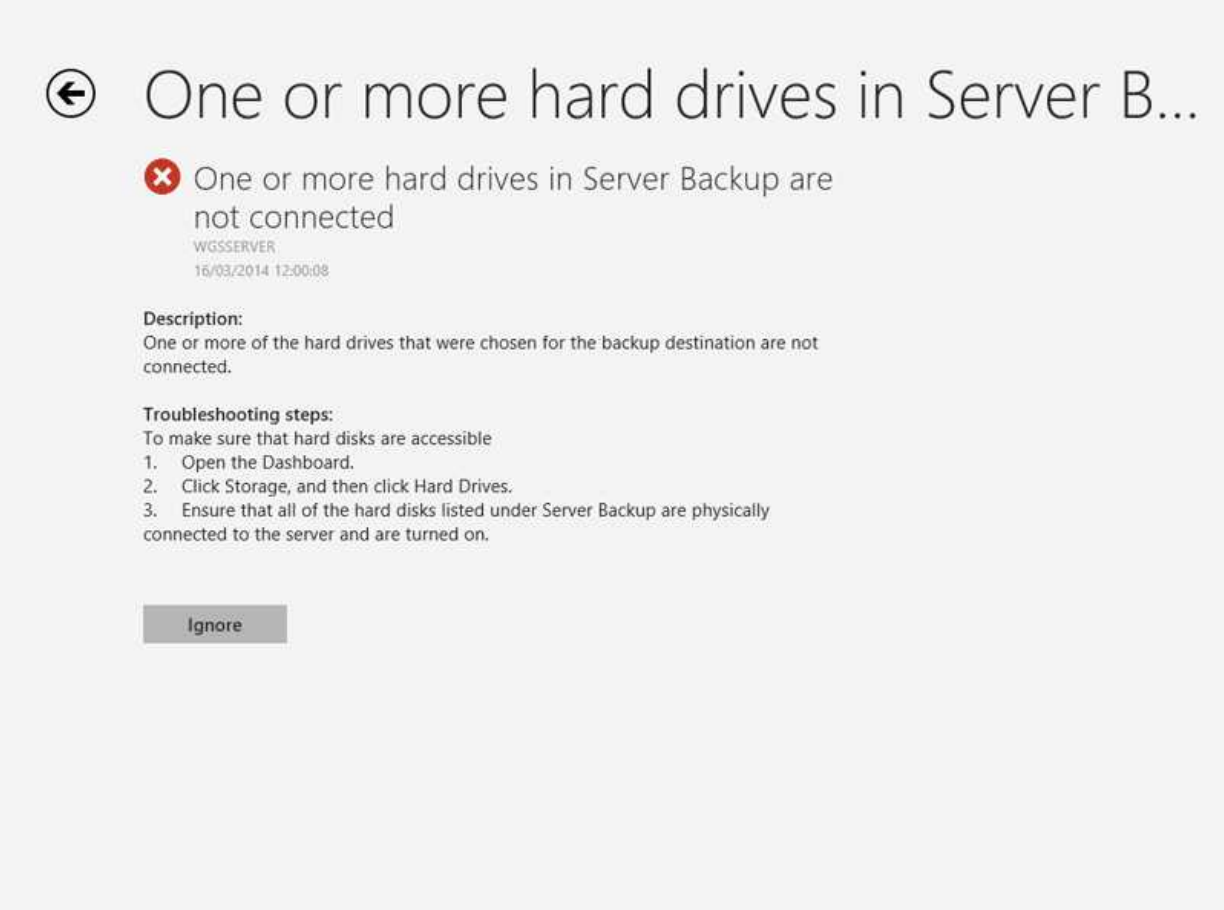
Viewing shared folders.

Finally, again depending on user permissions, alerts can be viewed in the My Server app.



Viewing a list of critical alerts.

To view the details of an alert, simply tap it.



Viewing alert details.

As you can see, My Server 2012 R2 is a surprisingly well-featured companion app for Windows Server 2012 R2 Essentials on Windows 8 and Windows RT. If you own devices with those operating systems installed, it's a recommended addition to your client and server management arsenal.

My Server 2012 R2 for Windows Phone

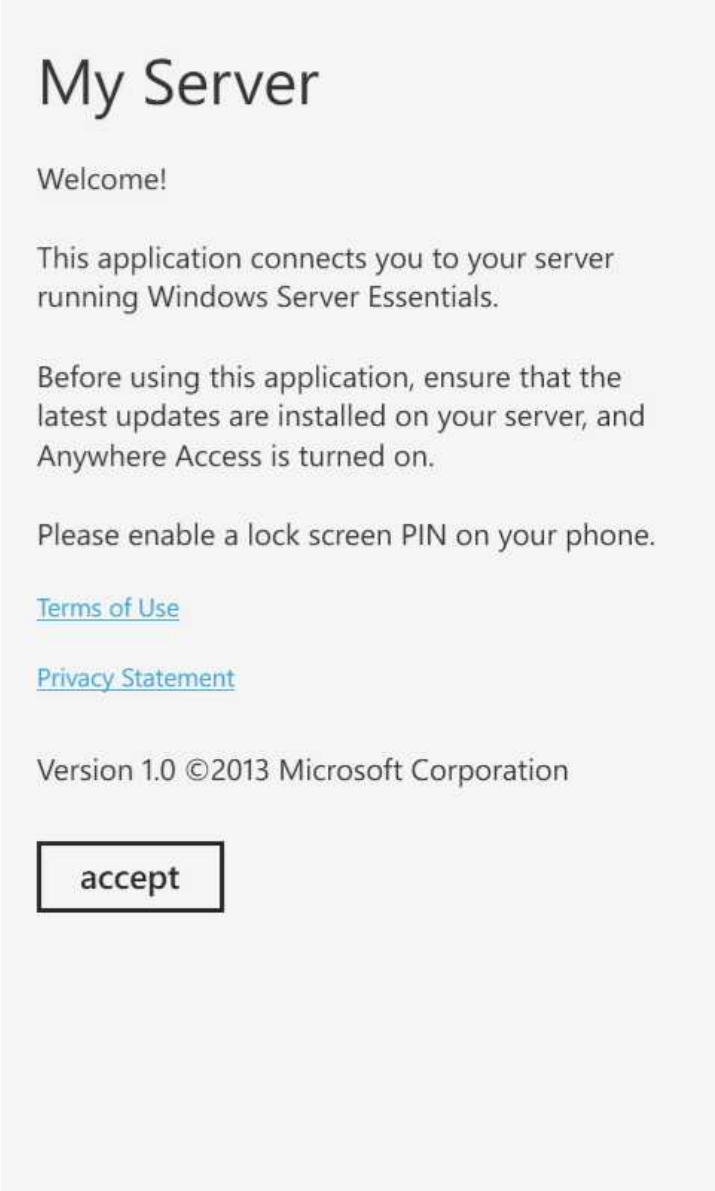
If you're a Windows Phone 8 user seeking to manage your Essentials server using your handset, then you're in luck! The My Server 2012 R2 app is also available for Microsoft's smartphone platform and offers a similar (but small-screen) experience to the tablet and desktop app.

My Server 2012 R2 in the Windows Phone store.

Search for the app in Microsoft's store, and you'll be able to download it to the device. It's a 2MB download.

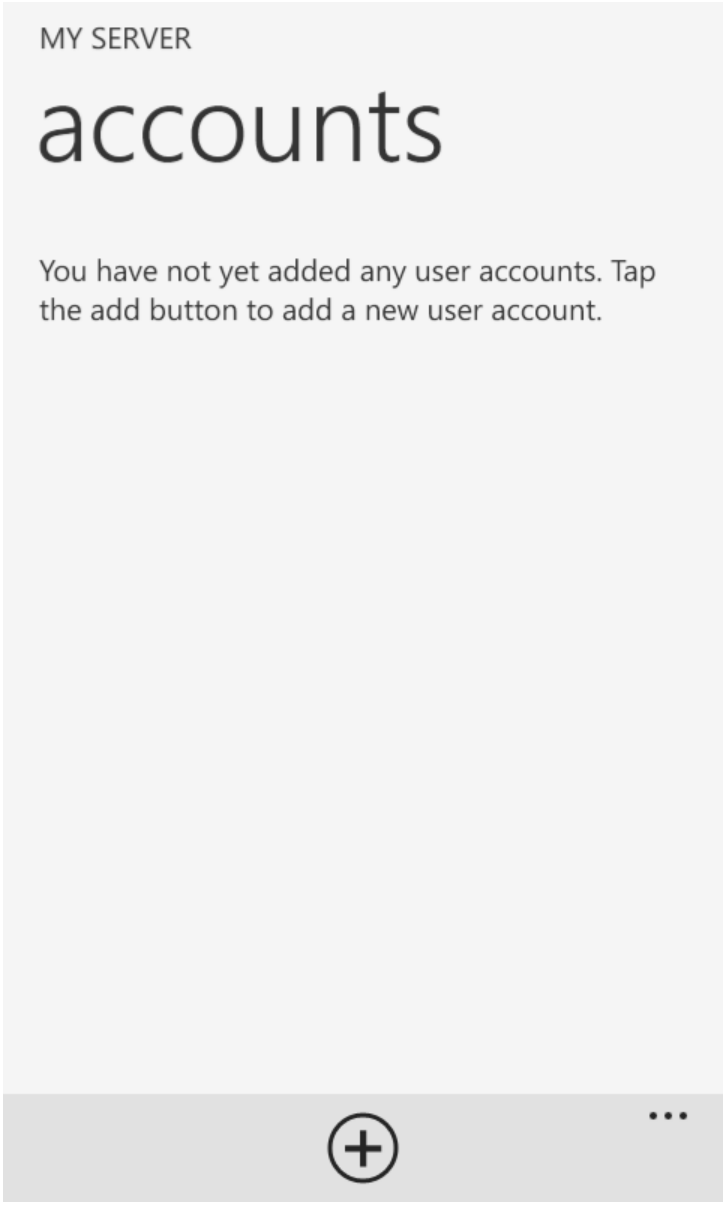
Installing the app.

Once installed, you'll have some terms to accept before you can view the app menu.



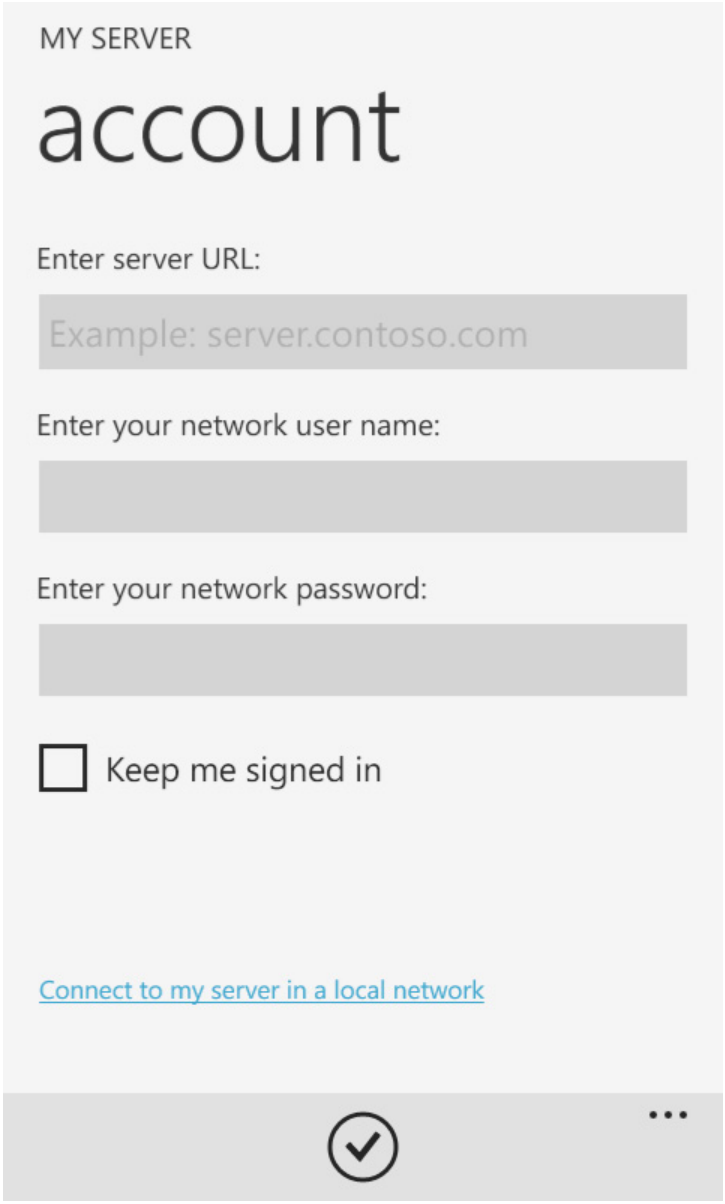
Hit the accept button to get started.

Just as we did with the Windows 8 app, you'll need to enter your account details to access the server through the app.



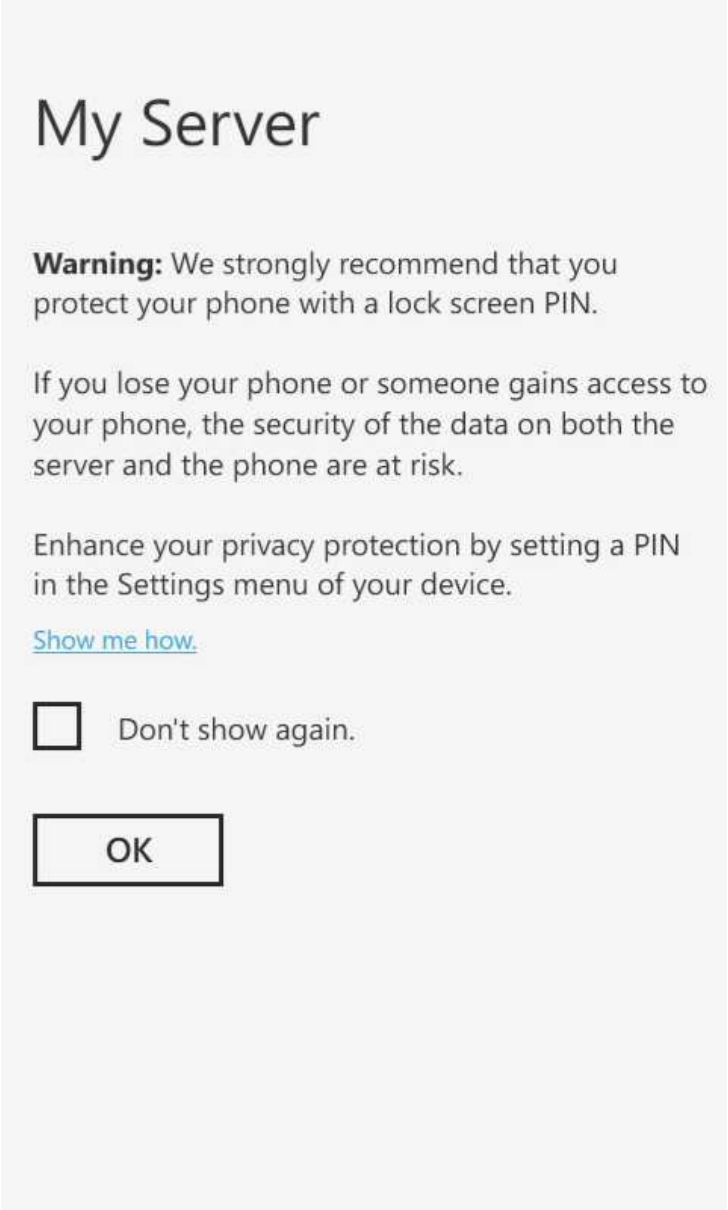
You'll need to add your administrator account details to access the app menu.

Click the **Plus** button to enter your details.



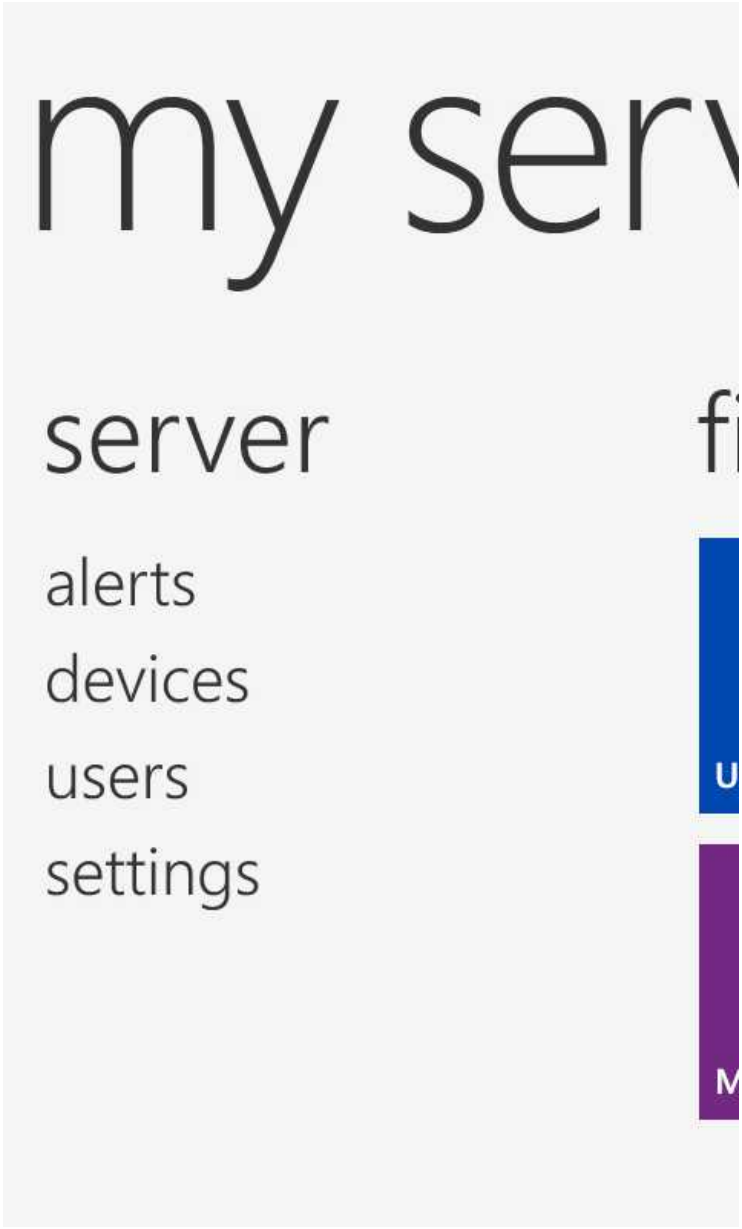
You'll need your remote web access details to use the app.

If you've yet to set a PIN number for your lock screen, then you'll be reminded to do so - it's not mandatory, but as your device can now access the server, it's a good idea to ensure your handset is secure.



It's a great idea to secure your phone with a PIN number.

With the app installed and configured, you can finally access the server menu. You'll see links to **Alerts**, **Devices**, **Users** and **Settings**.

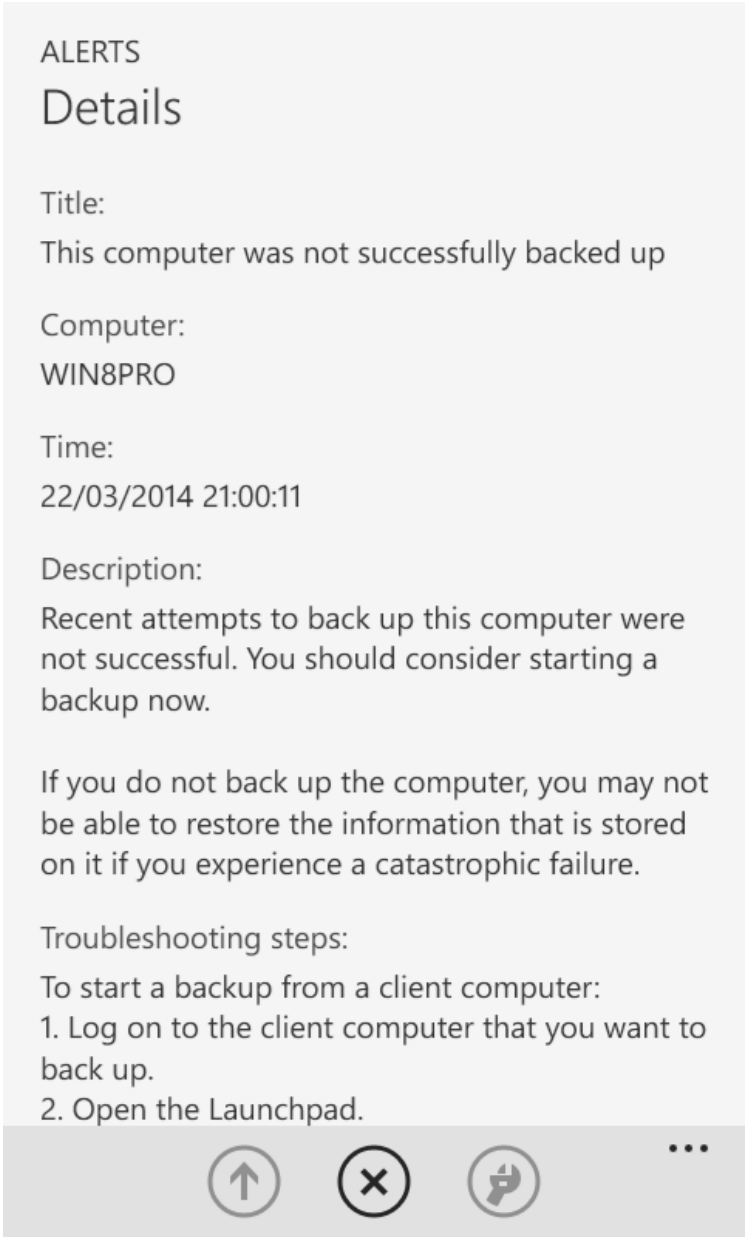


We're in!

The Settings menu simply lets you place a Live Tile for the app on the screen. Let's tap **Alerts**.

Viewing alerts.

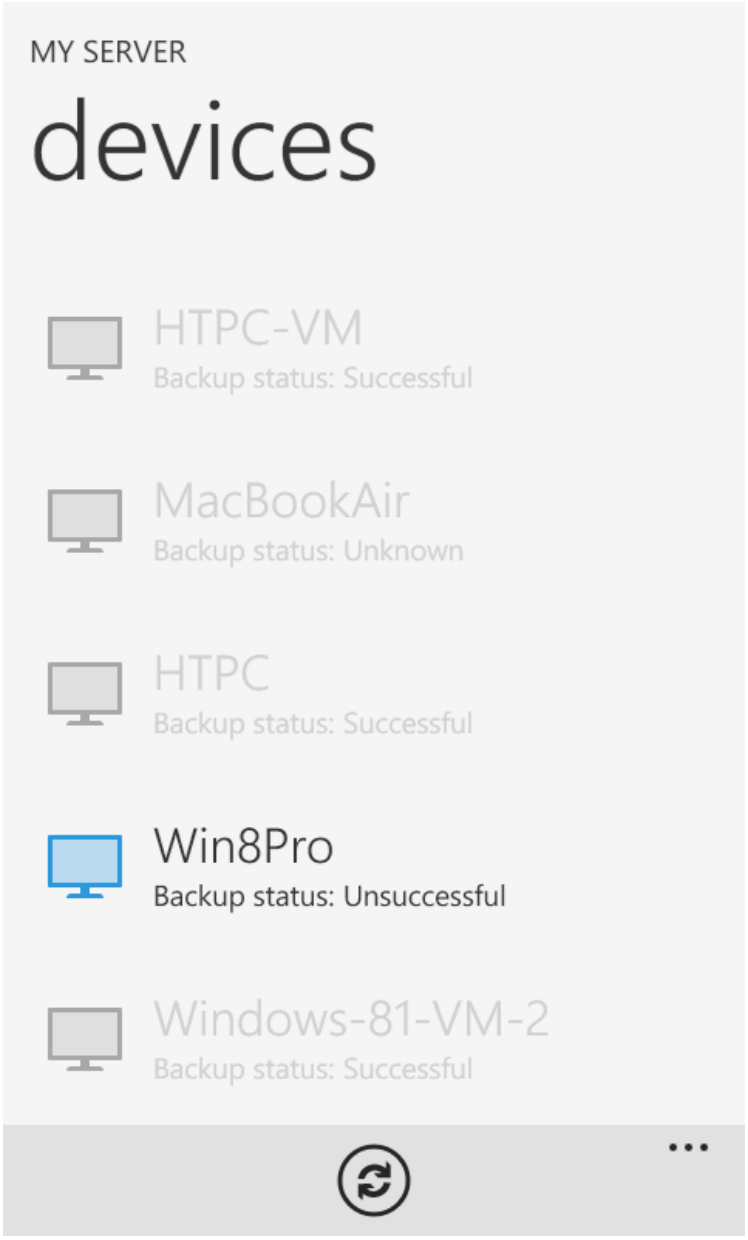
You'll see a list of current critical alerts and warnings - tap an alert and read the details.



Viewing details of the alert.

When viewing alerts, your options are to ignore it, or - for some alerts - the wrench icon may illuminate to attempt a repair.

OK, tap back to the main app menu and select the **Devices** link.

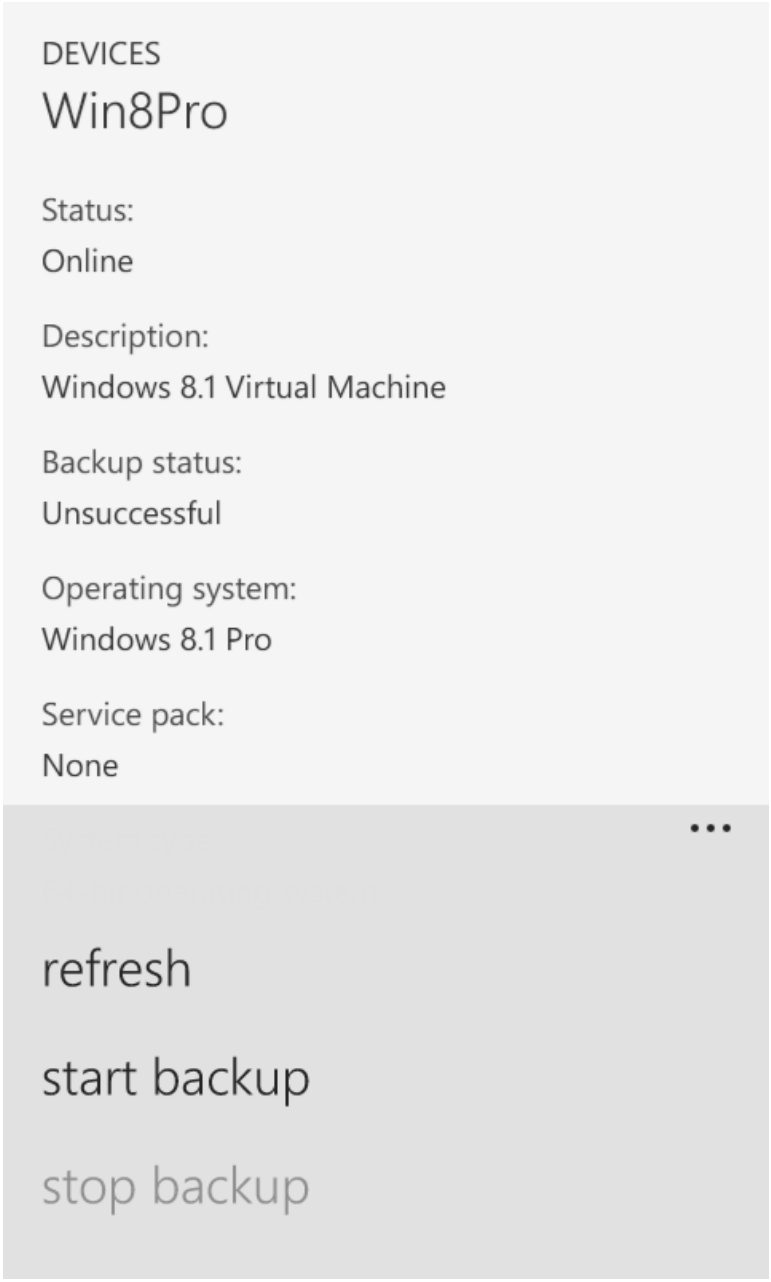


The Devices panel.

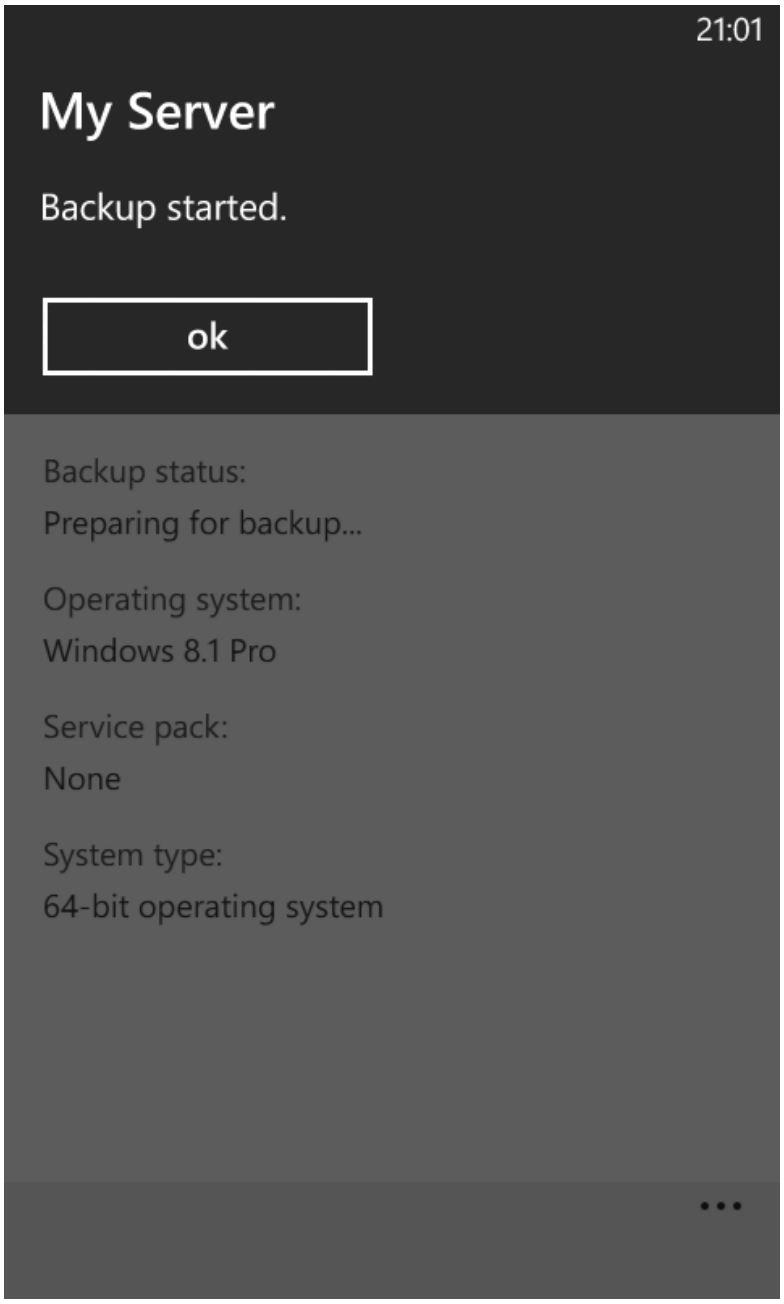
Here you can view a list of your connected devices - there's no remote desktop option on the smartphone, but you can tap on your devices to see more details.

Viewing device properties.

As a bonus, hit those three little dots and you can launch a manual backup from the handset.

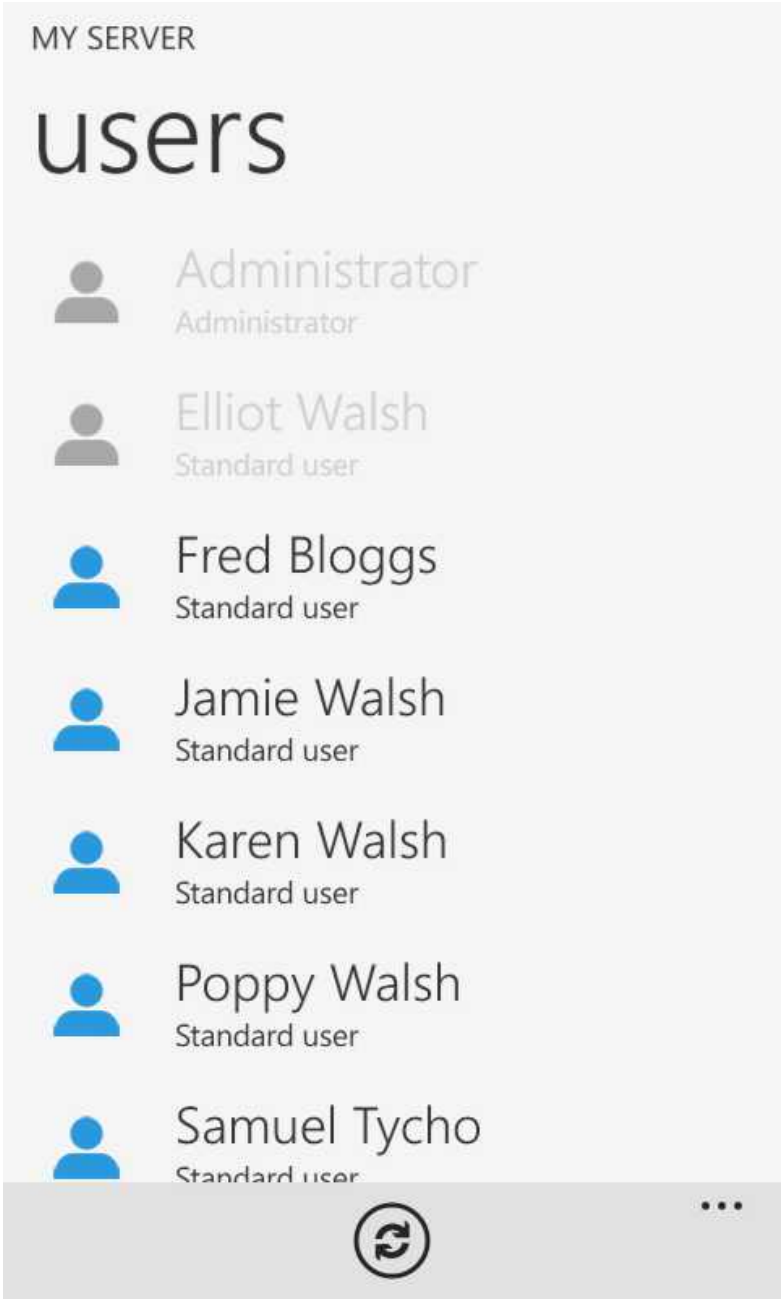


Initiate a backup from your phone.



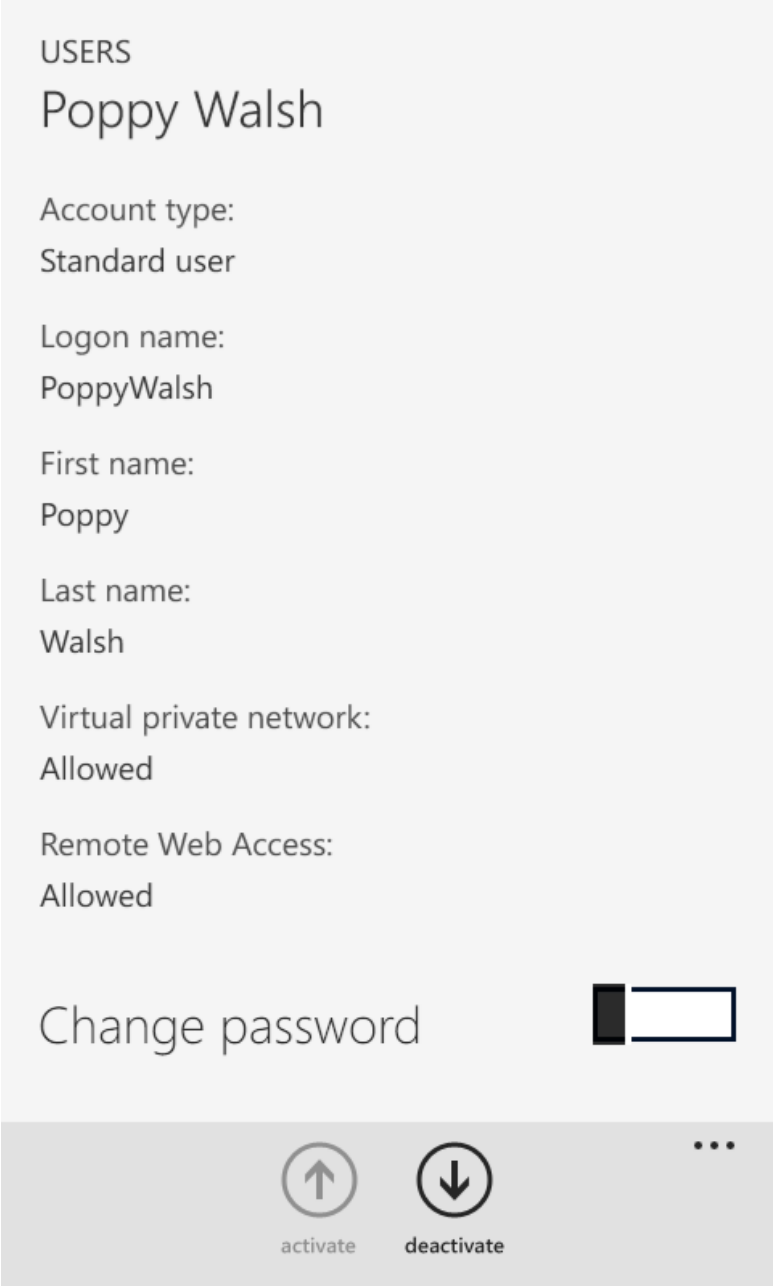
The backup begins.

The Windows Phone app also lets you view your users and, if you've had a request to change a password, you can do that too.



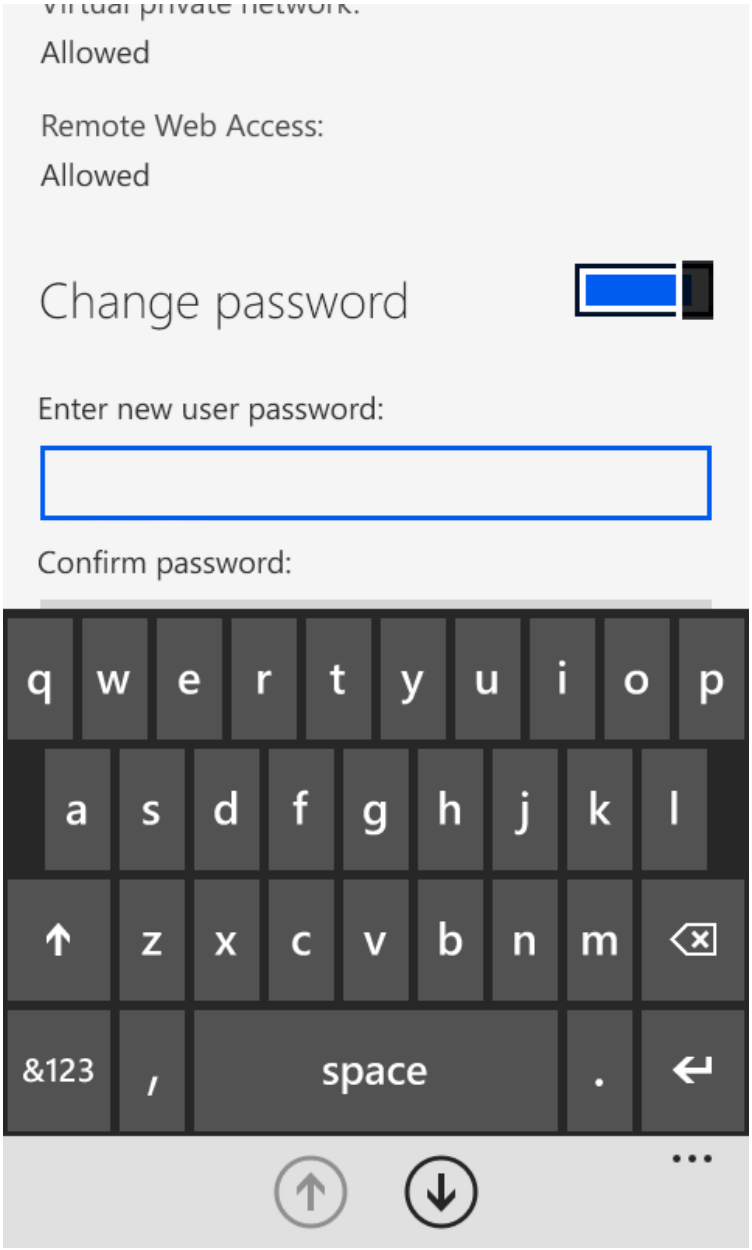
Your users are displayed.

Alongside password changes, you can also manage which accounts are active via the app.



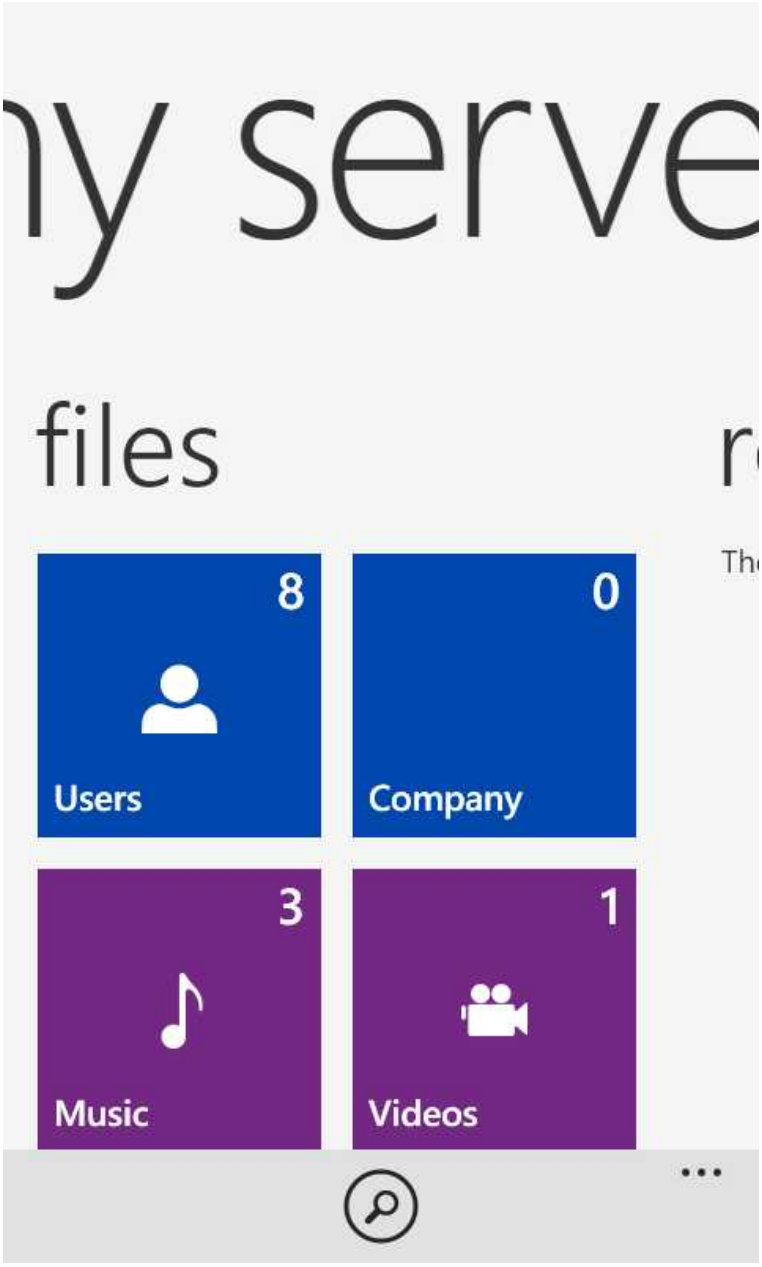
Change the user password or deactivate an account.

Just slide the switch over next to **Change password,** and you'll be invited to enter the new password.



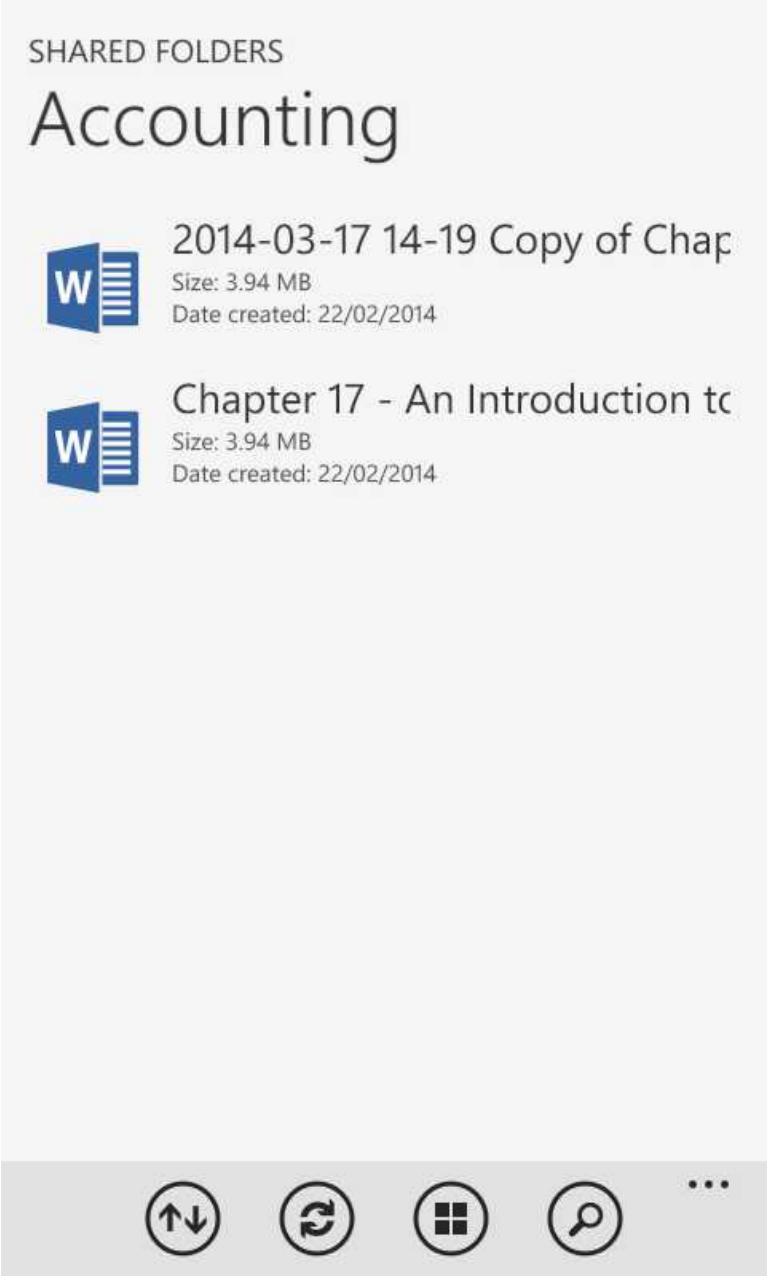
Changing the password.

Back at the main app menu, swipe to the left and you can navigate through your server's shared folders.



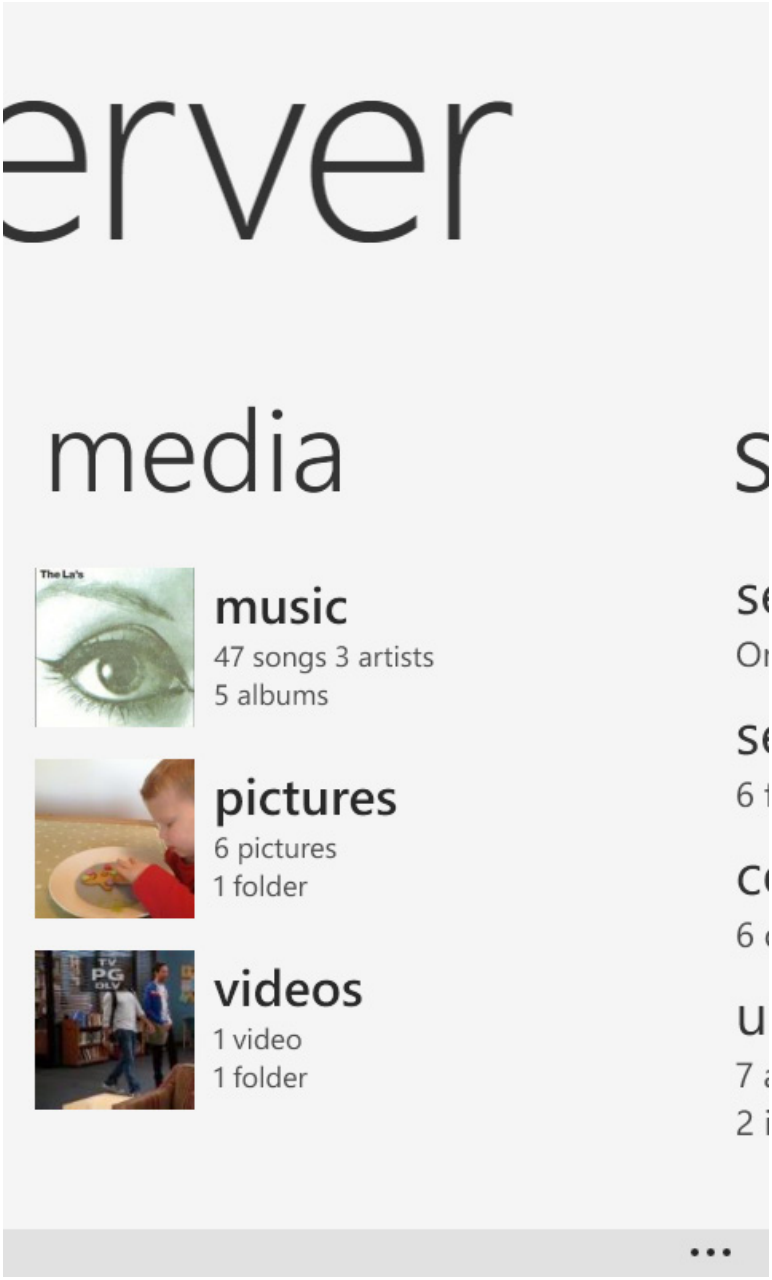
As we've installed media features, Music, Video and Photo folders are also available.

Tap on a tile and you'll be able to dive into your folders and files.

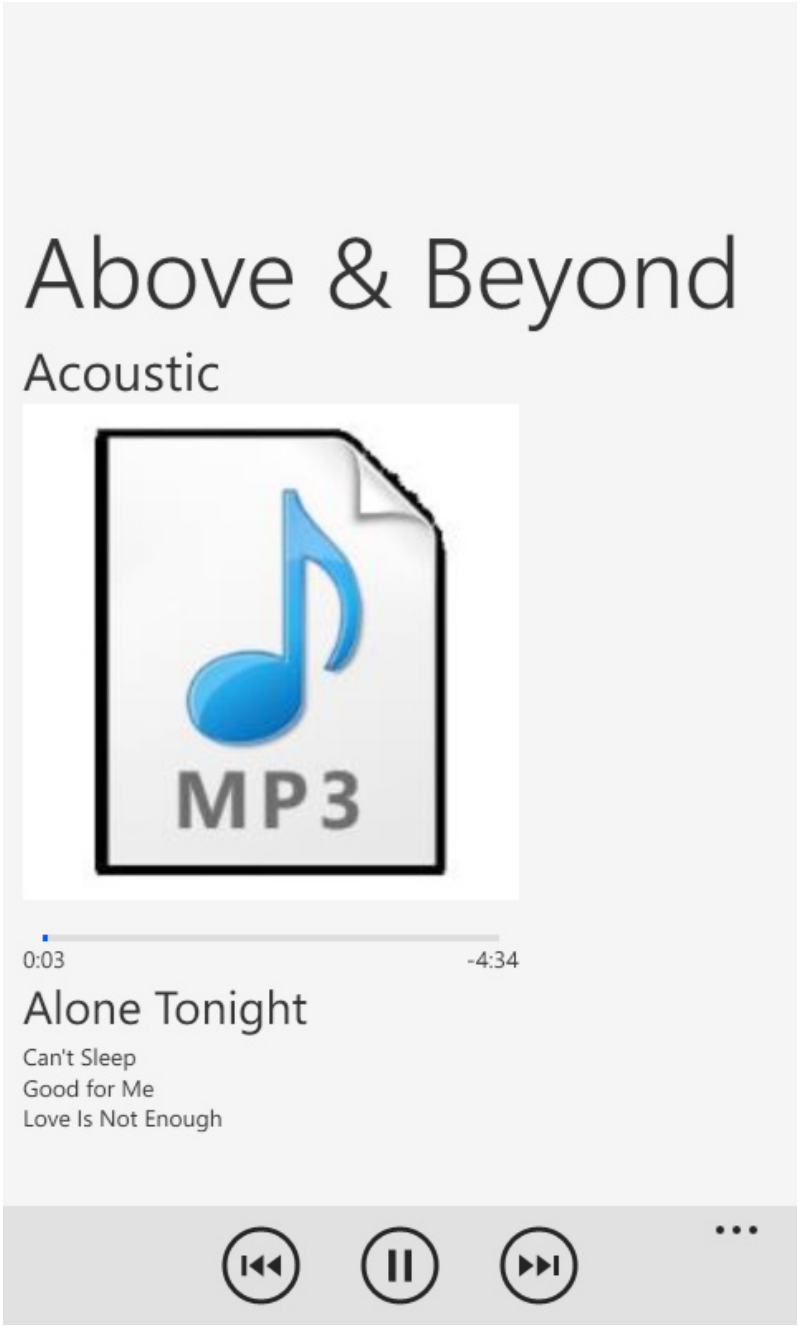


Viewing shared folders on your Windows Phone.

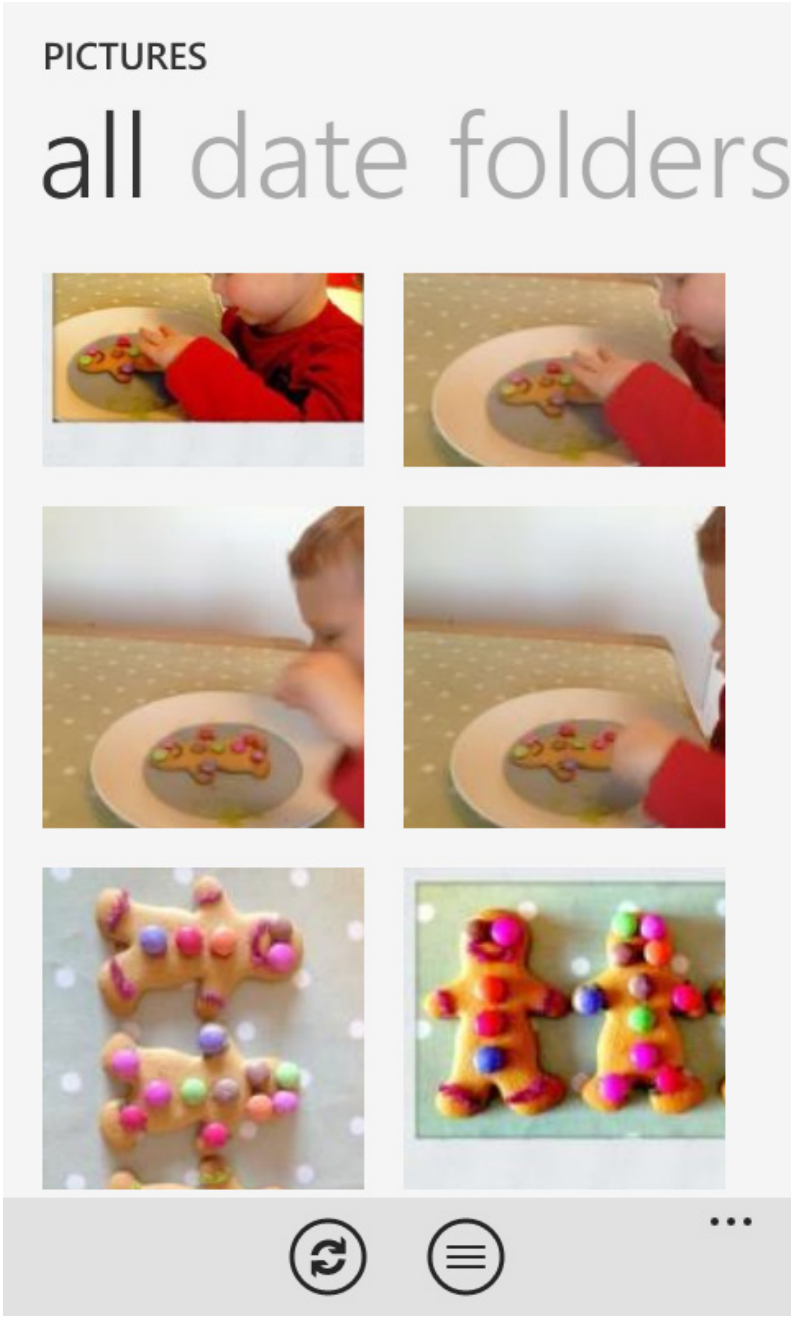
With the media pack installed, your music, video and photo libraries are all available for streaming.



Media libraries.



Who needs Spotify when you can stream your music remotely on your phone?



Viewing your photos.

Even video can be streamed on the phone from your server.

Rounding up the My Server 2012 R2 app for Windows Phone, you're able to keep a check on what's happening with a status report for your network.

Viewing the status of your server network.

Windows Phone may not be the most popular mobile operating system, but if you're a Microsoft fan, then investing in one of their Windows Phones will enable you to manage your server from wherever you are on your handset.

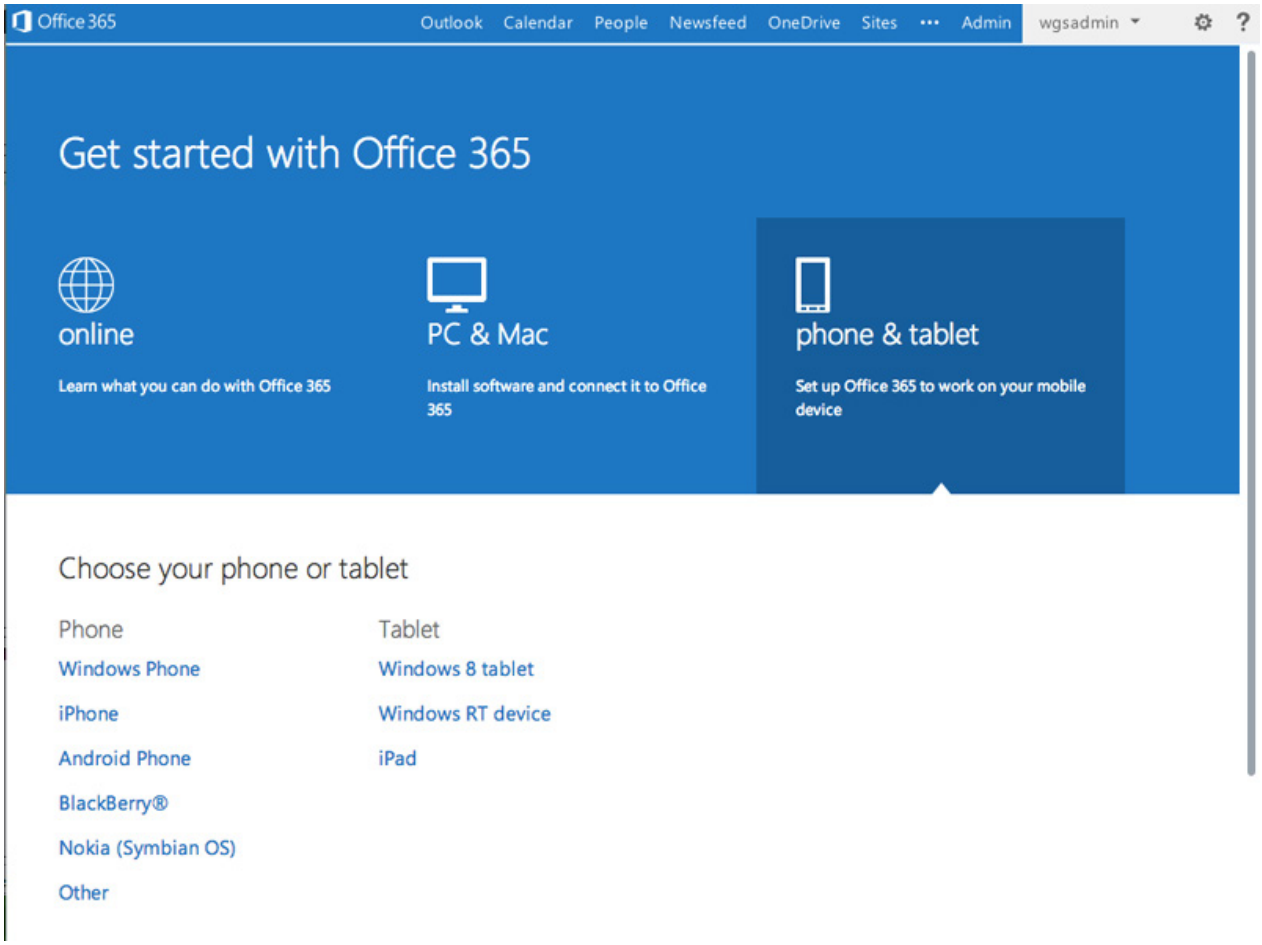
Managing Mobile Devices With Office 365 Integration

One of the major reasons for integrating Windows Server 2012 R2 Essentials with Microsoft's Office 365 is that your server functionality receives a boost in the area of Device Management. With Office 365 on board, **mobile device management** is added to your server! Fast forward to Chapter 20 if you want a headstart on connecting the cloud service. Everyone else, let's walk through our new

mobile device management features.

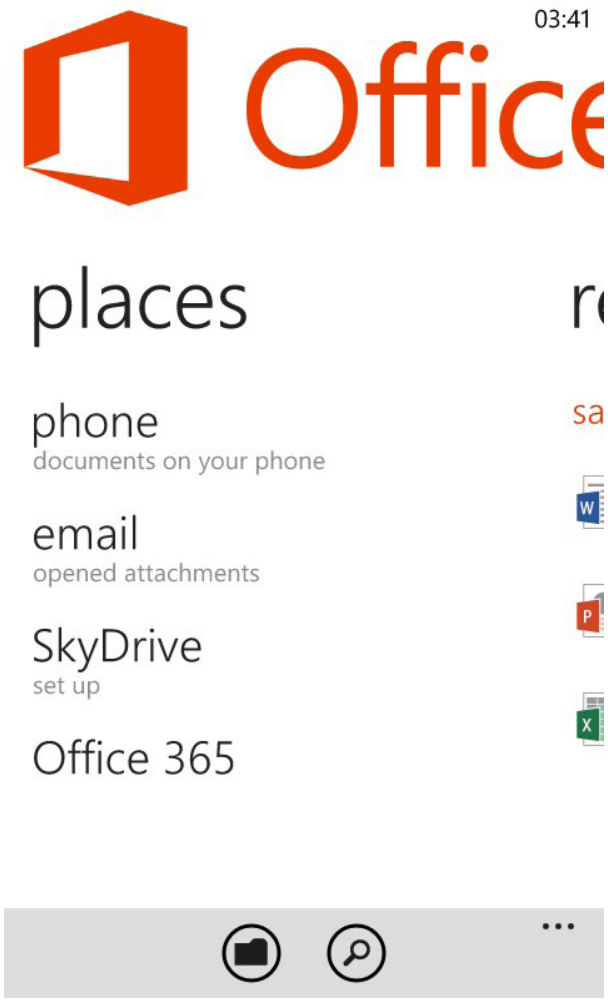
The good news is that unlike the My Server 2012 R2 app, which is exclusively developed for Windows Phone, whether you and your team rock Android, iOS, BlackBerry, Symbian *or* Windows Phone devices, they're all welcome when you integrate Windows Server 2012 R2 Essentials and Office 365.

There's no connector available within Windows Server 2012 R2 Essentials for mobile devices - you'll need to connect them to Office 365 via its online portal. Simply log-in to the Office 365 portal and visit **Office 365 settings > Get started > Phone & tablet** for full instructions on getting your mobile devices configured and apps installed.



Sadly, there's no mobile device connector for Windows Server 2012 R2 Essentials.

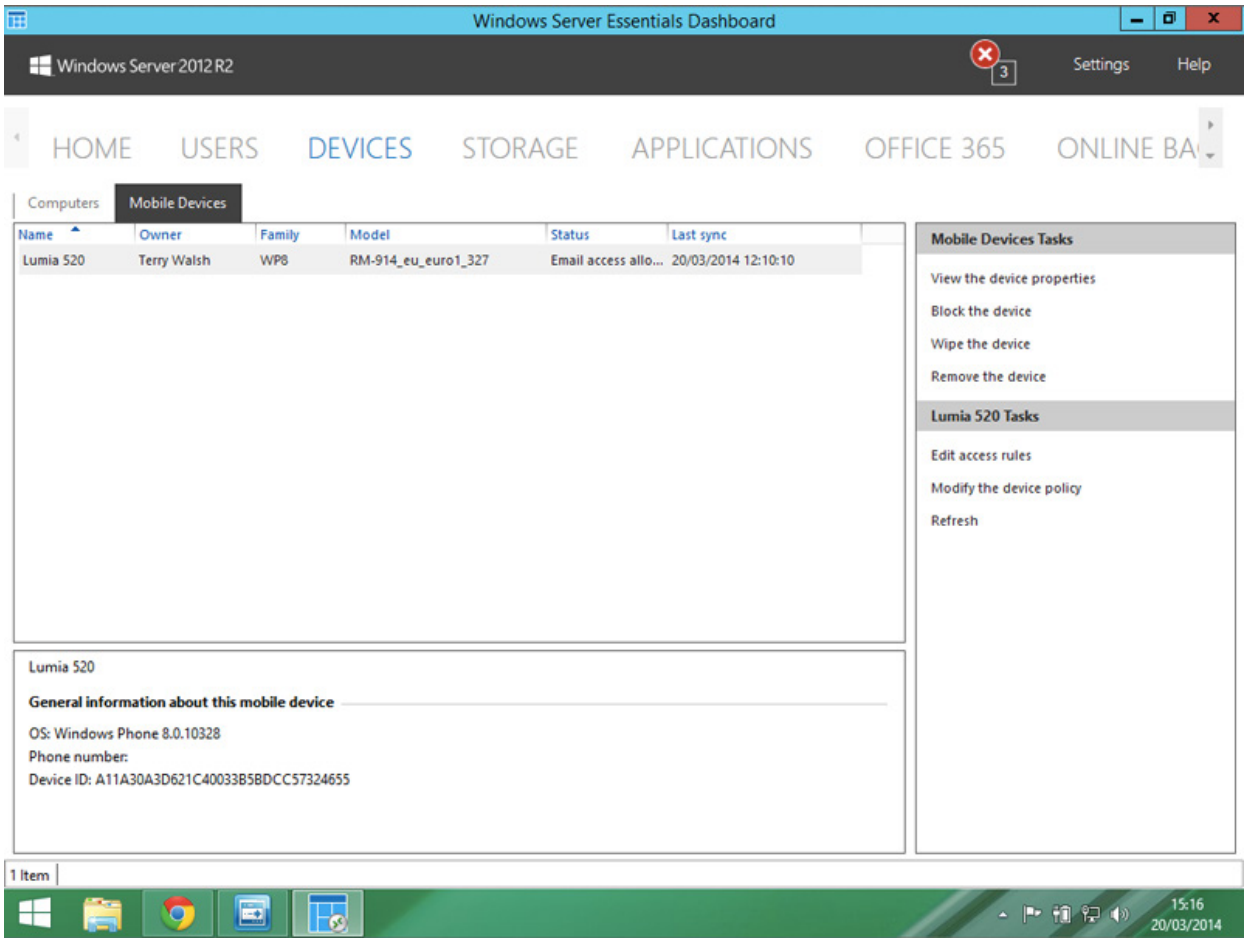
When you have your Office 365 mobile apps installed, you can simply log-in with your account credentials.



Mobile Office on Windows Phone.

Mobile Office on Android.

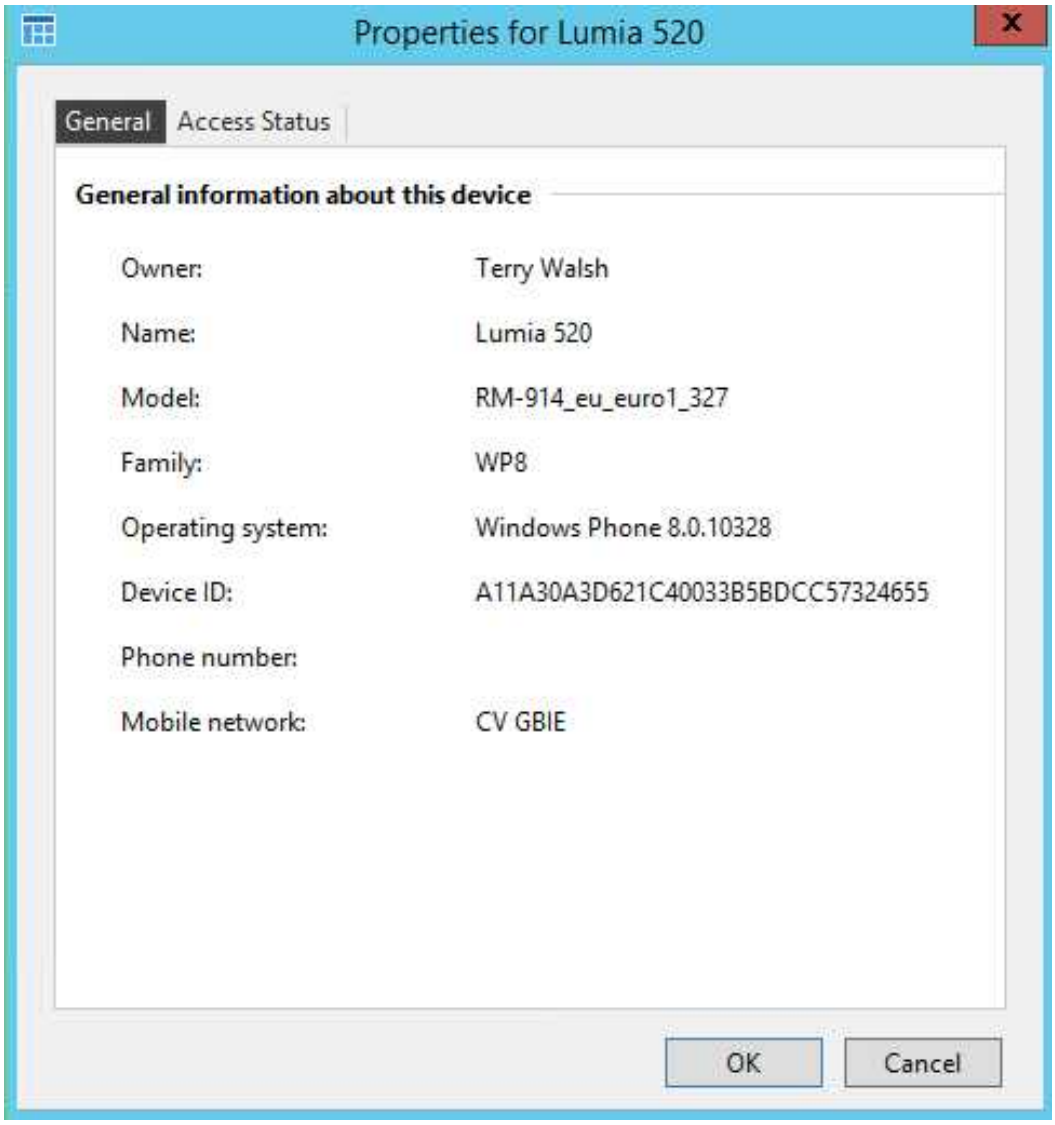
Once you've signed into Outlook on your mobile, refresh the **Devices** panel in your Dashboard and in the **Mobile Devices** tab you should now see the device listed.



Here's our test subject, a Nokia Lumia 520 Windows Phone.

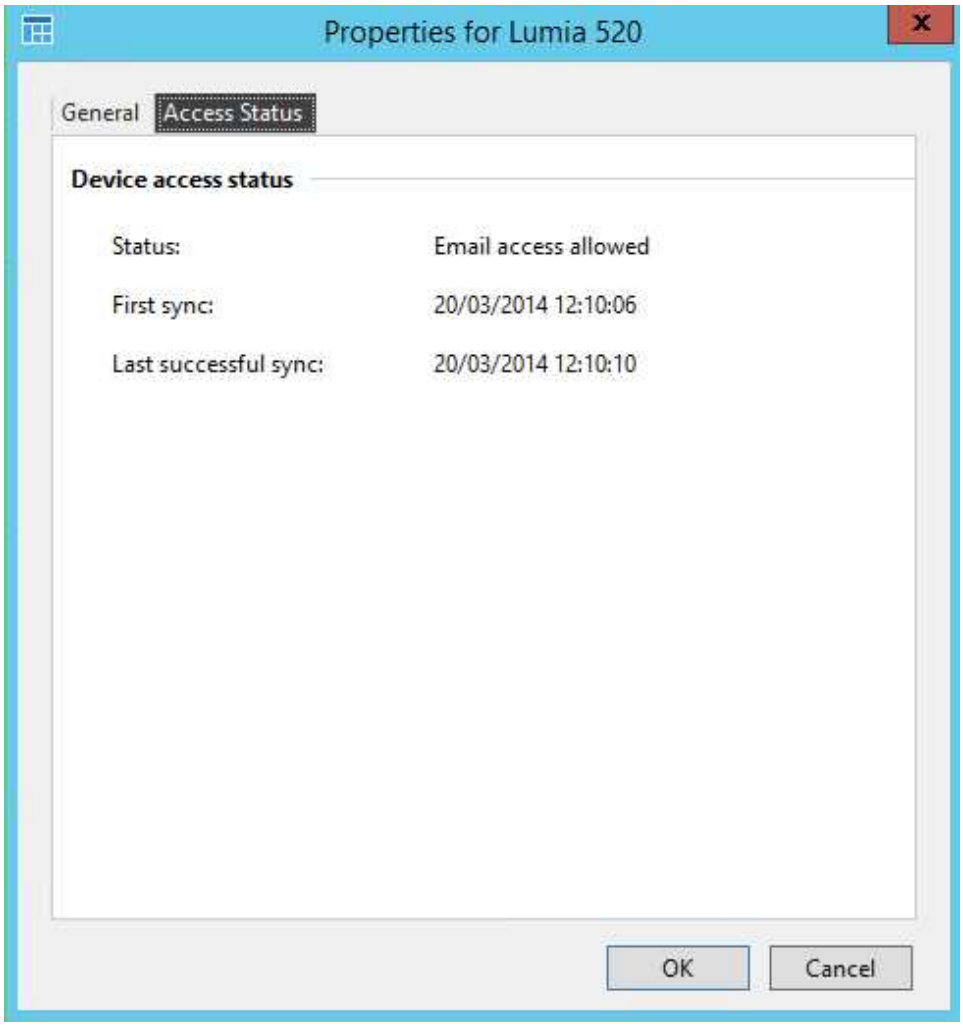
Each device will be listed with a name, owner name, family (operating system), model number, status and the date and time of its last sync with Office 365 Exchange.

You'll also see the Task Pane has now been filled with options for managing your mobile devices. **View the device properties** additional detail about the device alongside what you can view in the main pane - Device ID, Phone Number and Mobile Network. You'll need to have a SIM plugged into the device for the last two entries to make any sense.



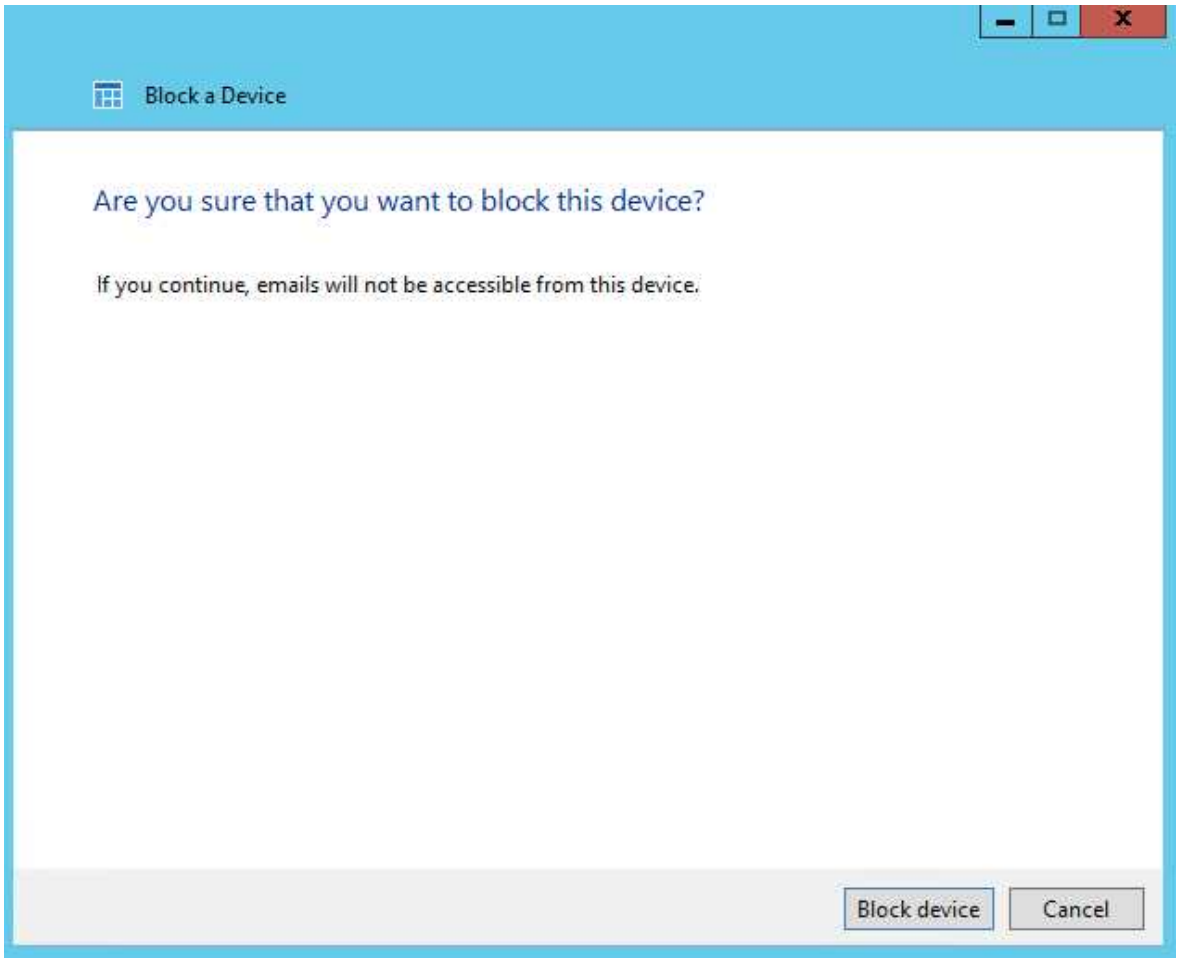
General device properties.

A second tab in Device Properties, **Access Status**, confirms whether email can be accessed on the device as well as the date and time for the device's first and most recent successful sync with Microsoft's online servers.



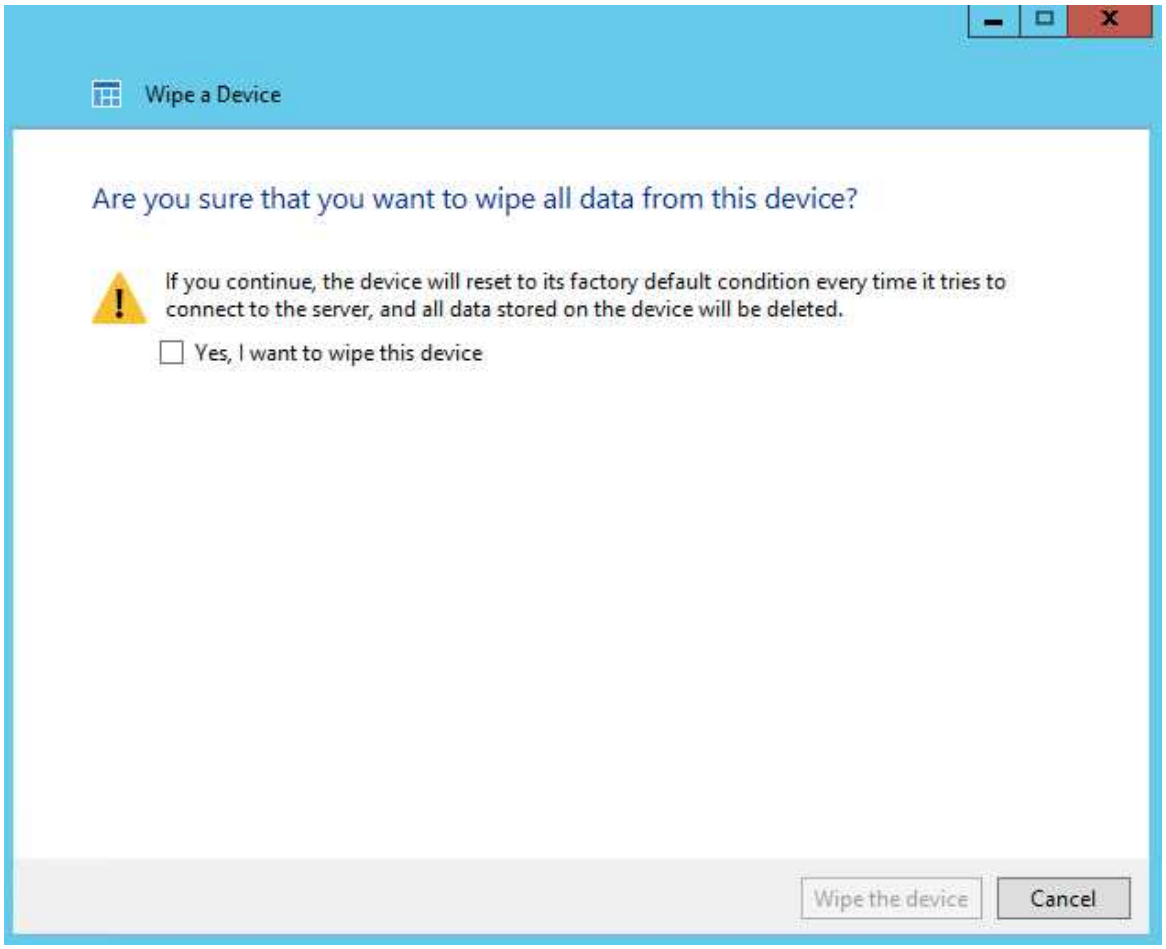
Access status properties.

Moving through the task list, **Block the device** allows you to remotely block the mobile device from accessing Office 365 email - a handy security option if the device gets left on a bus, train or in a bar!



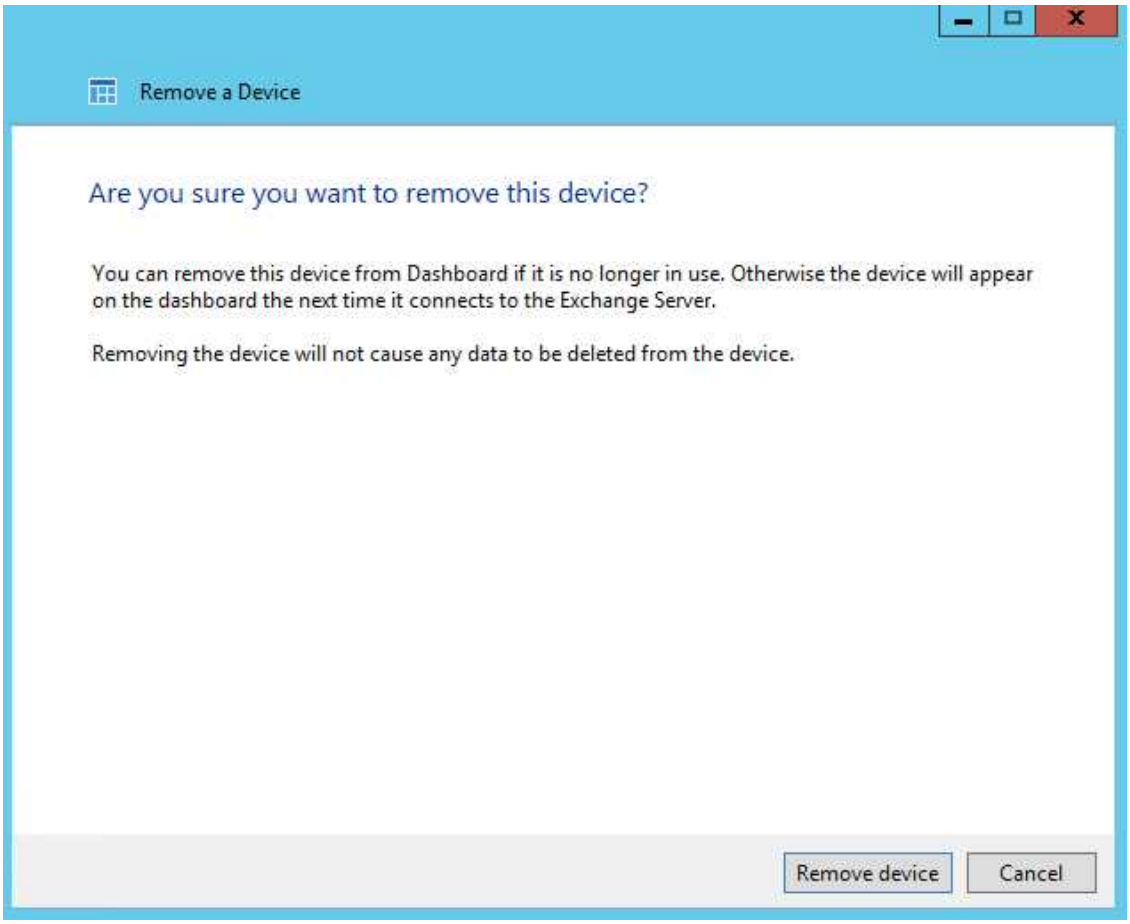
Block the device to prevent access to email.

If that's not secure enough, you can choose to **Wipe the device** which deletes all data from the device and will reset it to factory defaults whenever it attempts to access the server.



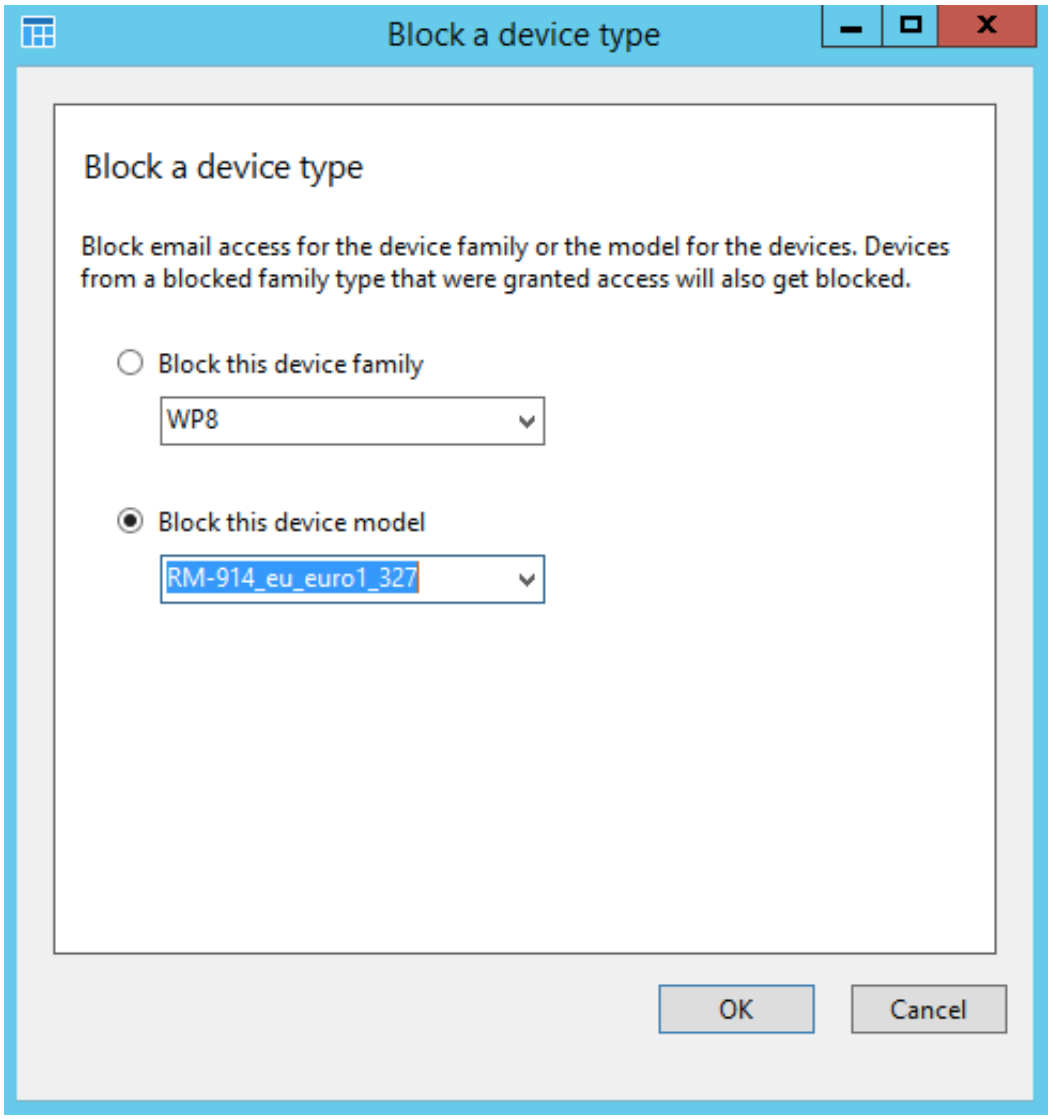
Wiping the device obliterates all of the data held.

When it comes to the time to replace the mobile device with the latest, greatest and shiniest offering from your mobile vendor du choix, you can **Remove the device** from the Dashboard with a couple of clicks.



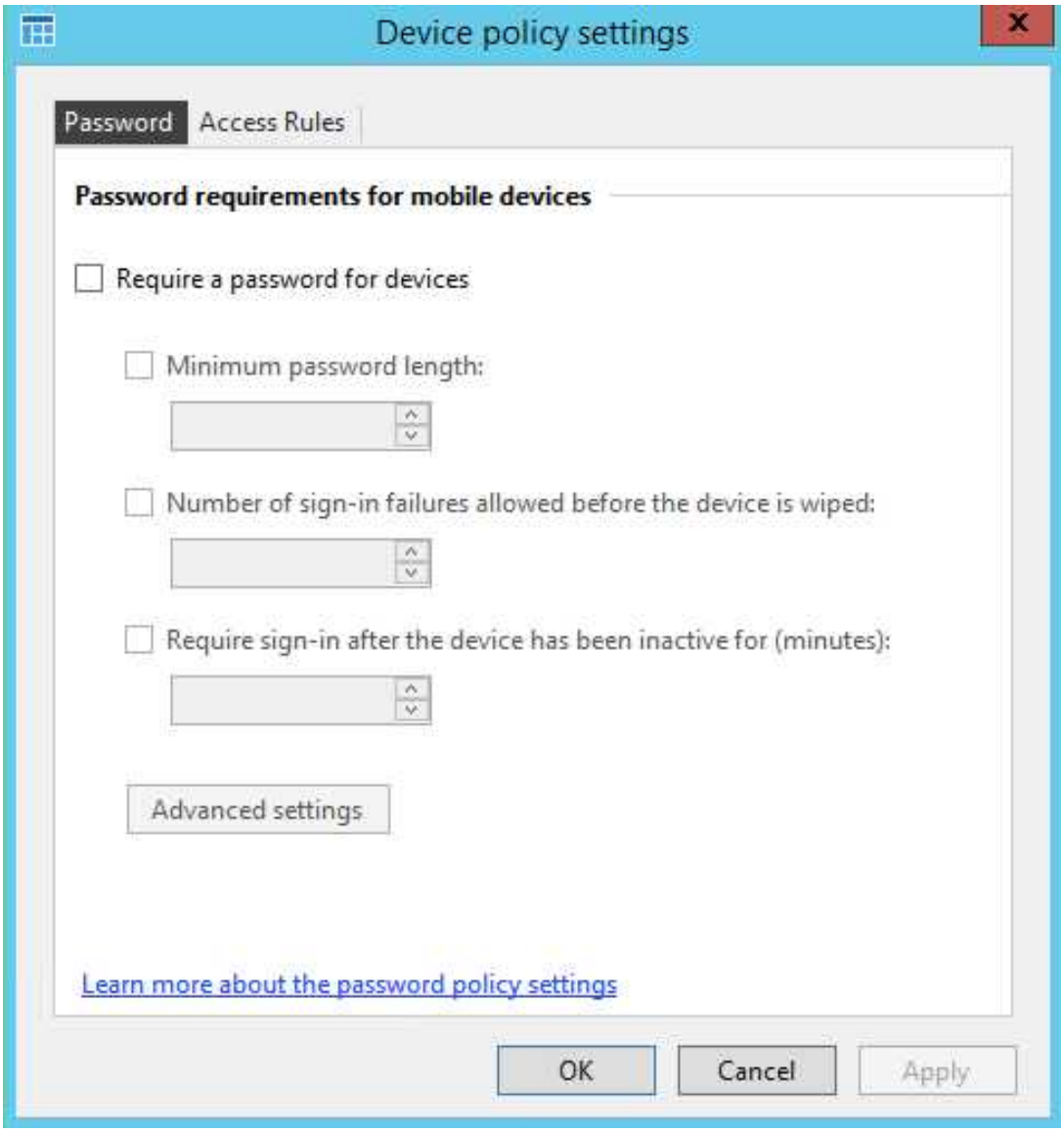
Removing the device from the Dashboard.

Lower down the task pane are a couple of more advanced controls for managing the device. Think of these as options to configure specific device policies - **Edit Access Rules** allows you to block families of devices or specific models from accessing Office 365 email.



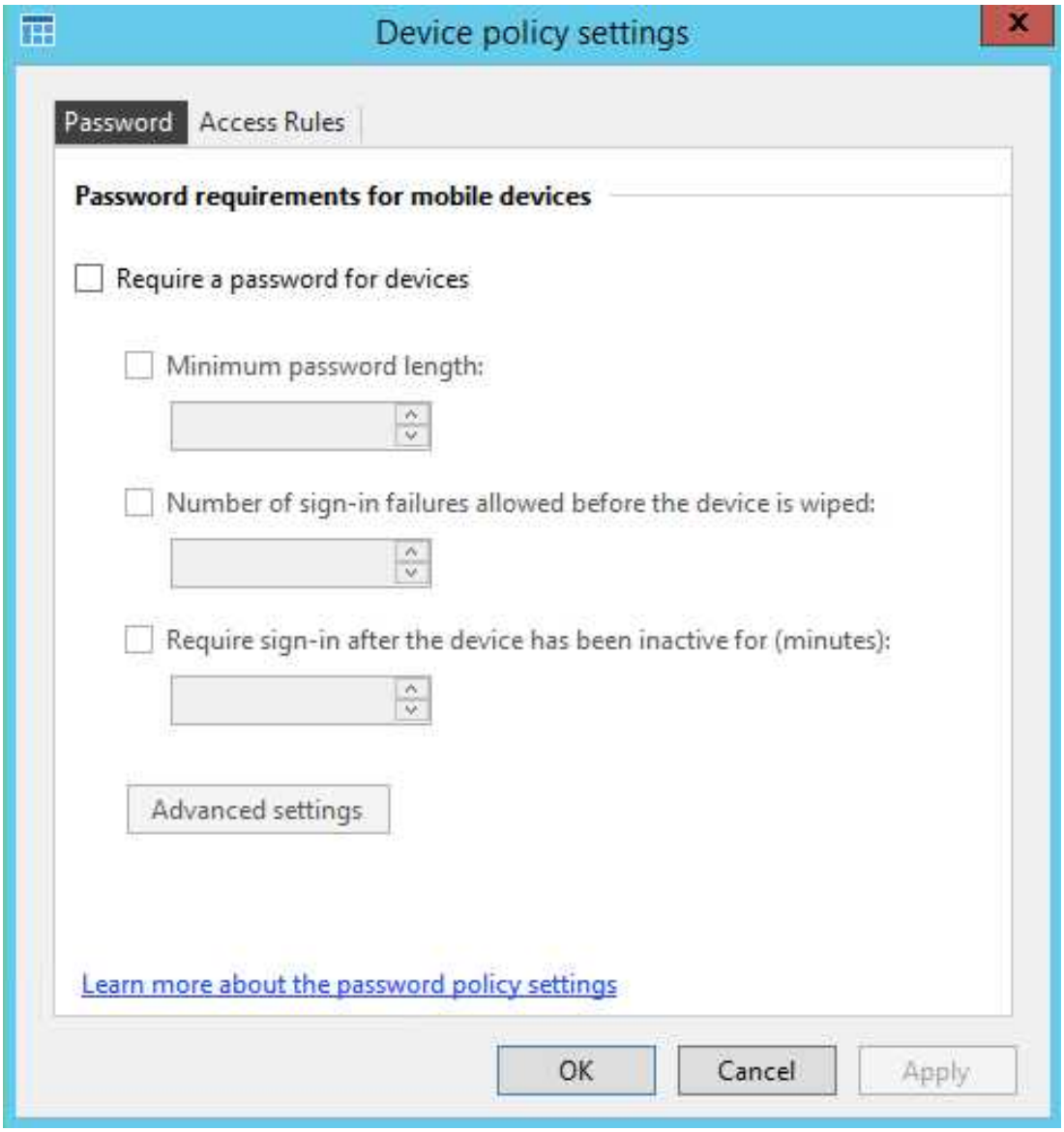
No email for you!

Meanwhile, Modify the device policy opens up a panel for detailed configuration of mobile device password policies.



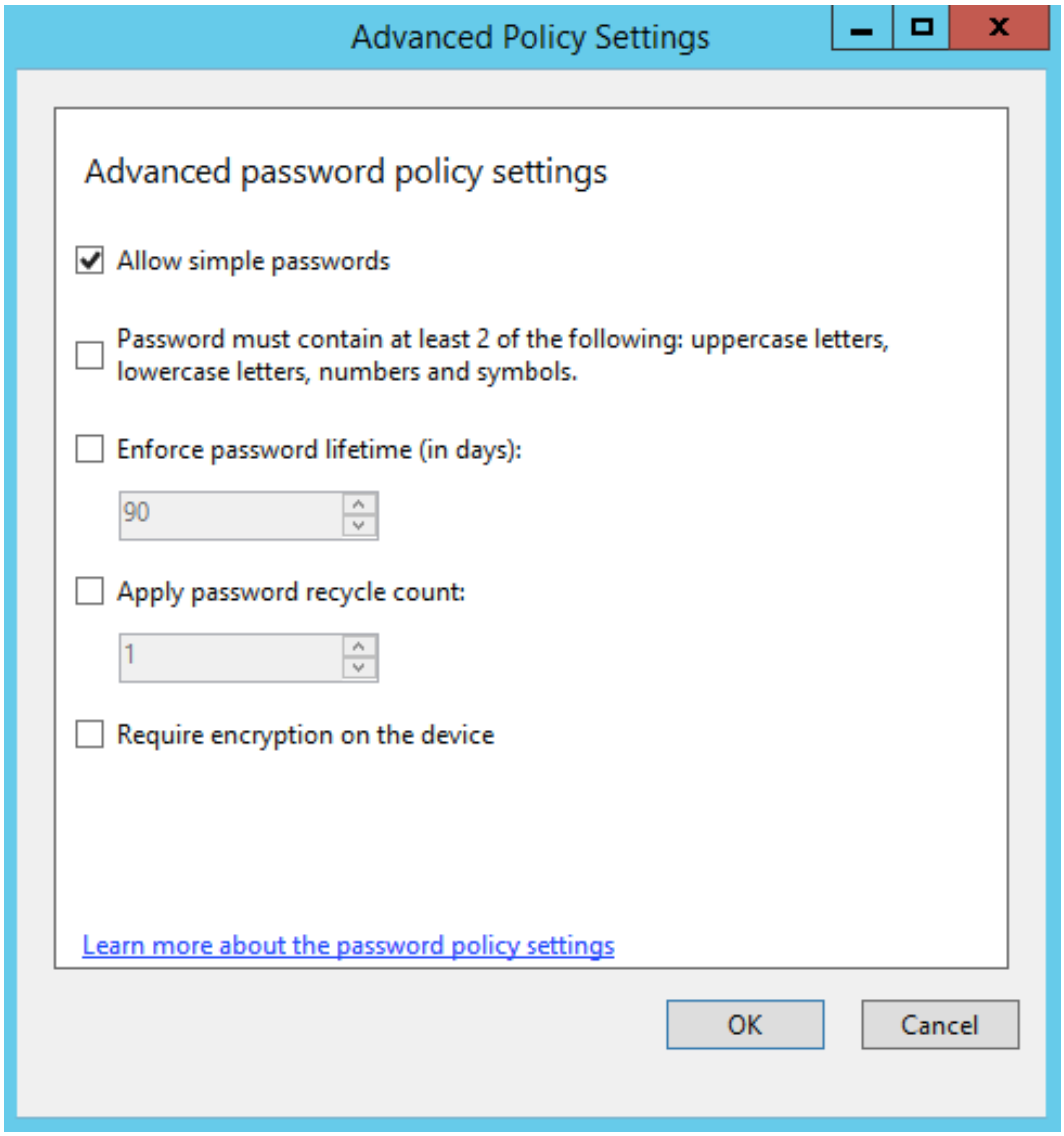
Office 365 integration also allows you to configure password policies on mobile devices.

Options include mandating the use of passwords on devices, setting a minimum password length, setting an automatic remote wipe of the device after a number of failed sign-ons, and requiring the device to be signed into again after a defined period of inactivity.



Strengthen device security.

Hit the Advanced settings button and even greater security controls become available - you can choose to allow or block simple passwords, configure password strength requirements, enforce password lifespans and recycle counts and mandate device encryption.



Advanced policy settings.

With Office 365 integrated into Windows Server 2012 R2 Essentials, the Dashboard becomes an even more essential tool for managing your small business IT infrastructure. But even if you don't go for Microsoft's cloud service I think you'll agree that Windows Server 2012 R2 Essentials offers a fantastic assortment of features for mobile users. Whilst in true Microsoft fashion, life is a little sweeter if you buy into to their mobile ecosystem, don't forget, you can also access your remote website through your mobile device - in this release, Microsoft have thrown out the need to use their Silverlight plugin and the whole experience is built in HTML5 - everyone's invited!

OK, that completes our comprehensive look at computer and mobile device management. Now, let's take a look at the Launchpad.

The Launchpad

"At this point in our (and your) Windows Server 2012 R2 Essentials installation, we are actually almost done with deploying the server. Let's recap on what we've achieved so so far."

We have:

- Installed the server operating system.
- Completed a number of set-up tasks.
- Connected devices (PCs, Macs and mobile devices) to the server.

There is still quite a bit work to be done, but we have the basics completed. It is now time to take a peek at the features the Windows Server Connector has installed on the devices in our network.

First up is **The Launchpad**.

The Launchpad application, installed on Windows PCs and Apple Macs, consists of a menu which navigates the user from the client to various features of the Essentials server. On a **Windows-based PC**, the Launchpad looks like this:

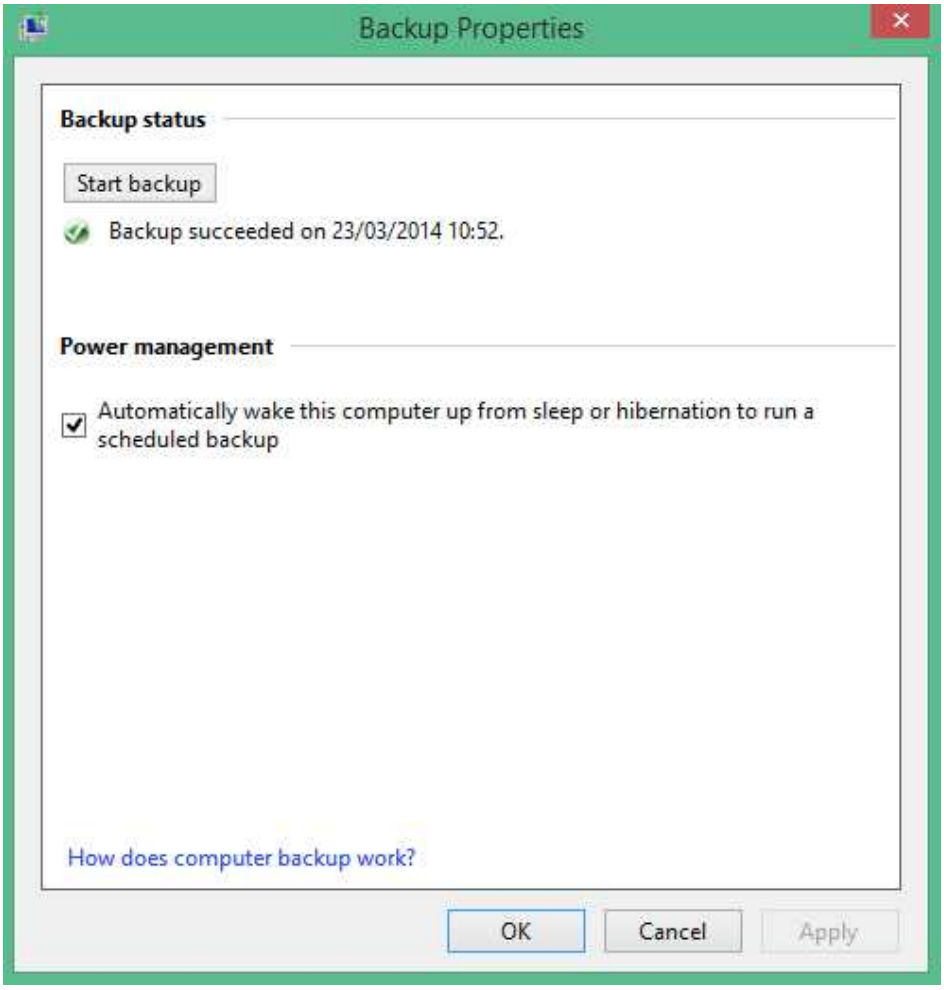
Launchpad on Windows.

When the Launchpad is opened for the first time, you will need to sign in to an administrator's user account to open the menu above. This is one time deal and a standard (non-admin) user does not gain any additional administration rights as a result of this action.

Let's work through the Launchpad menu.

Backup

Opens the **Backup Properties** dialog on the client computer.

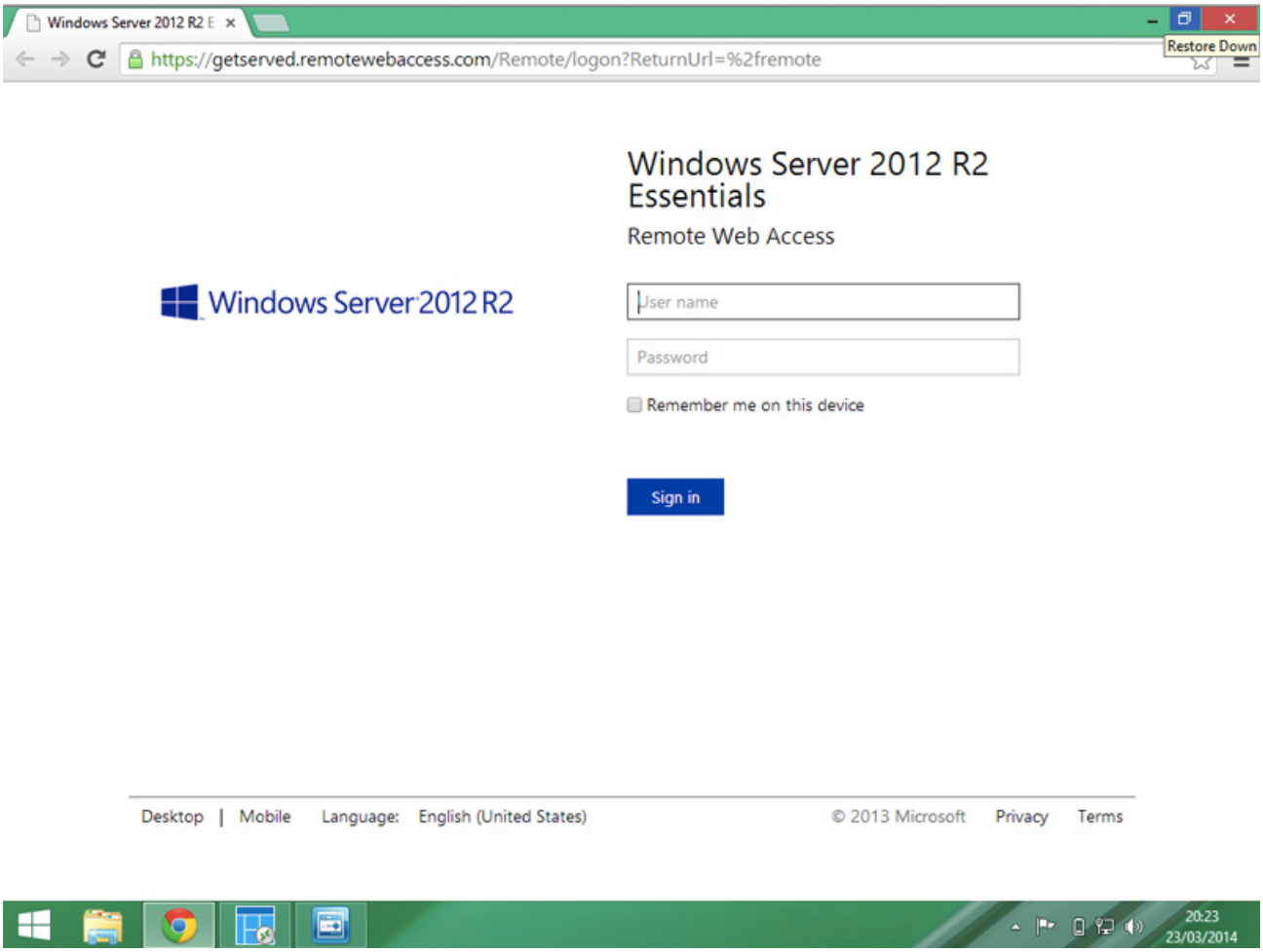


Backup Properties in the Launchpad.

From this dialog, a user can start a manual backup of the PC and is able to adjust the backup option to wake or not to wake a computer before performing an automated backup. We will go into this feature in a later chapter, but these backups will allow one to perform a **bare metal restore** of the client computer. If you lose a hard drive, you can put a new one the machine, boot from the Restore disc (or USB Flash Drive) and restore a complete image of the old hard drive.

Remote Web Access

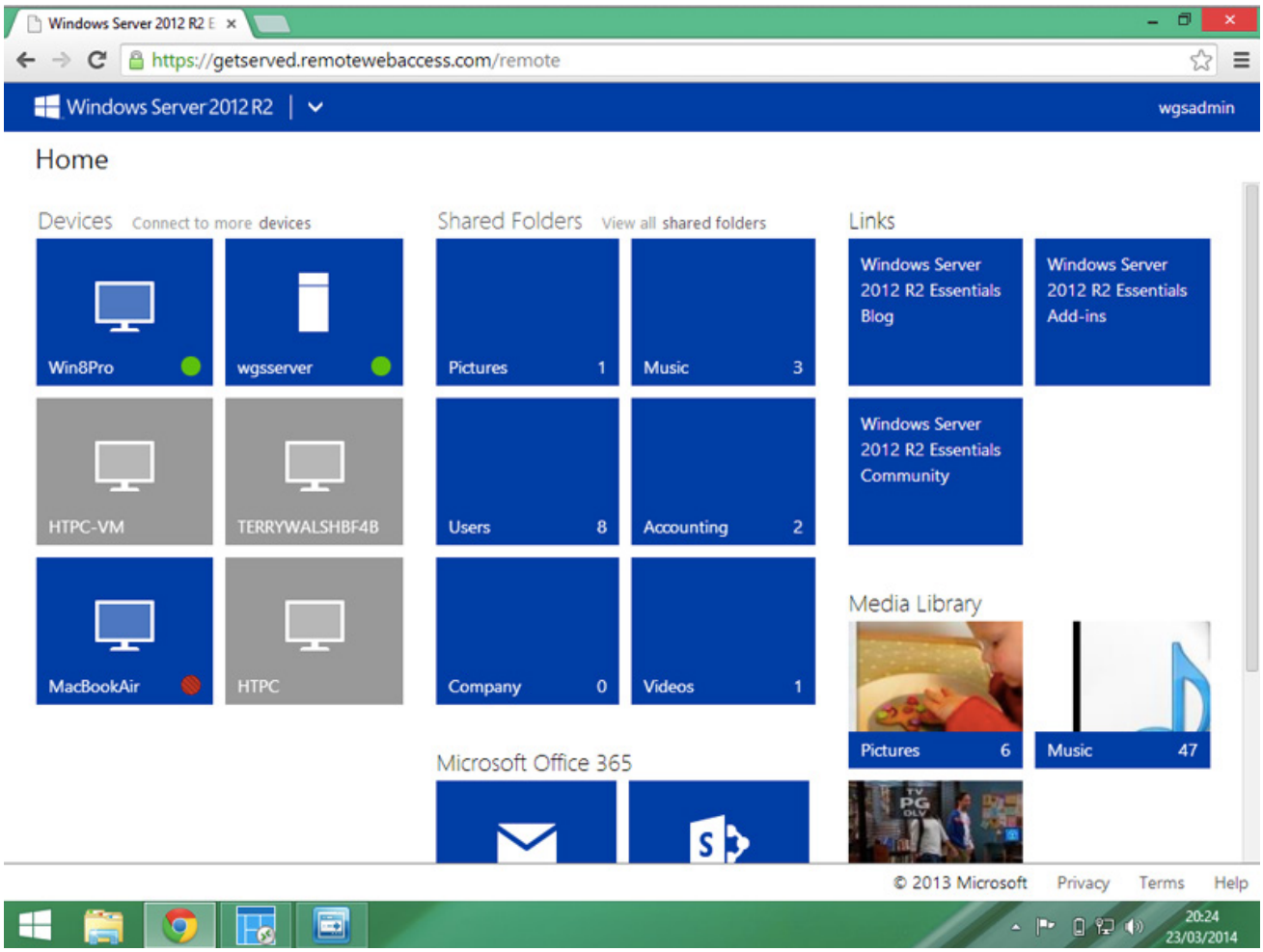
This is simply a browser shortcut to allow remote access to the server's shared folders and other client computers. When you click on this option, your browser opens to a Remote Web Access (RWA) sign in page in a web browser. Enter your **standard** user account name and password.



Logging into Remote Web Access.

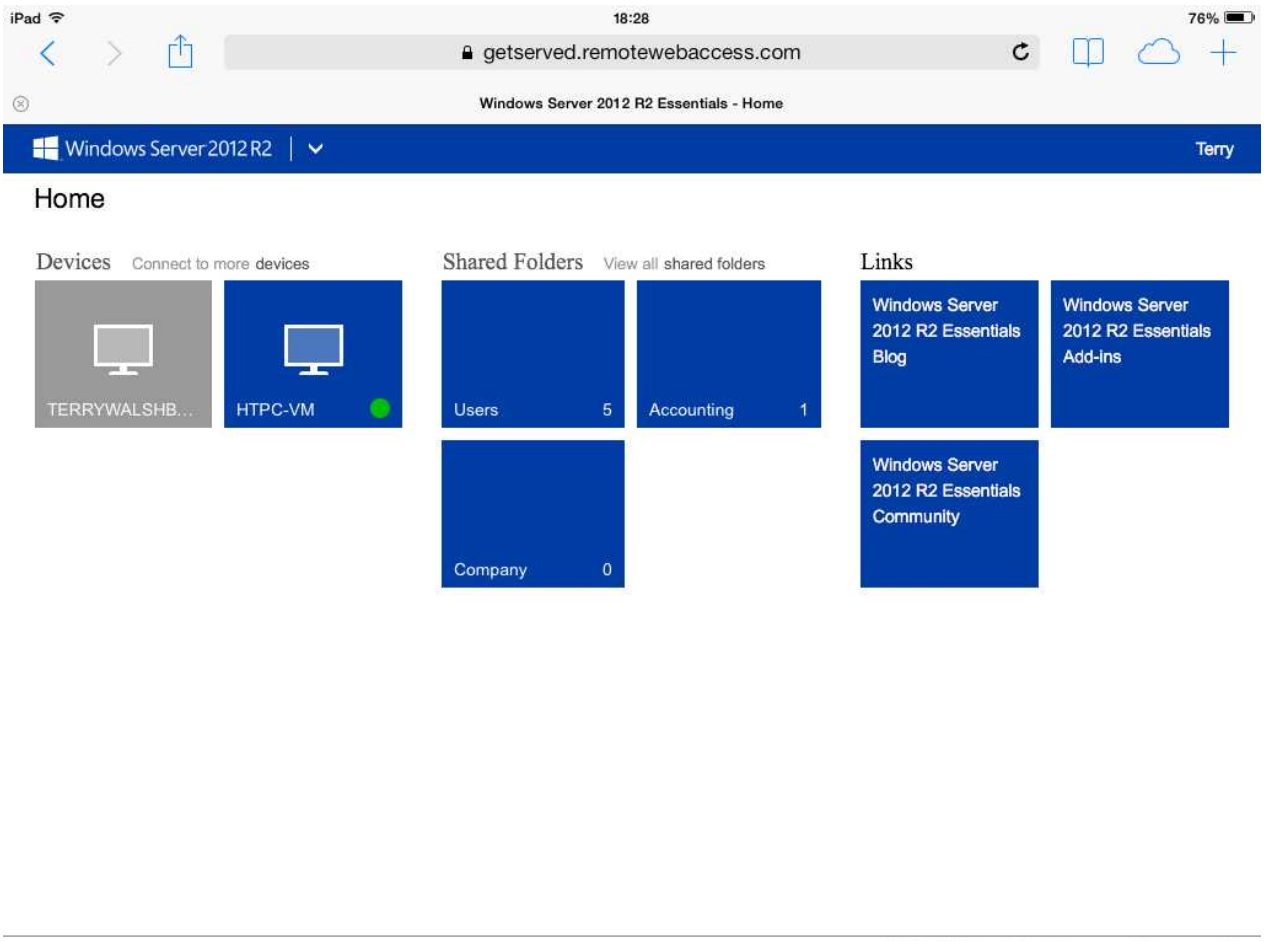
You will obviously need to have Remote Web Access configured on the server - we'll be covering this setup later on.

Once logged in, If you have other PCs available, you can access them remotely if needed. You can also access server folders and more. The following is a screen shot in Desktop format:



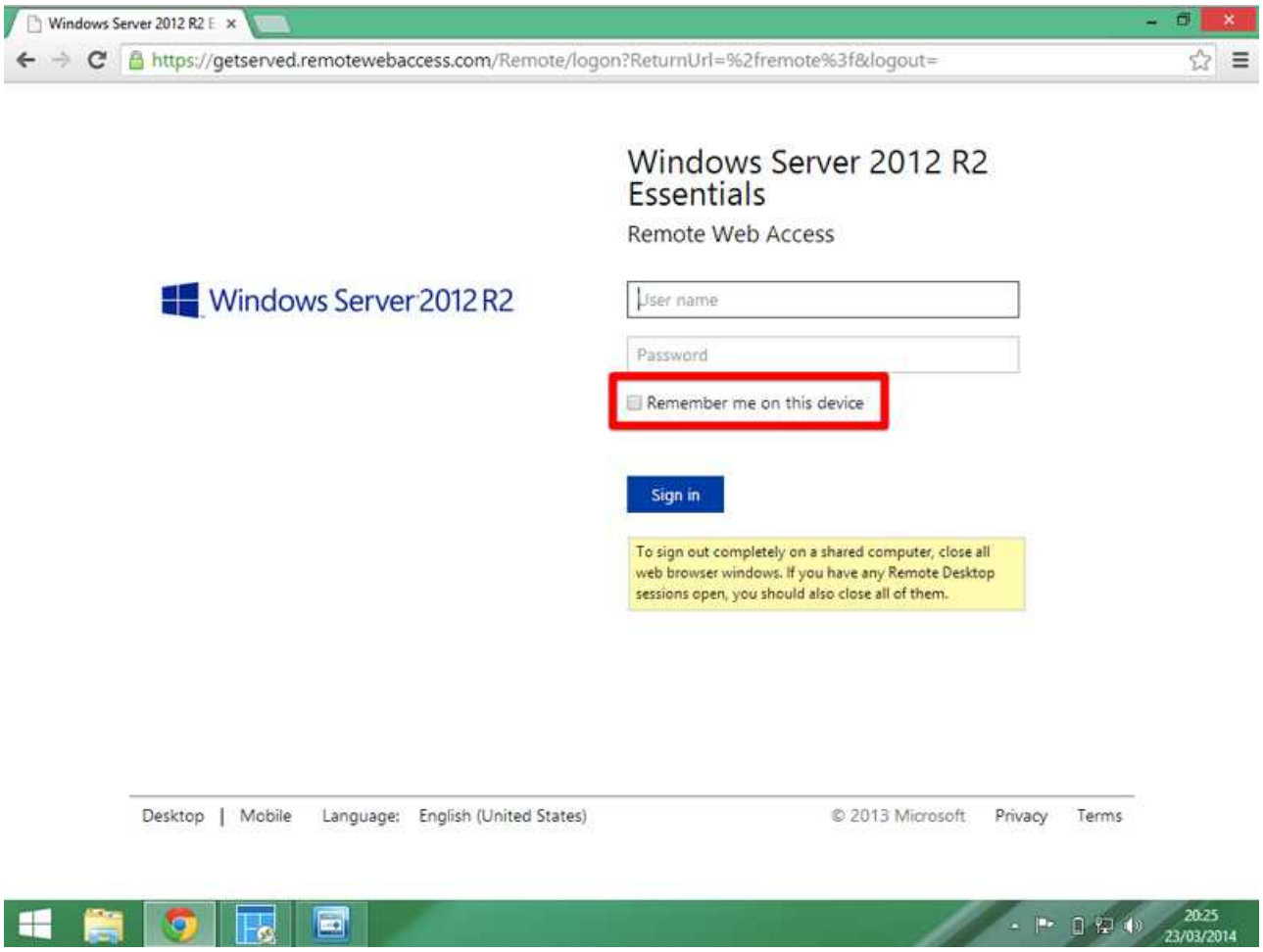
Remote Web Access on the desktop.

As RWA works through the browser, you can also access it through smartphones, tablets as well as Macs. In fact, anything with a web browser - although you'll find some devices are restricted in terms of features (most notably with regard to controlling clients directly through a remote desktop connection). Here's a tablet view, from an iPad Mini:



Remote Web Access on an iPad Mini.

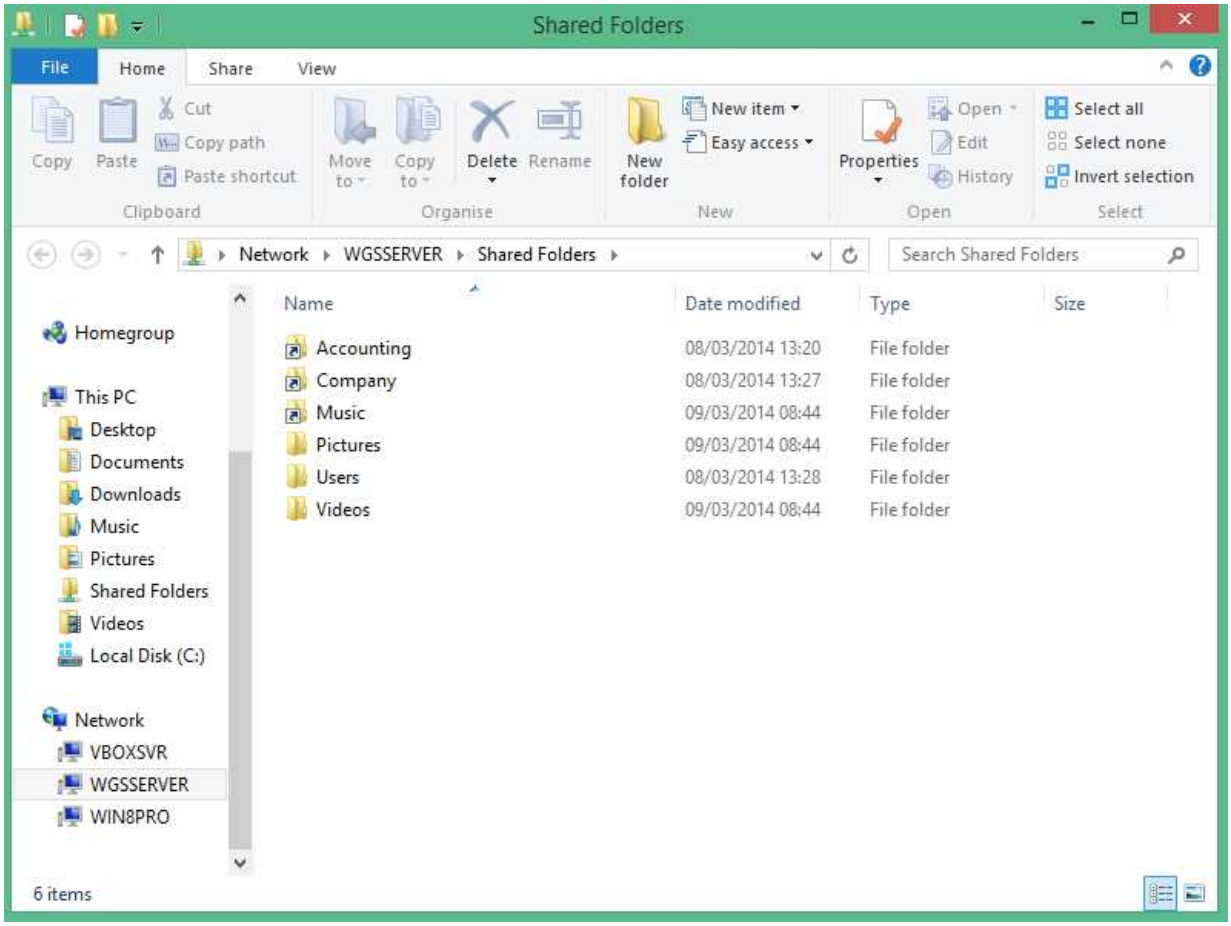
Please be aware that you *can* also access your server using the administrator account, but I would not recommend this and I would certainly not recommend you click on the "Remember me on this device" login option for an admin account.



Storing your log-in details.

Shared Folders

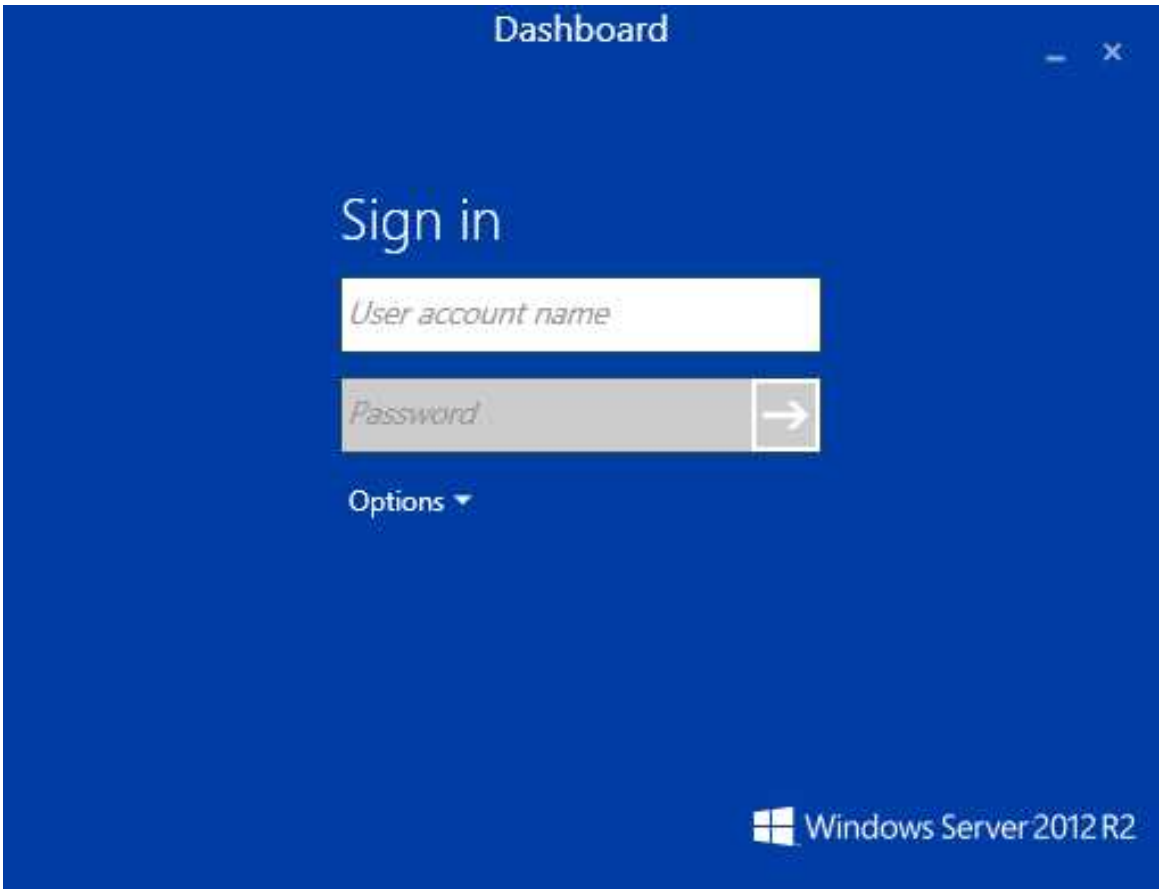
Another shortcut that will open File Explorer to view shared folders on the server, as shown below.



Shared folders are quickly accessible from the Launchpad.

Dashboard

This link opens the Dashboard log-in screen. As the Dashboard is a management interface, an administrator user account is required for access.

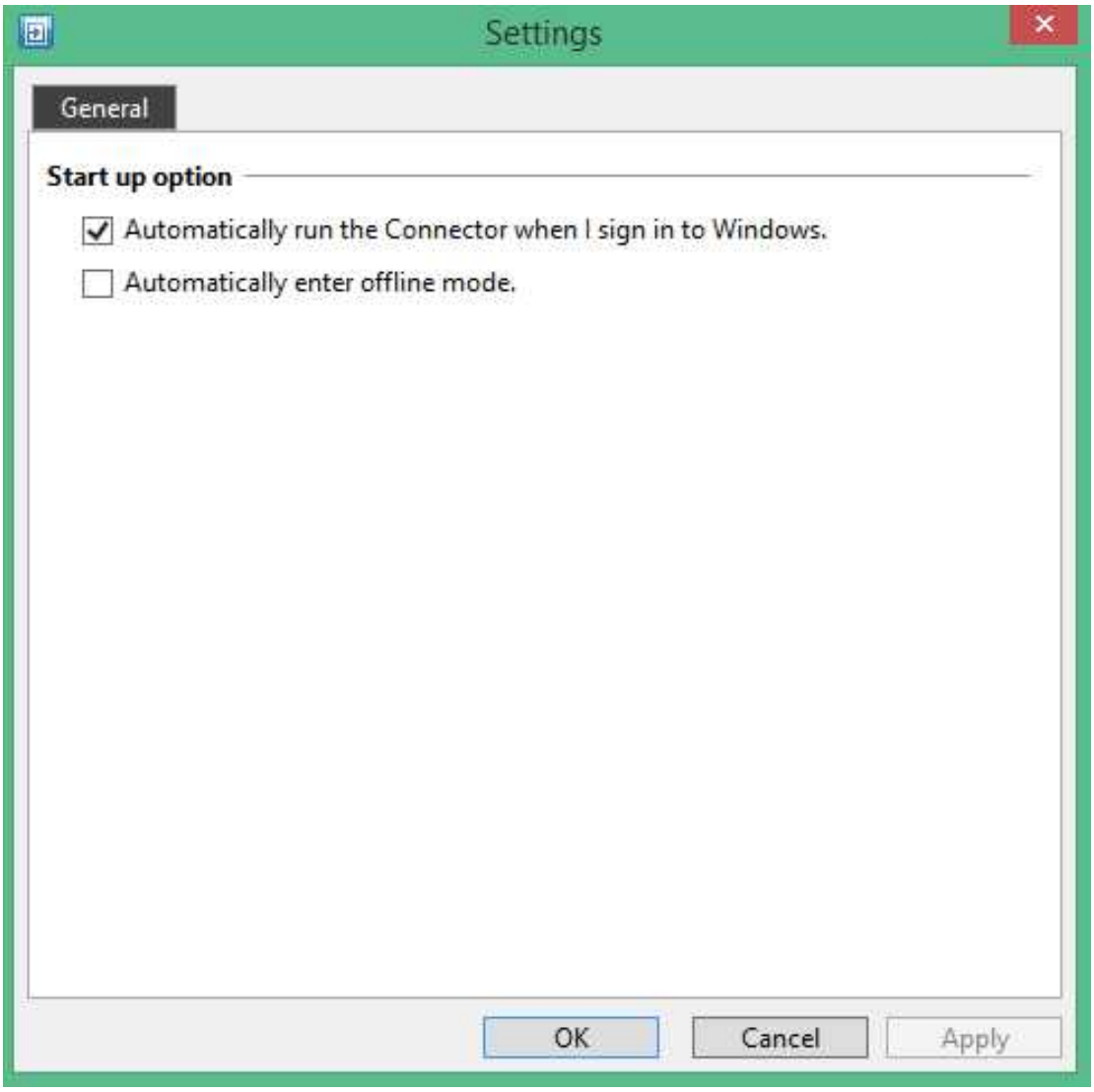


Signing into the Dashboard.

Before we move on, for administrative purposes I would suggest you click on the Launchpad's "down" arrow and open the **Settings** window.

The Settings menu.

There are two options in the Windows Server 2012 R2 Essentials Settings window. You can choose to automatically run the Windows Server Connector when you log into Windows, and choose to automatically enter Offline mode should you wish.



The Settings menu.

Launchpad on an Apple Mac

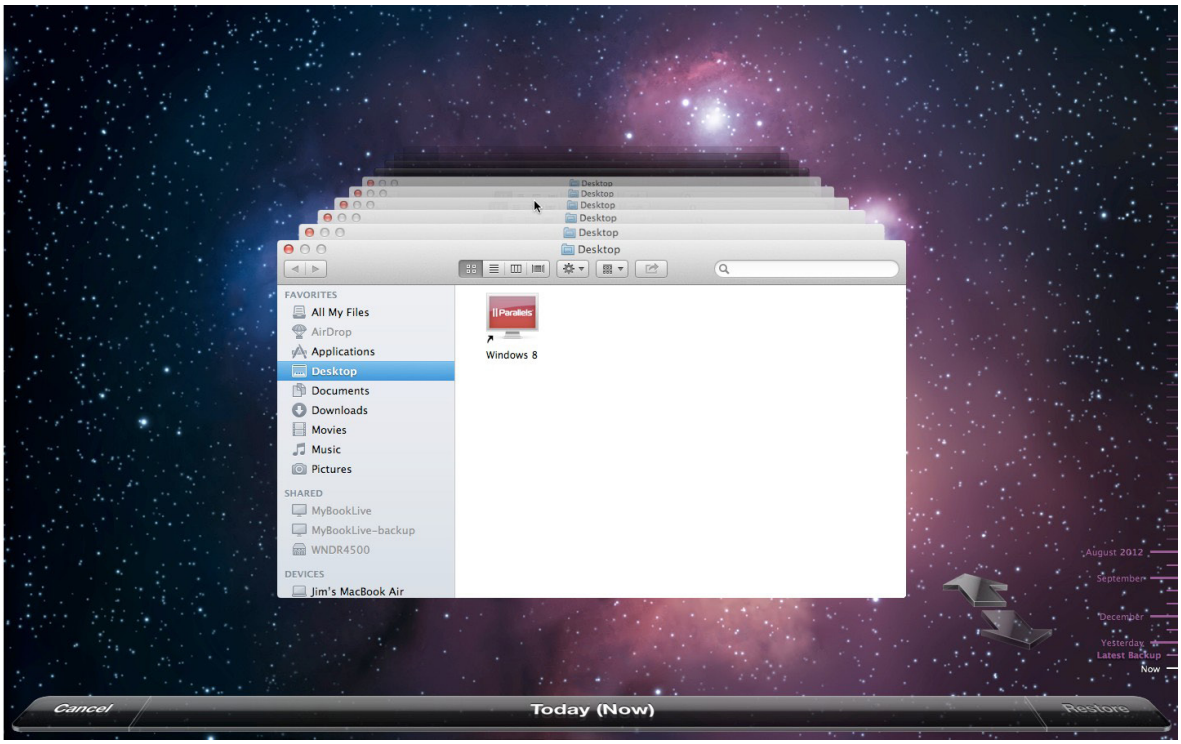
Moving on, the Launchpad on a Mac looks like this:

Launchpad on the Mac.

You have similar options on a Mac as you do for a PC, except you will not find a **Dashboard** link. As discussed in the previous chapter, the Dashboard is simply not available on a Mac. There are some additional differences:

Backup

This link will take you to the Mac's Time Machine configuration panel from which you can restore data from various points in time.



Time Machine.

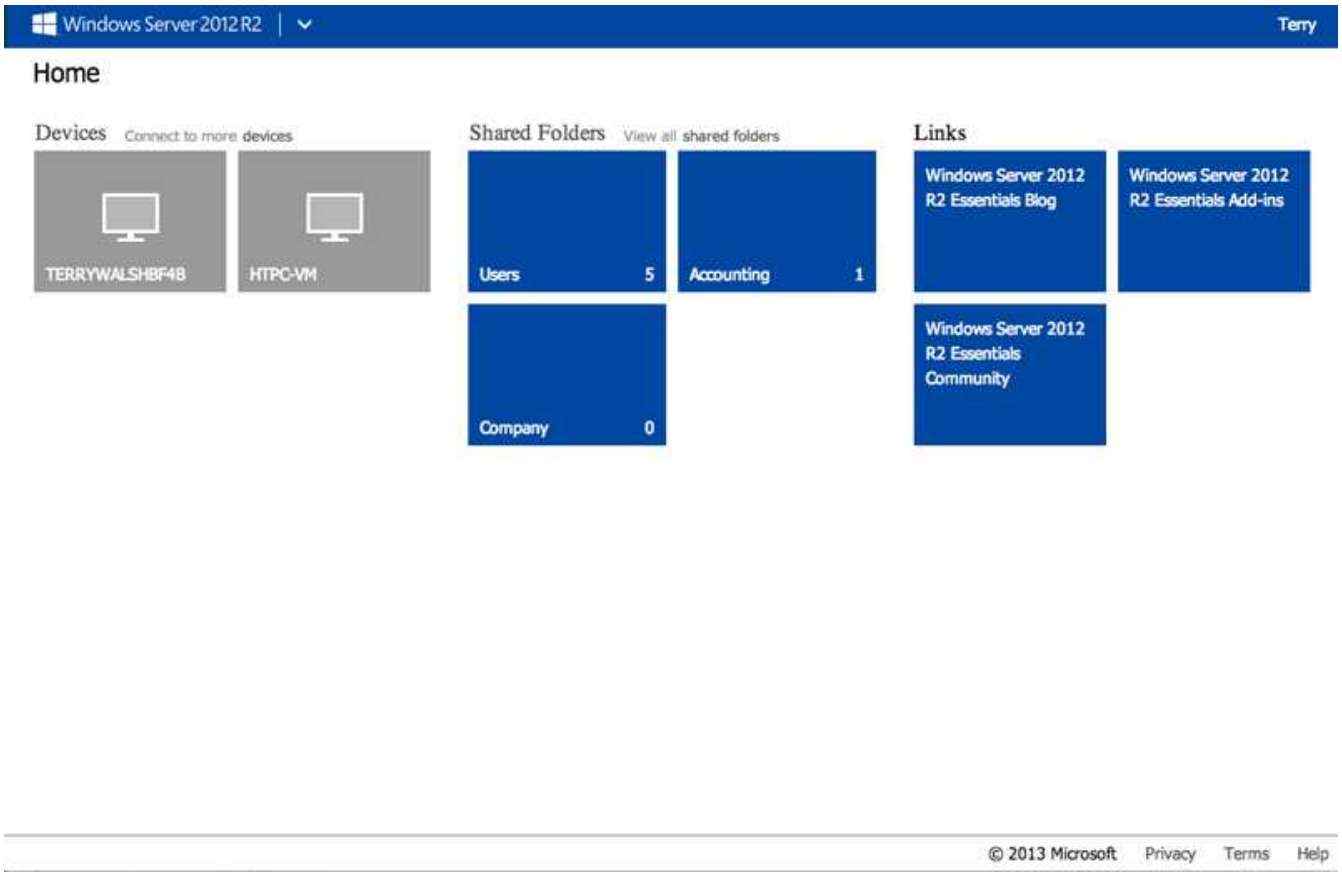
The reason for this is simple; a Mac has its own built-in backup feature in Time Machine, which is much better suited for backing up a Mac than a Windows Server-based option.

Remote Web Access

RWA on the Mac is similar to the Windows version. Log in:

The RWA log-in screen - looks the same as the Windows version, right?

You can perform many of the same functions as you would on a PC.



Remote Web Access on an Apple Mac.

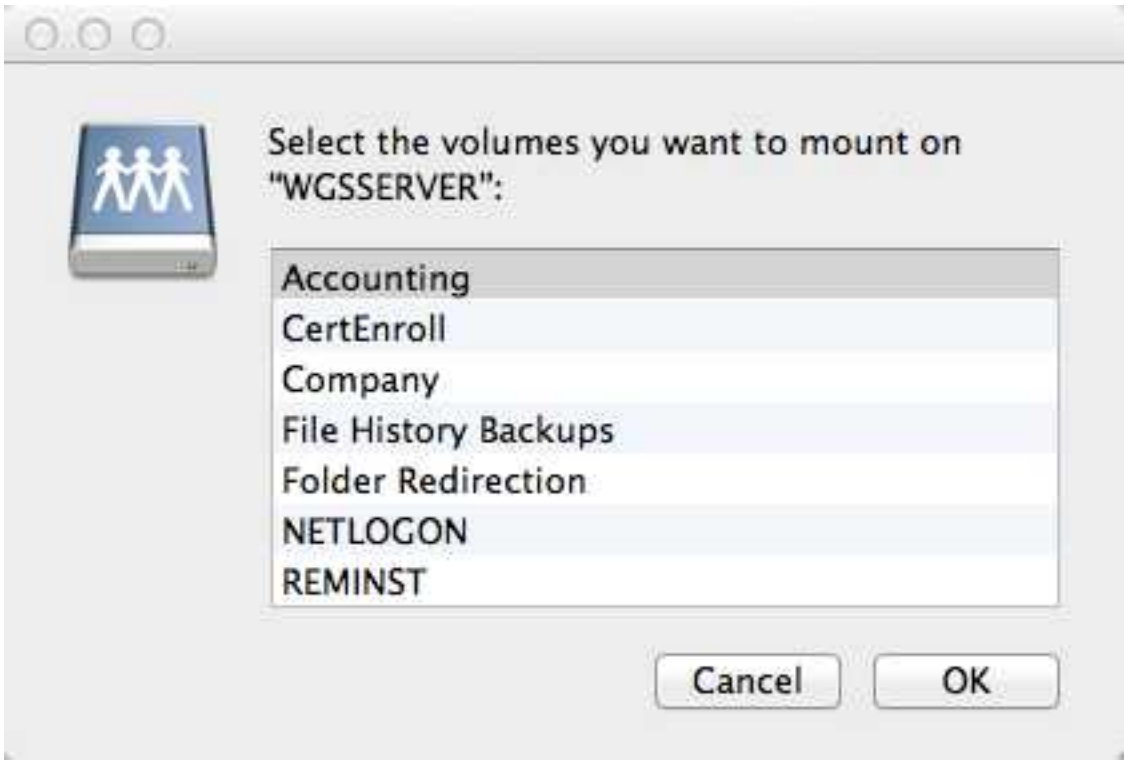
Of course, you won't be able to open up a Remote Desktop Connection from a Mac web browser - that's for PCs only.

Shared Folders

When you access the server's shared folders on a Mac in Finder, you will need to decide which shares you wish to mount and view. As you are not using a server user account, you will need to connect with one through what a Mac calls a "Registered User". Once the account details are entered and you click on the **Connect** button:

Connecting to Server Folders in Finder.

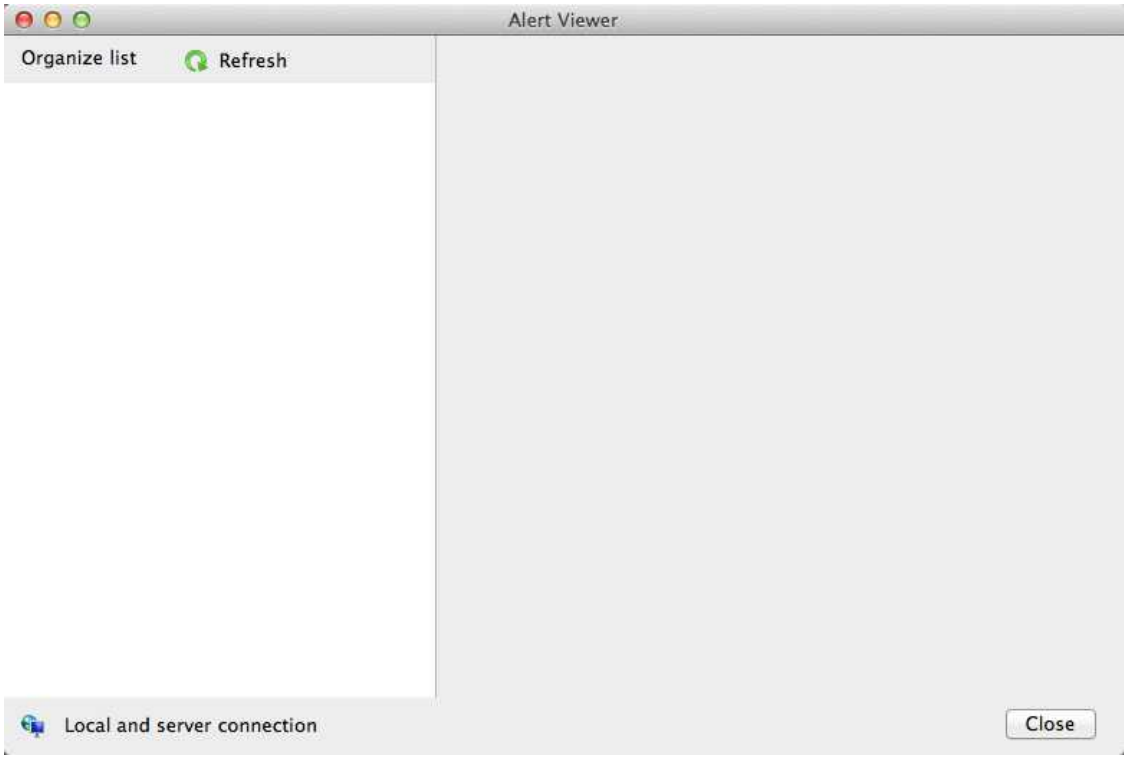
you are asked to select which shares you want to mount.



Mounting folders.

In this scenario, I chose the **Accounting** folder and once mounted, I have access to the shared folder on the Essentials server from the Mac.

Finally, you can easily access server alerts by clicking the associated link at the bottom right of the panel.



Alert Viewer on the Mac - looking a little sparse right now.

Like the PC Launchpad, a down arrow at the top of the panel allows you to access a Settings menu. This one is actually more fully featured than the PC Launchpad.

The Mac Launchpad Settings menu.

The **General** tab includes the ability to automatically open the Launchpad when you log-in to the Mac. Also here you'll find checkboxes which switch off confirmation requests when you decide to delete or ignore an alert.

The Alerts tab.

Switch to the **Alerts** tab, and you can choose to switch off Alerts presented in the Alert Viewer, or just show Local alerts. Unfortunately, there isn't an option to widen the scope further on the Mac.

The Time Machine tab.

The final tab, Time Machine, provides another quick link to the Mac backup app.

That completes our overview of the Launchpad on both a PC and a Mac. It's time to take a detailed look at the Dashboard.

A Trip Around the Dashboard

Over the last few chapters in this book, we have completed a large majority of the work involved in getting our server configured and deployed so that our users can get back to using their computers. For the most part, anything else that you do as the owner and/or IT manager of your home, SOHO, or small business network will mostly be transparent to the user base.

We have completed the basics of server deployment. It is time to sit down, peruse the administration Dashboard and make decisions on how best to manage your server, make it as effective and efficient as possible, and get yourself busy doing other more important tasks beyond server management. Such as running your business!

From this point on, there is really minimal need to manage the server sitting at its keyboard/mouse/monitor. Most of the work you need to do can be accomplished through the Dashboard on your own (client) computer. If you do need to access the server desktop, this can be done through a Remote Desktop Connection (RDC), which will be discussed in a later chapter. That means you can locate your server out of the way - in a (ventilated) cabinet, back room or closet, out of sight of your employees, customers or clients.

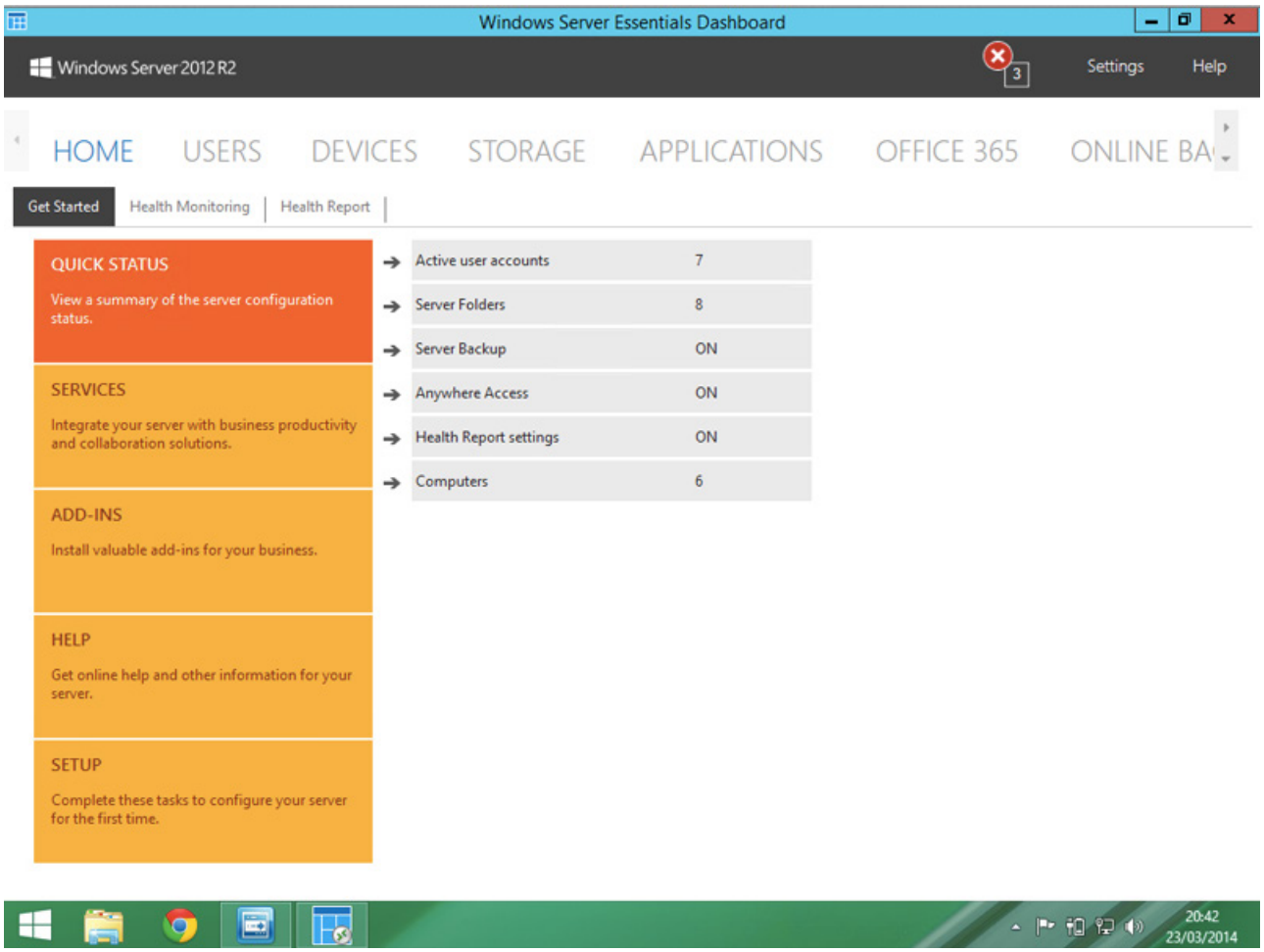
We will cover the specifics on each section of the Dashboard in subsequent chapters. In this chapter, I want to briefly run through where to find various server management features and discuss why you need them.

Once you have performed the initial server configuration, when you now open the Dashboard, you are greeted with a **Quick Status** overview of the server under the **Home** tab (yes, it doesn't look like a tab, but let's call it a tab). Let's start there.

The Home Tab

In the **Get Started > Quick Status** tab, you get a quick glance at your server setup. As your organisation grows, you may see the number of user accounts and connected devices growing with you. As you further structure the information required to run your business, you may find the number of Server Folders also grows.

But the main thing to look at in the Home tab is the status of three items - **Server Backup**, **Anywhere Access** and **Health Report** settings. They'll be listed with a big ON status (assuming you set them up earlier). If they are turned OFF for some reason, this is a quick indicator that an investigation is required.

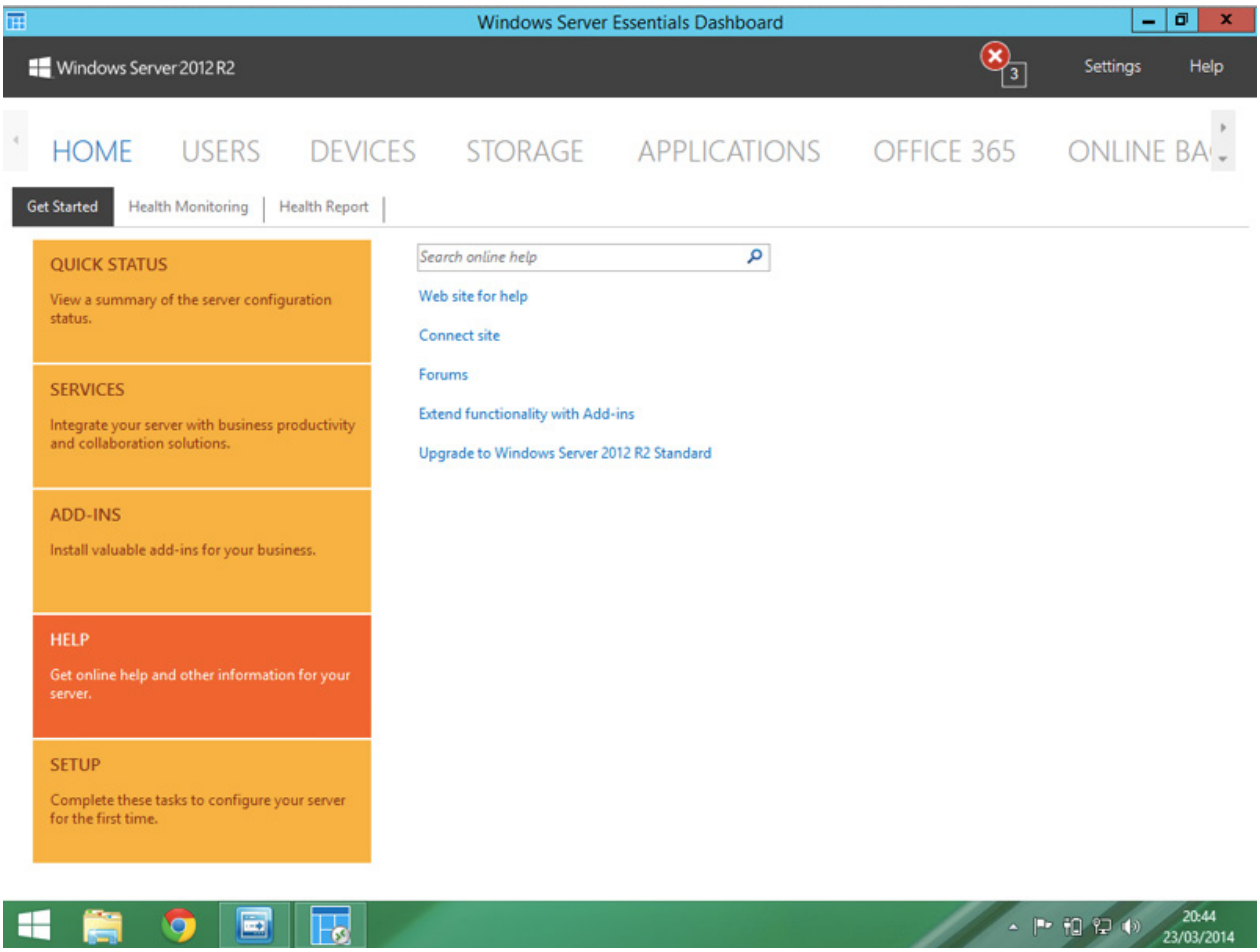


The Dashboard Home Tab.

For the most part, however, once you have set up your Essentials server, you will not have much of a need for the Home section. While we have worked through the **Setup** tab (listed at the bottom of the screen above) previously, there are a few additional tabs in the Home section that you may need to access to extend the capabilities of your server or to obtain help if you run into a problem.

The Help Section

In the Home section, you may have previously noticed a "**Help**" section in Get Started. It's just above Setup in the screenshot above.

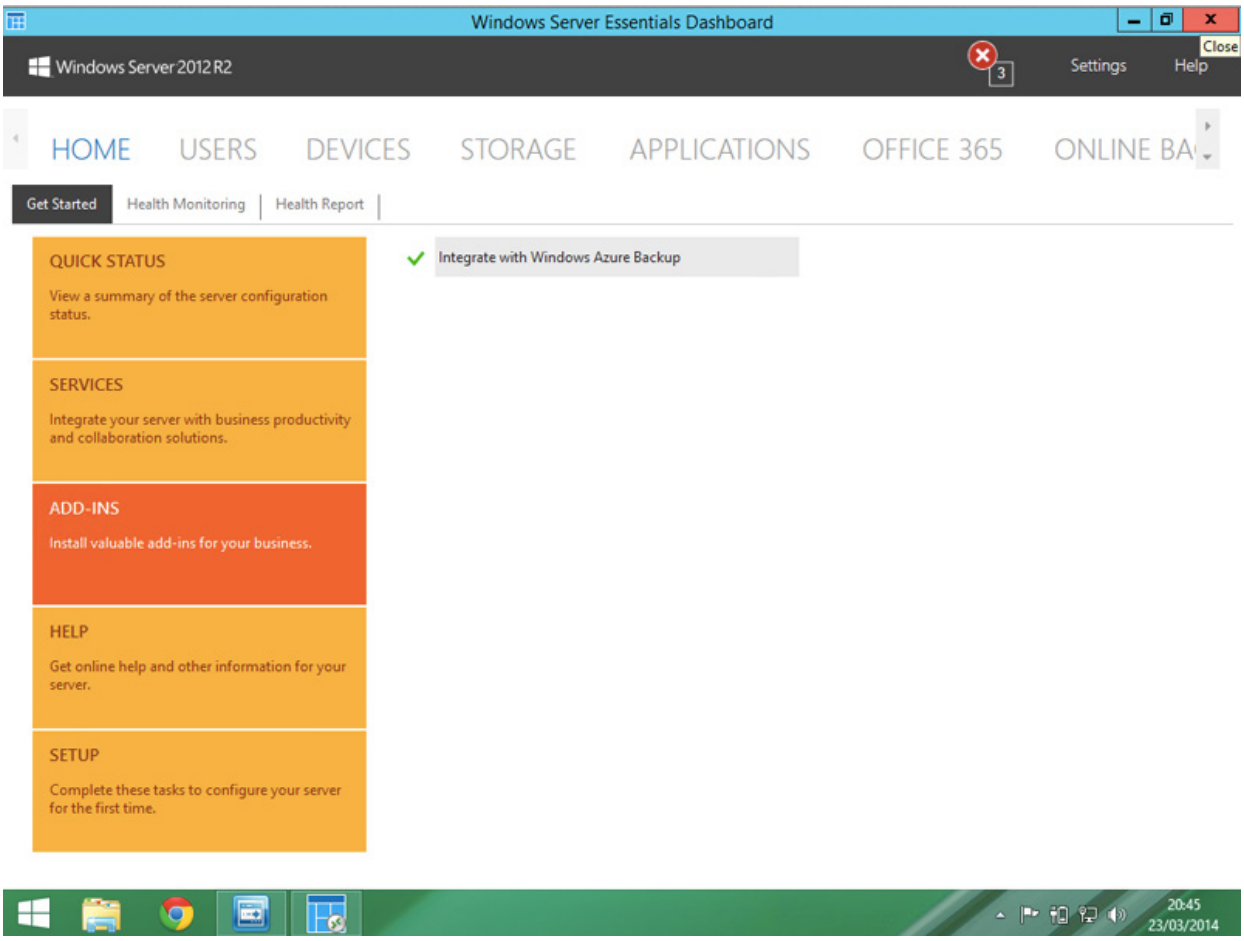


The Help section.

If you simply need additional information on a specific subject, the Dashboard Help section is your guide with resources to answer your questions. You'll find a handy search bar linked to Microsoft's online guides, as well as links to the same technical resources, Microsoft's Connect bug reporting website, user forums, add-in resources (more on those later) and information on upgrading from Windows Server 2012 R2 Essentials to the Standard edition of the software.

The Add-ins Section

At this point, we have not discussed add-ins, which are task-specific apps that are installed and integrated into the Dashboard. A few are published by Microsoft; many by third-party developers. Out of the box, there doesn't look like there's a lot going on here to begin with - but hold fire, we'll do more with add-ins a little later in the book. As you'll discover, they're a fantastic feature in Windows Server 2012 R2 Essentials.

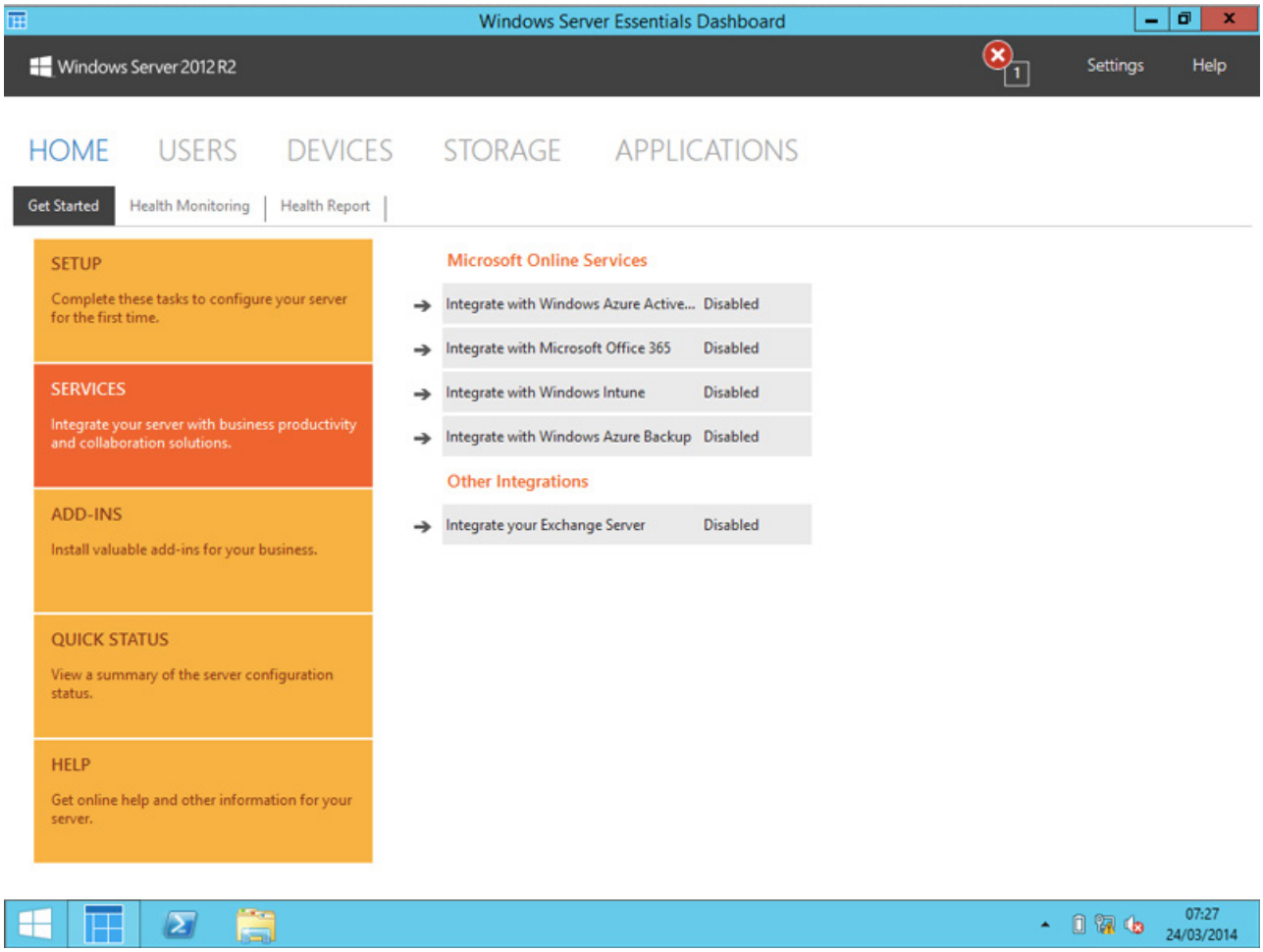


Don't be fooled by how sparse this add-ins section looks - there's lots to discover here later on.

The Services Section

Previously known as the Email section in the last release of Windows Server Essentials, Microsoft continues to develop extended service options for the platform, design to extend the feature set, and get you spending more on recurring subscription fees! The suite of services includes two integrated email services (**Office 365 Outlook** and integration with an on-premise **Exchange Server**), single sign-on integration with the rest of the Office 365 suite, support for **Windows Intune** computer management, offsite data protection with support for **Windows Azure Backup**, and Cloud-based identity management with **Windows Azure Active Directory**.

We'll dig into these services later in the book, but for now let's quickly run through what each service provides.



The Services section.

Windows Azure Active Directory

You may well have heard of **Active Directory** - it's the identity and access management "directory" that controls user and device access to the server domain we created earlier in the book. You have a local Active Directory service running on your server right now.

You may also have heard of **Windows Azure** - it's the brand name Microsoft use for many of their Cloud services. So, put the two together and you won't be surprised to hear that **Windows Azure Active Directory** is a service that provides identity and access management capabilities in the cloud. If you're a moderate or heavy user of Microsoft's cloud services, Windows Azure Active Directory enables you to synchronise your local version of Active Directory with the cloud, allowing your users single-sign on (i.e. using the same user names and passwords) for both local and cloud-based services.

Windows Azure Active Directory offers your users an easier experience if you're going to be utilis-

ing supported cloud services in the organisation - but as we'll see, some of the major Micosoft cloud and subscription services already offer single sign-on as an integrated feature, so you should check whether you really need **Windows Azure Active Directory** in your organisation. If you're keeping things simple, then you may be able to do without it.

Microsoft Office 365

There's a trend for software providers to move away from single licensing fees to a recurring subscription model, and Microsoft along with Adobe are blazing a trail with their Office productivity suite. Office 365 allows you to ensure you and your users are always running the latest version of the software in your organization, alongside a swathe of other benefits including cloud storage, online/browser-based versions of the software and more. All you need to do is to pay a monthly fee.

When it comes to integrating Office 365 with Windows Server 2012 R2 Essentials, you'll find a number of enhancements are available to you when you run the two together. They include:

- Online user account management
- Distribution group management (for Exchange Online distribution groups)
- SharePoint Online Library and Exchange ActiveSync management
- Online service subscription plan & license management - you can easilt bring new employees on board, configure a network user account for them and then assign it to an Office 365 license - all from the Dashboard.

Windows Intune

Windows Intune is another cloud-based service, this time focusing on helping you manage computers and devices - devices including Windows, Windows RT, Windows Phone 8, Apple iOS, and Android kit. With Intune you can upload and publish software packages, configure and deploy management and security policies, and poll hardware and software inventories across your organisation. Certainly handy for larger organisations with a fair amount of hardware and software infrastructure to keep a check on.

With Windows Server 2012 R2 integration, you can manage users, security groups and licences for Windows Intune services directly from the Dashboard.

Windows Azure Backup

Backing up the system files, settings and data stored on your clients to the server makes a lot of sense. Backing up the server makes sense too. But what happens if disaster strikes and your premises are destroyed through fire or flood. Or if your hardware is stolen during a break-in? Cloud-backup is most definitely one option and it's no surprise that Microsoft has a solution ready and waiting to launch in the Dashboard.

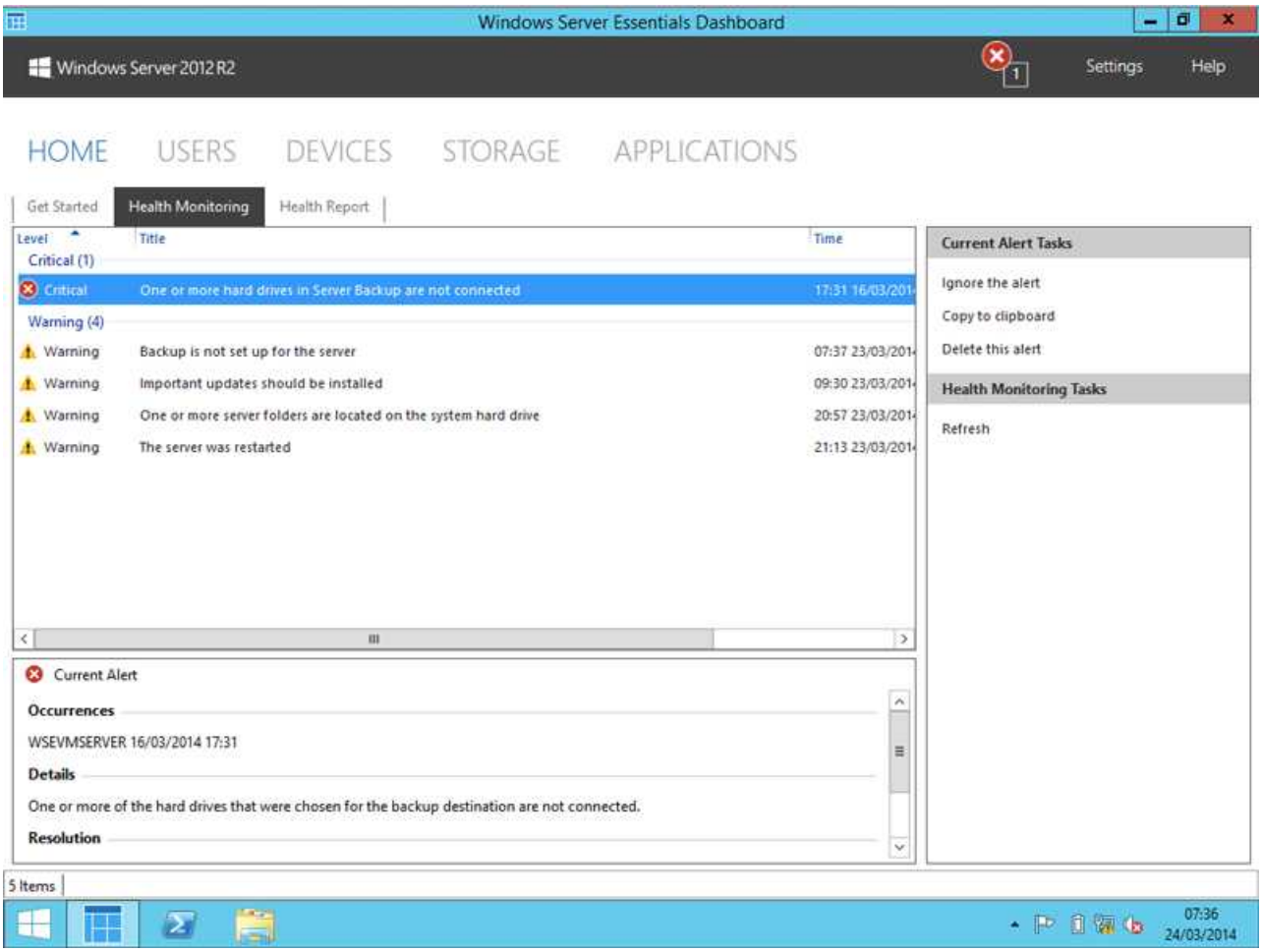
Windows Azure Backup integration allows you to more easily configure and manage the cloud-based service from your Dashboard. Critical server data can then be backed up to and recovered from a remote datacenter and, as Microsoft knows a little about storage, they perform a couple of tricks to make the service as efficient and secure as possible. To reduce storage and bandwidth requirements, Windows Azure Online Backup performs **block-level incremental backup**. This means that data is backed up in chunks of data (rather than individual files that you and I would recognise) and reassembled when needed at either end. Incremental backup means that the servers understand what data has been backed up previously, and does not transmit and store data it already holds - only the new data that has been added to the server since the last backup. Neat! To increase security, your data is also compressed and encrypted before leaving the server.

Do you need all of these services? Well, that's going to depend on you and your organization. For a first server, we always recommend you start out with the KISS (Keep It Simple Sucker) principle. You can opt for web-based email accounts, or you can try out Microsoft's Office 365 option. Not only does this give you integrated email, this service also provides the full suite of Office applications, albeit as a subscription-based service. You can try out Windows Azure backup and Intune - all of the services offer a free trial. But make sure you focus on getting your "on-premise" server capabilities configured correctly and you can them make a clear call on the value a trip to the cloud will deliver.

So, that's the **Get Started** tab in Home sorted out. You'll have noticed two additional tabs in Home, however, called Health Monitoring and Health Report. I mentioned them earlier in the book and we'll spend more time on them later, but for now, let's remind ourselves what they do - especially as they're new to Windows Server 2012 R2 Essentials.

The Health Monitoring Tab

You can think of the Health Monitoring tab like a mini-reporting centre for the devices connected to your server. It lists all of the alerts that have been generated across your devices allowing you to check any problems at a glance.



The Health Monitoring tab.

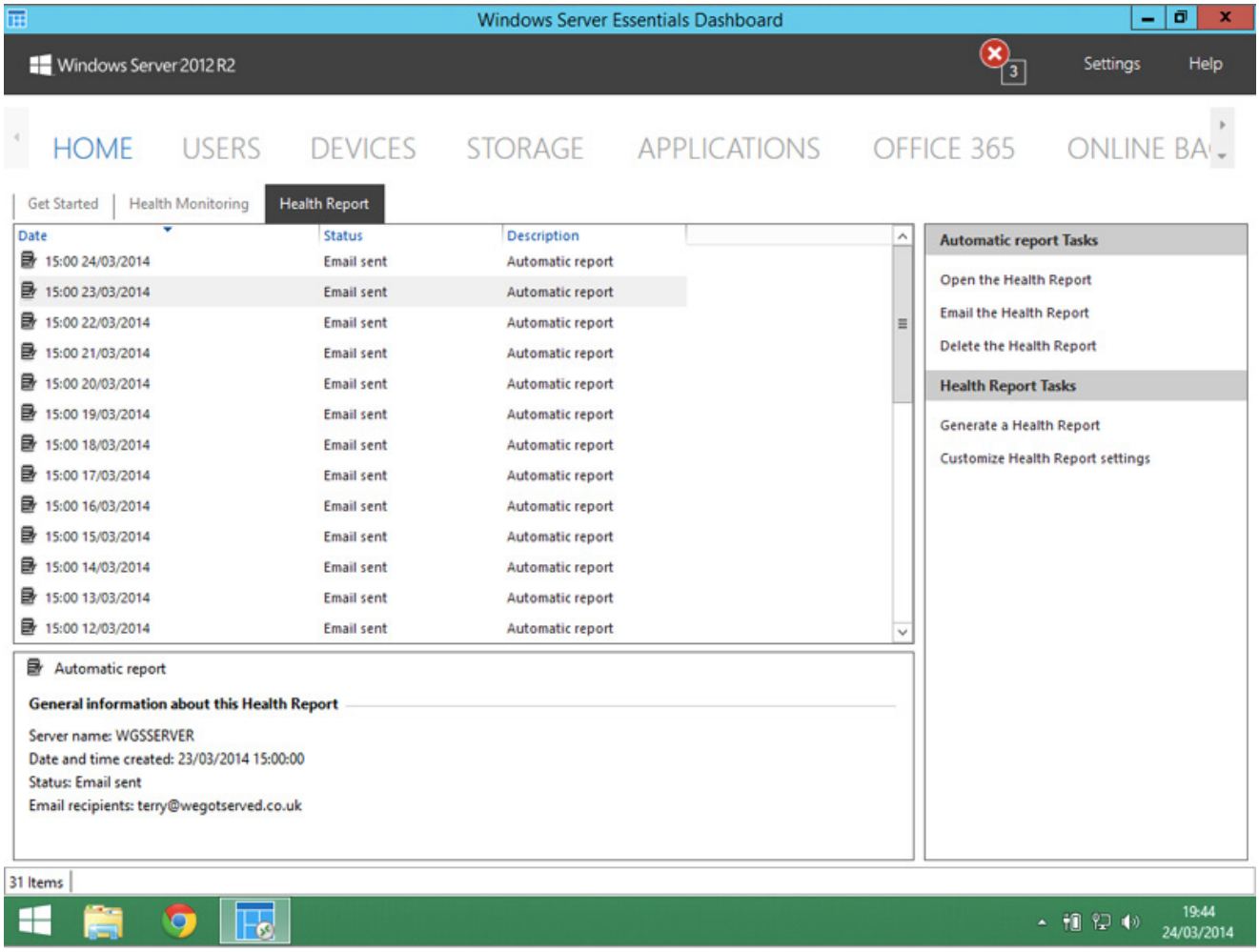
Alerts are grouped by seriousness and each is shown with a title, timestamp and computer name. Use the links in the task pane or right click an alert to ignore it or copy the alert to the clipboard. Additionally in the task pane you can choose to delete alerts and refresh the list.

In the lower section of the screen, another pane offers the detail behind each alert, so you can see what's going on. For each issue, scroll down that lower pane and you'll generally find a resolution available, so you can perform the necessary steps required to solve the problem.

The Health Report Tab

The final tab in the Home section of the Dashboard is where we can configure and view regular Health Reports for our server environment. If you have previously configured regular Health Reports to be run (you may remember it's one of the Dashboard Setup tasks) then you'll see a list of previously generated reports - handy if you need to look back, or of course if you haven't configured

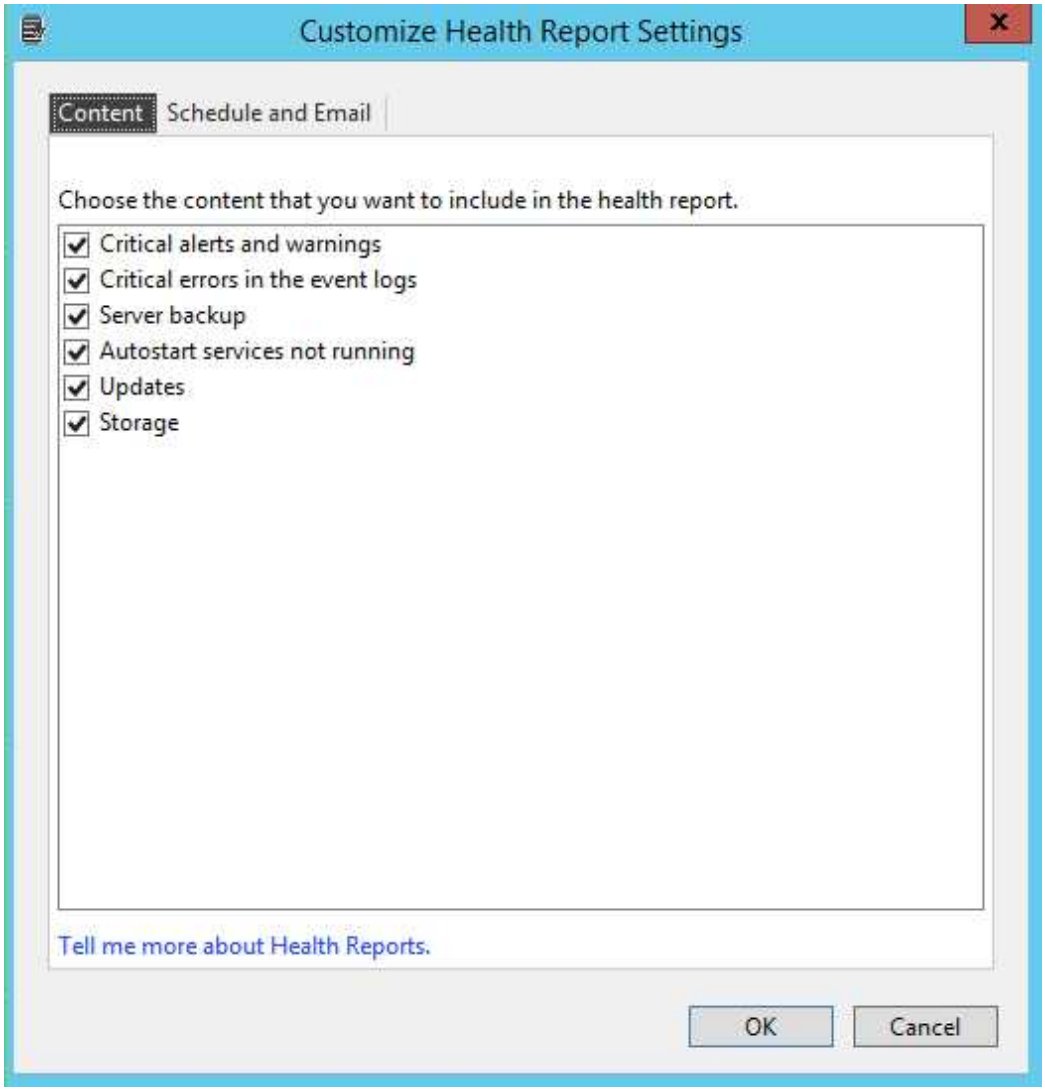
reports to be emailed out to you.



The Health Report tab.

Right click on a log entry (which provides the date and time the report was generated, Email status and a description) and you can open a report, email it to the recipients you've previously registered to receive reports or delete the report.

Those same options are available in the right hand task pane, along with the option to run a manual Health Report and Customize your Health Report settings. The latter option allows you to configure what's included in your report and manage your schedule and email settings.

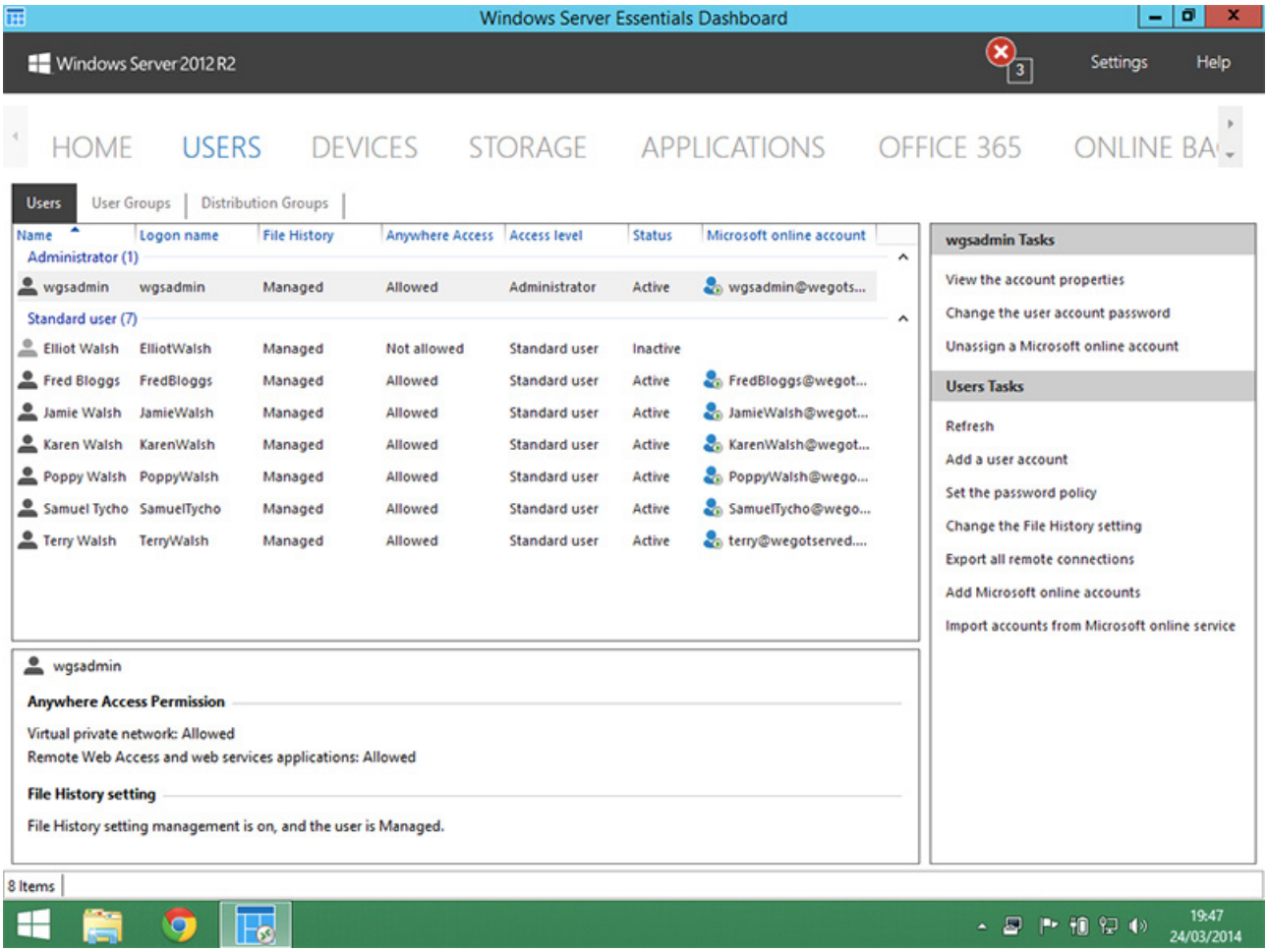


Health Report Content settings.

That completes the Home Tab and we can now go to **Users**.

The Users Tab

Once you have performed the initial setup of your domain users, this is the section you go to configure user options.



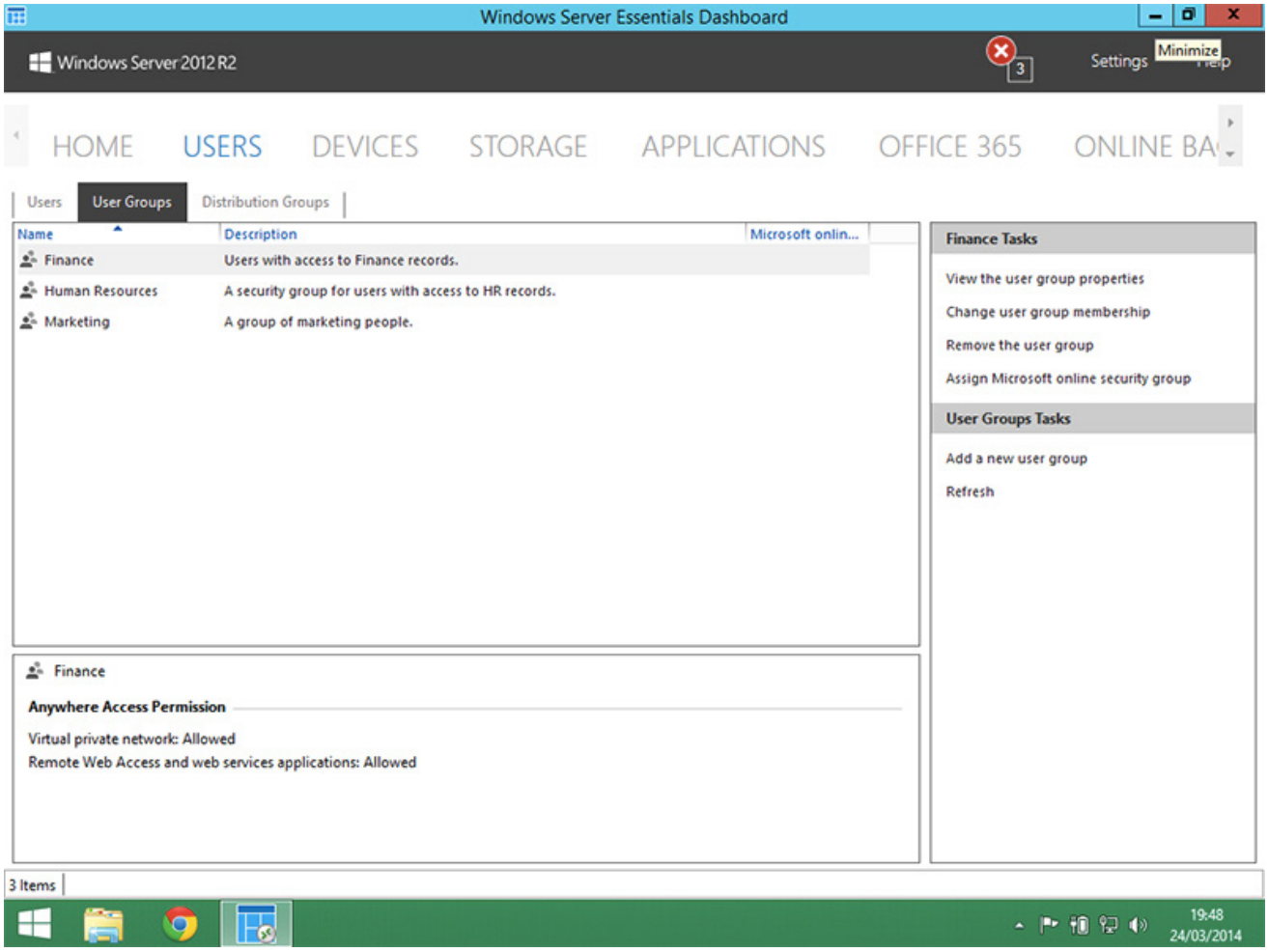
The Users tab.

The Users tab is itself split into two sections - **Users** and **User Groups**. The **Users** tab is where you'll spend most of your time managing your network users. They're grouped by account type - Administrators and Standard users, and then listed alphabetically. You can see the account name, logon name, File History setting, Anywhere Access permissions, access level and status. Click on any of the list headers and you can sort your list by that criteria.

As with the Health Monitoring tab we reviewed earlier, a details pane at the bottom of the screen contains more information on the account when each user is highlighted.

Right click on a user and you can choose to view account properties, deactivate or remove user accounts or change the account password. Those same tasks are also available in the task pane to the right (there's a pattern emerging here, right?) and are joined below by a Refresh command, the ability to add a user account, configuring the password policy, change file history settings and an option to export all remote desktop connections.

Meanwhile, over in the **User Groups** tab, you'll find the controls required to be able to set up and configure groups of users that share specific attributes - such as folder access, remote access and so on. This is particularly useful for securing access to sensitive files and folders such as Finance and HR records - rather than configure individual accounts to be able to access those files, you can simply create a user group, add accounts to that user group and then apply the necessary permissions just once to that group rather than have to perform the same task multiple times.



The User Groups tab.

User Groups are again listed alphabetically with just a Name and Description shown. The lower pane, just as before, shows more detail on the selection when you highlight a user group. Over on the right, you'll find the necessary links to add a new user group and refresh the list.

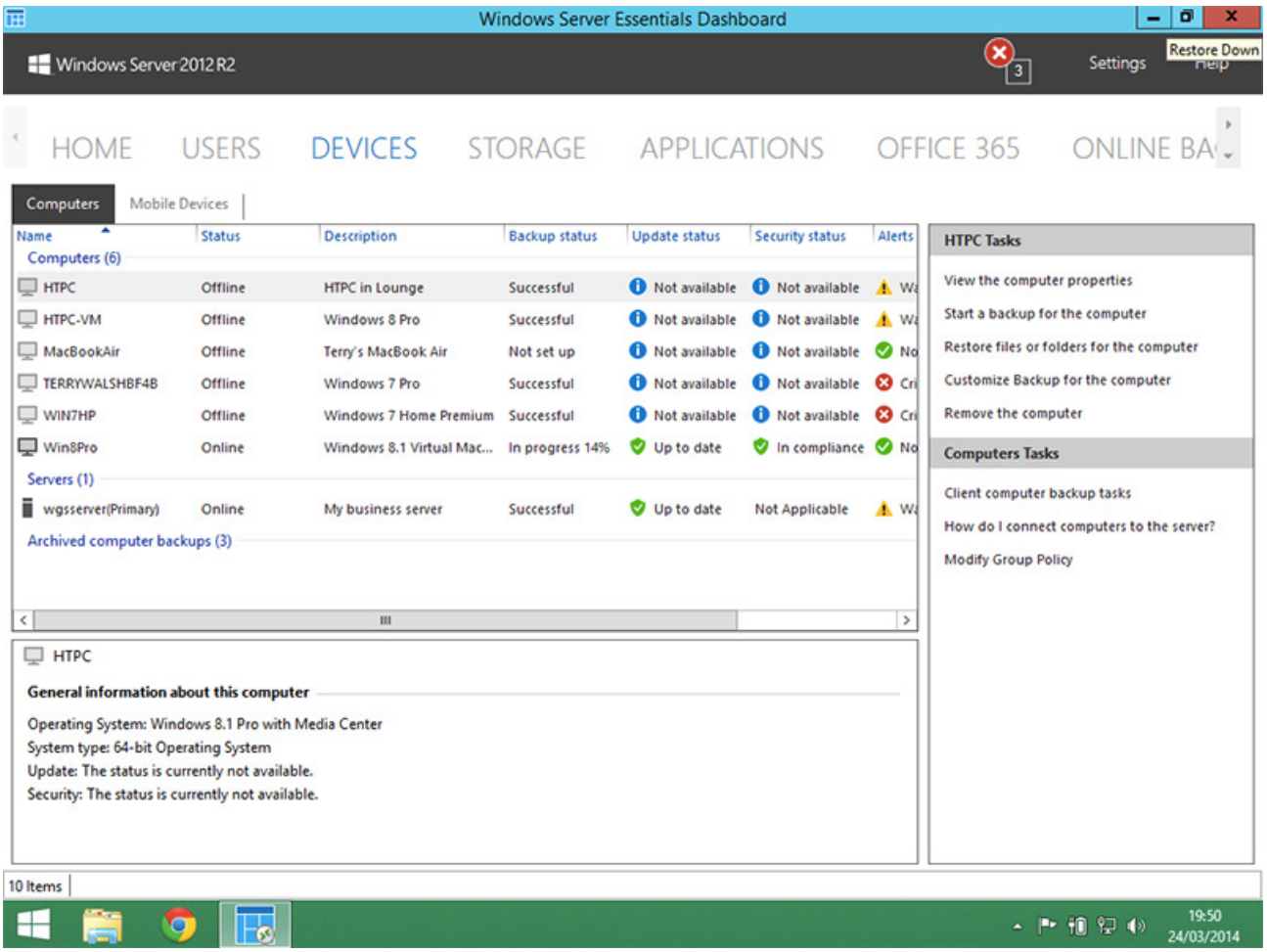
We'll be setting up user groups and spending more time configuring user settings in a later chapter. For now, let's briefly tour **Devices**.

The Devices Tab

In the Windows Server 2012 R2 Essentials world, **Devices** can be computers and mobile devices (a change from the last release of the product which supported computers only). They can be PCs or Macs, smartphones or tablets. As mentioned, if you wish to manage mobile devices from the Dashboard, you'll need to have integrated Office 365 with your server.

The list of devices is grouped by type and you can see the device name, online/offline status, a description, backup status, update status, security status, alerts and grup policy information. Obviously, not every device is compatible with every feature Windows Server 2012 R2 Essentials offers, so if you have a variety of devices connected, expect to see "Not available" listed in some of the fields.

There are a variety of tasks you can perform in the Devices tab. Again, as not all devices support all of Windows Server Essentials' features, the list of tasks available will change and you click between PCs, Macs and other devices. This is the section from which you manage backup settings for your client computers. Client Backup is one of the more powerful features of Essentials as it allow one to restore a complete computer, via a process called a **Bare Metal Restore**, to a new or existing hard drive.



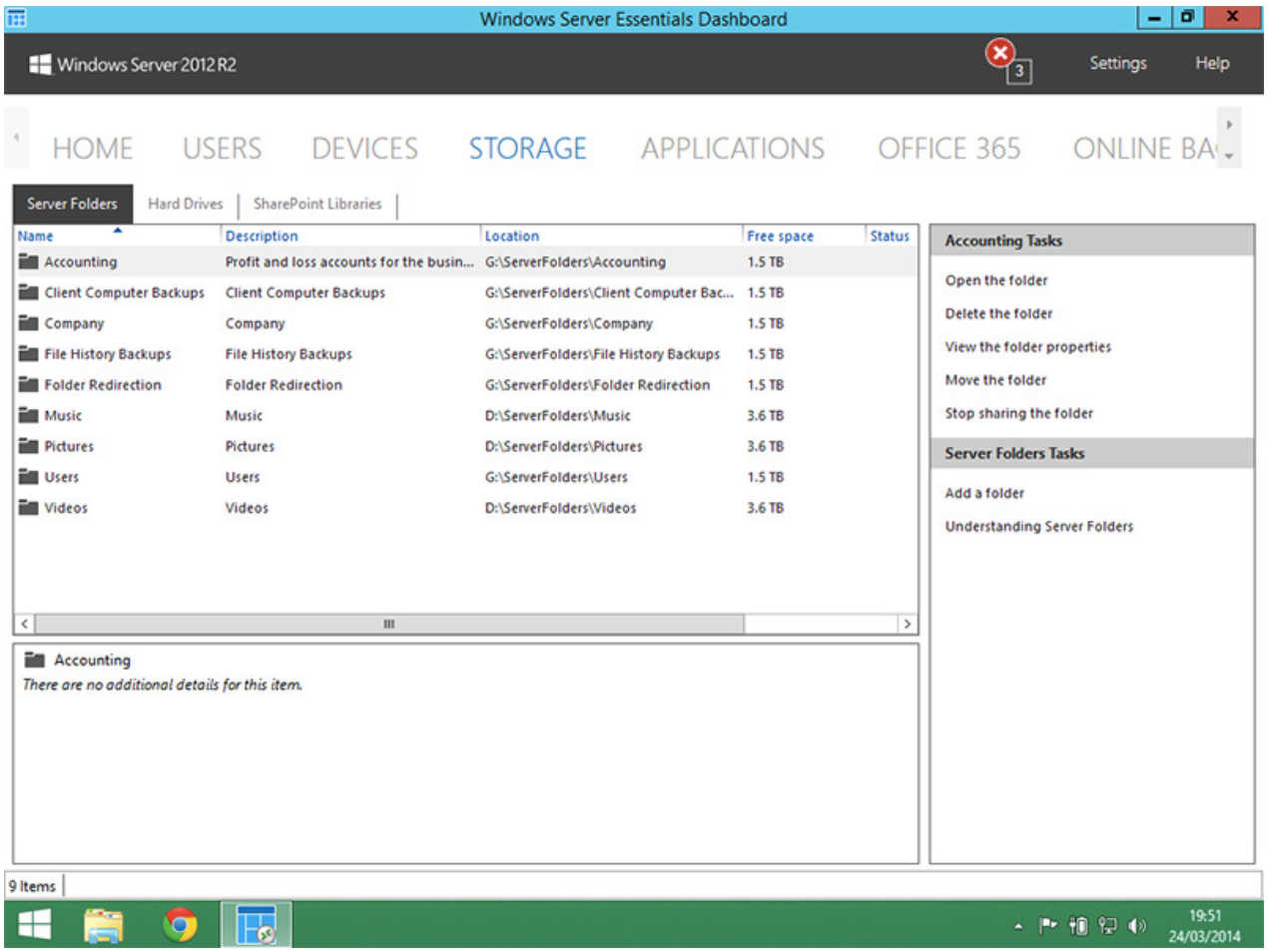
The Devices tab.

You can also restore specific files and folders from your client computers rather than restore the entire computer should you wish. Additional commands allow you to kick off a Remote Desktop connection to a compatible PC and remove a device connection from your server.

One of the tasks in the Devices section that you will want to check out at some point is **Implement Group Policy**, which helps us manage users' experience on client PCs. This gets us into the more advanced aspect of Windows Server Essentials, so we'll hold fire for now, walk through the remaining aspects of Essentials and the Dashboard before we get into Group Policy.

The Storage Tab

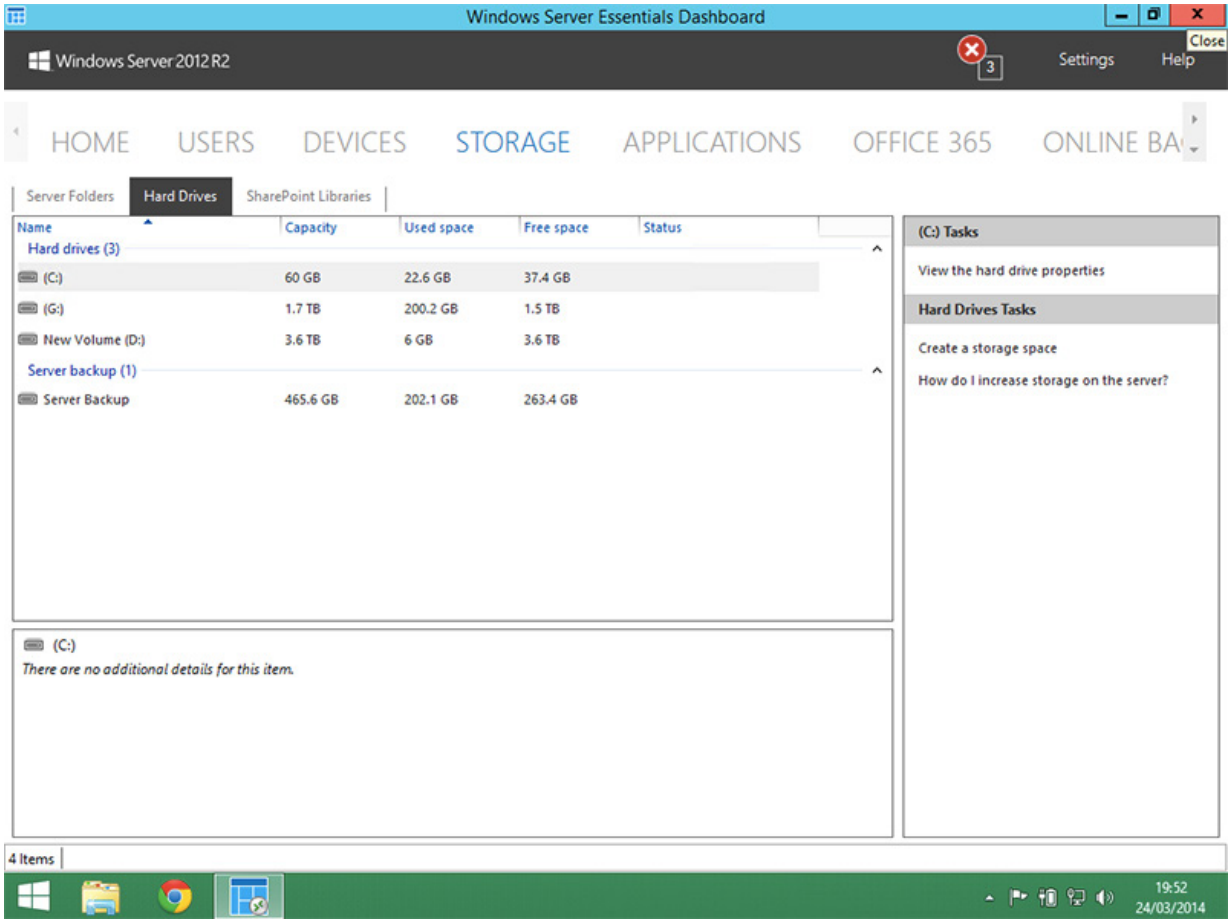
The **Storage** Tab is split into two areas. The first tab deals with **Server Folders**. It is here that you add, delete, and manage the folders that your users may access. Over time, as you gain experience, you will use this tab to further organize the data required to run your organization.



The Storage tab.

Again, you'll see a list view with your folder names, descriptions, locations on the server, free space available and a status field. Right click to access your list of tasks, or choose from the right hand pane. Tasks include opening a folder in File Explorer, deleting the folder, viewing folder properties, moving the folder (handy if your hard drives are getting full) and stopping sharing the folder. You can also add a new shared folder and find out more about shared folders.

The second tab deals specifically with **Hard Drives**.

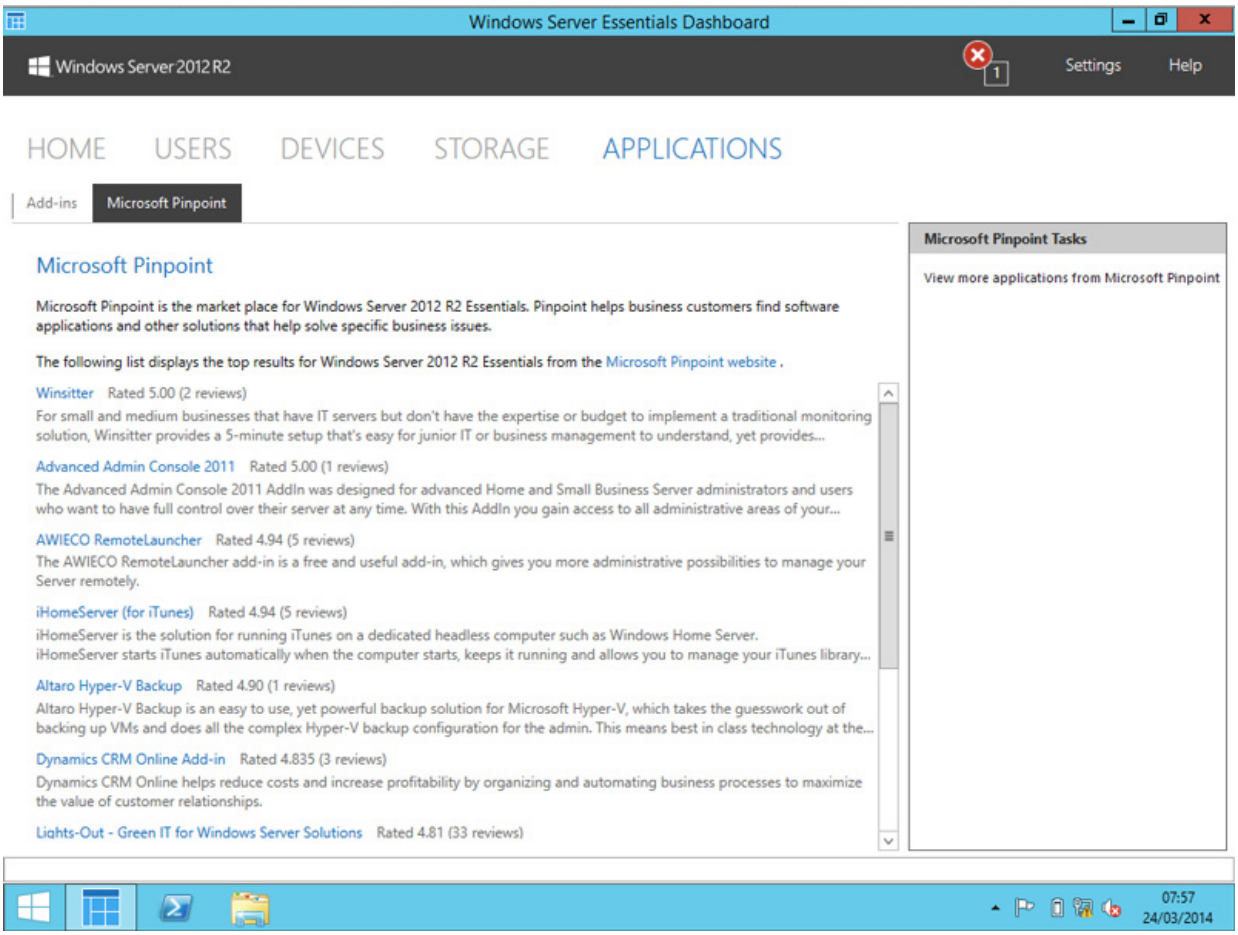


The Hard Drives tab.

It is from this tab that you implement decisions on how to manage the physical aspects of your storage. Specifically, this is where you can set up and maintain Microsoft's Storage Spaces feature to create a storage pool encompassing multiple hard drives. If you have never heard of the term "shadow copies", we will also be shortly introducing you to this feature and how to make use of it with the tools provided in this section.

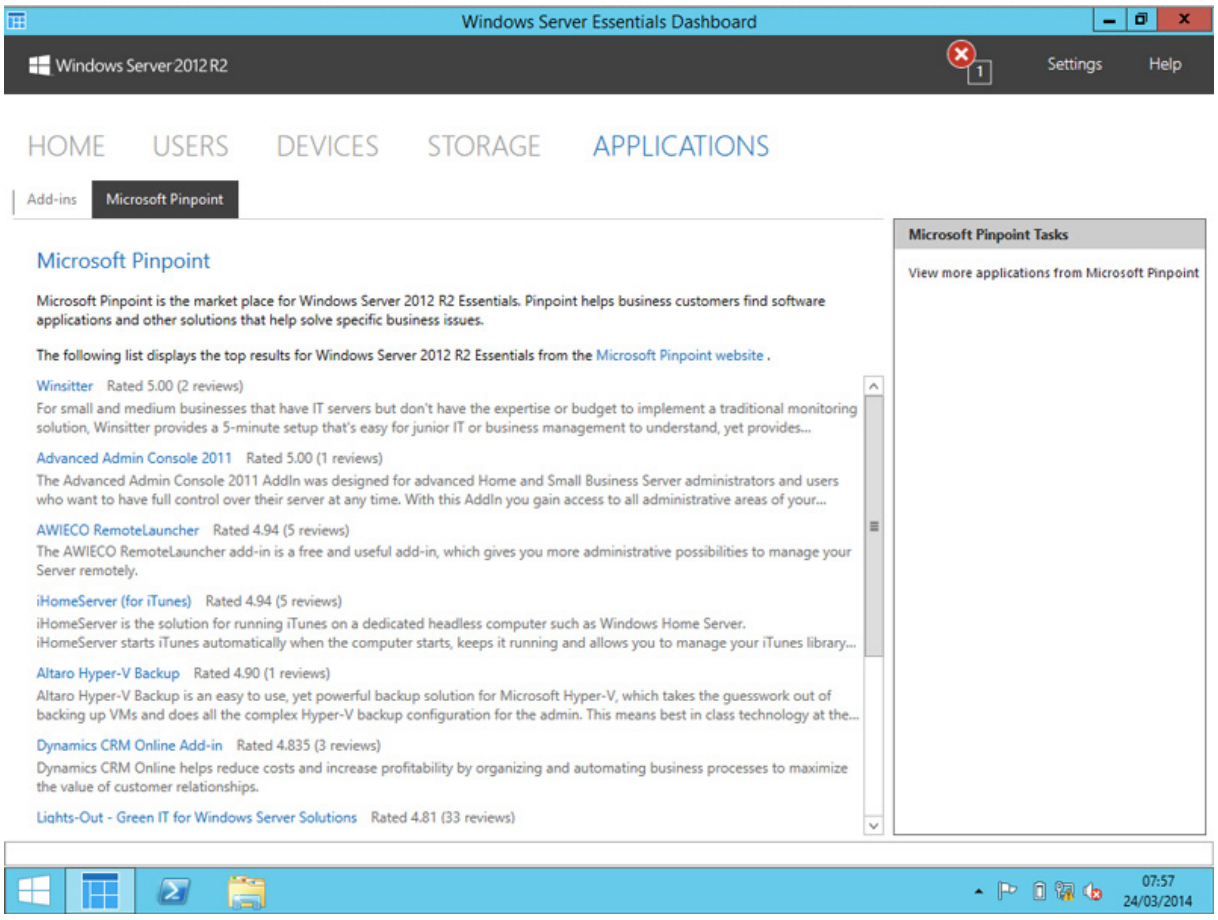
The Applications Tab

Every so often, we mention the term "add-in". As noted earlier, add-ins are task-specific apps that are installed and integrated into the Dashboard. The key word is *integrated* as these apps are used directly from the Dashboard to help manage various aspects of Windows Server Essentials, or additional features that they add to the server operating system.



The Applications section.

Many of these Dashboard apps are available from a website called **Microsoft Pinpoint** (http://pinpoint.microsoft.com) which is a searchable, online directory of software applications and services based on Microsoft technologies.

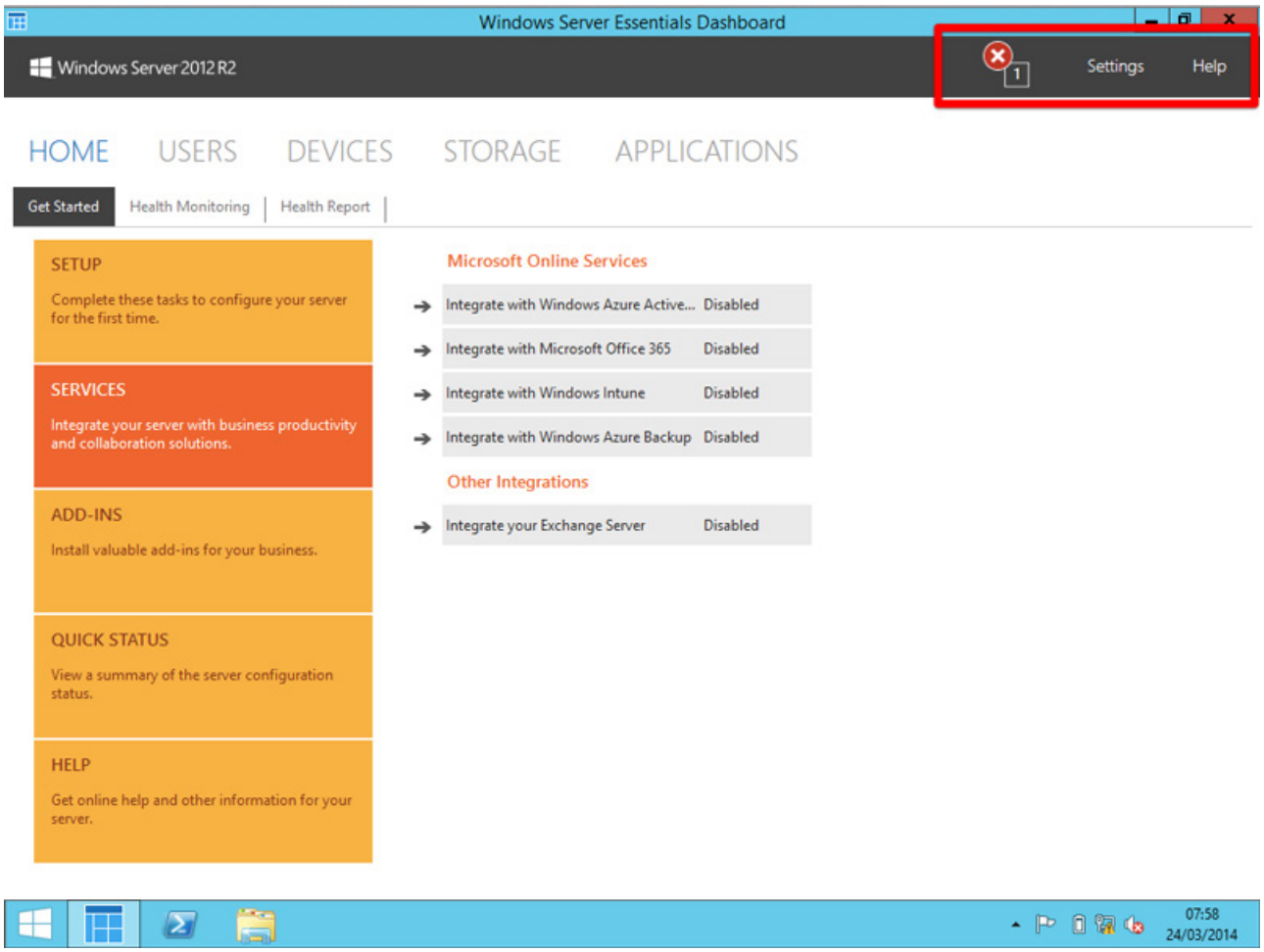


The Microsoft Pinpoint tab.

The products and services that are listed on Pinpoint are provided by third-party companies affiliated with the Microsoft Partner Network. The links included under this tab takes you to directly to the Essentials add-in section of Pinpoint; no searching required.

Alerts, Settings and Help

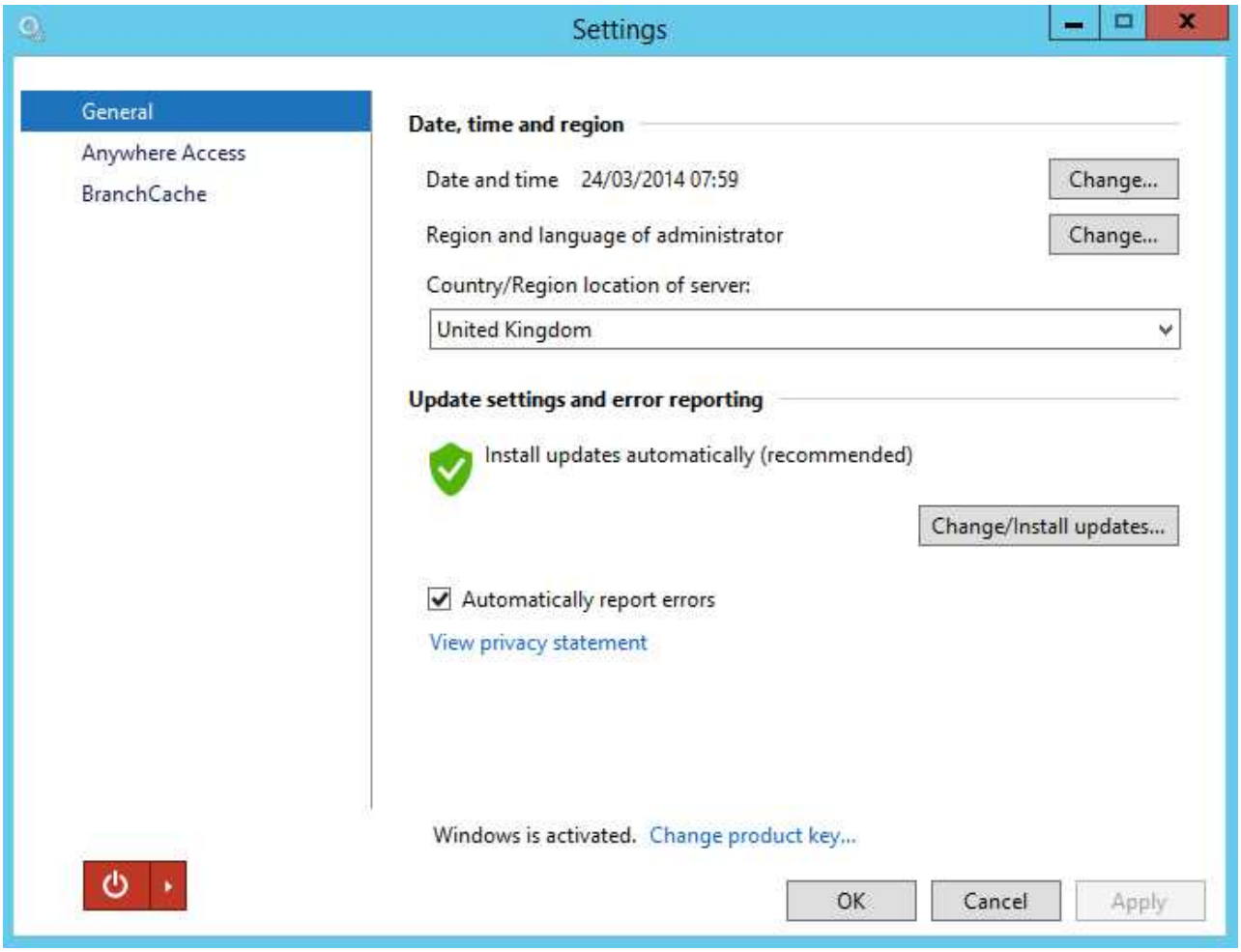
In the upper right corner of the Dashboard, you will find links to your Alerts, a Settings menu and links to Help.



Additional options are located at the top right of the screen.

From left to right, the **Alerts** icon provides a quick view of any issues discovered on your server or connected clients. Click and highlight an alerts category to be taken directly to the Health Monitoring tab.

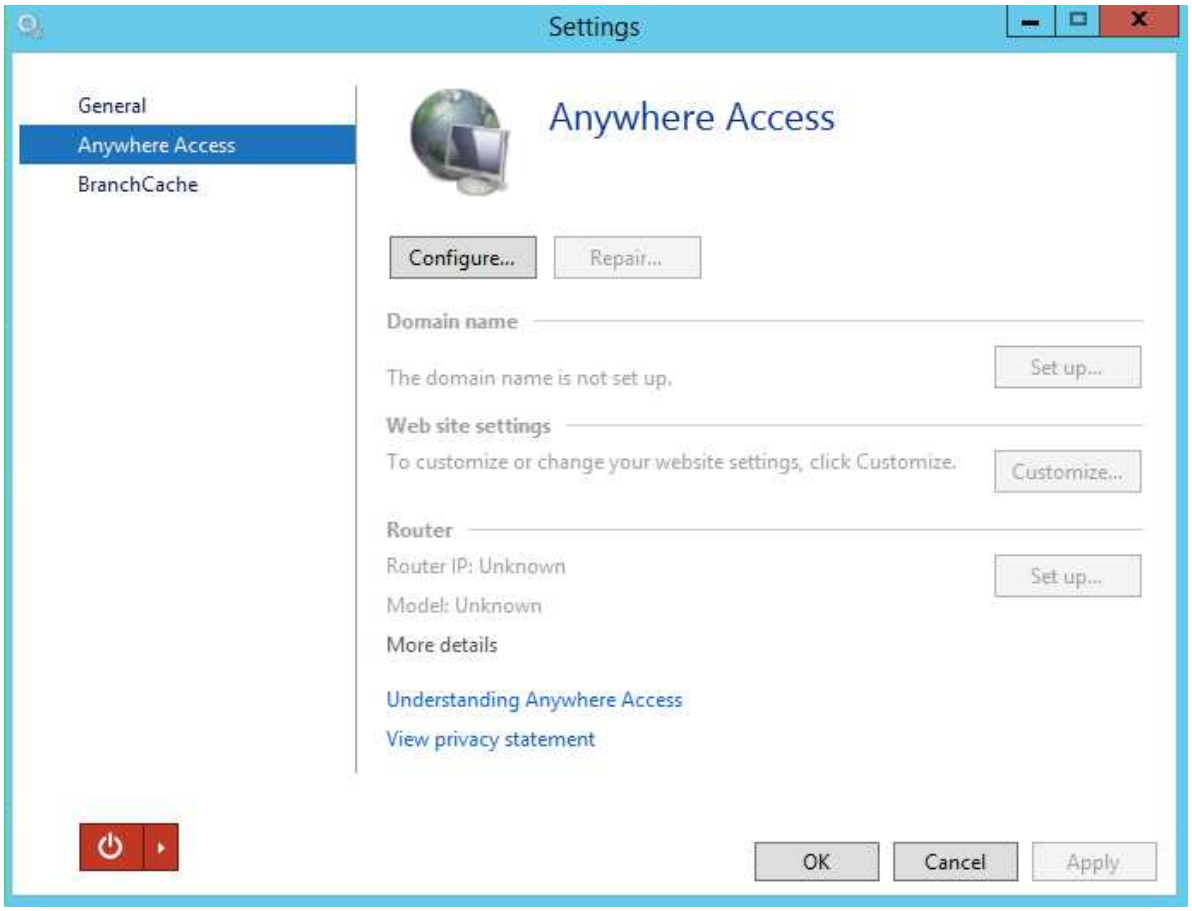
Settings provides you a means to change a few *general* operating system settings:



The Settings panel.

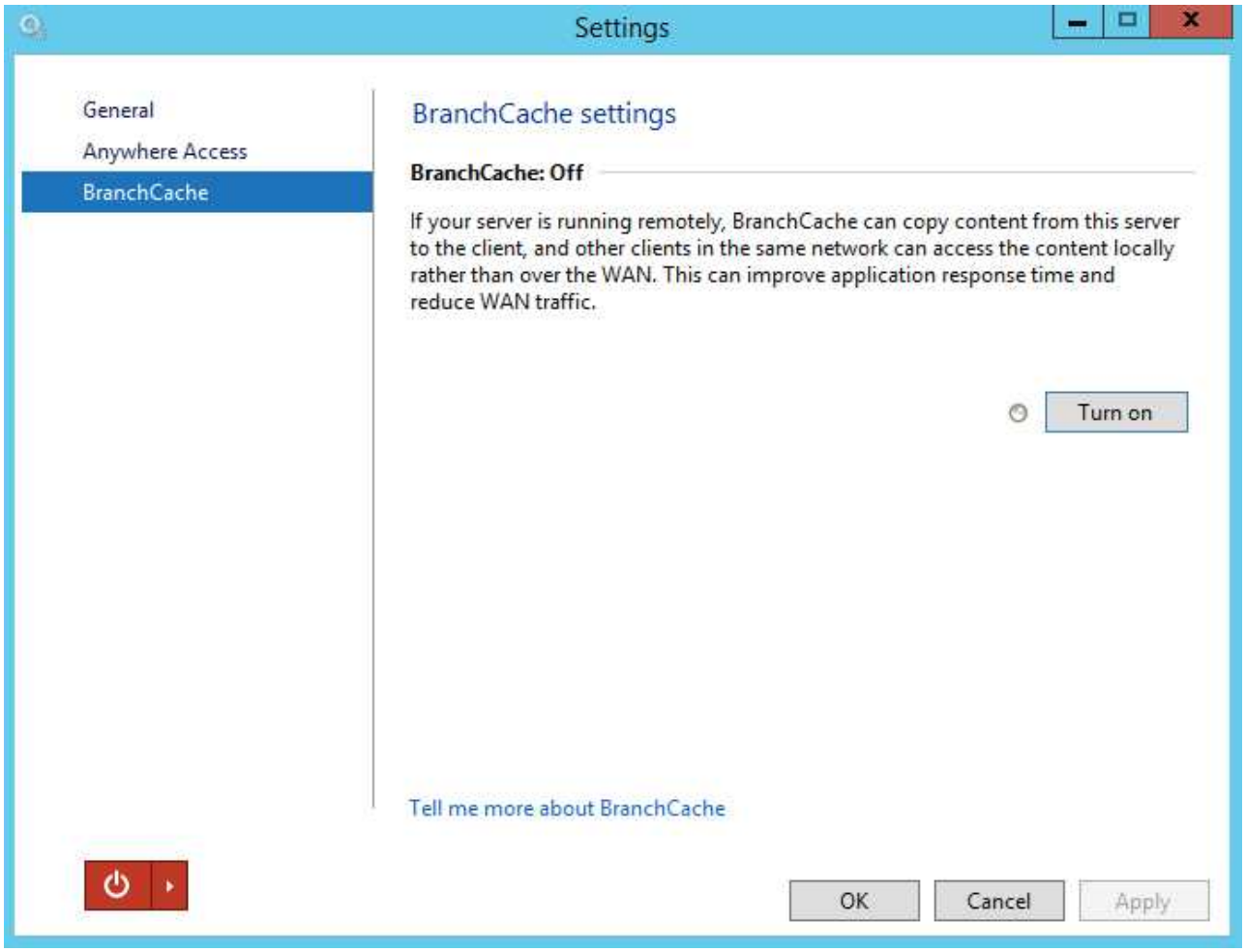
Use the **General** tab to view and change Date, time and region settings, Windows Update settings and options for reporting errors to Microsoft. You can also view privacy settings and change your product key here.

The **Anywhere Access** tab is where you'll configure and manage remote access to the server:



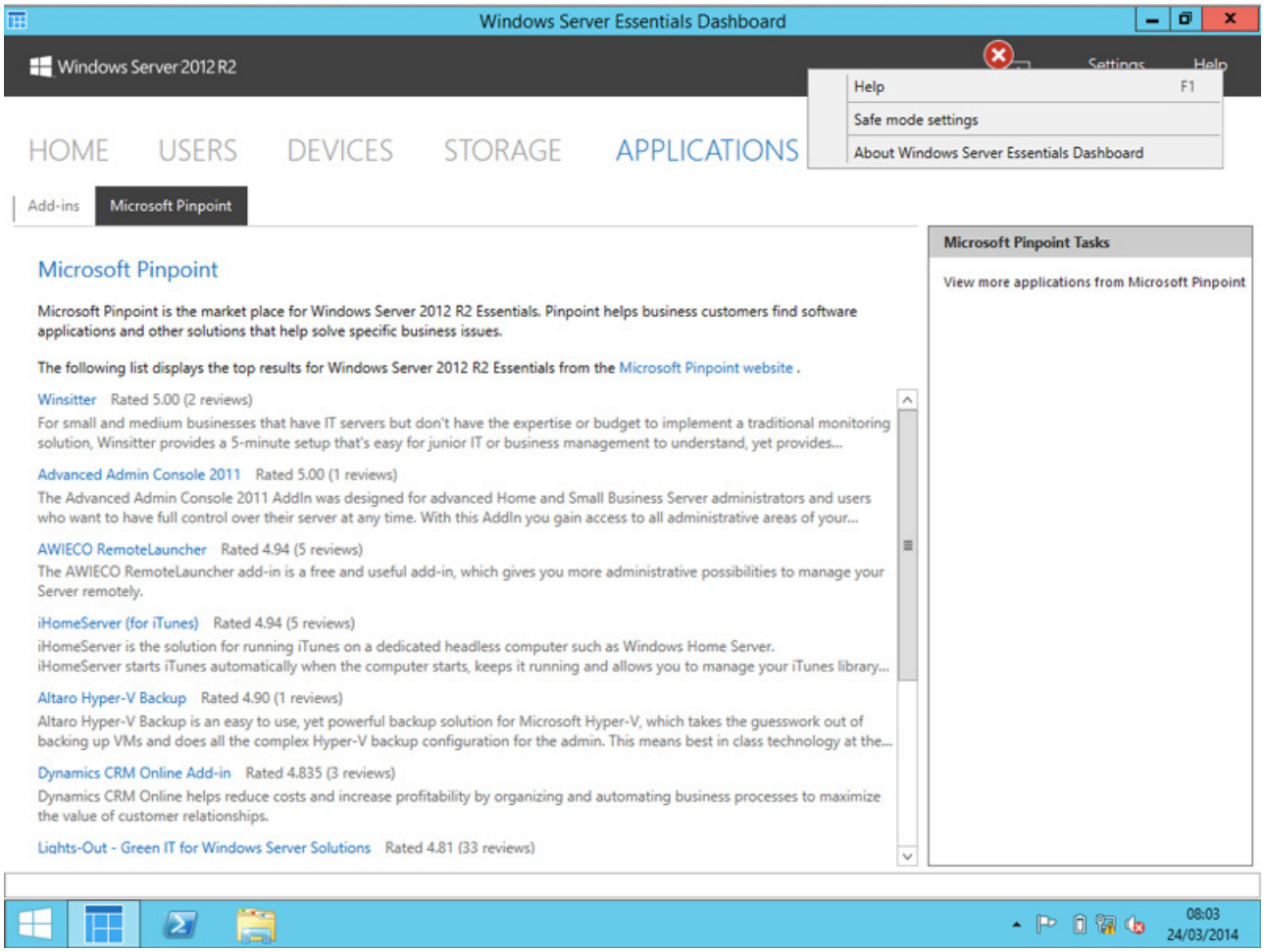
The Anywhere Access tab.

Finally in the Settings section, **BranchCache** is an advanced feature designed for larger networks that can optimise speed of access to data stored on the server by copying it from the server to a client. That can be useful in wide area networks where the server is located remotely from the clients, but in a small business scenario, BranchCache will be rarely used. But you can enable it here, all the same.



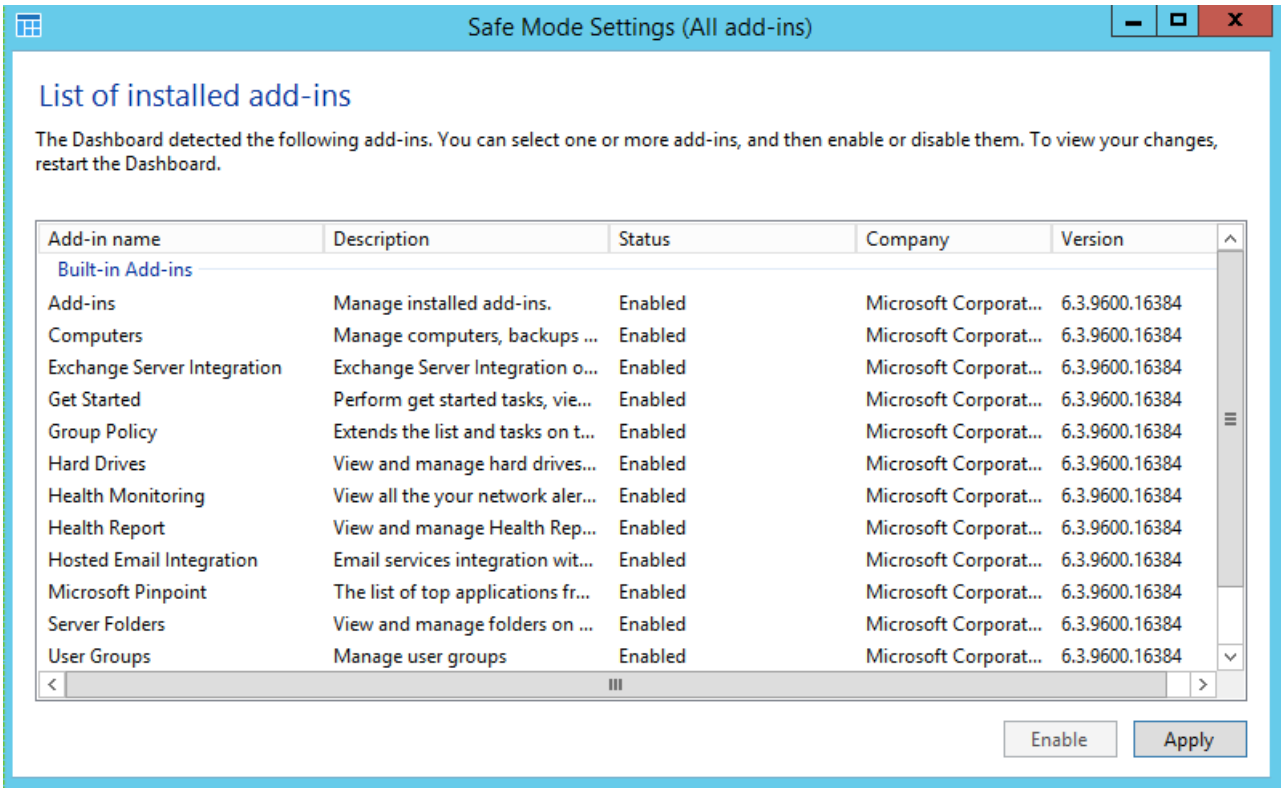
Enabling BranchCache.

Moving on, the **Help** option provides you with quick links to **Help** topics, the typical **About** option, and a **Safe mode** add-in settings option.



The Help menu.

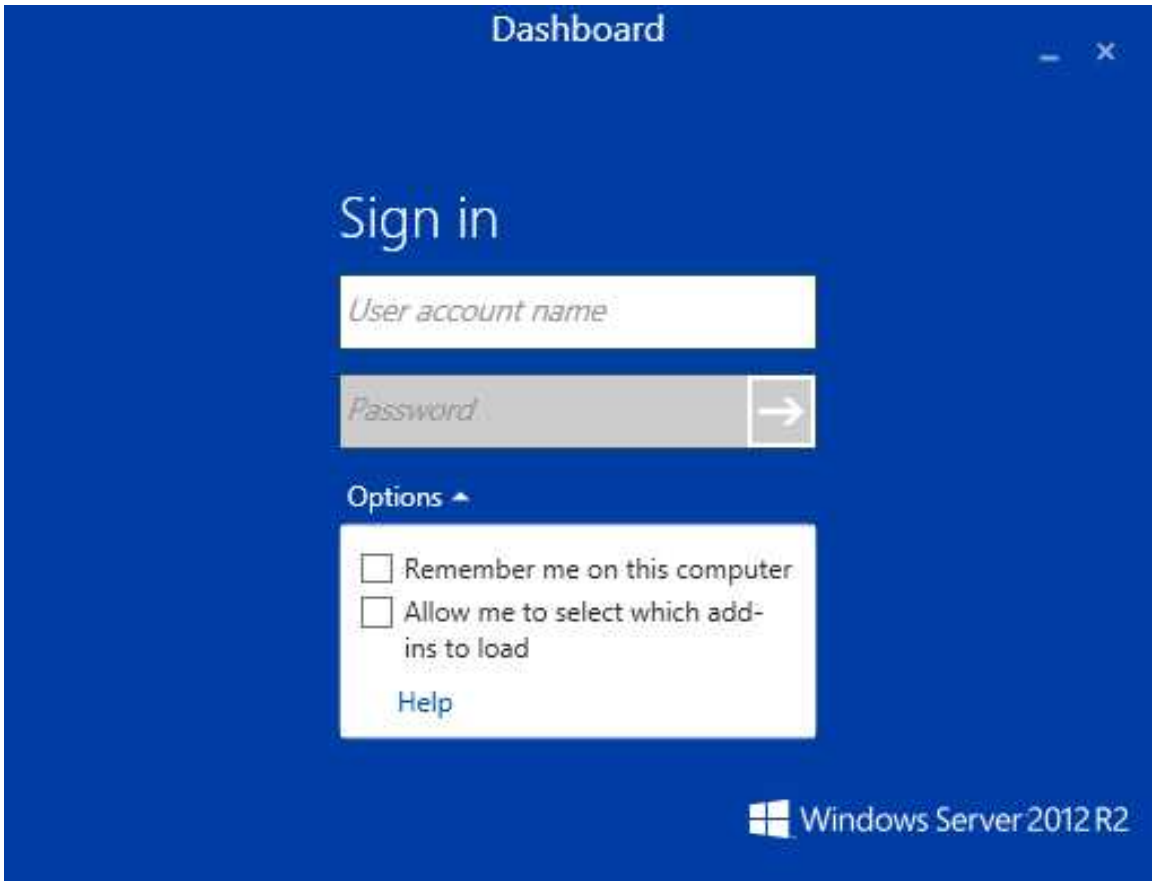
The **Safe Mode Settings** dialog allows you to enable or disable add-ins. Interestingly, you can see that many of the standard features of Windows Server 2012 R2 Essentials have actually been built by Microsoft as add-ins, and can therefore be easily disabled.



Safe Mode Settings.

If you're having an issue with a particular add-in, or you find the Dasboard doesn't load correctly, head here to disable your add-ins, and then enable them one by one until you find the culprit.

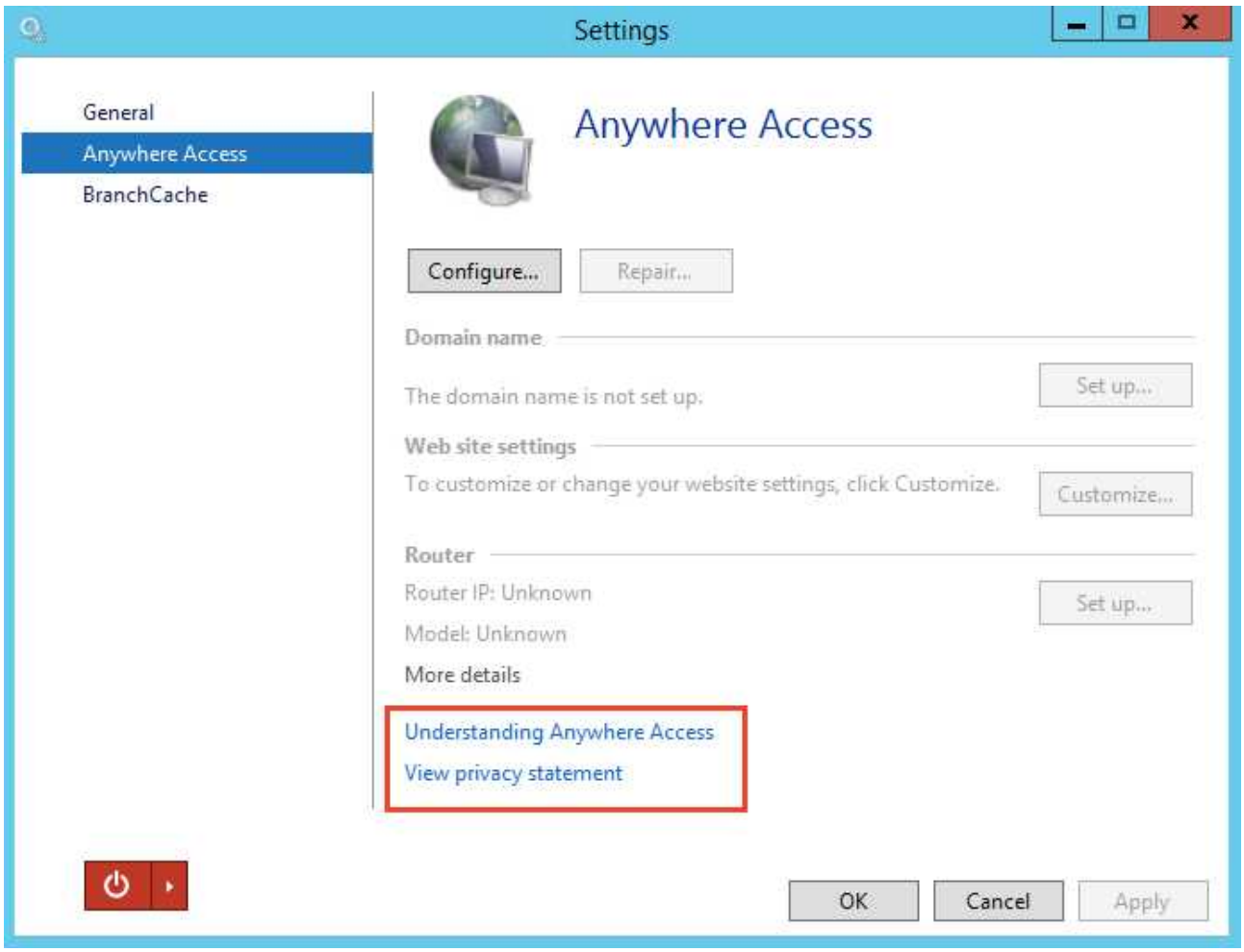
To open the Dashboard in Safe Mode, on a client PC, open the Dashboard log-in panel from the System Tray and click the **Options** link. Check the box next to **Allow me to select which add-ins to load** and you'll be able to open up the same dialog as above where you can Enable or Disable add-ins before opening the Dashboard.



Enabling Safe Mode.

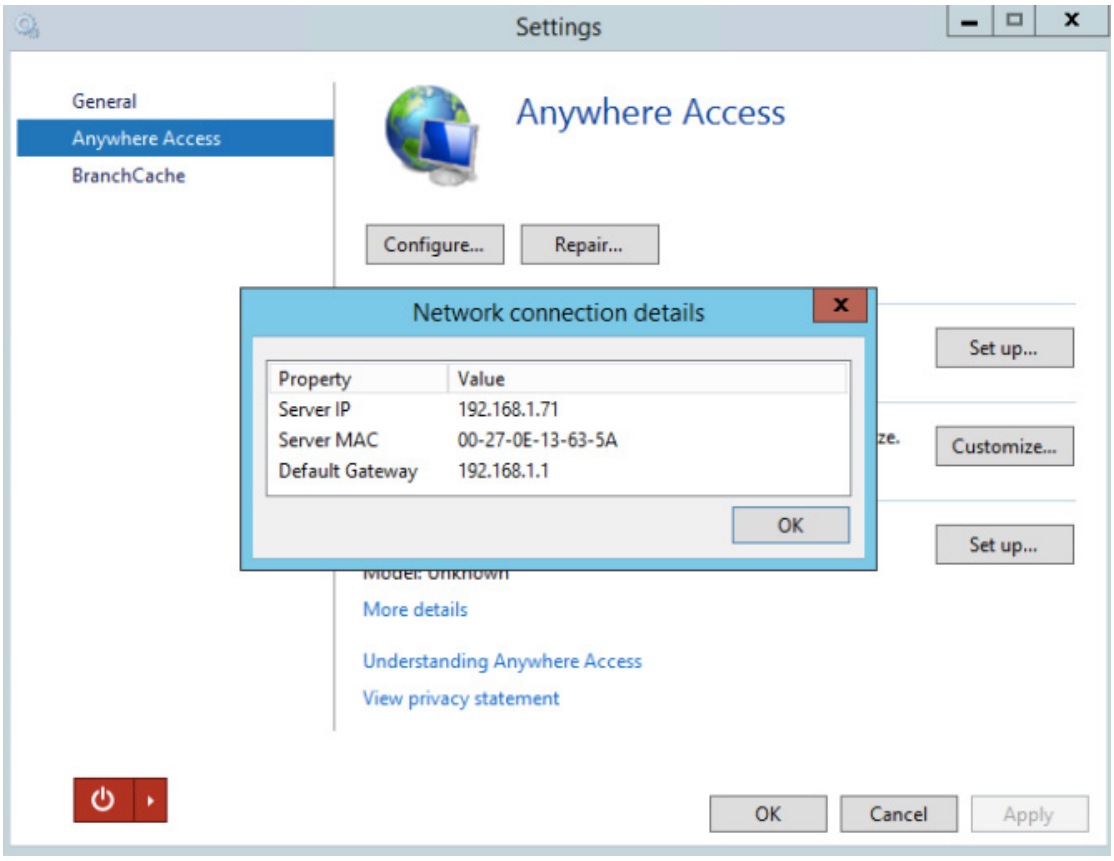
Help Links

Throughout the Dashboard, you may have noticed several phrases highlighted in blue.



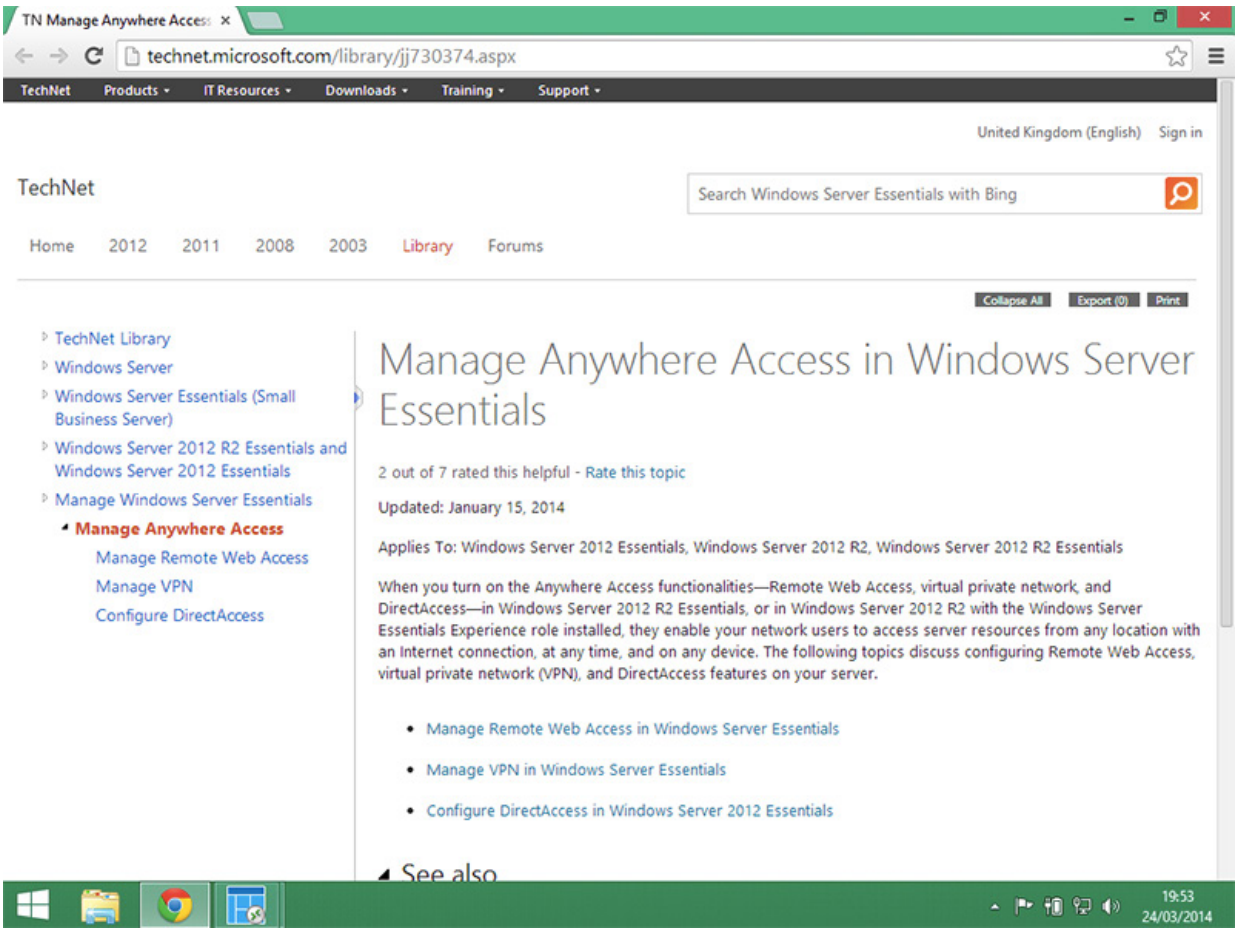
Help links are highlighted in blue. Click them!

These items are links to various pieces of information specific to your server and/or network:



Additional network information.

or links to online help topics about a specific aspect of the Dashboard.



Online Help files.

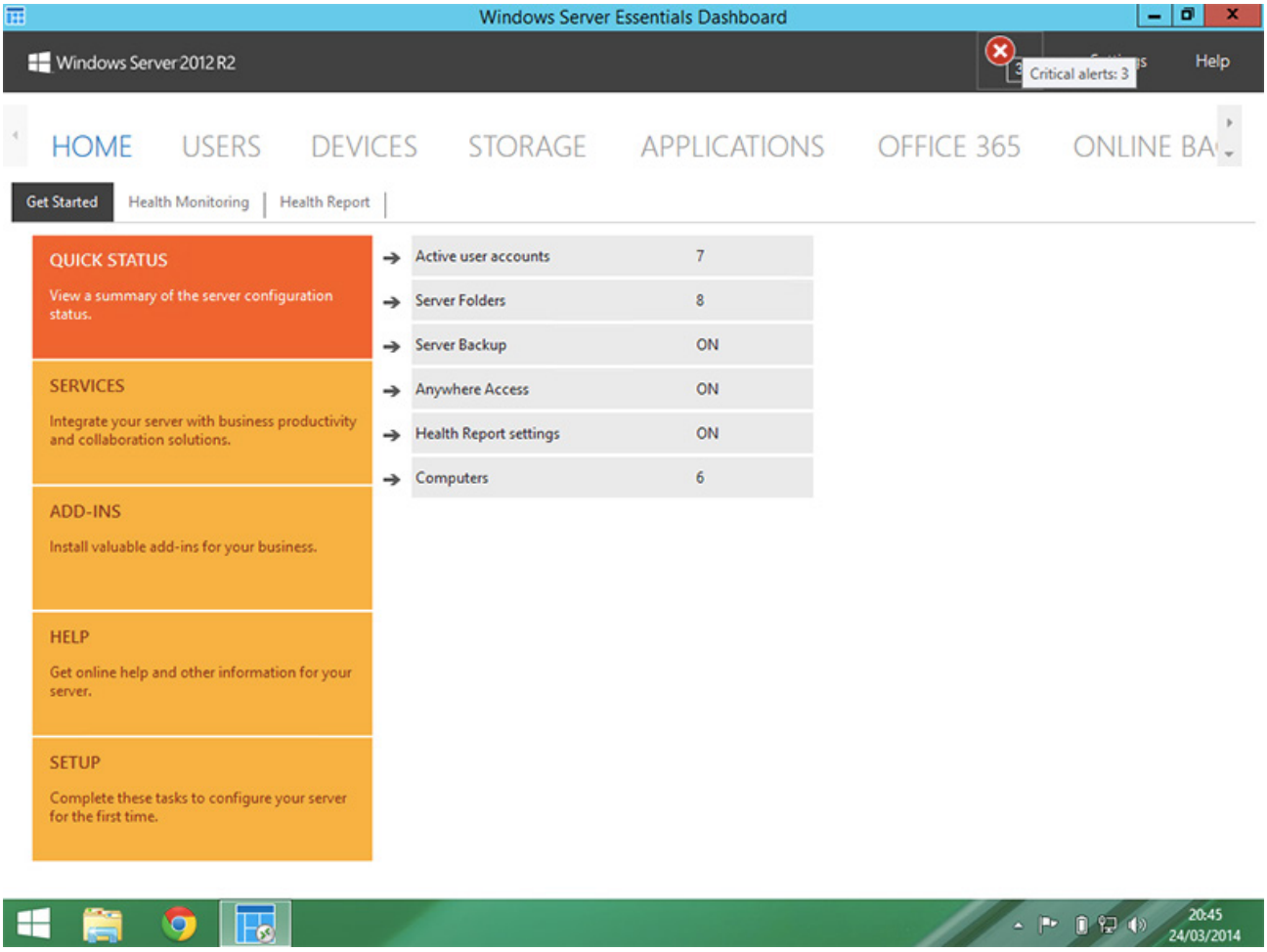
If you run into a problem in a specific area of the Dashboard, or have a question related to a option, this is the first action to take to learn more.

That completes our mini-guide to All-Things-Dashboard. If you want to find where a specific feature resides in the Dashboard, a quick perusal of this chapter should help. As various add-ins can create additional sections and/or tabs to the Dashboard, you will find that your Dashboard morphs to accommodate these integrated apps. Don't worry, the basic look of the Dashboard remains the same, so it's always easy to navigate.

In the following chapters, we'll deep dive into specific areas of the Dashboard - there's a lot to discover!

The Dashboard Home Tab

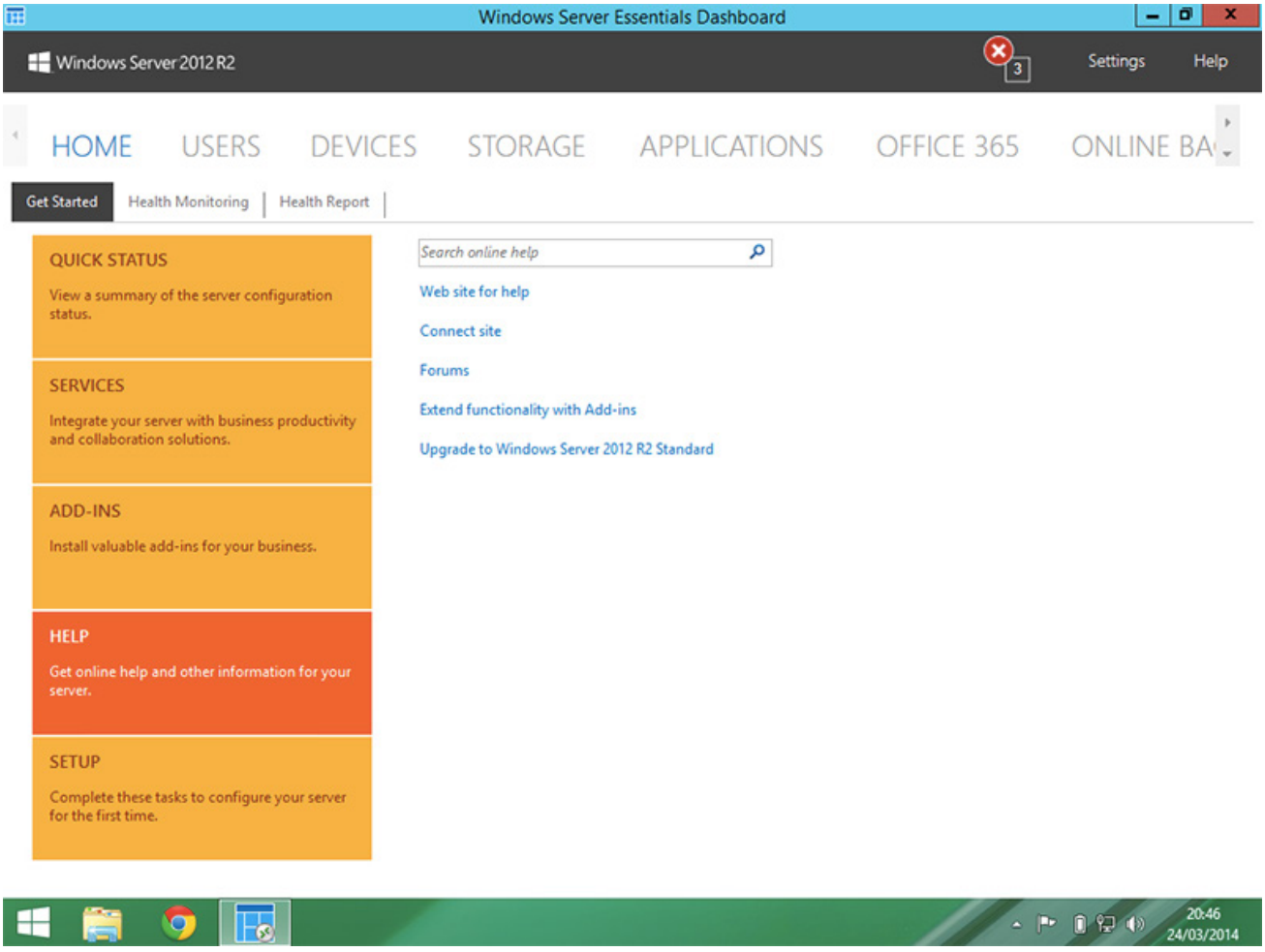
"In Chapter 10, we provided a brief introduction to the various sections of the Dashboard. It is now time to delve into specifics, and first up is the Home tab."



The Home Tab.

We have previously discussed the **Quick Status** and **Setup** tabs in detail, so we will try to not repeat ourselves here. There are three remaining tabs to learn more about. First, going from bottom to top, is the **Help** Tab.

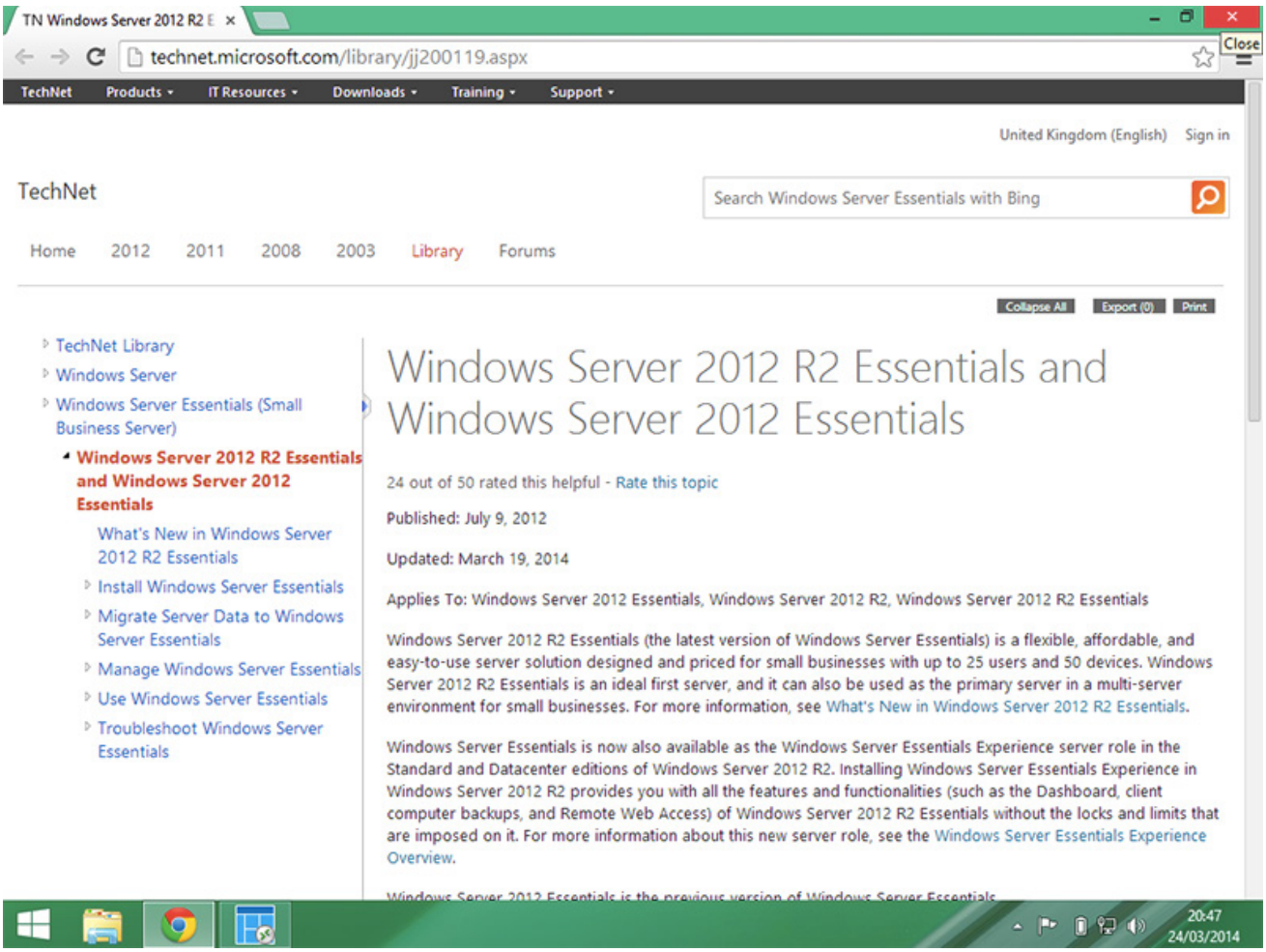
The Help Tab



The Help tab.

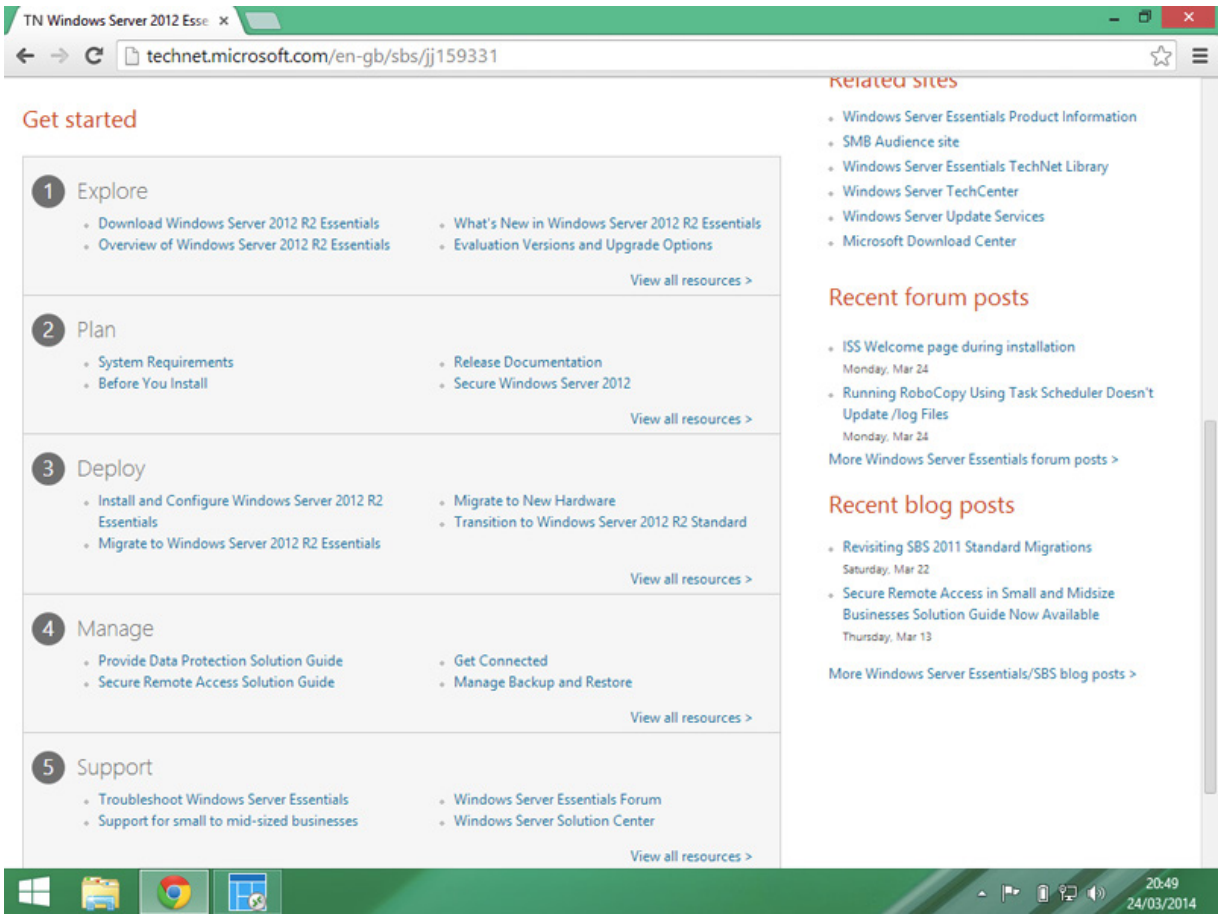
The Help tab includes links to various online resources specific to Windows Server 2012 R2 Essentials. Before you get to the links themselves, you'll see a search bar available that will allow you to freely search Microsoft's **TechNet** online help resources for any term you care to input.

The first link, the strangely entitled **Web site for help**, takes you to the equivalent of a user guide for Essentials. There is a wealth of information contained here and if you get stuck - or if you have a little time and would like to dig into some technical detail, the TechNet guide to Windows Server 2012 R2 Essentials is well worth a read.



Online help, hosted on Microsoft's TechNet website.

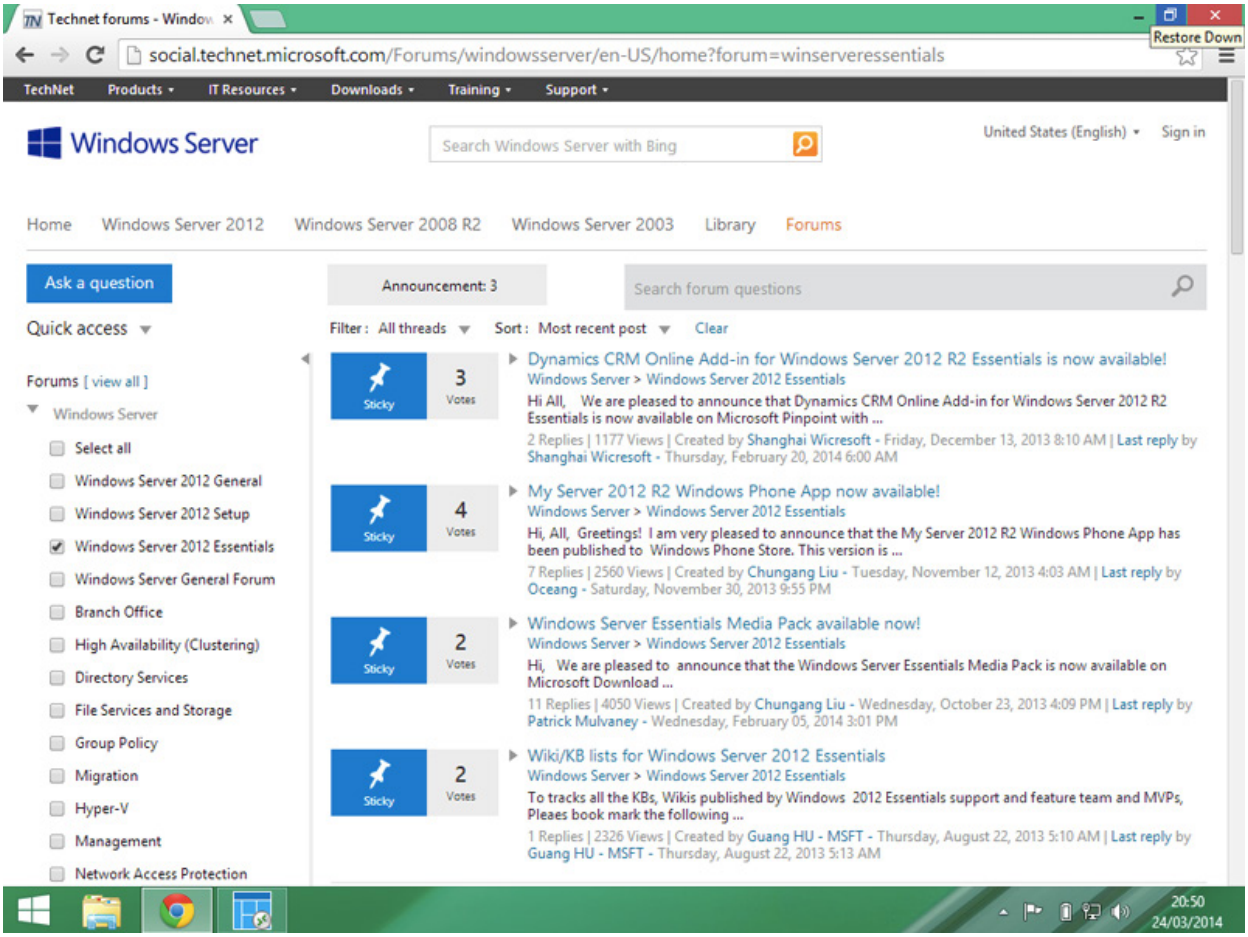
The second link in the list directs you to Microsoft's **Connect** bug reporting website. Or at least it *should*, but for reasons known only to Microsoft, it actually directs you to a different section of the Technet website which offers a full list of resources available for Windows Server 2012 R2 Essentials.



More help at TechNet.

Still, there's good content here, which is split into five sections - **Explore**, **Plan**, **Deploy**, **Manage** and **Support**. Sections 1 through 4 are shortcuts to various guides available in TechNet. The links in the Support section route you through to additional resources you can use beyond the TechNet Essentials guide, including the Windows Server 2012 R2 Essentials user forum and more.

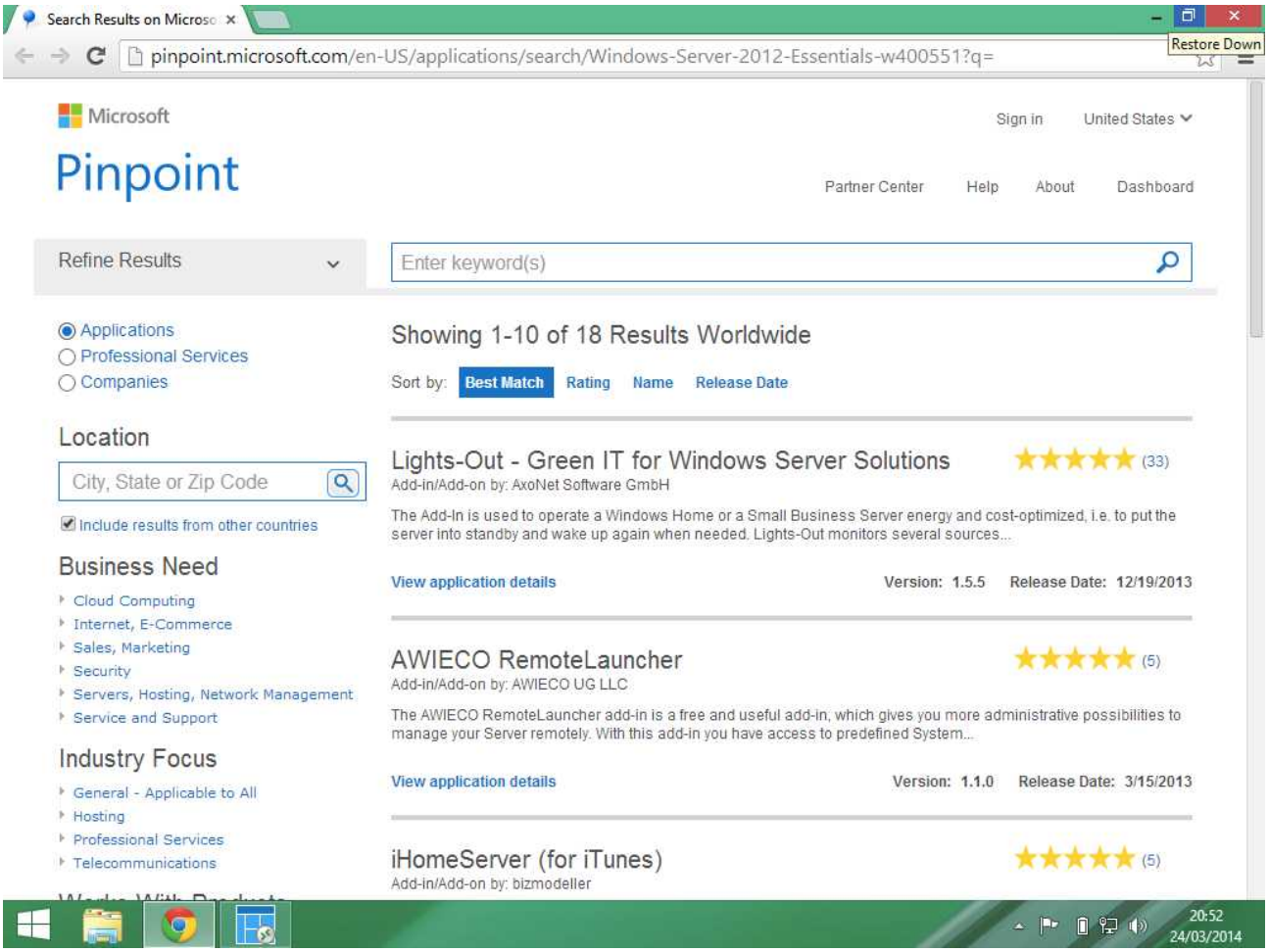
Indeed, the **Windows Server Essentials Forums** are linked next in the Dashboard Help tab. They're a tremendous resource for all things Essentials. If you have a problem, or a question, this is one of the first places to look for an answer. I'll also take this opportunity to plug our own We Got Served forum (http://forum.wegotserved.com) which also includes a dedicated Windows Server Essentials forum!



The Windows Server 2012 R2 Essentials user forum.

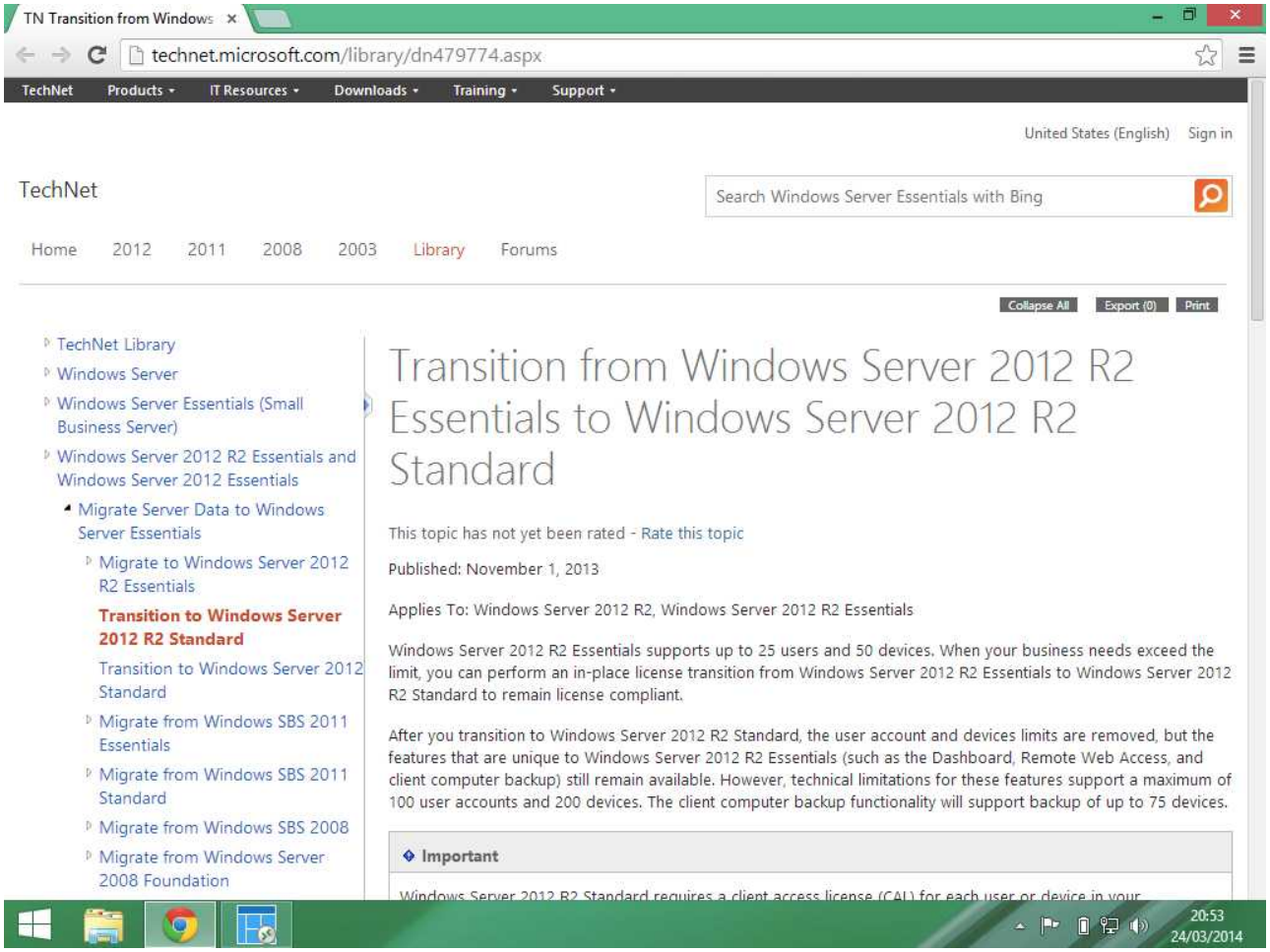
Next up, the **Extend functionality with Add-ins** link takes you to the Windows Server 2012 Essentials section of the Microsoft Pinpoint site. The various add-ins listed here are can extend the capabilities of your server. You may ask why only 17 add-ins? Well, take your pick:

- Essentials contains just about everything you need for a server.
- Do you really need 12,500 social media apps?



Microsoft Pinpoint.

Finally, we have a link to **Upgrade to Windows Server 2012 R2 Standard**. If (when!) your business grows beyond the 25 user limit, you will need to make the jump to the "higher capacity" standard version. In Microsoft language, this is called "transitioning".



Get the low-down on transitioning to Windows Server 2012 R2 Standard.

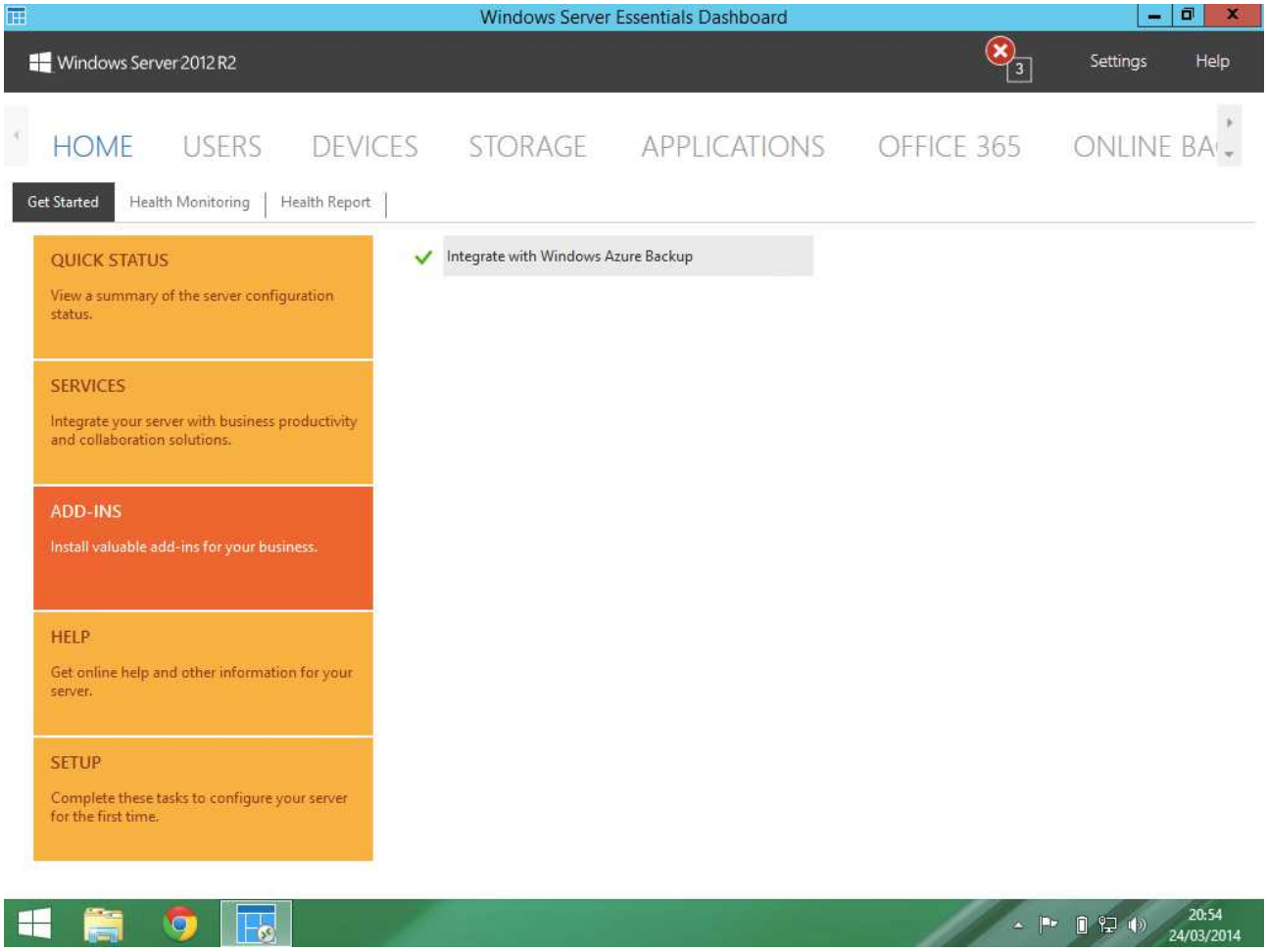
While the link takes you to some great information on what Windows Server 2012 R2 Standard can do and the transition process from Essentials, my advice is that you contact a small business IT consultant before proceeding further. Basically, as your business grows, so does the complexity of your server and IT needs. An IT consultant is there to help you (and/or your IT manager) steer you in the right direction. Server Migration and transitioning can be a complex process and a safe transition is worth the small investment in professional expertise.

If you decide that you do need a server/IT consultant, a good place to start the search for one is at Microsoft Pinpoint (http://pinpoint.microsoft.com).

The Add-ins Tab

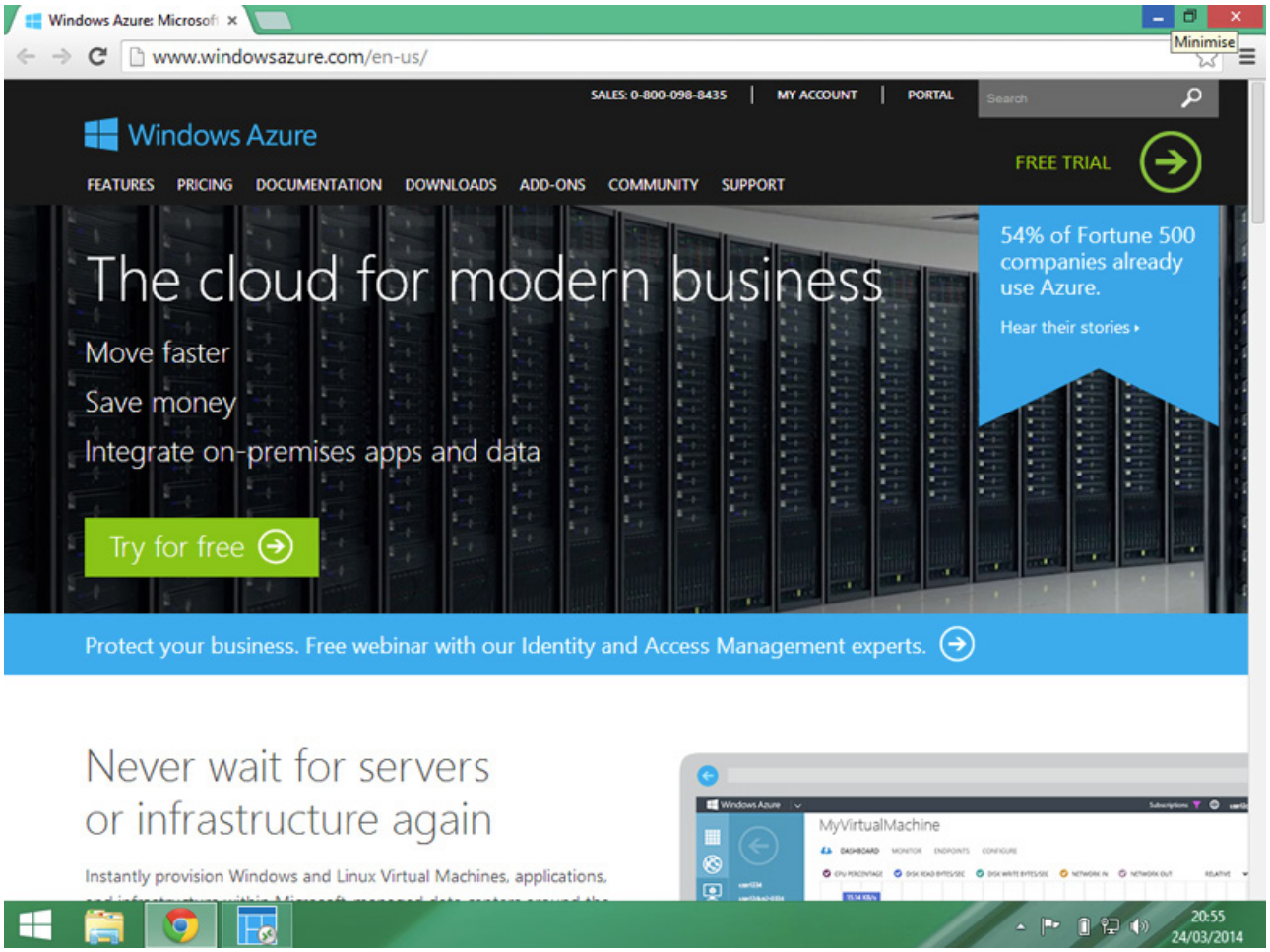
You'll notice that Windows Server 2012 R2 Essentials ships with one add-in already listed. The **Windows Azure Backup** add-in is an online backup service powered by Microsoft's Windows Azure

Cloud platform.



The Add-ins tab.

Clicking on the **Integrate with Windows Azure Backup** link provides a description of the service and its benefits. Two new links are exposed: **Click to Sign Up for Windows Azure Backup** opens a browser and takes you to the Windows Azure website to learn more and sign up to the service (a free trial is available).



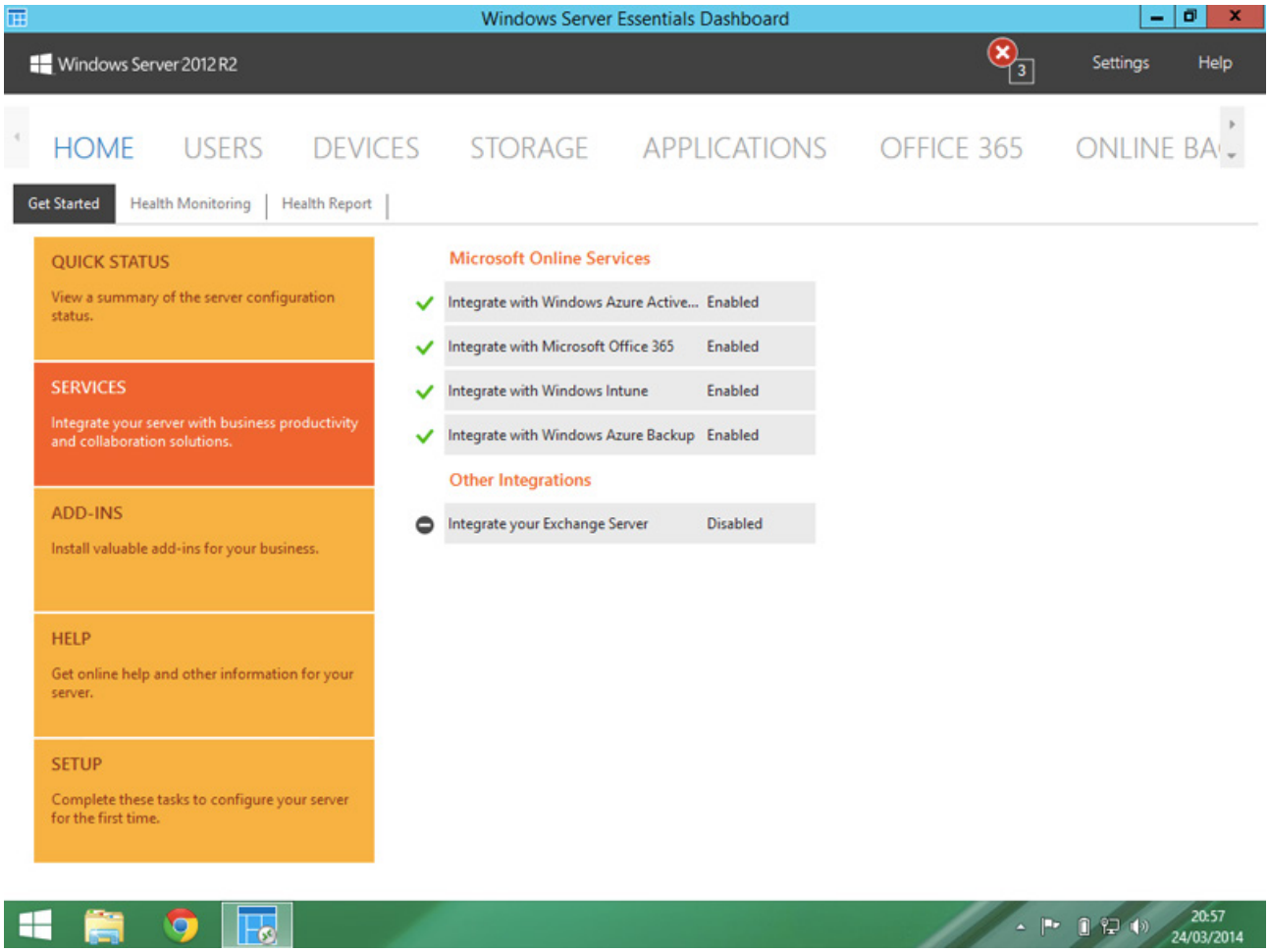
The Windows Azure website.

Once you've registered, check out the second link, the snappily titled **Click to download Windows Azure Backup integration module** which will grab the add-in for you to install. Or at least *should*. At the time of writing, the link wasn't working correctly on my server, so if you have similar problems, head over to the Windows Server Essentials Blog to grab it (http://blogs.technet.com/b/sbs/archive/2013/04/19/windows-server-essentials-integration-module-for-windows-azure-back-up-is-now-available.aspx).

Windows Azure is but one option in the cloud-based backup arena. We will discuss more about this solution as well as your other options later in the book.

The Services Tab

Heading north, we now open up the **Services** tab. Here it is:



The Services tab.

This area of the Dashboard has seen some notable additions since the last release of Windows Server Essentials, as Microsoft extend the number of cloud-based, "off-premise" services that integrated with this "on-premise" platform.

As noted earlier in the book, not every service is going to be relevant to every user and some of the services - I'm thinking Windows Azure Active Directory and Exchange Server integration here in particular - require a substantial amount of IT expertise to set up and maintain. For a "first server" user in a Home, SOHO, or Small Business environment you'll most likely start with Office 365 and Windows Azure Backup first, perhaps moving on to Windows Intune as your device management needs become greater. We'll take a look at a few of these services in dedicated chapters later in the book.

If an Office 365 option is of interest to you, you might want to check out Microsoft's Cloud-based service. Not only does this give you integrated email, the service also provides the full suite

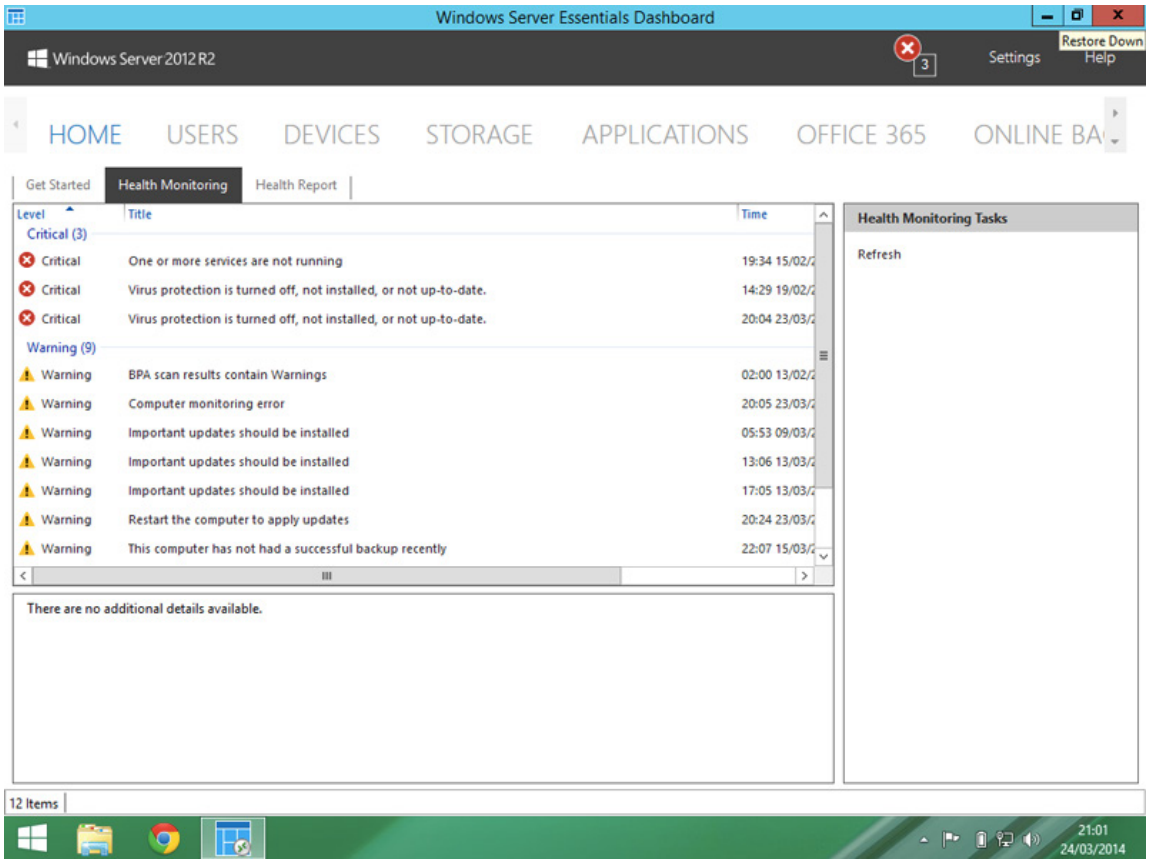
of Office applications, albeit as a subscription-based service.

Finally, if you have existing web or ISP-based email accounts (Gmail, Hotmail, Yahoo!, or others), you may wish to simply stick with those accounts to start with. This will give you time to decide later whether having an on-premise email setup or a cloud-based service such as Office 365 is in your best interests.

So, that's a brief run through of the Home Tab, or rather, the Get Started section of the **Home** tab. To the right you'll have already noticed the Health Monitoring and Health Report tabs, both of which are new to Windows Server 2012 R2 Essentials (they previously were available as an add-in). Let's take a quick look now.

The Health Monitoring Tab

The Health Monitoring tab is where you should head regularly to ensure your Windows Server 2012 R2 Essentials is working as it should. It where all of the alerts triggered by your server and your clients can be viewed, triaged and resolved.



The Health Monitoring Tab

As soon as your server is configured, the Health Monitor gets to work, and a steady stream of alerts and notifications will flow into this tab. Alerts can be critical - the highest priority - or serve as Warnings and typical cover issues such as Windows Services failing to tun on the server or your clients, security problems, such as the lack of anti-virus protection on your PCs, or guidance to install updates.

Each alert in the log is given a title, date and time stamp and is obviously labeled with the computer name the alert pertains to. Right click on an alert to perform a series of tasks, including the ability to Ignore a task (which does not make it disappear from your Health Monitor tab, but does ensure it is not included in the server's overall health assessment), copy the alert to the clipboard, delete the alert (which does make the alert disappear) and, on some alerts, access online help to tell you more about the issue.

Those same alerts are repeated in the Task Pane on the right hand side of the window, along with a **Refresh** link which keeps the list manually updated, if you wish to see if any new alerts have popped up.

The information pane at the bottom of the screen shows more detail on each alert when you left click on it in the list. Here's an example:

> One or more server folders are located on the system hard drive
>
> **Occurrences**
> WGSSERVER 12/02/2014 14:05
>
> **Details**
> The following server folders are located on the system hard drive:
>
> Folder Redirection
> File History Backups
> Client Computer Backups
> Users
> Company
>
> **Resolution**
> It is recommended that you move the server folders that are located on the system drive to a different hard drive to help protect your data against disaster. To move a server folder from the system drive to a different hard drive, select the server folder, and then click Move the folder task.

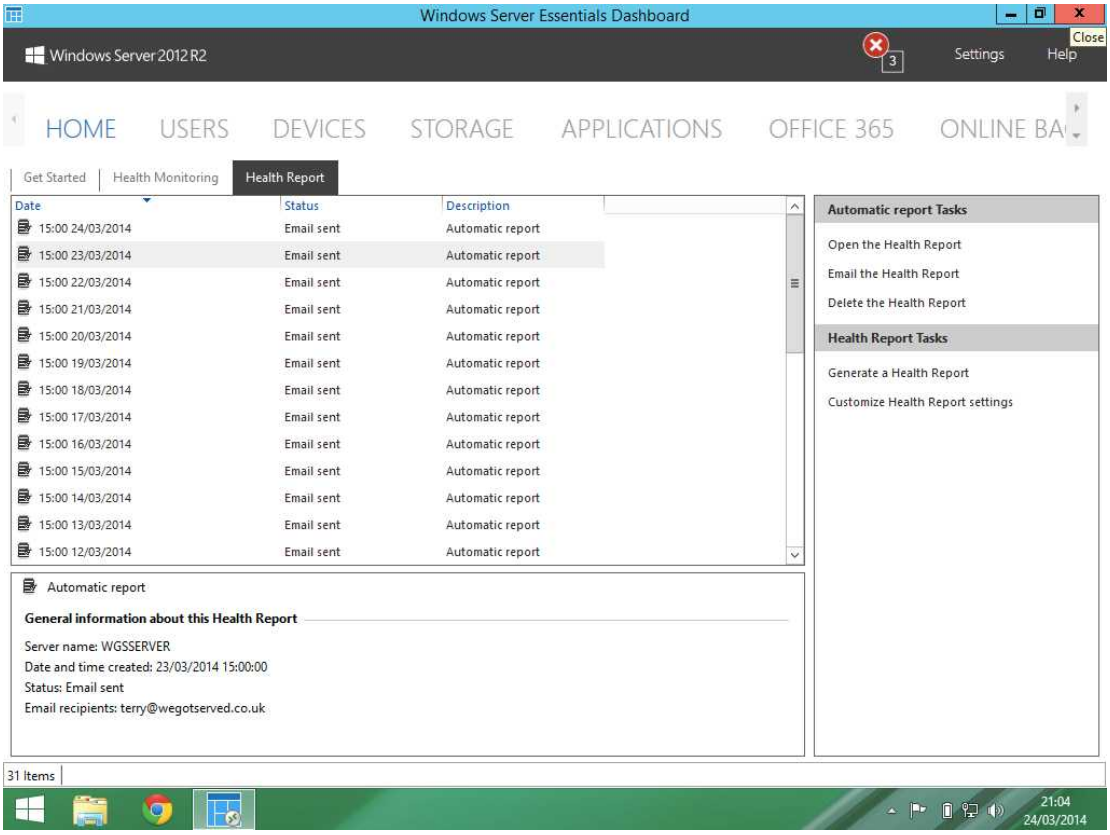
As you work through the list of alerts, you'll notice that Critical Alerts are noted at the top of the Dashboard, with a big red and white X icon in a circle, and a number showing the number of critical alerts awaiting action. Clicking on that icon and selecting either Critical Alerts or Warnings will take you through to the Health Monitoring tab.

So, the Health Monitoring is a definite place to stop by from time to time if you want to ensure your Windows Server 2012 R2 Essentials network is running in tip top condition. Of course, that relies on you taking the time to go into the Dashboard and check out what's happening. With our next tab, Health Report, the issues are going to come to you!

The Health Report Tab

Previously available as a post-purchase add-in for Windows Server Essentials, Health Report:

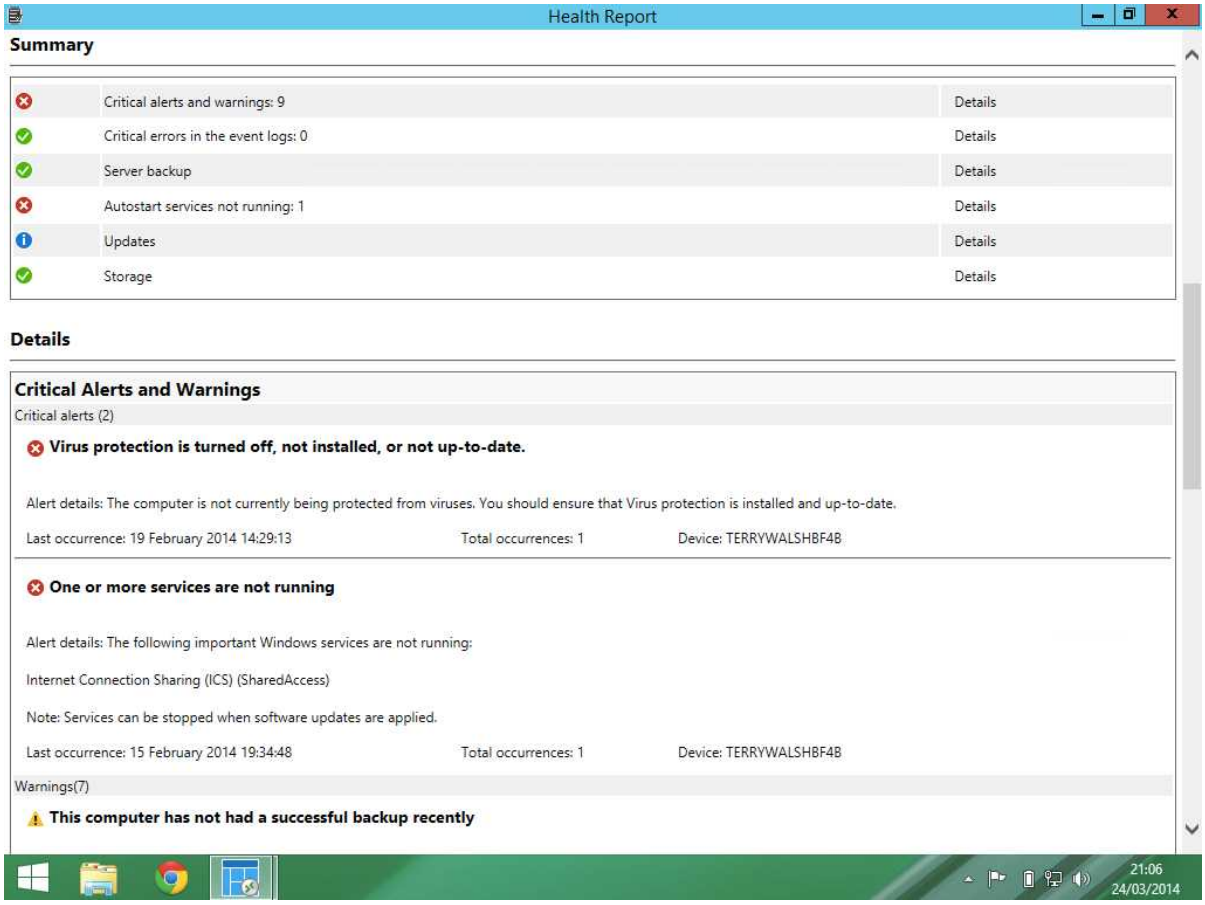
covers the health of several key functionalities of the server to assist the administrator to easily know the server's overall status by reading a manually or automatically generated report. The administrator can configure a schedule for the report to be automatically generated on a daily or hourly basis, and enable the generated report to be sent to a list of specified email recipients. Source: Microsoft



The Health Report tab.

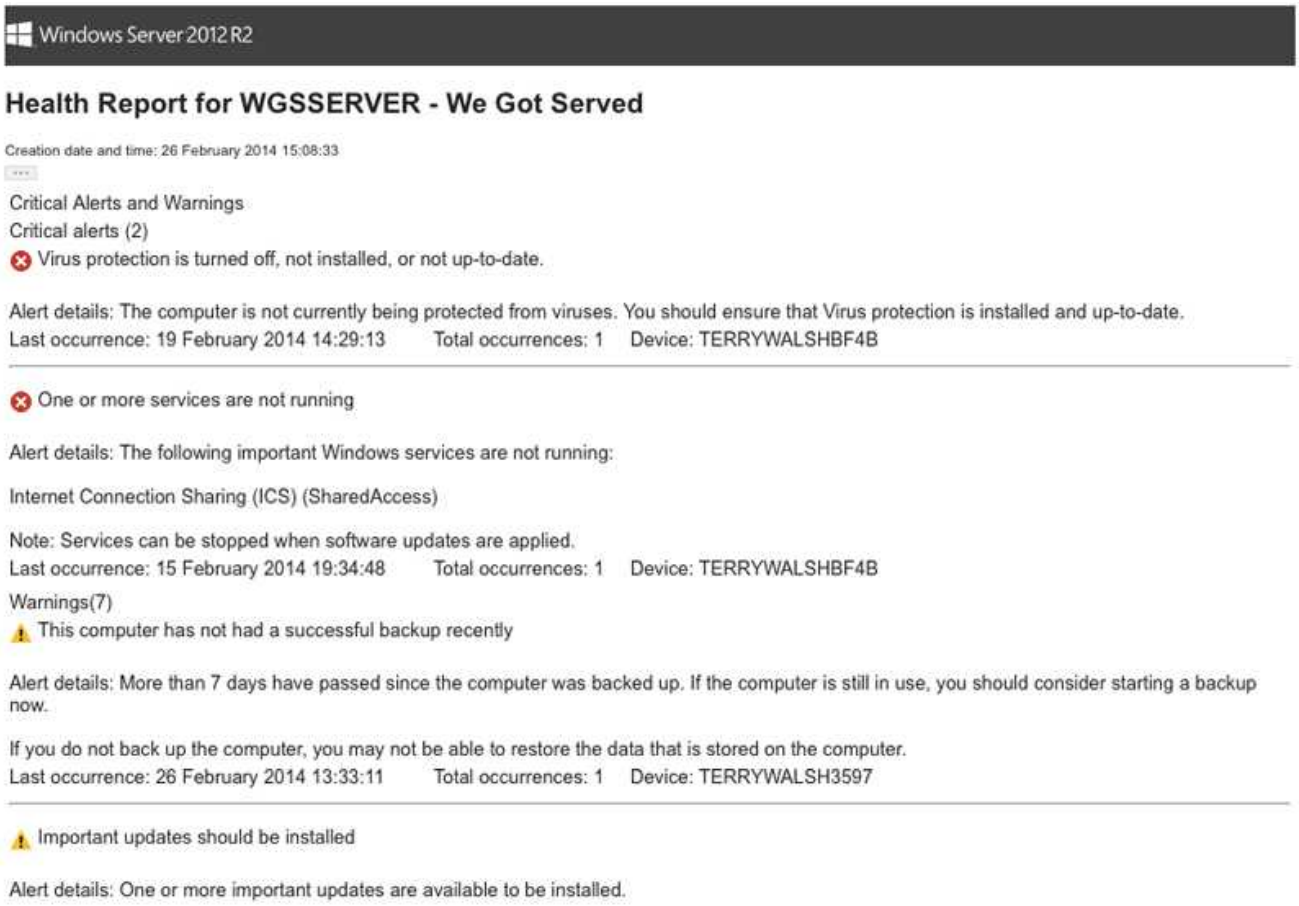
If you've yet to configure Health Reports (we did so earlier in Setup Tasks, but who says everyone follows this book in a linear fashion?) then look at the Task pane, and click the **Generate a Health Report** task.

The relevant data is collected and entered as a listing in the main pane, with the description **Manual Report.** You can double-click on the entry, or highlight, right click and select the O**pen the health report** task to display it.



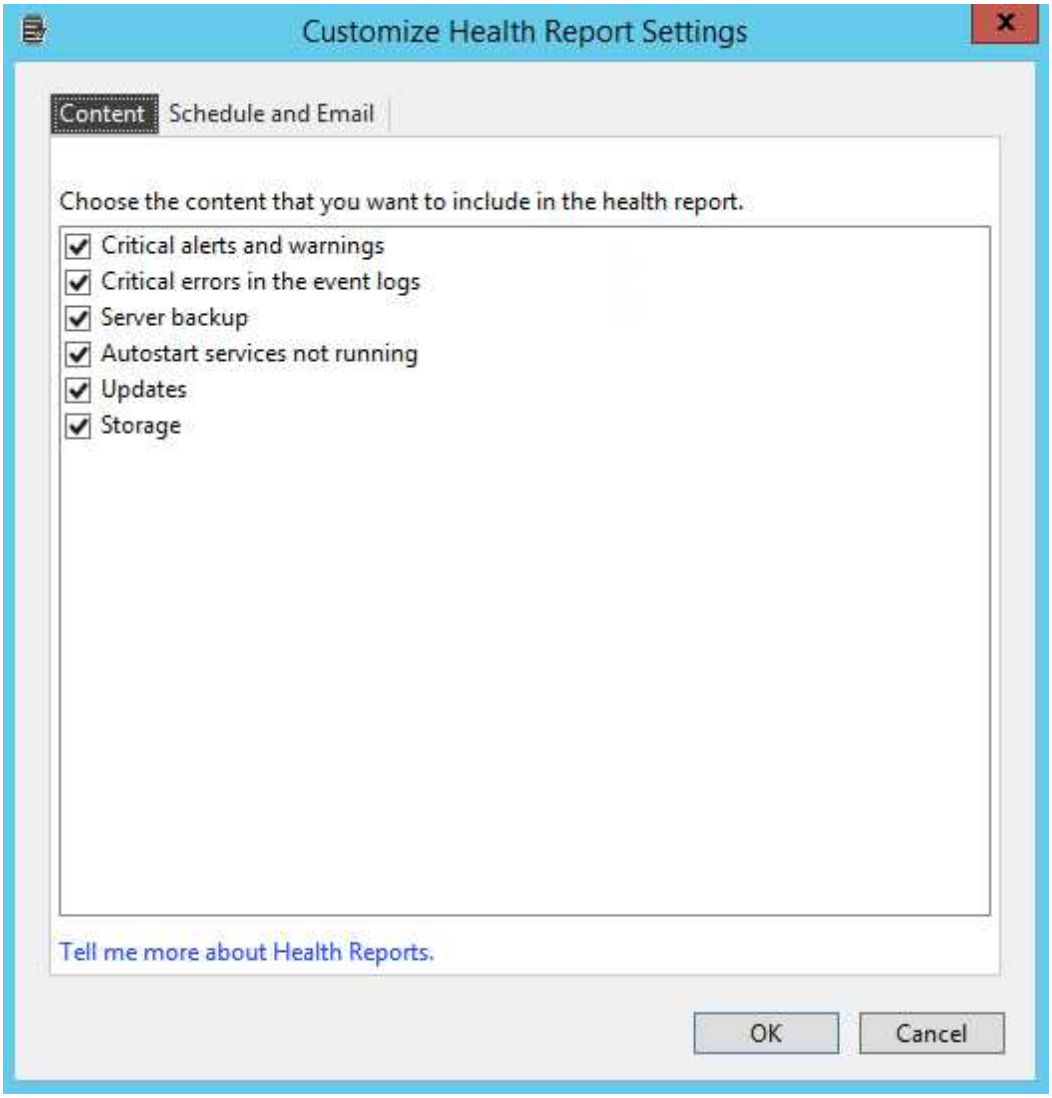
A Windows Server 2012 R2 Essentials Health Report.

If you want your reports emailed to you, then they'll look like this:



An emailed Health Report.

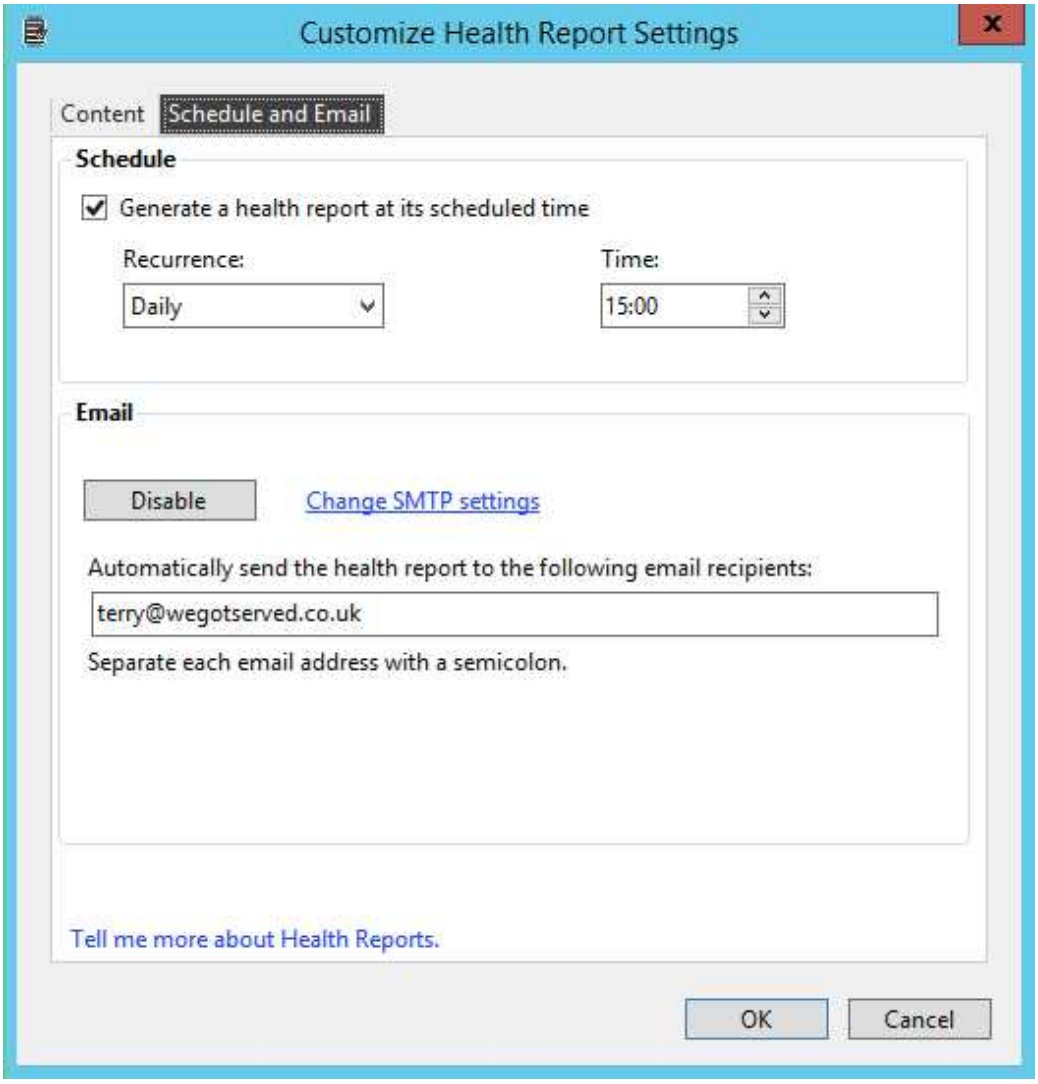
To enable email reporting, click on the **Customize health report settings** option. This brings up a window from which you customize what you want reported:



A simple check box list allows you to configure the report.

Run through the list presented, unchecking the items you don't want included in the report (everything is thrown in by default). You can select **Critical alerts and warnings, Critical errors in the event logs, Server backup notifications, Autostart services not running, Updates** and **Storage** messages.

Clicking on the **Enable** option in the **Schedule and Email** tab gives you opportunity to enter your ISP's SMTP email settings for sending the reports. As the tab name kind of gives away, you'll be able to set a scheduled time for your report to run also.

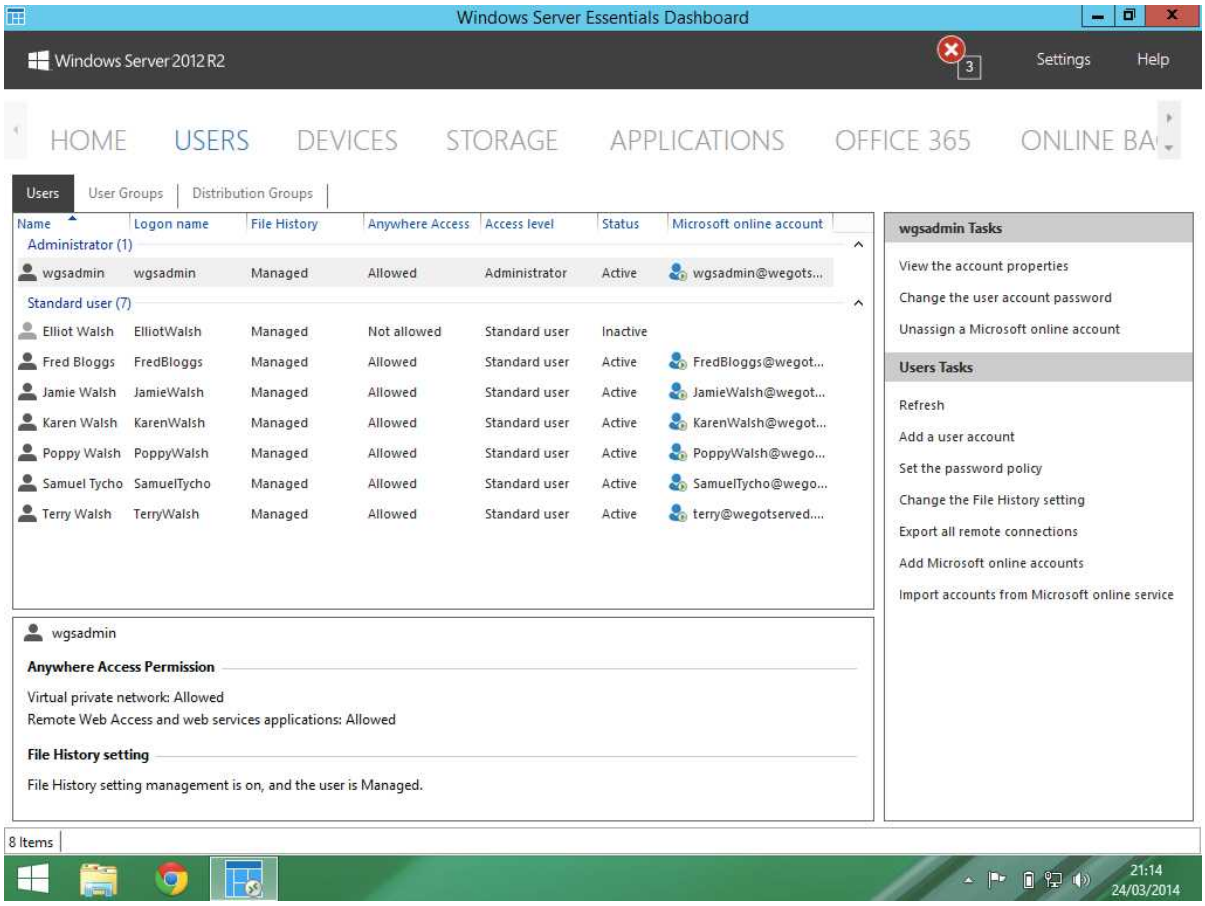


The Schedule and Email tab.

After working through the Home section as we've done in this chapter, you should consider the **Home** section an information resource to make use of as needed. But for now, let's check out the action in the other sections of the Dashboard!

Managing Users, User Groups and Accounts

"In the last chapter, we looked in some depth at the Dashboard's Home section. Once you've completed the required setup tasks, you'll rarely visit this section again. However, the Users section is a more regular visit - especially if you're running a business with frequent changes in personnel."



The Users tab.

Here we can view and manage the user accounts that have access to the server. Click the **Users** tab in the Dashboard, and you'll be presented with a now familiar list of items (this time, it's a list of accounts), a Details pane at the bottom of the screen, and a set of tasks you can perform over on

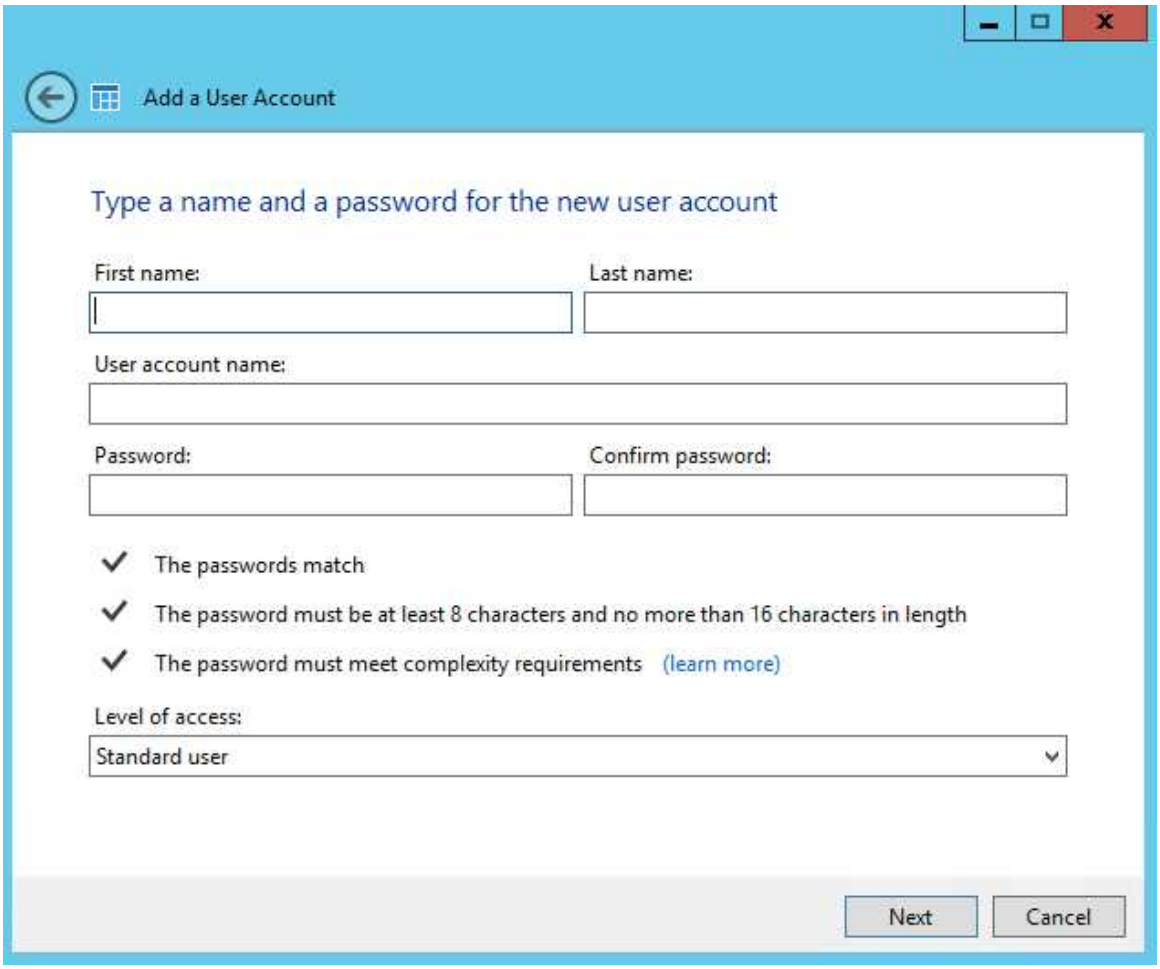
the right.

As you add user accounts to the server, you'll see each listed with their **Name**, **Logon name**, **File History** status, **Anywhere Access** status, **Access** level (Standard User or Administrator), and account **Status**.

Let's take a look first at some general tasks that can be performed by the server administrator - they're listed in the Task pane over on the right of the window in **Users Tasks**.

Adding a User

The first item is somewhat obvious. If you need to add a new user, click on the appropriate link and you will be taken through the same wizard-based process you followed when you added your original user accounts.

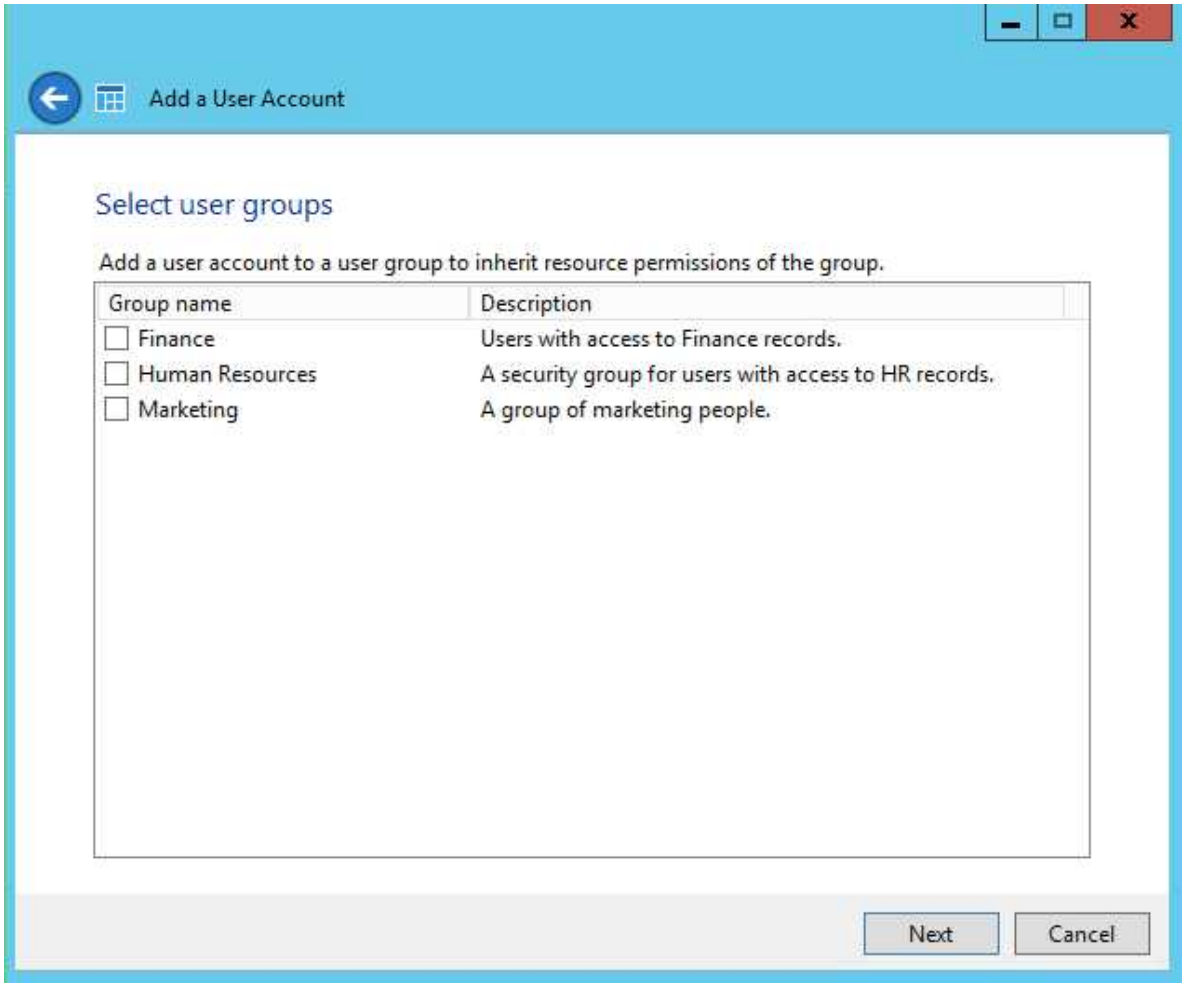


Adding a user account.

Adding a user account is really simple. Enter the user's **First** and **Last** name and you'll see that a **User account** name is automatically created - you can delete that and add a different user name should you wish. Create a **Password** for the user, following the complexity guidelines and enter it a second time for confirmation. The default is a "Strong" password (at least 7 letters, must contain at least three of the following: uppercase letters, lowercase letters, numbers and symbols) but as we'll see shortly, you have the power to determine complexity requirements via a Password Policy, depending on the level of risk you're comfortable with.

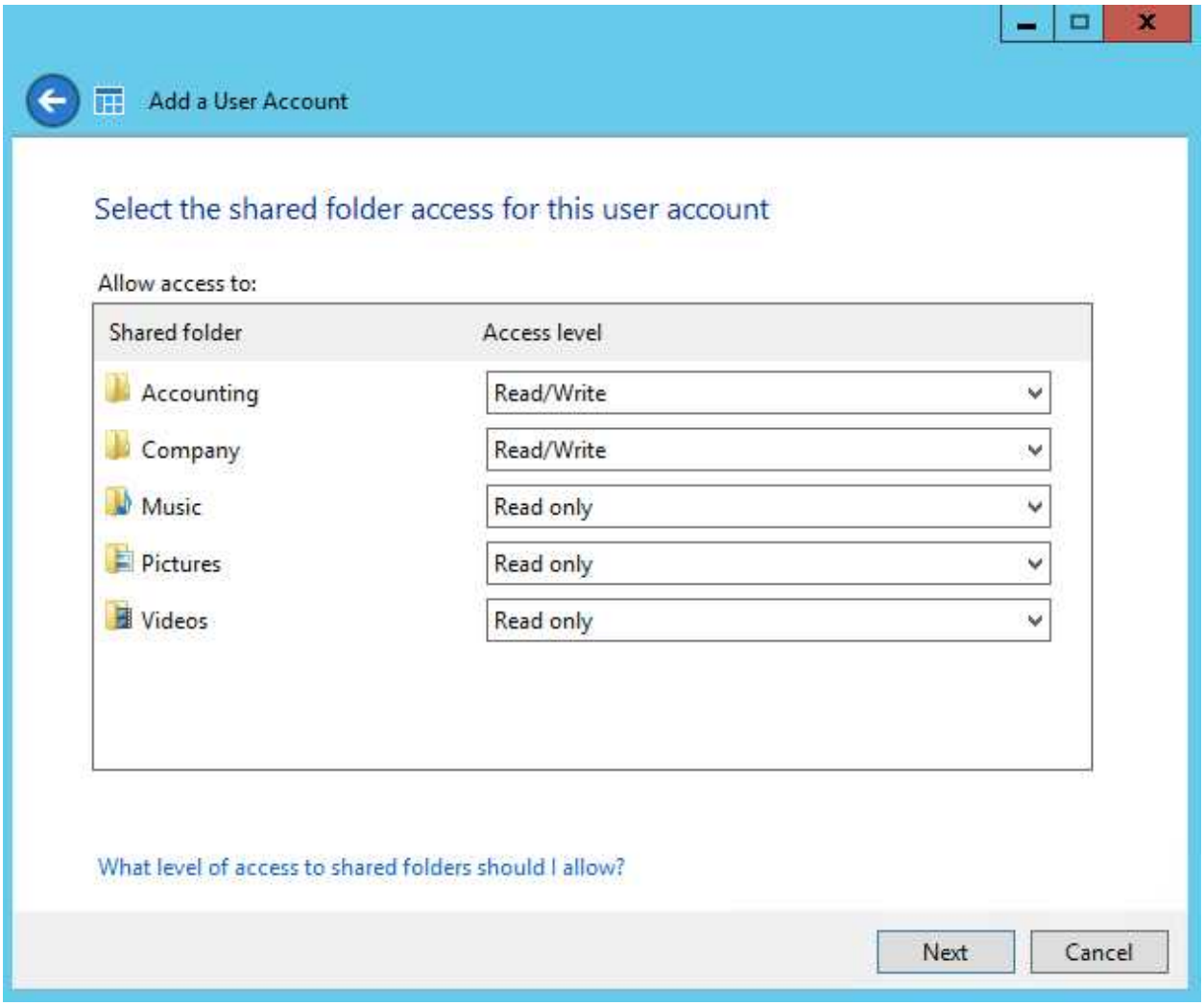
Finally, use the drop-down list to determine the level of access you wish to grant the user - clearly you'll want to restrict administrator access to those users you wish to be able to access the Server Dashboard and configure settings. You should restrict Administrator access as much as possible.

We'll walk through setting up **User Groups** shortly, but once you've entered the users personal details, password and account level and clicked **Next**, you'll be asked if you wish to allocate that user account to any groups you may have created. Check the necessary boxes and click **Next**.



Selecting user groups.

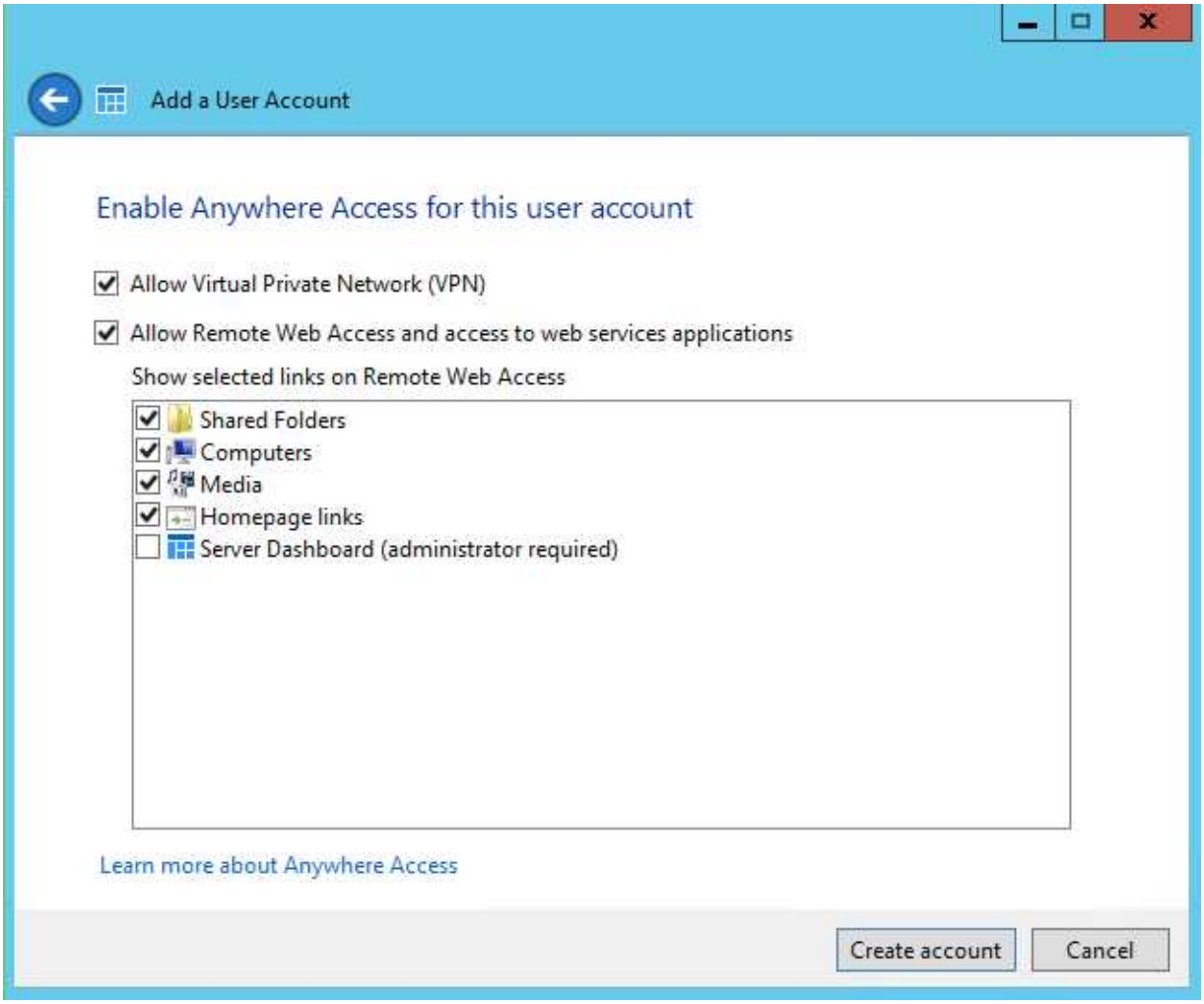
You'll now be asked to determine **Shared Folder** access for the new user. This is an important step if you hold any sensitive data on the server, such as accounting information or HR records.



Setting shared folder access.

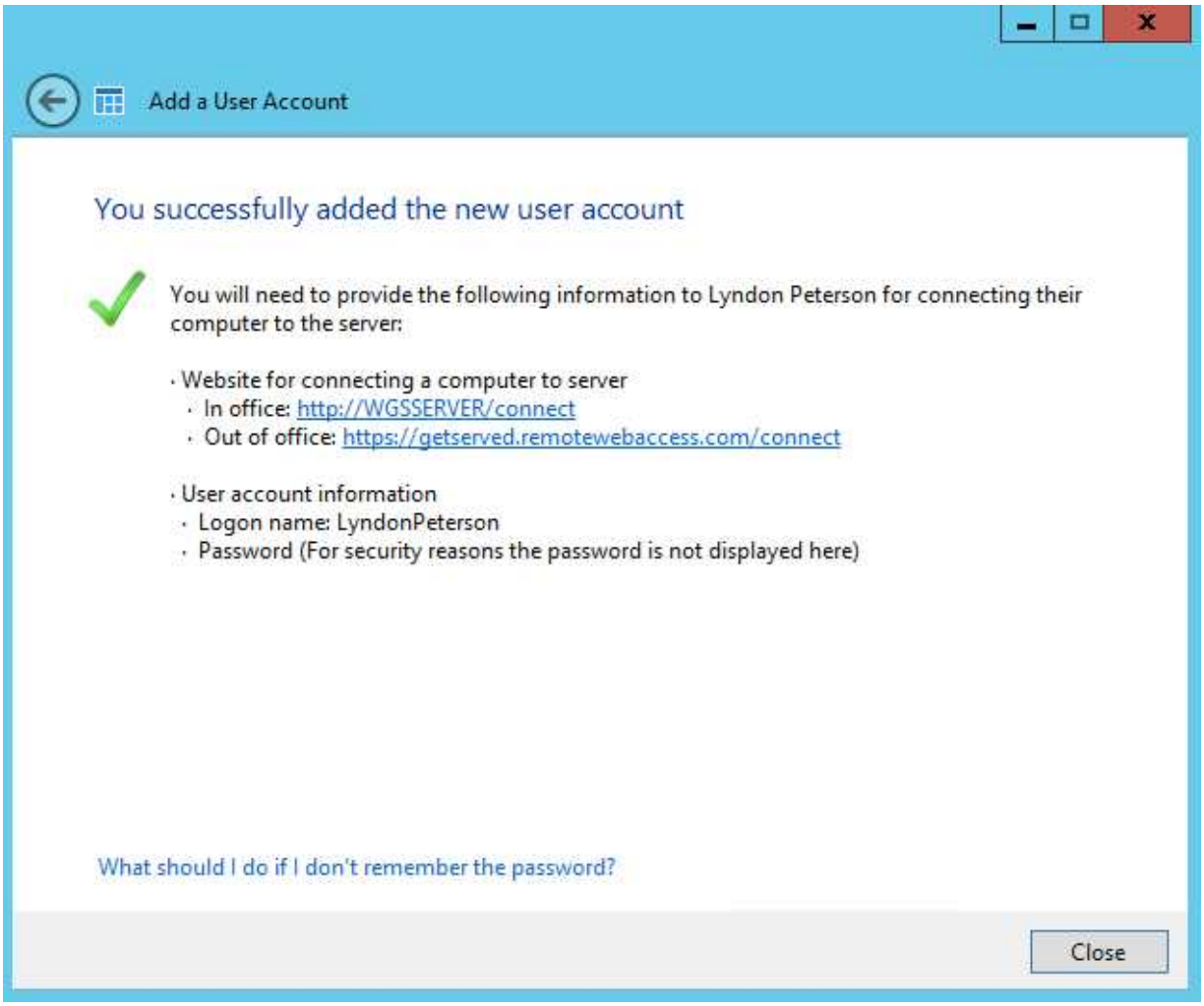
For each of your server's shared folders, you can select **No access**, **Read only** or **Read/Write**.

Next up, **Anywhere Access** settings. Again, for security purposes, you should give this one some thought. Does your user need to access the server and client PCs when out and about? Do you wish to provide the user with a VPN (Virtual Private Network) connection so they can access the server's files and folders remotely? How about Remote Web Access through the browser? Here you can configure remote access for the user with a degree of granularity, even determining which links and features are displayed in the remote website. Simply check or uncheck Shared Folders, Computers, Homepage links and Server Dashboard (which required Administrator permissions anyway) to control the remote web access experience.



Configuring Anywhere Access.

With those settings completed, hit **Create account** and you'll see the new user has now been listed in the Dashboard. Handily, a confirmation page is displayed with some important information about connecting the new user's computer to the server - whether they're in the office or outside, accessing remotely.



The new account is confirmed.

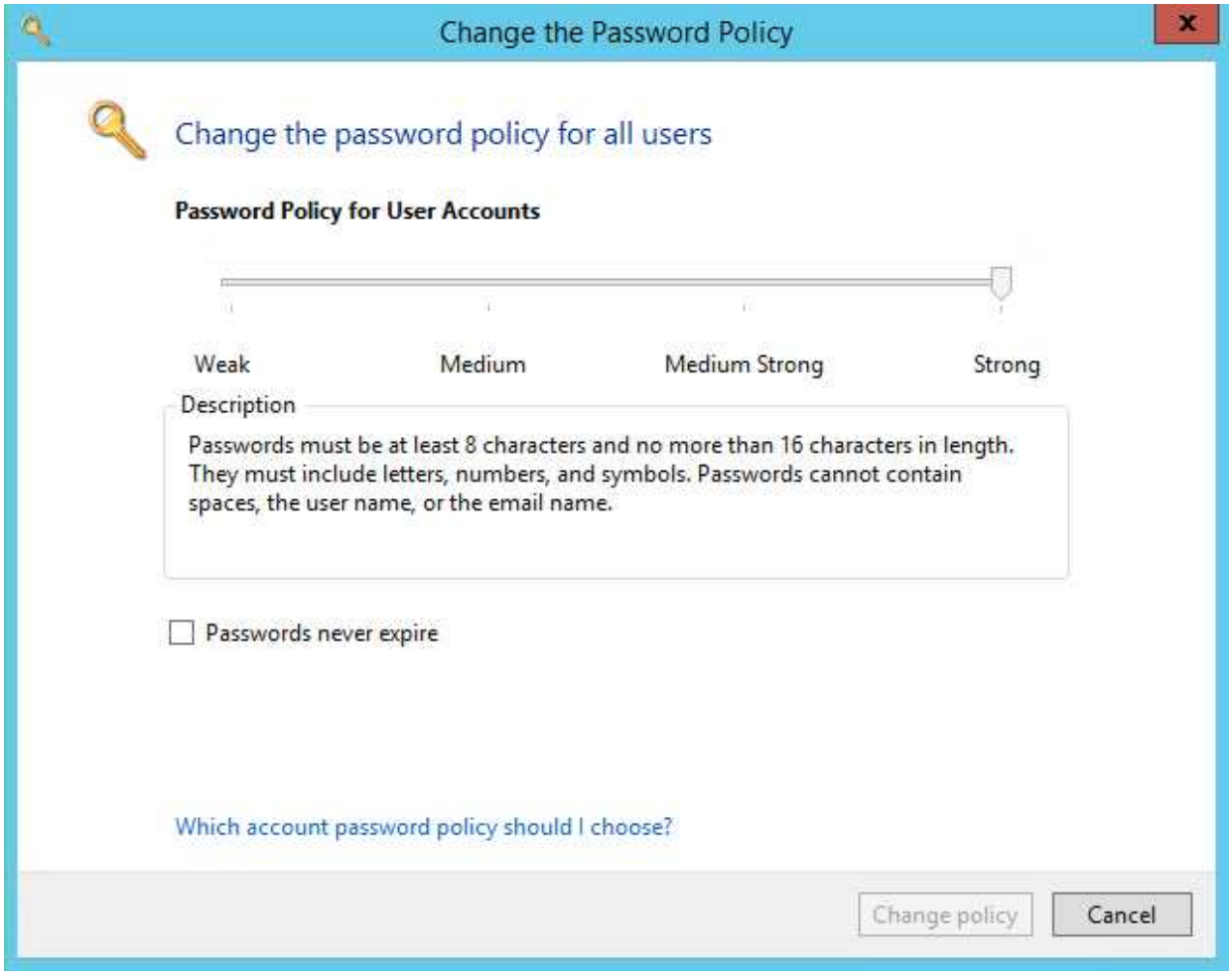
Setting the Password Policy

The next option on the task list allows you to change the password policy for your users. As mentioned earlier, the default is a "Strong" password (at least 7 letters, must contain at least three of the following: uppercase letters, lowercase letters, numbers and symbols). This is where you also determine if passwords do not expire, or if they must be changed at a minimum interval of 180 days.

Your other options:

- **Medium Strong** - at least 5 letters, must contain at least three of the following: uppercase letters, lowercase letters, numbers and symbols)

- **Medium** - at least 5 letters. Complex passwords not required.
- **Weak** - any non-blank password is accepted.



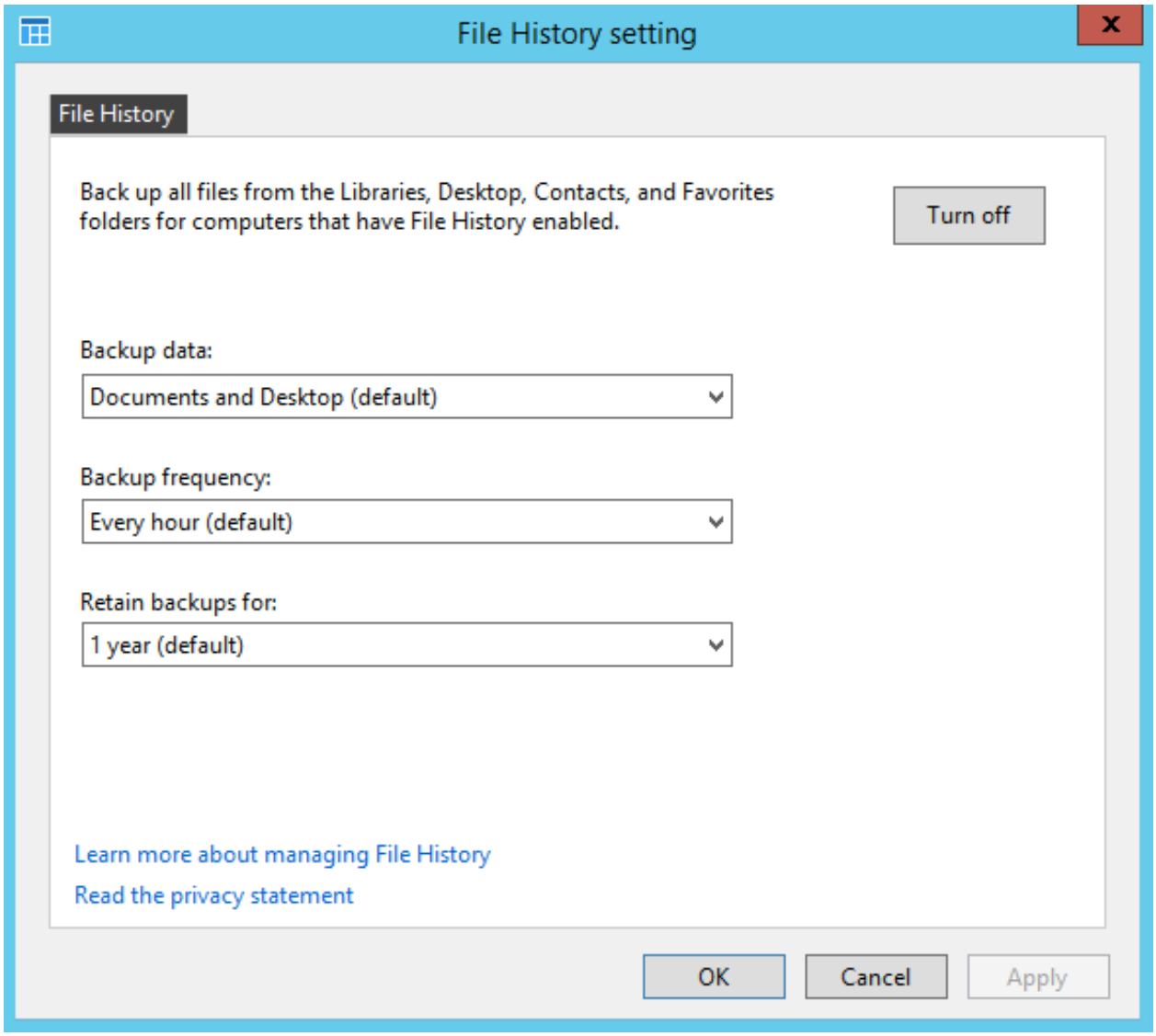
Changing the password policy.

Changing File History Settings

File History is a recent feature developed by Microsoft in Windows 8 which backs up users' **Libraries**, **Contacts**, **Desktop** and **Favorites**. File History settings can be managed from the Dashboard - although in this release, settings have moved from the Devices tab across into Users.

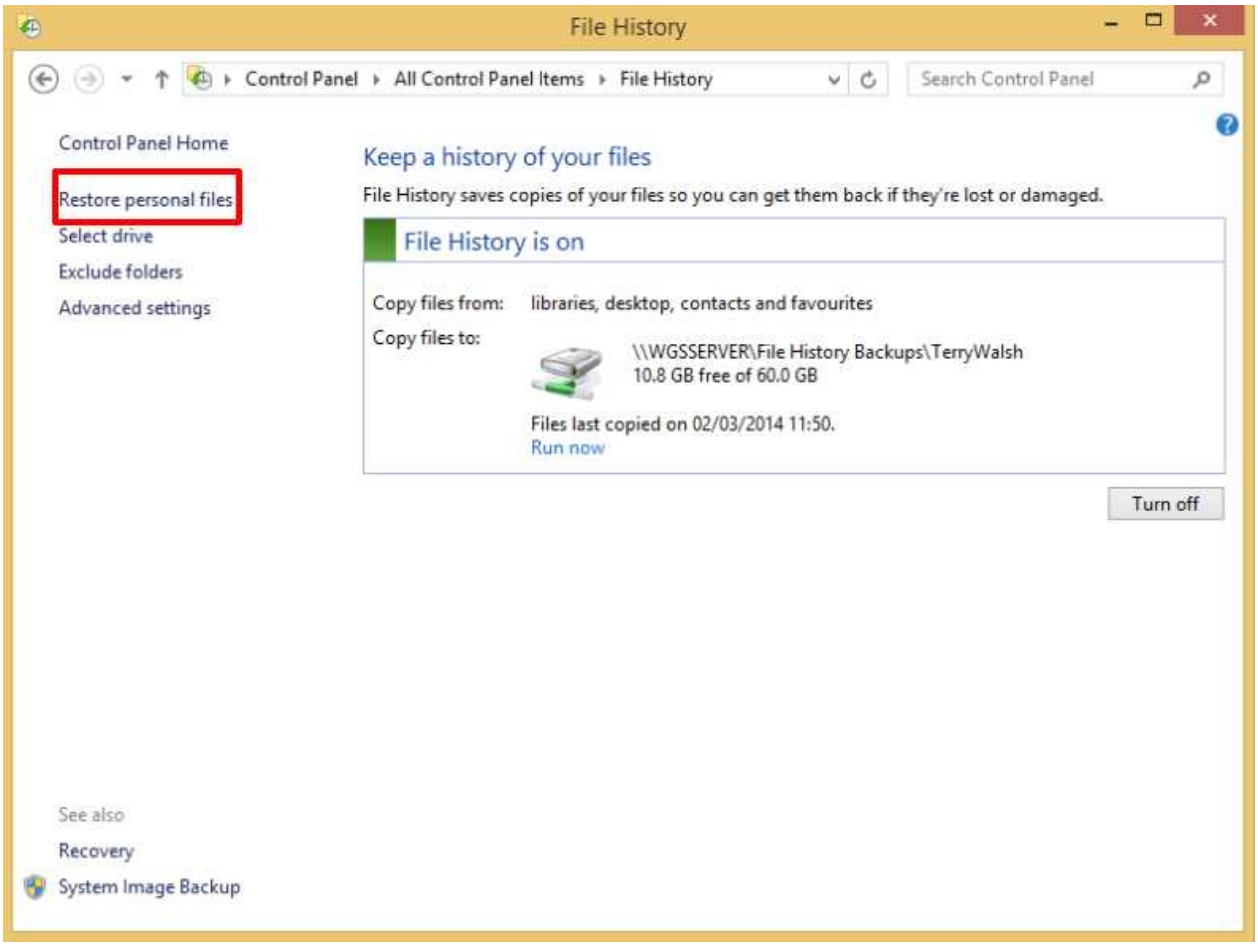
You cannot perform a bare metal restore with File History. The advantage over a full computer back-up is that the File History scans the file system for changes on a more frequent basis which in turn means that File History builds a more complete history of changes made to any individual file.

For Windows 8 clients connected to the Essentials server, File History is automatically turned on. The data on the Desktop and in the Documents folder is backed up on an hourly basis, with the backup being stored on the server for a year. In the tab above, you can change this setting as desired. In addition, you can change what data is backed up as indicated below.



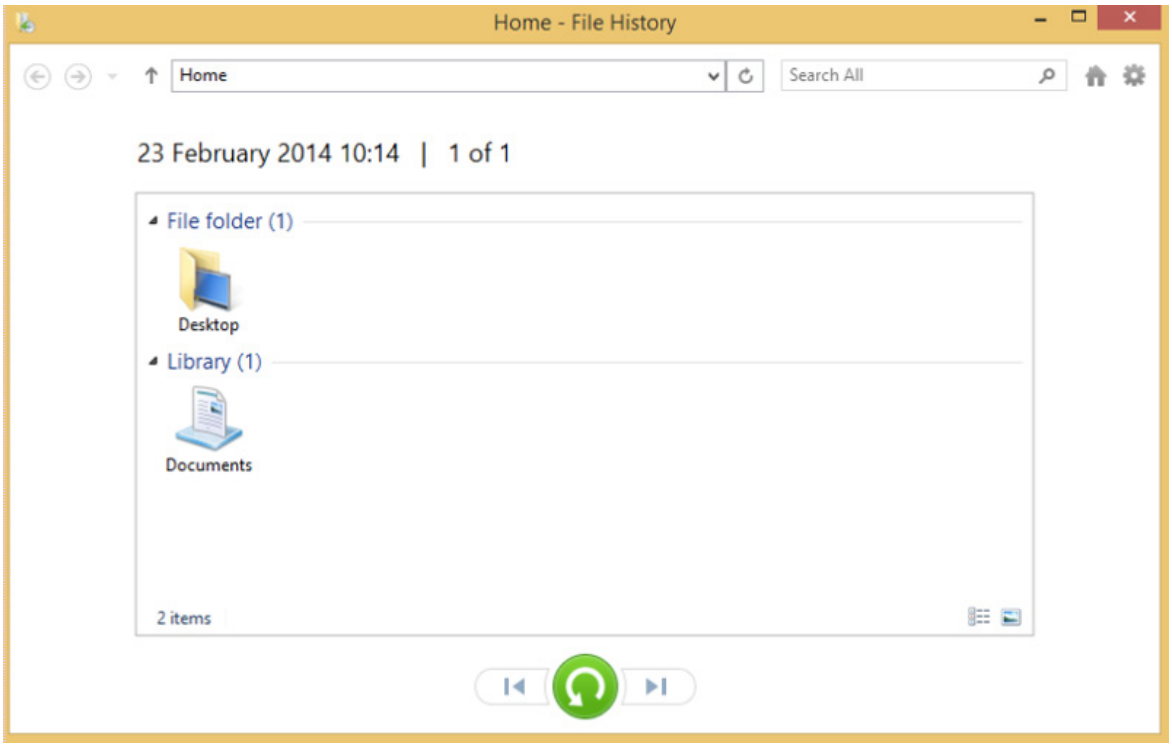
Changing File History settings.

What does all this mean to you? If you are a user on a Windows 8/8.11 client machine, and you just overwrote a very important file, you can retrieve the previous version by opening the **Control Panel**, click on **File History**, and click on **Restore personal files**.



File History on Windows 8.1

The following dialog opens from which you can bore down to the exact version of the file you are looking for.



Locating your backed up file.

Simply use the |< and >| icons to find the version you need and click on the green circular arrow to restore the file.

With a domain account, unlike a local account, these items "travel" with the user from PC to PC, so it makes sense to be able to manage File History Settings from the Dashboard. If your original files are lost, damaged or deleted, you can restore them. You can also browse and restore different versions of your files. For example, if you want to restore an older version of a file, you can browse through a timeline, select the version you want, and restore it. Think of File History as the Windows equivalent of Apple's Time Machine, and you won't be too far away.

It can sometimes be a little confusing to figure out which Windows backup feature is protecting which data on your PCs. Just remember that File History backs up a user's profile data, whilst Windows Server 2012 R2 Essentials' client computer backup protects **all** the data (including apps) on the client computer. Standard users can restore files from the File History backup directly without the administrator's help.

Back in the File History settings dialog that appears when you click the relevant link, you'll notice a button which allows you to enable or disable File History, and three drop-downs which tailor how it works. The first drop-down, Backup data, controls what data is backed up by File History. You can

choose the default **Documents and Desktop** option, **All profile data except media libraries** and **All Libraries, Desktop, Contacts and Favorites.** Your choice should be governed principally by the number of users you have and therefore the amount of storage you'll require to backup all of this data on the server.

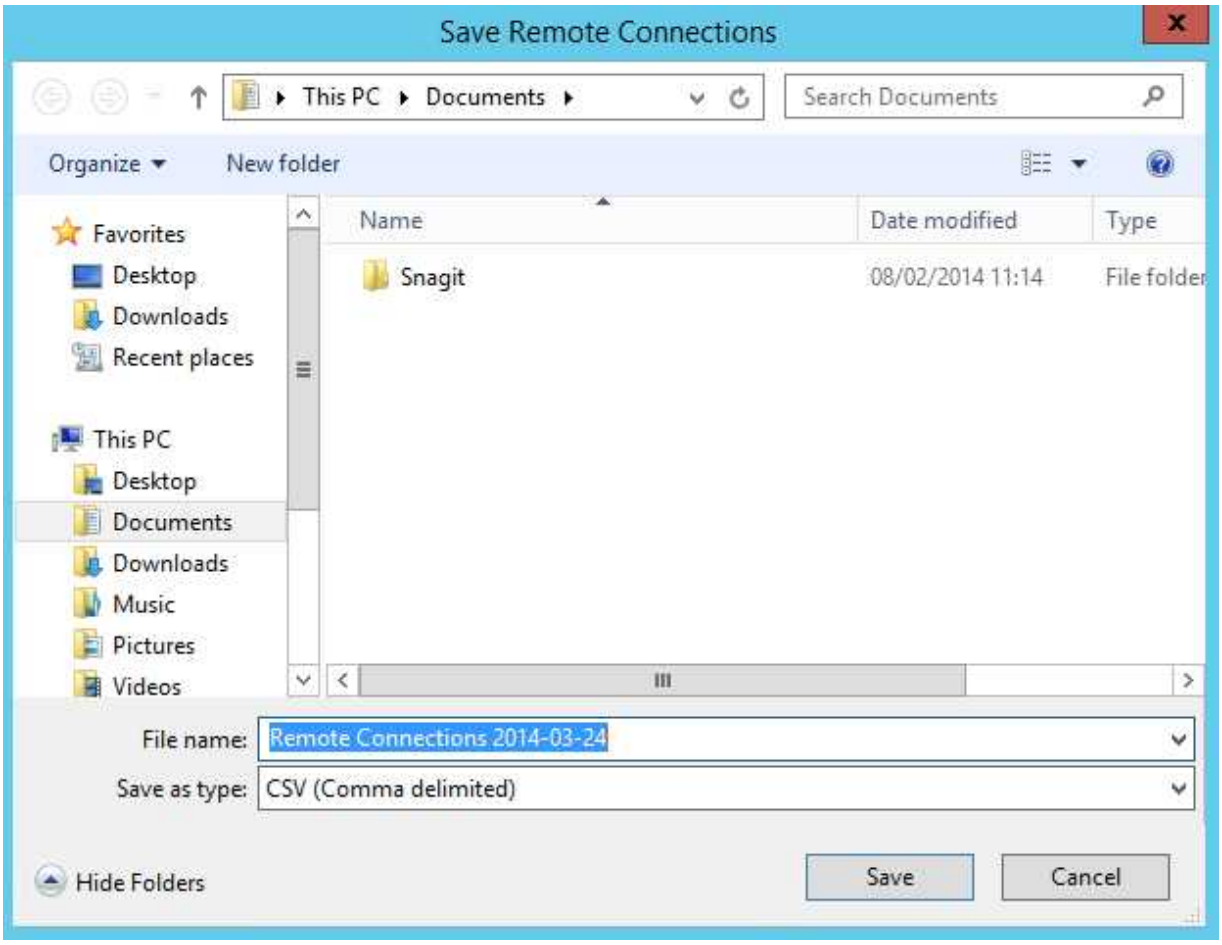
In **Backup frequency**, you can choose how often File History backups are made. The shortest time available is every 10 minutes - that extends up to a once daily backup.

Finally, the third drop-down governs how long backups are kept - the default saves your backups for a year, but you can choose to delete backups automatically when you need more space, all the way up to Forever, which will never delete your backups.

Make you selections and click **OK**.

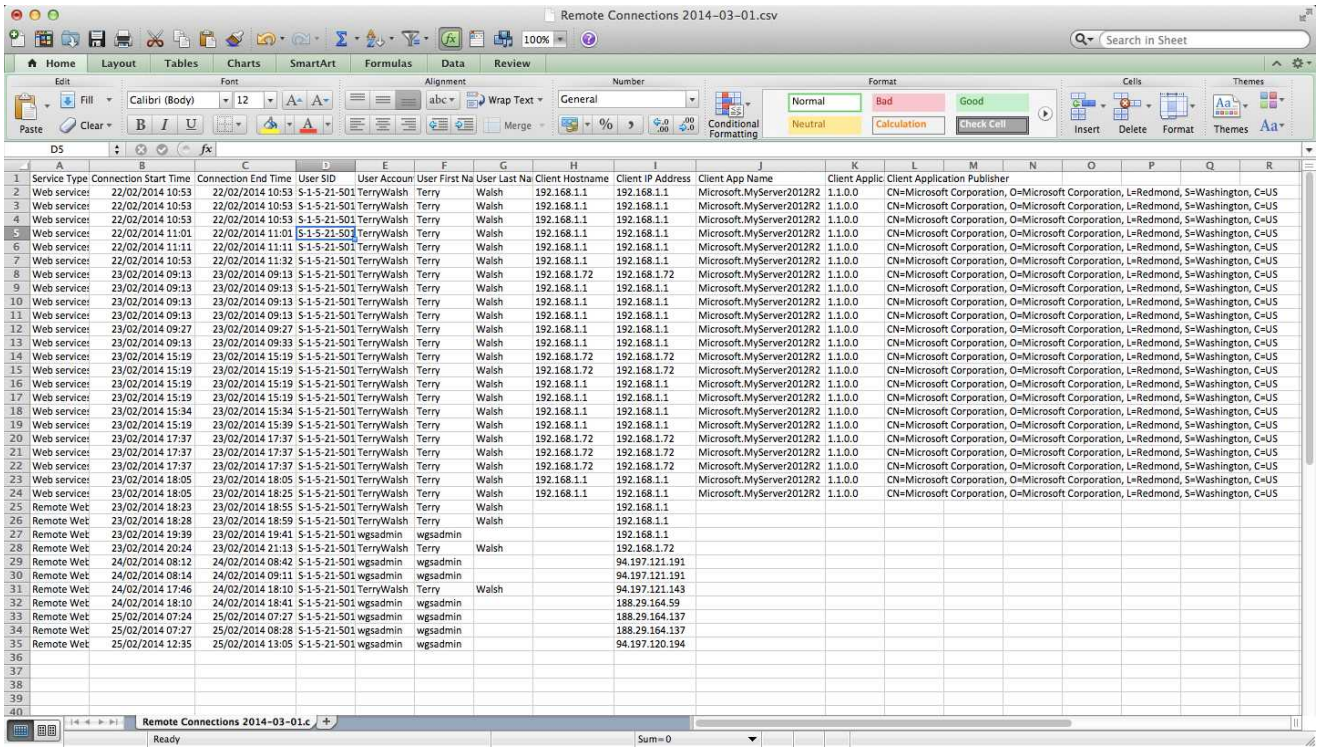
Exporting Remote Connections

The last item on the Users Tasks list is "**Export all remote connections**". Clicking on this item allows you to create a .CSV-format file of all remote connections to the server that have occurred over the past 30 days.



You'll need a spreadsheet application like Excel to view the CSV file.

You can then open this file in Excel to see who has been accessing your server from a remote location and how often.

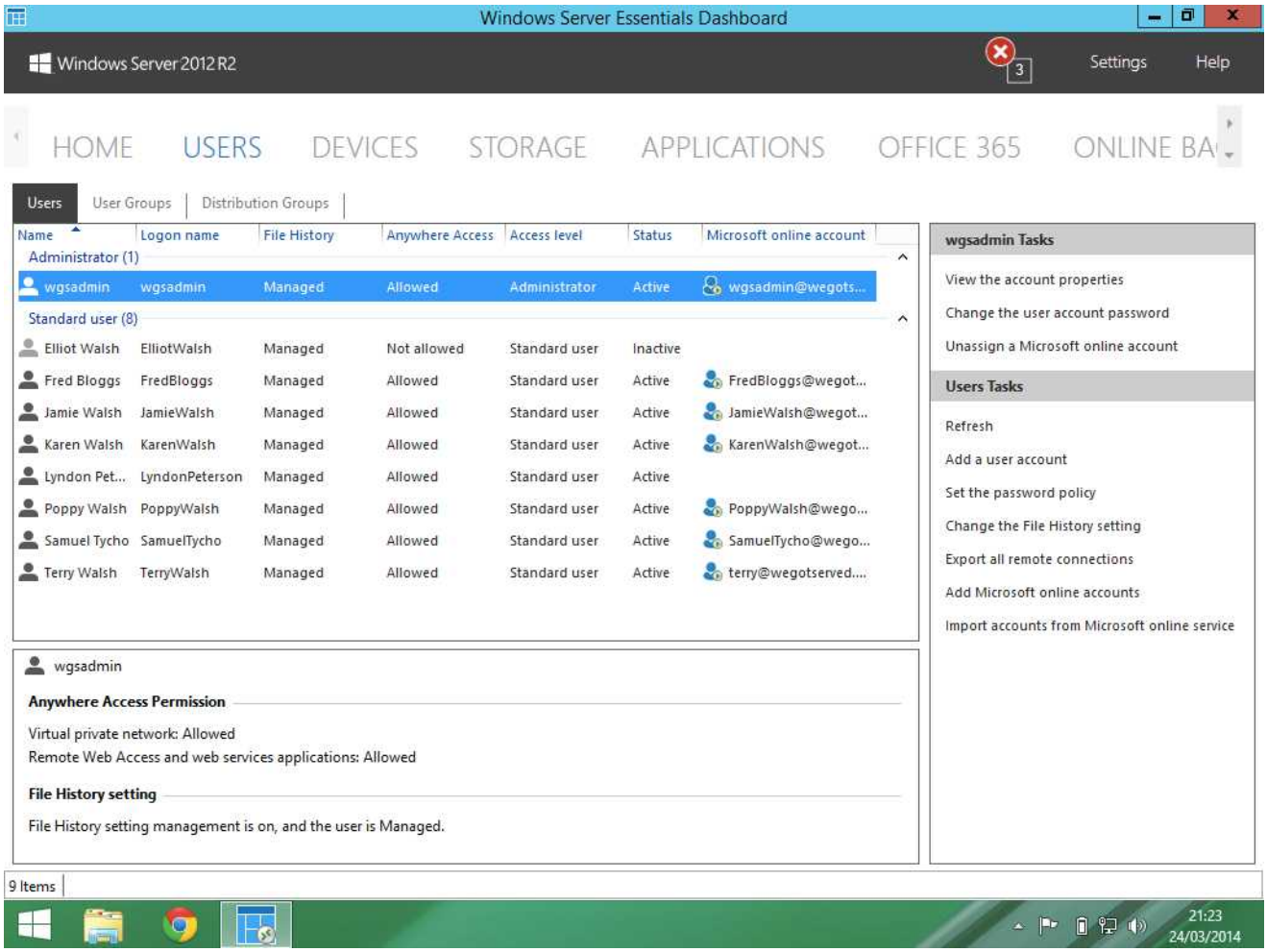


The Remote Connections log file.

The log file provides details of each remote connection made to the server, including the Service Type, Connection Start Time and End Time, User Account name, User's First and Last names, the Client Hostname and IP Address, The Client App Name, Application Version and Publisher - it's detailed!

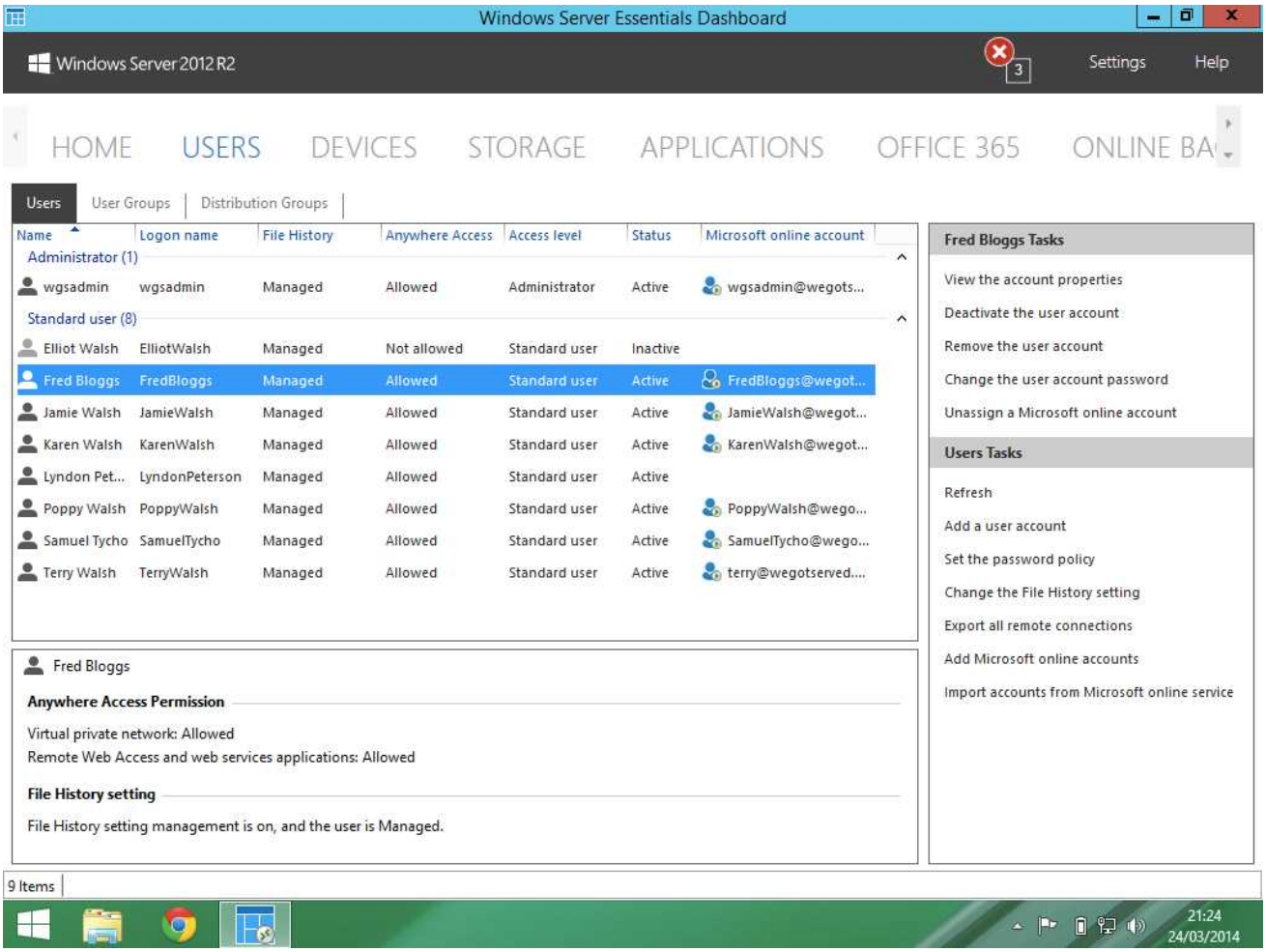
Deleting and Deactivating User Accounts

Moving on to the individual account tasks, we have specific tasks that can be performed on Administrator accounts:



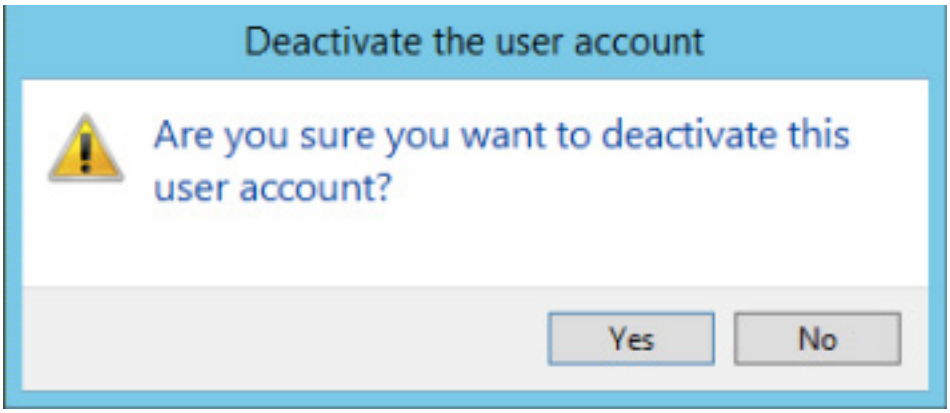
Administrator account tasks.

and tasks that can be performed on Standard users.



Standard account tasks.

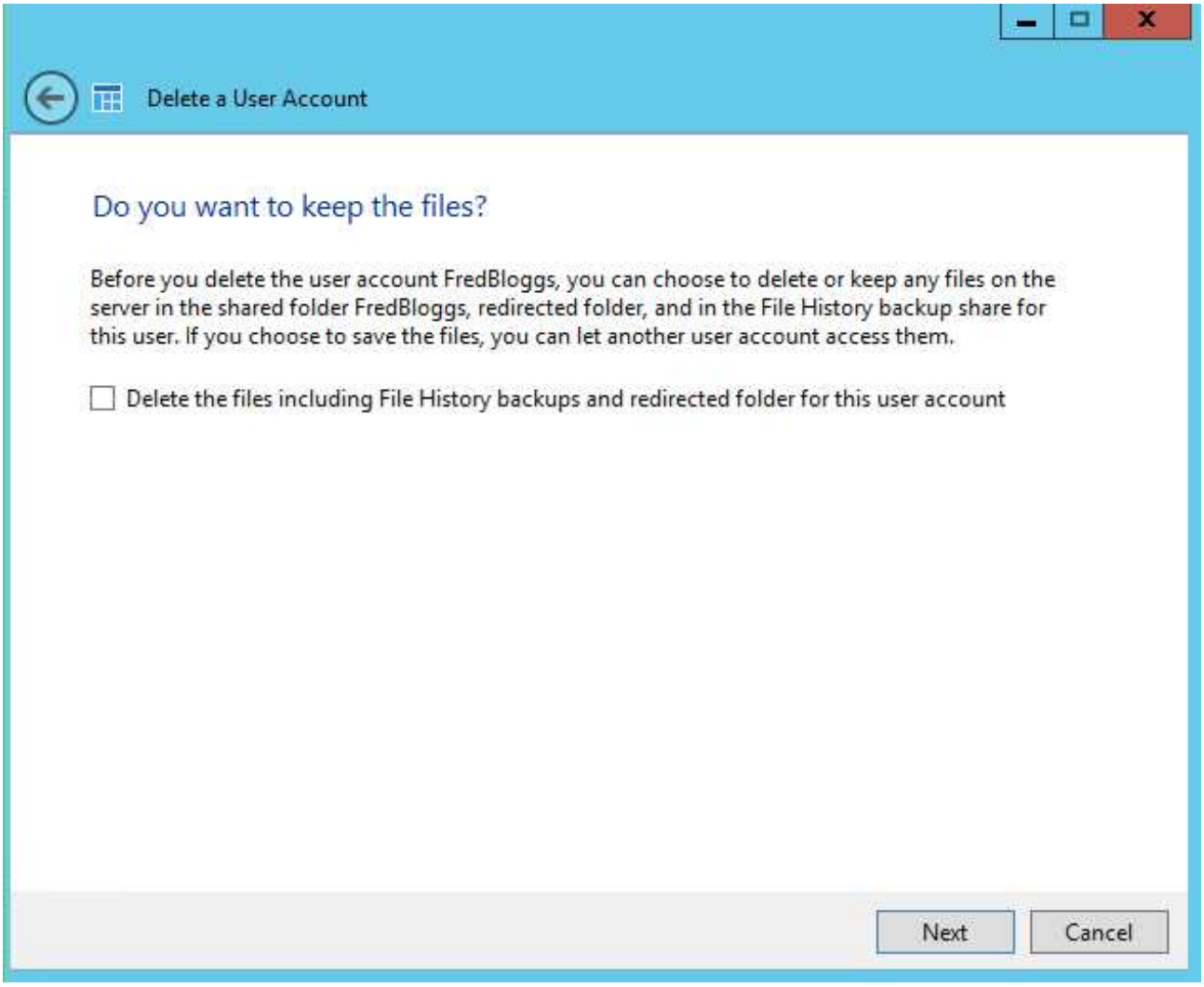
The key difference? Administrator accounts cannot be deactivated or removed, while standard accounts can be.



Deactivating a standard account.

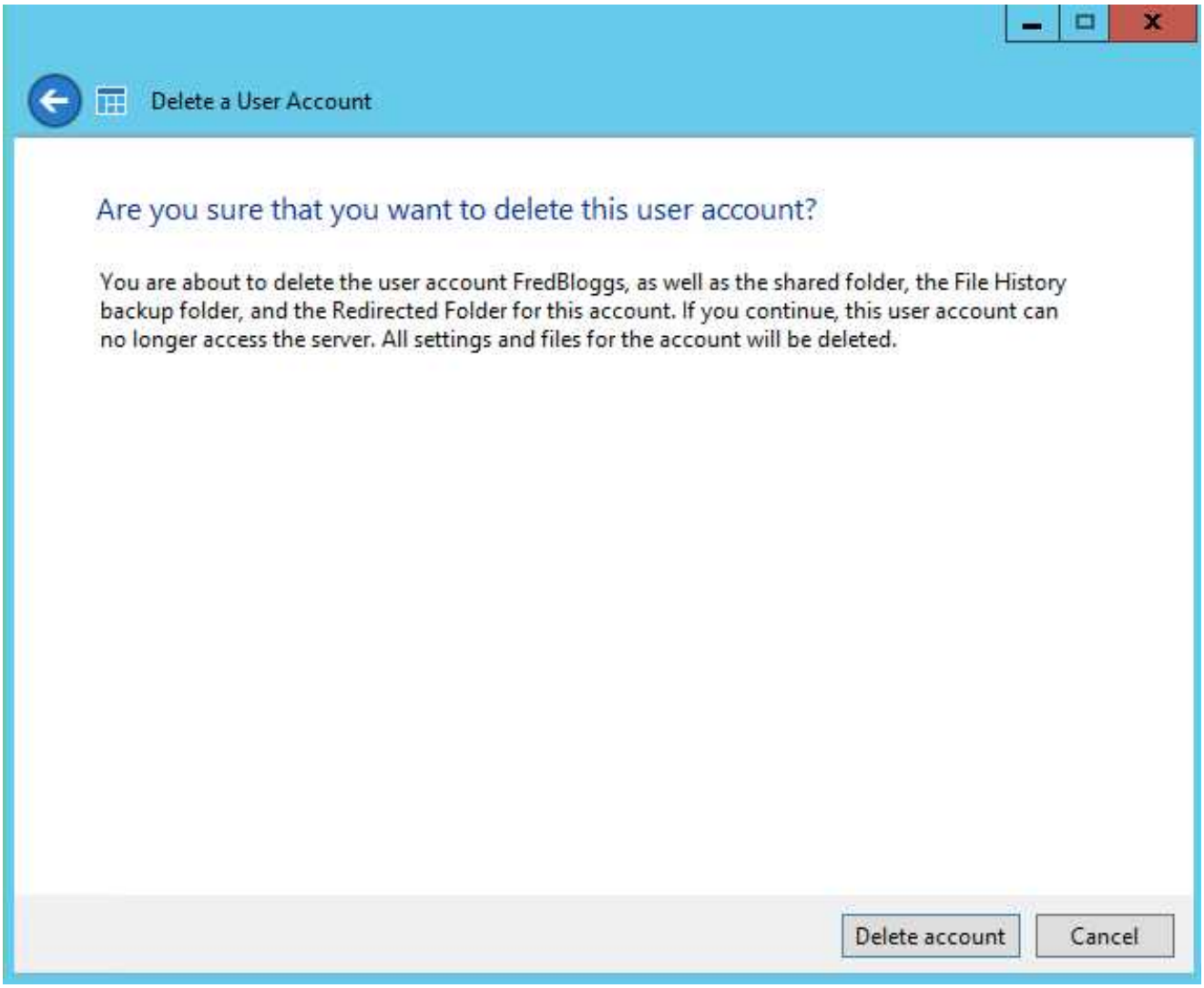
If you deactivate a user's account, their files will be automatically preserved, ready for a point in time when you may wish to reactivate the account. As you'd expect, you can activate the account from the user task pane.

When it comes to deleting accounts, you're given the option to delete or keep the user's files, including data stored in the user's shared folder, redirected folder and File History backups.



Deleting user files.

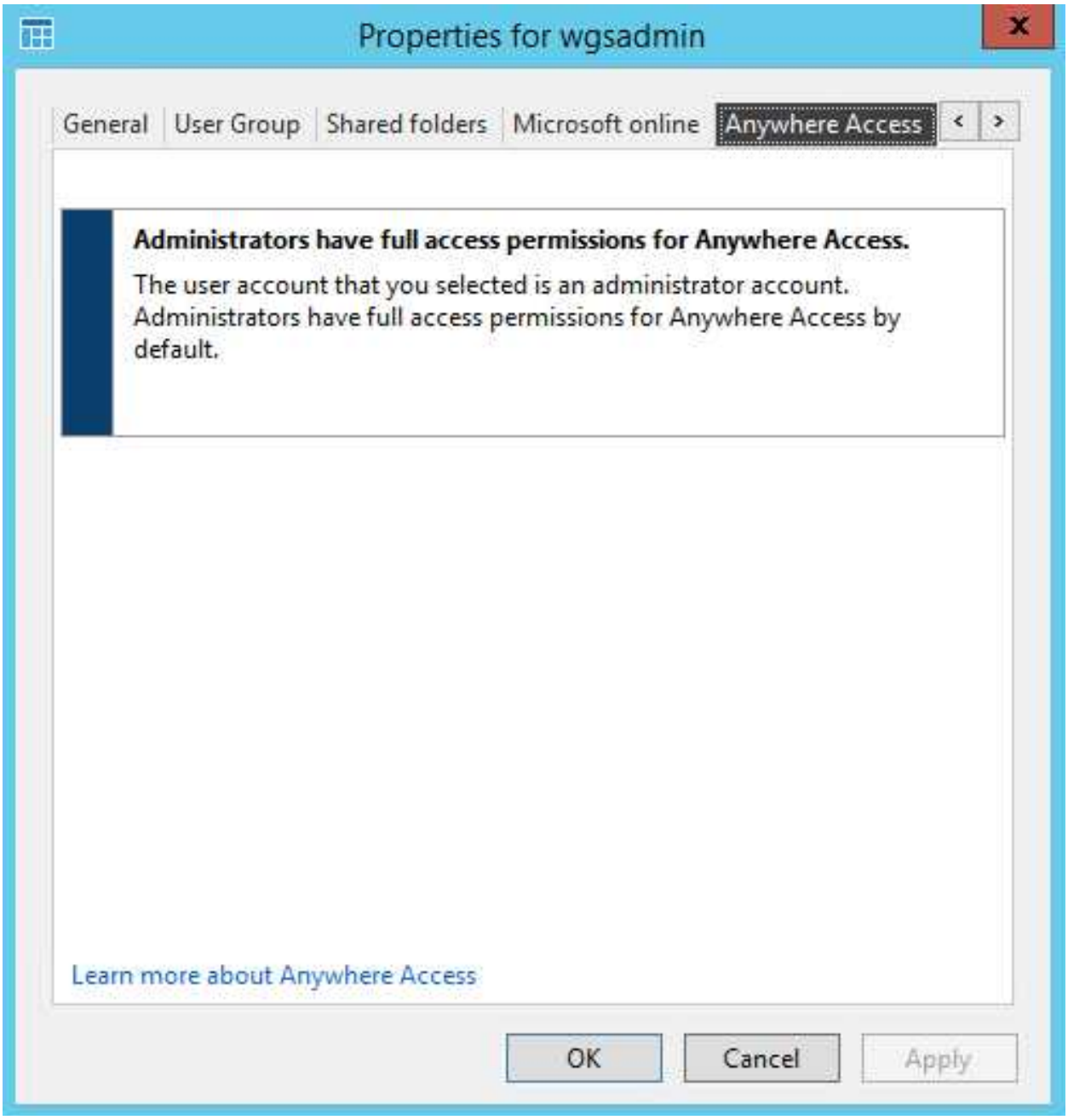
Simply check the option to delete the files and click **Next**. You'll be asked to confirm the account deletion before the server complies with your request.



Confirming account deletion.

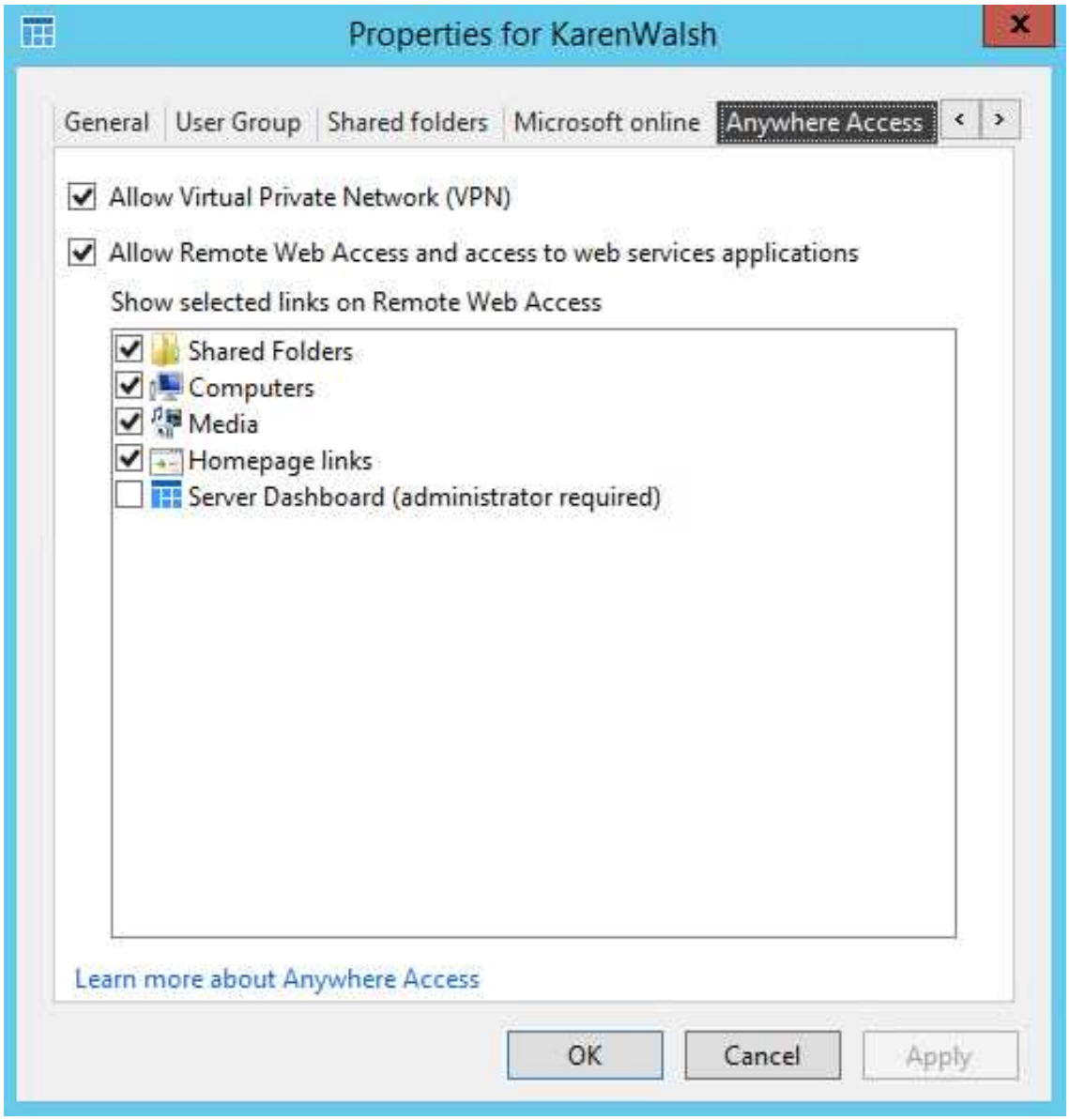
Viewing and Managing User Account Properties

Another perk of owning an administrator account is that you have full access to all shared folders, full Anywhere Access, and access to all client computers by default. You can also click the **View the account properties** task to sneak a peek at each user account's settings.



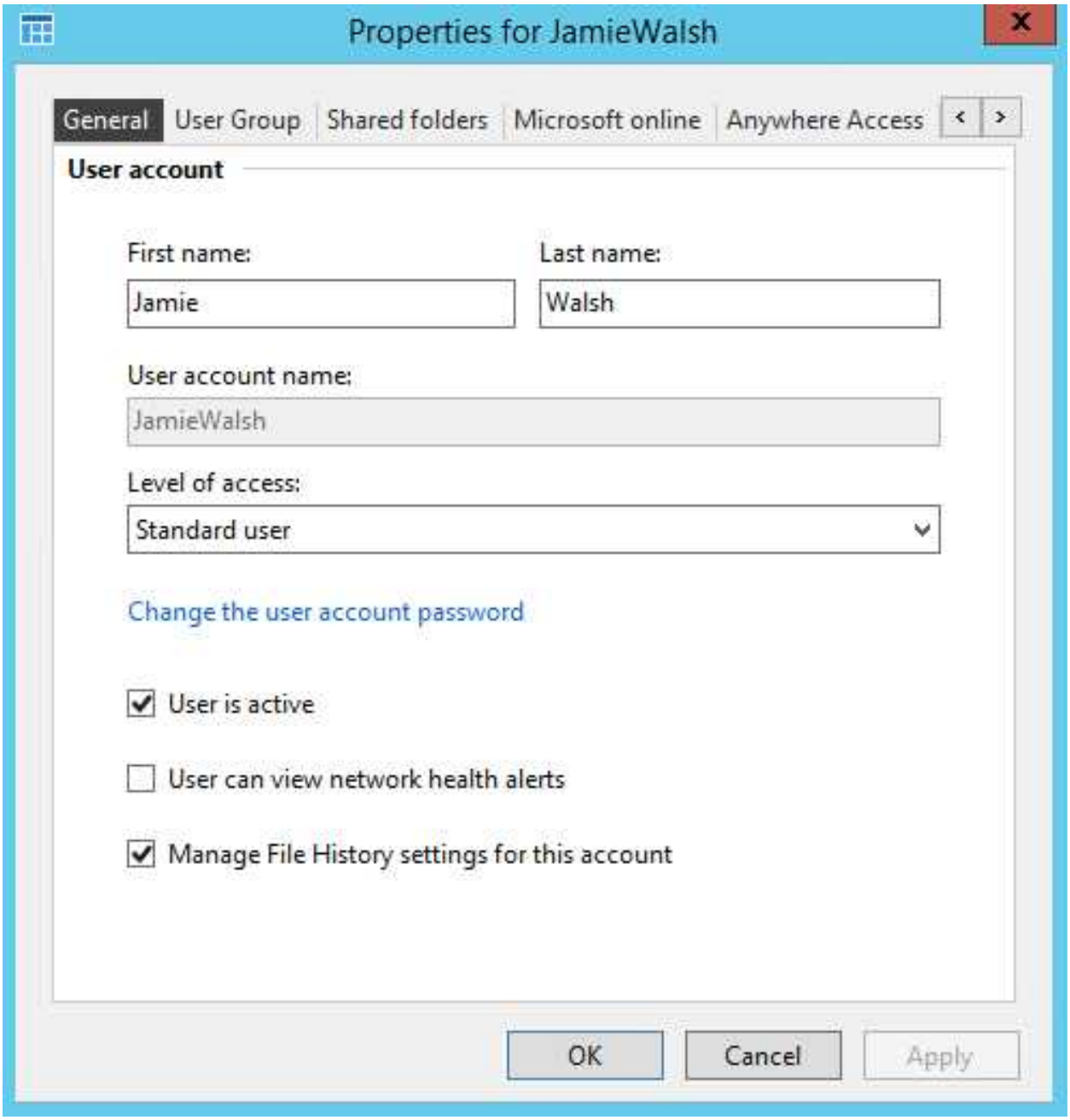
Administrator account properties - you have full Anywhere Access permissions.

By contrast, standard users do not unless they are given explicit permission.



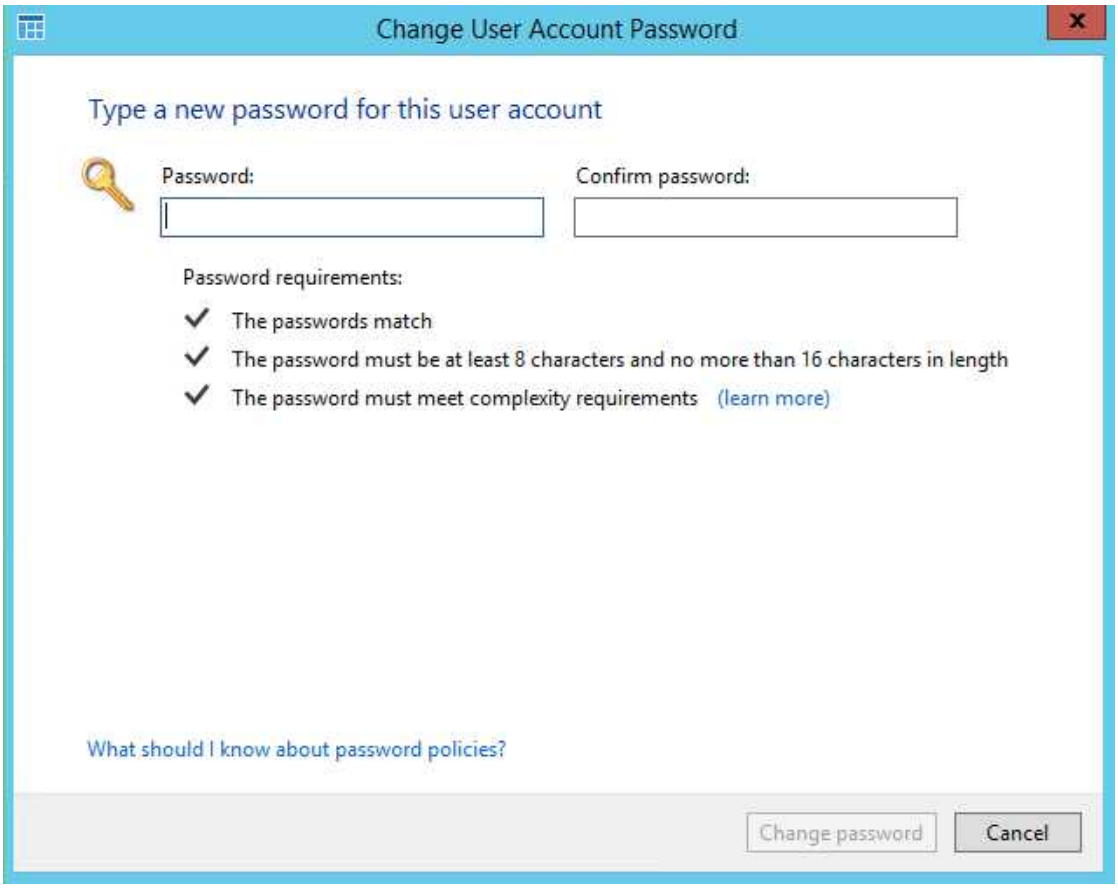
Standard user account properties are configurable.

The User Account Properties dialog is a useful area for checking and configuring your user accounts once they've been set up. The dialog is split into five tabs, each of which control a specific element of the account.



General settings.

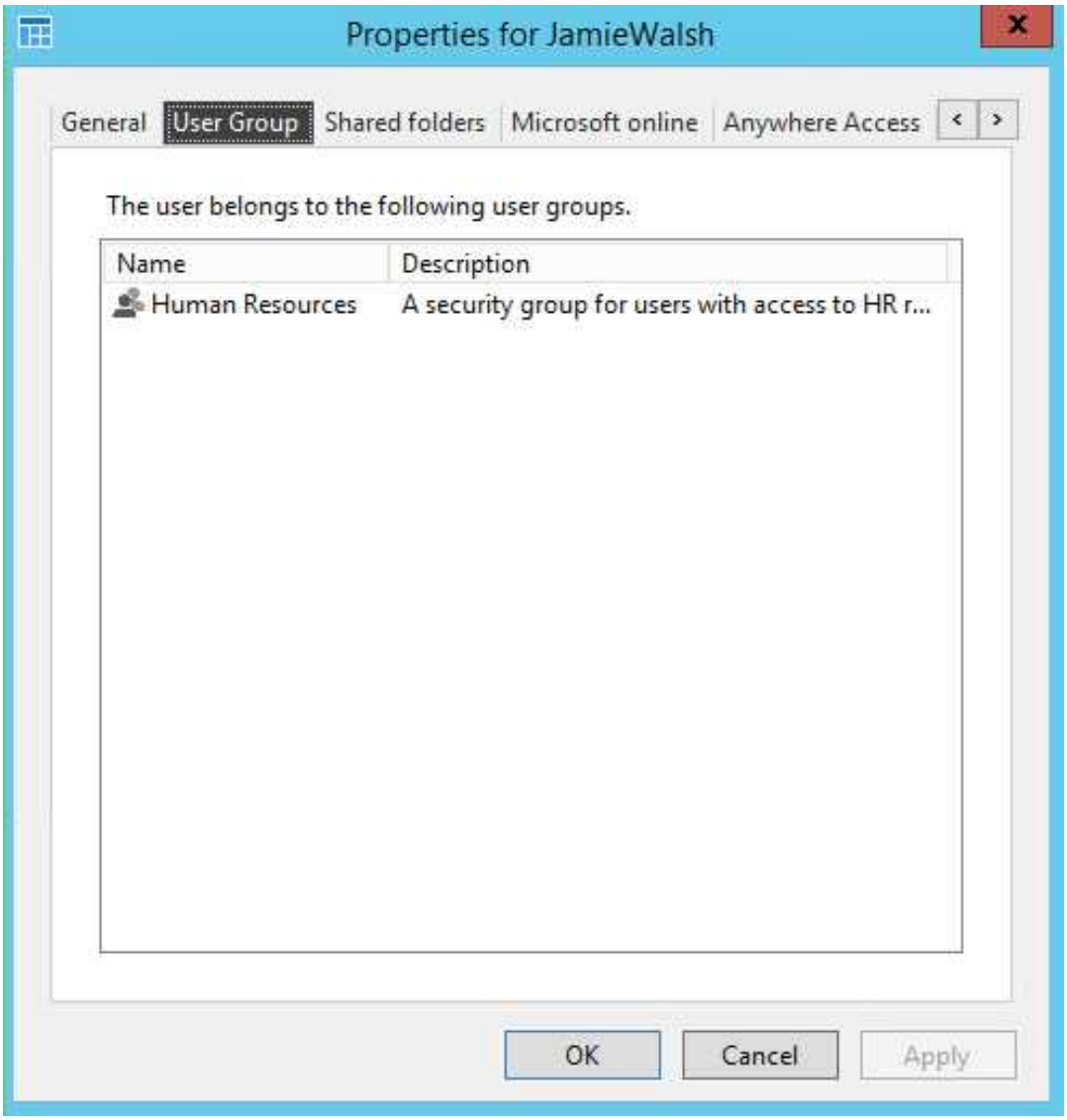
General settings allow you to change the user's First and Last name (although the user name is not changeable), switch standard accounts to administrator accounts and change the account password (this latter task is also available from the Task pane).



Changing the account password.

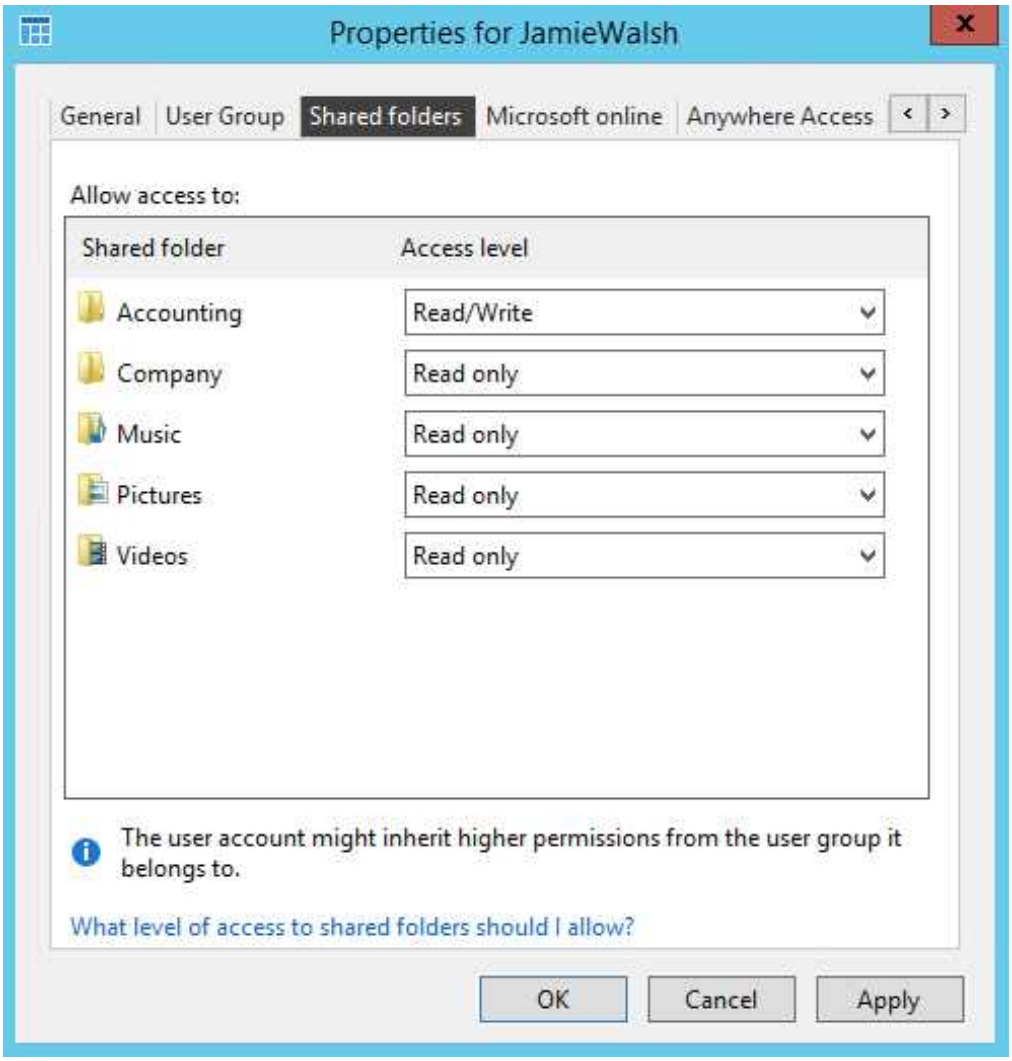
Checkboxes at the bottom of the dialog allow you to activate or deactivate the account, allow access to network health alerts and choose to manage File History settings for the account.

The **User Group** tab lets you see what groups the account belongs to, although there are no controls here for changing user account membership.



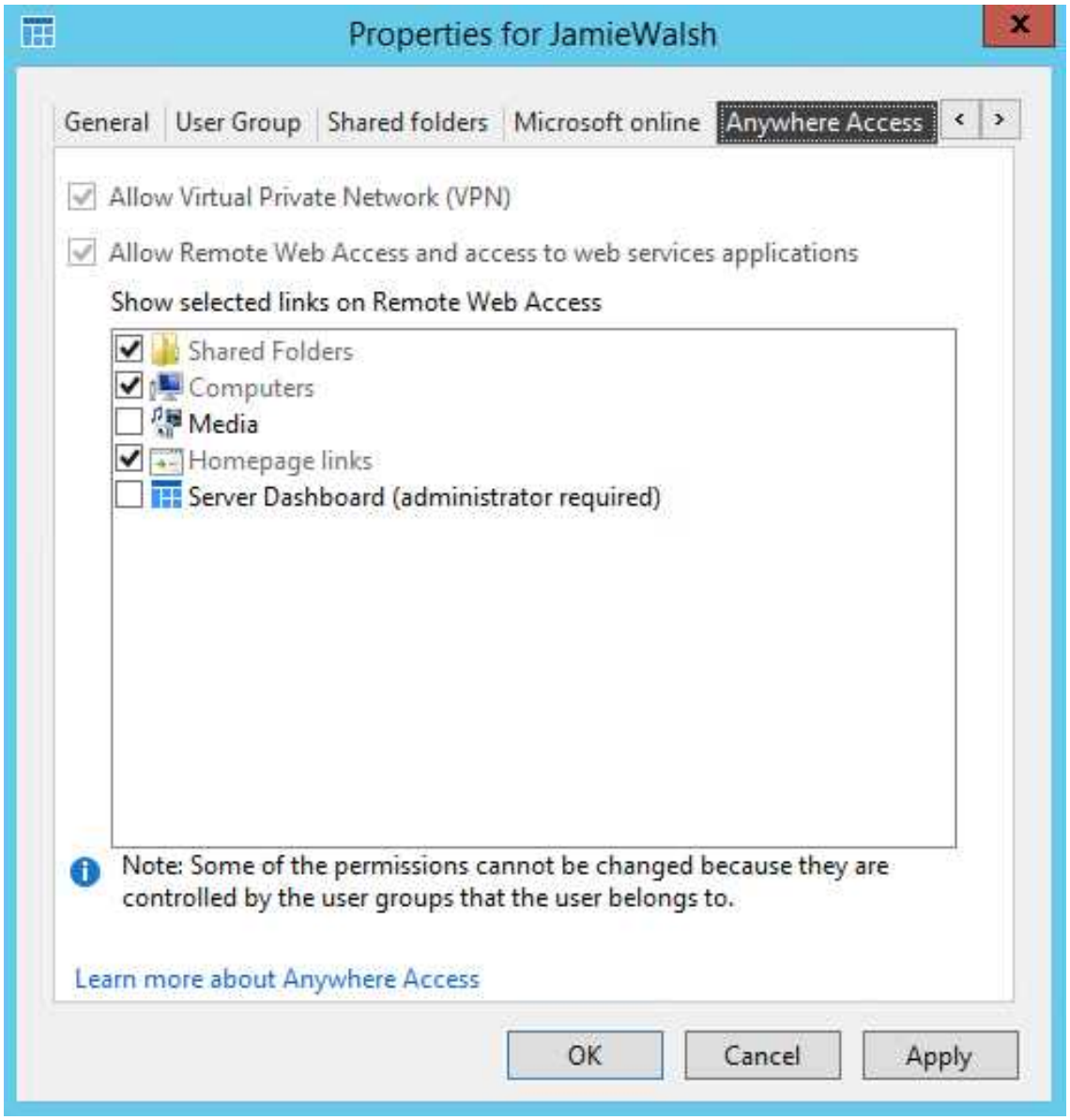
The User Group tab.

Shared folder properties can also be viewed in the tab of the same name. You're not able to share additional folders here, but you can configure the level of access granted to each user for the server's shared folders - Read/Write, Read only and No access are all available.



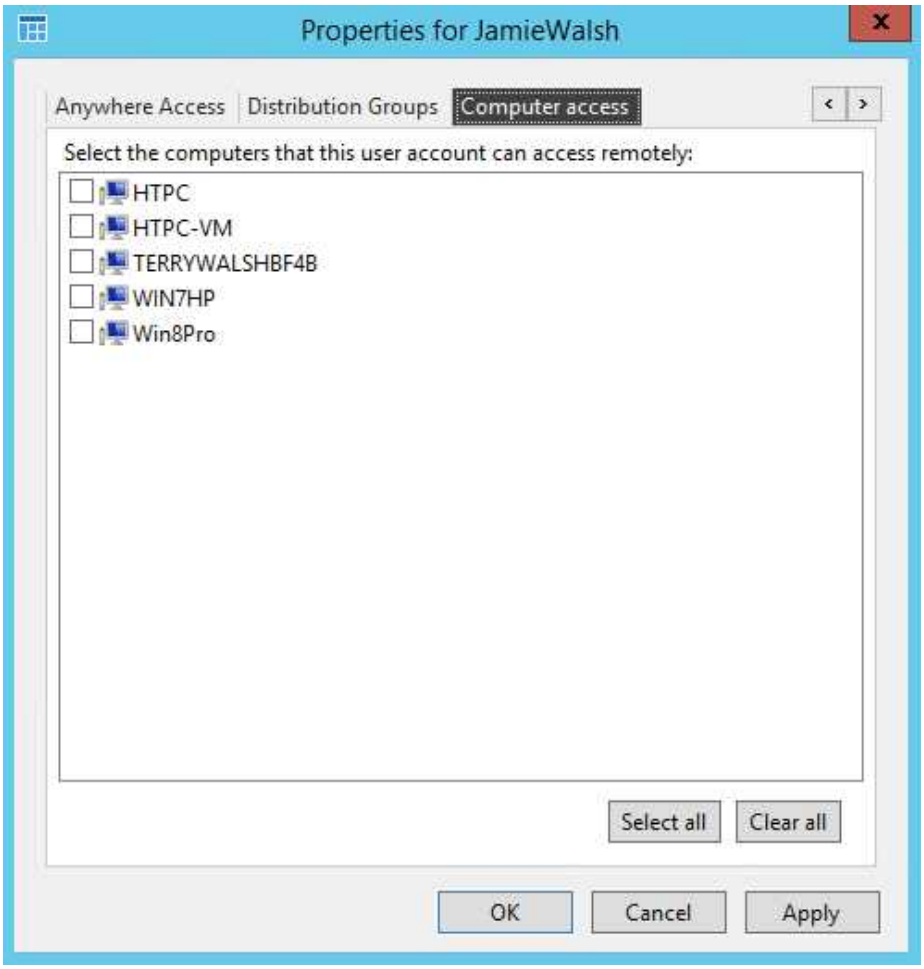
Shared folder properties.

Moving along. the **Anywhere Access** tab allows you to change the links visible from the user's Anywhere Access screen. You can block/unblock access to Shared Folders, remote connections to Computers, Homepage links and the Server Dashboard. Note that User Group settings can supercede individual user account settings, so if you're expecting to see that the user has access to a particular folder, or area of Anywhere Access and they don't, be user to check the User Group settings as well as the User Account properties.



Anywhere Access properties.

Finally, you can allow users remote access to individual computers on the network using the **Computer access** tab.



The Computer access tab.

Setting Up and Managing User Groups

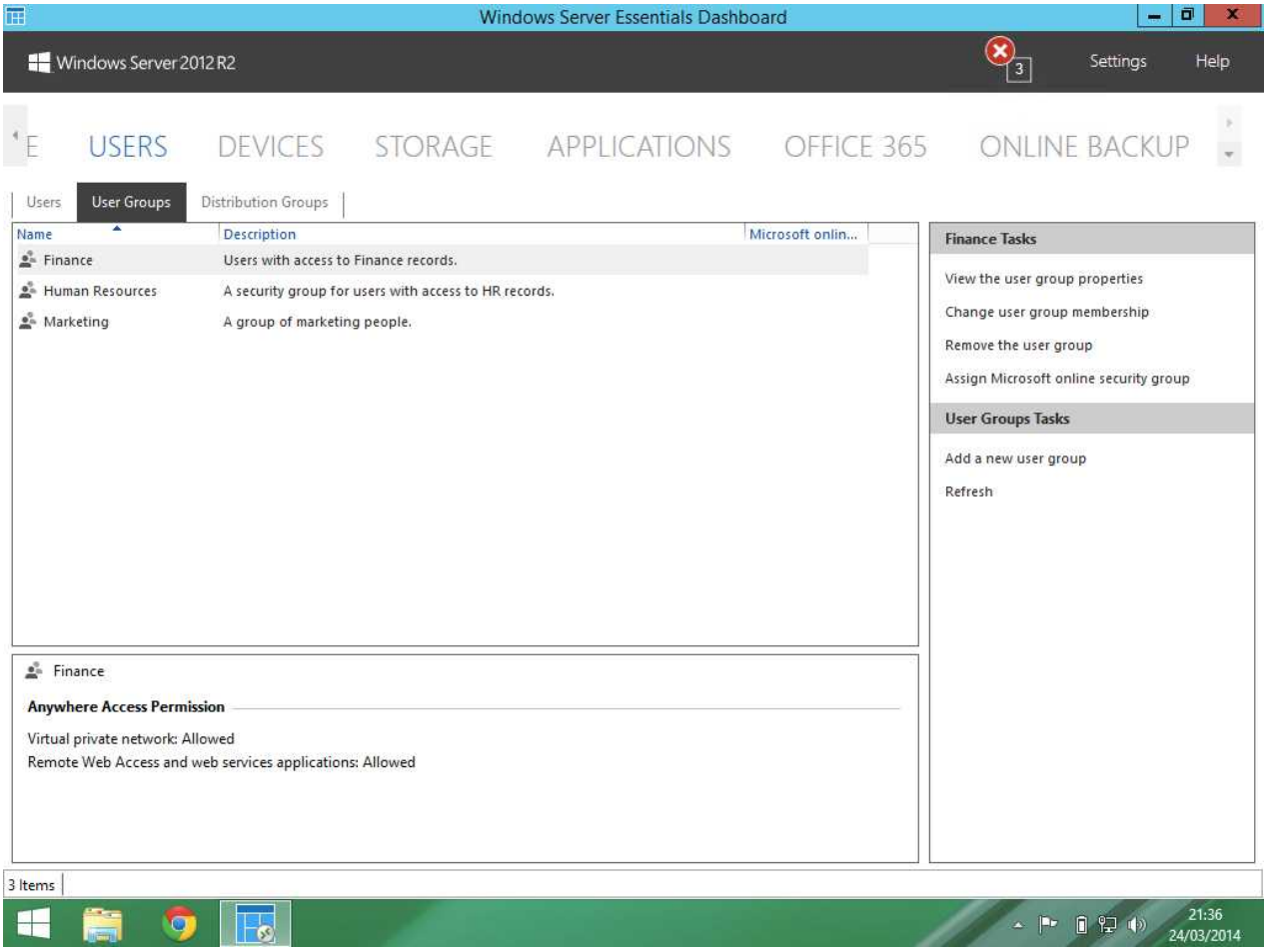
Surprisingly, the ability to set up and manage user groups in the Dashboard is a brand new feature in Windows Server 2012 R2 Essentials. Good to see Microsoft including some much needed functionality in the latest version of the platform!

The benefit of User Groups is that you can configure and apply security settings to multiple accounts with a couple of clicks of the mouse. In the last version of Windows Server Essentials, you were forced to go into individual user properties in the Dashboard (as we've just explored) and configure permissions accordingly. That got a little old when you were configuring user number 25! But now, User Groups makes life a lot easier.

You'll use User Groups heavily, a little, or not at all depending on the number of users in your organisation and the relative sensitivity of data you have stored on the server. At the top end, you may

find it useful to segment your users into groups - perhaps by department, with a Finance, Marketing, HR and Sales group. Alternatively, you may wish to segment by security levels, with a group that has access to your most sensitive data, and another that does not. In a home context, you may wish to setup user groups for Grown Ups and Kids - it's the same principle and it can work well in either scenario.

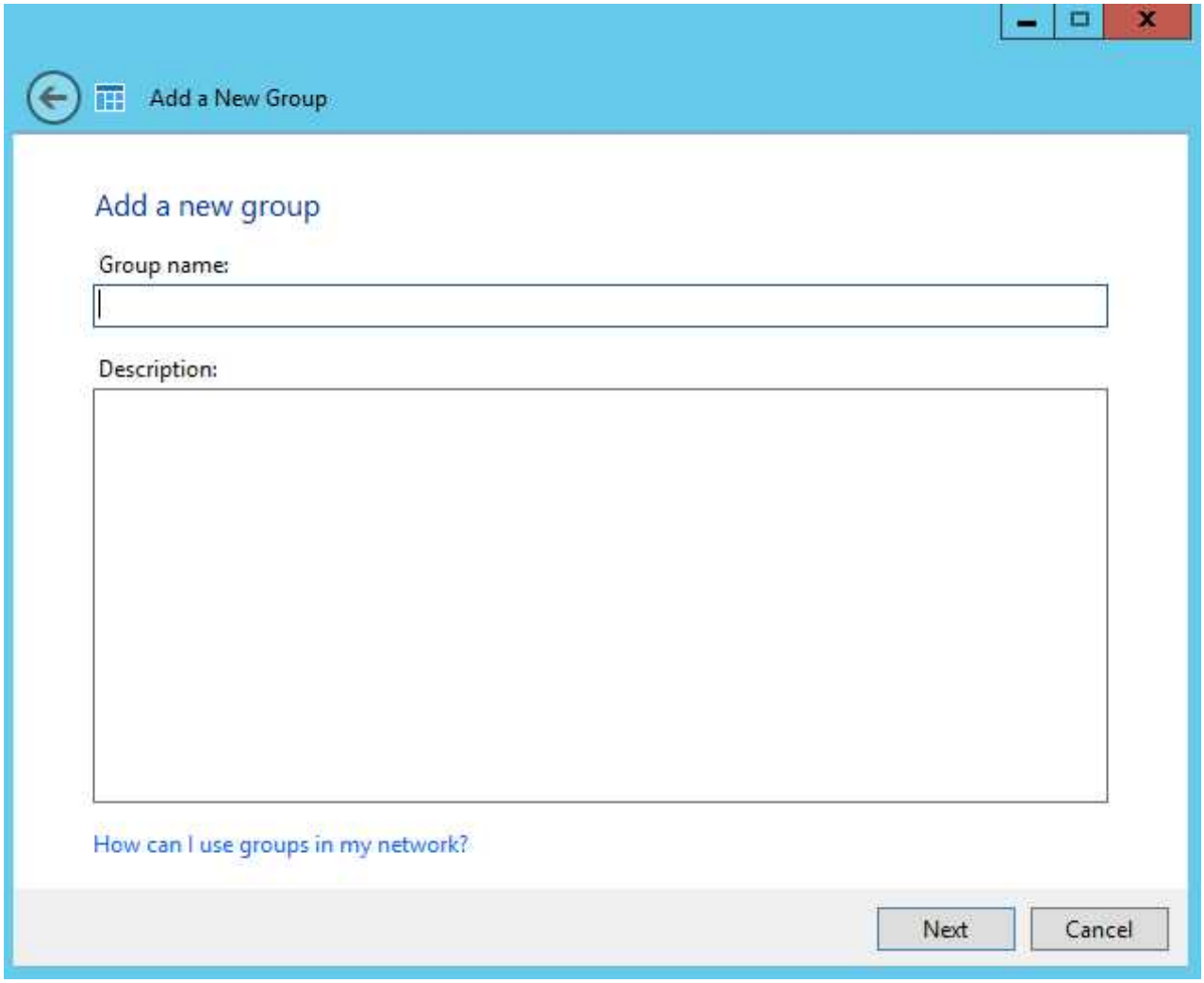
How you choose to segment your users, if at all, will vary by organisation but for now, let's take a look at how User Groups work in Windows Server 2012 R2 Essentials. Click the **User Groups** tab to take a look - I've already set up a couple of groups so you can see how they look in the Dashboard.



The User Groups tab.

As usual, expect to see a list of user groups in the main pane. Here you see I've set up a Finance, Human Resources and Marketing group with a description for each. In the Details pane, Anywhere Access information is shown on the highlighted group, including VPN configuration, and permissions for Remote Web Access and web services applications.

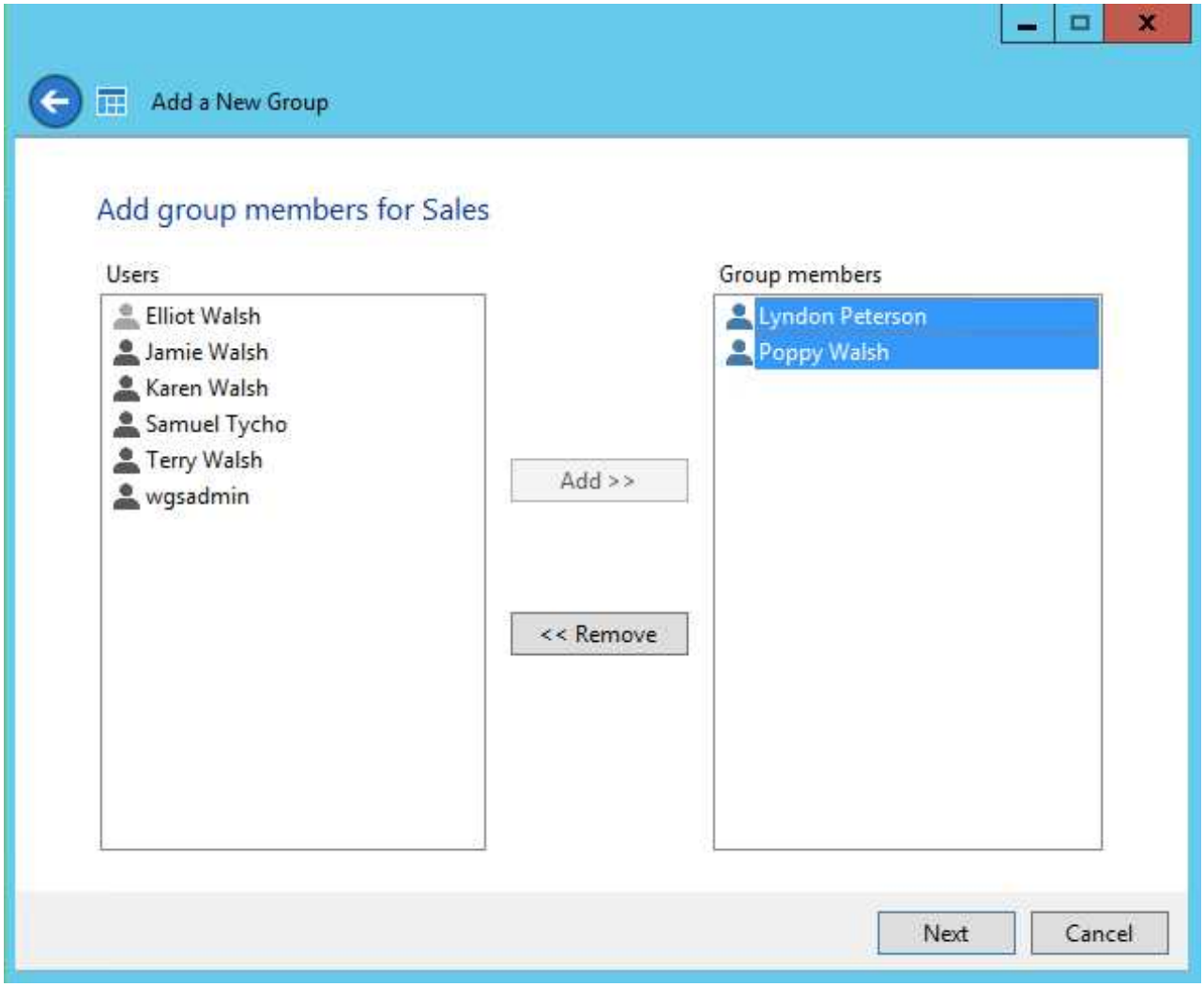
Over on the right, you'll see tasks available for each group and an option to **Add a new user group**. Click that one to get started.



Adding a new user group.

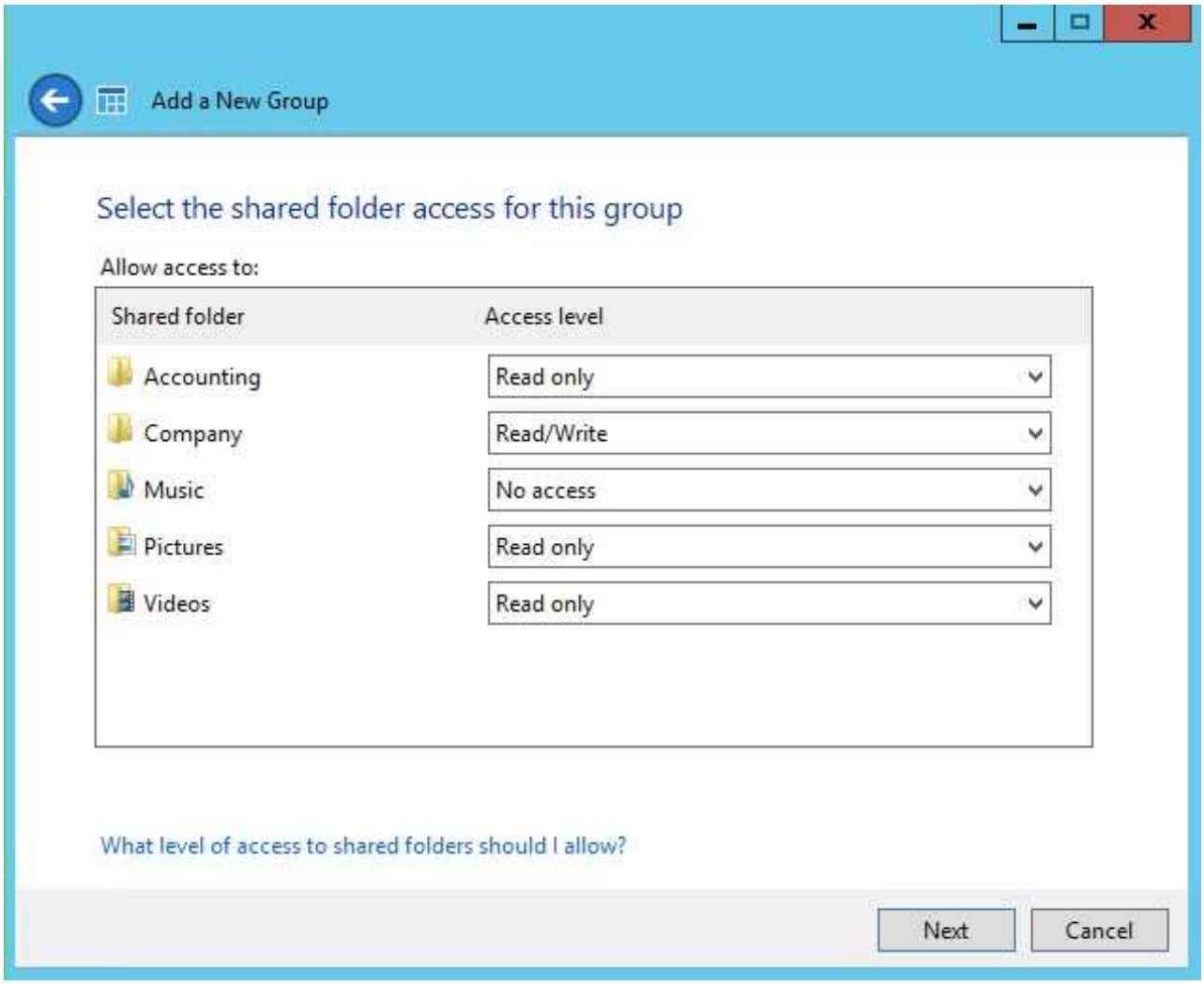
In this example, let's create a new user group for those gung-ho guys and gals in the Sales team. Enter a **Group name** and a **Description** for your user group.

Next, you be asked to choose which users belong in that user group. Simply highlight the accounts and click the arrow to move them into the right hand **Group members** box.



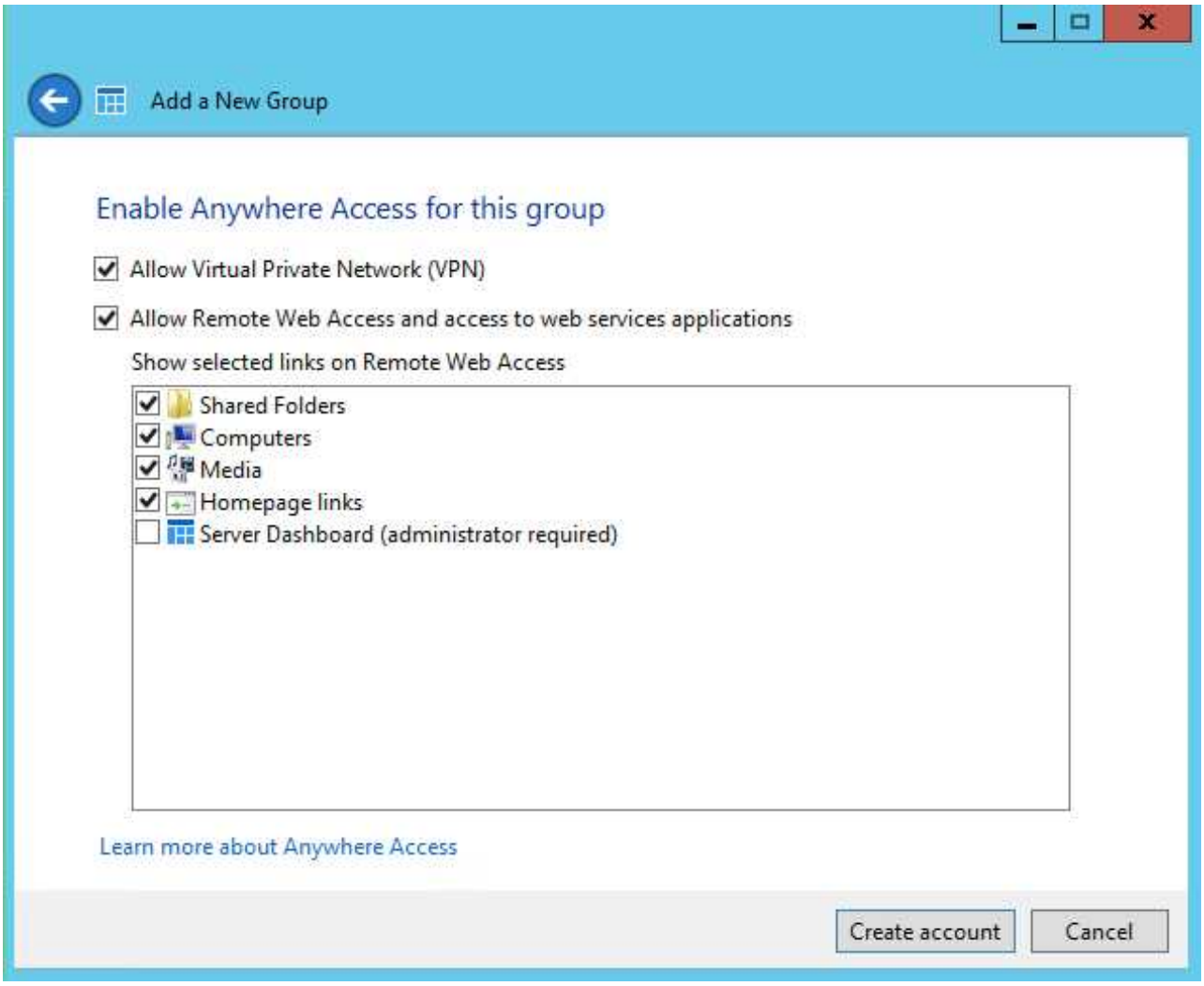
Adding accounts to the group.

Click Next and you'll be able to set folder permissions for the group. As we've seen previously, Read/Write, Read only and No access options are available. Here, I'm going to block access to the Accounting folder but grant Read/Write access to the Company folder.



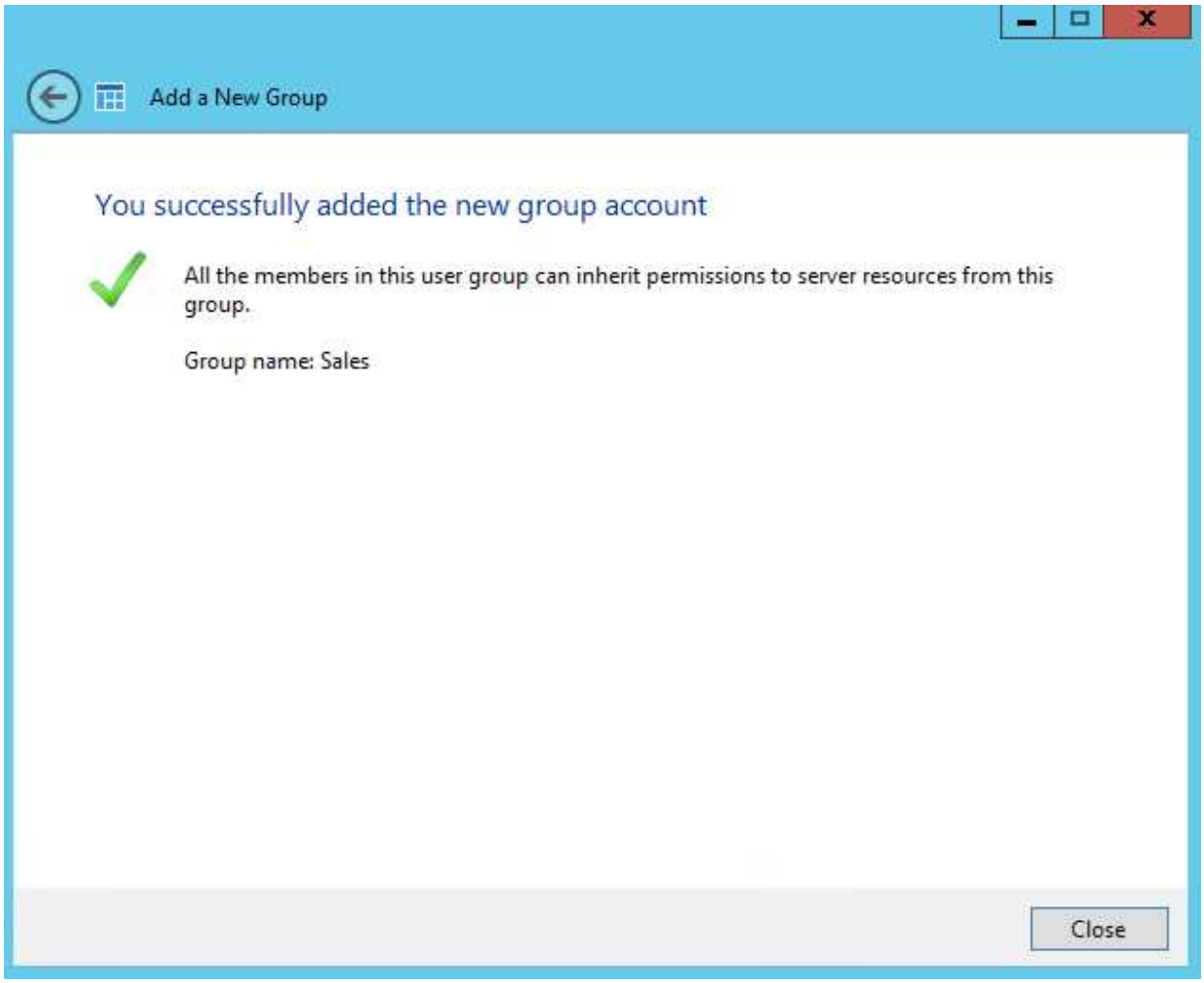
Note that user group settings take precedence of individual account settings.

Click Next, and as with adding individual accounts, we now set access rights for Anywhere Access. We can allow or block VPN access and Remote Web Access to the server for this group as well as configure the RWA experience these users see when accessing the server remotely in the browser.



Configuring remote access for the group.

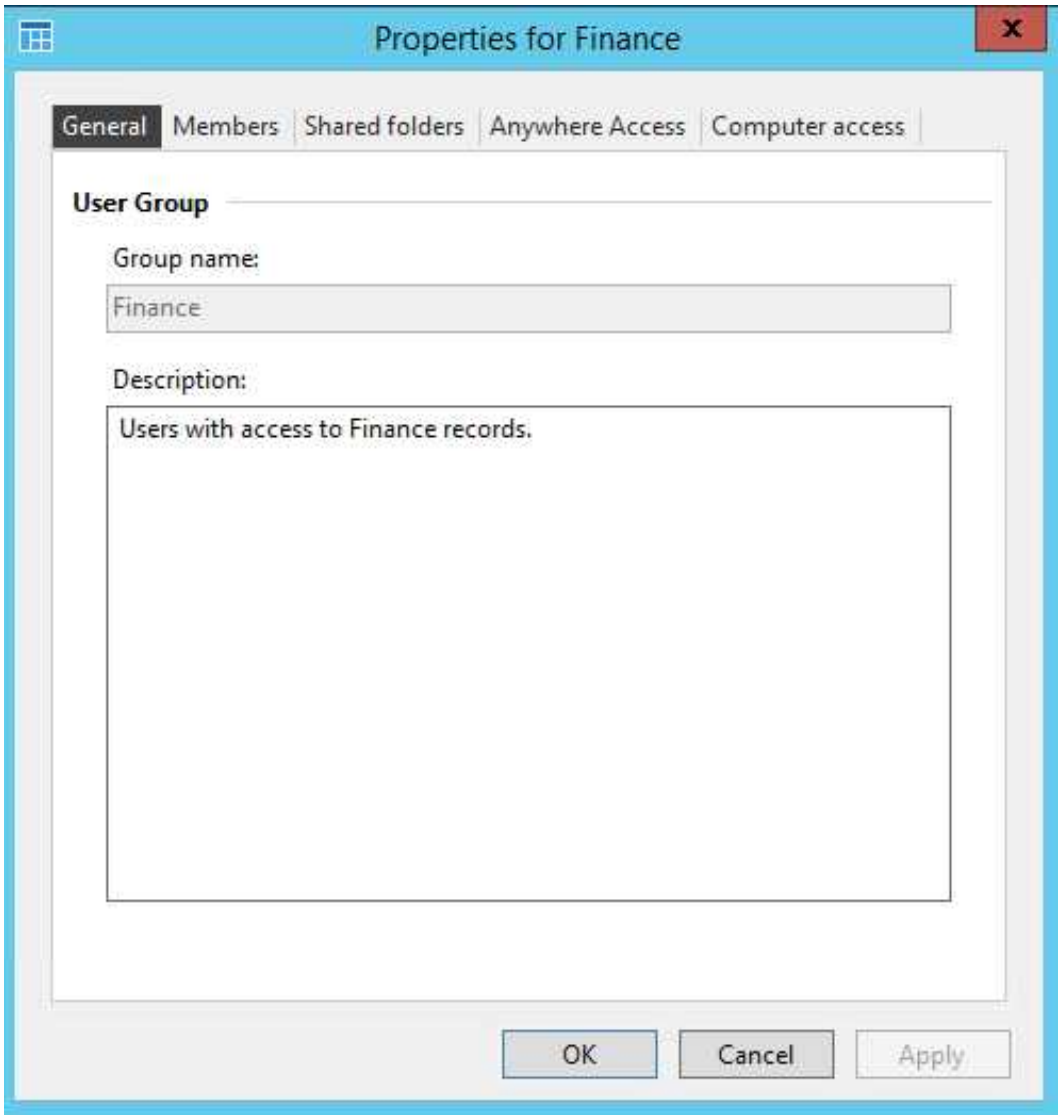
When you're ready, click the badly labelled **Create account** button (it should really say *Create Group*, right?). After a little work, you'll receive a confirmation message.



The User Group is ready.

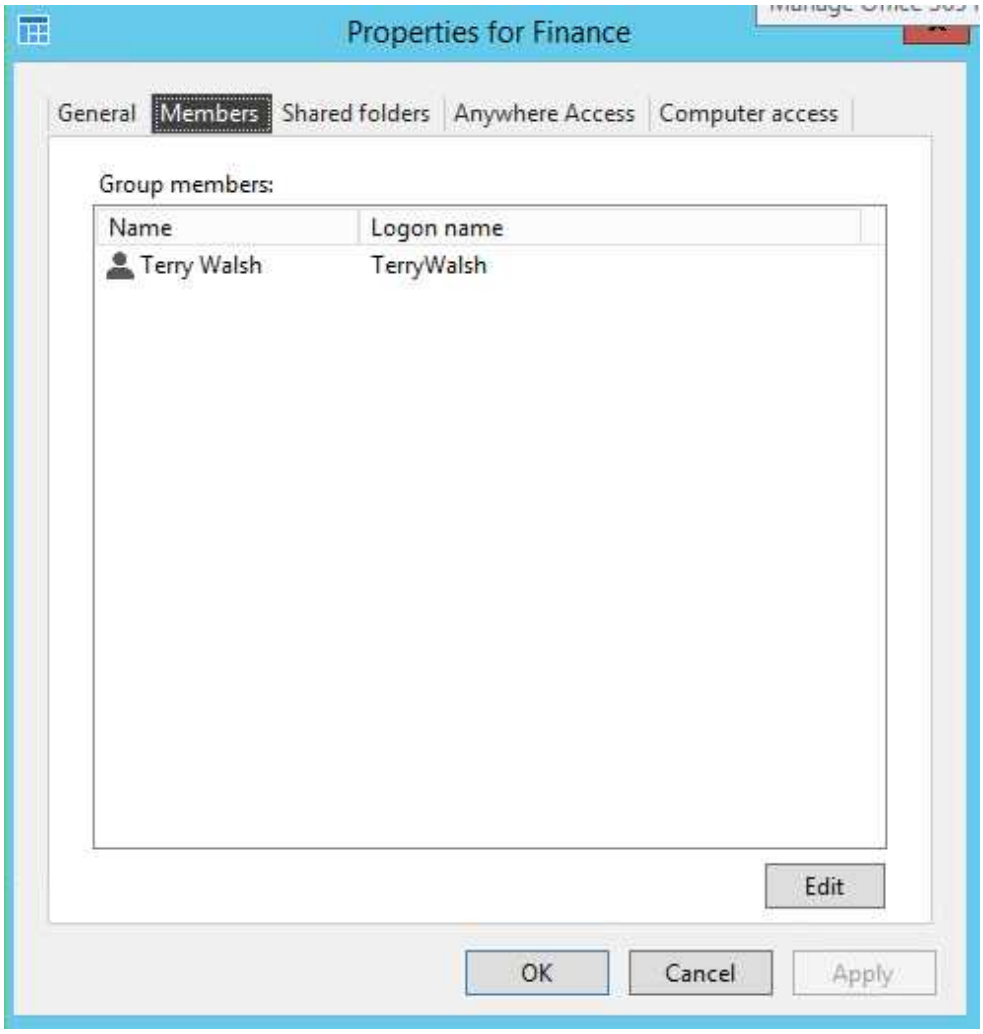
From here, any new user can be added to the user group during account setup.

Managing the user group works in a similar way to managing users. Click the View the user group properties to open a familiar-looking dialog, with five tabs segmenting controls into **General**, **Members**, **Shared folders**, **Anywhere Access** and **Computer access** settings.



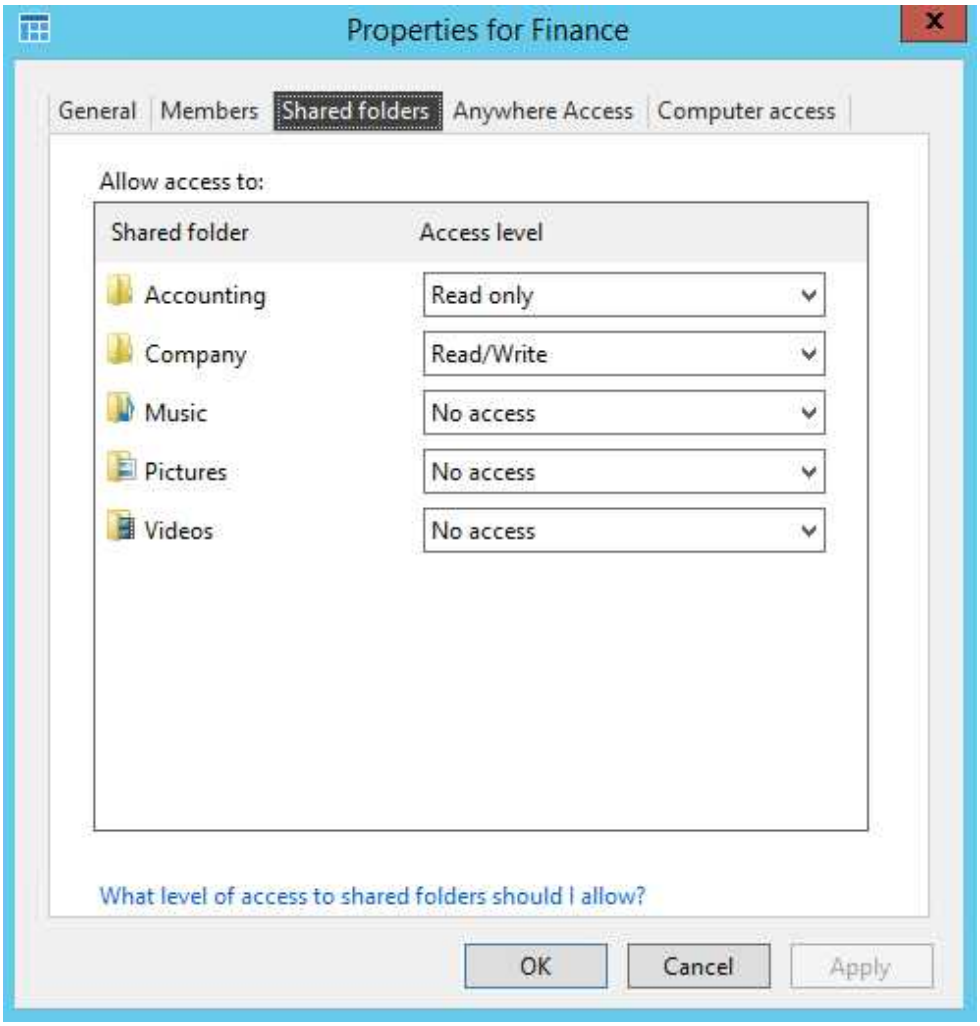
The General tab.

The **General** tab doesn't have a lot going on, but will allow you to amend the User Group description should you wish. A little more fun is **Members**, where you can add and remove accounts from your User Group.



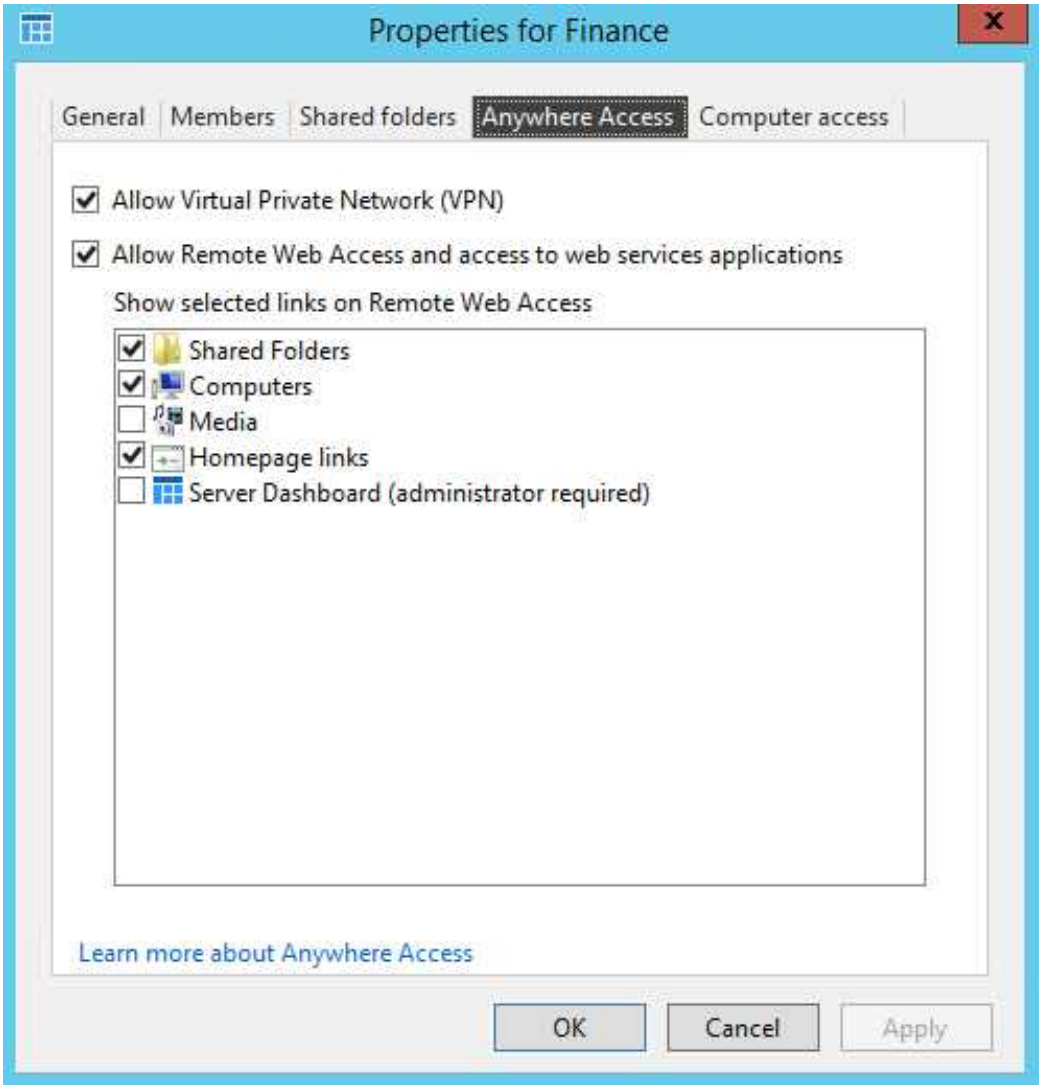
Click the Edit button to alter membership of the group.

Over in **Shared Folders**, you can change access privileges that the group has for your server's shared folders.



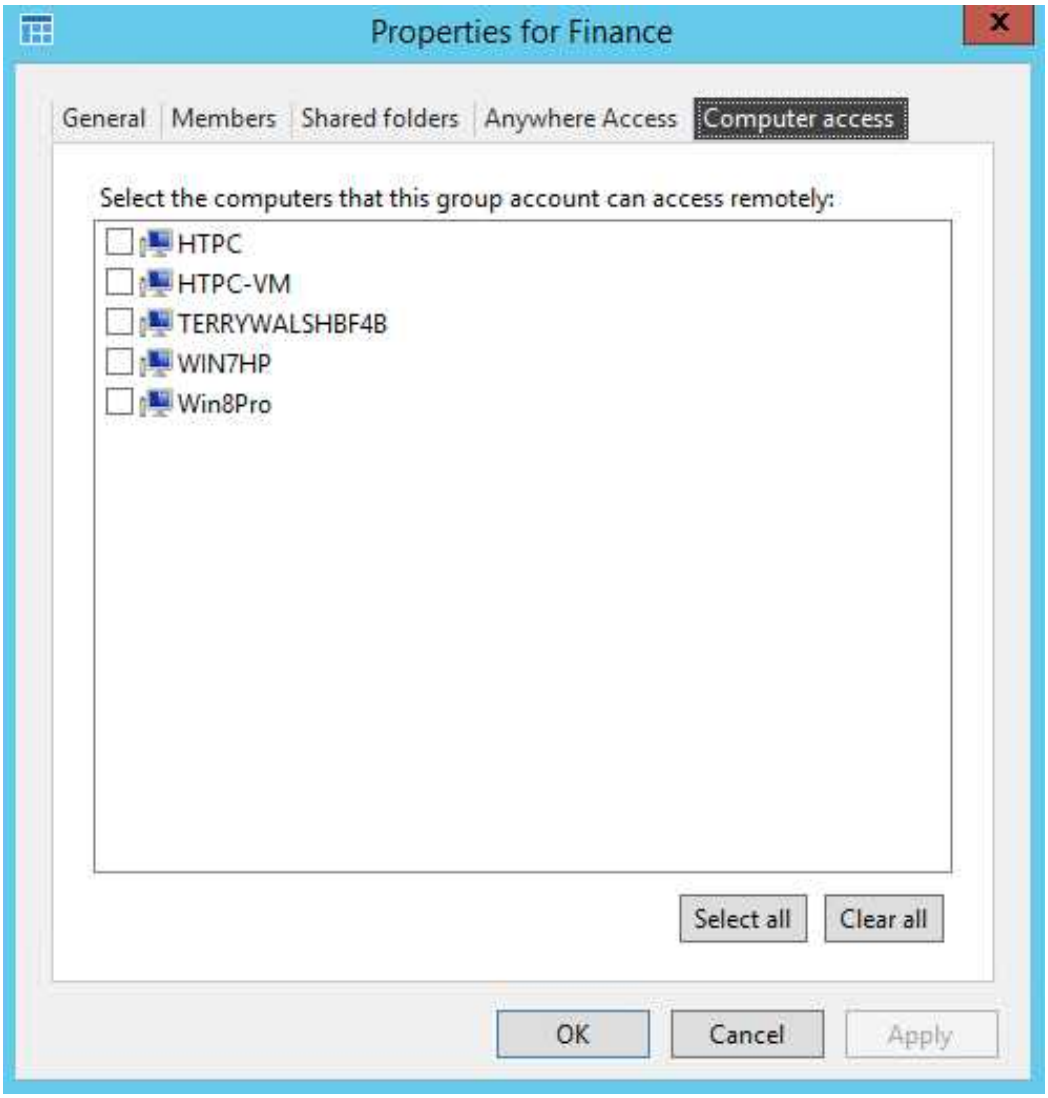
The Shared Folders tab.

The Anywhere Access tab opens the now familiar dialog which lets you configure remote access settings in detail. Available options are the same as we saw earlier for individual users, so you can configure this in exactly the same way.



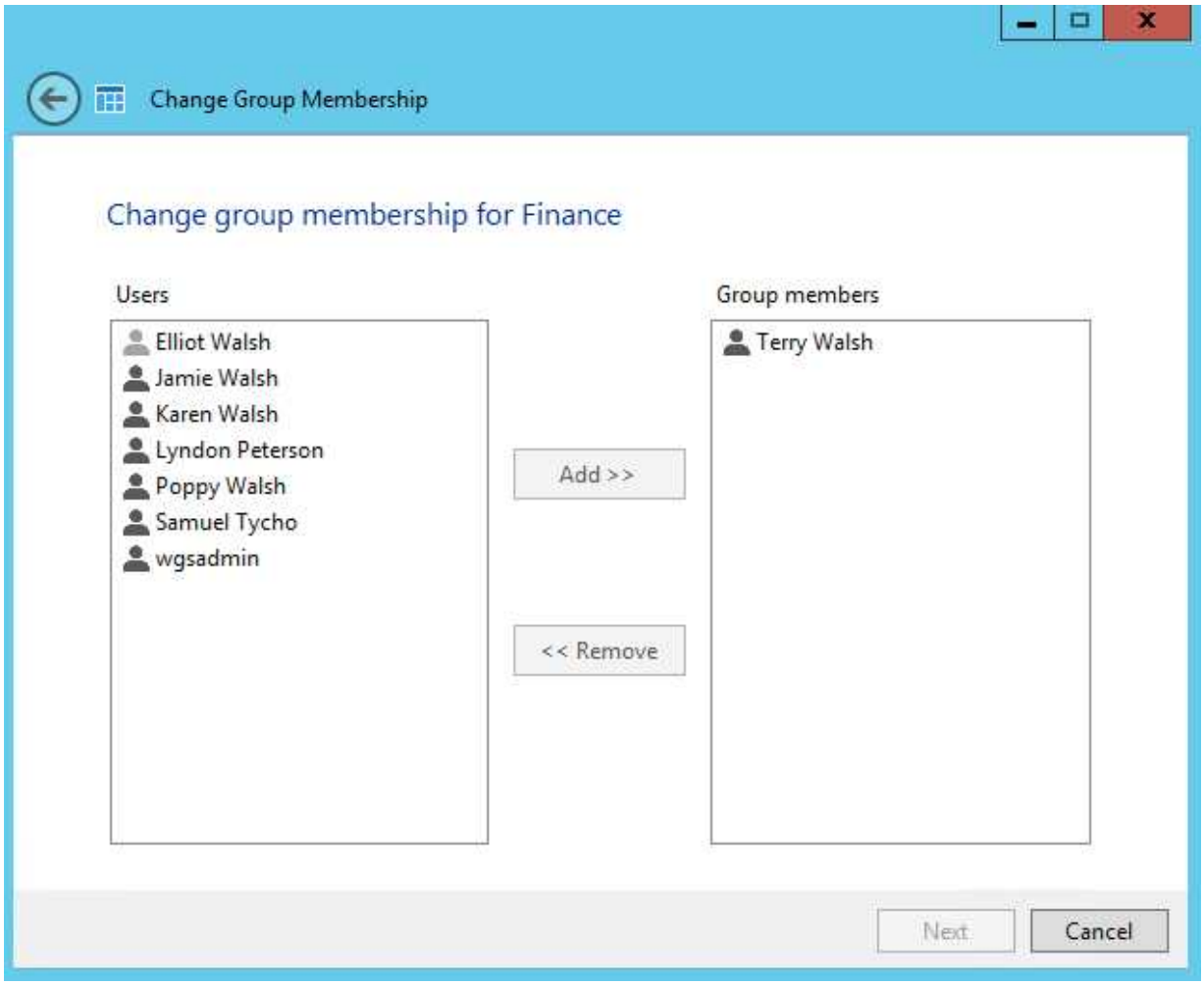
Anywhere Access settings.

Finally, **Computer access** offers the same ability to block and unblock remote access to individual computers as we are able to for individual accounts.



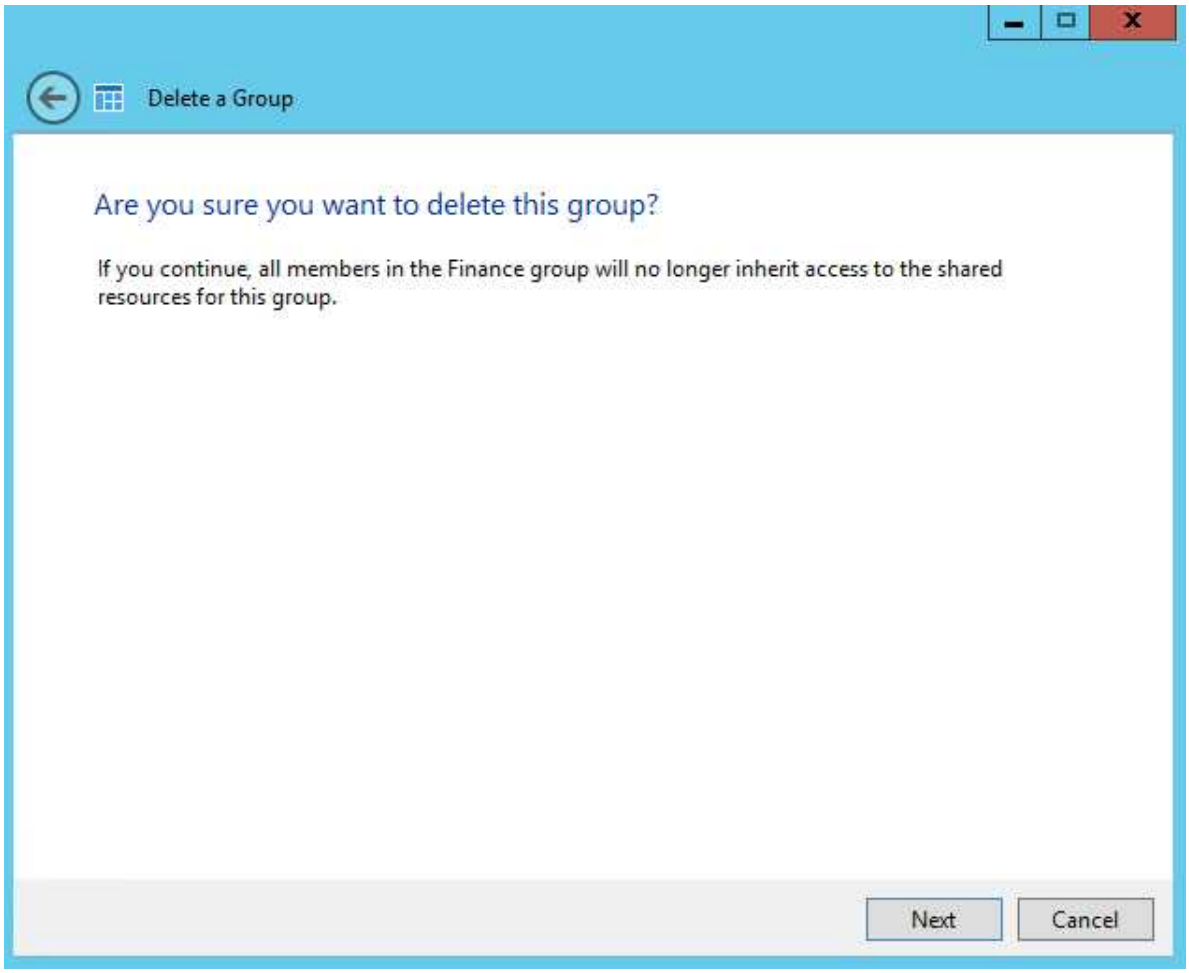
The Computer access tab.

Back to the Tasks pane, and you'll see a couple of shortcuts available for User Group settings. **Change user group membership** opens up the same dialog we saw earlier, allowing you to add or remove accounts from the group.



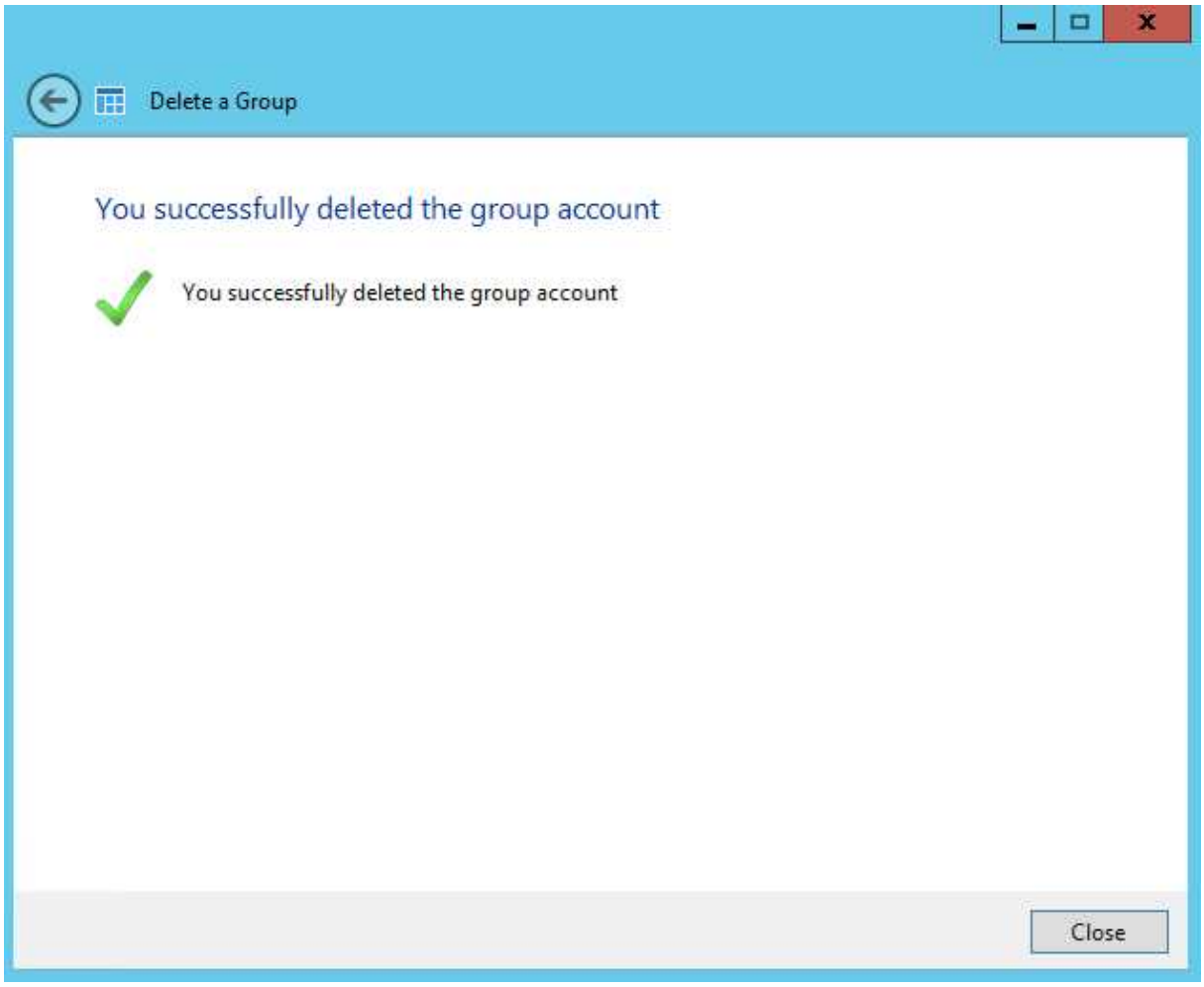
Changing Group Membership.

Finally, **Remove the user group** is the task to select when you wish to delete a user group from the server.



Removing a group.

Obviously, the accounts themselves are left in place, but those shared settings will now be removed,



Confirming deletion.

Once set up, managing user accounts and user groups is relatively simple as you can see. Microsoft has made life a lot simpler with the addition of User Groups in Windows Server 2012 R2 Essentials and that means more time for you to run your business rather than managing accounts! Hurrah!

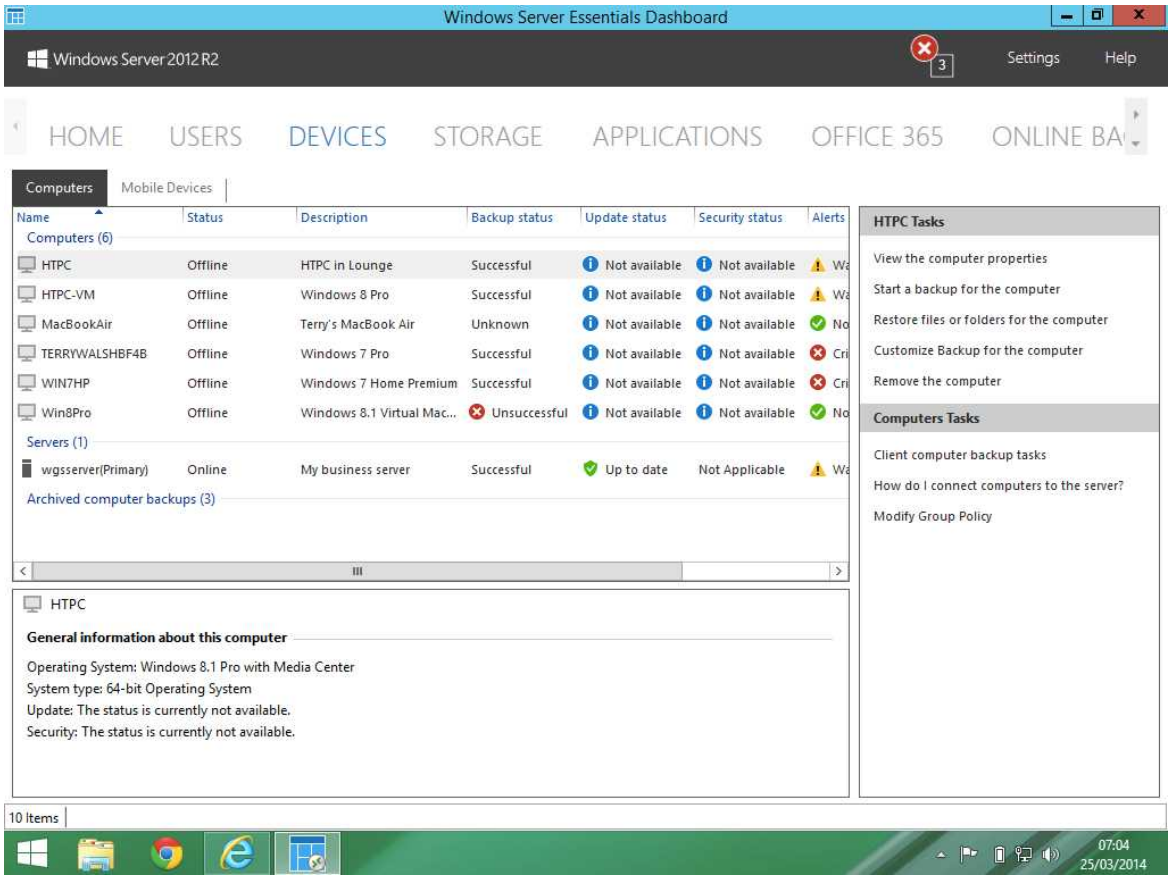
Next, we'll dig into Devices!

Managing Devices and Group Policy

"Next up on the Windows Server 2012 R2 Essentials Dashboard tabs is the DEVICES tab. Devices can be PCs, Macs or the Windows Server 2012 R2 Essentials machine itself. If you have Office 365 installed and integrated, add mobile devices to that list too."

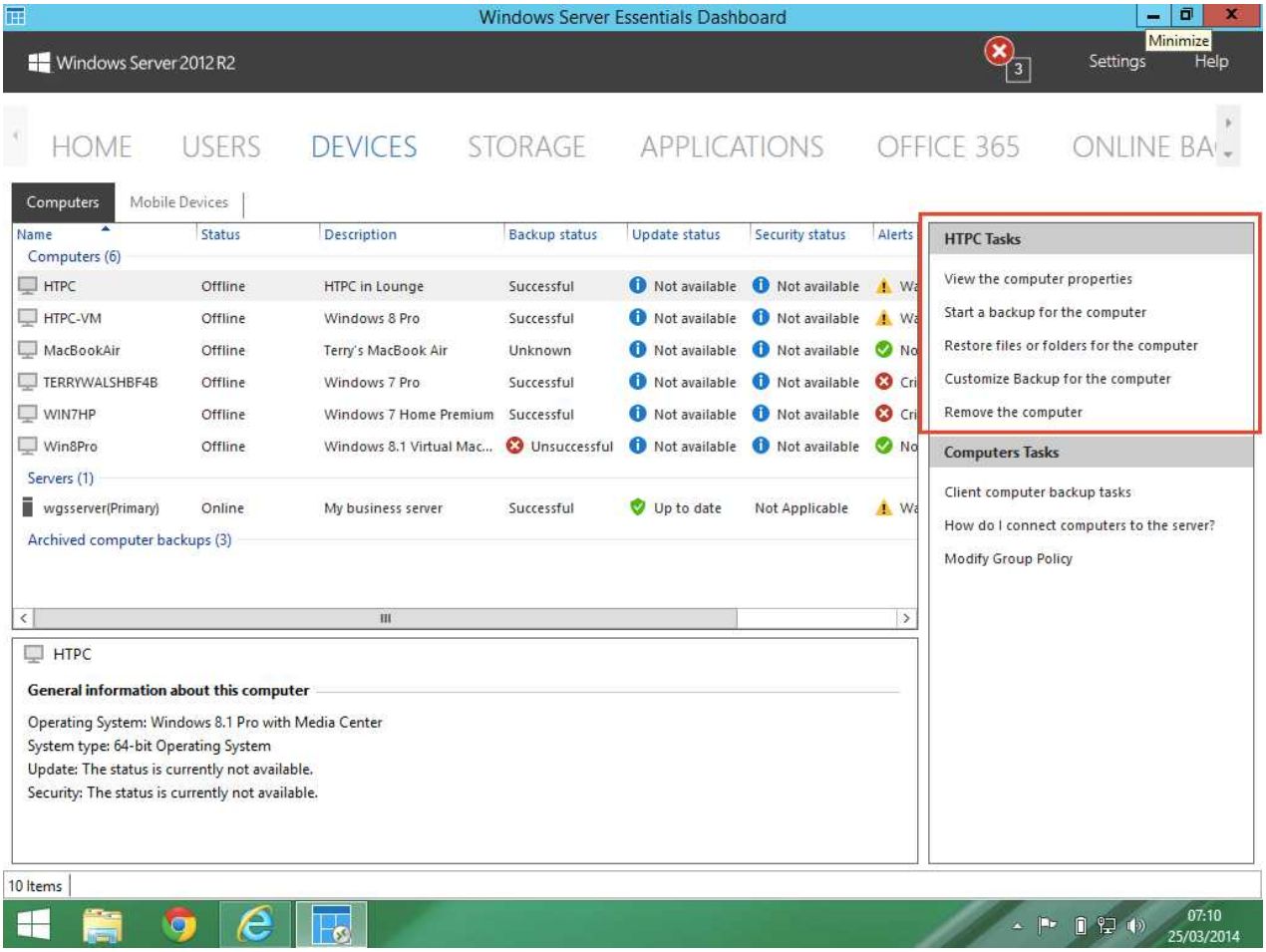
Server tasks have change a little from the last version of Windows Server Essentials. The overall concept is the same, but you may notice that a couple of the tasks available in the previous version - View server alerts and the Best Practices Analyzer, have been removed from the task list.

As is typical of most tabs in the Dashboard, whether that be Users, Devices and others, the tasks you can perform on an item change depending upon the item itself.



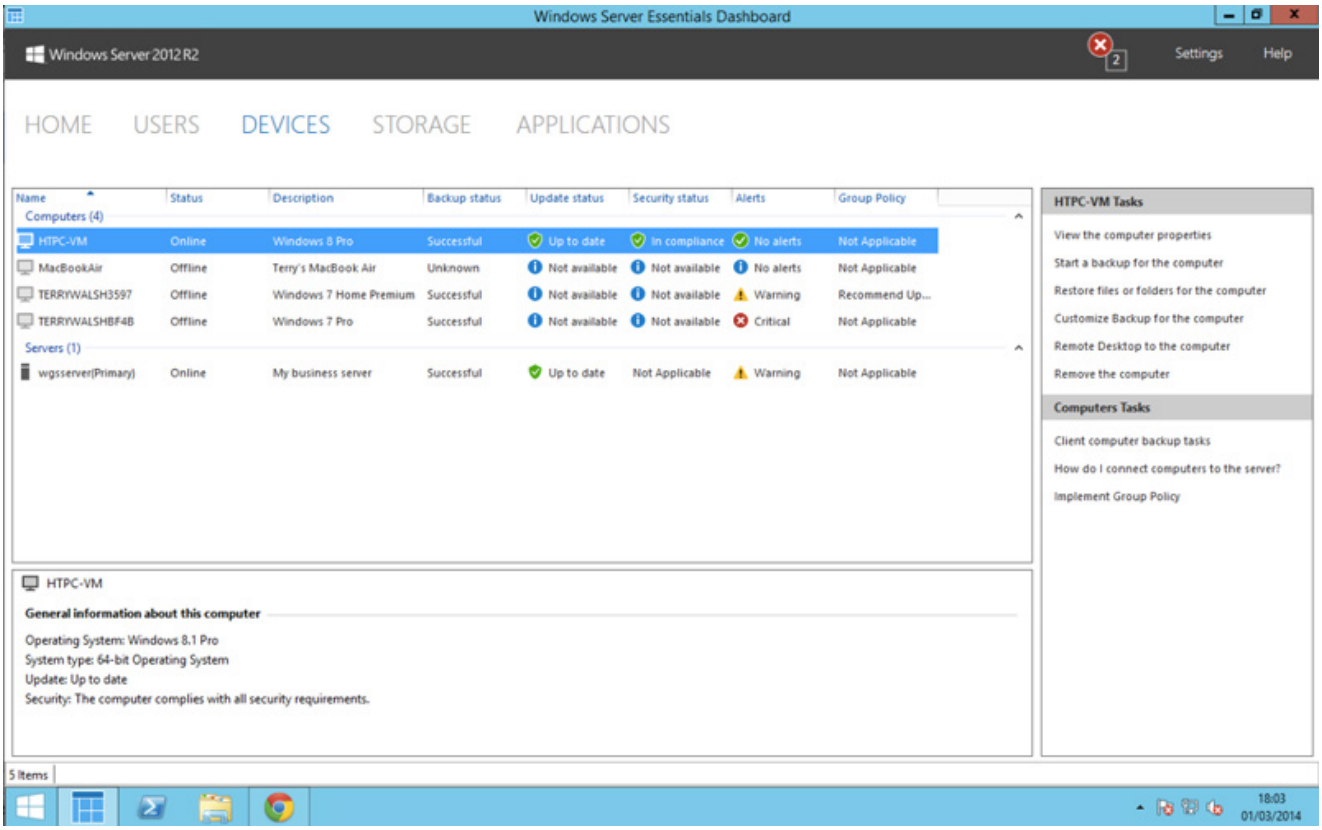
The Devices tab.

It's all context-sensitive. For example, you will notice that the tasks listed when the server is selected (above) are different to when an offline client is selected (below):



The task pane changes for an offline client.

The tasks are different again when an online client is selected.



Tasks for online clients.

Each device you have connected to the server is listed in the main pane of the Devices tab. You can view the **Computer name**, its **Status** (Online or Offline, depending on whether it's powered on and connected to the network), **Description, Backup status** and **Update status, Security status**, **Alerts** and **Group Policy** settings.

Let's take a look at some of the tasks we can perform to manage devices.

Viewing Server Properties

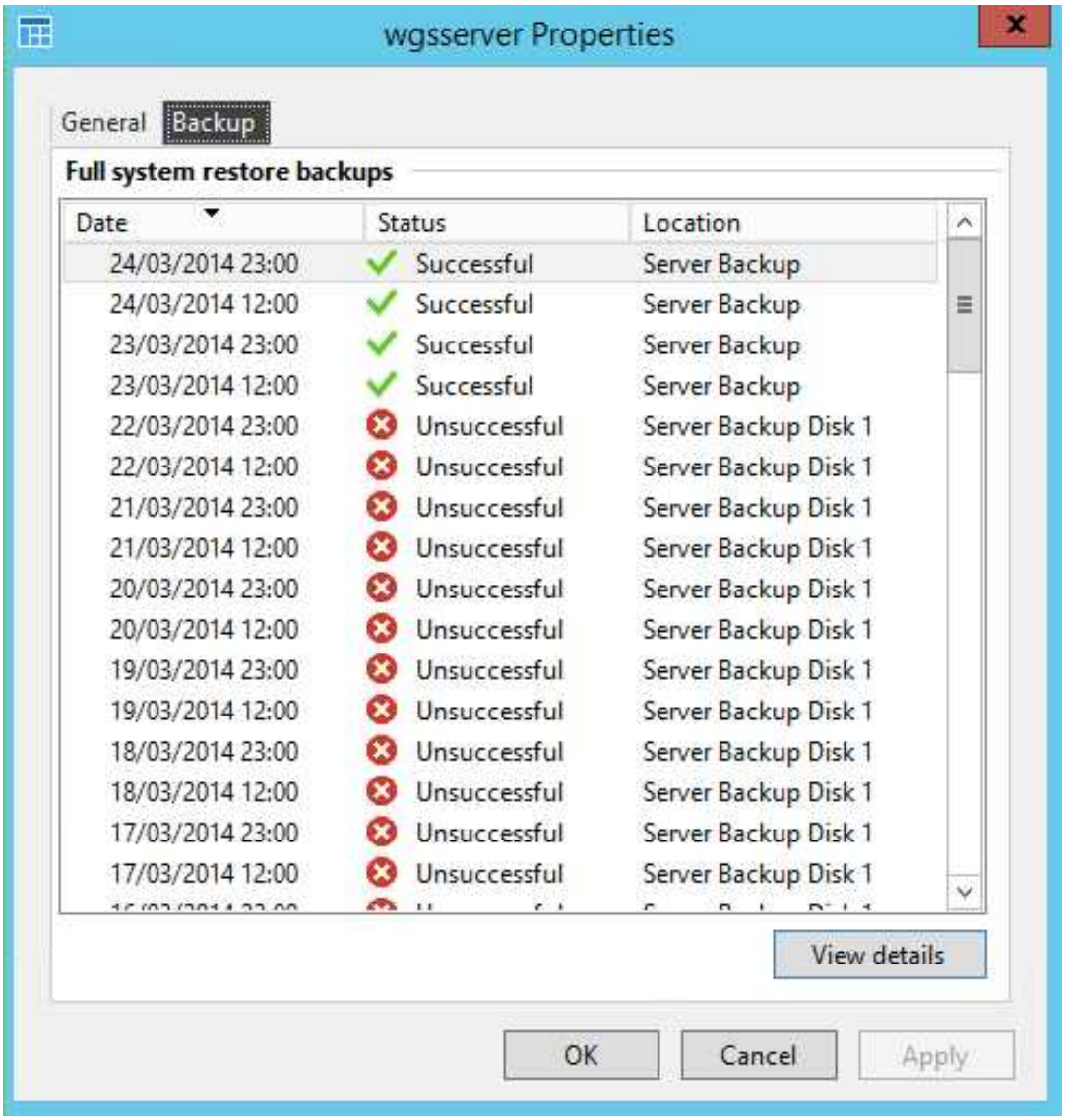
For the server, tasks are for the most part self-explanatory. Click **View the server properties** to get started.

We have the **General** properties tab, which simply offers some basic information about our server - its **Computer name**, **Description**, **Operating system**, **System type**, ***Update status*** and **Security** settings.

The General tab.

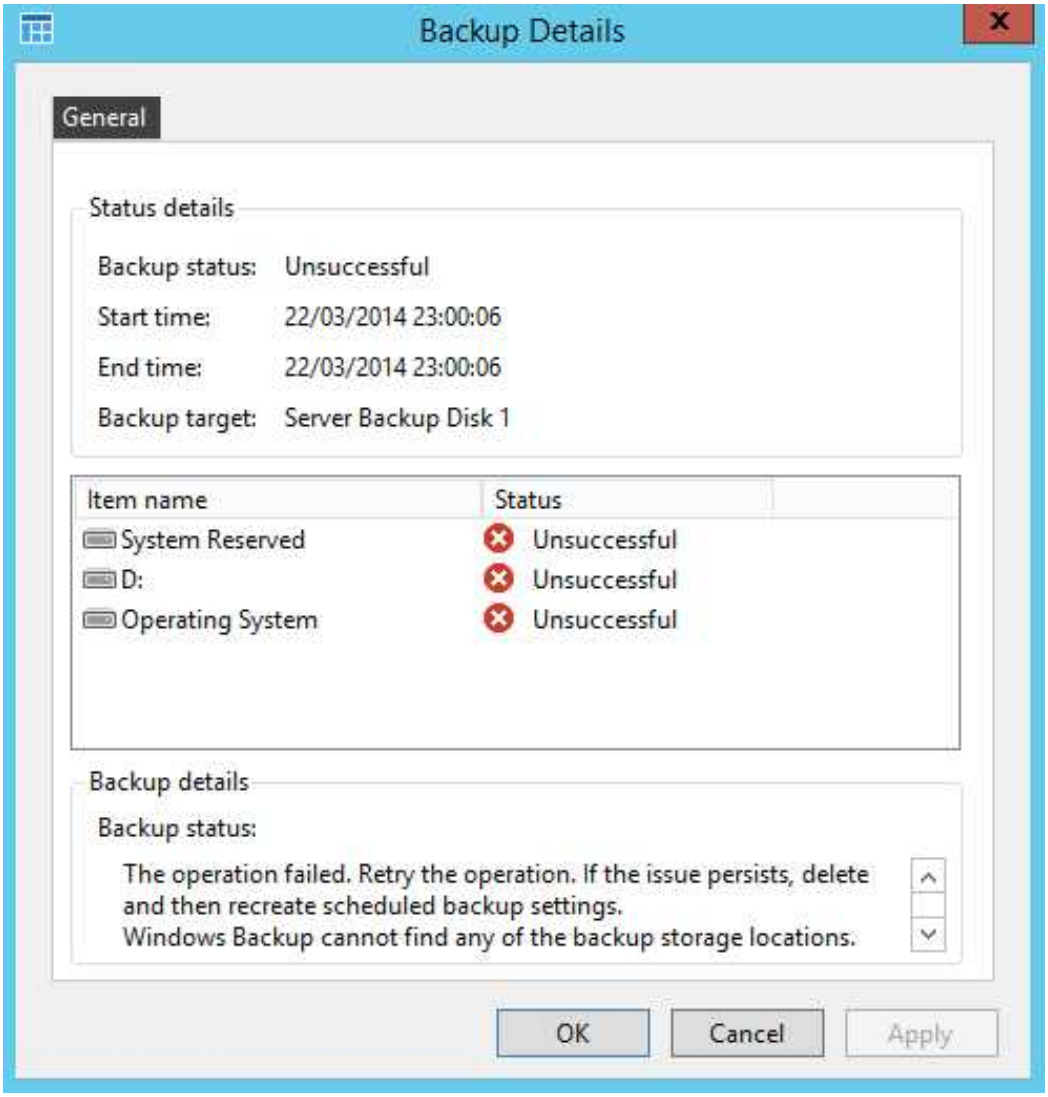
In the General properties dialog, you may have noticed the Security item and ambiguous "**This status is not supported for the server**" report. This simply means that the server does not check its own security status. I personally think this would be an excellent place to display the security status of the server, but Essentials (and in turn, Microsoft) does not.

Next to the General tab is the **Backup** properties tab. This provides a log of your server's backups highlighting any unsuccessful jobs.



Server backup properties tab.

Double click an entry or highlight it and click **View details** and you'll be able to find out more about each of your backups.



Our unsuccessful backup.

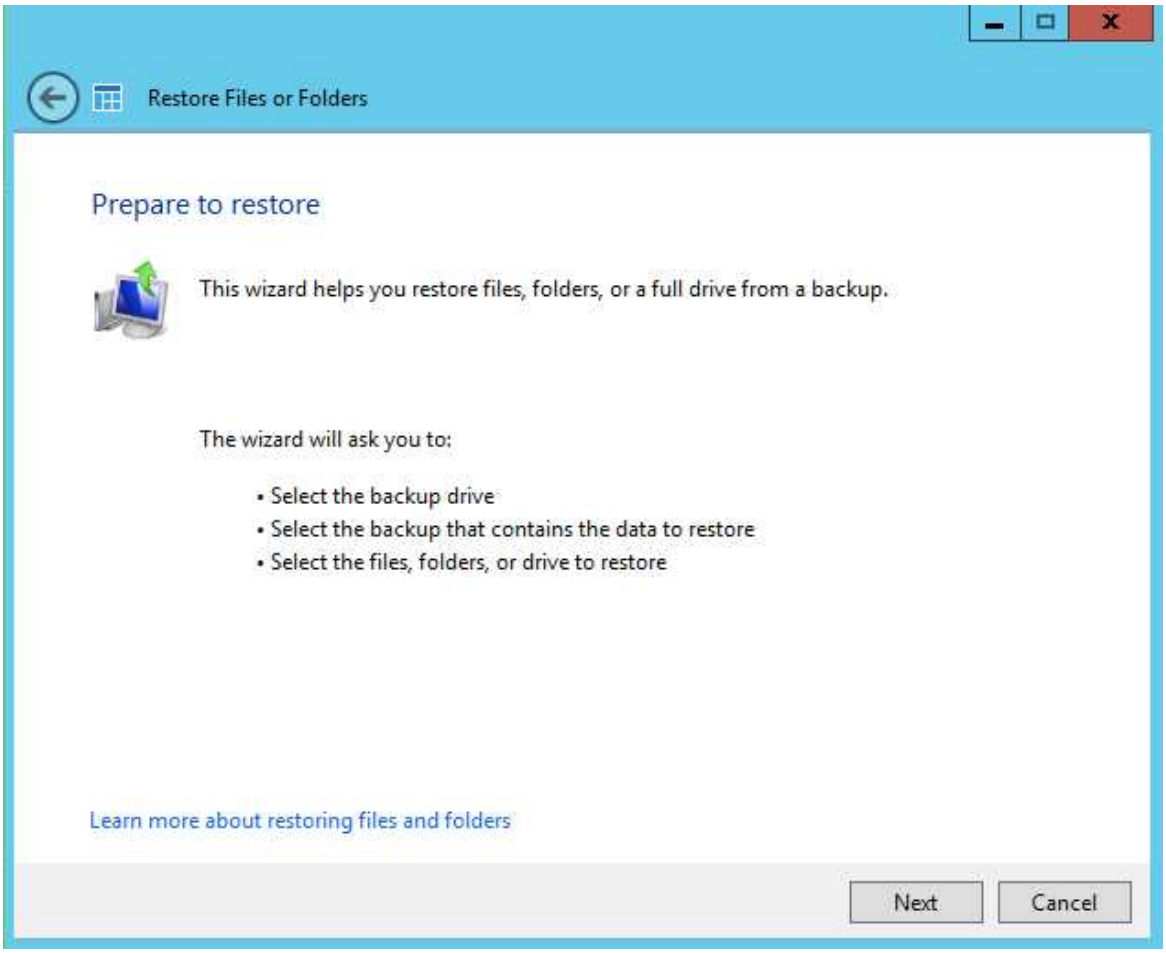
Here's the unsuccessful backup in our log. You can see the status, Start and End times for the back-up and where the backup was targeted (i.e. the drive we were backing up to). Each of the items marked for backup (in our case, the System Reserved partition, D: volume and Operating System) has a status report next to it. Finally, there's a short report as to why the backup was unsuccessful. Click **OK** to close the dialog.

Backing Up and Restoring the Server

Next, click **Start a backup for the server**. You won't be surprised to learn that the server does just that. You'll be asked to confirm the backup and off it goes.

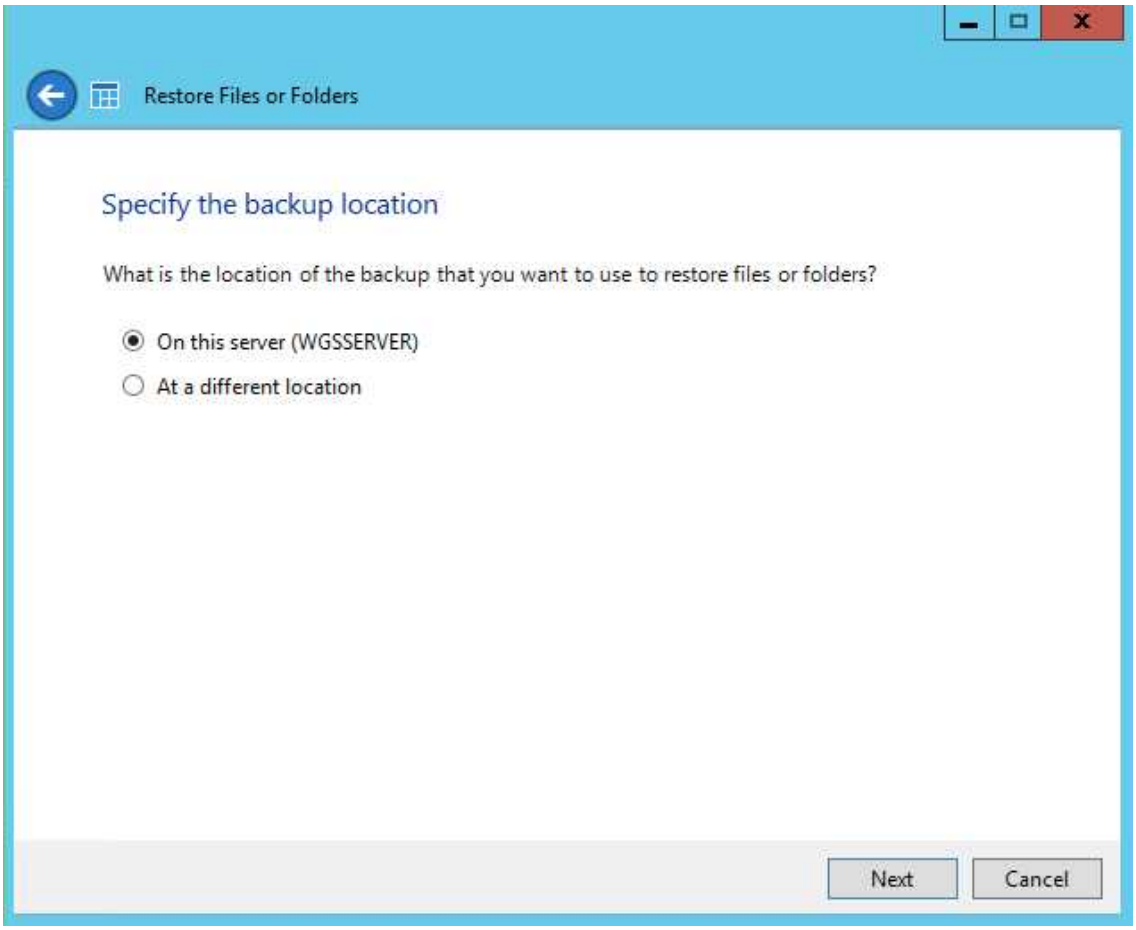
The next task, **Restore files or folders for the server a**llows you to restore anything - from individual

files to complete data drives.



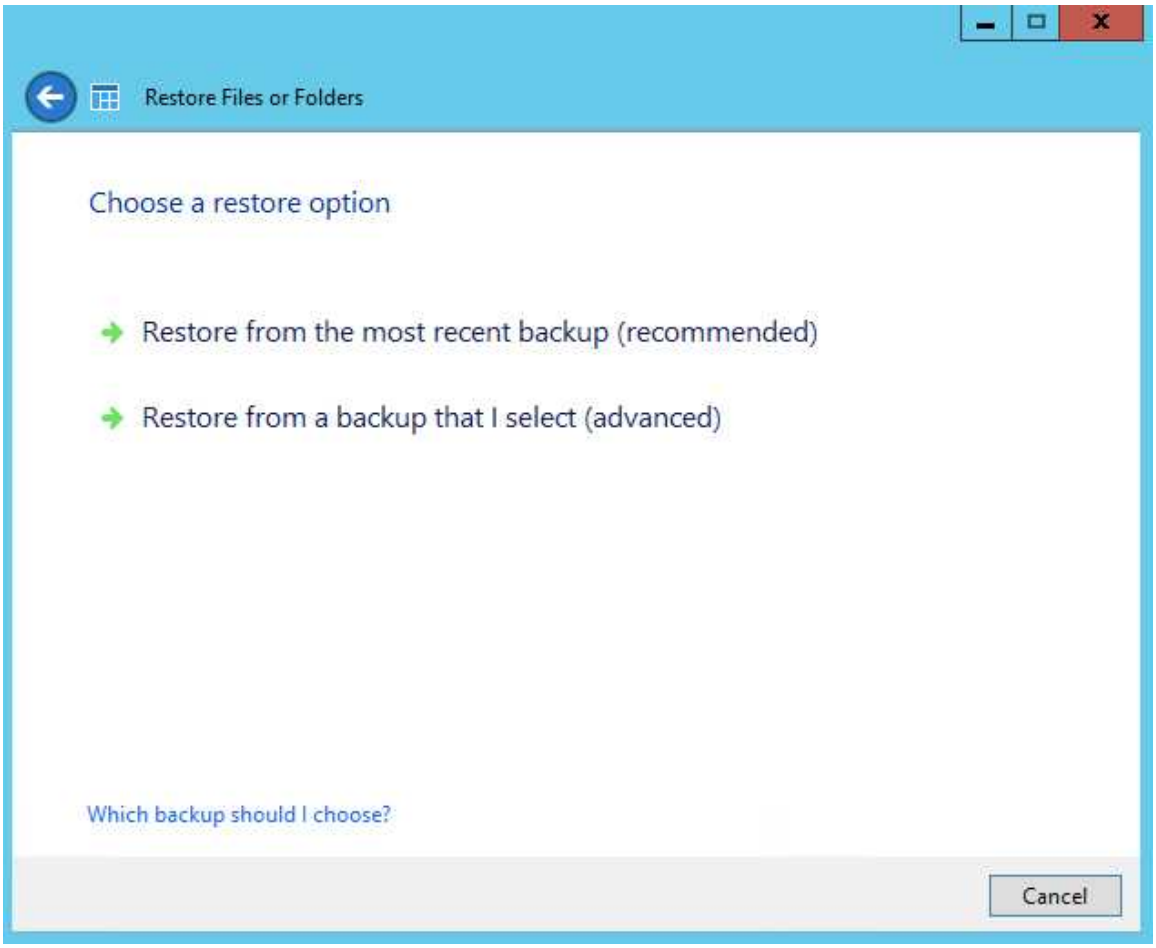
Restoring files, folders or a full drive.

As you'll now expect, restoring data to the server is a simple process - all wizard-based. You'll be asked to select the location of your backup first:



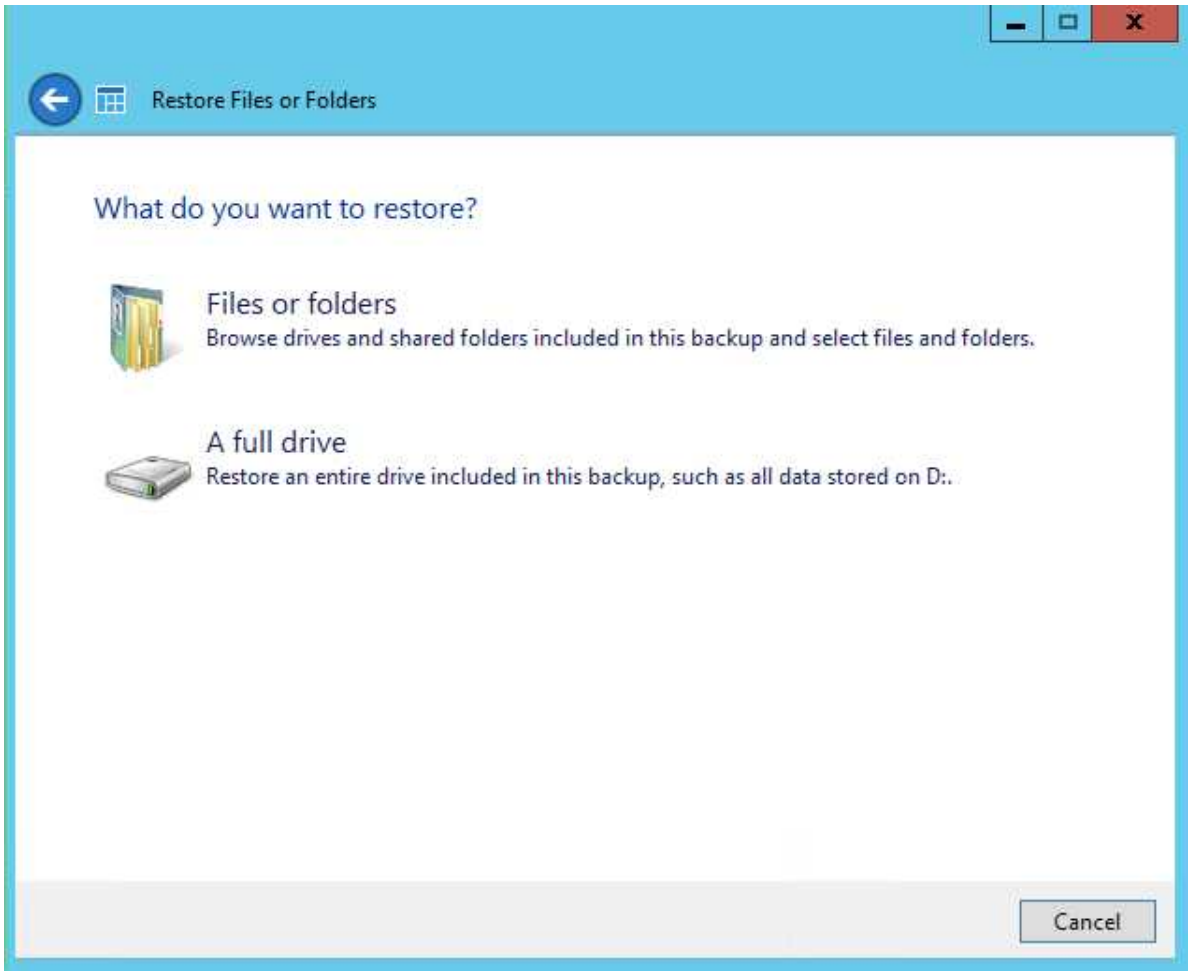
Specifying the backup location.

You'll then choose a backup to restore from - the most recent, or an earlier backup.



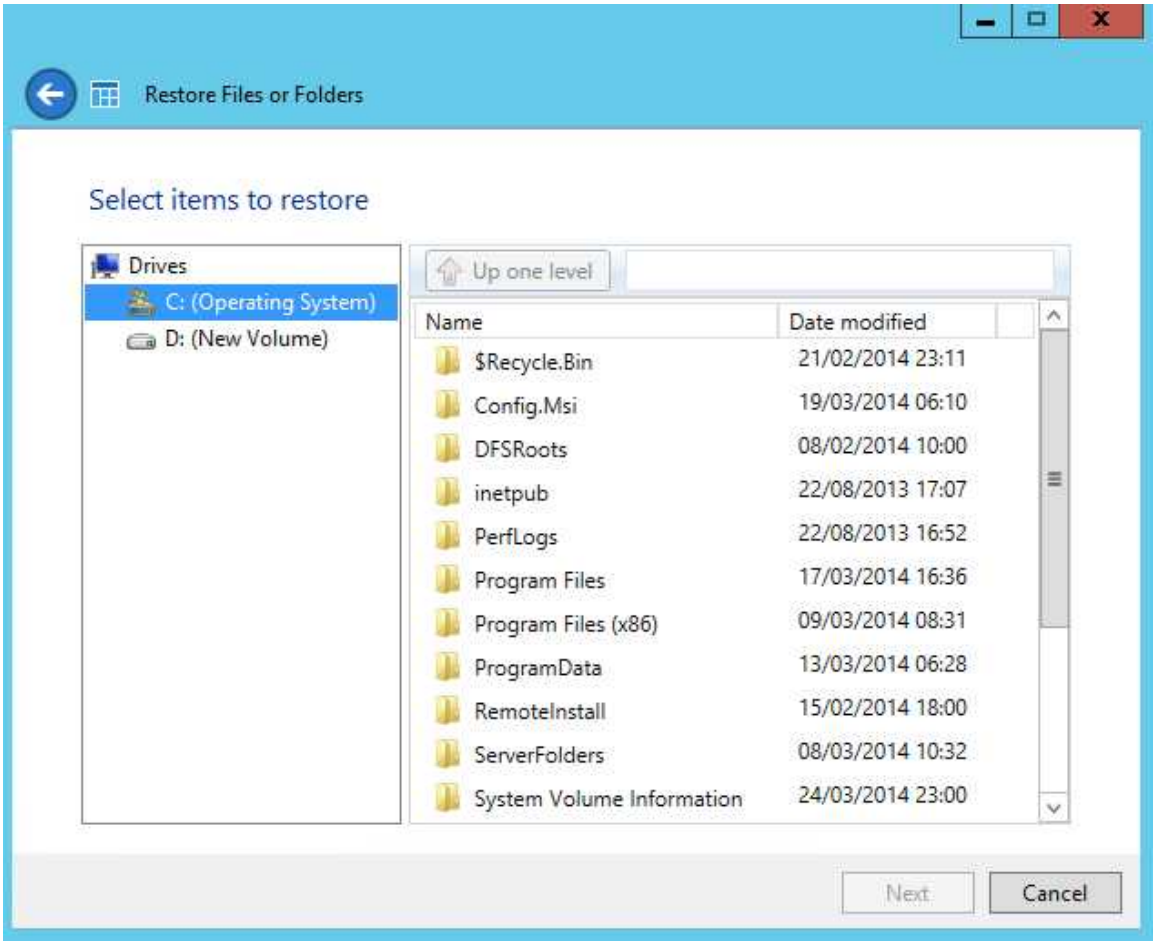
Choosing your backup.

Next, choose what you'd like to restore - files or folders, or an entire drive.



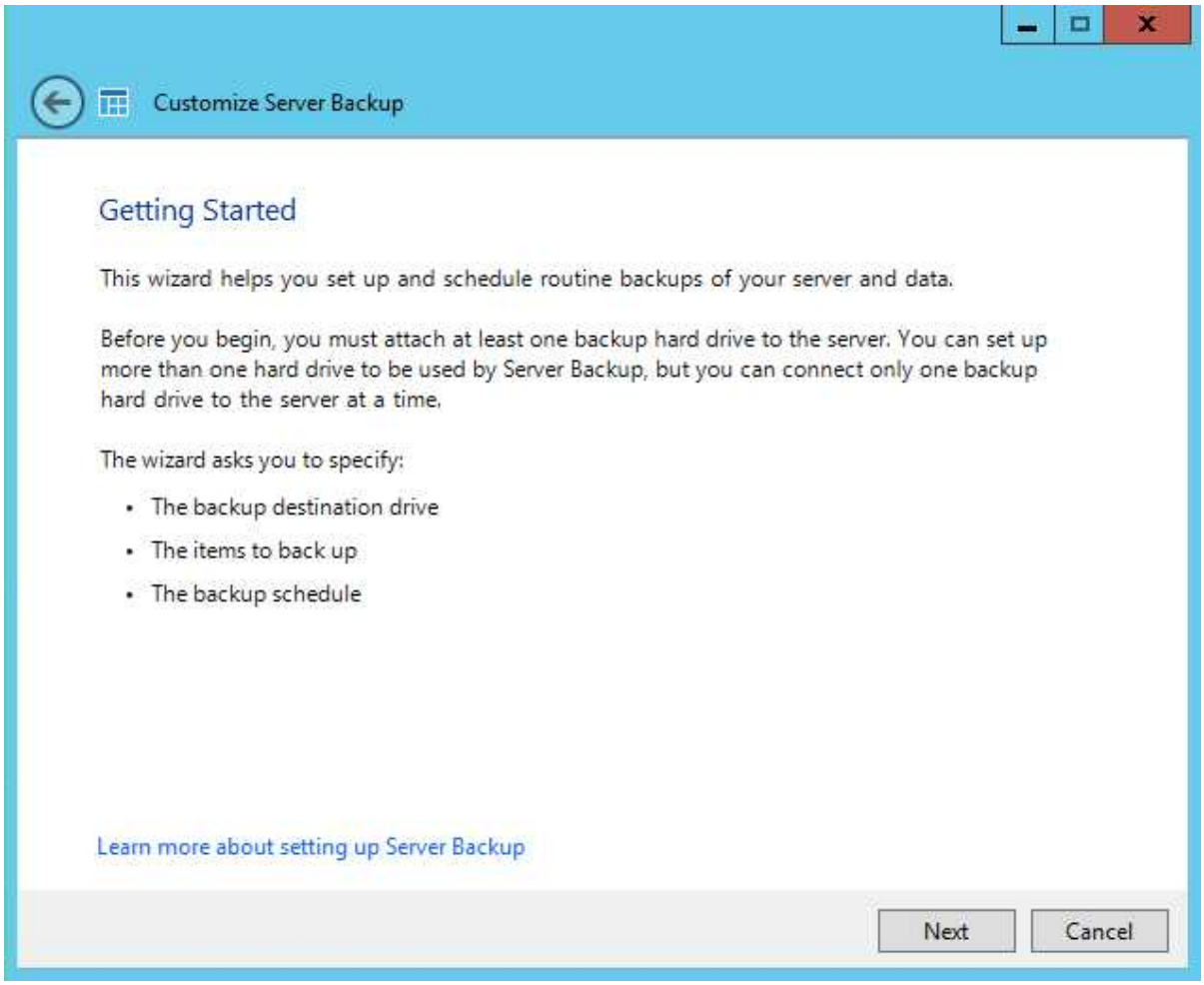
Selecting files and folders or a drive to restore.

Finally, select the files and folders or drive you wish to restore.



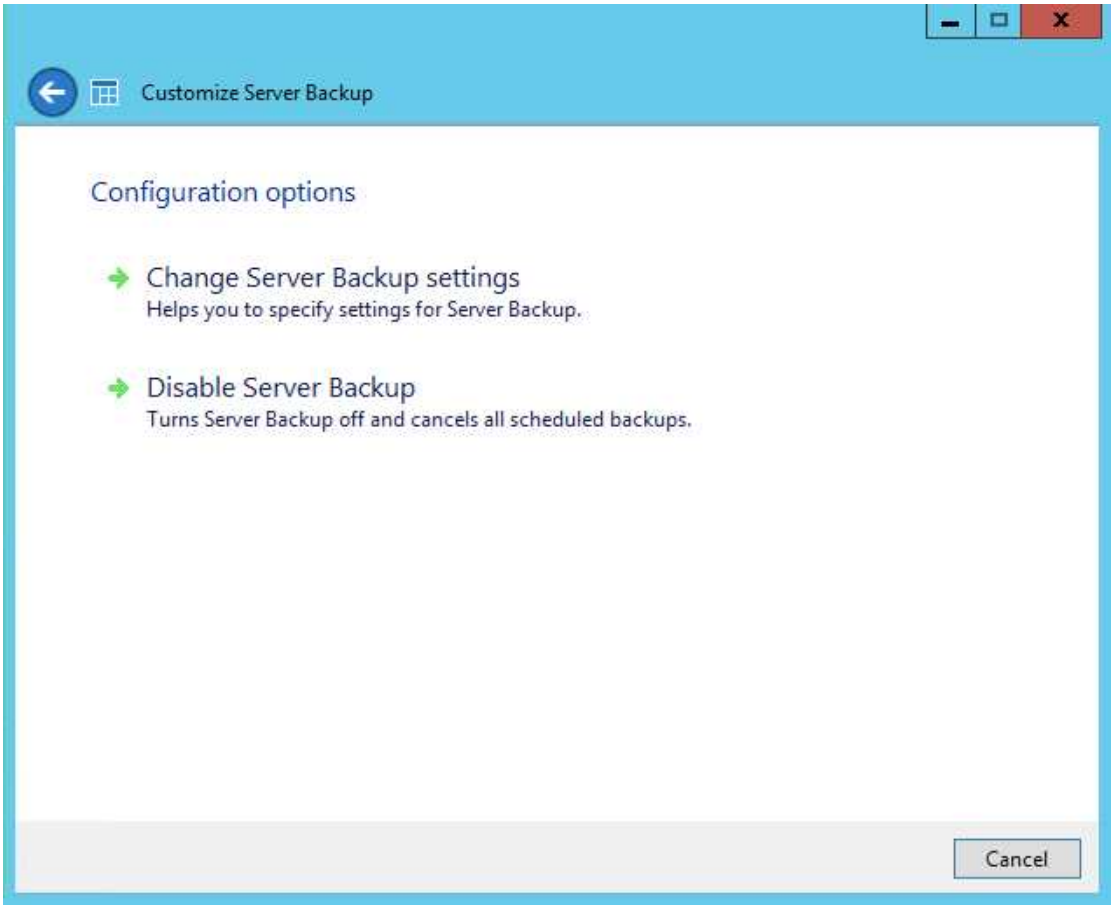
Selecting items to restore.

Your next task, **Customize Backup for the server,** allows you to change individual backup settings for the server, or to disable backups altogether. This task basically repeats much of the original set-up process we followed in an earlier chapter for configuring server backup - here we can change the backup destination drive, items that are backed up and the backup schedule.



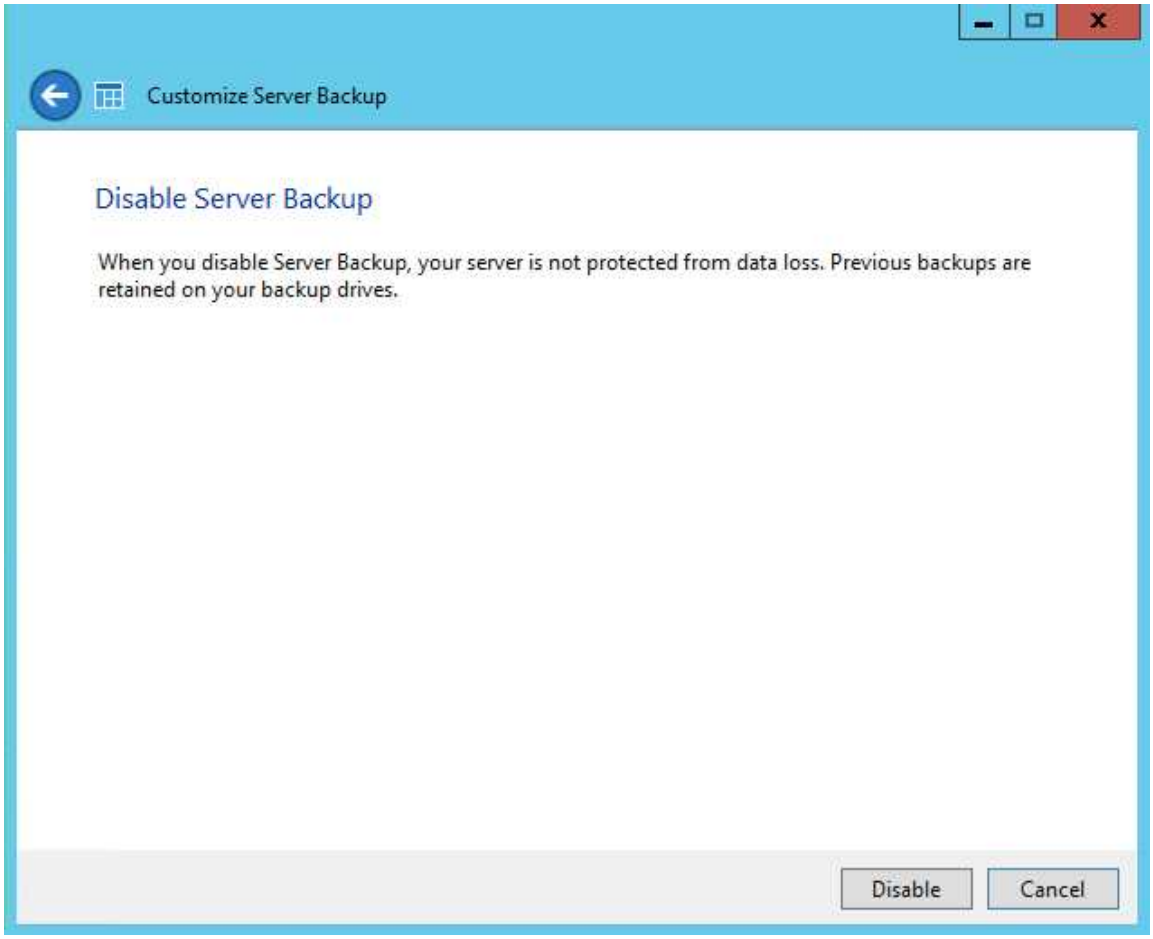
Customizing server backup.

Firstly, let the server know whether you want to disable server backup or simply make a change.



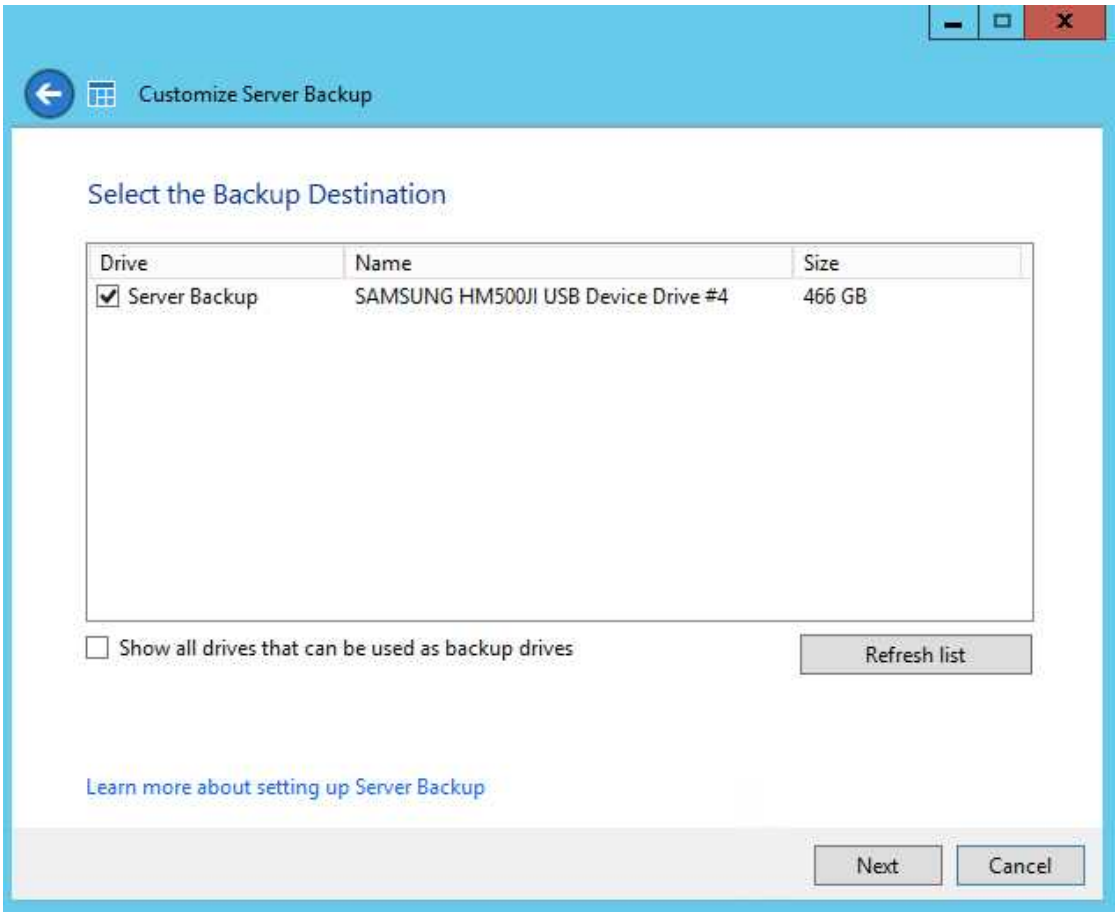
You can change Server Backup settings or disable it altogether.

Of course, if you decide to halt server backups, your old backups will be retained in case you need them.



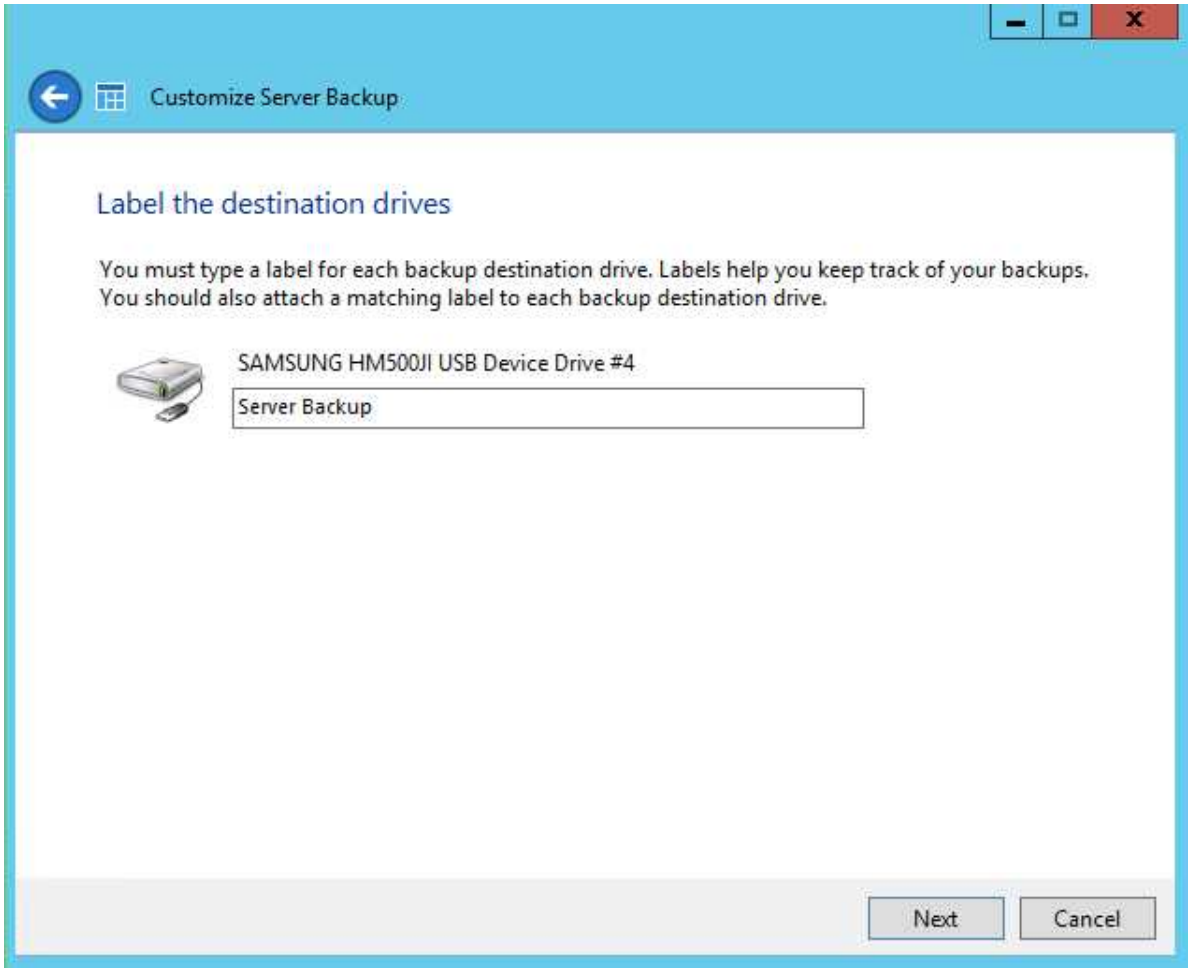
Confirming you wish to stop backing up the server.

If you're making a change, walk through configuring the backup location:



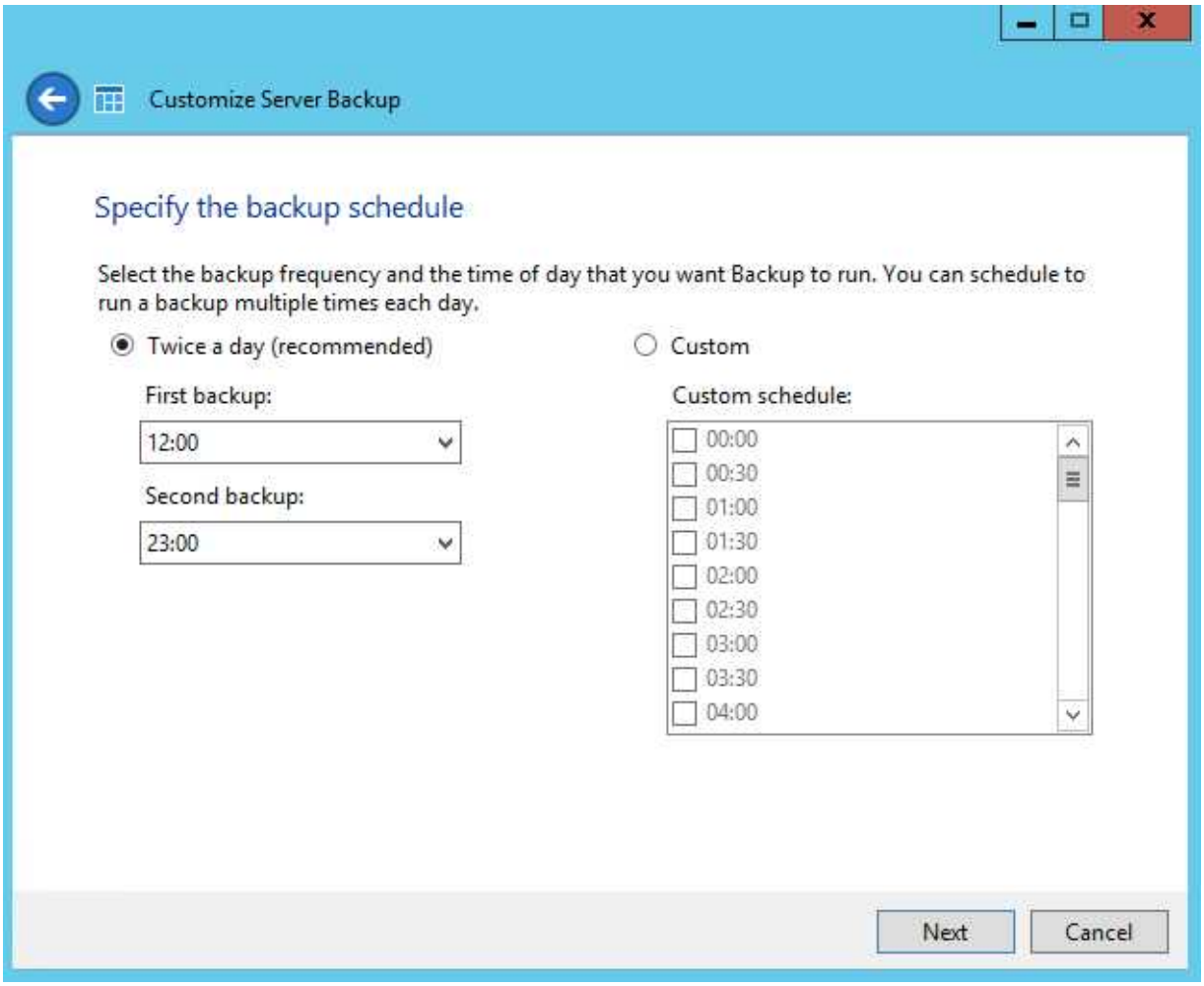
Configuring the backup location.

Then, provide a label (or keep it as is):



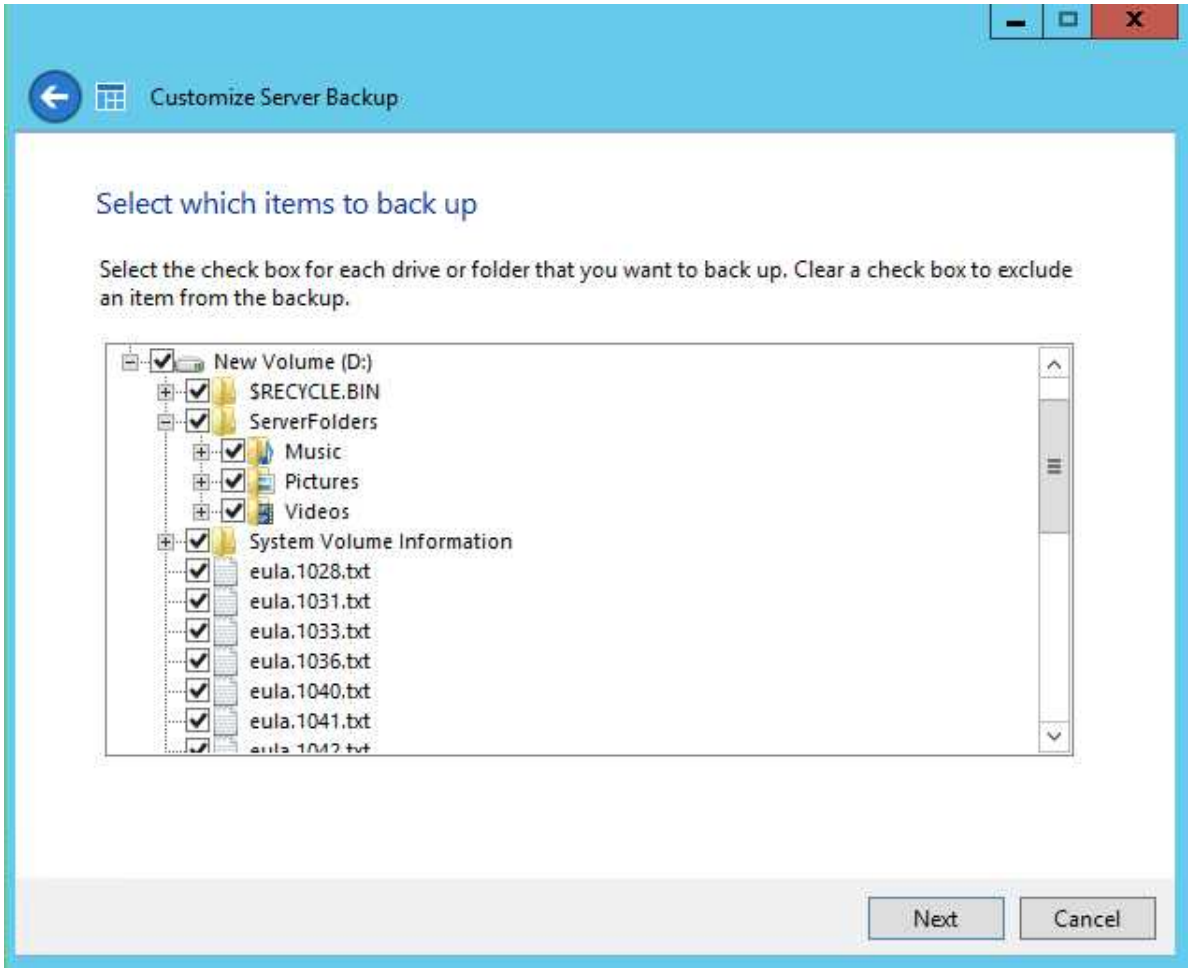
Labeling the drive.

Next up, you can amend your backup schedule.



Amending the backup schedule.

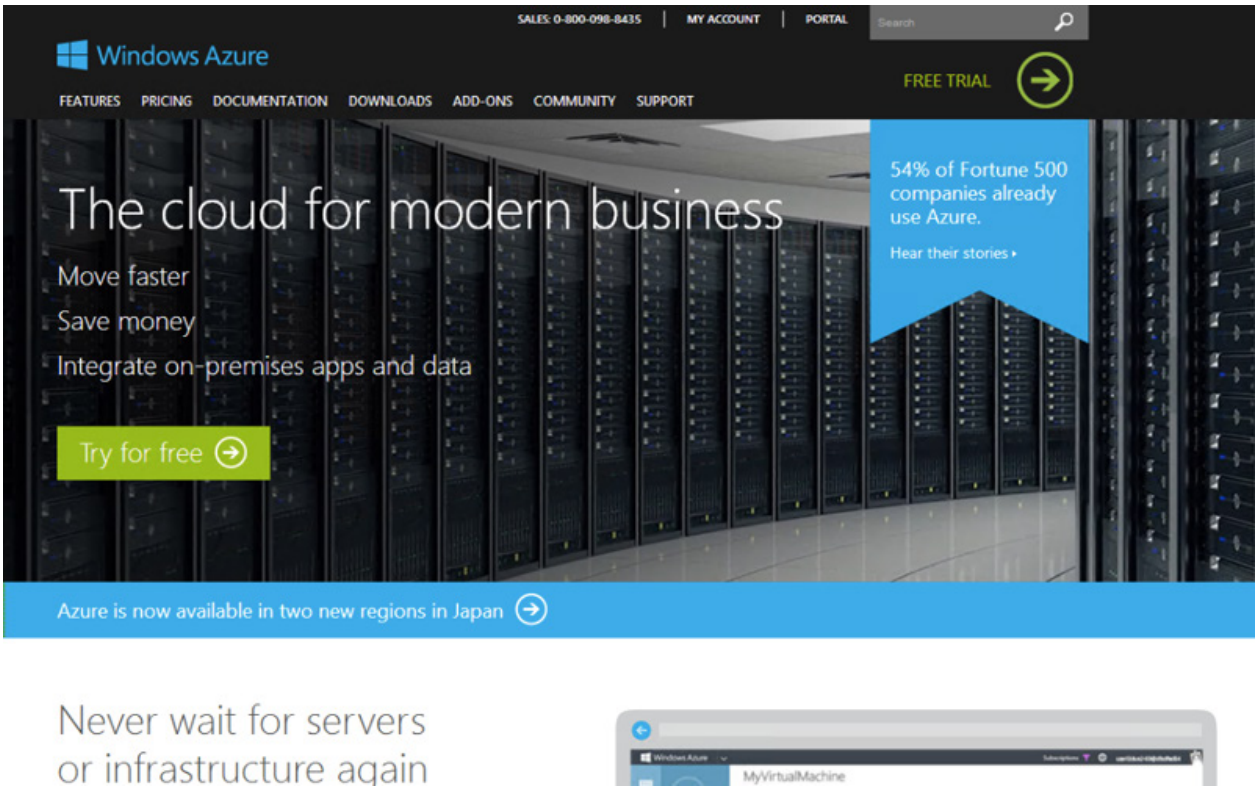
Finally, you can tweak what is to be backed up on the server.



Selecting files and folders for backup.

Sign up for Windows Azure Online Backup

Microsoft are *very* keen for you to try out their Windows Azure Cloud services, so you'll find links to buy dotted all over the Dashboard - including one in Server Tasks. We'll take a look at Windows Azure Backup soon, but for now, clicking the link will take you off to Microsoft's Windows Azure website where you can register for the service.



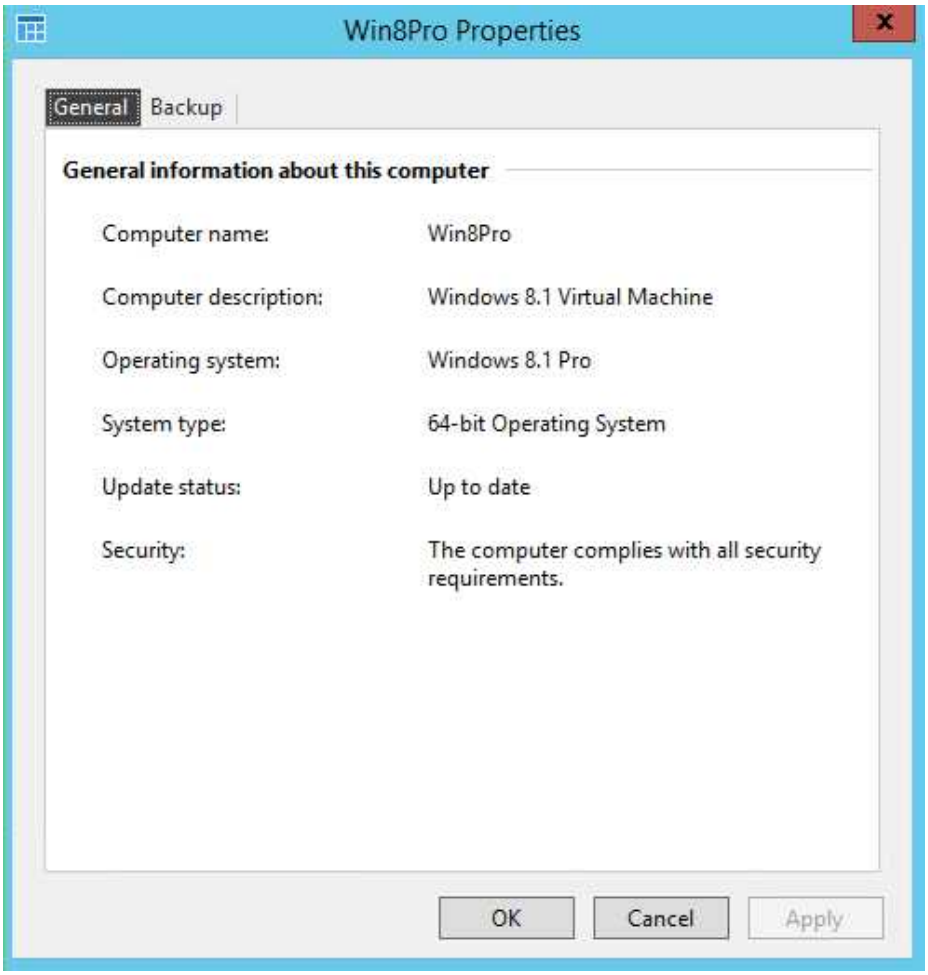
The Windows Azure website.

Managing Clients

For a client PC (offline or online), device management options are again mostly self-explanatory. Click on one of your PCs in the Devices list and let's take a look.

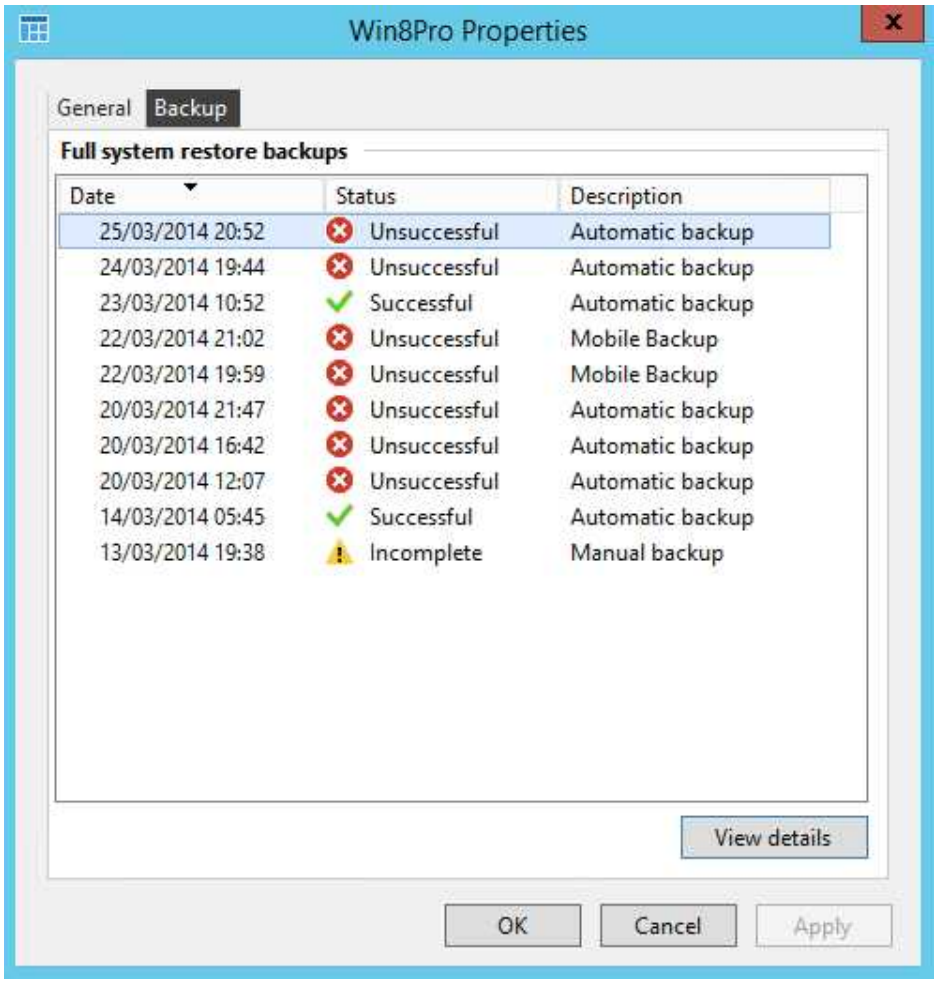
Viewing Computer Properties

The first task is **View the computer properties**. This is identical to the server properties dialog we saw earlier with a **General** tab and a **Backup** tab, except it includes a brief analysis of the client's security properties:



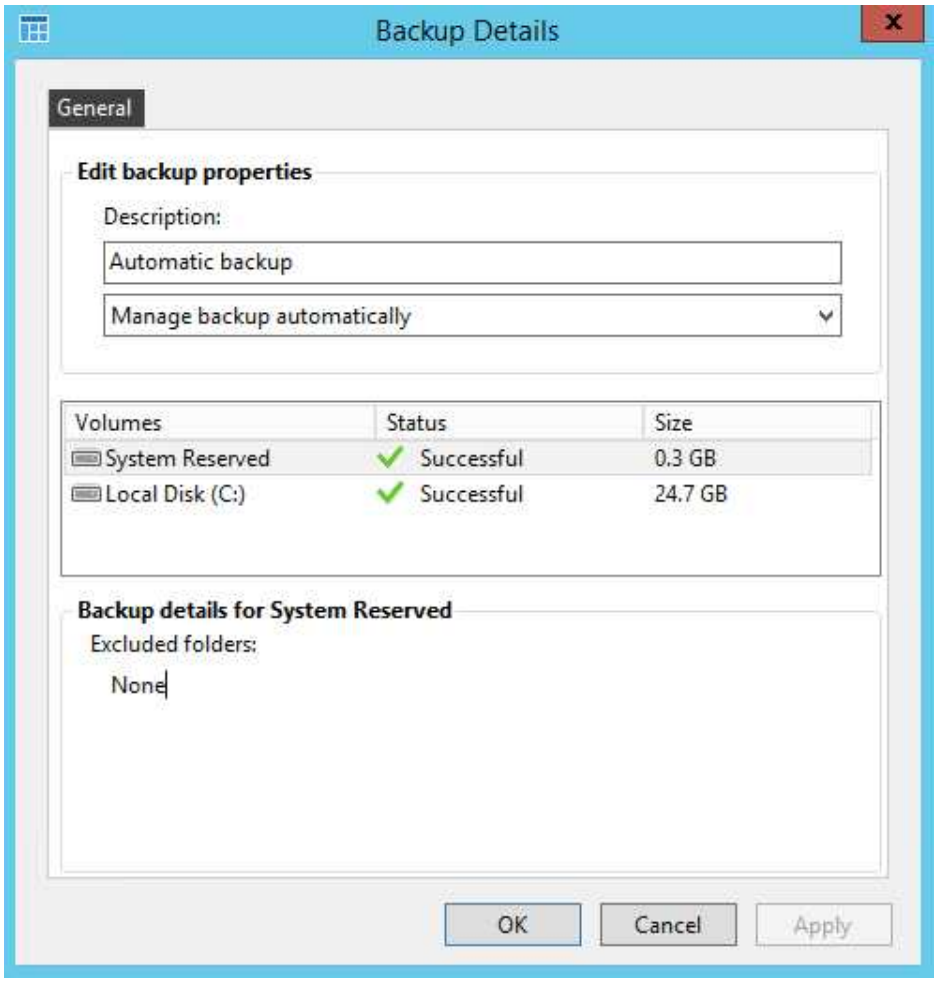
The General tab includes a status report for client security.

Once again, the Backup tab includes a list of your most recent backups, allowing you to spot any issues with ease.



The client backup log.

Double click on a log entry, or highlight an entry and select **View details** to view a report of that backup.



The Backup Details dialog can be edited.

There is one key difference in managing client backups compared to the server backup dialog we saw earlier. You'll notice that you can edit the description of your backups, and change how the backup itself is managed by the server. The default option, **Manage backup automatically**, determines how long a backup is kept before it is deleted during an automated **backup cleanup** process. Backup cleanup runs at 11:59 PM every Saturday. It deletes all the backups that fall outside the backup retention policy. The defaults for the backup retention policy are:

- **Retain daily backups for 5 days**. The first backup of the day is retained as the daily backup. After 5 days, the oldest daily backup is deleted in the cleanup process.
- **Retain weekly backup for 4 weeks**. The first backup of the week is retained as the weekly backup. After 4 weeks, the oldest weekly backup is deleted in the cleanup process.
- **Retain monthly backups for 6 months.** The first backup of the month is retained as the monthly

backup. After 6 months, the oldest monthly backup is deleted in the cleanup process

If that doesn't sound like what you need, you can click the drop-down and choose to make a backup for deletion when backup cleanup next runs or protect the backup from deletion.

Again, as we saw with Server backups, the dialog reports the volumes backed up on the client and highlighted any excluded folders.

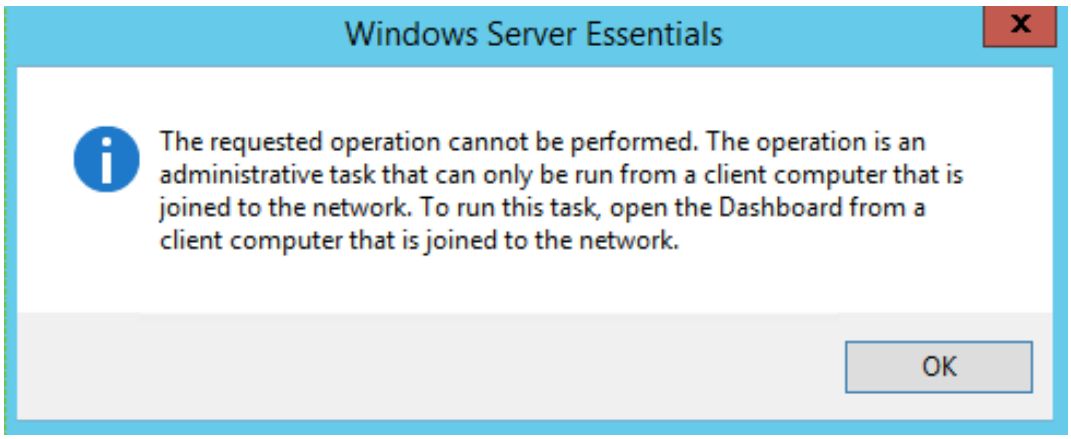
Backing Up Client Computers

Click the next task, **Start a backup for the computer**, and you can manually initiate a backup of the PC. Provide a name for the backup, hit **OK** and off it goes.

Naming the backup.

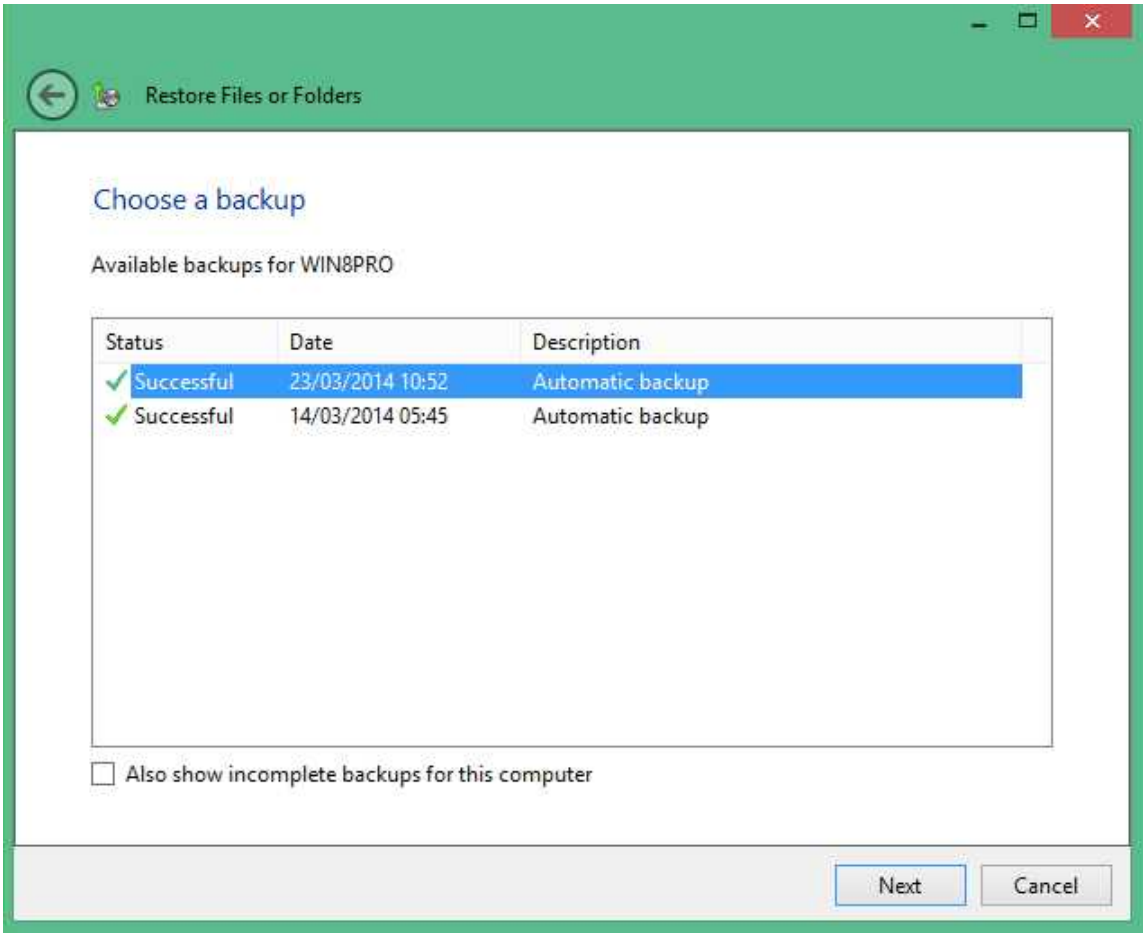
Restoring Client Data

Just like the related server task, **Restore files or folders for the computer**, you can extract data from a previous backup for restoration. Note that you'll need to perform the task on a client computer - it cannot be run from the server itself.



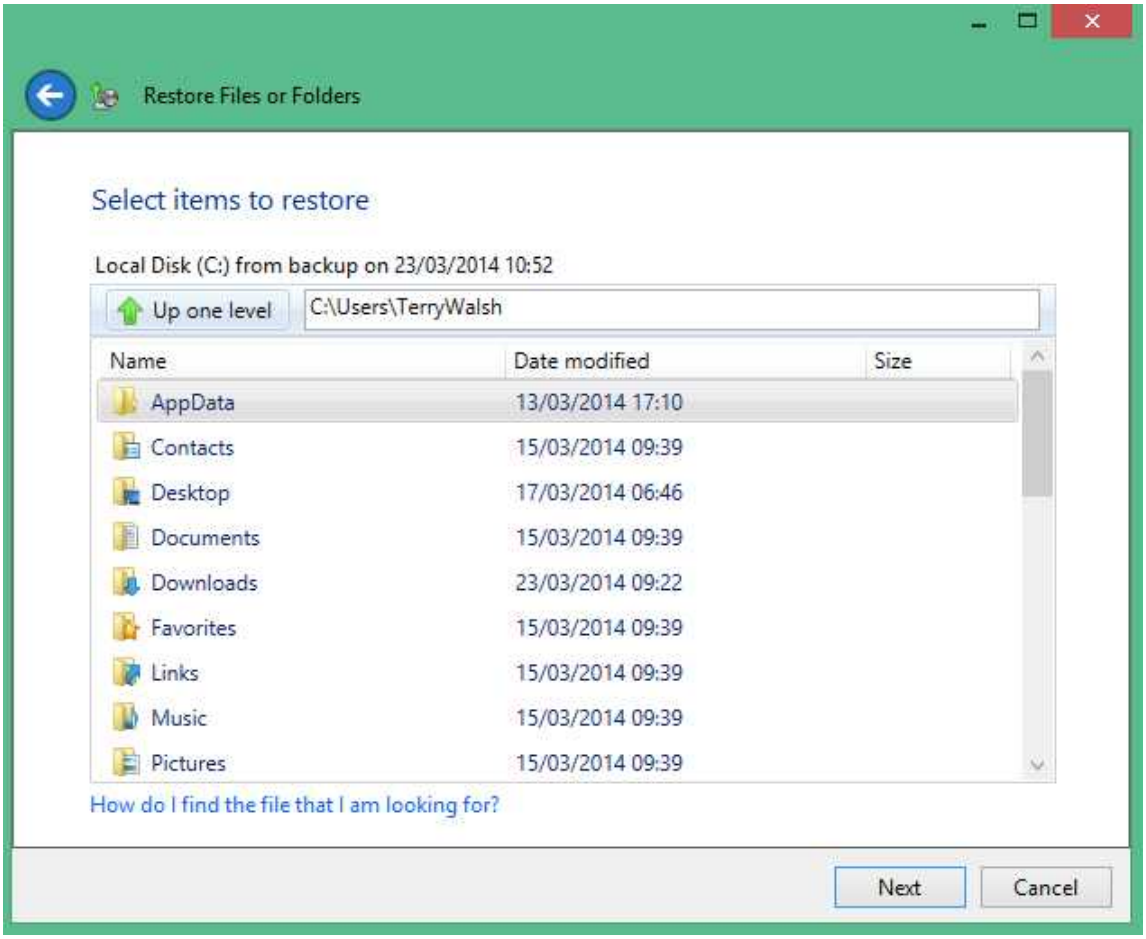
You'll need to restore data from a connected client.

You'll be presented with a list of your successful backups - unsuccessful backups can also be listed if you check the relevant box at the bottom of the dialog.



Choosing a backup.

Highlight a backup and click **Next**. You can then navigate to the files or folder you wish to restore on your client PC.

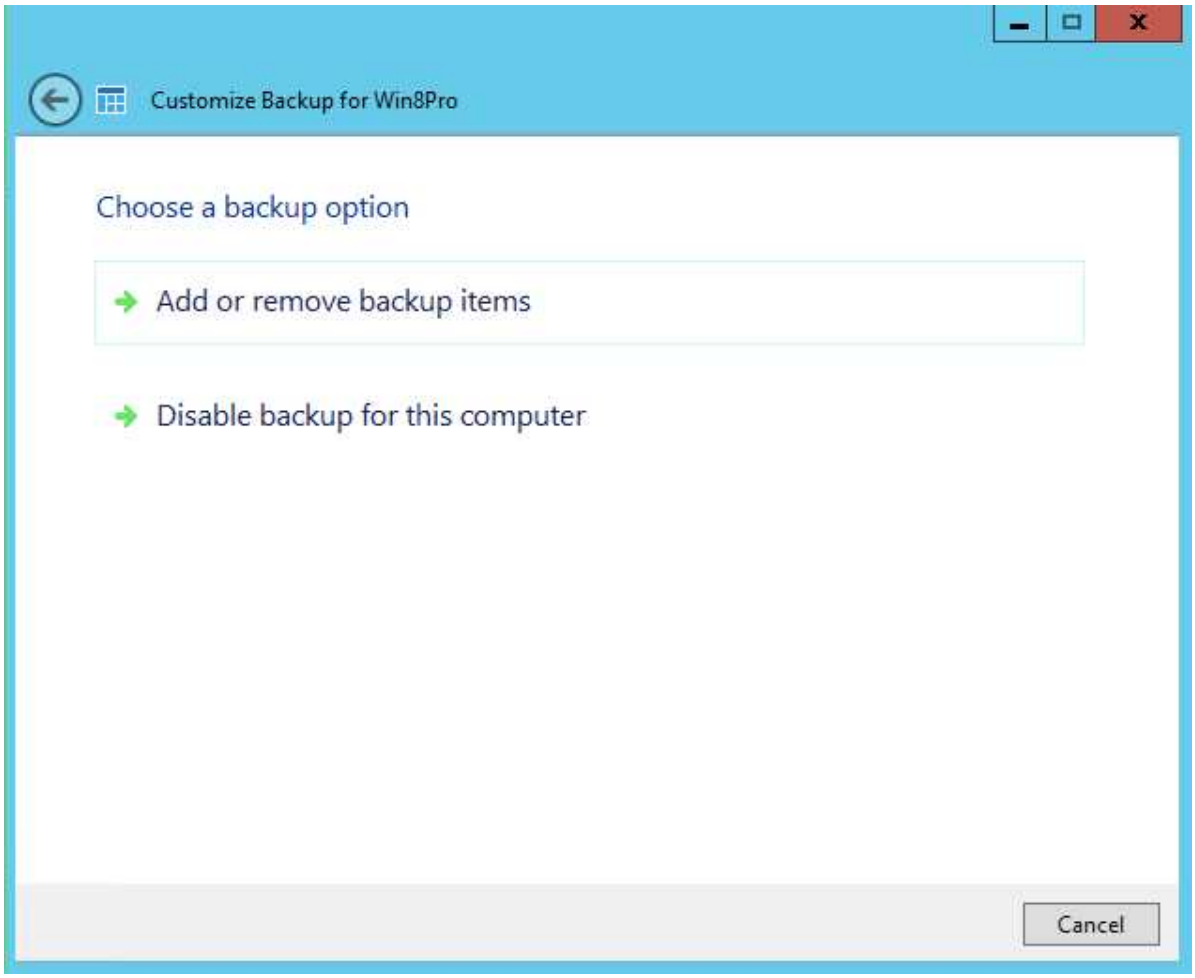


Restoring files and folders.

Note that with this task, data can only be restored from backed up files and folders - there is no full system restore available here.

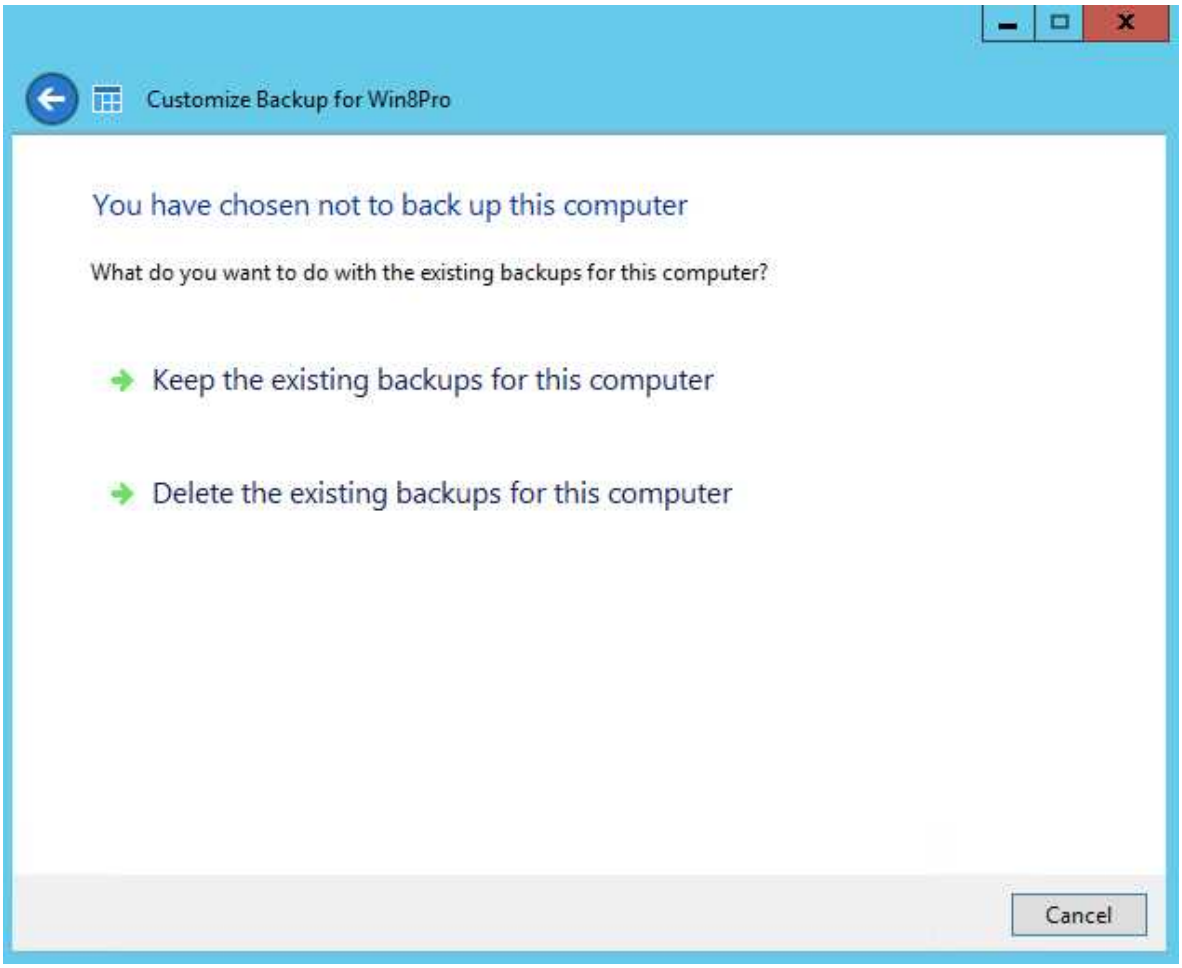
Customizing Client Backup

Customize Backup for the computer provides broadly the same options to tweak your backup settings as the server task. There are a couple of differences, however.



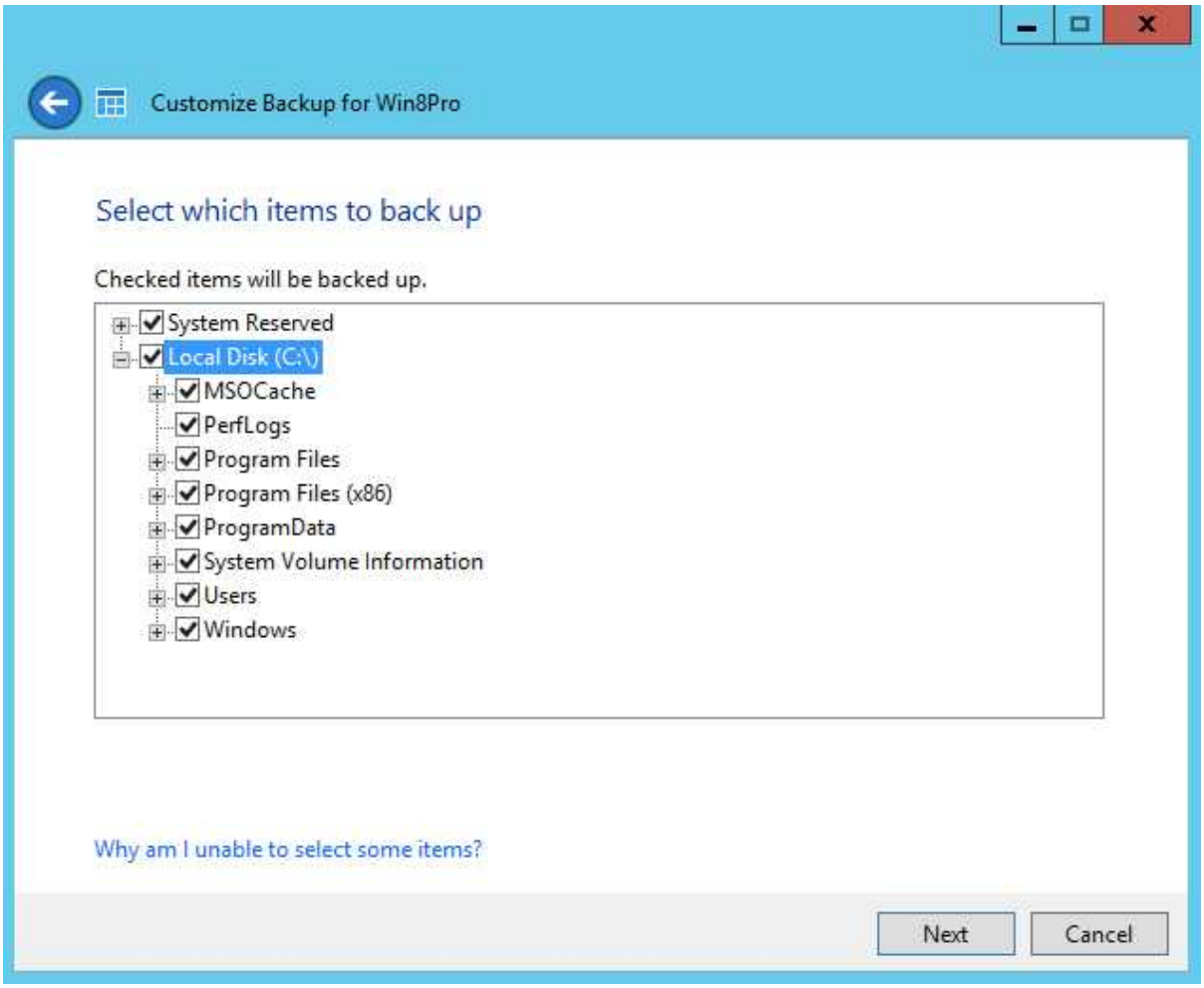
Choosing client backup options.

Disabling the client backup gives you the option of doing a little housekeeping on your server by deleting the PC's old backups. It's not mandatory, however and you can safely store your legacy backups in case you need them again in the future.



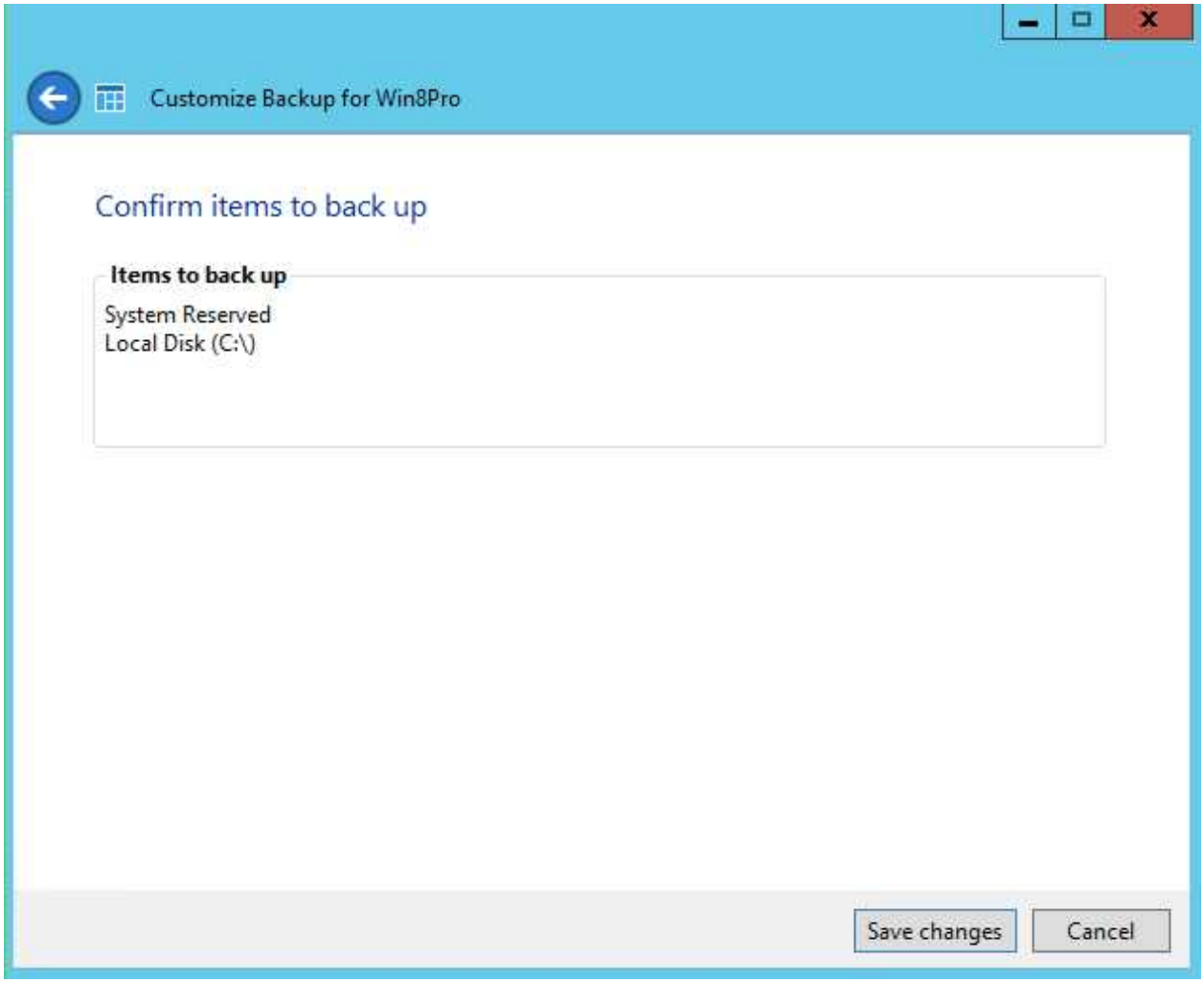
When disabling client backup, you can decide to keep or delete existing backups to claw back storage space.

Amending the client backup settings is very straightforward. You can simply check the folders you wish to include or exclude from the backup.



Selecting items to back up.

Confirm your selections and you're done. Unlike server backup, there are no options for scheduling your backups - Windows Server handles that for you automatically.



Confirming your backup settings.

Connecting to Clients Remotely

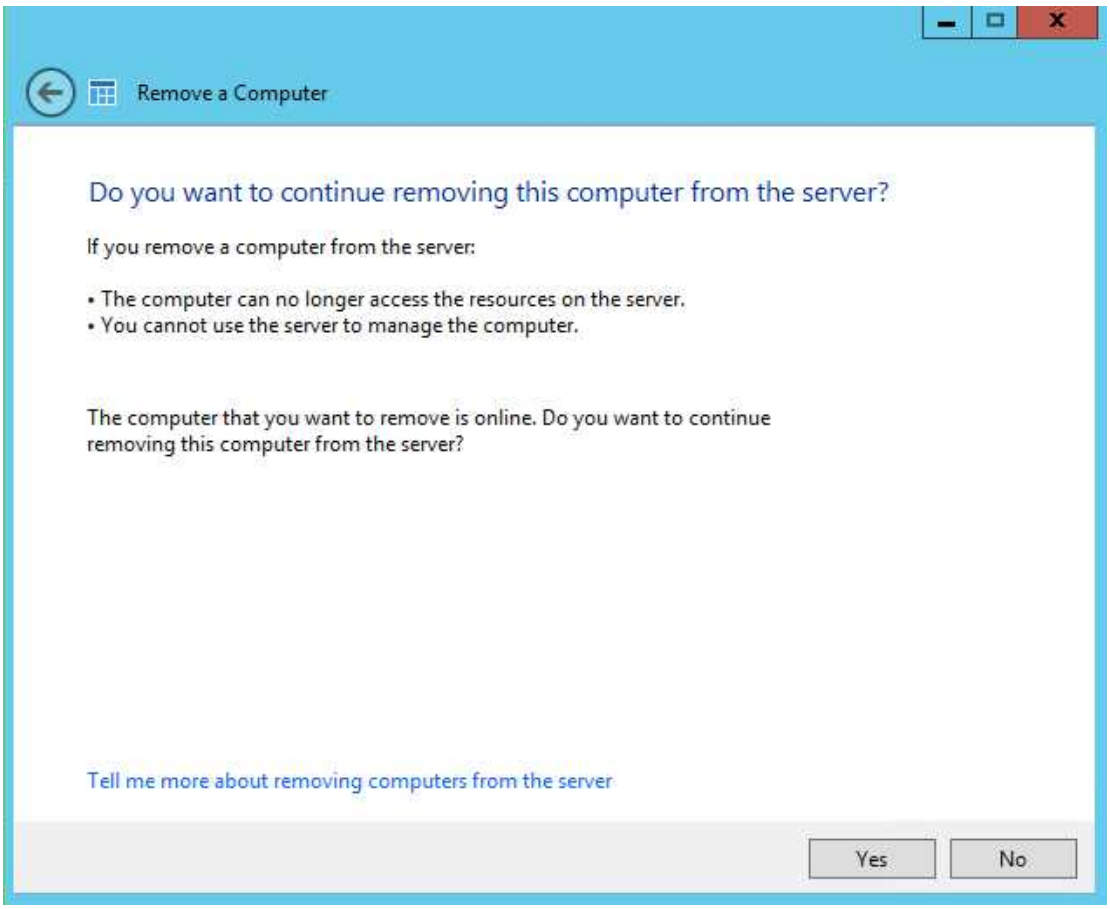
Also including in your client task lists is a handy link to open a remote desktop session to each compatible PC. If you need to access the PC's desktop, then you can do so with just a couple of clicks. As you'd expect, this task only appears for those PCs that are powered on and connected to the network.

Obviously, you can't connect to the computer you are running the Dashboard from - that would too much of a paradox for any of us to handle!

Connecting to the client via a Remote Desktop Connection.

Removing Computers From the Server

Remove the computer removes the client from the Windows Server 2012 R2 Essentials network - following removal, you will no longer see an entry for the computer in the Devices section. No back-ups will be run for that device and the server will no longer monitor the client's health status.



If you're decommissioning an old computer, you'll need to remove the connection from the server.

Note that removing the computer from the server does not remove it from the network - the PC can still access network resources in the same way as ever. To prevent the PC from accessing network resources, it must be removed from the domain.

To do this, on the client click **Start**, right-click **Computer**, and then click **Properties**. Under **Computer name, domain, and workgroup settings**, click **Change settings**. In the System Properties dialog box, click the **Computer Name** tab, and then click **Change**. In the **Computer Name/Domain Changes** dialog box, under **Member of**, click **Workgroup**, and then do one of the following:

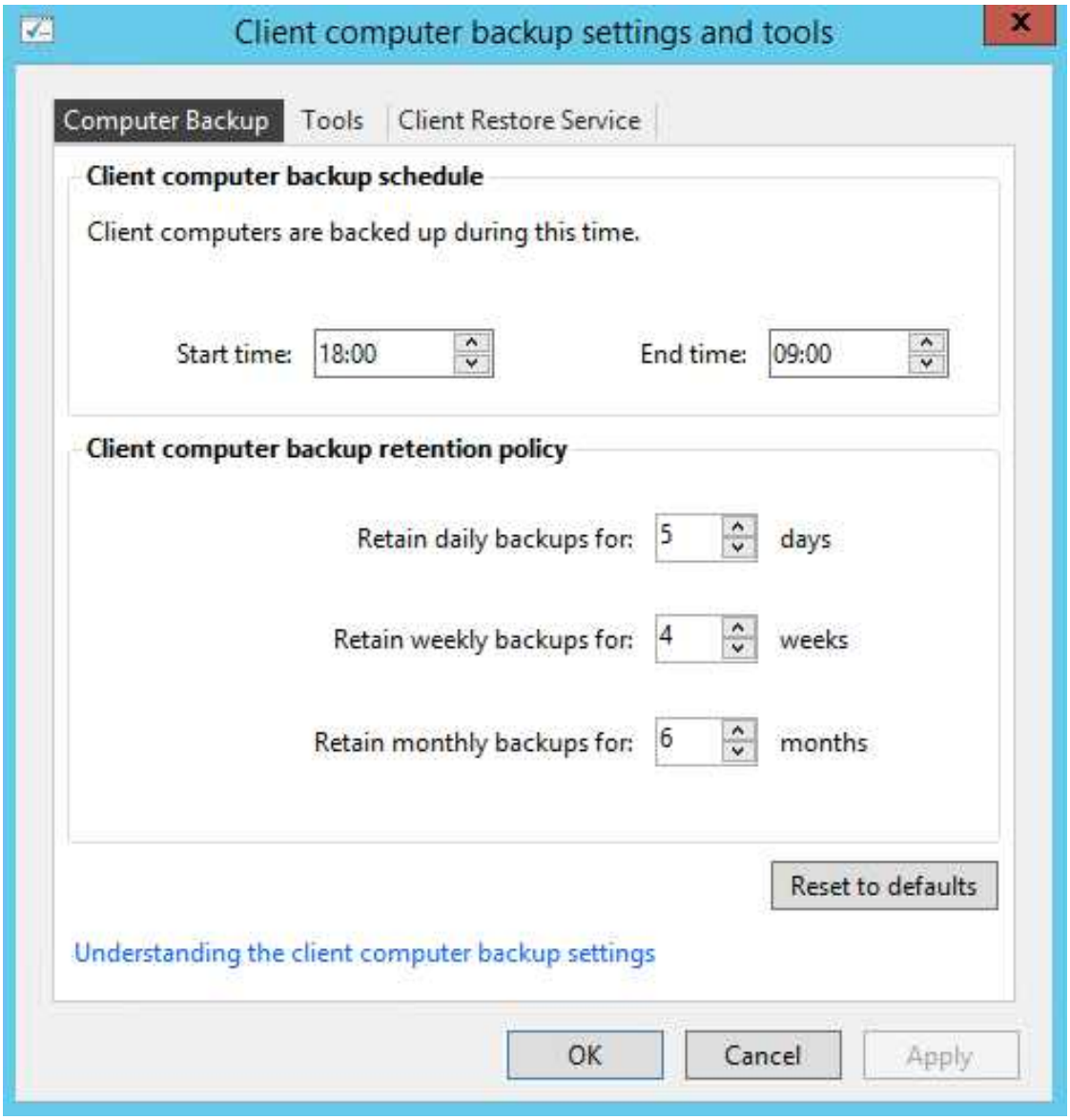
To join an existing workgroup, type the name of the workgroup that you want to join, and then click **OK**. To create a workgroup, type the name of the workgroup that you want to create, and then click **OK**

Remember, you'll also need to remove the Windows Server Essentials Connector software, which will delete the Launchpad and Dashboard links from the PC. To do so, open **Control Panel**, and then in the Programs section, click **View installed updates**.

Select Windows Server Essentials Connector from the list of programs, and then click **Uninstall**.

Client Computer Backup Settings and Tools

Further down the window, underneath **Computers Tasks**, you'll see a task called Client Computer Backup Tasks. Click it to open the **Client Computer Backup Settings and Tools** dialog.



Client Computer Backup Settings and Tools.

This is an important dialog which allows you to configure a range of settings across your client backups. It's split into three sections - **Computer Backup**, **Tools** and **Client Restore Service**. Let's walk through each in turn.

I mentioned earlier that Windows Server manages the scheduling of your client backups. Your PCs will be backed up overnight and Windows Server uses a set of internal rules to determine the order in which those PCs are backed up.

In the **Computer Backup** tab, you can alter the time window in which Windows Server backs up your PCs. By default, the backup window is set between 18:00 and 09:00 - what Microsoft considers to be "overnight" hours, when your PCs will be quiet. Obviously, your business may operate to a different schedule, so use the controls to change the backup schedule to a time when your PCs will not be in use. Bear in mind this is a window, so whilst you may set the End time to be 07:00 for example, Windows Server may well finish ahead of that deadline - all you're saying here is that Windows *must* have backups completed by the End time.

We continue in the Computer Backup tab to **Client computer retention policy**, which determines how long backups are kept on the server. This is an important task to manage, as obviously over time, your server will fill up with client backup files.

Windows Server backs clients up on a daily, weekly and monthly basis and you can control specific retention policies for each of these types of backup.

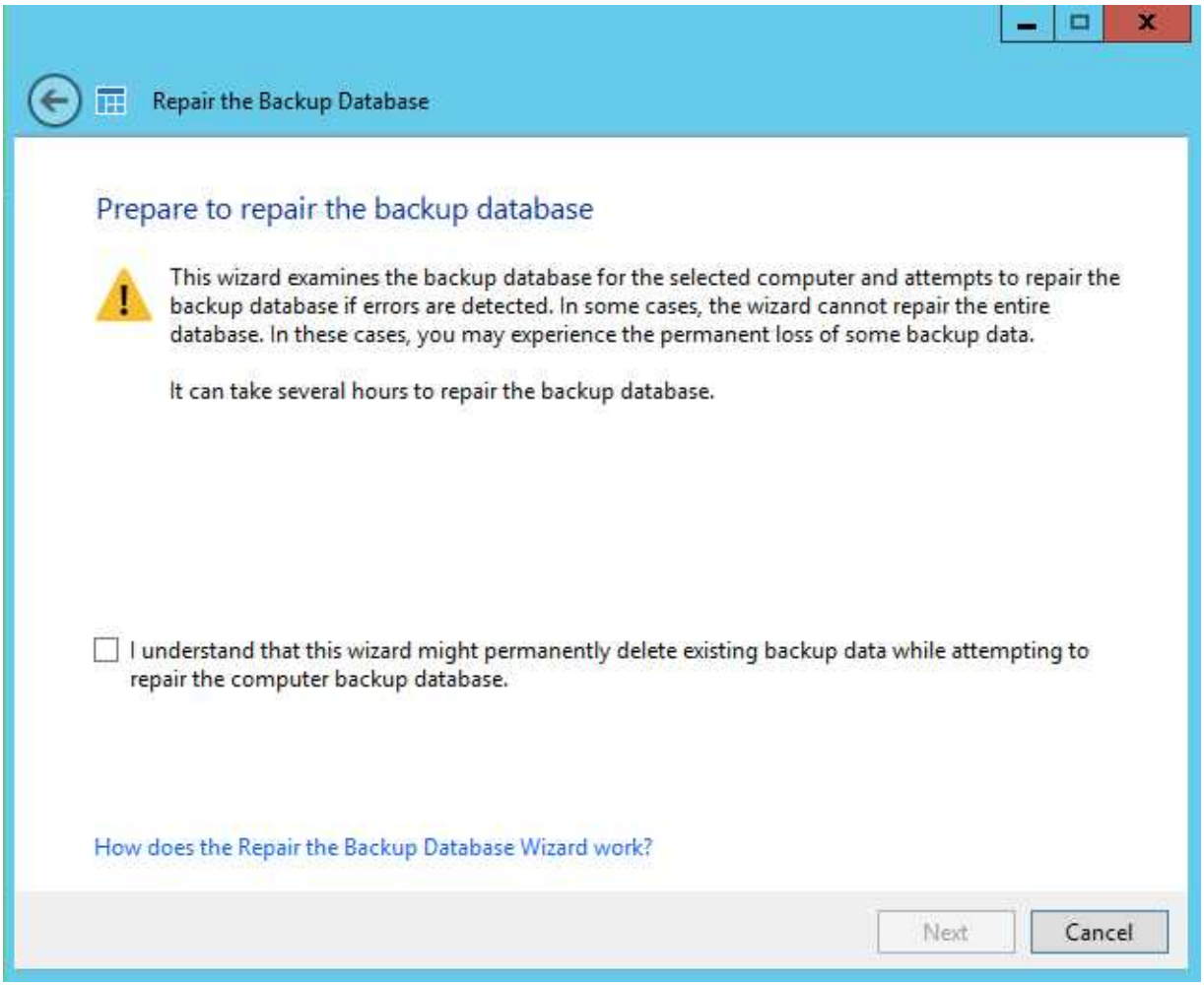
- The Daily backup default is 5 days - On the 6th day and each day thereafter, the oldest daily backup file is deleted.

- The Weekly backup default is 4 weeks - 4 weekly backups are retained. On the 5th week and each week thereafter, the oldest weekly backup is deleted.

- The Monthly backup default is 6 months - On the 7th month and each month thereafter, the oldest monthly backup is deleted.

Simply use the up and down arrows to adjust the default retention settings. To return to the defaults, click the **Reset to defaults** button.

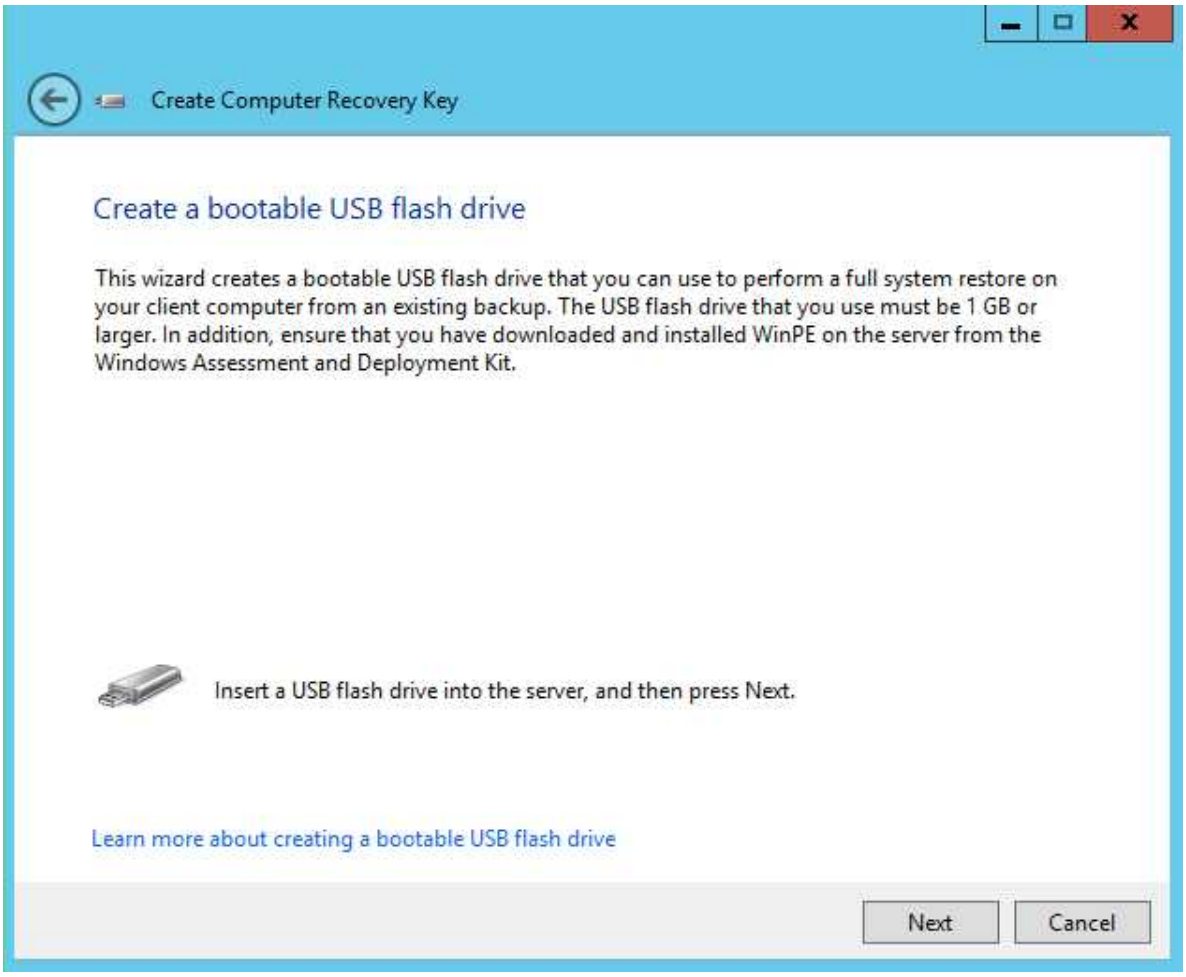
Moving on to the **Tools** tab, if your backups aren't restoring correctly, you can launch a **Repair** tool to try to get them working correctly.



Repairing the backup database.

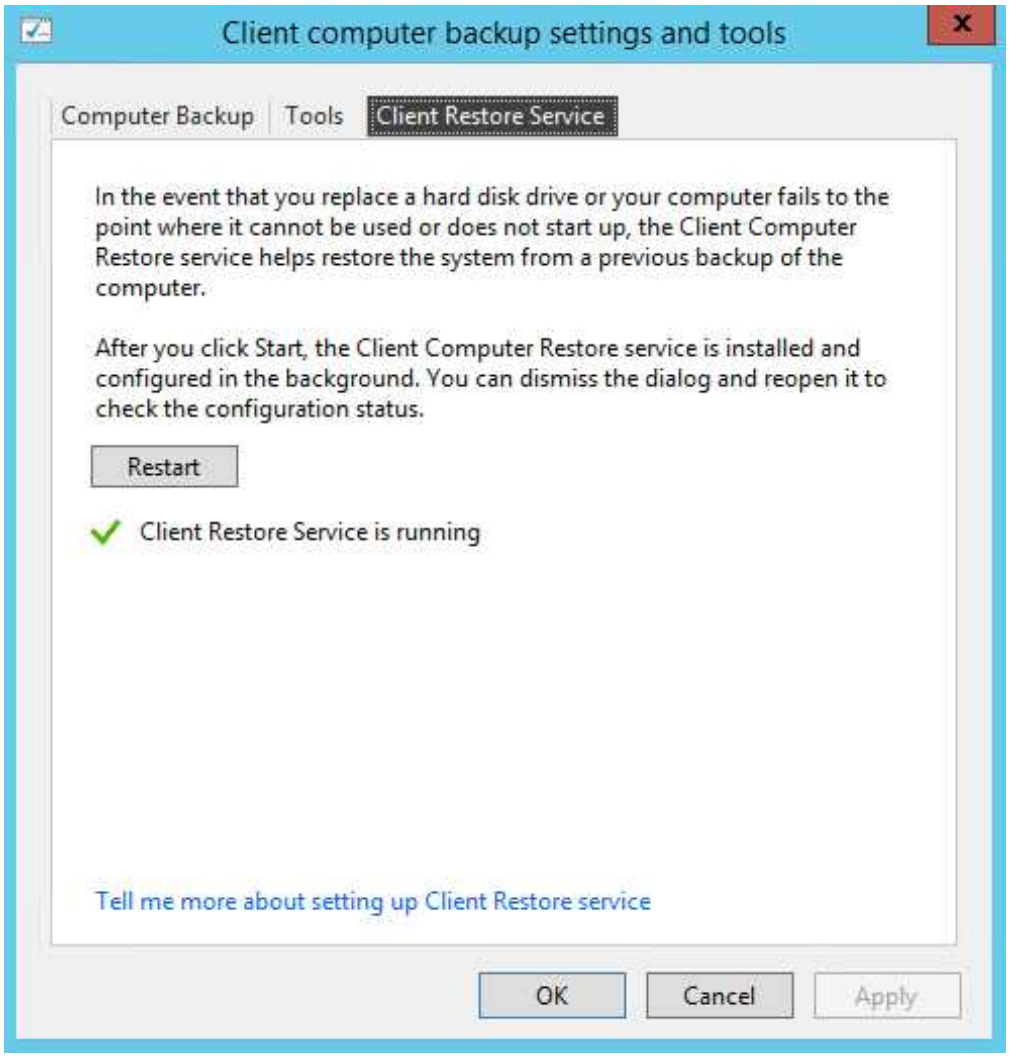
Note that repair can sometimes be destructive, so backup data may be deleted during the process.

We'll also head back to the Tools tab in a later chapter on to create a **Computer Recovery Key** for our clients.



Computer Recovery Keys are used to perform full system restores.

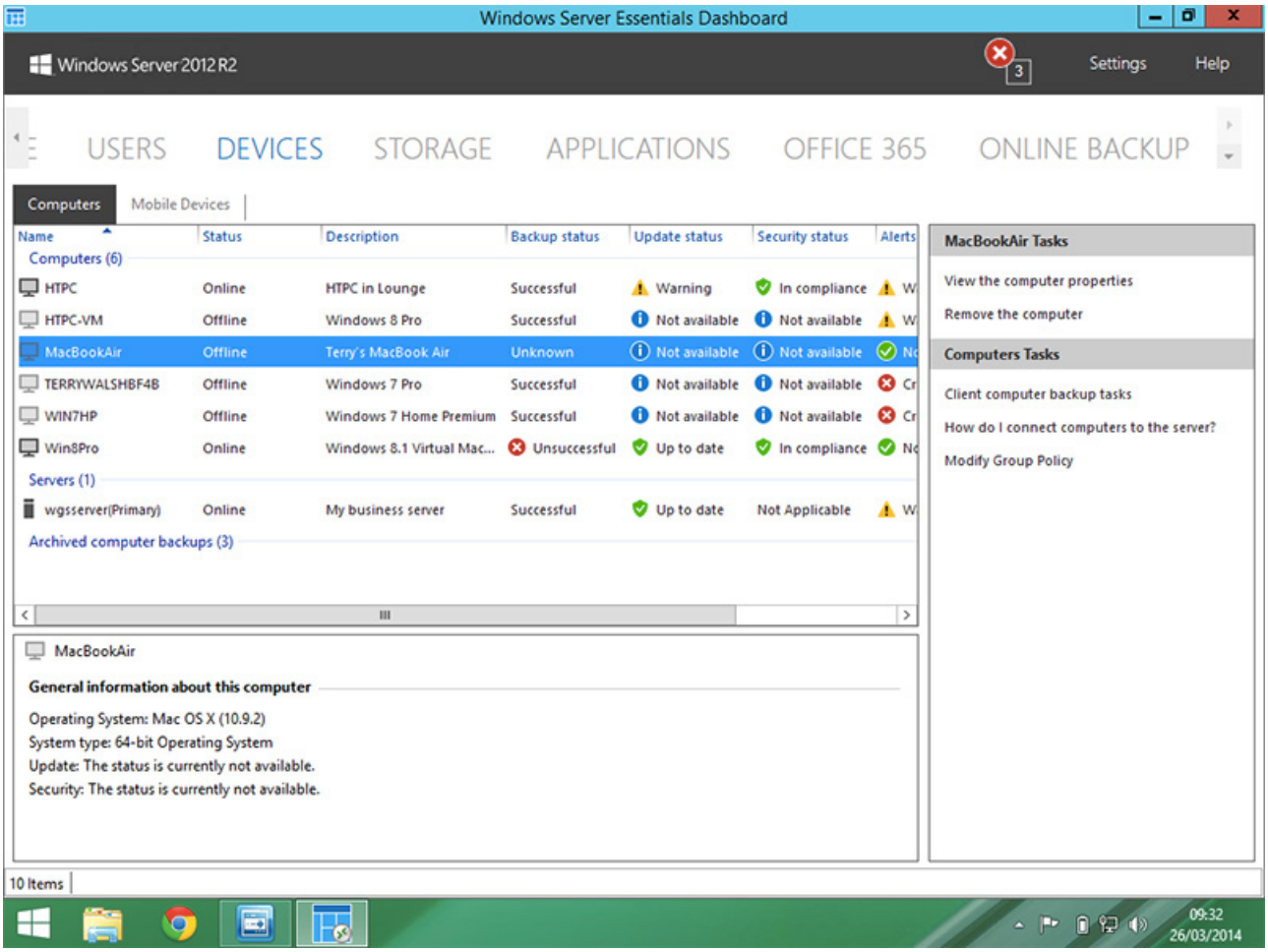
Finally, the **Client Restore Service** tab is used to start (and restart) the service which allows us to restore PCs. If the service is already running (you'll remember we kicked it off in the Setup tasks earlier), a button serves to restart the service.



The Client Restore Service tab.

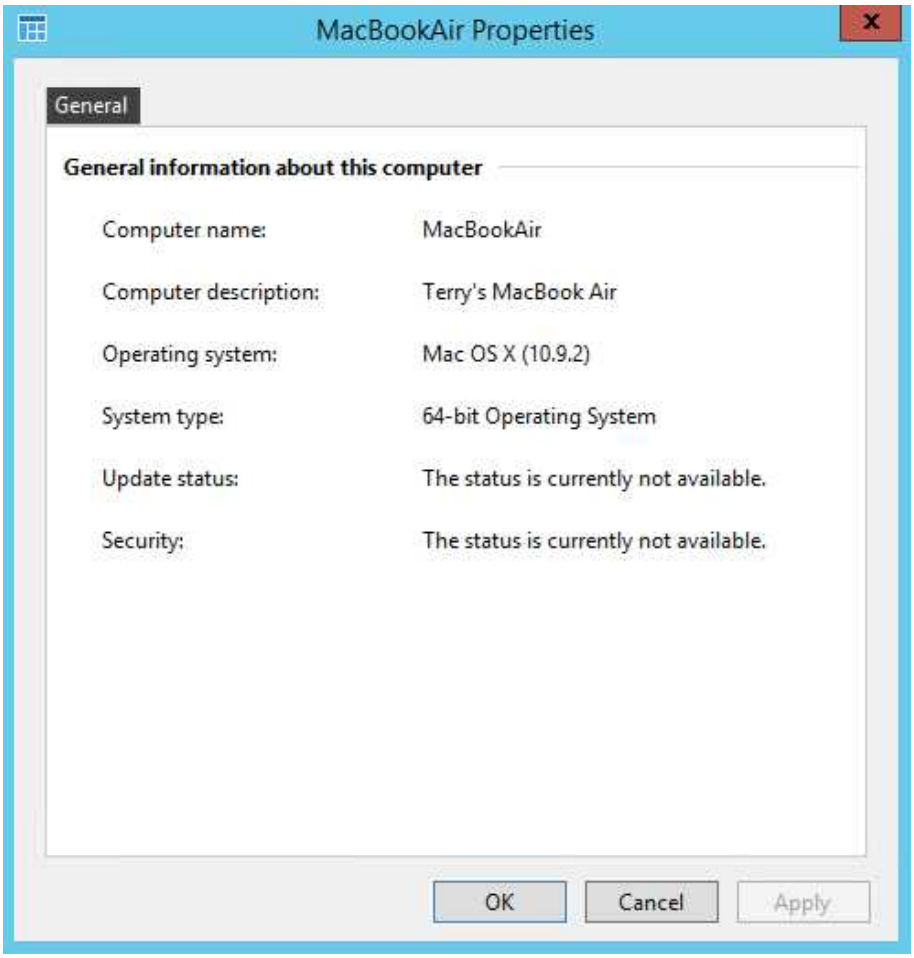
Client Tasks for Apple Macintosh Computers

If you have a Mac in your organization or home, the available tasks are somewhat limited:



Apple Mac client tasks in the Windows Server 2012 R2 Essentials Dashboard.

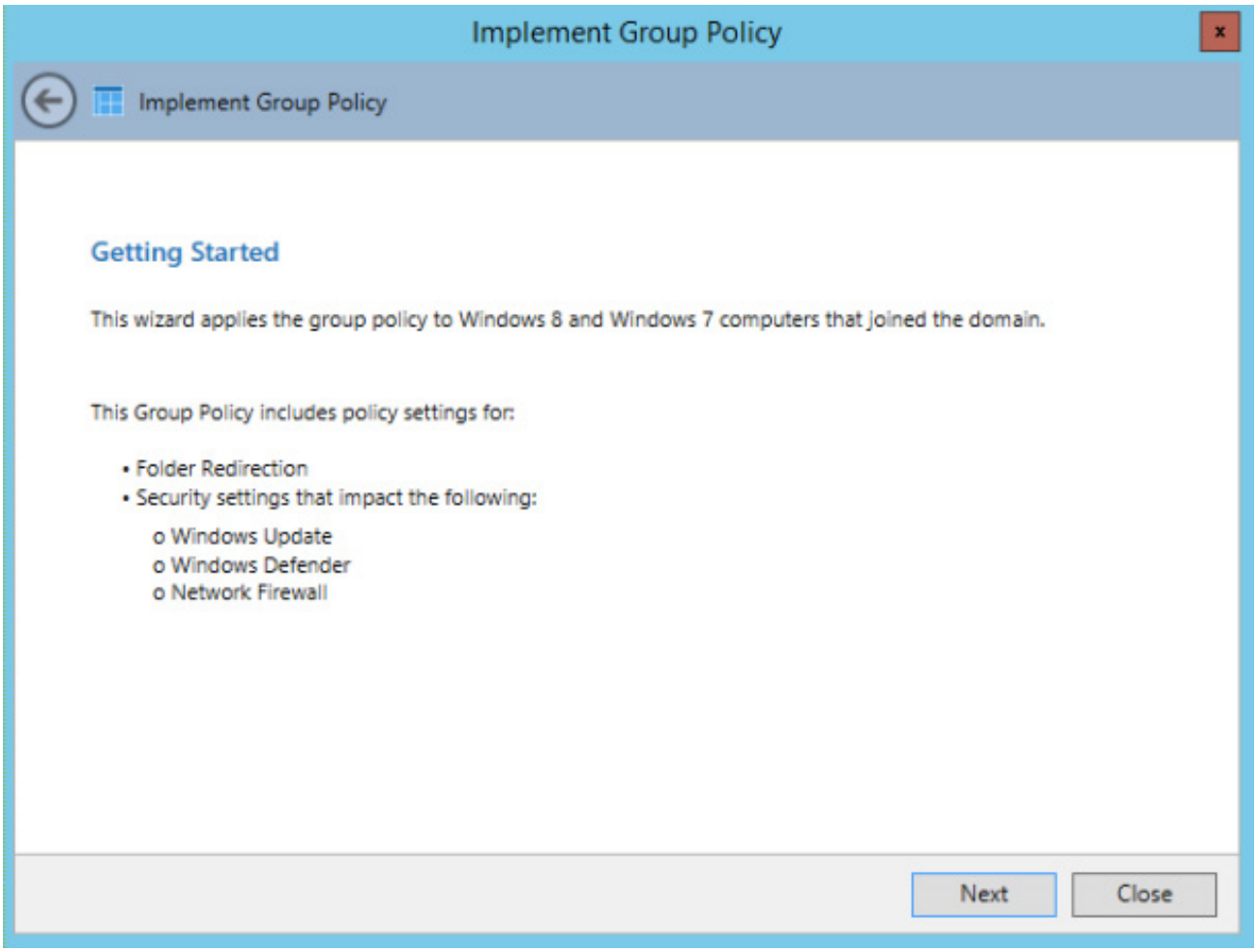
Windows Server 2012 R2 Essentials provides less information for a Mac than it can glean from a Windows client. Click **View the computer properties** to check it out.



Viewing Apple Mac properties.

Implementing Group Policy & Folder Redirection

OK, back to our Device Tasks - we have already gone over "**How to connect computers to the server**", so we will move to the final Device Tasks setting, which relates to **Group Policy**. You'll find a task called **Implement Group Policy** at the bottom of the list.



Implementing Group Policy.

Group Policy in Windows Server 2012 R2 Essentials performs two tasks. I'll deal with the second task first, as it's quick to explain! The second task ensures that certain security settings are enabled on Windows 7 Professional, Windows 7 Ultimate, Windows 8 and Windows 8.1 Pro computers as well as Enterprise editions. The server will override any settings that may have been set on an individual computer, so you may find this a compelling reason in itself to upgrade "Home" versions of Windows 7 or 8 to the "Business" versions.

The first task that Group Policy performs, **Folder Redirection**, requires a bit more explanation. Folder Redirection moves or copies the contents of your profile - what make you "you" on a client computer - to a special folder on the server. So, all of your user files and folders, your documents, music, video, pictures libraries and more will actually be held on the server, but *appear* to be stored locally on each client.

Actually, depending on how you set up "syncing" on your clients, this data either resides on the

server only (live), or is duplicated for remote access and synced back to the server when the machine is on the same network that the server is connected to.

Before you consider enabling Folder Redirection, you need to decide if is desirable for a particular user. If a user:

- Works on multiple PCs and needs access to their personal files and folders on all of those computers

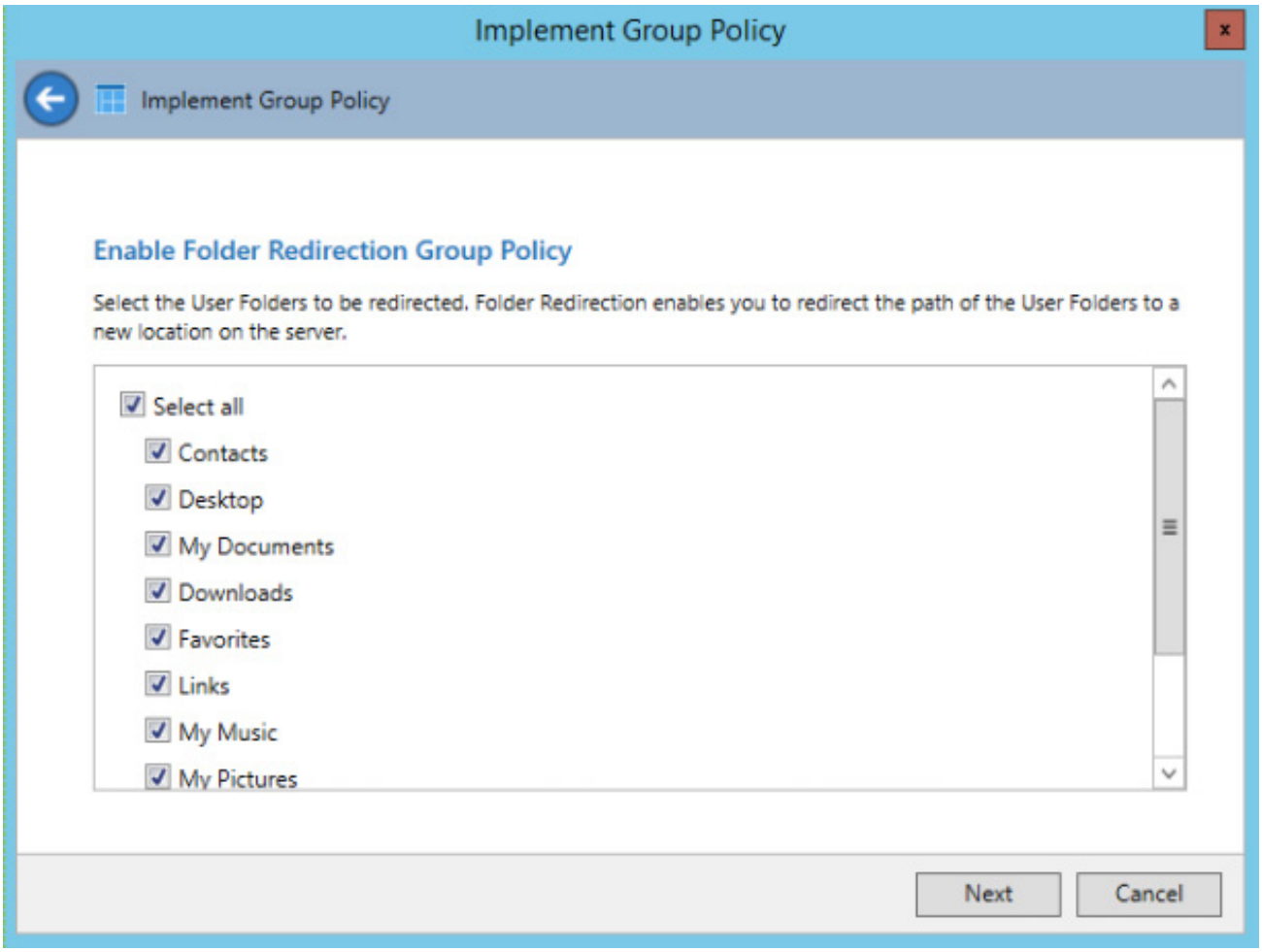
and...

- Does a lot of remote work away from the office

than Folder Redirection might be very useful. If neither condition applies, I would recommend that you not use Folder Redirection and simply make sure that PC backups are enabled as well as File History.

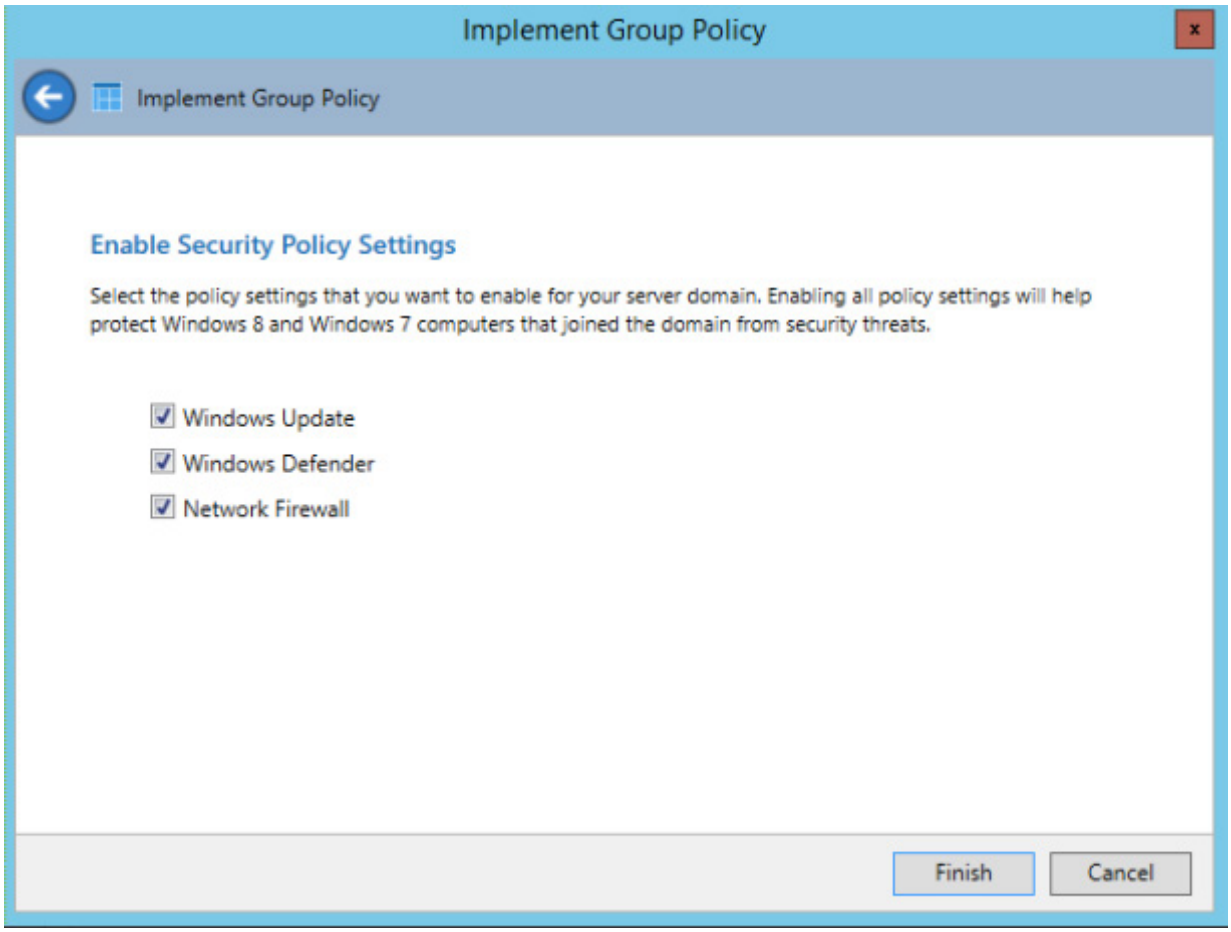
Before we actually proceed through the wizard, please make note of one more caveat. **Make sure that users are logged on to only one machine during this process.** I guarantee that strange things can and will occur if users are logged onto multiple machines simultaneously when you run this wizard.

OK, click on the **Implement Group Policy** link to start the setup wizard. The first screen simply informs you what policies you can set, so click on **Next**.



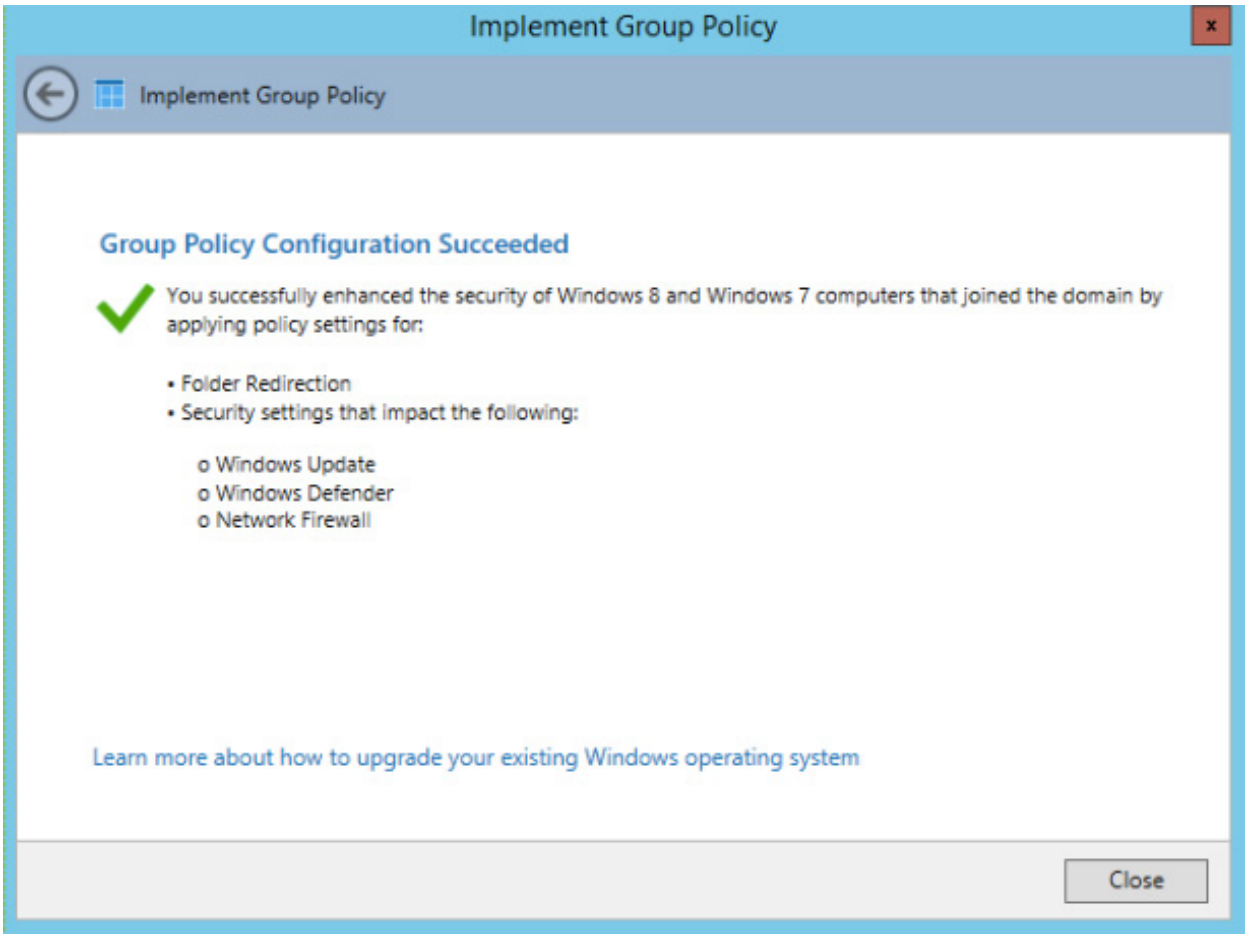
Choose which user folders will be redirected to the server.

Depending upon how you have decided to use Folder Redirection, enable or disable any or all of the various folder options. If your domain account is associated with a Microsoft (Live, Hotmail, MSN) account on a Windows 8 or 8.1 computer, than you might de-select various items such as **Links**, as this is handled separately as part of that association. Once you have ticked/unticked various folders, click on **Next**.



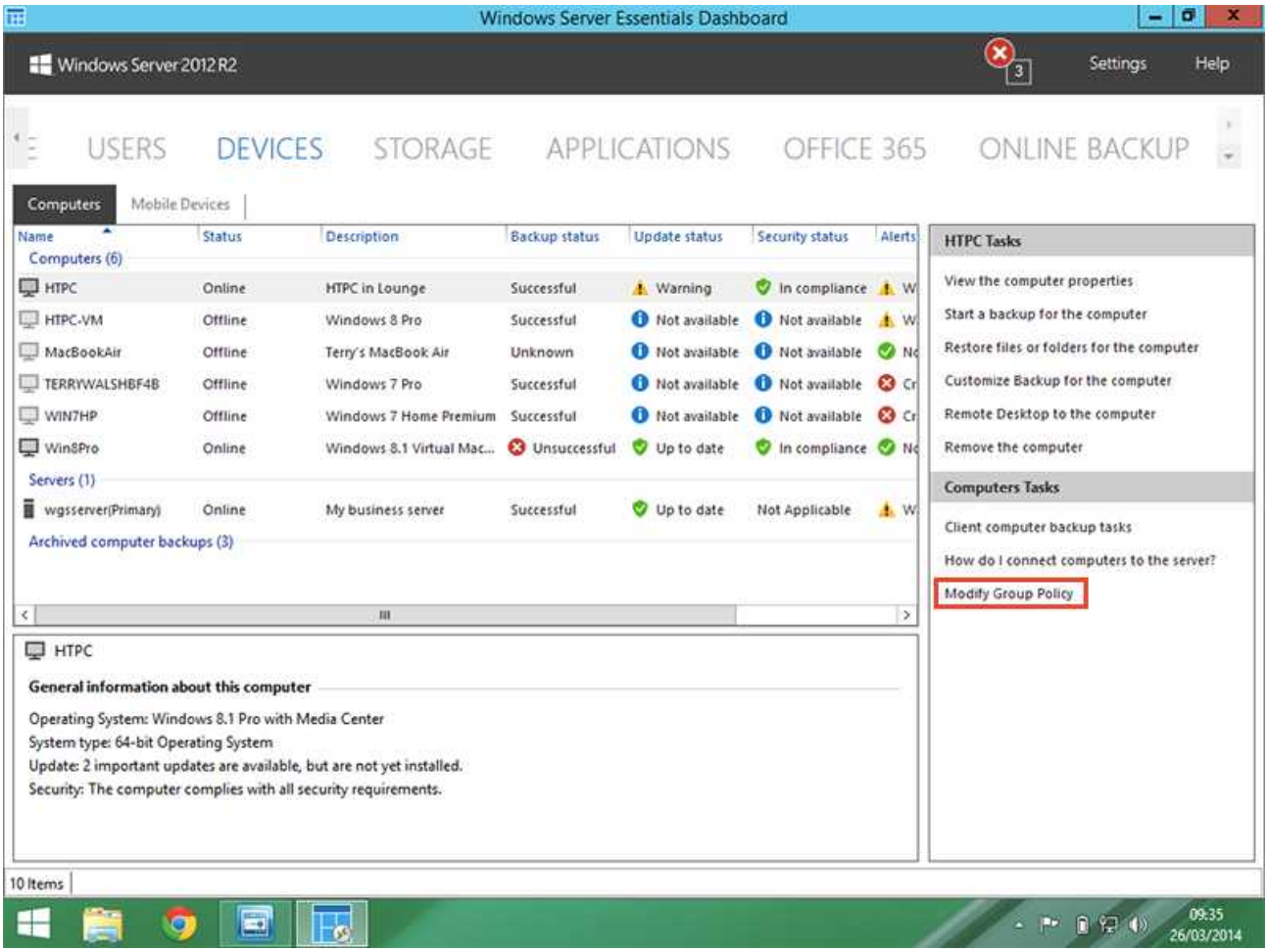
Security Policy settings.

In the next screen, you are asked to enable **Security Policy Settings**. The first option, **Windows Update**, should be most definitely enabled to ensure your clients receive security patches (and bug fixes!) from Microsoft. If you use a third-party anti-malware application, you may de-select the **Windows Defender** option. Also, if that third-party software has its own firewall feature, than you might consider de-selecting the third option, **Network Firewall**. (In my experience, I have almost always regretted using a third-party firewall; your experience may be different). Once your decisions have been made, click on **Finish** to implement those choices.



All Done!

Back in the Dashboard, you might notice the change in the "**Implement Group Policy**" task which has now become "**Modify Group Policy**".

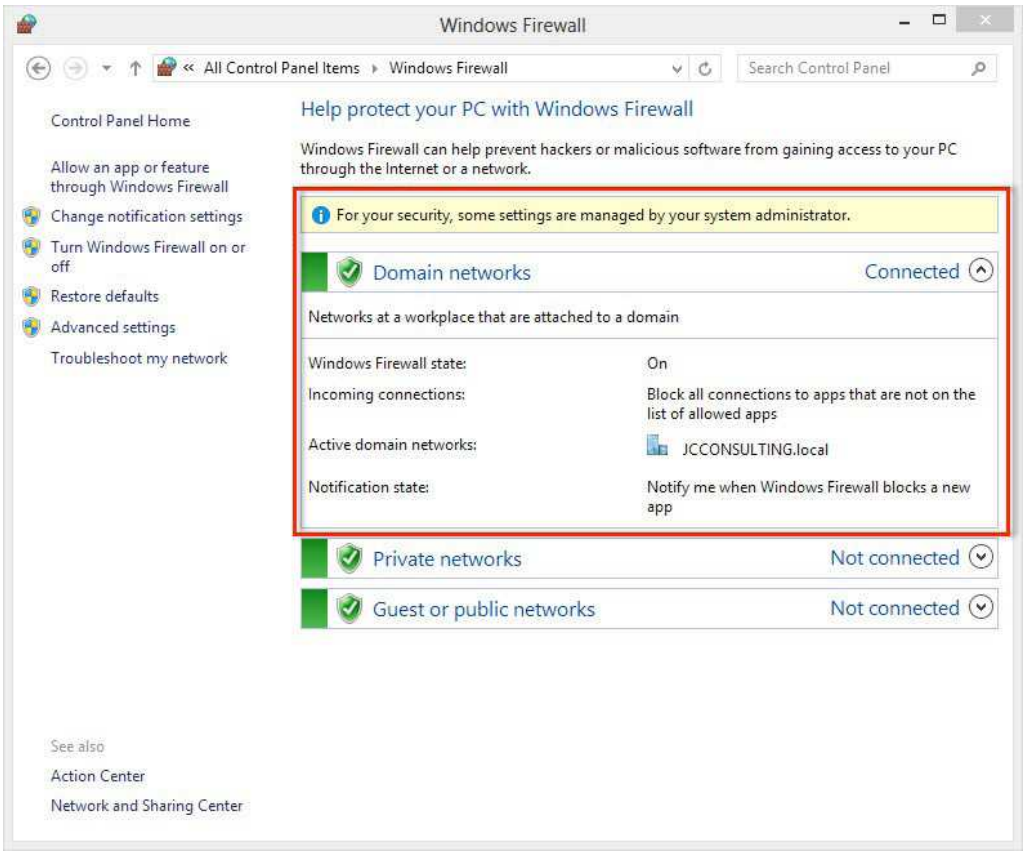


We've implemented so now we can modify.

At this point, you need to restart any computers attached to the domain to ensure Group Policy changes are deployed. While it may not be specifically required, it is not a bad idea to reboot the server also.

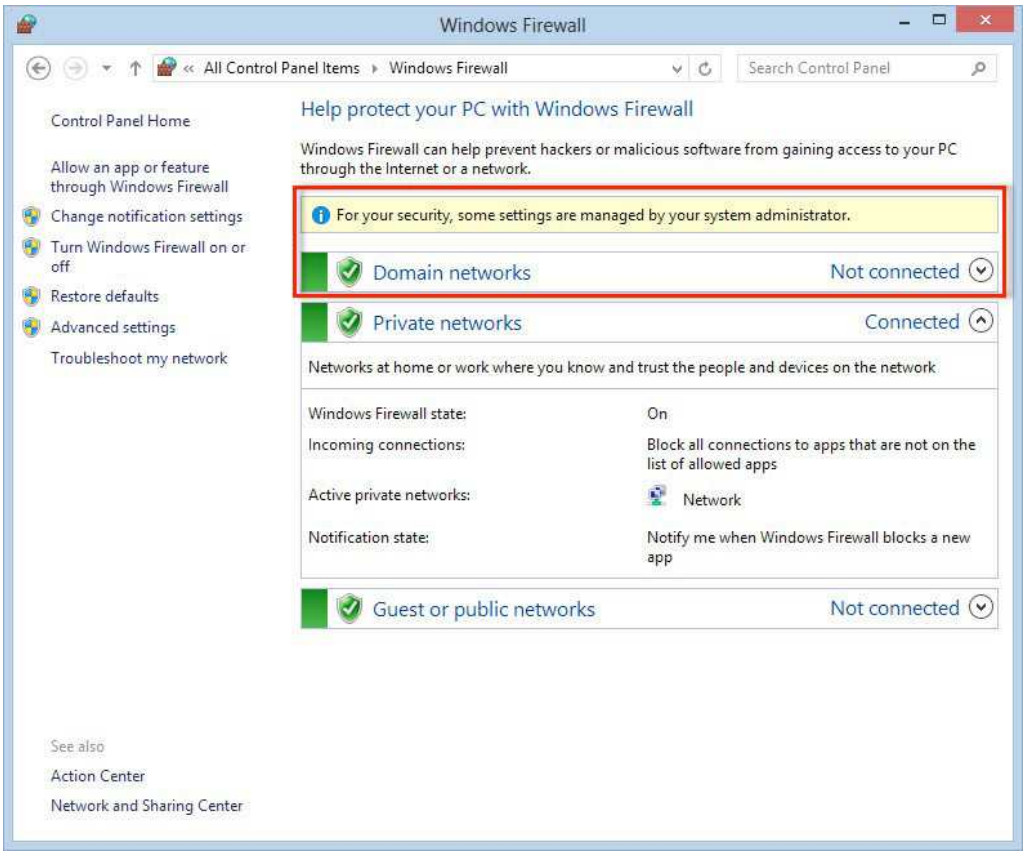
Please be forewarned that if you turn on Folder Redirection, rebooting client machines may take some time. In my case, I had 47GB of user data; it takes a while...

The security changes should be transparent. If you open the **Control Panel**, locate and click on **Windows Firewall** you will notice a couple of hints that something has changed.



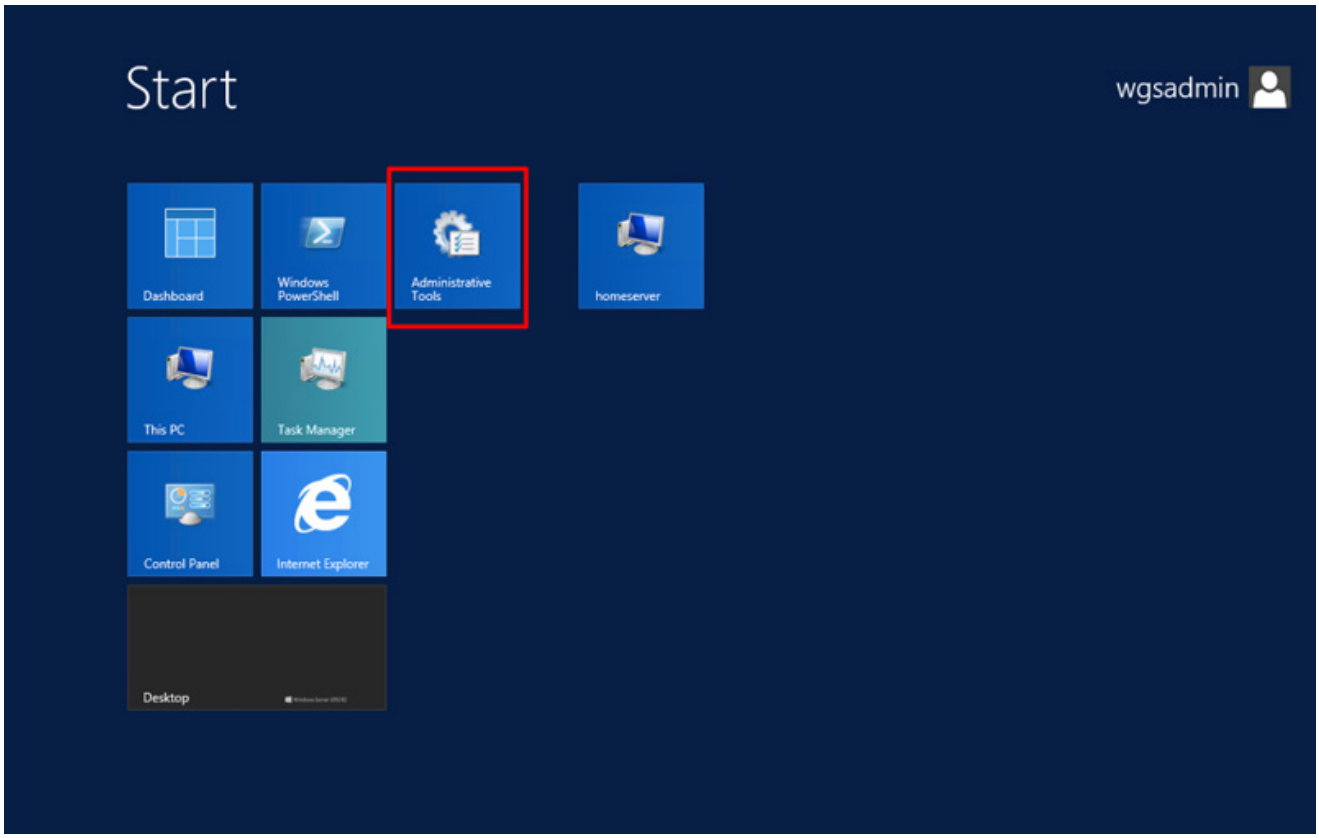
Windows Firewall looks a little different!

Specifically, you should see the "**some settings are managed by your system administrator**" caption, and you should see the new "Domain networks" section. If for some reason you see something like the following, an error has occurred.



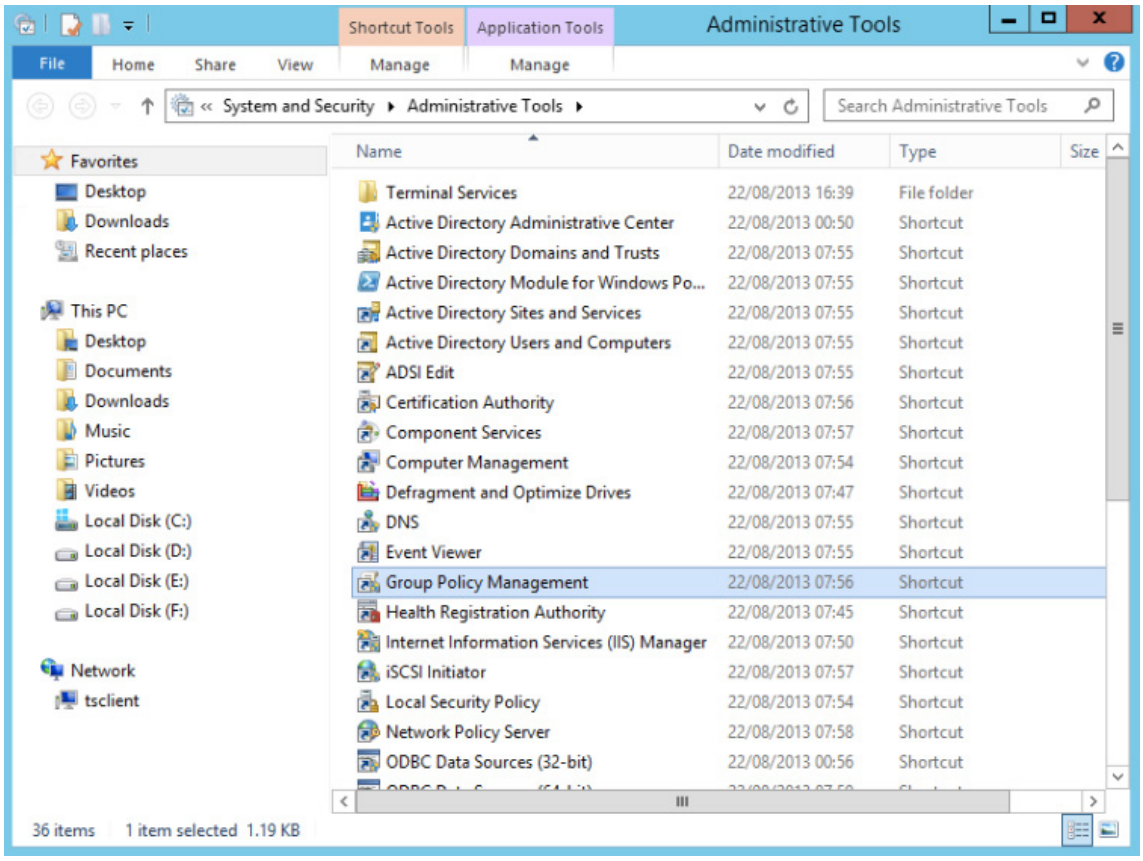
Where are the Domain networks settings?

You can log on to the server (or use a Remote Desktop Connection) and open **Administrative Tools**:



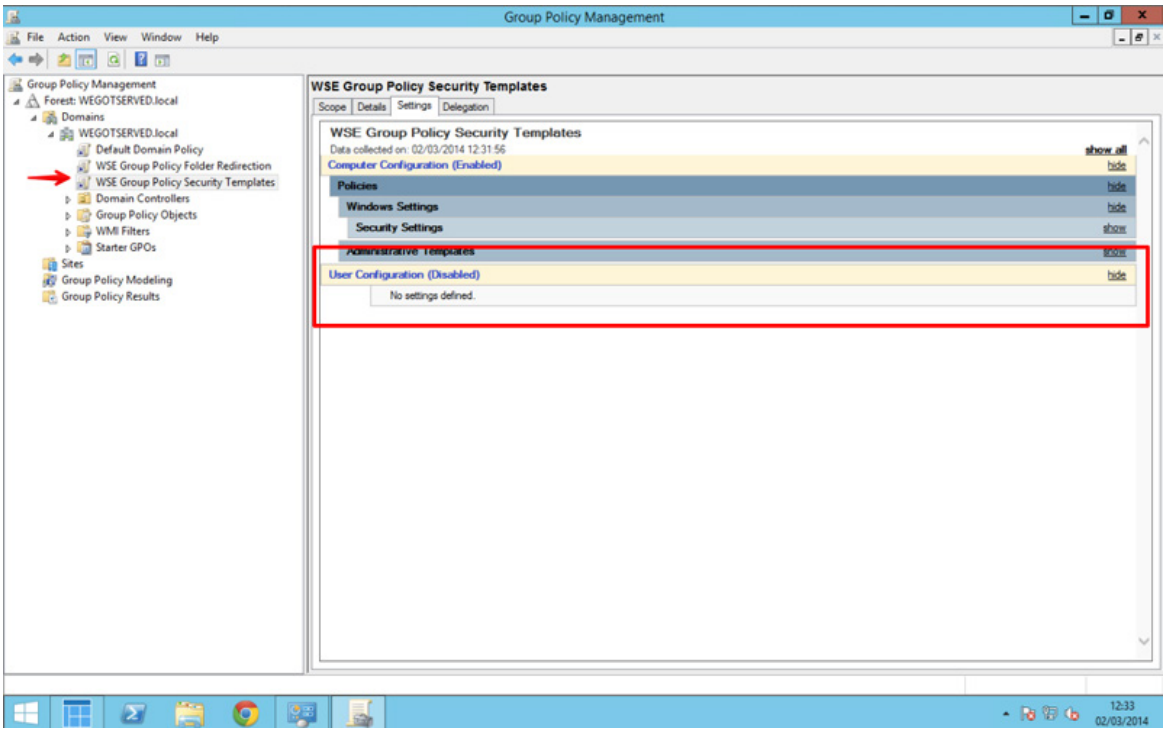
Administrative Tools on the Start Screen.

then Group Policy Management:



Administrative Tools.

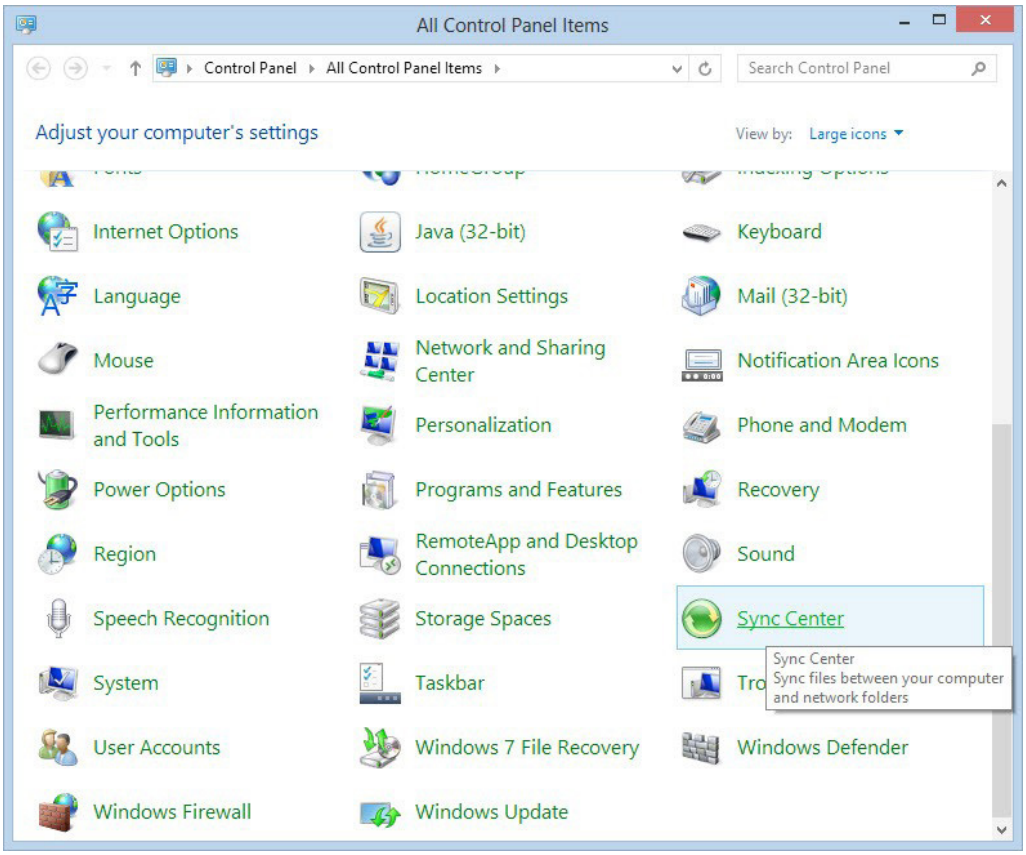
Locate the **WSE Group Policy Security Templates** tab, expand (show) a few of the sections and make note of the last item in particular in **Settings**. If your template looks different than that one, there is most definitely a problem.



Group Policy Settings.

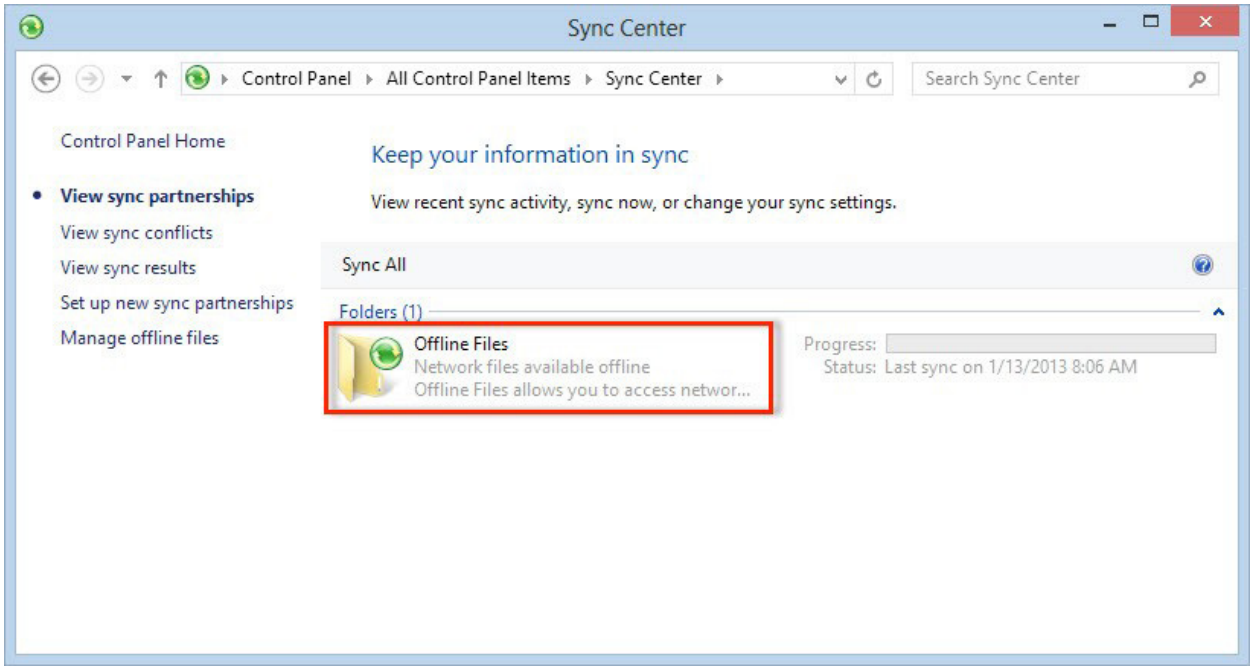
If you know an IT specialist, you could ask them to fix the problem. If not, the easiest solution is to simply run through the Implement Group Policy wizard again **twice** (first time, unchecking all of the options) to turn off the feature and turn it back on again. Reboot the clients and life should be good.

Now, let us address Folder Redirection on the client machines. Open the **Control Panel**, locate and click on **Sync Center**.

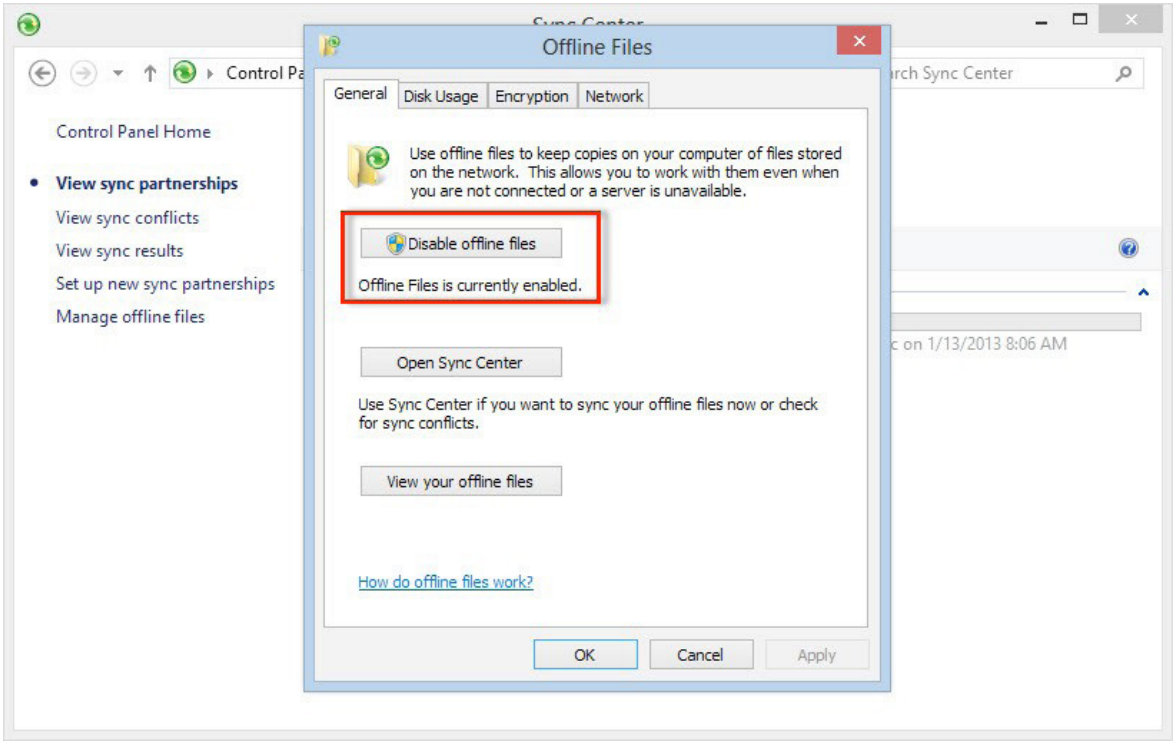


Sync Center in Control Panel.

You should see something similar to the following:

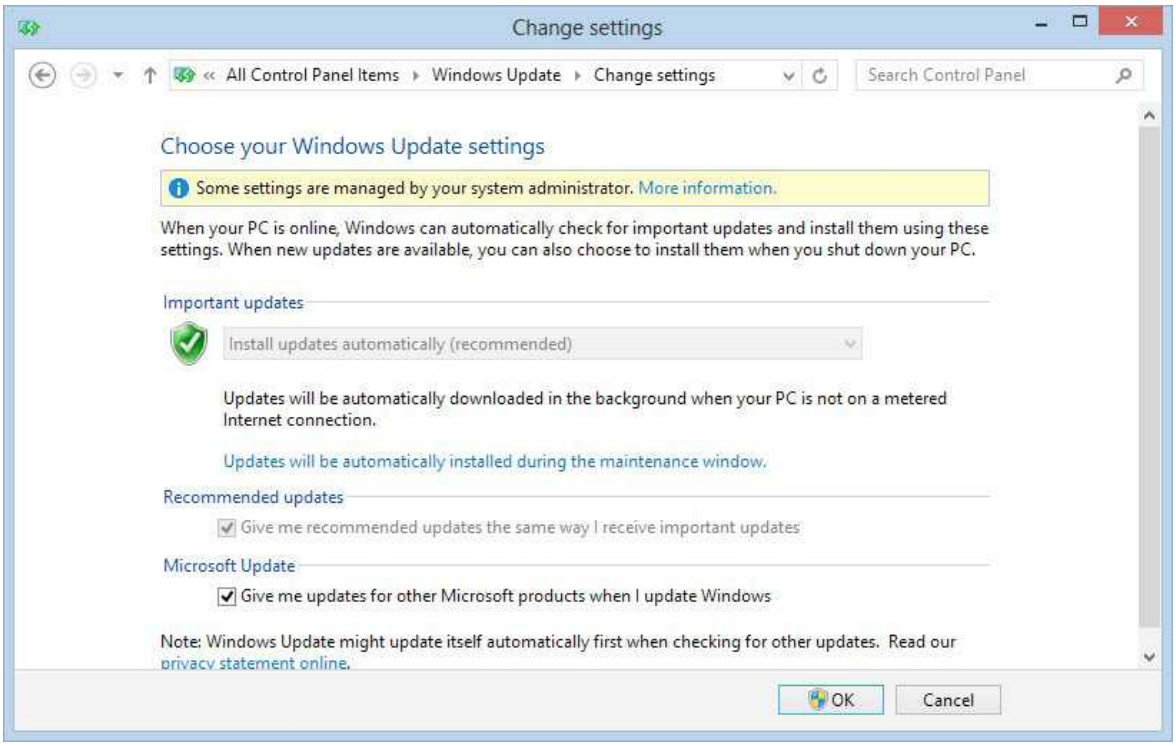


Make note of the **Offline Files** status which should state "**Network files available offline.**" If you want to turn it OFF (or turn it ON), select the **Manage offline files** task in the left hand pane and select the appropriate option.



Enabling Offline Files.

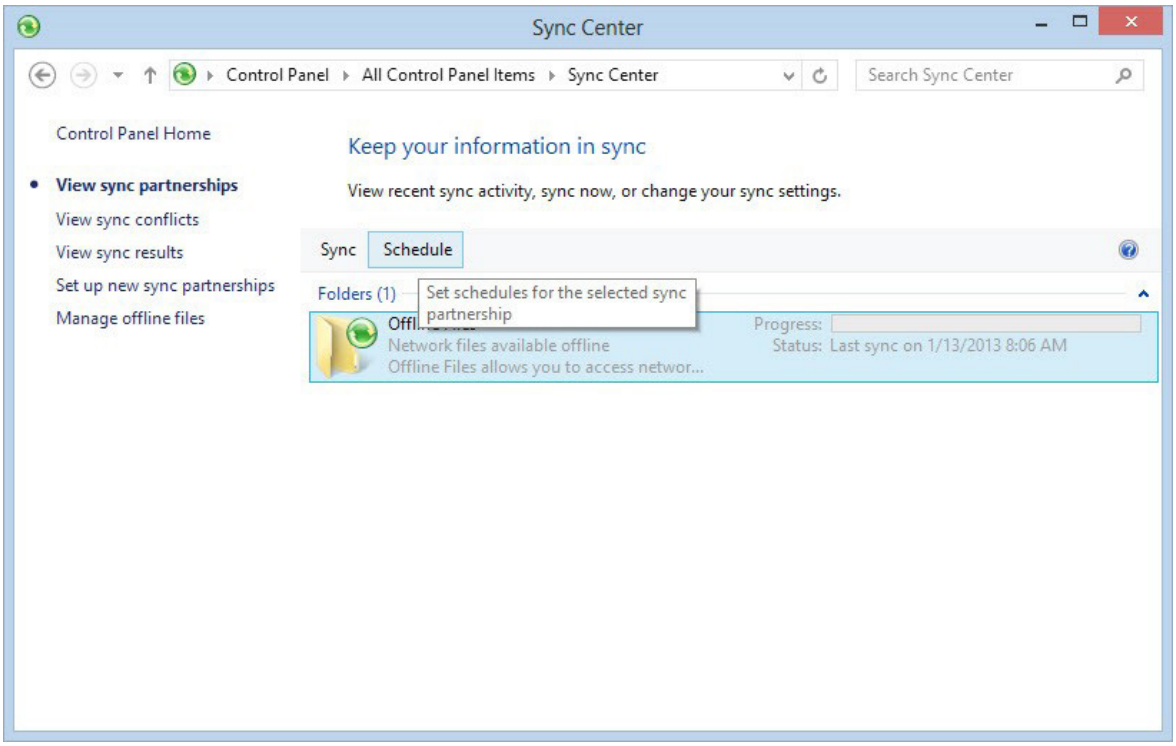
And that is that! Assuming all of your clients are a Windows Pro version or better, you have now ensured that the security settings are set correctly on each computer and that the **user on a client machine cannot make changes to those settings**. For example, see the grayed -out section below.



Settings are now controlled by the server.

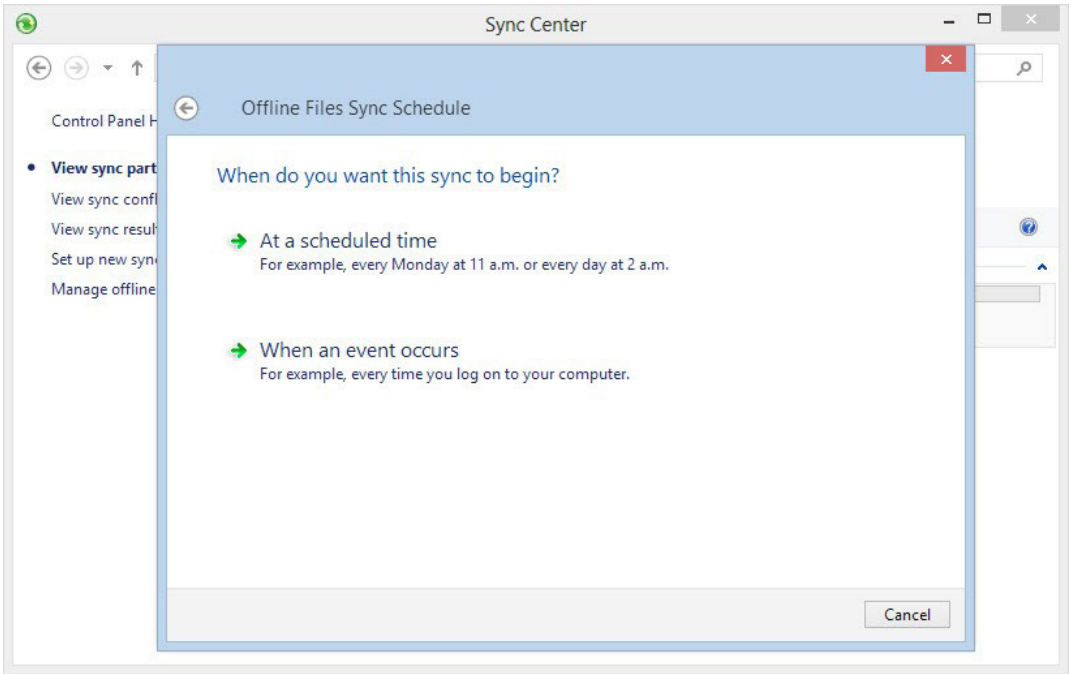
If there is a problem, an Essentials Alert will warn you. Although you should be aware that these warnings occur whether Group Policies are set or not set.

Finally, if you have Folder Redirection set up, you can now work on multiple computers, on site, off site, and have your user folders on all of the clients synced to the same data set. If you're working on "Offline" files, (which would be the scenario when you are offsite), data will be synchronized when logging on or off the client computer, and/or if you set up a synchronization schedule on the client machine.



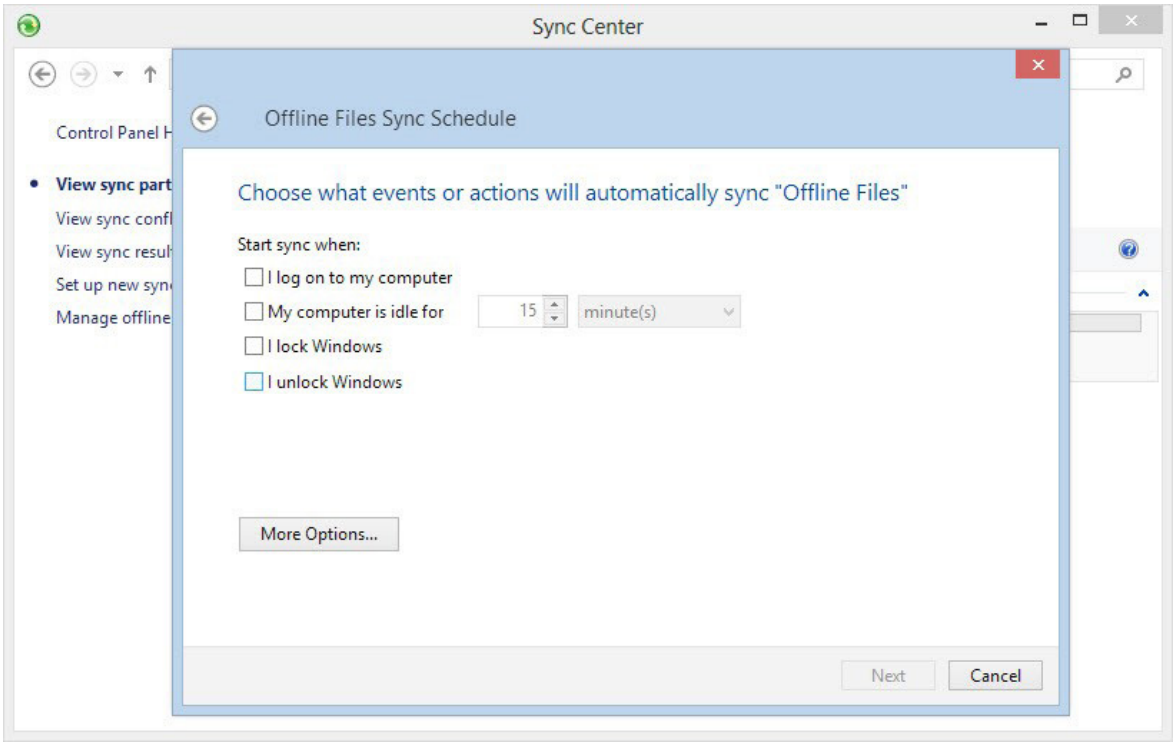
Setting a sync schedule.

Highlight the folder, click on the **Schedule** option to walk through a scheduling wizard.



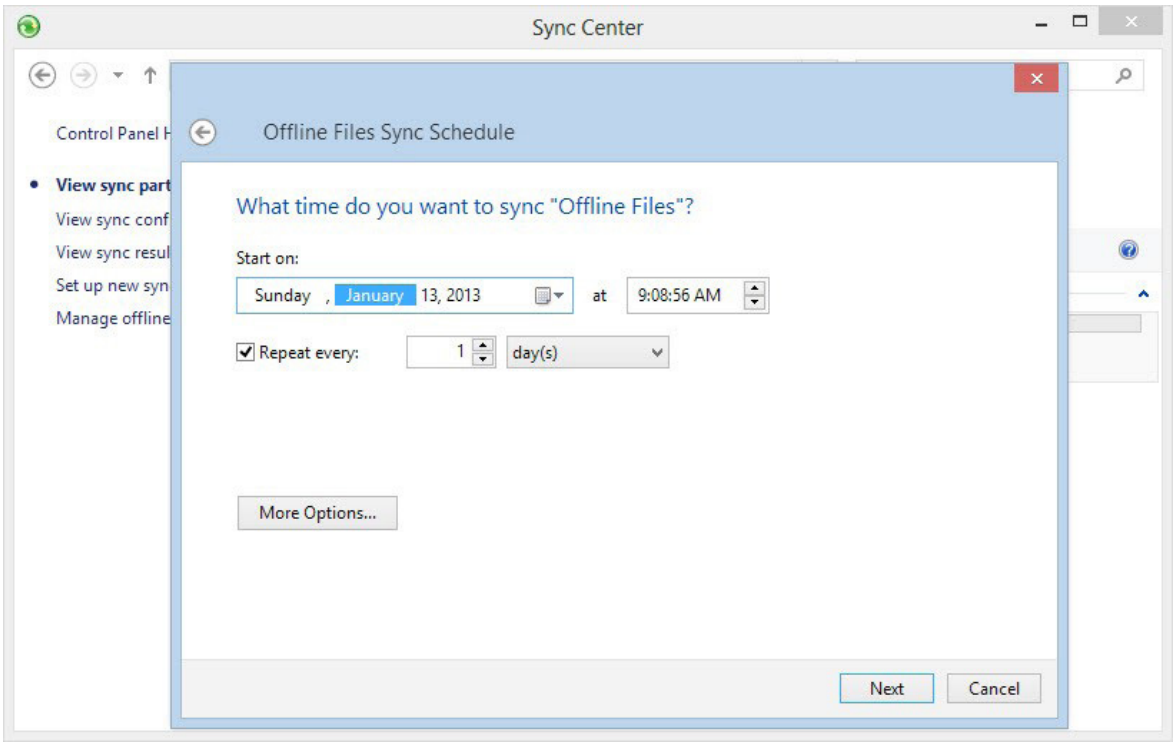
The scheduling wizard.

You can change when a sync occurs, configure event triggers:



Selecting trigger events.

and/or schedule specific times to sync files.



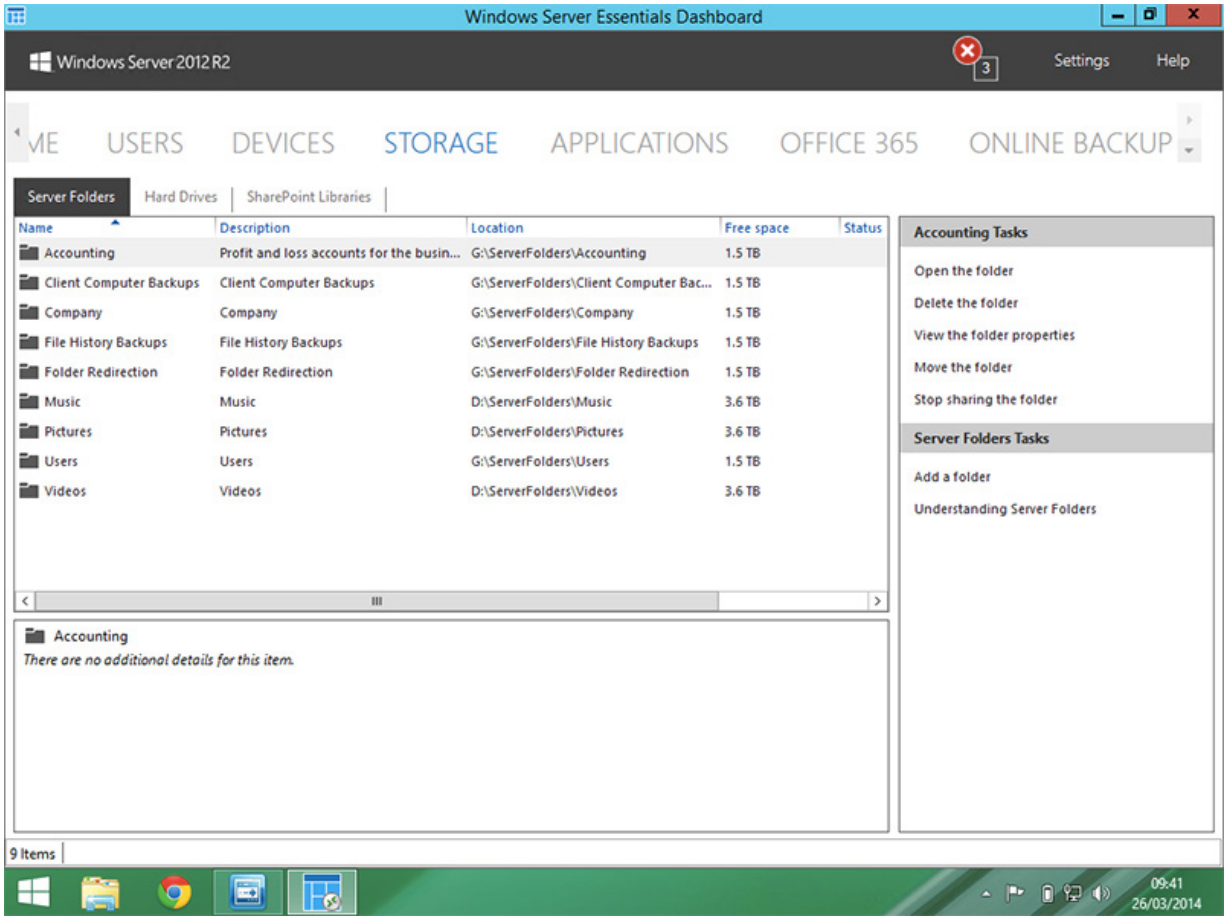
Configuring the schedule.

In this chapter, we have covered device features from the very simple to the rather advanced. As I mentioned at the start of this chapter, if you're integrating Windows Server 2012 R2 Essentials with Office 365, there's even more device management to discover with mobile device support! Stay tuned for more on that a little later in the book.

Through the use of the Windows Server 2012 R2 Essentials Dashboard, setup, configuration and management of your devices is relatively easy. Hopefully, our walkthroughs have made it as painless as possible for you to get up and running so far!

Managing Hard Drives, Storage and Storage Spaces

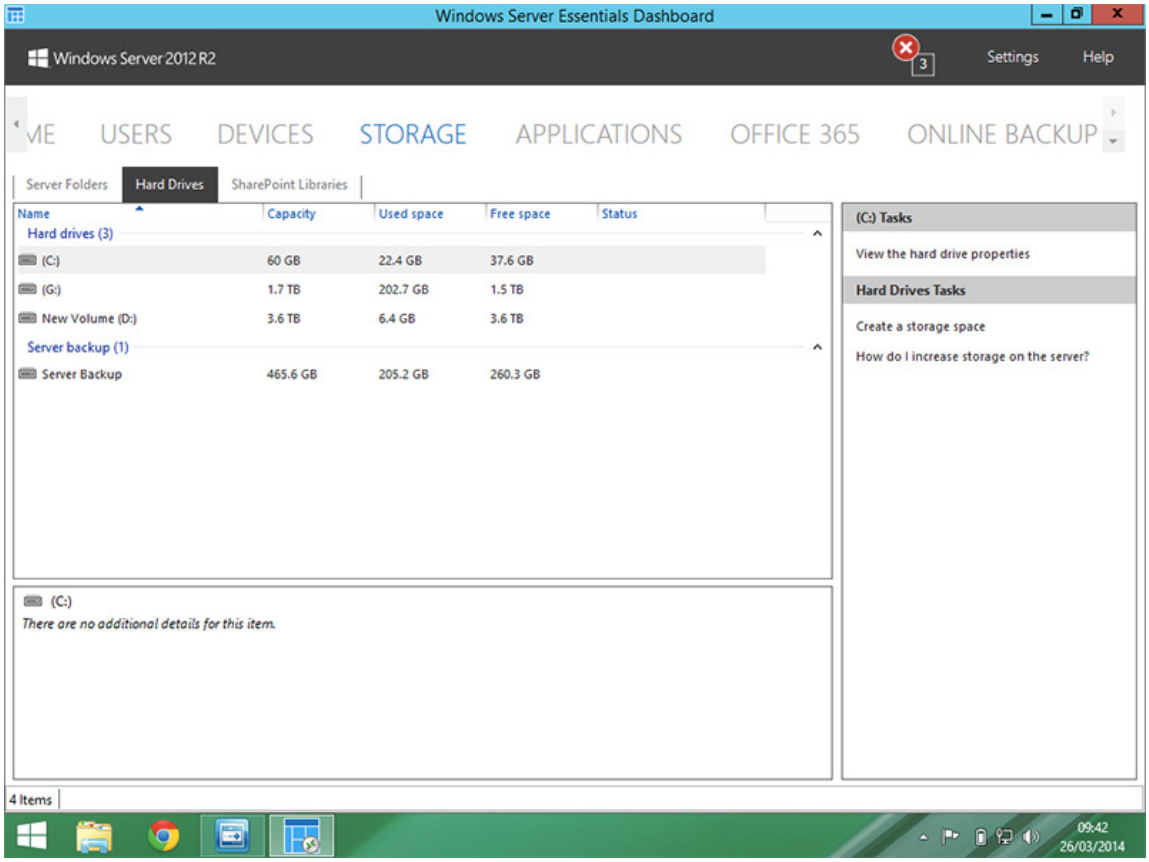
"Our journey through the Windows Server 2012 R2 Essentials Dashboard continues as we move one step to the right to the Storage tab."



Managing storage in the Dashboard.

One of your tasks as a Server Administrator is to manage the structure of and access to shared folders that are stored on the server. Indeed, your server's shared folders are one of the most important features of Windows Server 2012 R2 Essentials and will most likely be the most heavily used feature in your organisation. Fortunately, managing server folders is a reasonably easy task, but it pays to know what you're doing, as any mistakes will be highly visible across your business!

As can be seen, this section is divided into the **Server Folders** tab (above) and the **Hard Drives** tab (below).



The Hard Drives tab.

Managing Server Folders

Moving back to the Server Folders tab, you'll find a list of folders are already populated on screen. Various details are presented for each folder, including the Name, Description, the folder's location, Free space available in the folder, Status (usually blank if all is well and no tasks are running).

Click on a folder and you *may* see some additional details about the folder listed in the Details pane, but often you'll see that there's little additional information available.

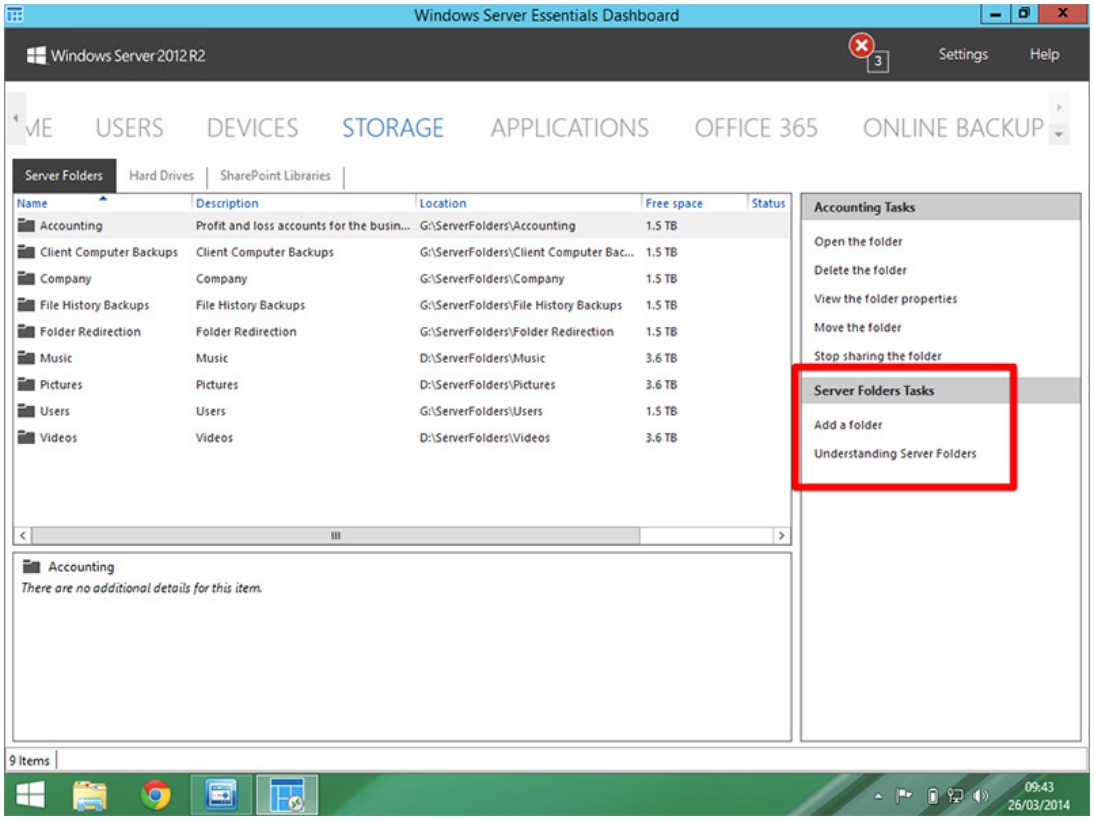
By default, Windows Server 2012 R2 Essentials sets up a number of shared folders which can be accessed by your users. You should see the following:

- **Client Computer Backups** - a folder used to store your PC backups.

- **Company** - a general folder used to store documents about your organisation.
- **File History Backups** - you guessed it! Your user's File History backups will be stored in this folder.
- **Folder Redirection** - used to store user folders configured for folder redirection.
- **Users** - you'll find a separate folder for each of your network users stored here.

If you've previously used Windows Server 2012 Essentials, or an earlier related operating system like Windows Home Server, you'll no doubt be looking for shared media folders (Music, Pictures, Videos, Recorded TV and the like). They've been removed in Windows Server 2012 R2 Essentials by default - later in the book, we'll install the Windows Server's media services and you can add these folders should you wish.

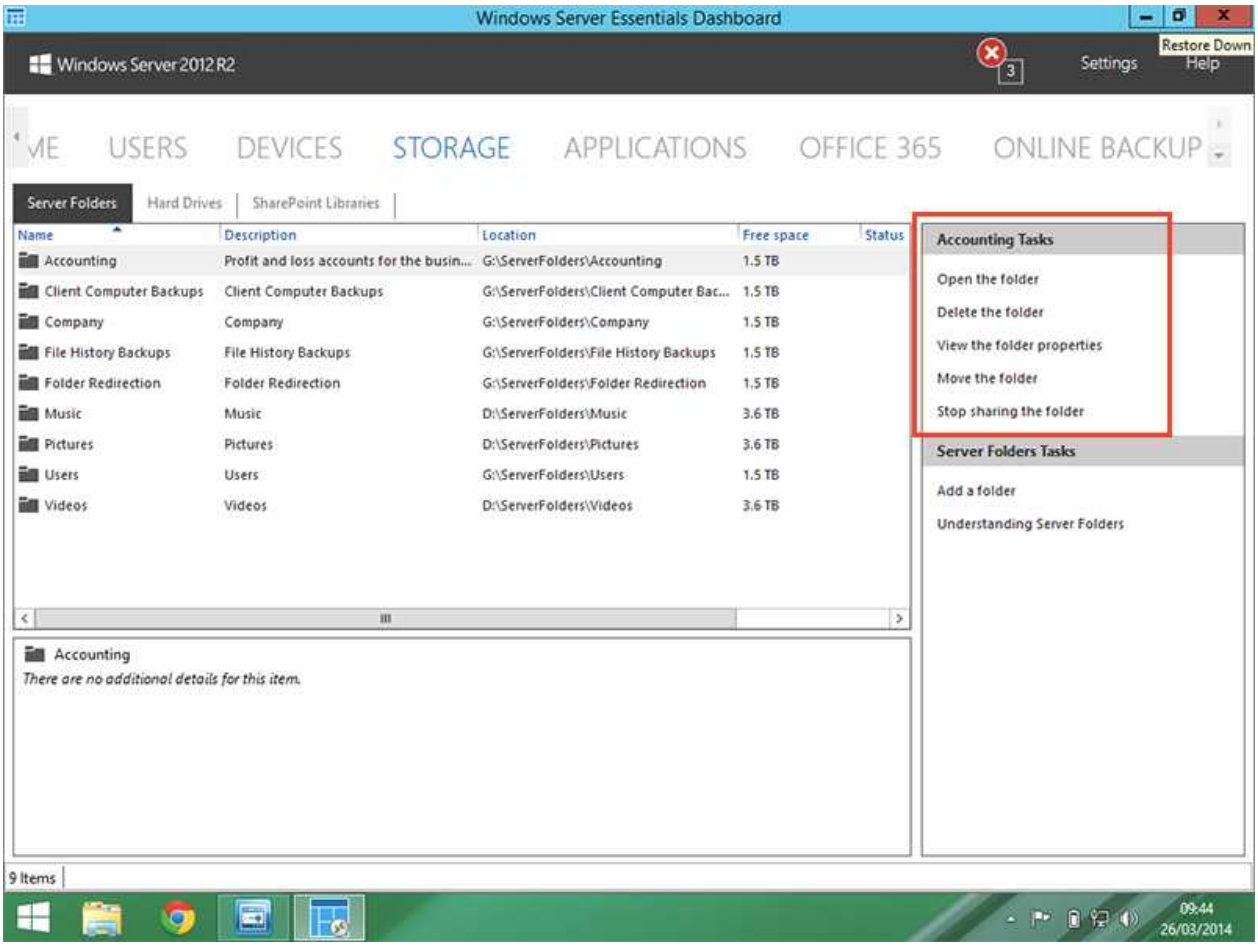
To the right, there's the usual list of tasks we can perform, split by specific tasks for each folder, and a **Server Folders Tasks** section which covers broader, server-wide tasks. To add your own, additional shared folders, simply use the Add a Folder wizard we used earlier in the book when setting up the server.



Server Folders Tasks.

The **Understanding Server Folder**s task simply takes you to online help, so I'm sure by now you're well used to navigating yourself there.

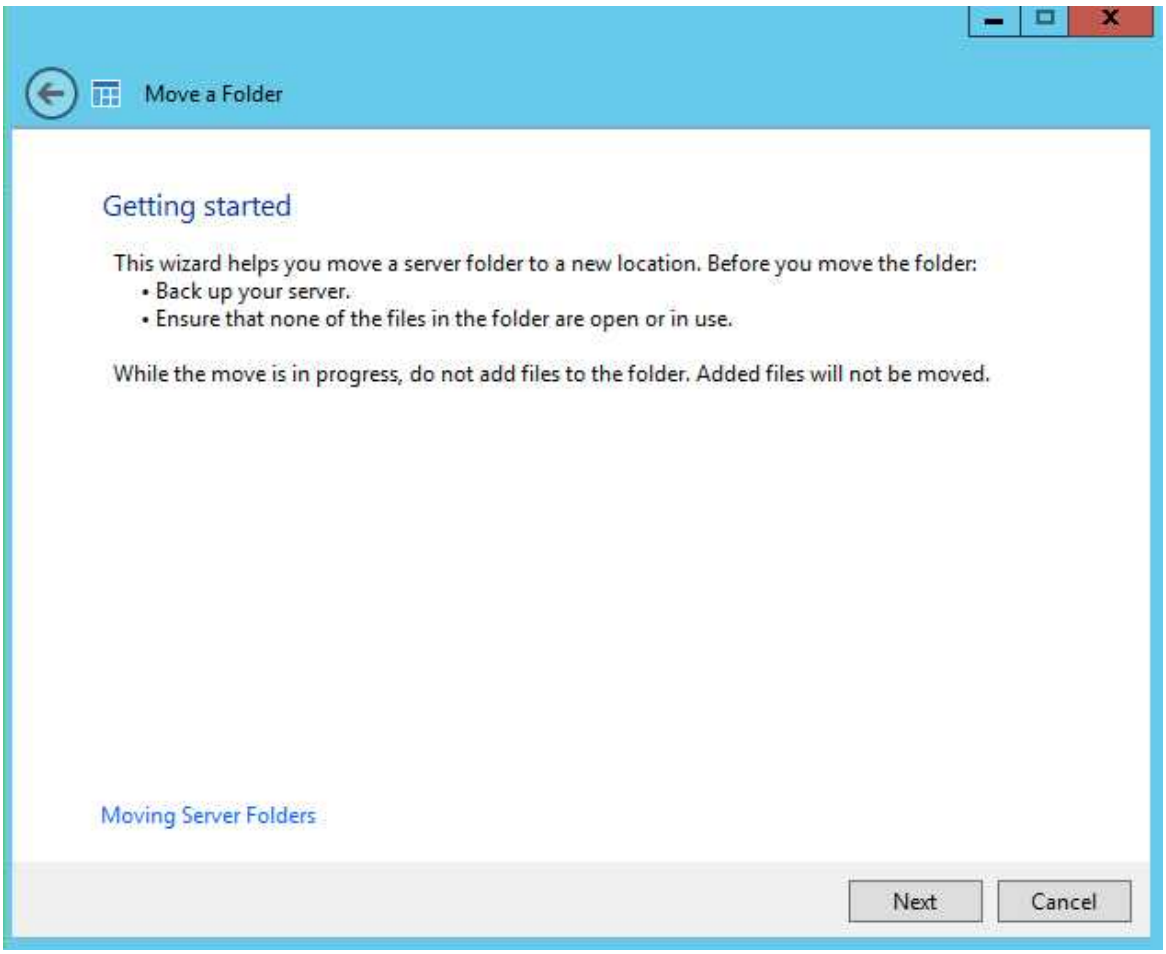
Moving up the screen to individual folder tasks, the available options depend upon which folder you highlight.



Tasks for a user-created folder.

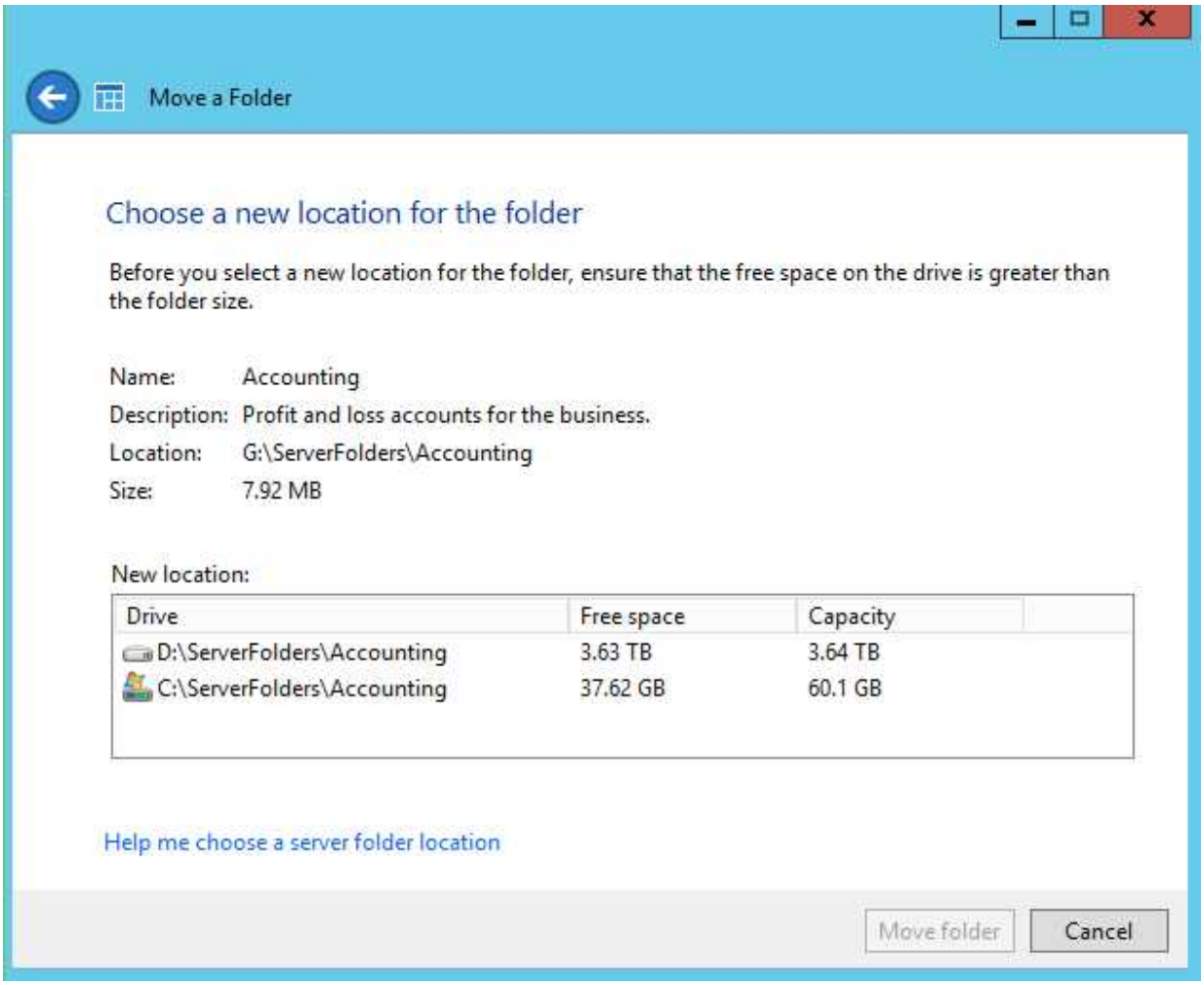
The **Client Computer Backups** folder is unique in that you only have two options, **View the folder properties and Move the folder**. Move the folder is simply the method through which you "move" a folder from one physical hard drive to another hard drive. If you do not use RAID or Storage Spaces arrays, you may find that you have to perform this task occasionally as your hard drives become full.

Moving a folder is a simple process that calculates the size of the folder you wish to move, asks you where you wish to move the folder to, and then does it.



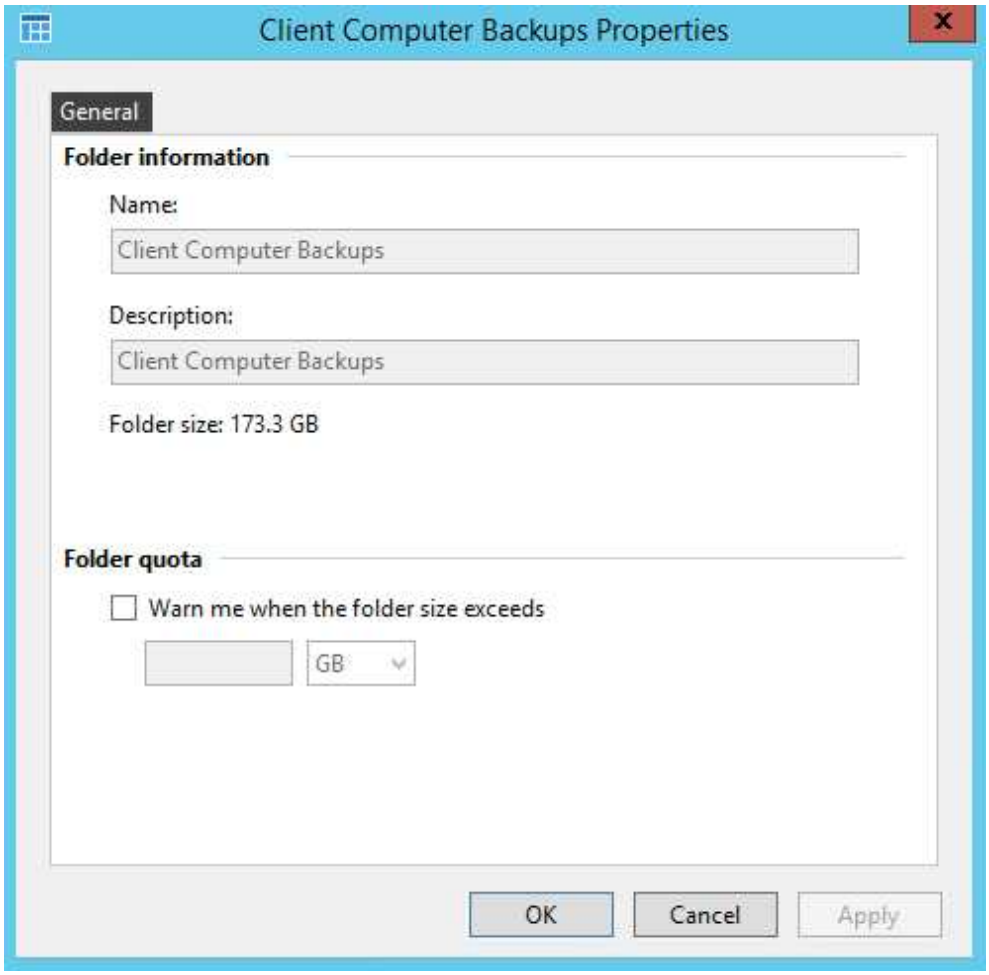
Starting the Move a Folder wizard.

It's really the kind of task that can be done easily in File Explorer, but have a Dashboard wizard makes life more convenient.



Choosing a new location.

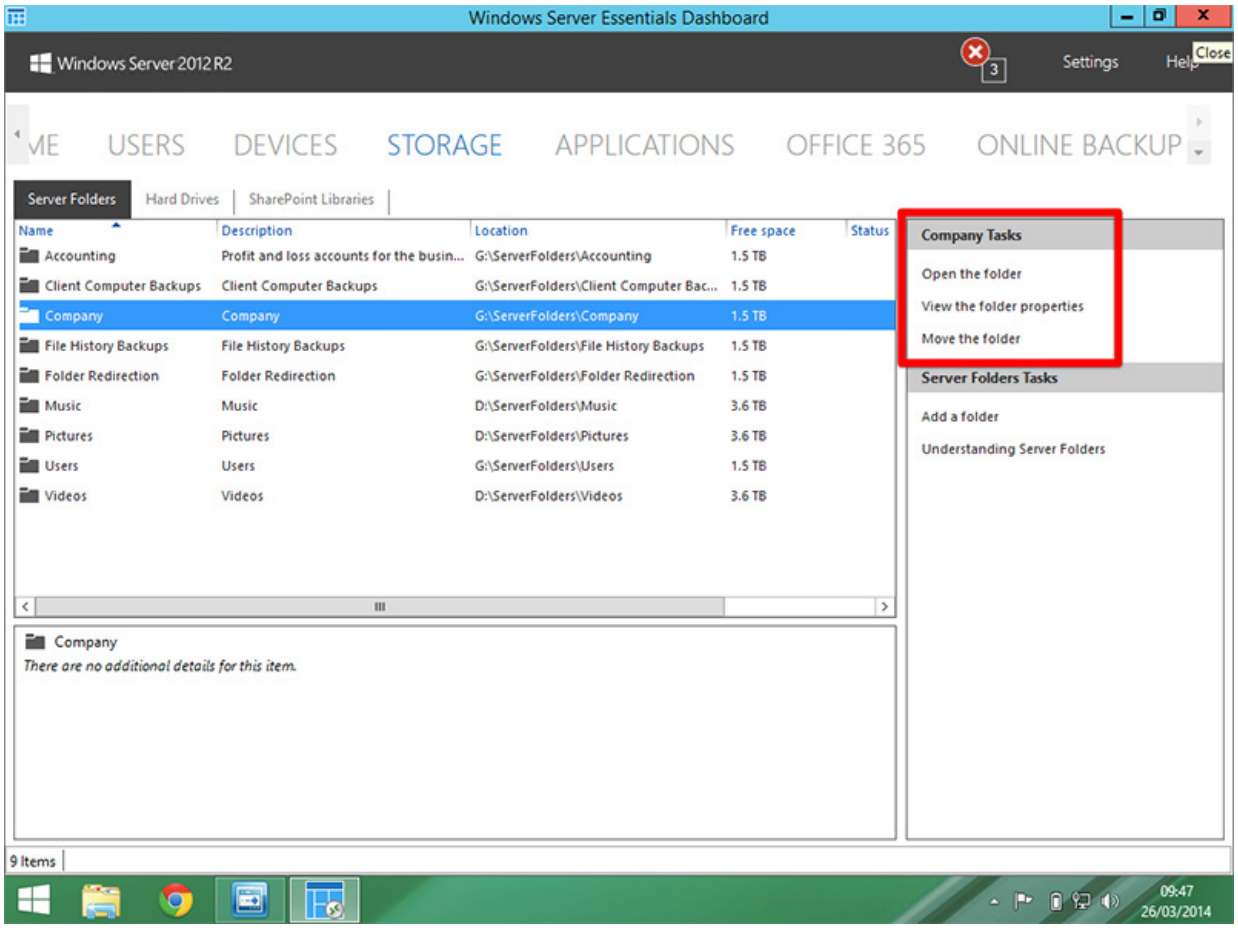
Back to the tasks list and the first option opens a window that simply provides basic details of the folder including the amount of disk space it uses.



Client Computer Backups Properties.

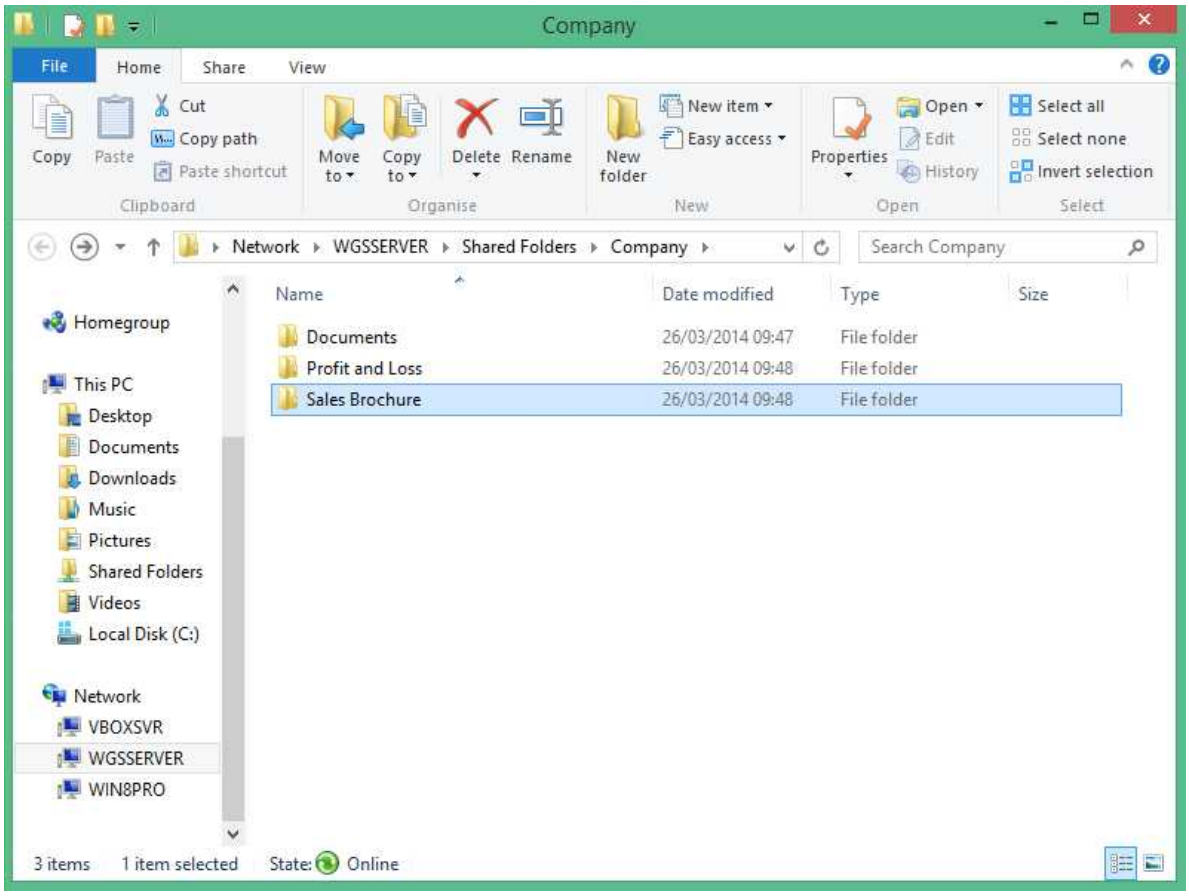
To help you manage your storage efficiently, you can choose to receive a warning when the folder exceeds a certain quota. Just check the box next to **Warn me when the folder size exceeds** and enter a value.

If you highlight a folder that Essentials created when first installed you get an additional option: **Open the folder**.



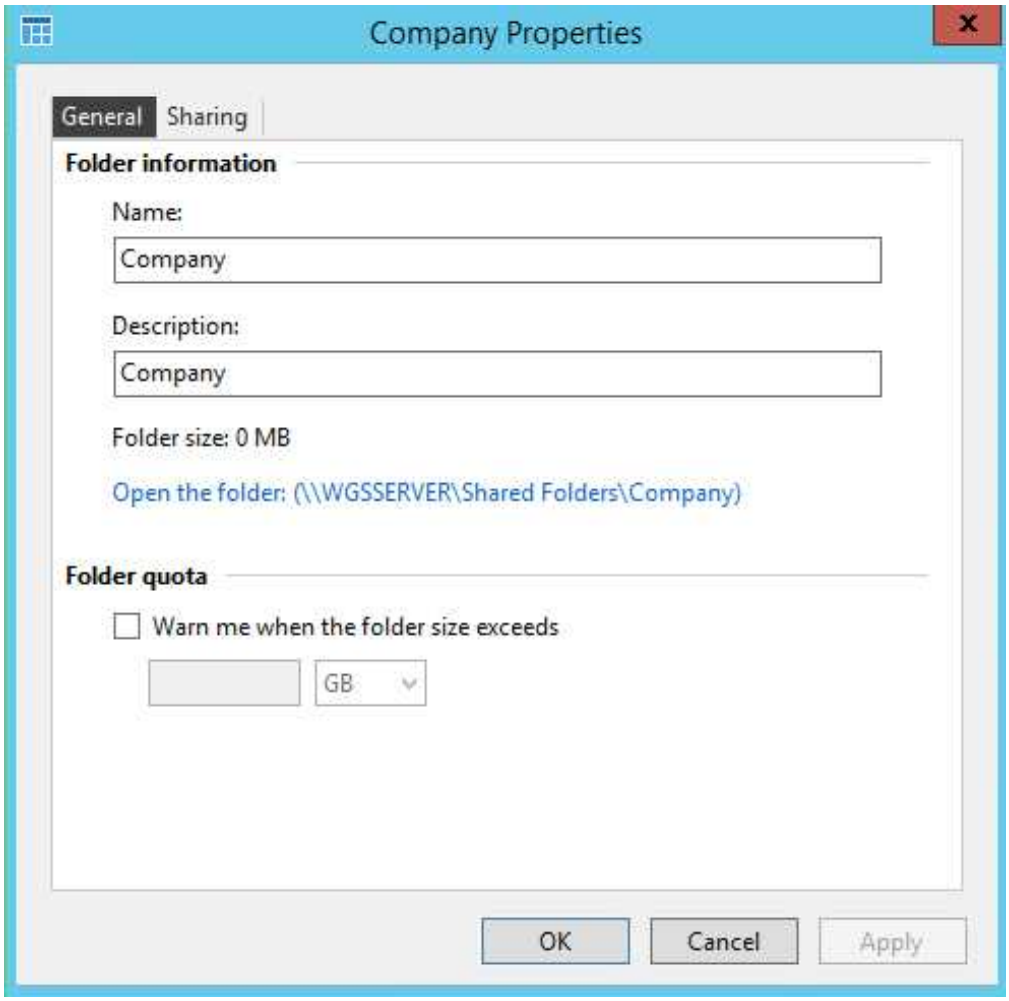
Highlighting a pre-configured folder.

This brings up the folder's contents in File Explorer so that you can view and/or manage the files within.



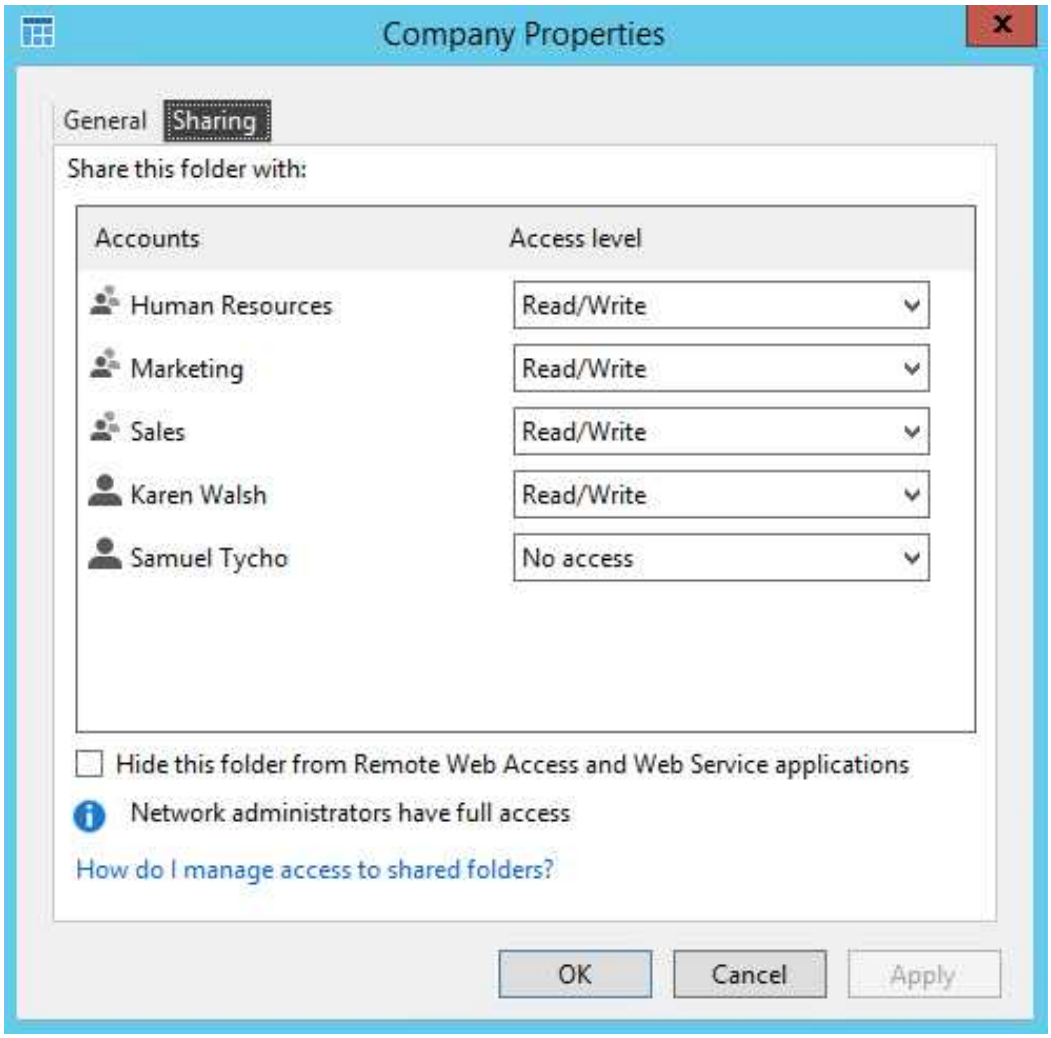
Viewing the folder in File Explorer.

If you use the **View the folder properties** option on a pre-configured folder, you'll see that two tabs are available. The first, **General**, allows you to edit the folder name and description, open the folder (again) and set a quota warning.



In the General tab, you can edit the folder name and description as well as set the quota warning.

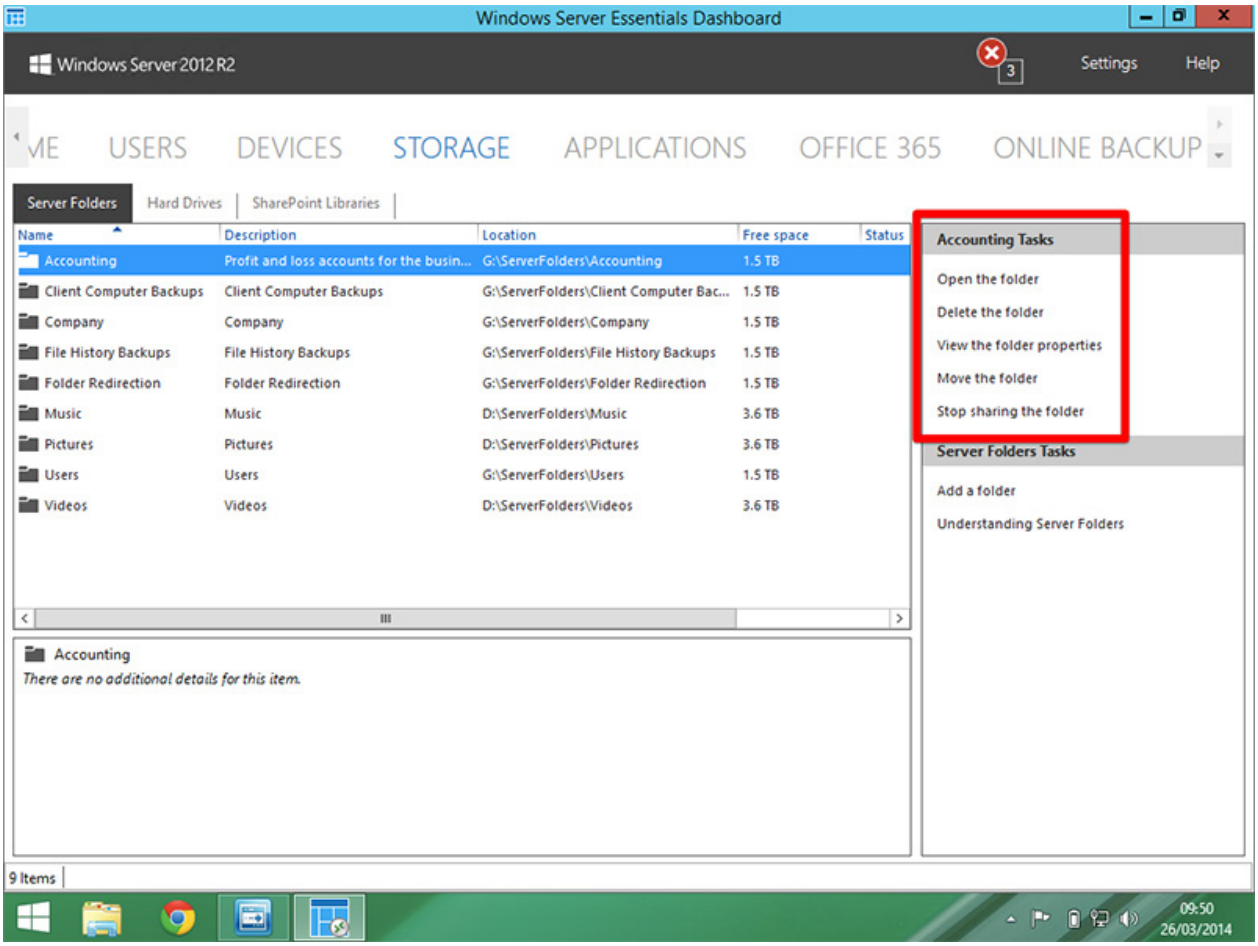
In the second tab. **Sharing**, you will find the ability to share or not share this folder with specific user groups (this has changed from the last release of the product in which you would manage permissions at the individual user level). If a user is not a member of a user group, they will be listed individually. You also have the option to hide a particular folder from someone accessing the server from a remote location.



Managing sharing settings.

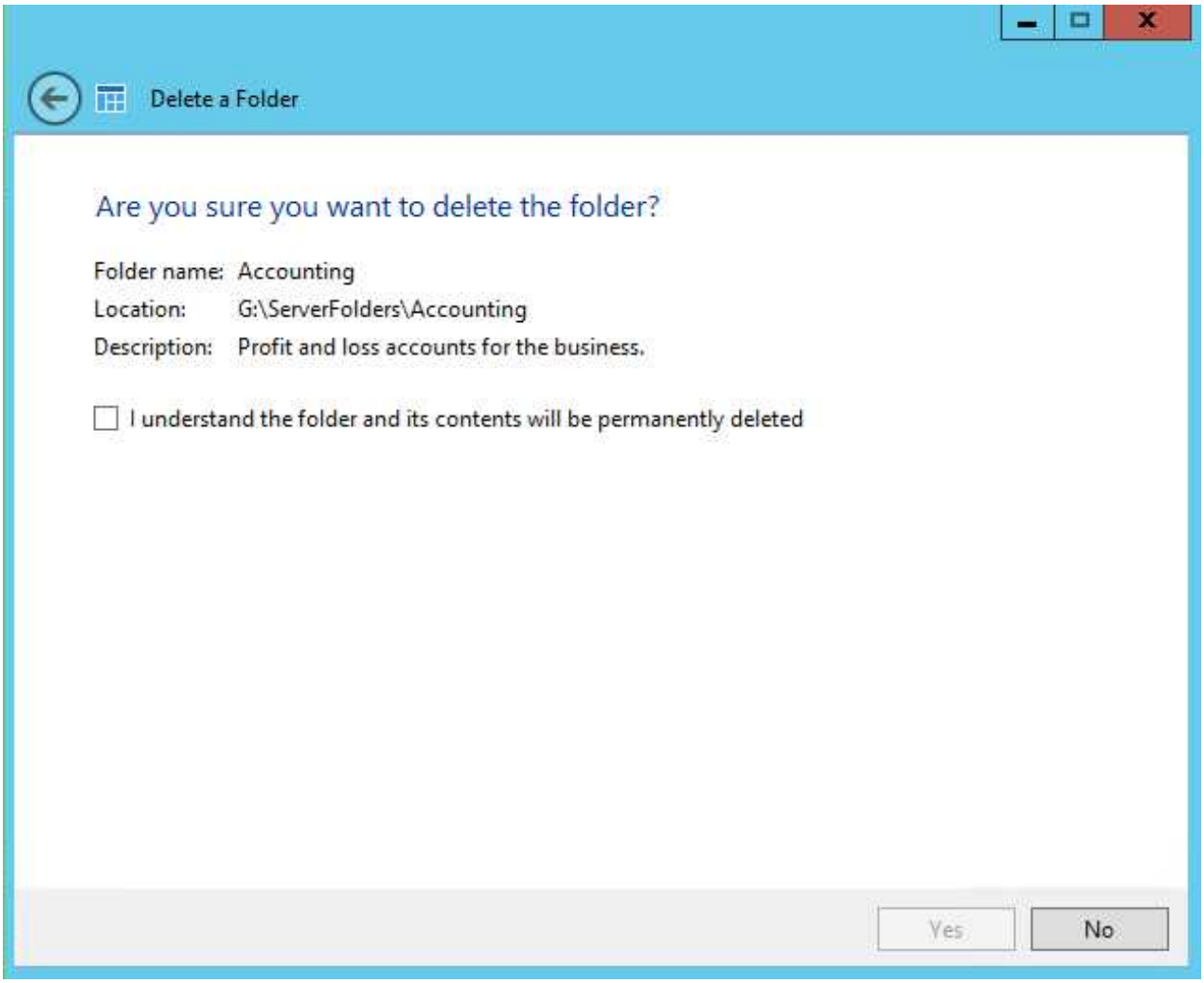
As you can see in the screenshot above, administrators have full access to all folders. You cannot modify sharing permissions for File History Backups, Folder Redirection or the Users server folders, so don't expect to find a Sharing tab when you view the properties of these folders.

The next category of Shared Folders are user-generated folders such as the Accounting folder we created earlier.



User generated folder tasks.

Folders created by the administrator have the ability to be deleted or have sharing disabled/enabled, in addition to having same of the same options as pre-configured folders. Just be aware if you remove a folder, you destroy anything left in it! Fortunately, you'll be asked to check a box that confirms you understand that you're about to kill your data before the server will remove the folder.

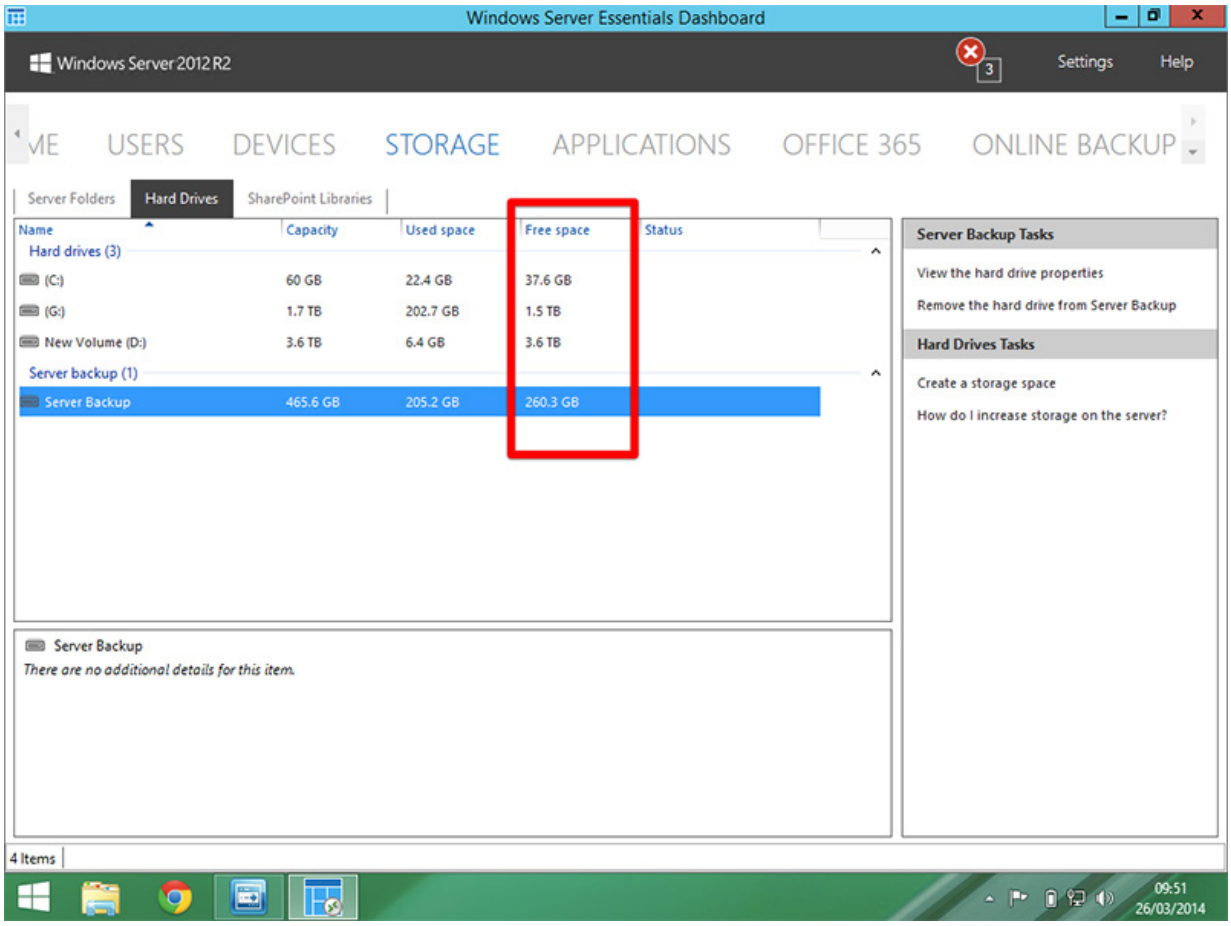


Confirming deletion.

While the server folders are the heart of any server, any maintenance required within the Dashboard is rather simple to perform.

The Hard Drives Tab.

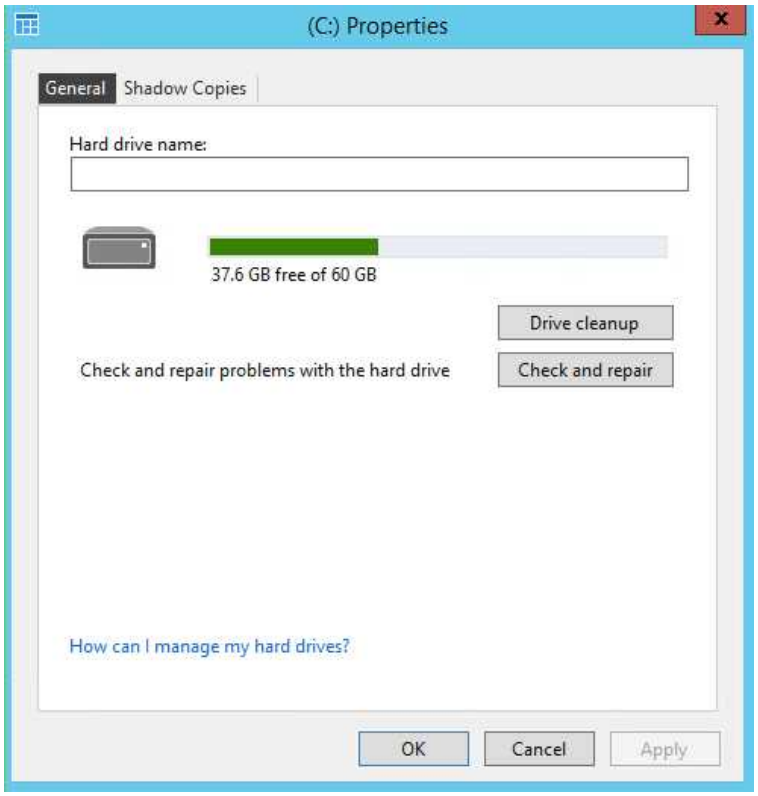
Next up in this section is the Hard Drives tab. This is where you maintain existing storage and add additional storage. The most important piece of data that you want to keep an eye on is **Free Space**. No free space equals trouble for your users and for you!



Hard drive management in the Dashboard.

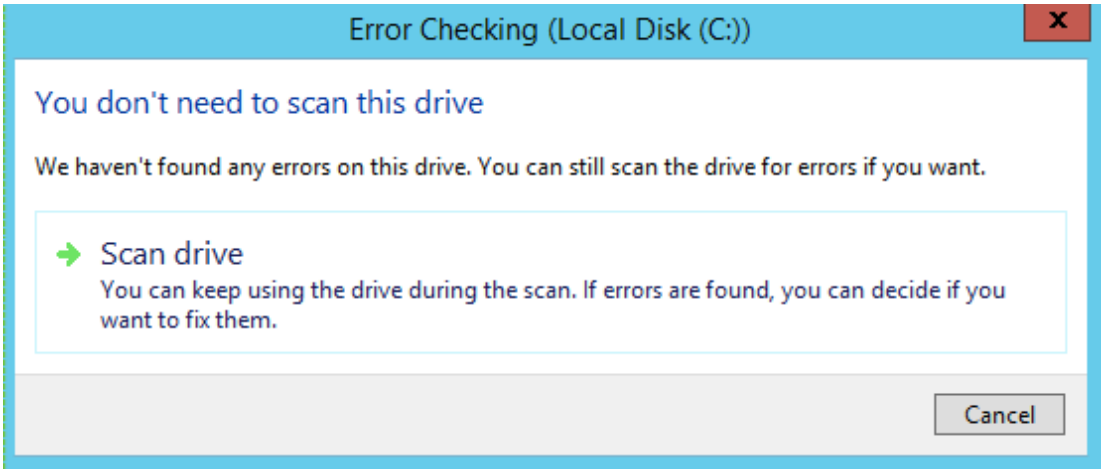
From an individual Tasks perspective, at first glance you do not have much to play with here. Opening the "**View the hard drive properties**" task does just a bit more than you think however. In the first tab, **General**, you have the ability to name a hard drive, which can come very handy. If you have a server with more than just a couple of drives, identifying the right drive can be difficult if you need to replace a bad drive - especially if you've used the same model for multiple drives. This gives you the opportunity to give a drive a name here and place an identical ID tag on the drive.

You may find yourself in quite a quandary later if you do not do it now!



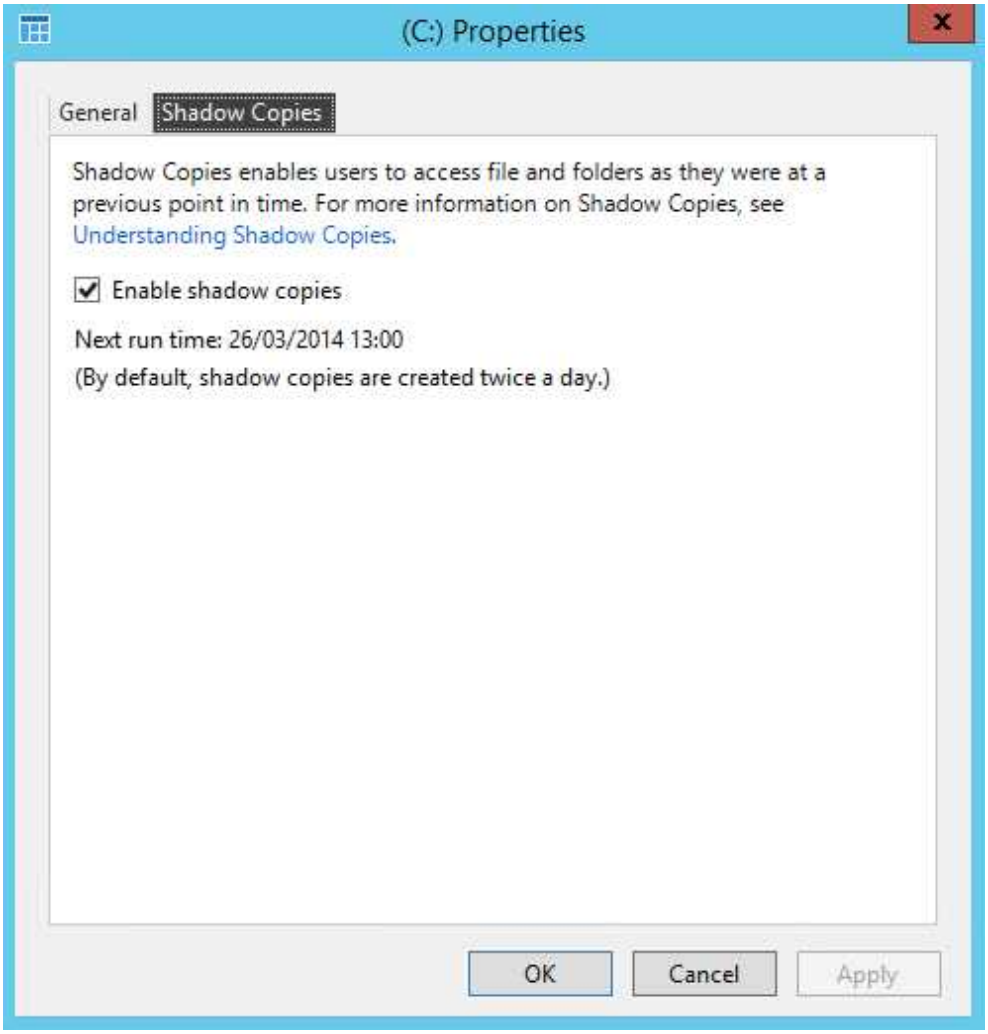
Give your hard drives a name!

The **Check and repair** option allows you the scan the drive for errors. If no errors have been automatically detected, Windows will attempt to save you a little time by letting you know all is well. But, you're still handed the option of scanning anyway.



Scanning the drive.

Moving over to the **Shadow Copies** tab gives you yet another backup option.



The Shadow Copies tab.

Shadow Copies is somewhat similar to File History, except that it is a server-based option and can be enabled for all kinds of files and folders - not just Libraries. With Shadow Copies, one can view and access earlier versions of shared files and folders. When enabled, a user can:

- Recover a file that was accidentally deleted.
- Recover a file that was accidentally overwritten by another file with the same name.
- Compare a current version of a file with older versions.

In a day and age where hard drives are rather inexpensive, all of these backup options may be fun

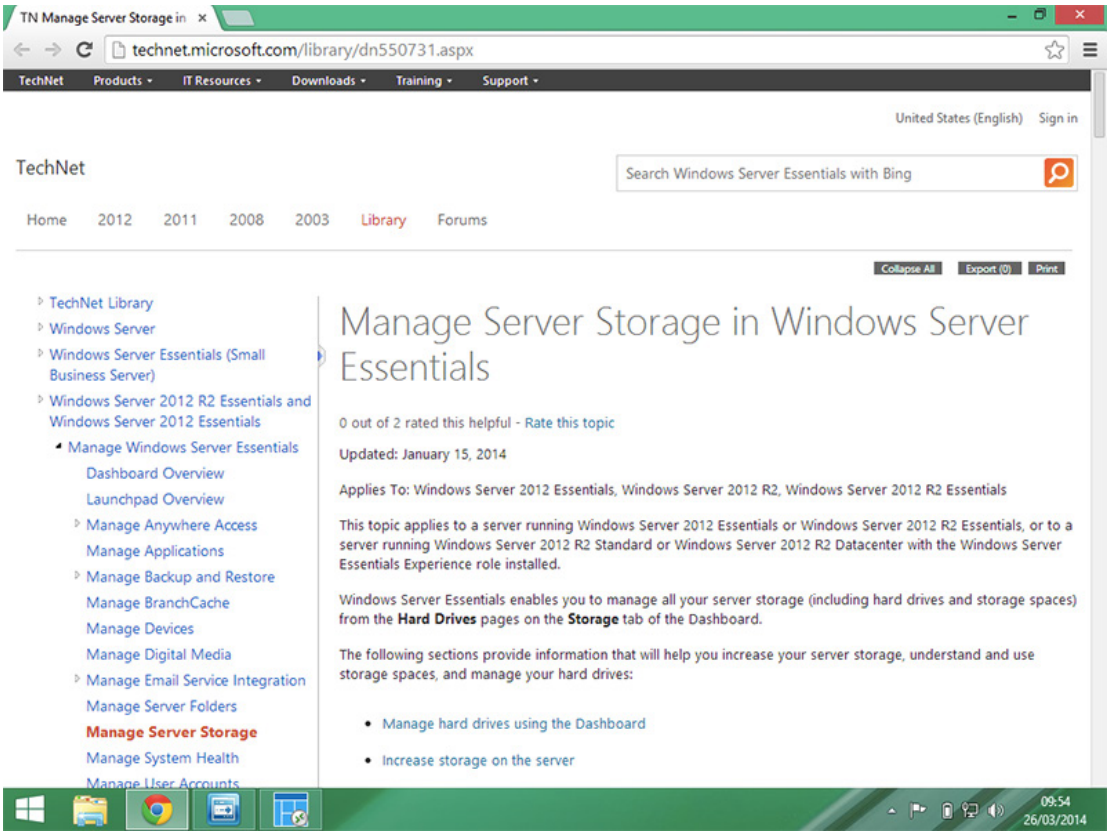
to implement. The downside is that you either need additional external drives/computers for such options as File History, or you need additional hard drive space and time to back up the server. If you are backing up to the Cloud, various backup strategies such as Shadow Copies simply requires more time and expensive storage space to back up to the Cloud.

What is great is that you do have the option to turn on Shadow Copies for only the shares you feel would be important to do so - to use Shadow Copies, on a client computer (Windows) right click a file or folder and choose **Restore Previous Versions.**

Take some time to think through the wide array of backup features supported on Windows Server 2012 R2 Essentials and select what's right for you, your business and/or your home.

Adding Hard Drives to the Server

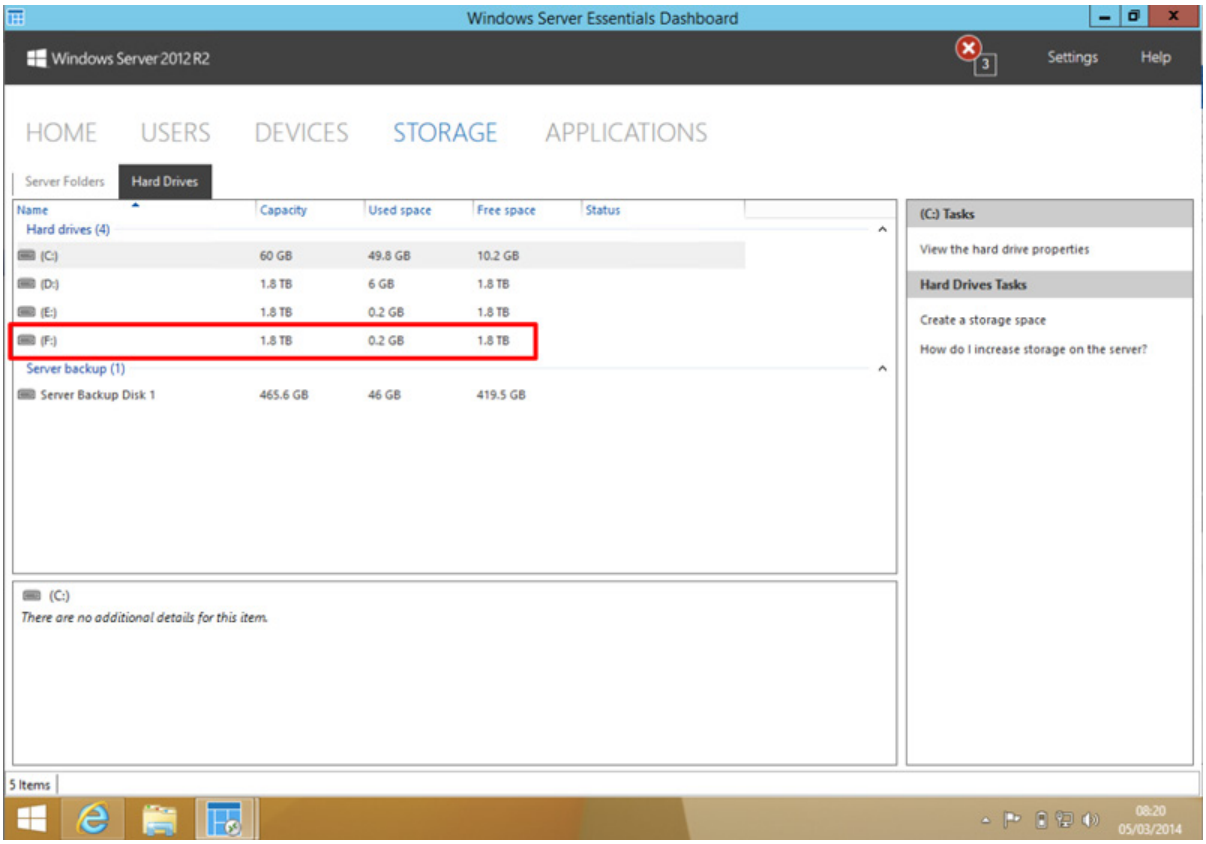
Moving over to the **Hard Drives Tasks**, the second option, **"How do I increase storage on the server"** simply opens the specific Essentials documentation in a browser.



Help is available at the Microsoft TechNet site.

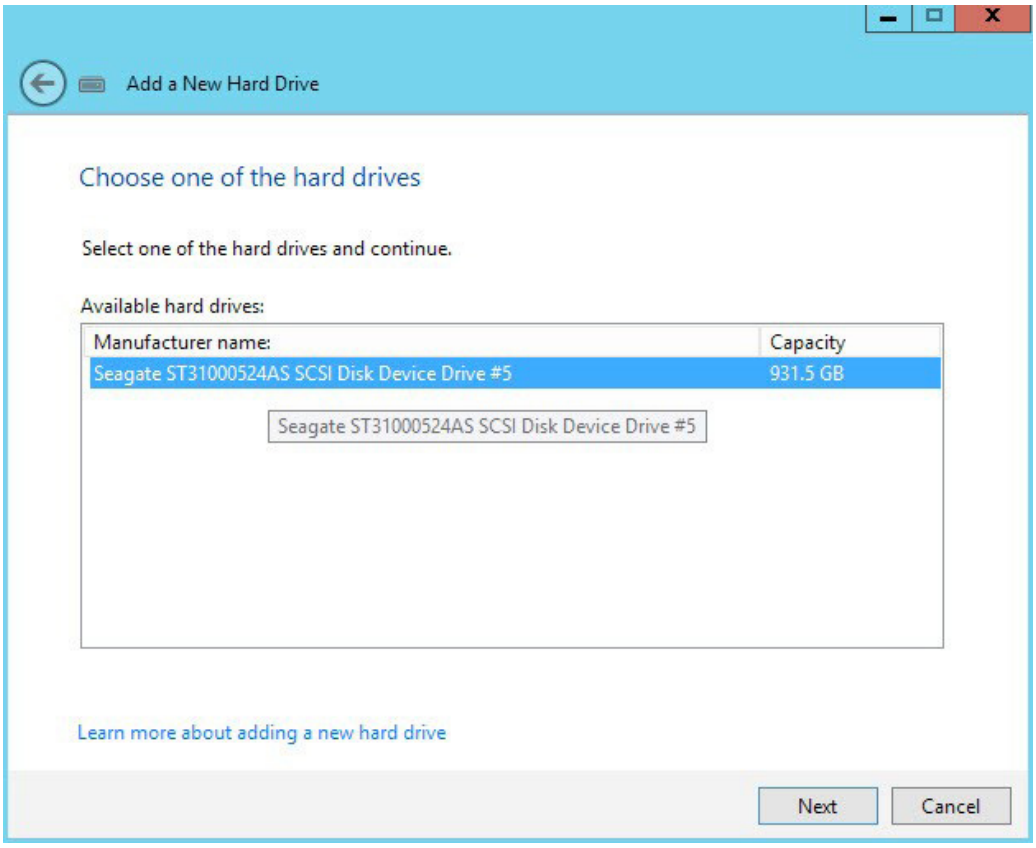
Reading this section takes care of two scenarios for adding a hard drive. The first relates to pre-

viously formatted drives where Windows Server 2012 R2 Essentials will assign a drive letter to it and add the server storage capacity. The (F:) drive shown below is one such drive added in this manner.



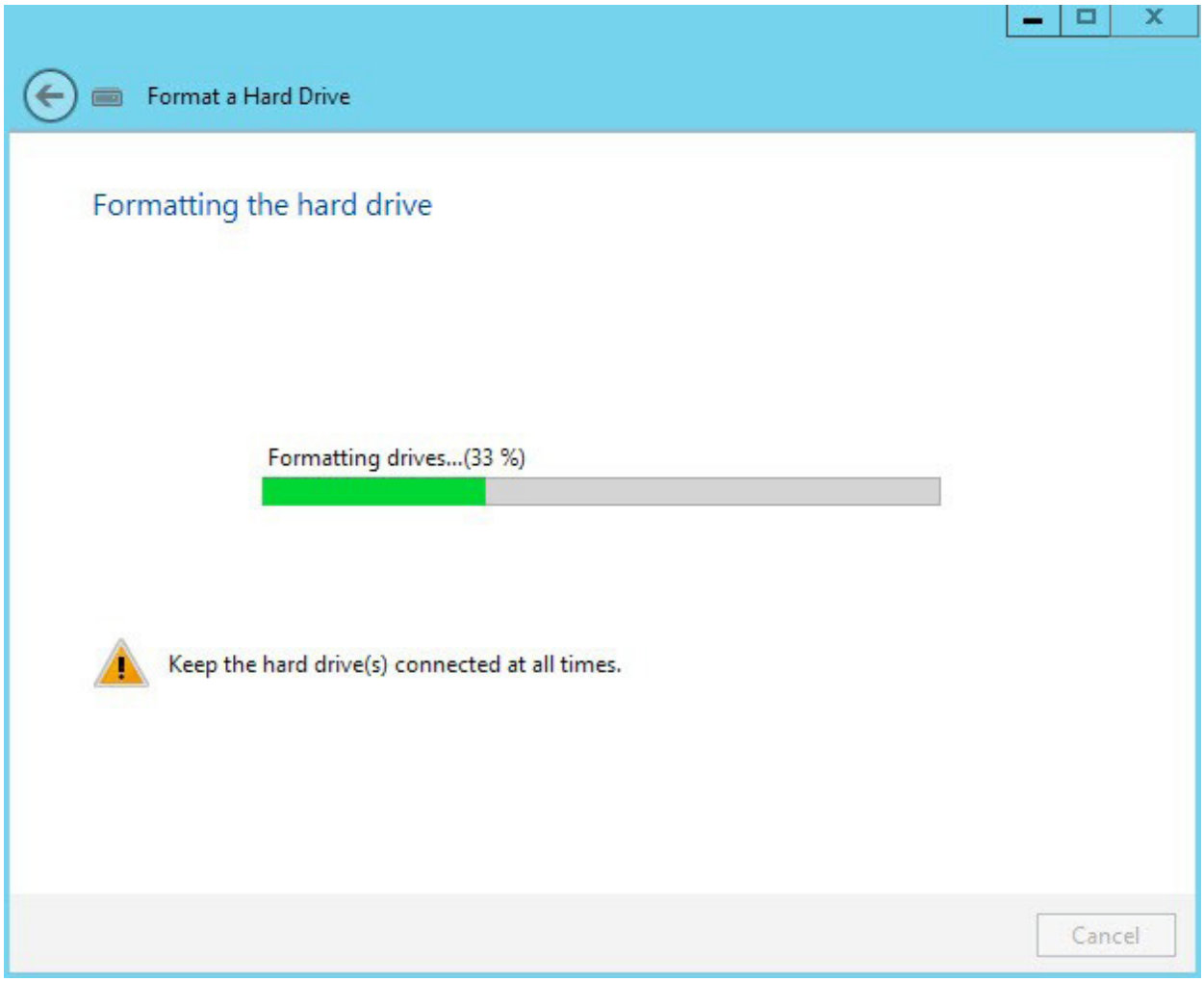
A previously added hard drive.

The second scenario relates to an unformatted drive. When the server spots that an unformatted drive has been connected, the Add as Hard Drive Wizard will guide you through getting it initialized and ready for use.



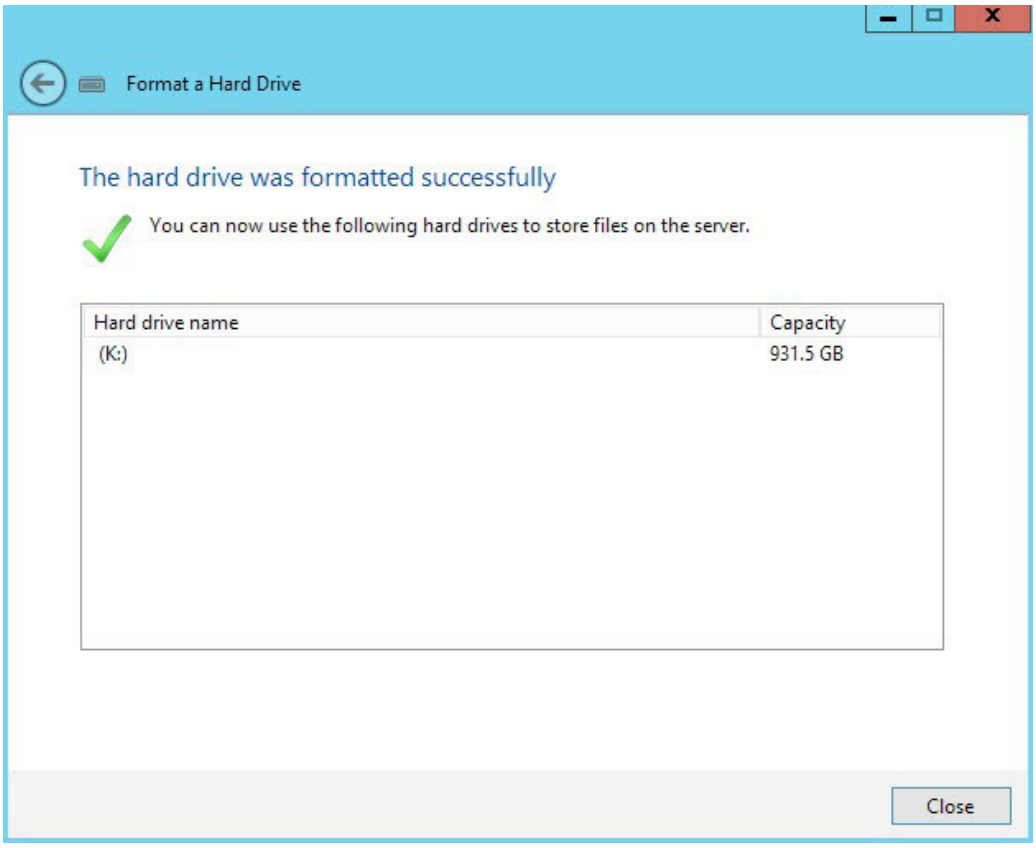
Adding a hard drive.

You'll be able to format the drive:



The Dashboard wizard will guide you through formatting.

and complete.



The hard drive is prepared.

Once your hard drive is formatted, it should appear in the list of hard drives in the Dashboard.

Creating and Managing Storage Spaces

In Windows 8, Windows Server 2012, and Windows Server 2012 Essentials, Microsoft added a new storage pooling technology that is similar to a building a RAID array. It's called Storage Spaces, and the feature remains available in the latest versions of Microsoft's server and client platforms As defined by Microsoft:

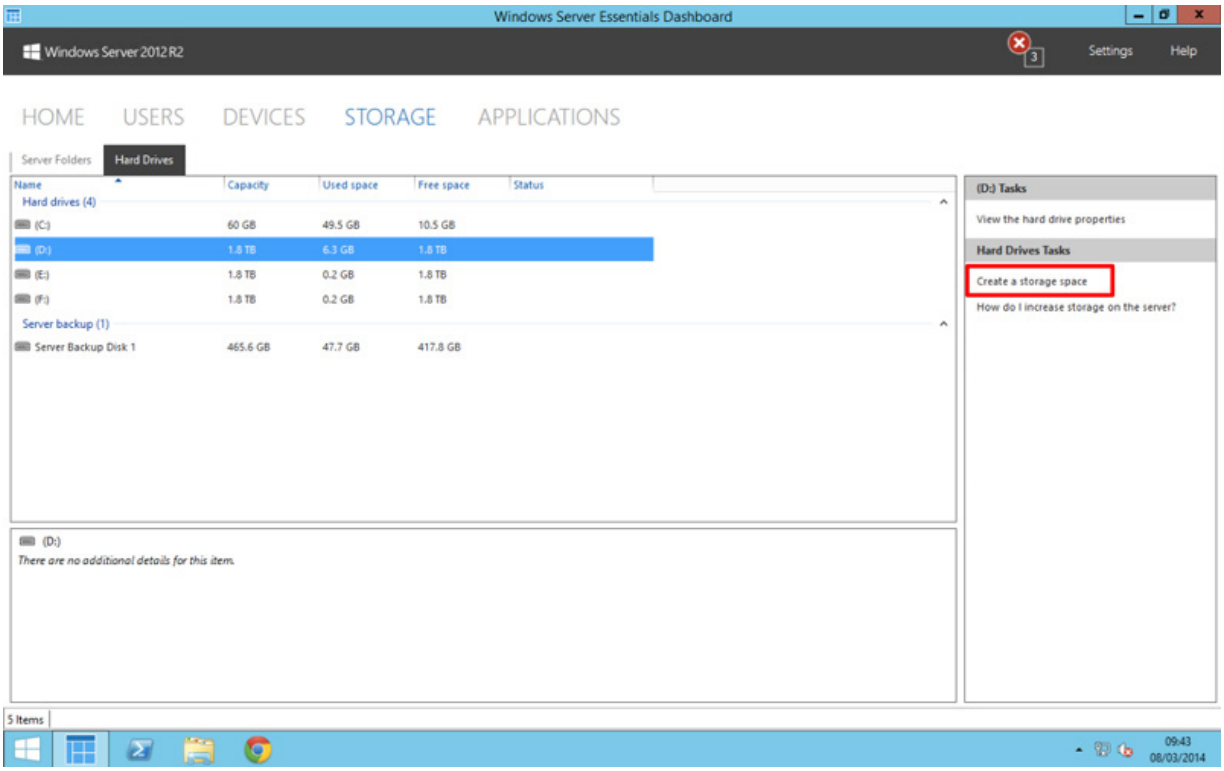
"Storage Spaces in Windows Server 2012 and Windows 8 enables cost- effective, optimally used, highly available, scalable, and flexible storage solutions for business-critical (virtual or physical) deployments. Windows Server 2012 and Windows 8 deliver sophisticated storage virtualization capabilities, which empower customers to use industry- standard storage for single computer and scalable multi-node deployments. It is appropriate for a wide range of customers, from consumers using Windows 8 for personal storage, to enterprise and cloud hosting companies using Windows Server 2012 for highly available storage that can cost-effectively grow with demand."

Bleurgh. The effective translation of all this is that Storage Spaces has the ability to create a software storage array (a pool of storage, in simple terms) from within the operating system using hard drives of varying sizes. The benefits of using Storage Spaces is data protection - you can mirror data held in a Storage Space across multiple drives to protect against drive failure - and convenience. Storage pooling allows you to "merge" multiple drives (of varying sizes) into a single pool, addressed with a single drive letter - just like having one massive hard drive.

To create a Storage Spaces array, you have two options. In Windows Server 2012 R2 Essentials, Microsoft has added a new Create a Storage Space wizard in the Dashboard, which quickly creates a storage pool and a single storage space which is set to a default level of protection - a two way mirror which synchronises the contents of a folder stored on one physical drive in your pool to a second drive in that same pool. This option is fine if you want something quick and simple, but if you want to work through some custom settings in more detail, then the second option, available through Windows' Control Panel task may be more suitable.

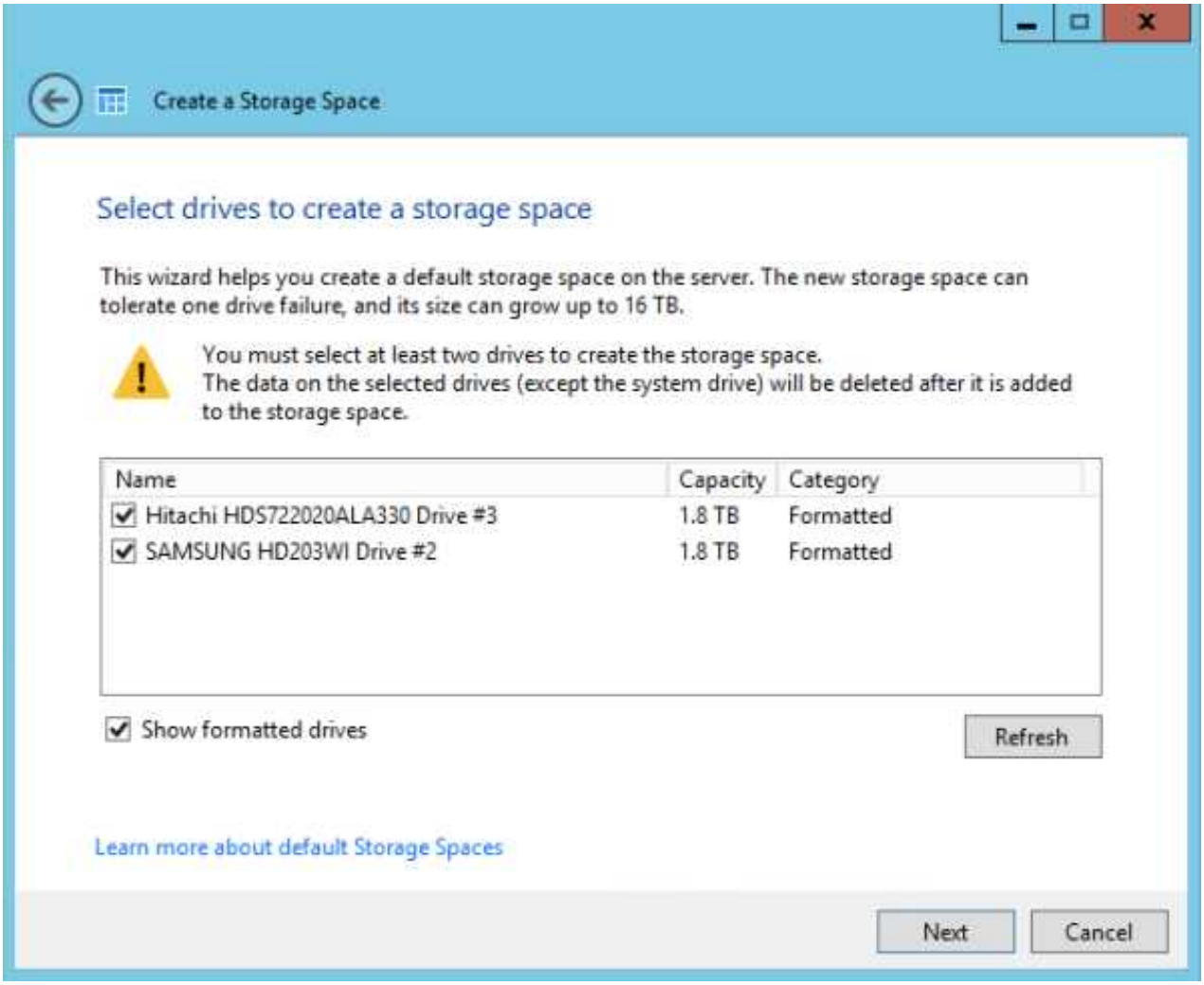
Creating a Storage Space With the Dashboard

Let's start with the Dashboard task option, **Create a Storage Space**. For my use, I am going to create an array using the (E:), and (F:) drives.



Creating a storage space.

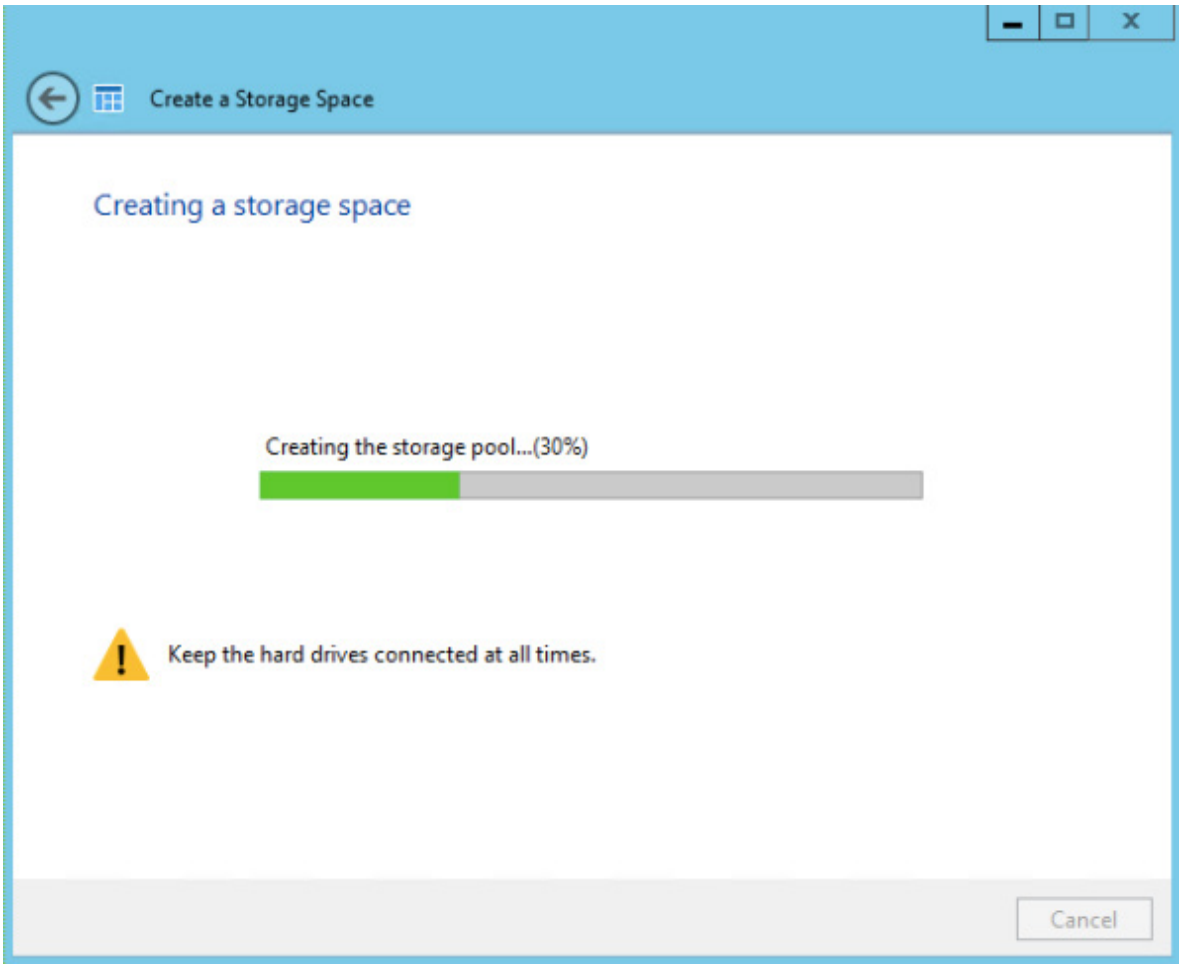
The wizard starts up, and we need to first select the drives which will be used for the Storage Space. If you do not see and drives listed in the window shown below, ensure **Show formatted drives** is selected. **Choose your drives** and click **Next**. If you're a little confused at this point as to which physical hard drives correspond to which drive letter in Windows, then I won't blame you! Fortunately, as you'll see, Windows will confirm the physical drive and drive letter shortly.



Selecting drives for the Storage Space.

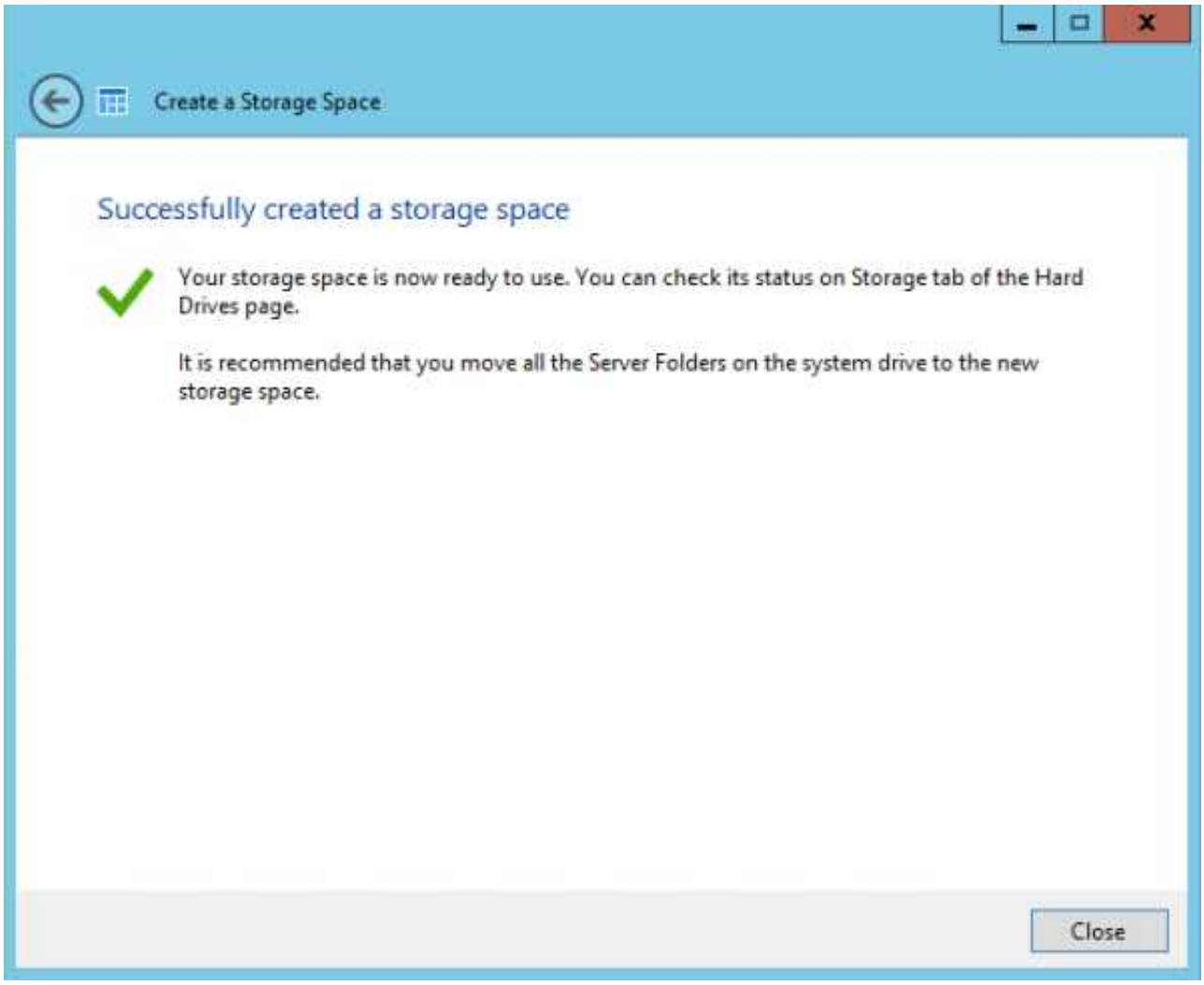
Note the advice provided by Windows here - your storage space will be able to tolerate one drive failure, and can grow up to 16TB.

Windows will confirm that all of your data will be deleted, as your drives need to be formatted to create the storage space. Double check you have selected the correct volumes (drive letters) and click **Yes** to proceed.



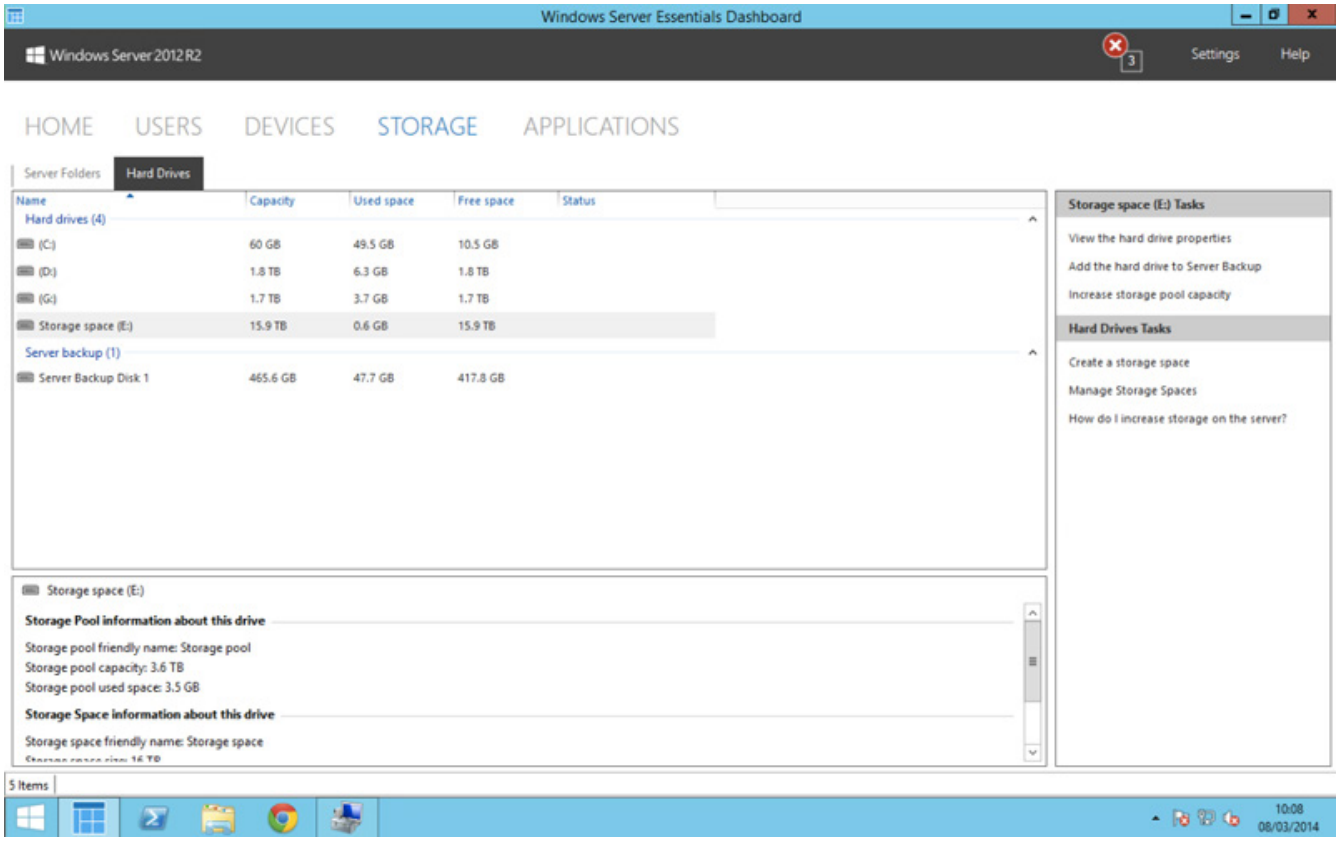
The storage space is prepared.

Preparing the storage space just takes a couple of minutes.



Your storage space is ready!

Close the wizard and check your hard drive status. You'll now see that we have a Storage Space listed - that's two drives, polled together under a single drive letter (E:)

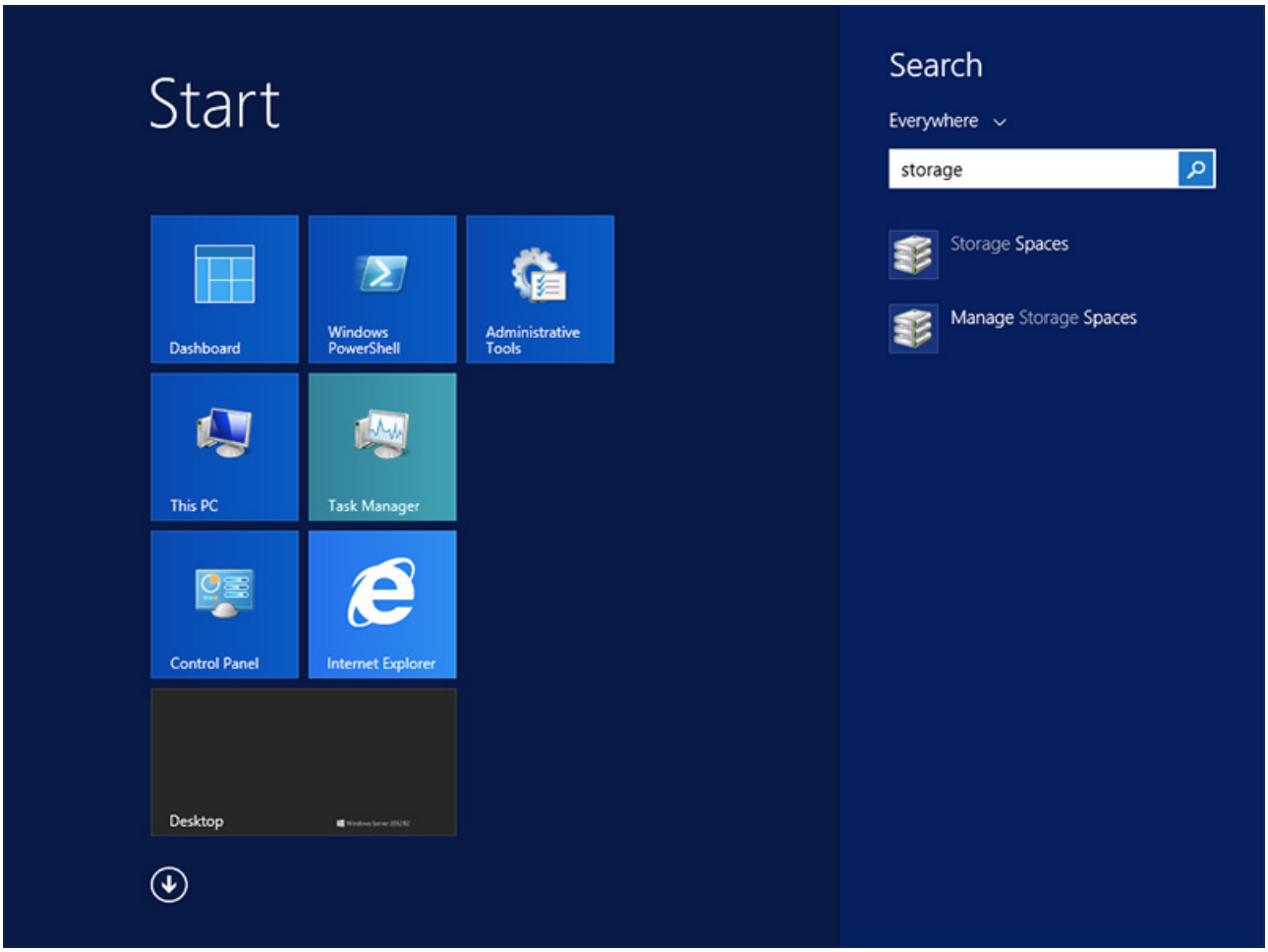


Our storage space is listed in the Dashboard.

Okay, so that's the quick and easy option covered. Let's check out the second, more granular method for creating a Storage Space.

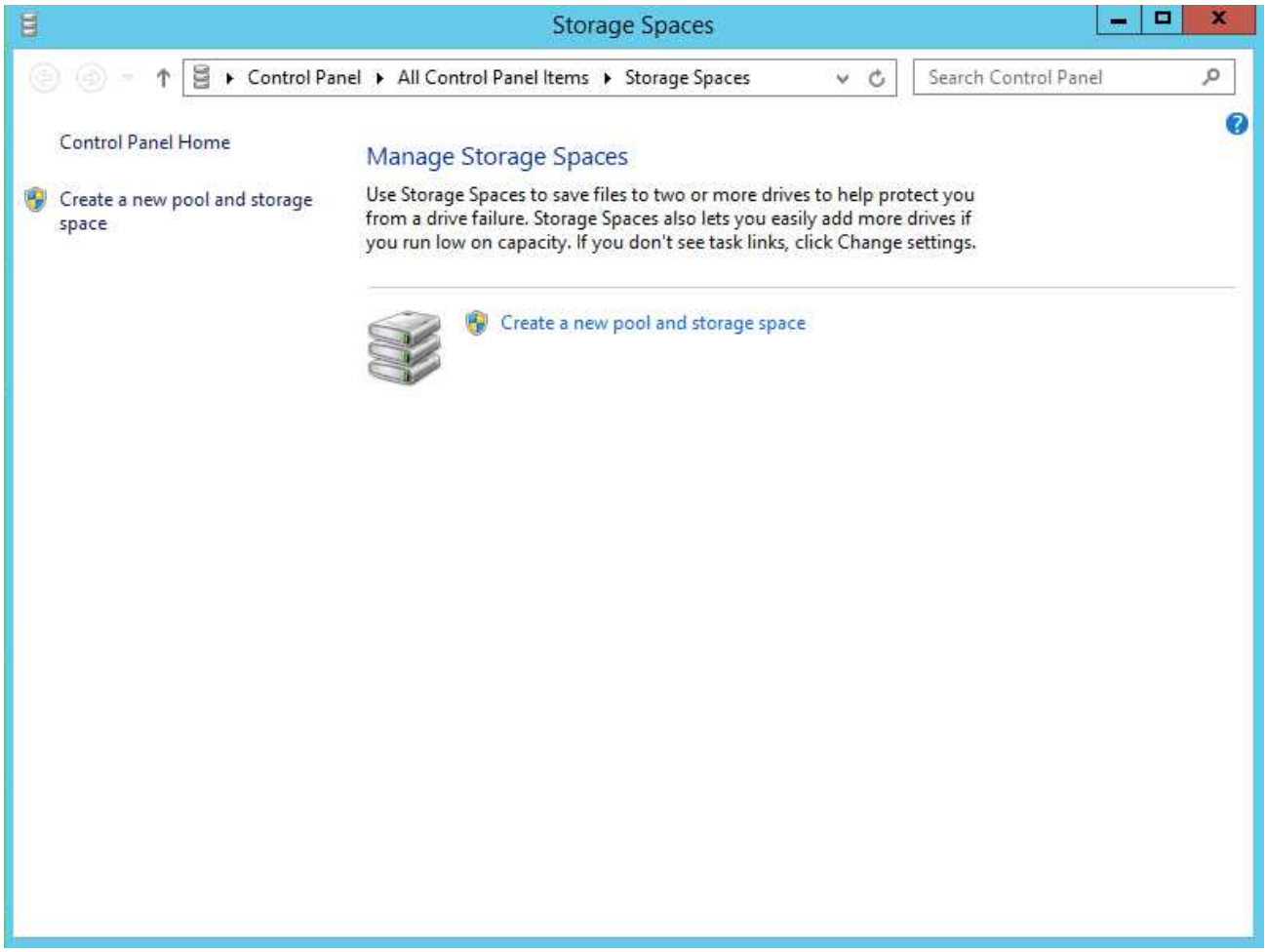
Creating a Storage Space With the Control Panel

Open a search box using the Windows Charms bar (hover the mouse to the right hand edge of the screen and click the magnifying glass icon that appears). In the box, type **storage** and you'll see a **Storage Spaces** option appear.



Windows Search.

Click the Storage Spaces link and the **Control Panel** will open.

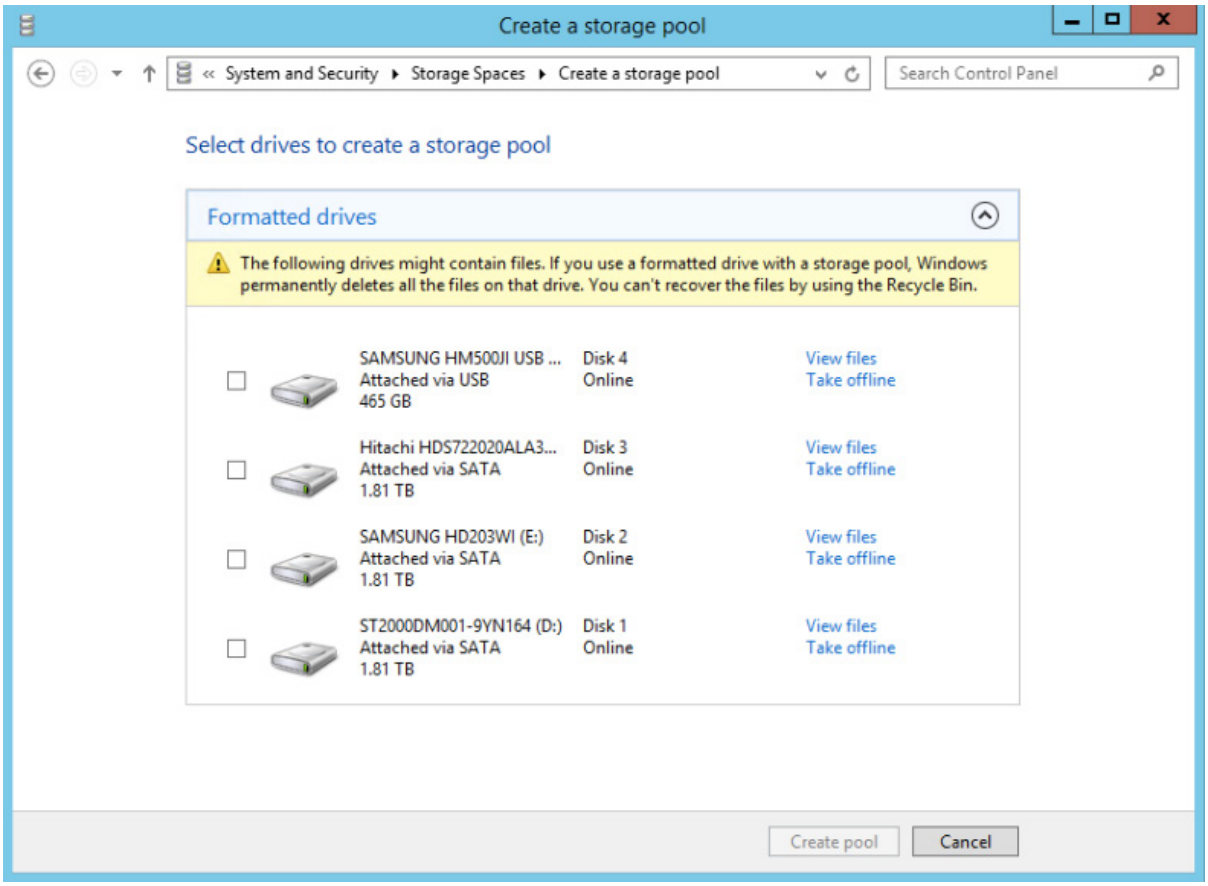


The Manage Storage Spaces window.

There's just a single option available to us here, so click **Create a pool** and a storage space. Let's quickly talk through the concepts of storage pools and storage spaces whilst that window opens.

A **storage pool** is a collection of physical drives, whilst a **storage space** is a virtual drive that spans across multiple physical drives. **Critically, multiple storage spaces can be created on a storage pool.** You may wish to create separate storage spaces for media and business documents and handle data resiliency differently, mirroring your business files for additional protection whilst retaining just a single copy of media, so you can optimise physical storage capacity. It's an additional layer of protection granularity available to you.

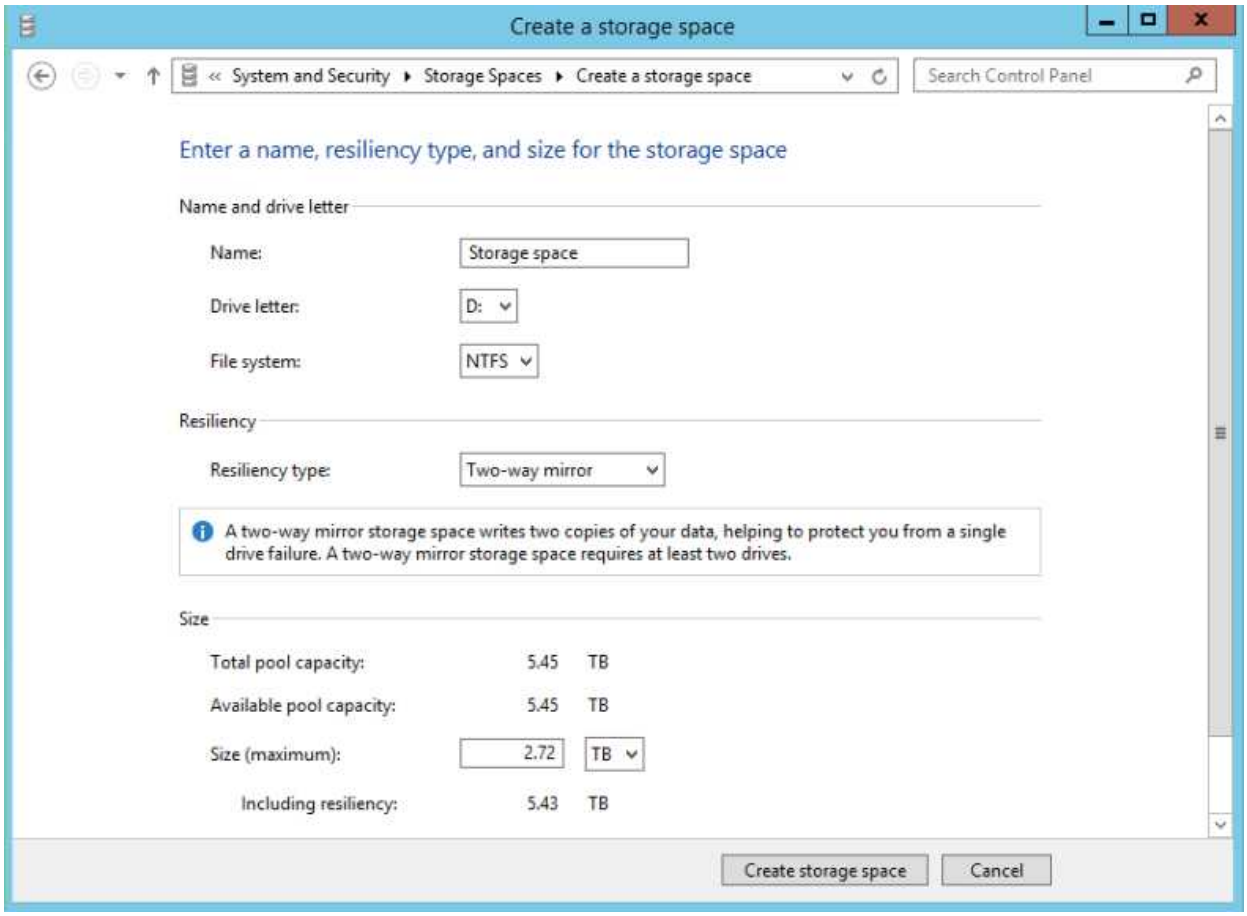
You'll be presented with a list of your hard drives - USB, SATA, SAS, no matter how they're connected, they'll all be shown.



Viewing your hard drives.

As you can see above, the USB drive we use for Server Backup is listed, but I don't want to include that in my storage pool. You can use the View files link to see what, if any, files are stored in each of the listed drives - important as each drive will be formatted when the storage pool is created, so make sure you have any important data migrated off the drives.

Use the checkboxes to select the drives that will make up your storage pool, and then select **Create pool**. That task takes just a few seconds, and you'll be presented with the following screen in which we can define the storage space.



Configuring the storage space.

Here you can give your space a name, assign a drive letter and change the file system from the default NTFS to the newer ReFS should you wish. These settings are all configured automatically if you use the Dashboard option to create the storage space.

Let's pause here and discuss file systems. NTFS (New Technology File System) is a proprietary file system technology introduced by Microsoft way back in 1993 with Windows NT 3.1. Not so "new" now, but at the time it was a revolution! It came with a host of advancements over its predecessors and competitors, including geeky (but important) concepts such as parse file support, disk usage quotas, reparse points, distributed link tracking, and file-level encryption. In fact, it was so good that it's still the default file system in use in Windows today, over 20 years later. When a piece of technology lasts that long, it's got to be good!

ReFS, or to give it its full name, **Resilient File System,** was introduced in Windows Server 2012. It is not designed to be a direct replacement for NTFS - it introduces some improvements on NTFS but what it gives with one hand, it removes with the other as some features of NTFS are dropped. Features such as the ability to quickly detect and repair file corruption are built into ReFS (whereas

NTFS needs to use the CHKDSK tool you'll be familiar with). When combined with Storage Spaces, ReFS can use the mirrored copy of files to automatically address any file corruption it detects. With strong resiliency features in place, ReFS is ideal for storing very large data sets - by that, I mean seriously large amounts of storage - millions, billions of gigabytes.

Some common NTFS features are not supported in ReFS. They include a host of features that you may not immediately recognise but are used commonly in Windows - named streams, object IDs, NTFS compression, Encrypting File System (EFS), hard links, extended attributes, and disk quotas. As a result, ReFS will not be supported by some applications (including, at the time of writing, Microsoft's SQL Server) so unless you need hardcore resilience for massive amounts of storage, stick with the tried and trusted NTFS.

Okay, moving on to Resiliency Type, this is where we define the method used to protect the data held in the storage space. Earlier, we used the Dashboard to create our storage space. We created a simple storage space with just two drives and, if you check the entry next to Resiliency type, you'll see that we created something called a **Two-way mirror.**

Viewing Resiliency in the Details pane.

This was selected for us by default by Windows Server 2012 R2 Essentials, but what is it? Well, a Two-way mirror is like a RAID 1 array - the data stored on a drive is simply mirrored on the second drive, so if you have a hard drive failure on one of the drives in your (currently) two-drive storage pool, the data exists on the second drive too so is safe!

However, depending on the number of drives you've included in your storage space, you can set how your data is protected using the Control Panel creation method. Choose from:

- **Simple (no resiliency)**, which creates a Just a Bunch Of Drives (JBOD) array that provides no data redundancy and therefore no protection of your data in the event that you lose a drive in the

array. This array requires a minimum of only one drive.

- **Two-way mirror**, which is analogous to a RAID 1 array. The data is mirrored to another drive. This array requires a minimum of two drives. This array can protect your data in event of a single drive failure.

- **Three-way mirror**. This array requires a minimum of five drives. This array can protect your data in event of two drives failing at the same time.

- **Parity**, which is analogous to a RAID 5 array. This array requires a minimum of three drives. This array can protect your data in event of a single drive failure.

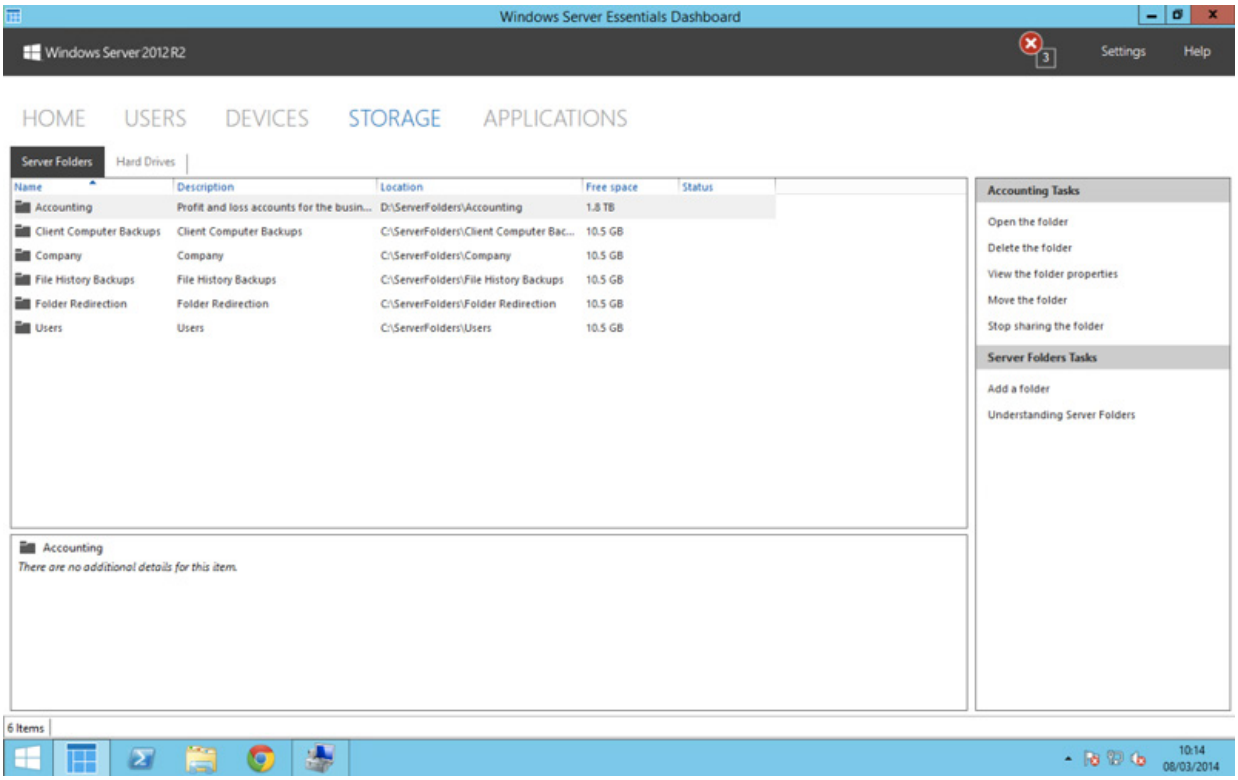
Note that resiliency is set and locked when you create the storage space. Unfortunately it cannot be amended once the space has been created.

As you'll see from the **Size** section at the bottom of the window, each type of Resiliency has a different overhead in terms of capacity requirements so finding the right balance of protection and storage capacity for your needs is important. You also may see some differences in file transfer speeds depending on which option you choose, with Parity spaces generally offering slower write performance than other types of resilience. (If you want to read more on this, there's a great white paper over at Microsoft TechNet (http://social.technet.microsoft.com/wiki/contents/articles/15200.storage-spaces-designing-for-performance.aspx).

Make your selections and click **Create storage space**.

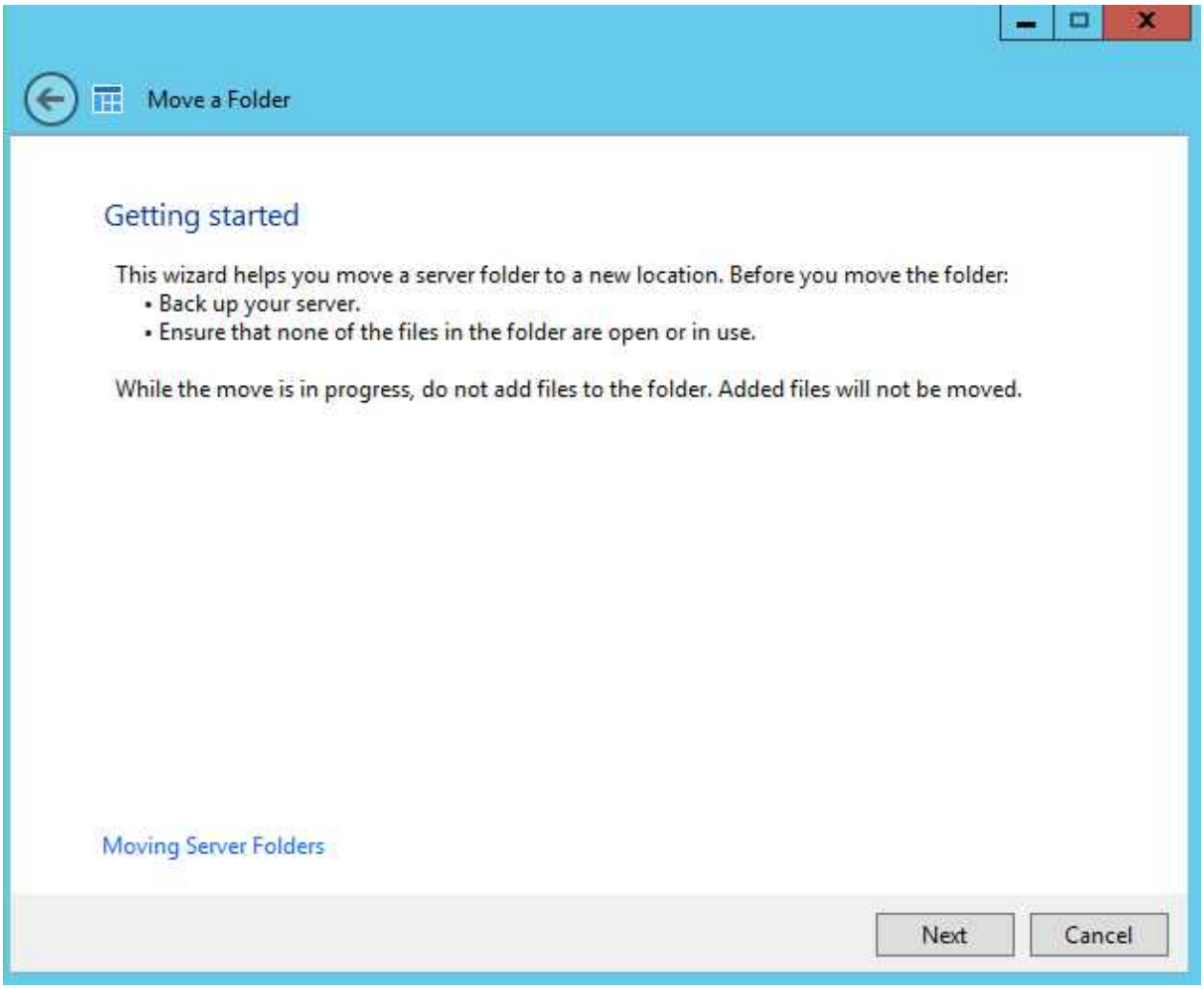
Moving Server Folders to the Storage Space

As you'll have seen if you used the Dashboard wizard, when you created the storage space, you were advised to move your server folders over to it. It makes sense to store your data on your largest drive (or pool of drives) so let's do that now. In the Dashboard, click on the **Server Folders** tab to view your folders.



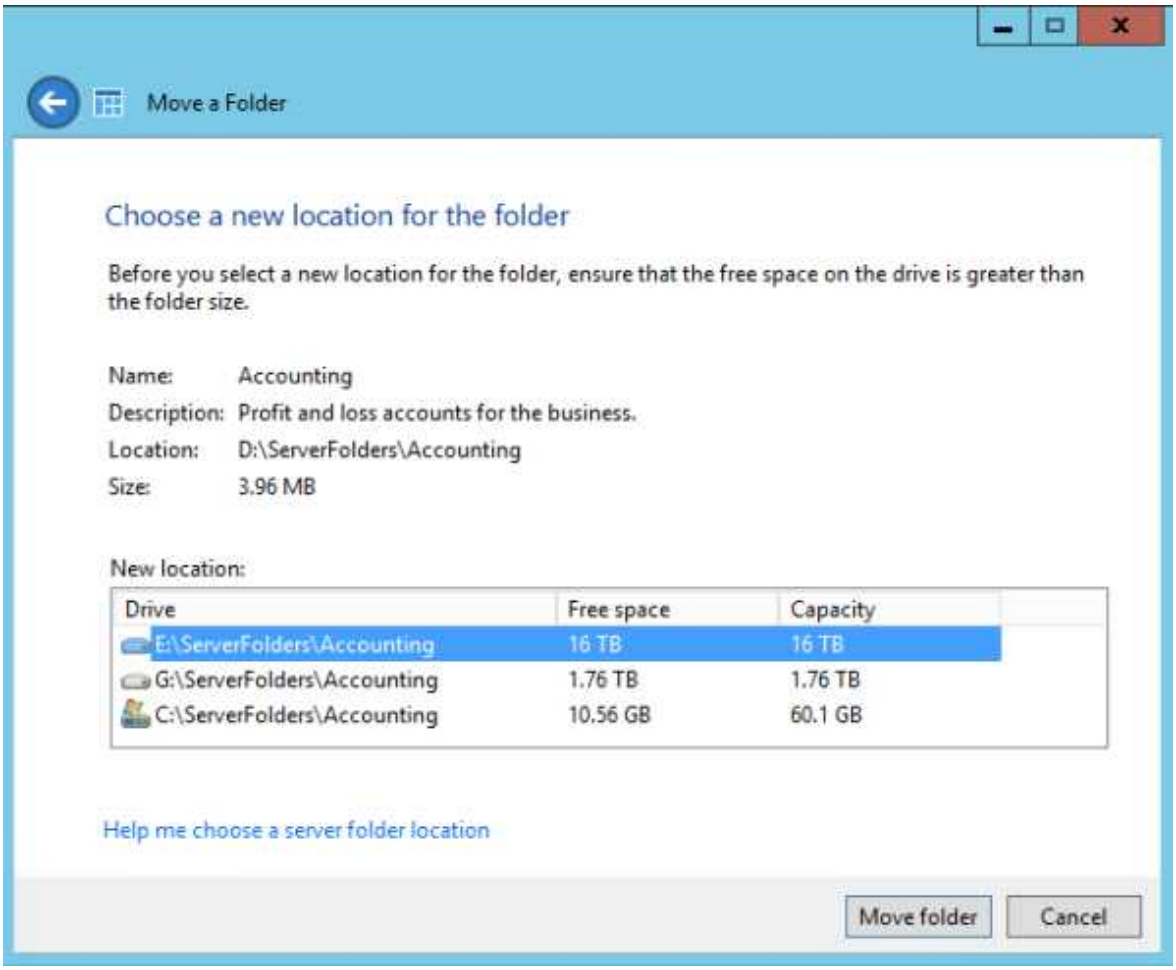
Your server folders.

Select a folder and click **Move the folder** from the Task pane. The **Move a folder** wizard will open.



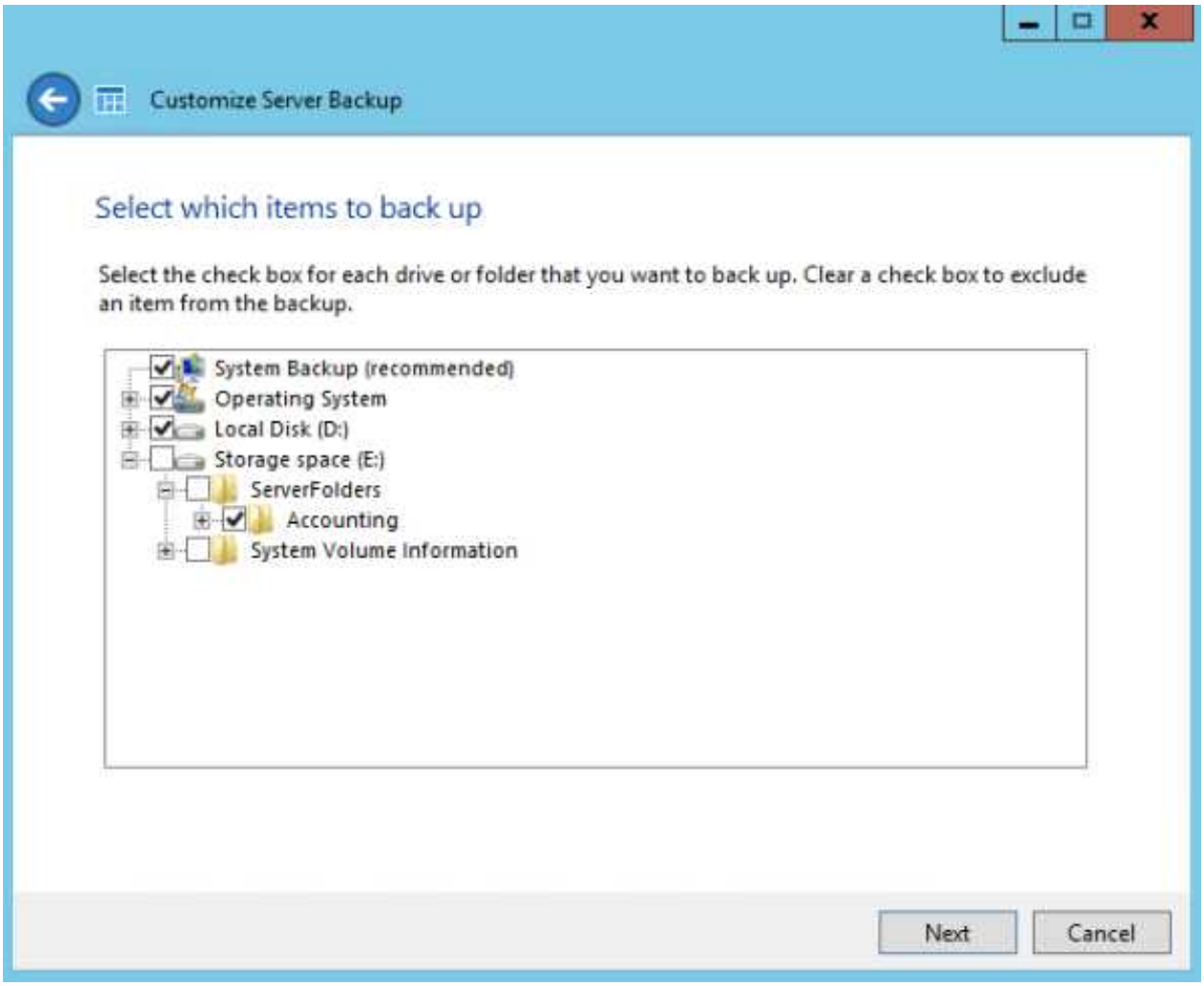
Moving folders.

Click Next and you'll be asked where you wish to move the folder to. Highlight your storage space and click **Move folder**.



Selecting the storage space.

The folder will be moved to the storage space. You're advised to check that the folder is selected for server backup, which you should do with the **Open** button. This opens the Server Backup configuration wizard where you can verify the folder is set to be backed up from its new location.

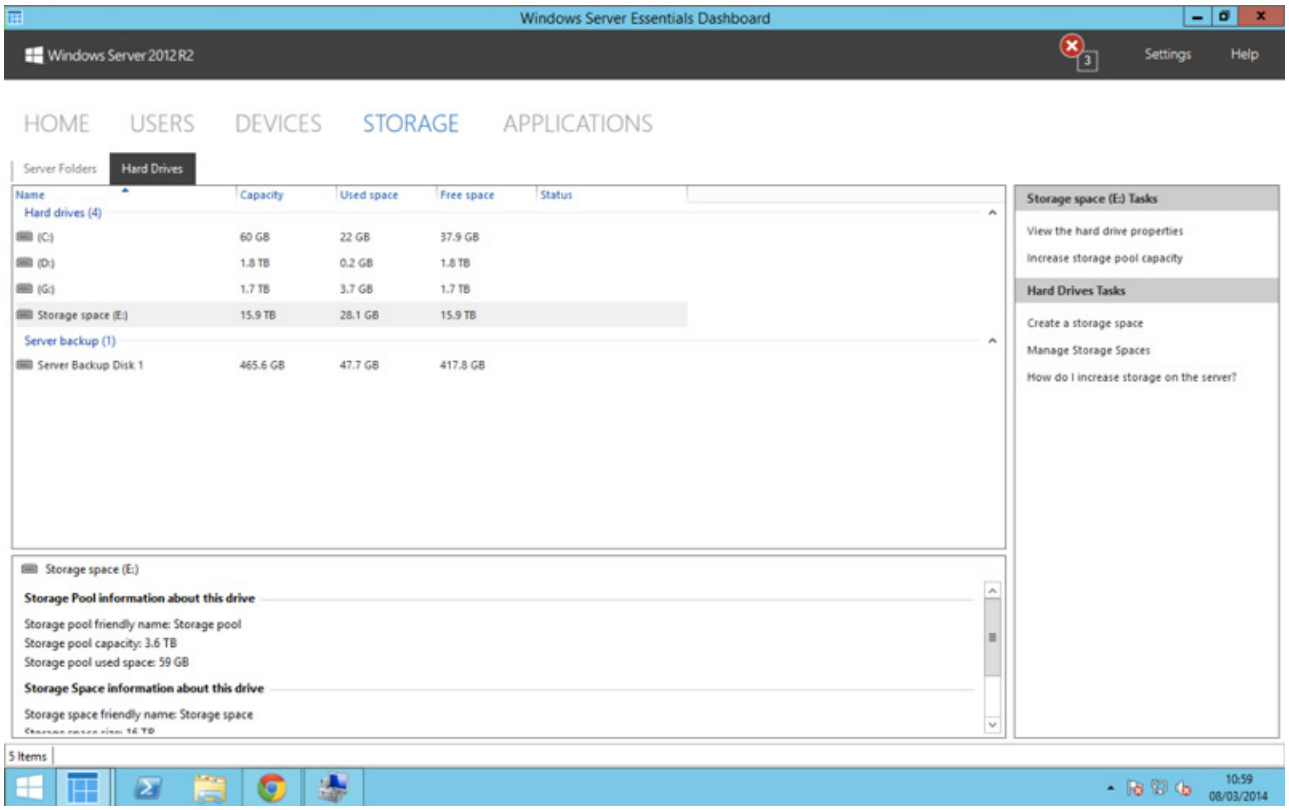


The folder backup is already set and is pointing in the right location.

Now repeat the move process for the rest of your server folders. Obviously, it'll take longer to move larger folders, such as your Client Computer Backups.

A Brief Word on Storage Virtualisation

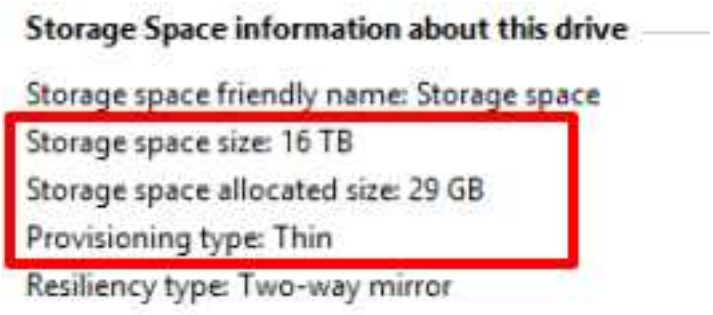
Now, before we move on, you may have noticed that the Dashboard is suddenly reporting a huge amount of free space available in your storage space. If you check my example below, by storage space (the E: volume) currently has 16TB free space. But hang on, I only added two 2TB hard drives to the storage pool, so surely it should say 4TB as a maximum. What's going on?



2TB + 2TB = 16 TB! (Not really).

Welcome to the (slightly bonkers) world of **Storage Virtualization**, and more specifically, a concept called **Thin Provisioning**. Please read these next few paragraphs sitting down, as your head may start to spin a little. You've created a storage pool, which is a "virtual disk" - you know it's made up of two separate, physical hard drives but Windows is seeing is as a single volume with a single drive letter. So it's one big "virtual" disk or "Space" in Windows language.

A space can be "**fixed**" or use "**thin provisioning**" in its configuration. Looking at the **Details** pane in my Hard Drives tab, if I click on the storage space, I see the following:



Storage space details.

We see a **Storage space size** of 16TB, a **Storage space allocated size** of 29 GB and a **Provisioning type** called Thin. This gives us some clues as to what's happening - no, your server hasn't lost the plot, I promise.

Without knowing it as such, you'll be familiar with **fixed provisioning** - it's how the computing world usually works. With fixed provisioning, storage capacity is allocated and reported immediately when a "space" or virtual disk is created. I allocate a space size of 4TB and that amount of physical storage capacity is reserved for that space and can't be given to any other space. That's why it's called "fixed".

With **thin provisioning**, you can create a "space" or virtual disk that is actually larger than the amount of physical storage you have available. That's because physical storage capacity is allocate to the space *only when it's needed* (i.e. you have files and folders to store). So the **Storage space size** of 16TB we see reported above is an *advertised size* - the total, virtual size of the space. But the **Storage space allocated size** of 29GB we can also see reported is the amount of physical storage capacity that has currently been allocated to the space for our server folders.

When the storage space allocated size grows to around 4TB - the maximum physical storage capacity we have available on our drives, Windows will simply ask us to add more capacity to the storage space. We can expand storage spaces by installing additional hard drives and adding their capacity to the storage space, as we'll see next.

If you've followed this so far (and I really hope you have) then your next question will most likely be: why? The benefit of storage virtualisation will be clear - creating pools of storage means that you won't be continually needing to move folders between fixed capacity drives depending on which has the most free space available. Your folders will undoubtedly grow in size, and rather than have you and your users see "Disk full" messages, you can simply keep adding capacity to your storage pool with new hard drives and let Windows manage your storage.

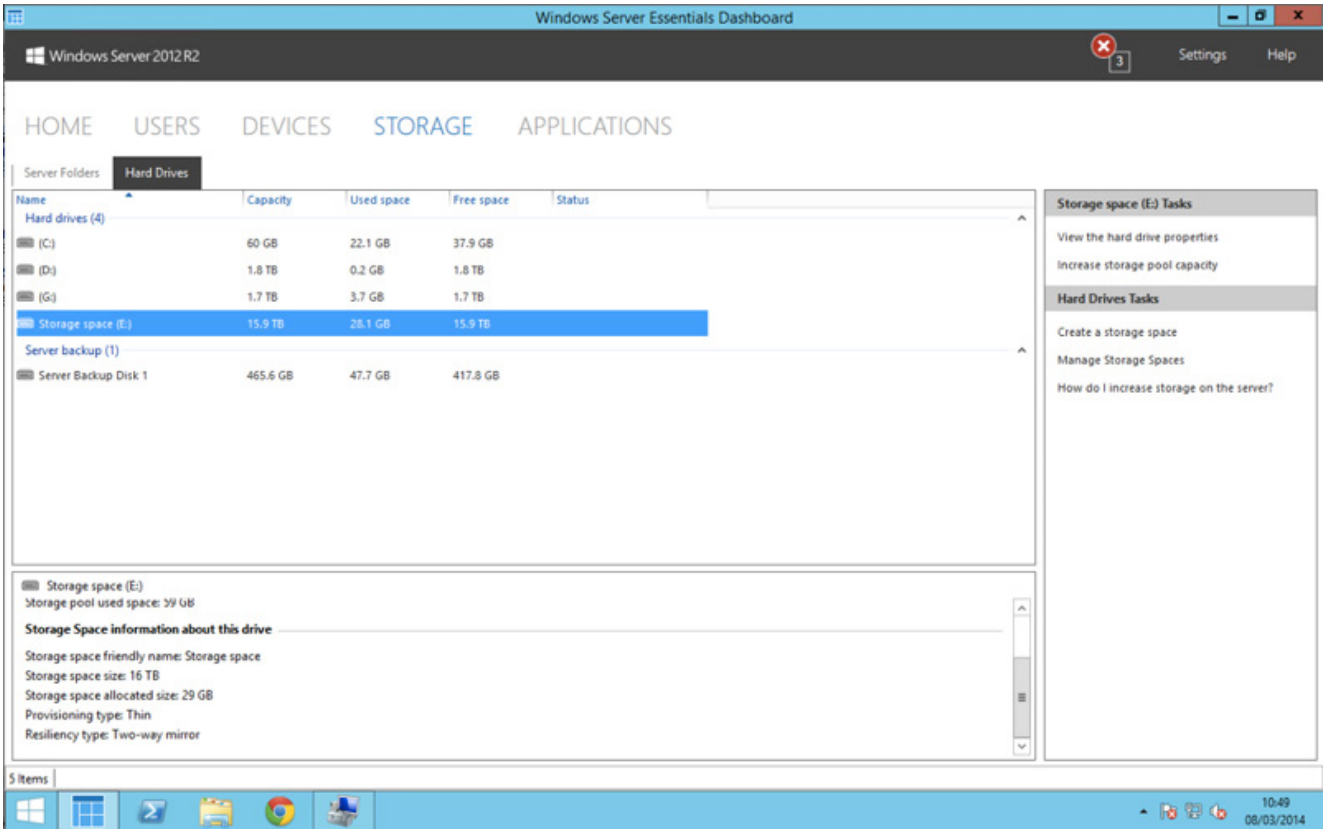
With thin provisioning, line of business applications will no longer grind to a halt, or even crash because they believe you're out of disk space. By convincing the applications that you have huge amounts of storage available, life will be smoother as physical storage capacity can be added to a space as it's needed, and when more capacity is required, then we can expand the storage space.

Let's do that next, and also discuss another Storage Spaces concept - **Resiliency**.

Expanding Storage Spaces

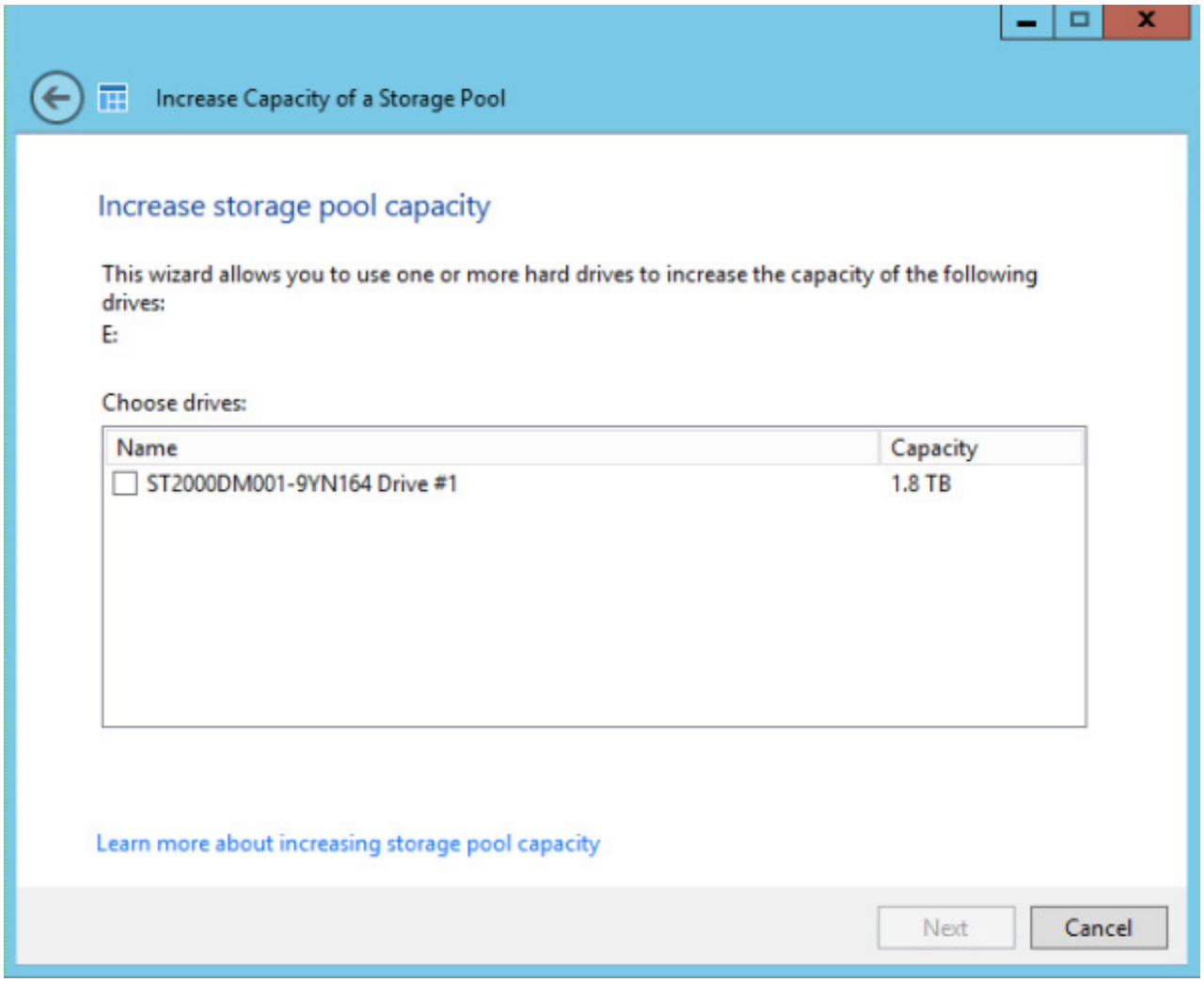
If you wish to expand the capacity of your storage space, you can do that through the Dashboard. In

the Hard Drives tab, highlight your storage space and then, in the tasks pane, select **Increase storage pool capacity** (obviously you'll need to have a third drive available here to follow along).



You can expand the storage space from the Dashboard.

As usual, a wizard will open up, this time entitled **Increase Capacity of a Storage Pool**, and any available hard drives will be displayed. I just have the one drive available (you are not allowed to add system drives to a storage space, so that will not be shown).

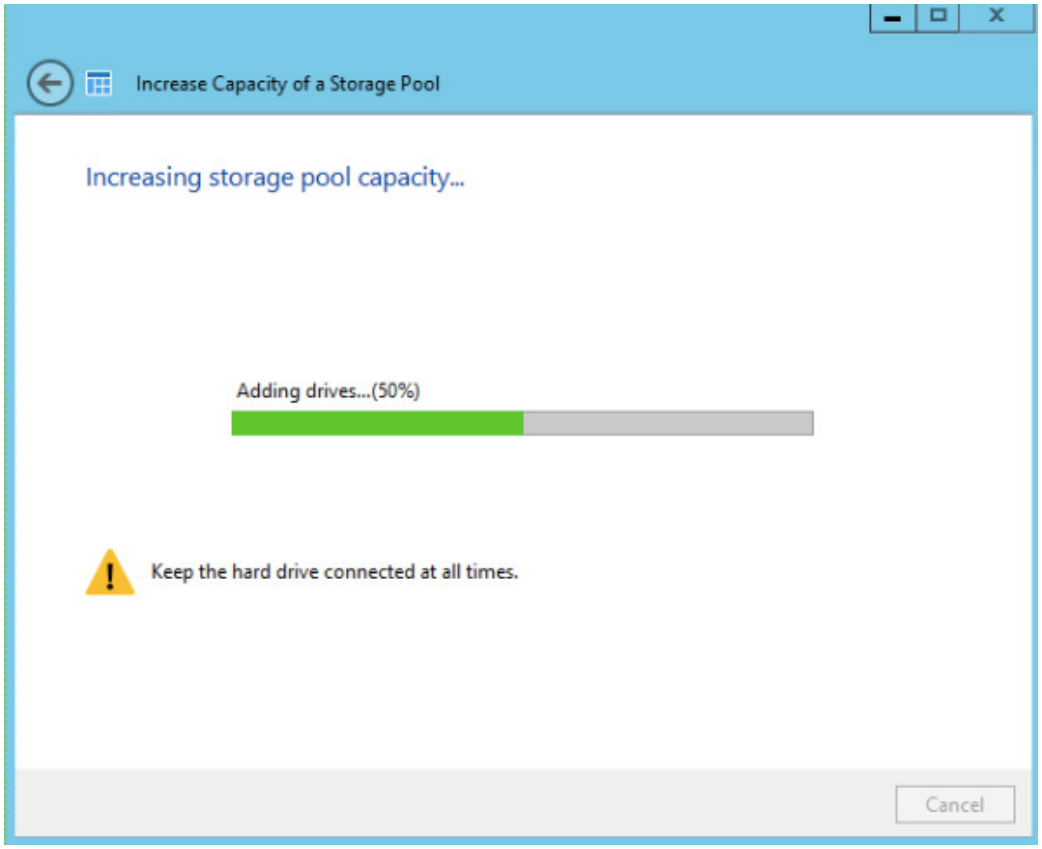


Increasing the storage pool capacity.

Check the drive(s) you wish to add to the pool and hit **Next**. You'll once again be able to check the physical drive name and respective volume you'll be adding to your storage space. Click **Yes** to continue.

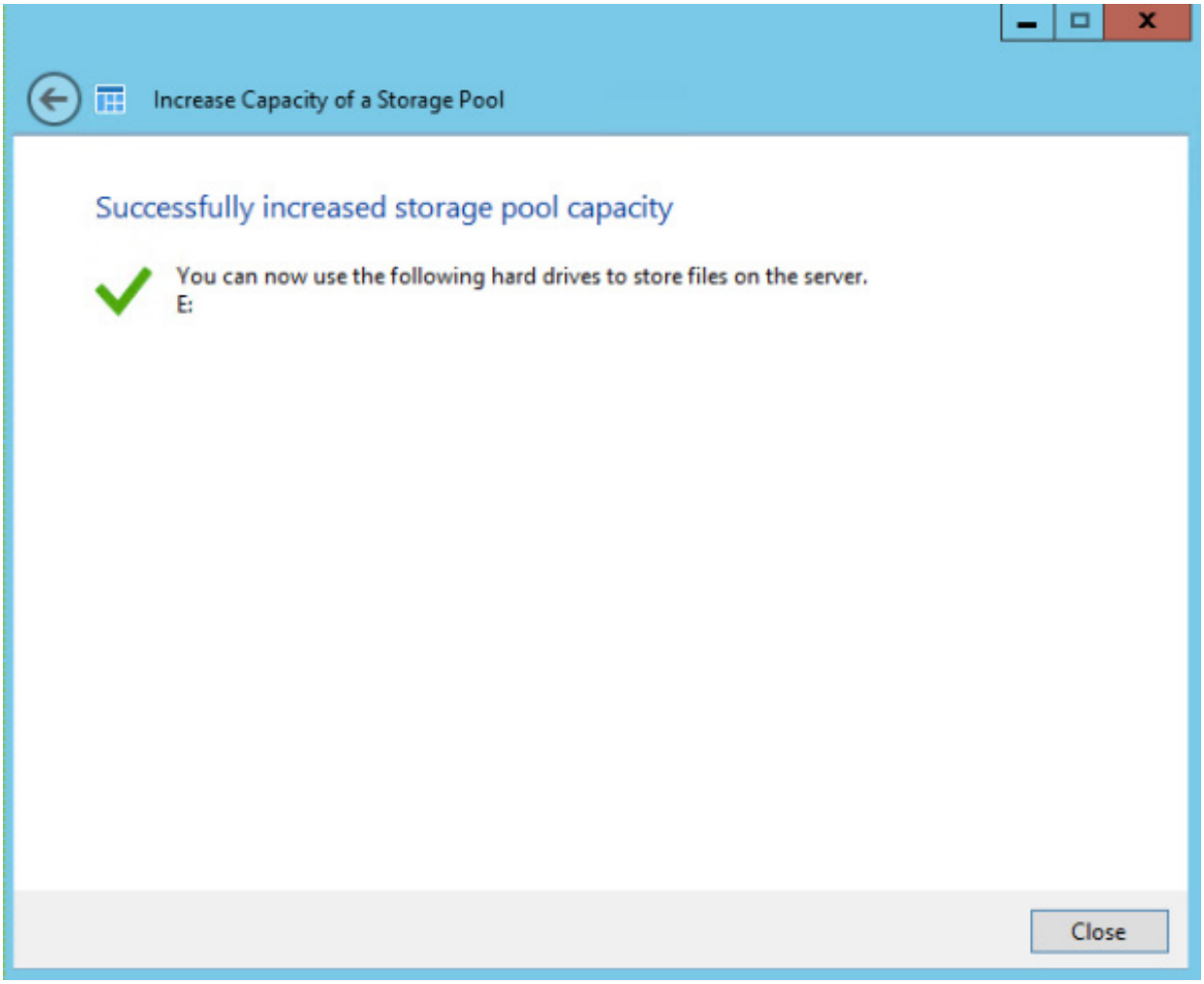
Check the drive and continue.

The drive is added.



Adding the drive.

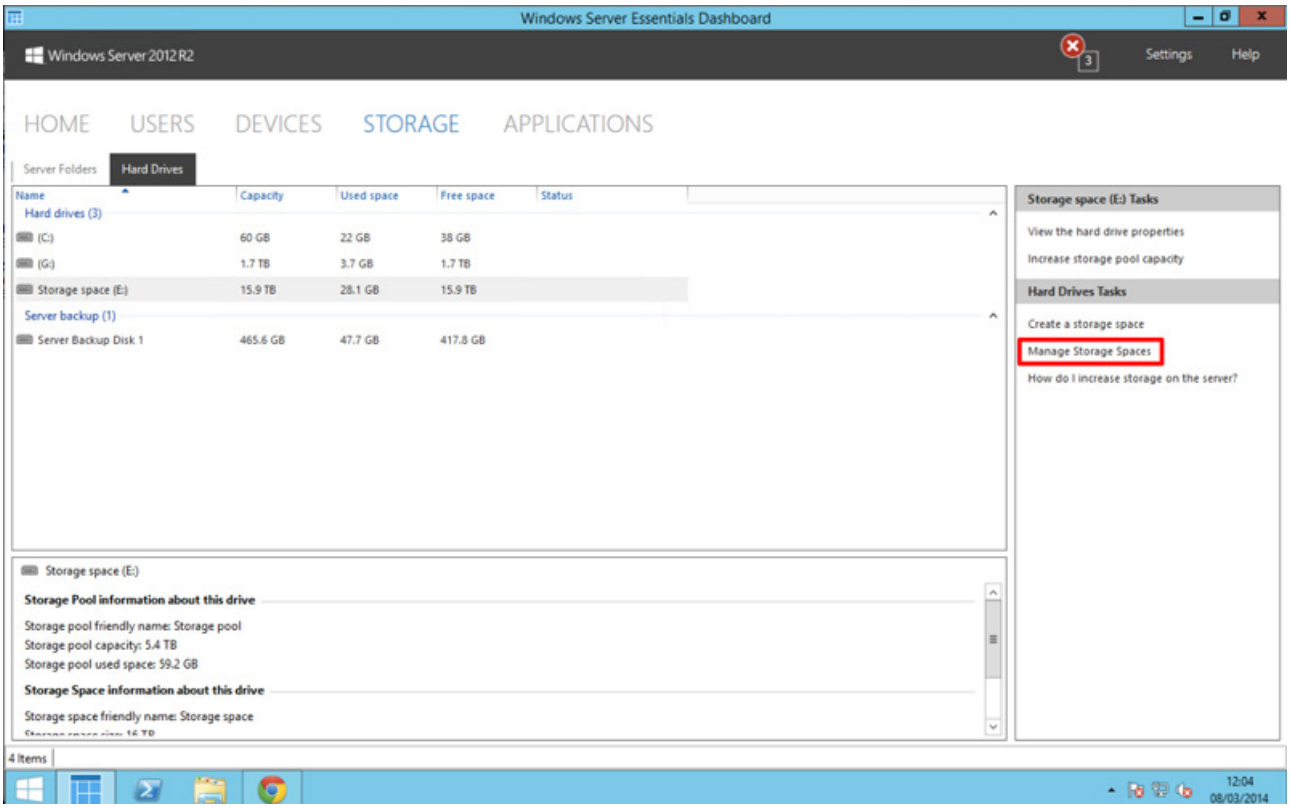
Everything should ready in a matter of seconds.



The storage pool has been expanded.

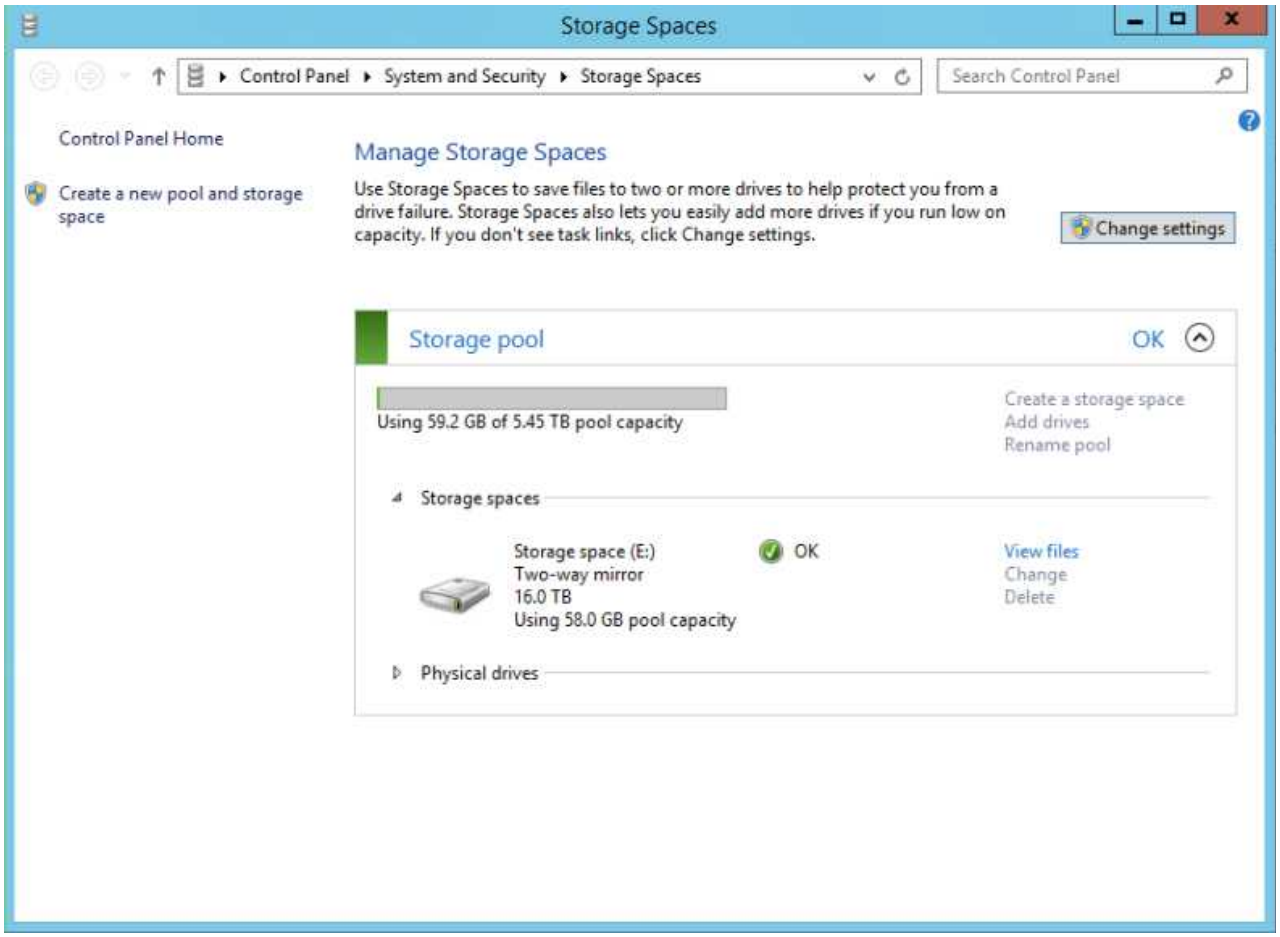
OK, we've expanded the storage pool from two to three drives, but check the **Details** pane and you'll see that Resiliency is still set to Two-way mirror. As mentioned earlier, the resiliency type is locked in when the storage space is created and unfortunately cannot be amended, post creation. If you wish to make a change, you'll need to create a new storage space with the resiliency type you need, and move your data across to it, deleting the old space to keep things tidy. I know, not the most fun you can have.

To make other changes to the storage space, we'll need to use the **Manage Storage Spaces** task in the Dashboard.



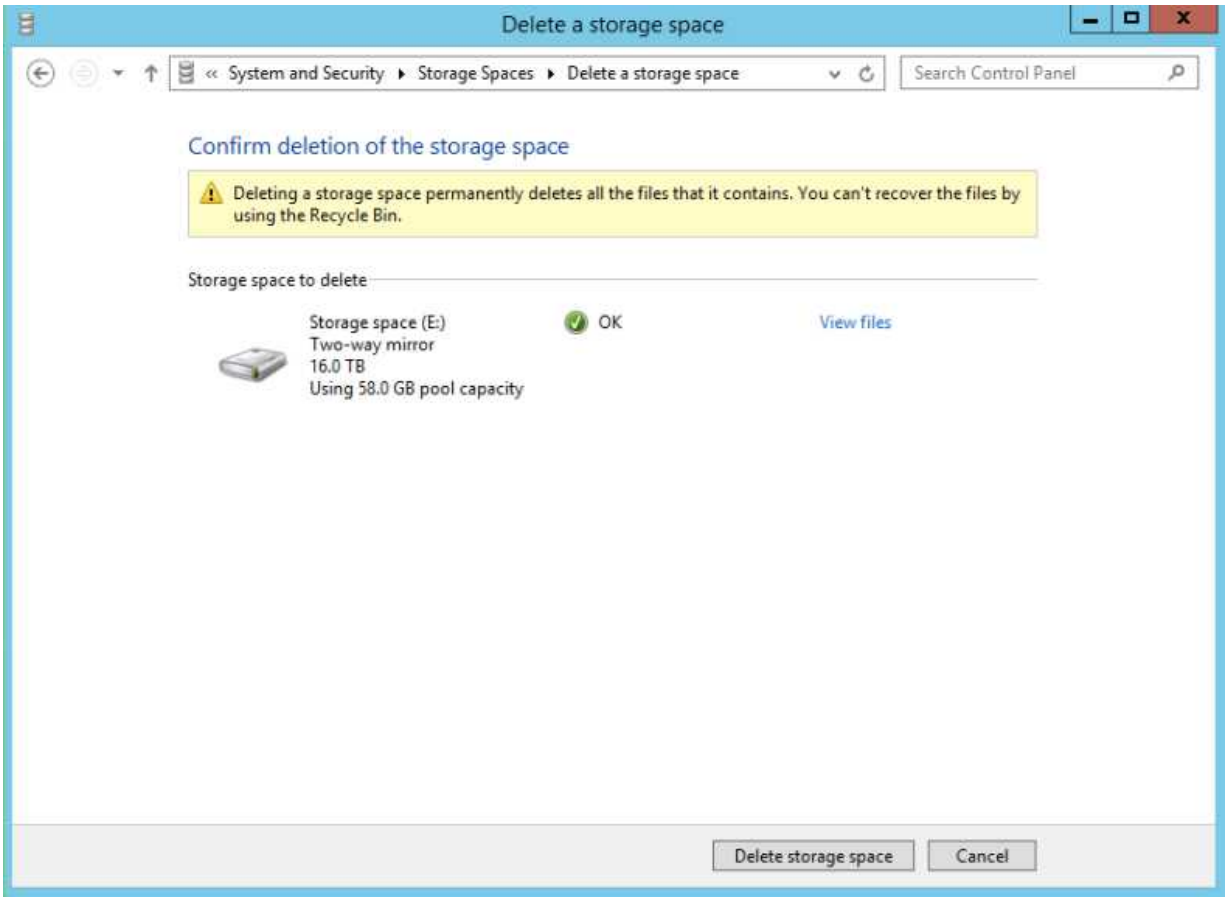
The Manage Storage Spaces task.

Hitting **Manage Storage Spaces** routes us out of the Dashboard and into the standard Storage Spaces Control Panel window.



Storage Spaces in the Windows Server Control Panel.

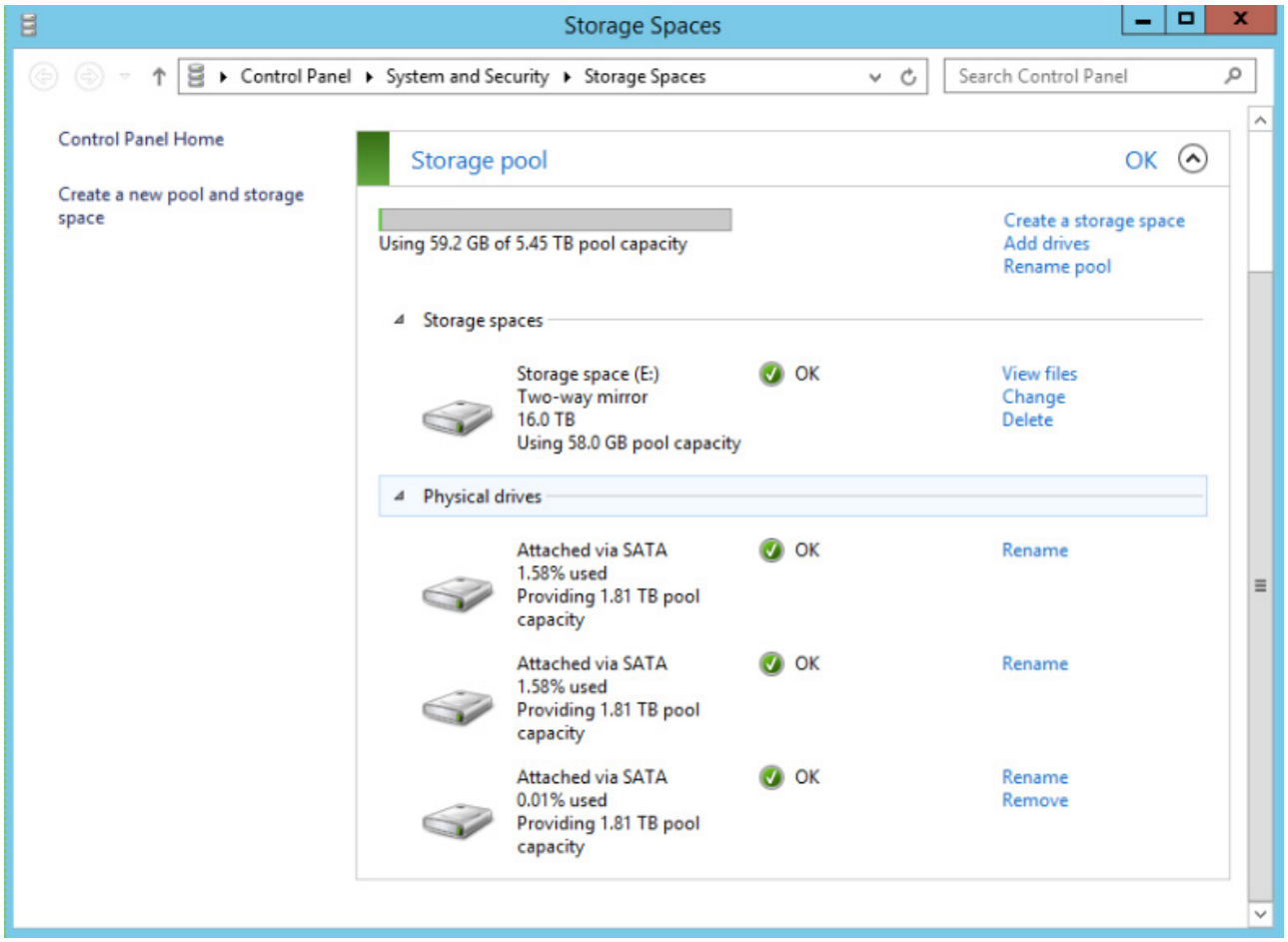
Storage Spaces in the Control Panel offers us a little more information than is exposed in the Dashboard. We can see our Storage pool listed, with a green health status and see how much capacity is being used. At the side of the pool status, task links allow you to create a new storage space, add drives to the storage pool and give the pool a new name.



Renaming the storage pool.

We can see our storage space (the E: volume) showing its resiliency setting (Two-way mirror), virtual storage allocation (16TB) and physical storage capacity used (58 GB). Commands next to the storage space entry allow us to **View** the files stores in the space in File Explorer, **Delete** the storage space (please see my cautionary note below before playing with deletion) and make a **Change** to the space. We'll come to that shortly, but before we do so, let's quickly scan the rest of this window.

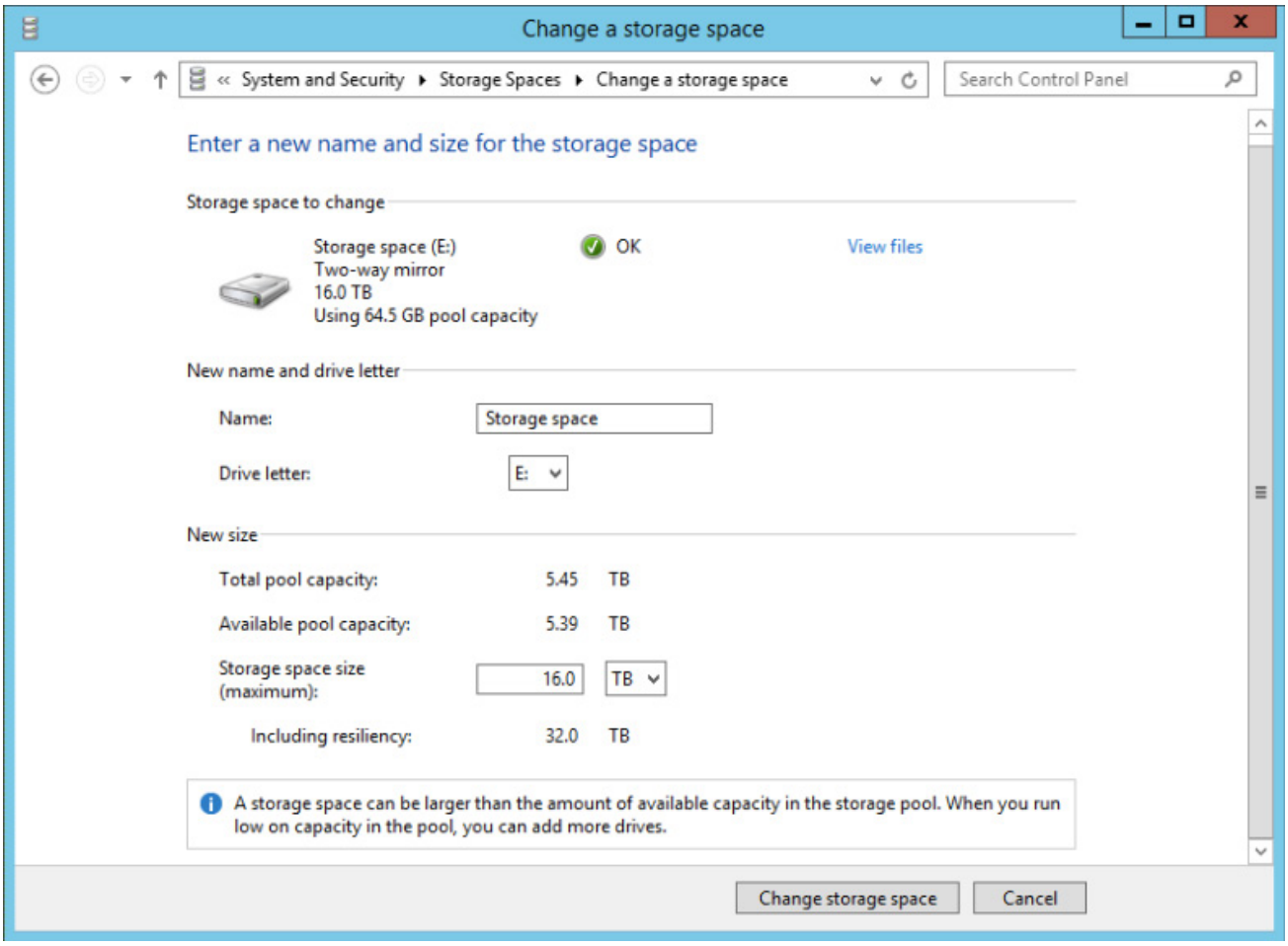
Click the arrow next to **Physical Drives** and you'll be able to view the status of your physical hard drives.



Hard drive status.

You can see how each drive is connected to the server (in my case, a SATA connection as these are internal drives - a combination of USB, SAS and SATA drives are all supported, but USB (especially USB 20) drives may drag down file transfer performance, so beware), the percentage of capacity in use, and how much capacity (in TB - terabytes) is being provided for the storage pool. Just as we saw with the Dashboard, you can re-label a drive easily using the **Rename** command.

Still in the Control Panel, head back to your storage space entry and click the **Change** task. You can make some simple changes to the storage space, including its name, drive letter and size. The maximum size of a storage space is 63 TB.



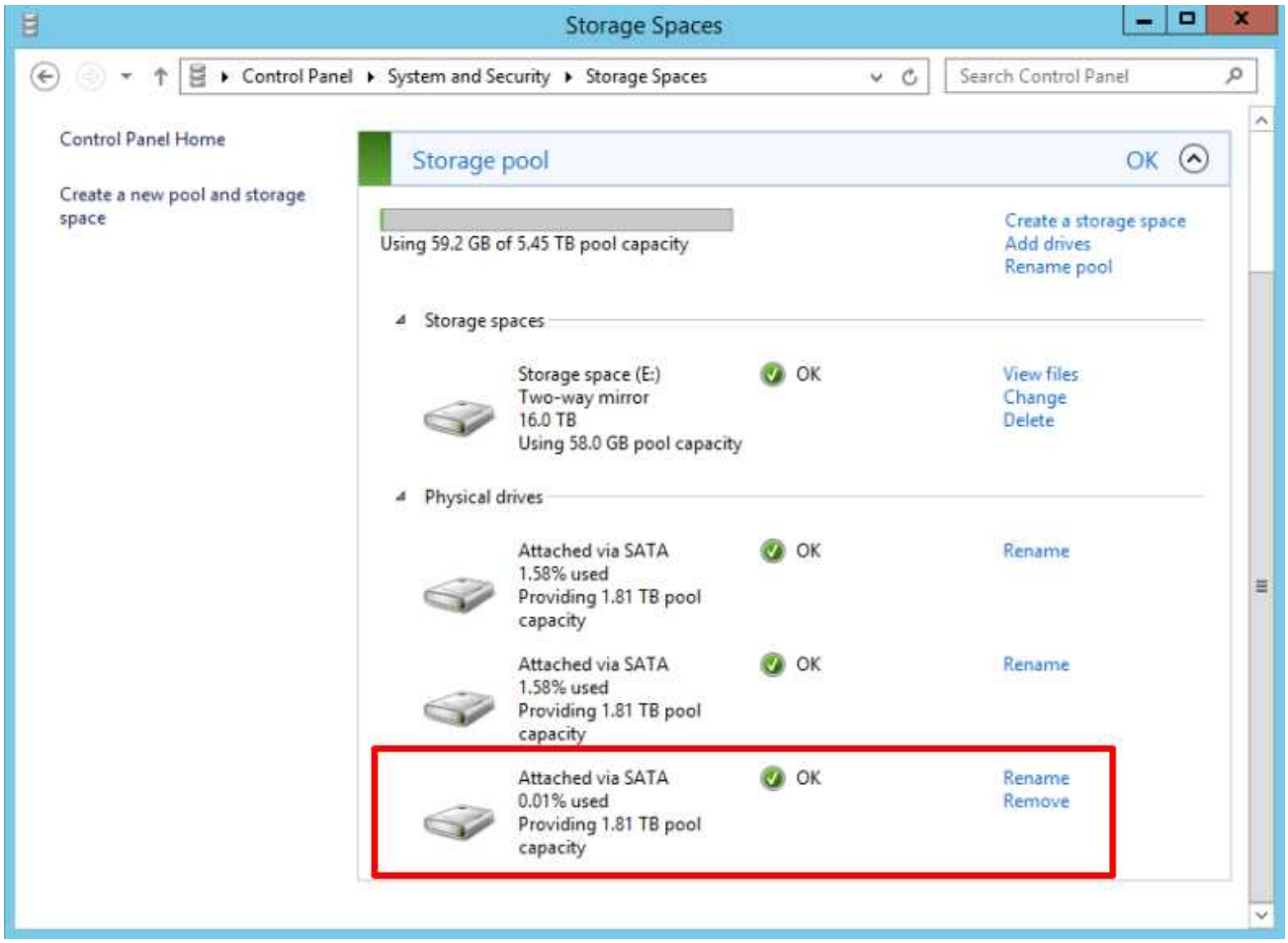
Making changes to the storage space.

Removing a Hard Drive from a Storage Pool

There may be times when you wish to remove a hard drive from a storage pool. This cannot be done from the Windows Server Essentials Dashboard, but rather must be done from Storage Spaces in the Control Panel.

The other rule to remember is that a drive cannot be removed from a pool if it has storage space data stored on it. Earlier versions of related platforms like Windows Home Server included a very convenient *Remove disk* task that would automatically move data from the drive you wished to remove across to other disks within pool - alas, no such task is available in Windows Server 2012 R2 Essentials.

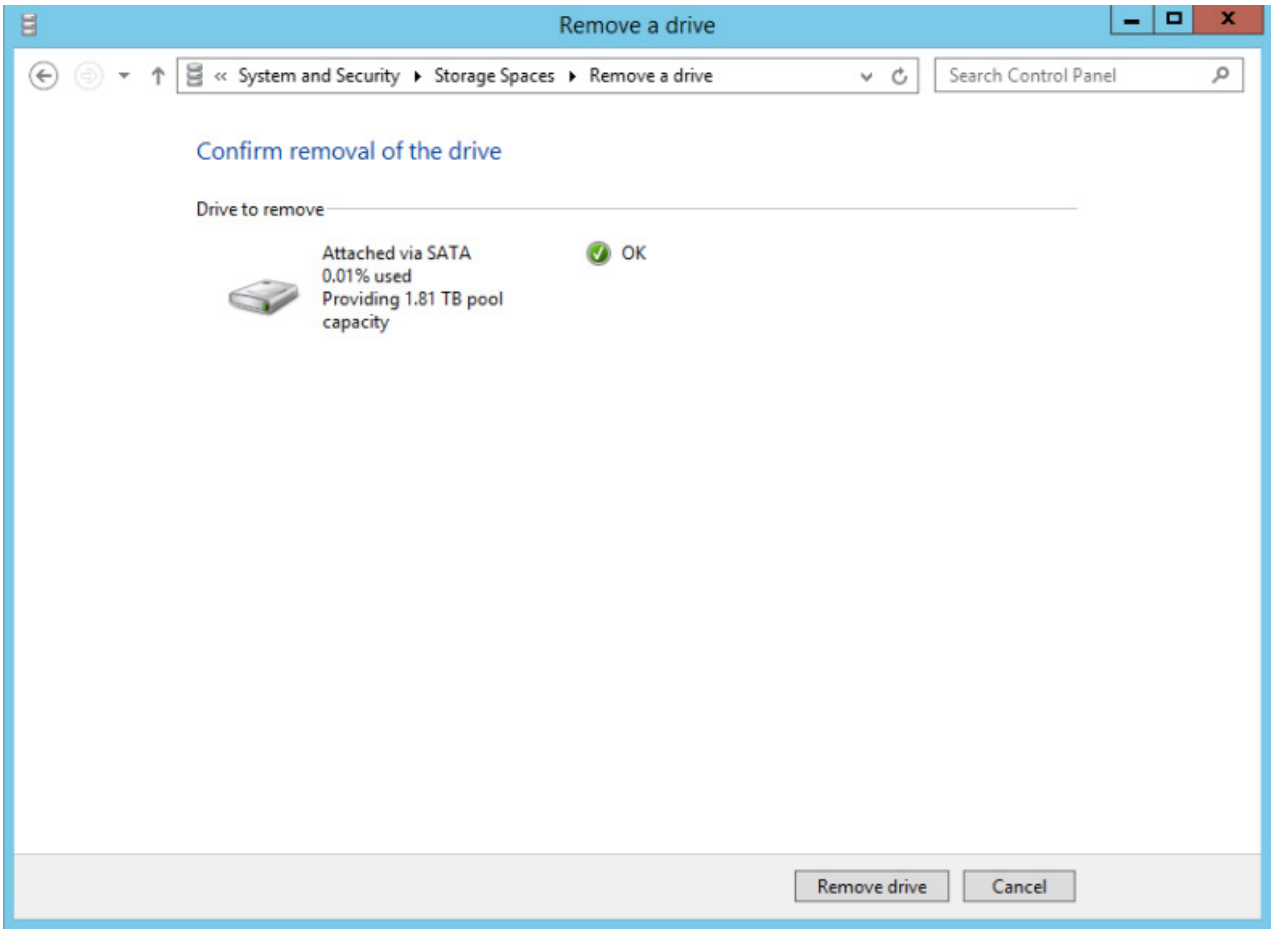
As you can see in the example below, one of our drives currently does not have data stored on it, and has a **Remove** task available. The other drives do not.



The Remove option is only available for drives that do not have any data stored on them.

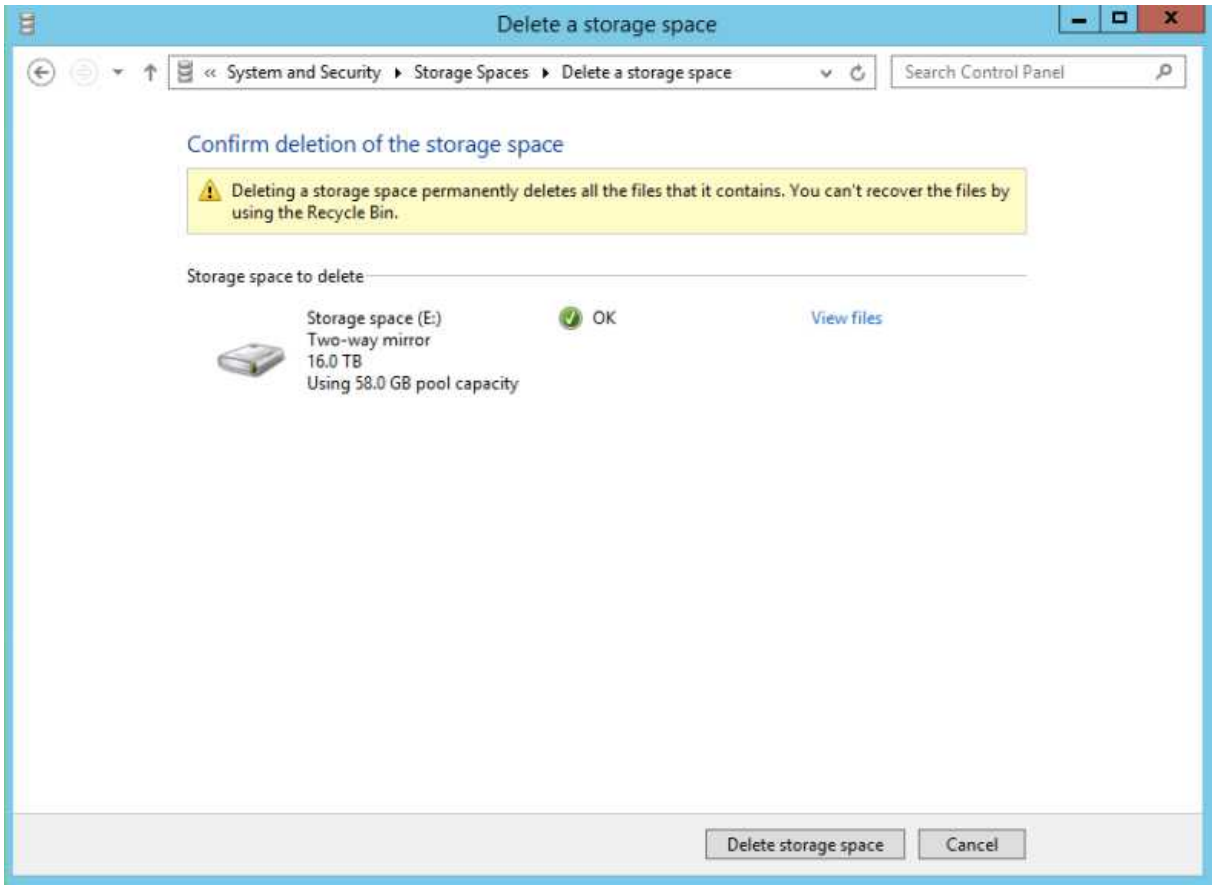
Click **Remove** and you'll be asked to confirm, following which the drive will be taken out of the storage pool and can serve as a standard, single drive once again.

If you wish to remove the Storage Space, and then in turn the Storage Pool, all data will need to be migrated off the Storage Space first (you can use the **Move a Folder** wizard in the Dashboard for this) at which point you can remove the storage space and the storage pool using the Control Panel.



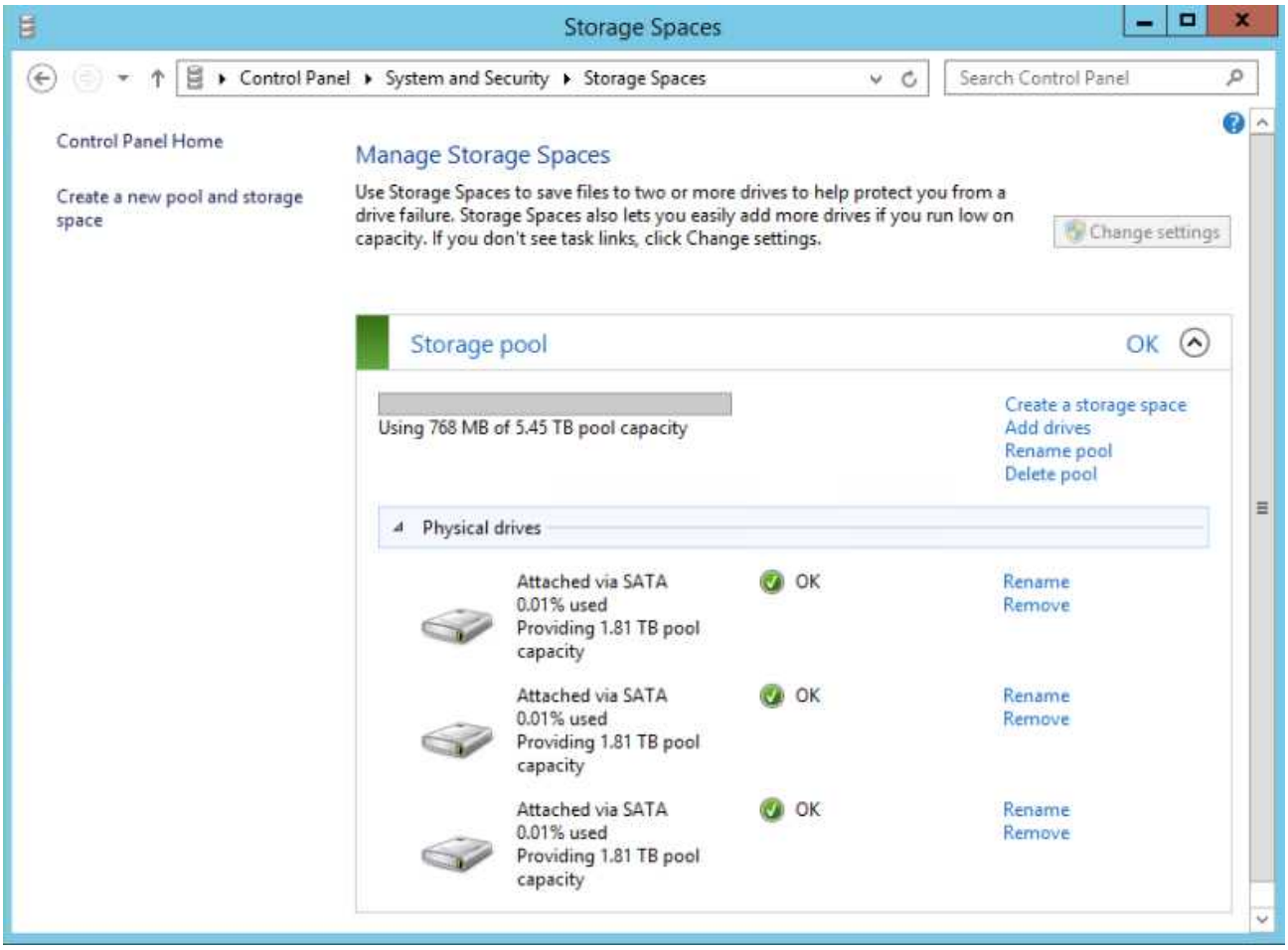
Confirming removal.

Note that there *is* a deletion option shown at all times in the Storage Spaces Control Panel, and this can indeed be used at any time. But if you use it, any data currently stored on the Storage Space will be deleted permanently. No, it won't go in the Recycle Bin, it'll just be wiped. So, if your data is important, then migrate if from the space using the Move a Folder wizard, and *then* delete the space.



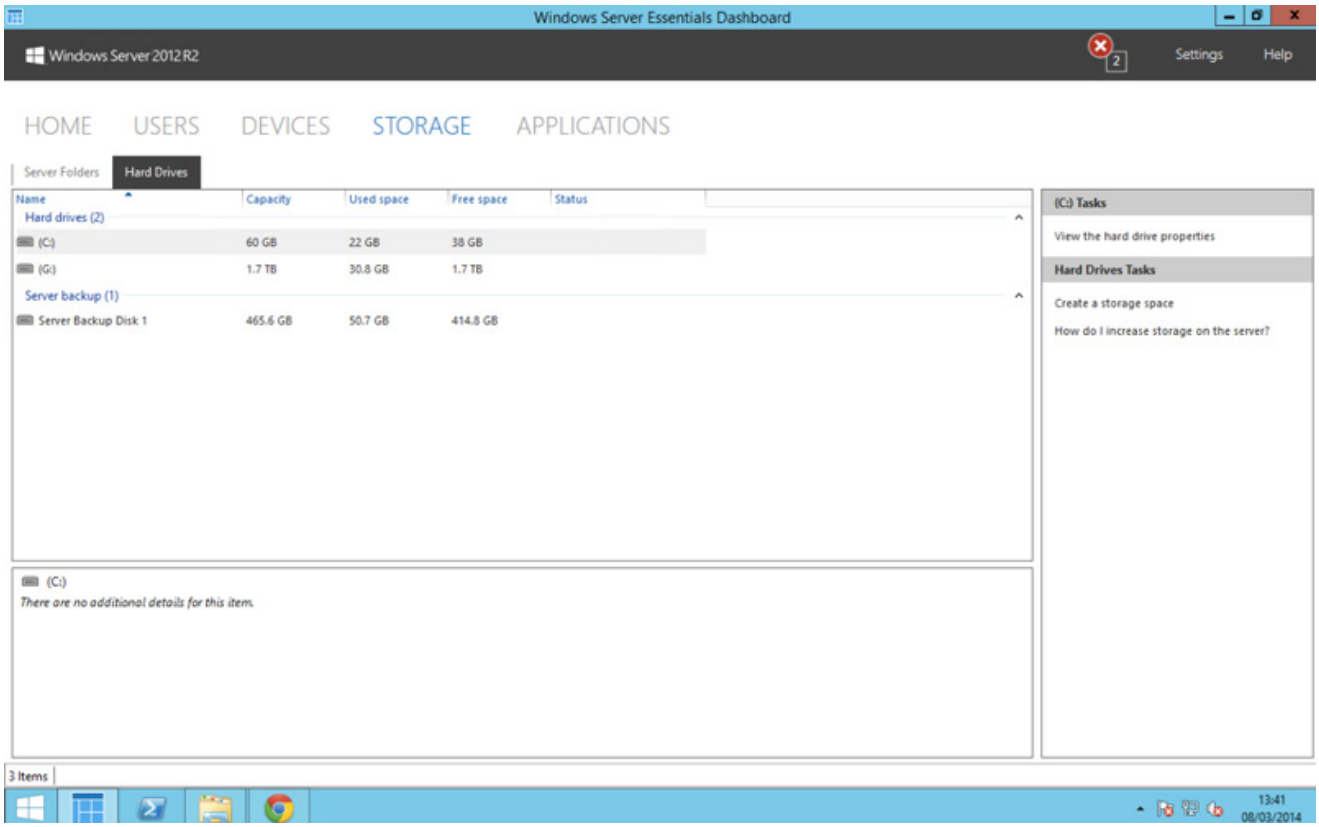
Ensure no important data is remaining in your storage space before it is deleted.

Once all of your storage spaces have been removed, you'll see a new option available to remove the storage pool.



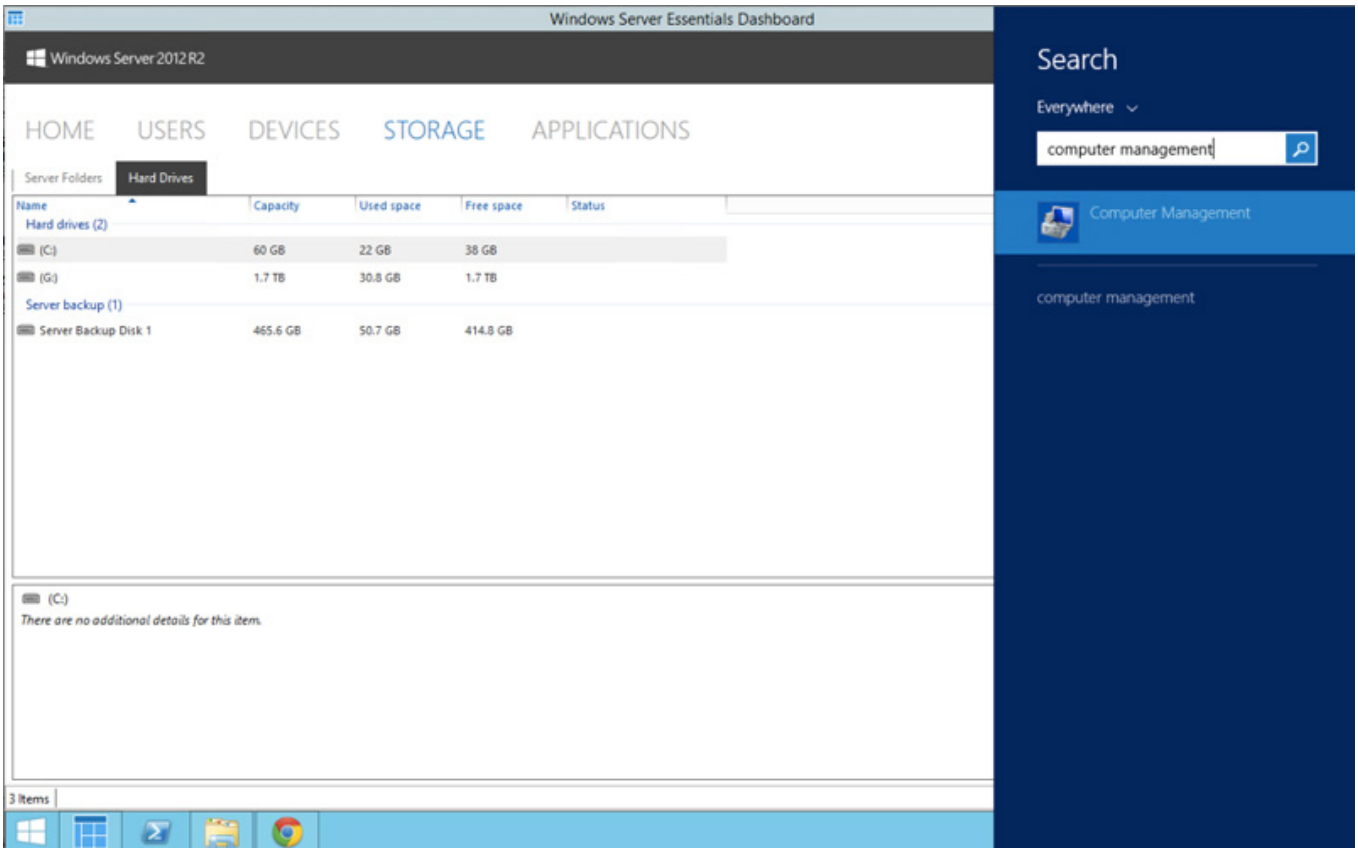
You can now remove the pool.

Once you've deleted the pool, you'd expect to be able to go back in the Dashboard and see those newly released hard drives available in your Hard Drives tab, right? Wrong! They've disappeared.



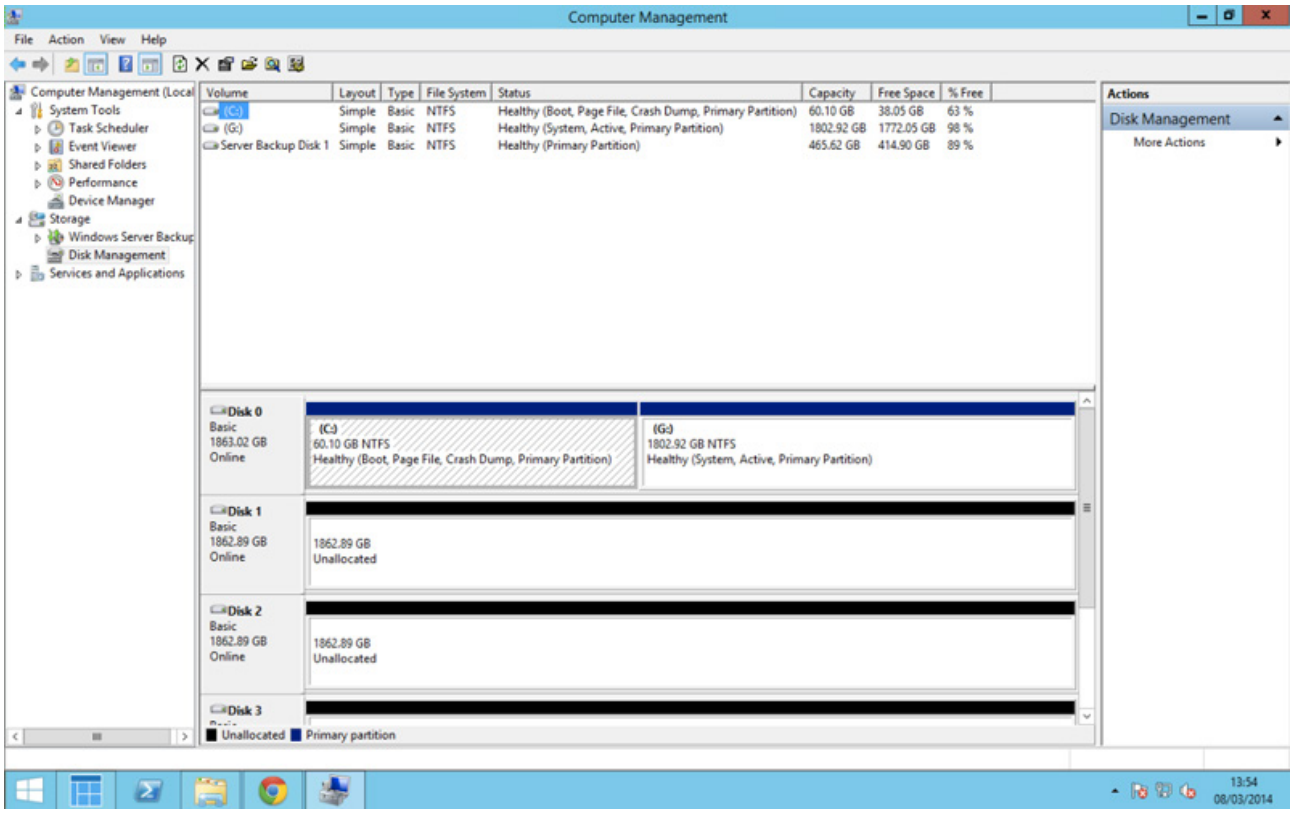
Who ate my drives?

You may have figured out that you'll need to reformat your hard drives to make them available again in both Windows and the Windows Server Essentials Dashboard, Unfortunately, you won't be able to see the drives in File Explorer any more. So, to retrieve them, we'll need to head to an area of Windows called Computer Management. Open up a search box via the Charms bar and type in **Computer Management,** and you'll be able to open it up.



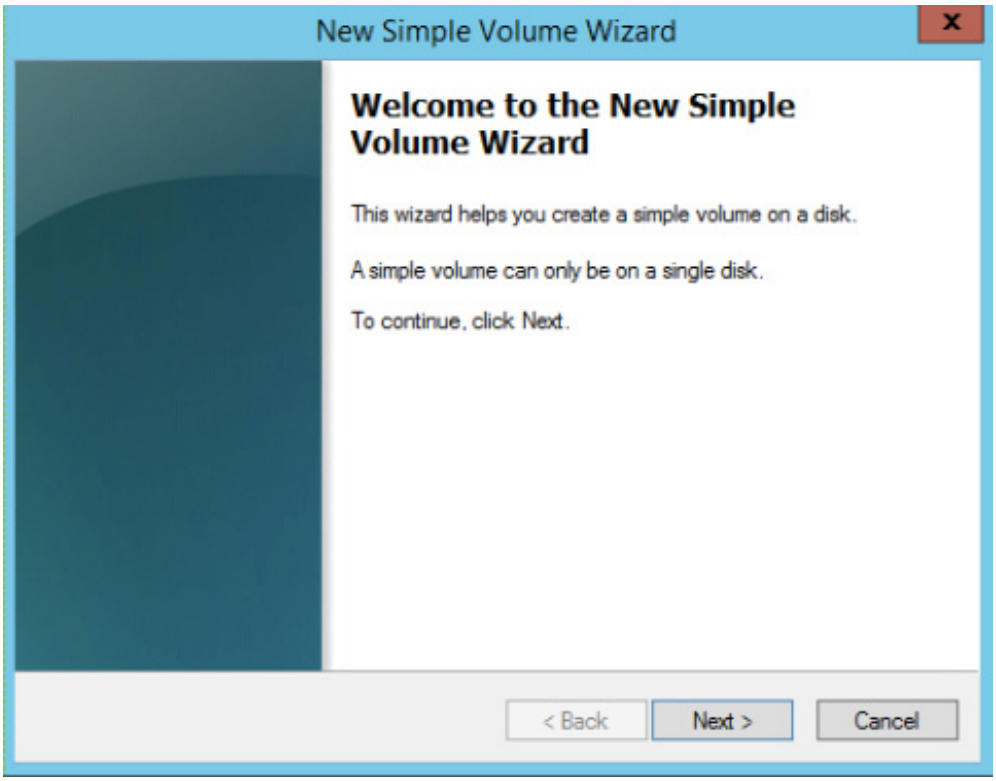
Hover the mouse to the right of the screen and select the magnifying glass icon to search.

Click the **Computer Management** link when it appears and a new window opens. In the left hand pane, select **Disk Management**.



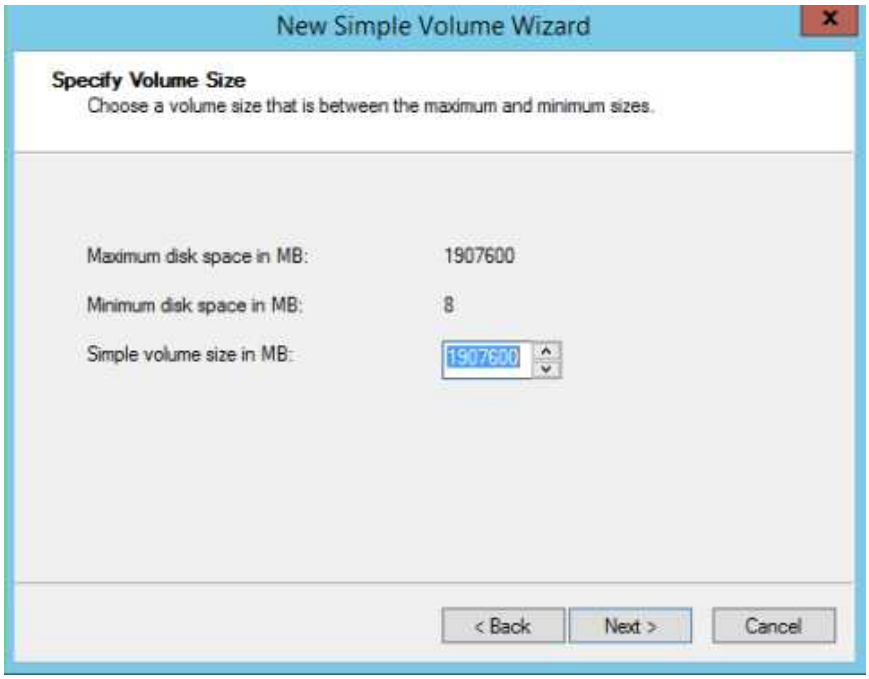
Managing storage in Computer Management.

We can now view all of our hard disks, and can see that the drives we released from the storage pool are listed without drive letters and have space reported as **Unallocated**. To rescue each, right click on the drive and select **New Simple Volume...**



The New Simple Volume wizard.

A wizard will create the volume for you. You can take this opportunity to partition (split) the drive should you wish into multiple volumes, otherwise, when asked for the size of the volume, leave the default maximum in place.

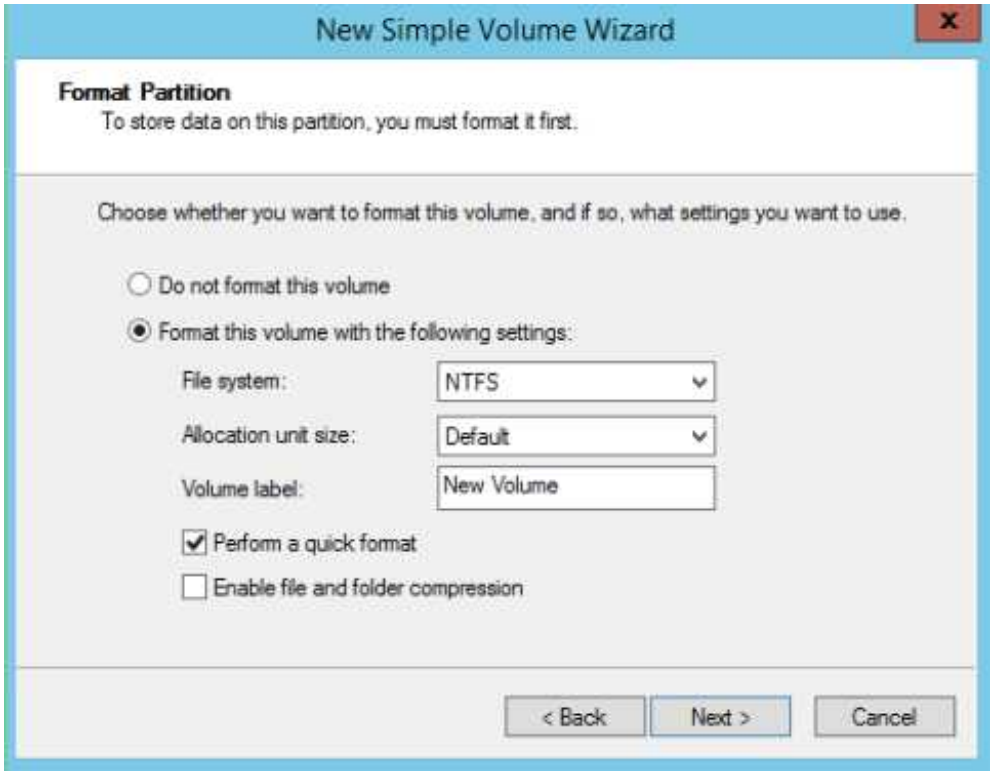


Sizing the volume.

Next, choose your drive letter:

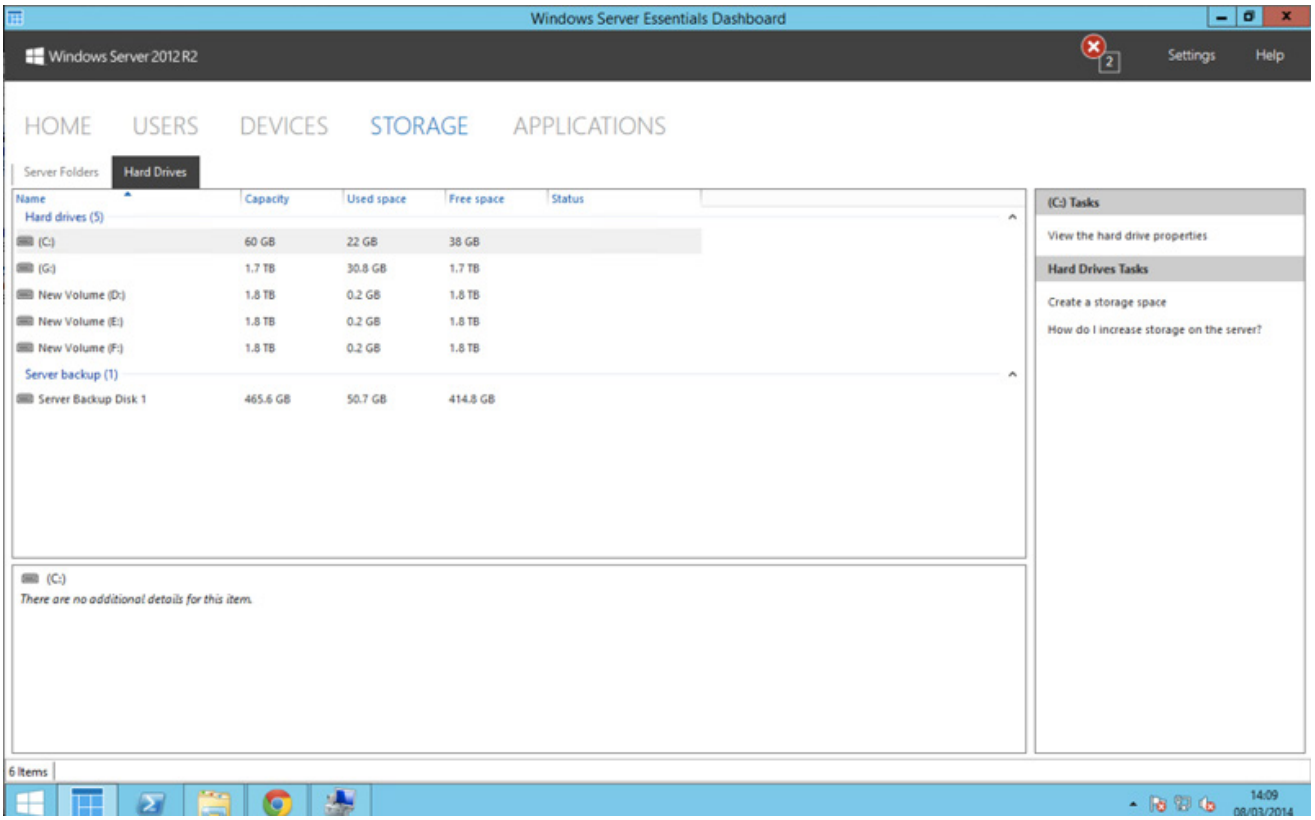
Creating the drive letter for the volume.

Finally, choose your format settings - you can leave the defaults in place.



Configuring format settings.

Hit **Finish** and the hard drive will be prepared. Complete that same wizard for each of the drives released from the storage pool and you should see them available again both in Windows File Explorer and the Windows Server Essentials Dashboard.

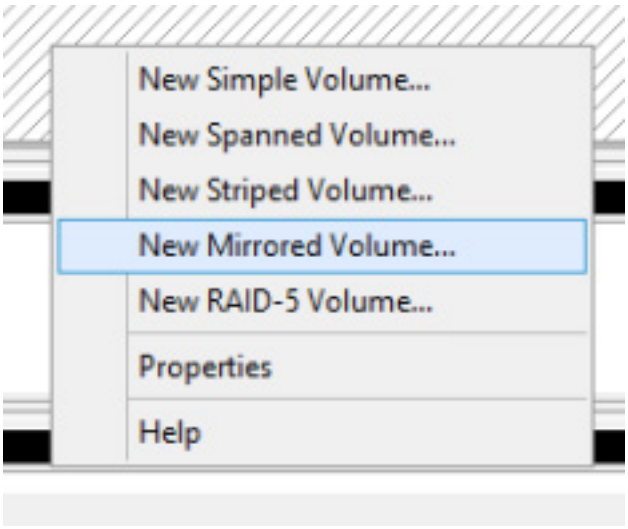


The drives are back!

Advanced Storage Management: Spanning, Mirroring, Striping and RAID

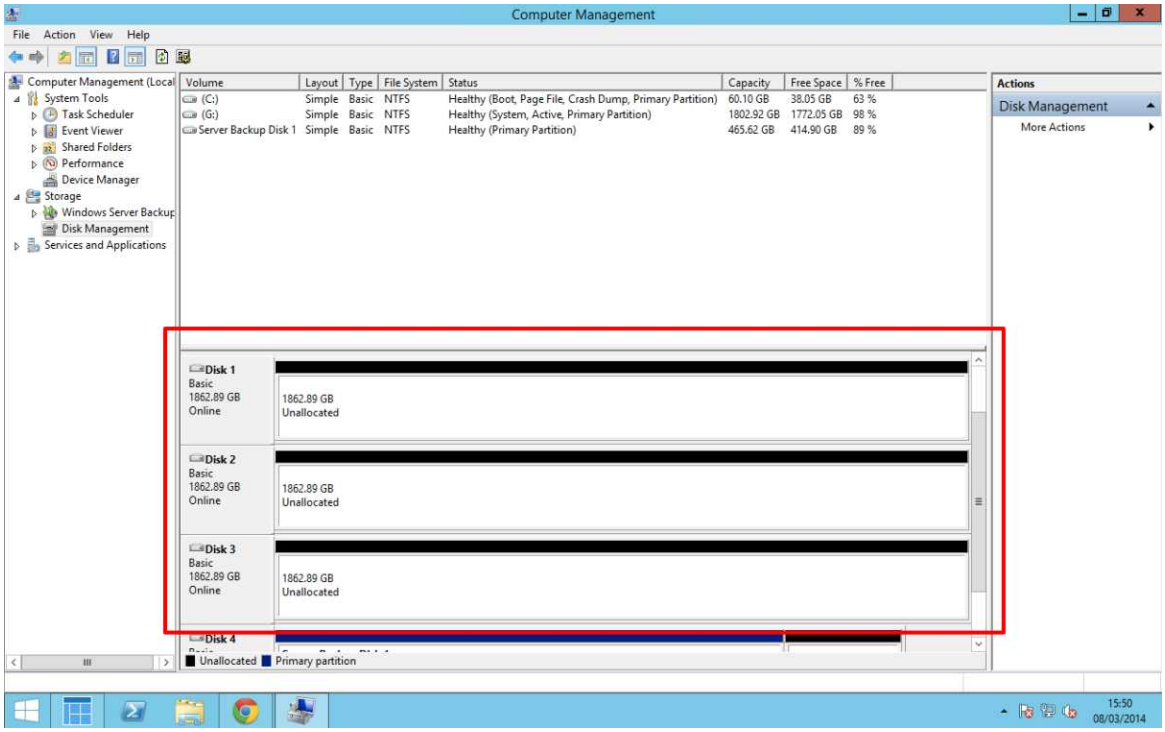
Whilst we've covered much of the basics of storage configuration and management in Windows Server 2012 R2 Essentials, there is even more to discover!

In the **Computer Management** panel we used to initialise our drives, you'll remember that we used the New Simple Volume... option to add a drive letter and format the drive. But, you'll have seen additional options available in that menu too - namely a New Spanned Volume, New Striped Volume, New Mirrored Volume and a New RAID 5 Volume. What are they?



Windows offers a host of storage configuration options.

Dig a little under the hood of Windows Server 2012 R2 Essentials and you'll find a variety of ways to configure your server storage. Different admins favour different options, but here's a run down of your choices so you can decide for yourself. Note that you can only configure the settings for drives that are Unallocated and unformatted in Computer Management, like Disks 1, 2 and 3 you see in the screenshot below.



Unallocated drives in Computer Management.

To make a drive Unallocated in Computer Management, select it and then right click and select **Delete volume**. Remember, any data held on that drive will be lost so make sure any important data is copied elsewhere before you do this!

Right click on a drive and let's review the options:

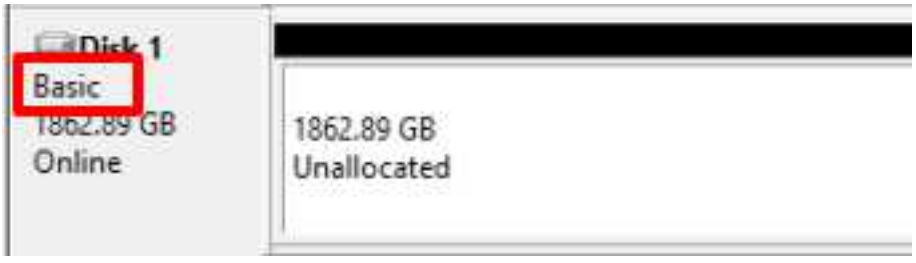
- **New Simple Volume** - A simple volume is made up of disk space from a single disk. It can consist of a single region on a disk or multiple regions of the same disk that are linked together. Simple volumes cannot tolerate disk faults - if the single hard drive fails, data will be lost.

- **New Spanned Volume** - A spanned volume comprises disk space on more than one physical disk. If a simple volume is not a system volume or boot volume, you can extend it across multiple disks to become a spanned volume. Spanned volumes are also not tolerant to disk failure - they're simply a disk pool without any redundant storage protection.

- **New Striped Volume** - A striped volume stores data in stripes across two or more physical disks. They offer the best performance of all the volume types that are available in Windows, but once again there is no fault tolerance. If a single disk in a striped volume fails, the data in the entire volume is lost.

- **New RAID 5 Volume** - A RAID 5 volume (also known as a striped volume with parity) combines three or more physical disks into a single volume. With data and parity striped across a set of disks, should a drive fail, Windows Server uses the parity information to re-create the data on the failed disk.

Sounds good, right? We've covered Simple Volumes, but to create one of the fancier types of volume highlighted above, each disk type must be converted from a **Basic** type to a **Dynamic** type. Look underneath the Disk number for each of your drives, and you'll see it says **Basic**.



See, it's a Basic disk.

Drives are typically initialised as a basic disk when the space is allocated and formatted. To answer your upcoming question, the two types of storage are defined below.

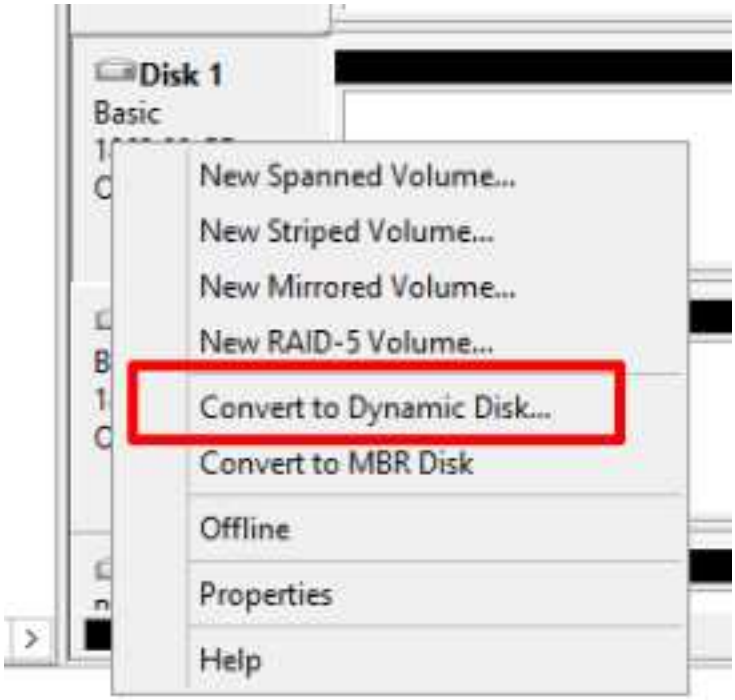
Basic Disk Storage

A basic disk contains basic volumes, such as primary partitions, extended partitions, and logical drives. They've been supported in Windows way back to the days of MS-DOS>

Dynamic Disk Storage

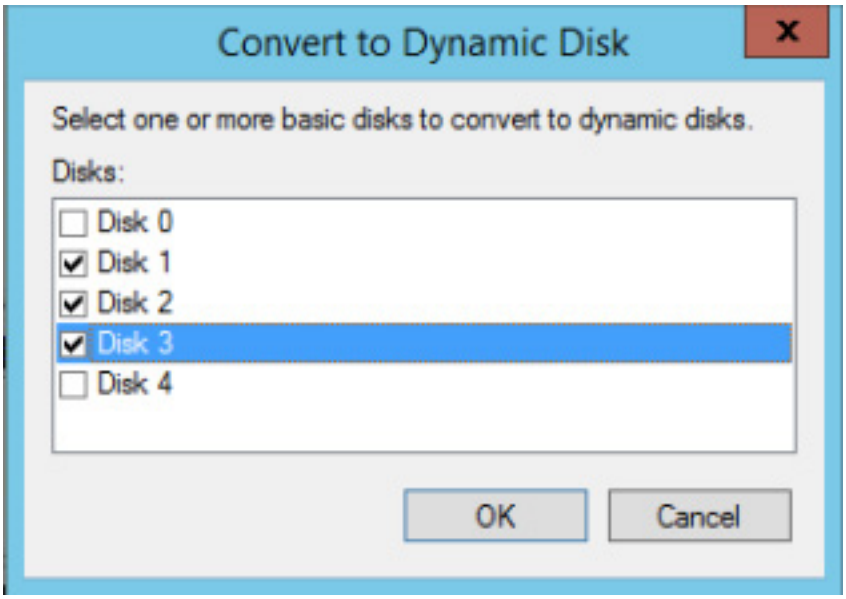
Dynamic disks were introduced in Windows 2000 and support simple volumes, spanned volumes, striped volumes, mirrored volumes, and RAID-5 volumes.

To create a striped, mirrored, or RAID-5 array, we need to convert a Basic drive to a Dynamic drive. To do so, right-click on the drive area and select **Convert to Dynamic Disk** from the menu.



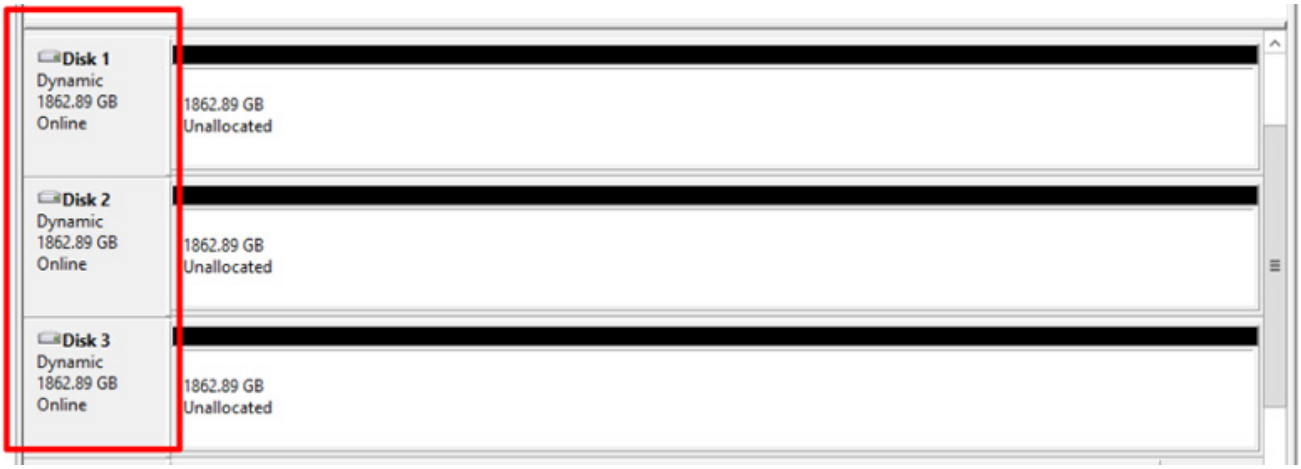
Converting from Basic to Dynamic.

Select the disks you wish to convert (Disks 1, 2 & 3 in this example), and click **OK**.



Selecting disks for conversion.

After a few seconds, you'll see the disk type change to **Dynamic**.



The disk type is now Dynamic.

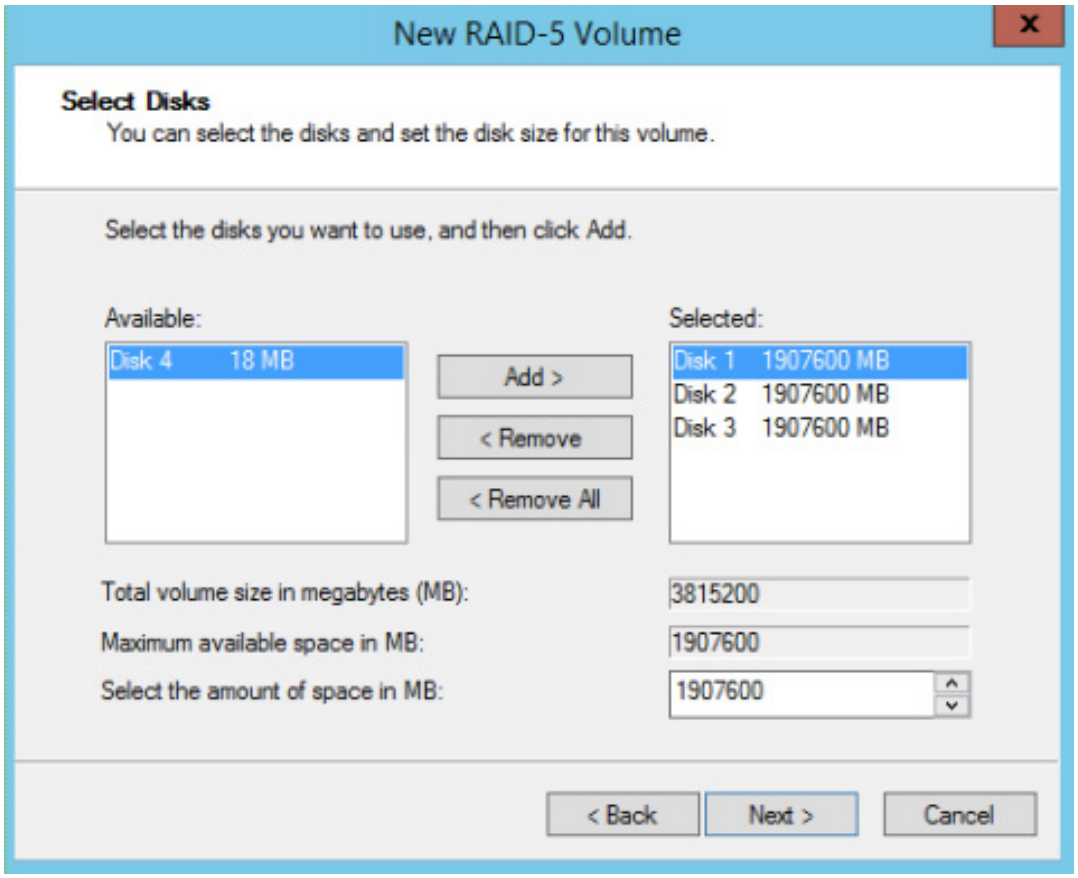
It is at this point that we will be able to create a RAID array, and specifically a **RAID 5** array. You might ask why a RAID 5 array? We are looking for data protection by creating a *redundancy*. If one drive fails, we do not lose the data. Spanned and Striped arrays do not provide this redundancy. If a drive dies, so does the data. A RAID 5 array requires a minimum of 3 drives and we have those available. Alternatively, if we had just two drives available we could go for a mirrored (RAID 1) array, but that dedicated a whole drive for protection - RAID 5 therefore gives us more storage capacity whilst ensuring our data is protected.

The Windows configuration principles are broadly similar no matter what type of array you create, so you can use this walkthrough as a guide, even if you decide that a RAID 5 array isn't quite right for you.

Right click on a drive and select **New RAID 5 Volume...** to kick off the wizard.

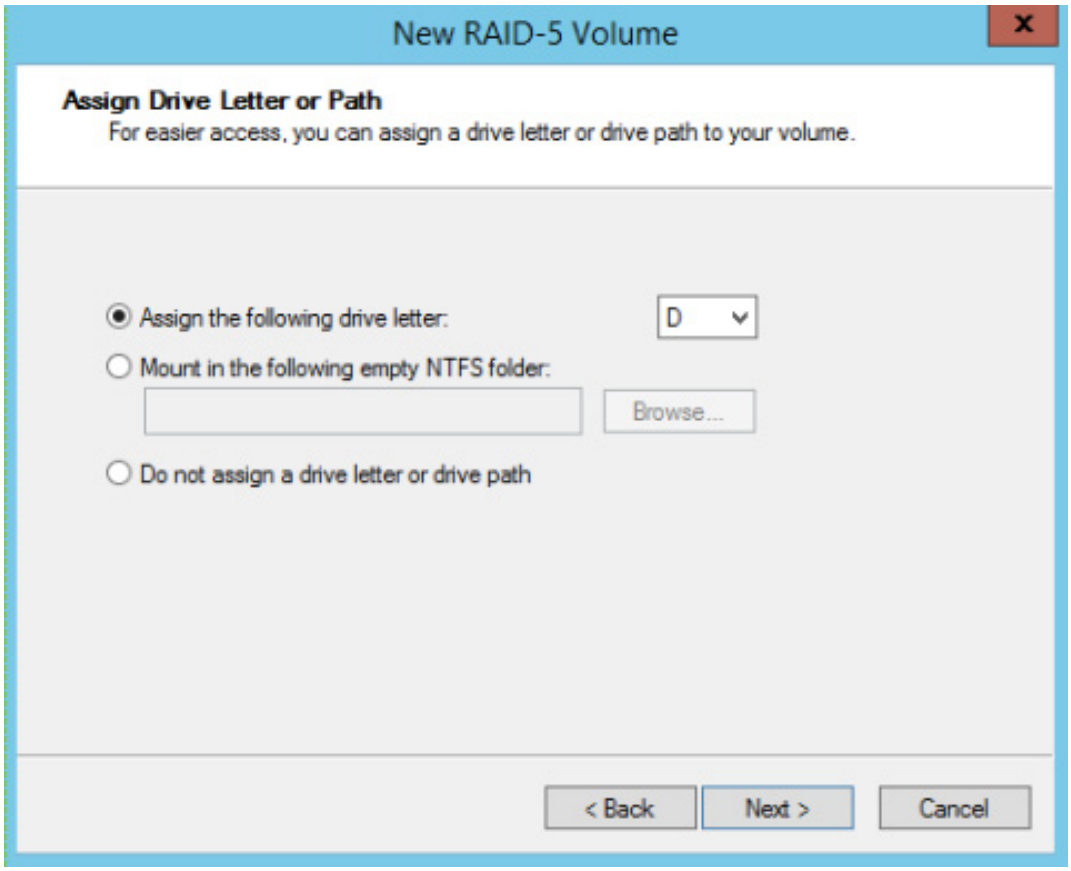
Click on New RAID 5 Volume to start the process.

Click **Next** to start. You'll need to tell Windows which drives you wish to use for the RAID array. Select the drives and click the **Add** button to move the drives into the right hand panel.



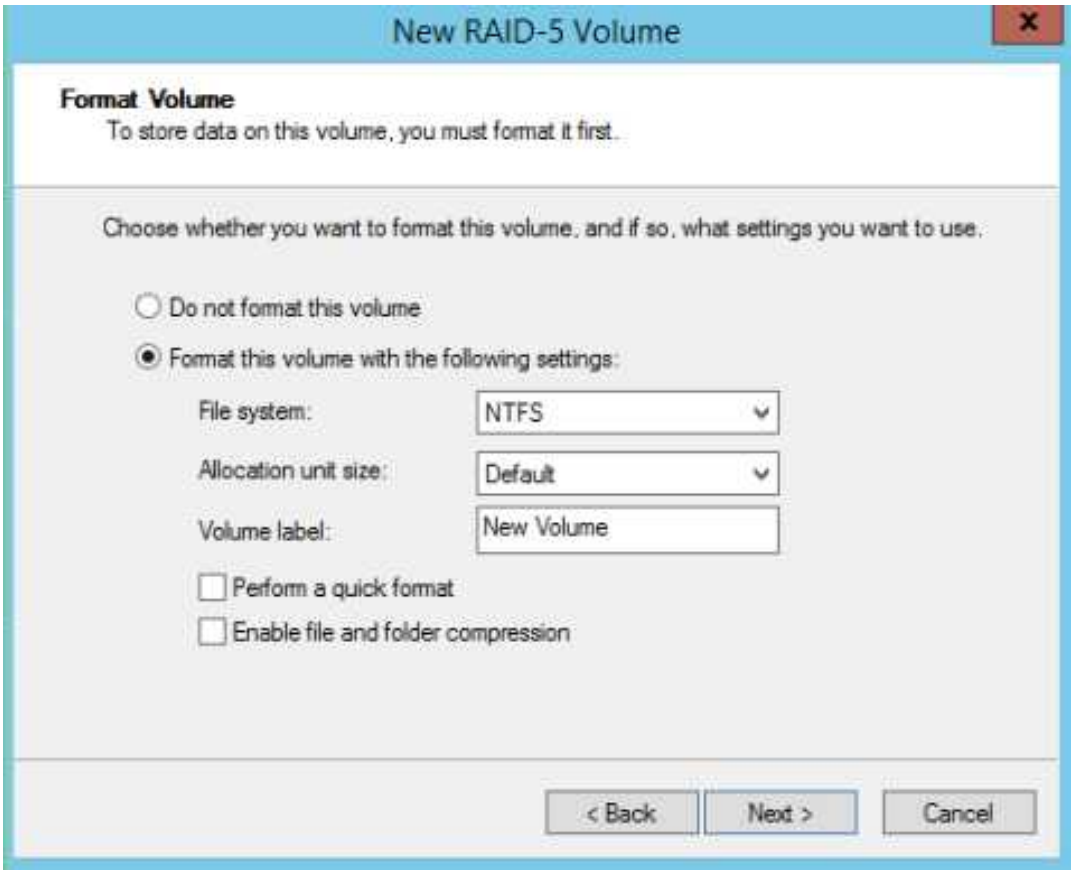
Creating the volume.

You can also change the total size of the array. Once you've finished configuring the array, click **Next** to continue.



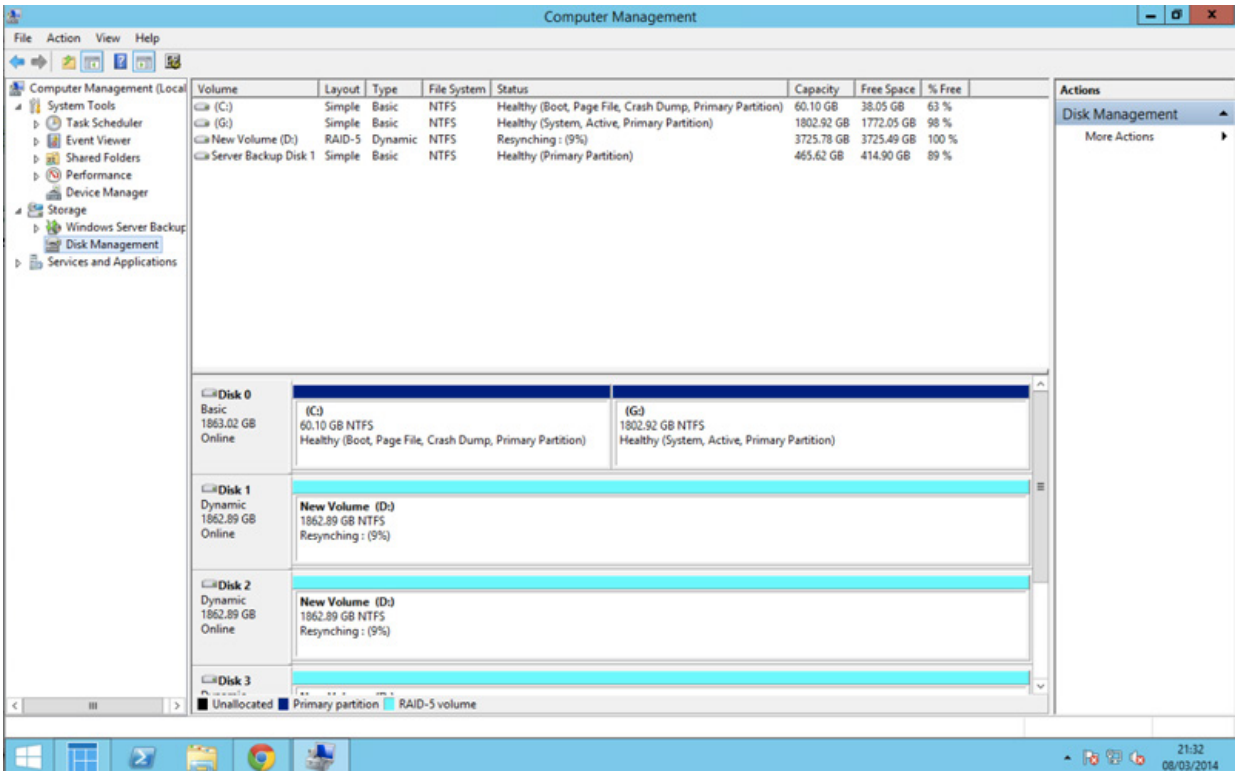
Choosing a drive letter.

Next, choose a drive letter for your volume and click **Next**. You'll be invited to configure format settings. Leave the default settings in place and select **Next**.



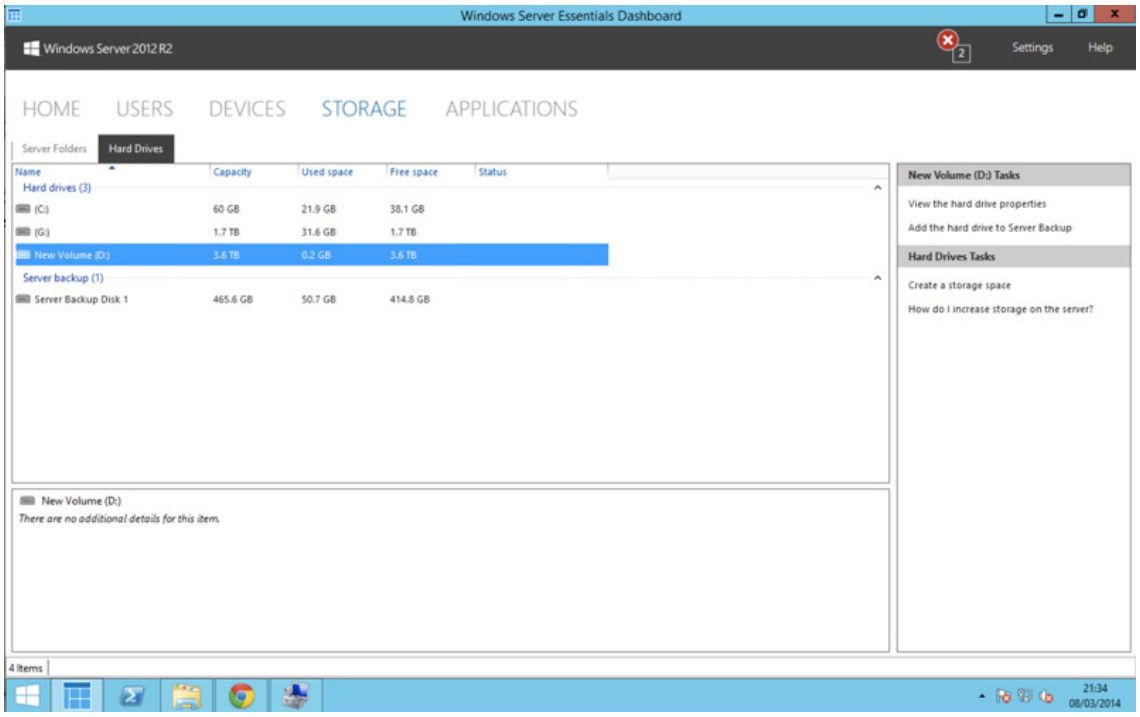
Choosing format options.

Click **Finish** and your RAID array will be created. It will take some time for the array to be built and synchronised, but once complete, you'll be able to see the results in Computer Management.



Your new RAID 5 volume will take some time to synchronise.

Meanwhile, in the Dashboard, the RAID 5 volume simply looks like any other hard drive - just a big one!



The 3.6 TB RAID 5 volume in the Dashboard.

No matter how you choose to configure Windows Server 2012 R2 Essentials, the recommendation here is that you **should** have some form of real-time drive redundancy, *in addition* to regular server backups. Whether that be through the use of Storage Spaces, or a traditional RAID array is up to you.

Storage Spaces and other "software" RAID configurations (such as the RAID 5 array we build in Computer Management - both of which are controlled by Windows) will generally incur slightly slower file transfers compared to a hardware-based RAID solution. Hardware RAID can be found on dedicated servers such as Western Digital's Sentinel DS6100 and other servers which include a dedicated RAID controller chip on the server's motherboard.

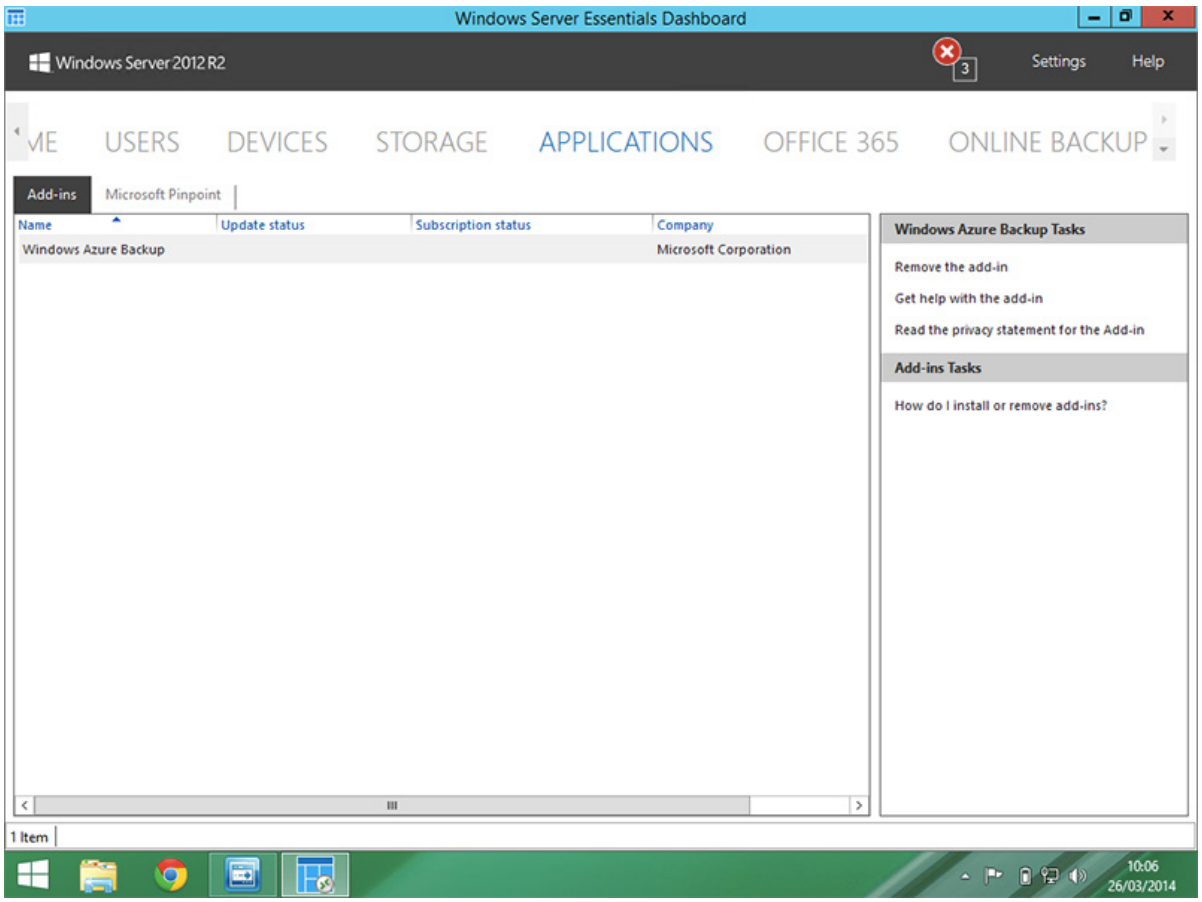
However, traditional RAID solutions also require matched drive sizes, while Storage Spaces does not - that's the main advantage of the Storage Spaces solution and other software-based drive pooling techniques.

That completes our deep dive into storage management in Windows Server 2012 R2 Essentials - easy to configure, easy to manage with a comprehensive assortment of features and settings to tweak to your needs.

We're moving on now to look at ways we can extend the platform with **add-ins.**

Extending Windows Server 2012 R2 Essentials With Add-ins

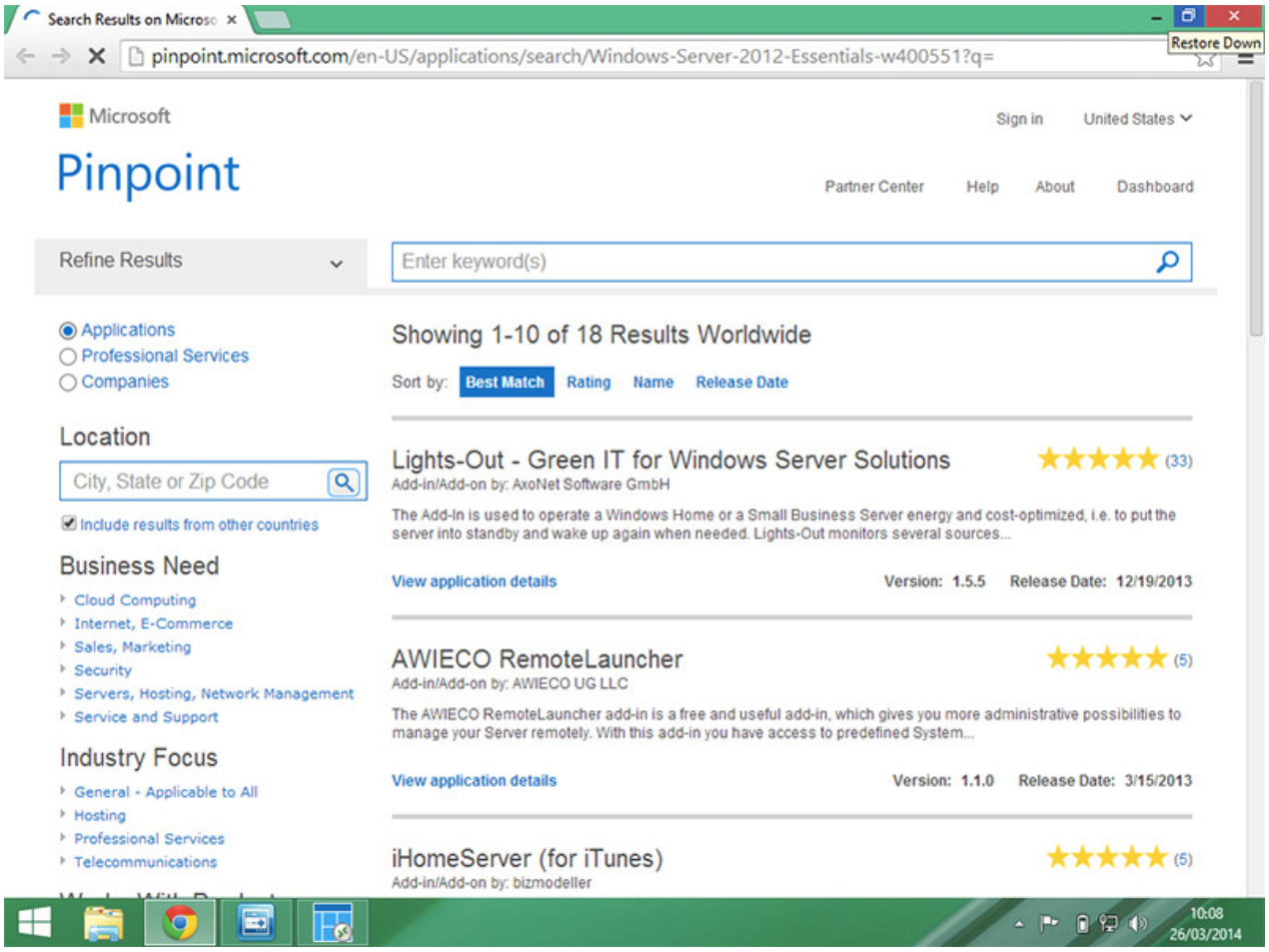
"Next up on the Dashboard tabs is the Applications section. We've already worked through a wide variety of management features in Windows Server 2012 Essentials. The good news is that third-party developers can extend the Essentials platform with a host of new features courtesy of small apps, called add-ins."



The Applications section.

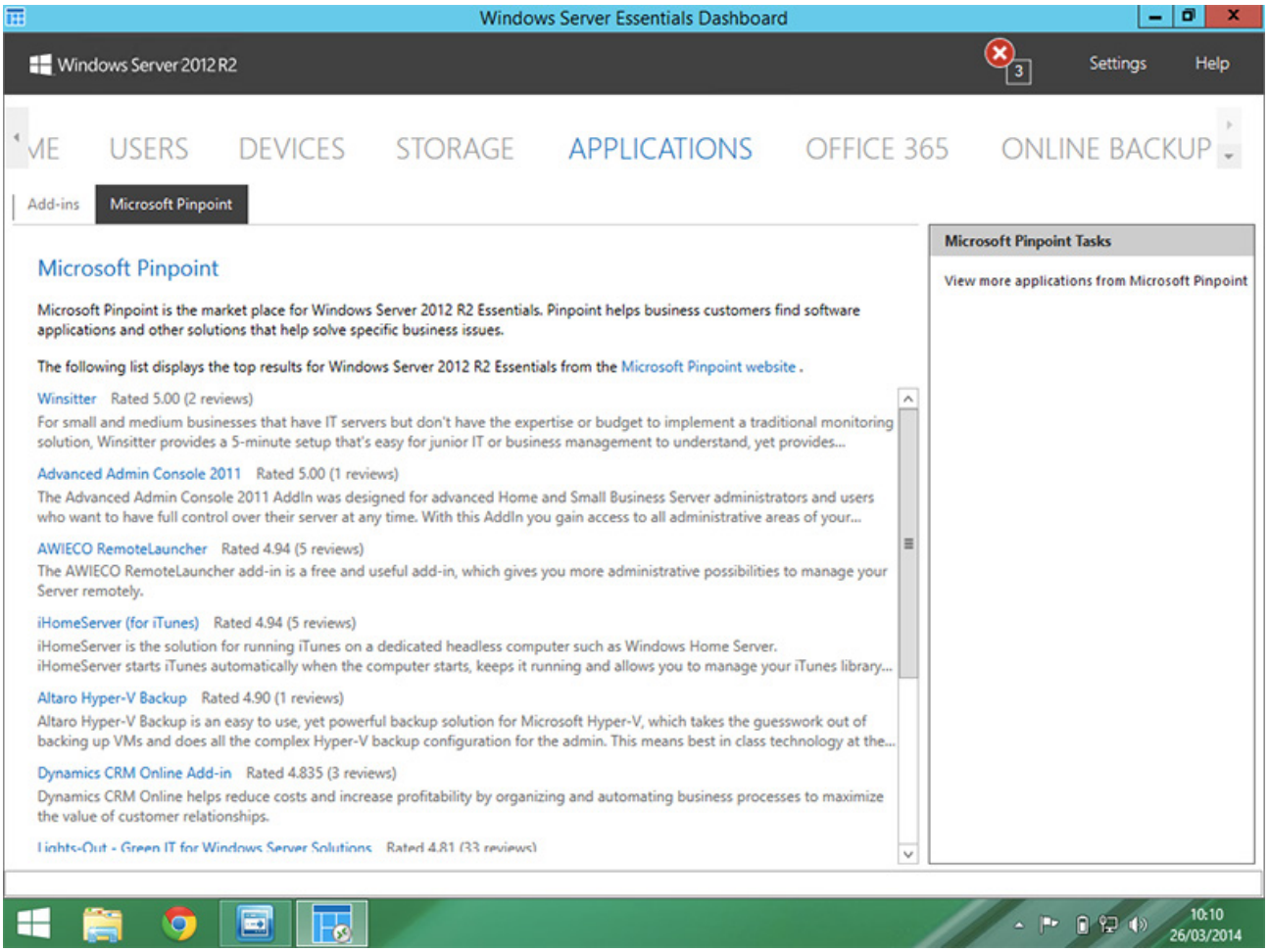
This is the area from which you maintain applications, called "add-ins", which integrate into the Windows Server 2012 R2 Essentials Dashboard. Initially, this section is empty - we'll need to download and install some add-ins to see the section in action.

Where do you find add-ins for Essentials? While we would hope you will check our website at We Got Served, **(**http://www.wegotserved.com**)**, one of the places you might also want to go is to the **Microsoft Pinpoint** site (http://pinpoint.microsoft.com) to peruse the add-ins available.



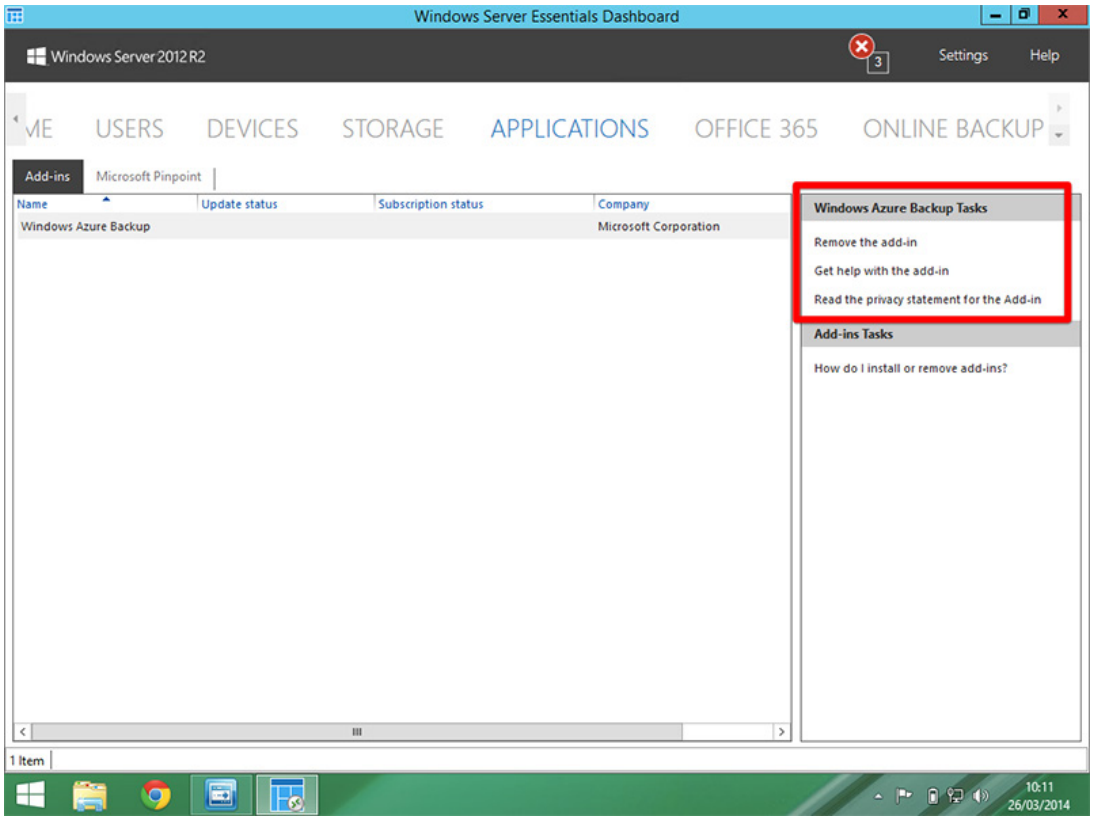
Microsoft Pinpoint.

The more convenient option is to simply click the **Microsoft Pinpoint** tab in the Applications section, which will present a list of current add-ins available for the Windows Server 2012 R2 Essentials platform.



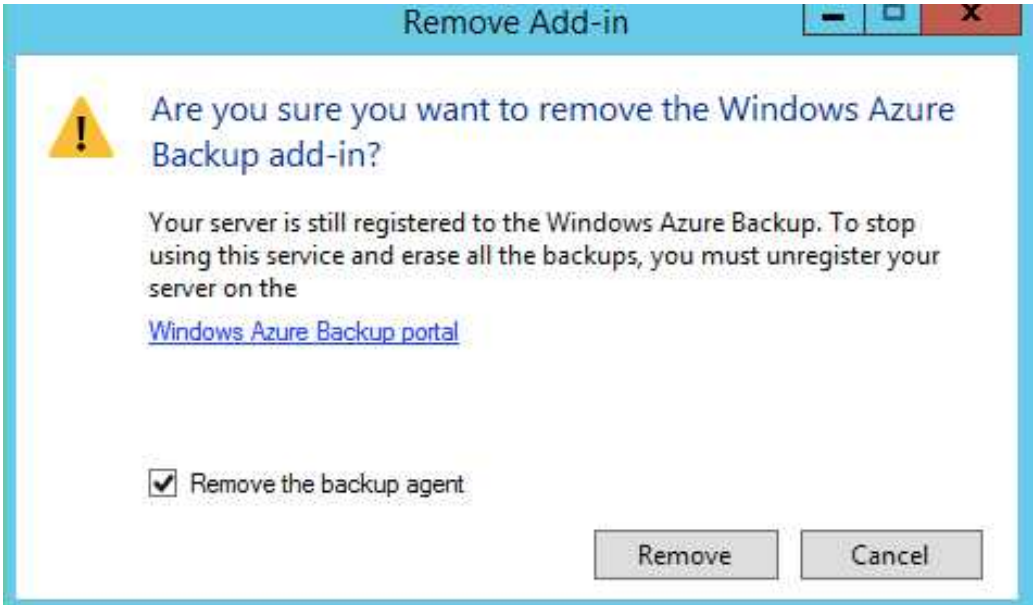
The add-ins listing in your Applications section - convenient!

Note that you do not install add-ins from the Applications tab. Once installed, however, this is where you maintain that add-in. You have a small set of actions you can make use of here:



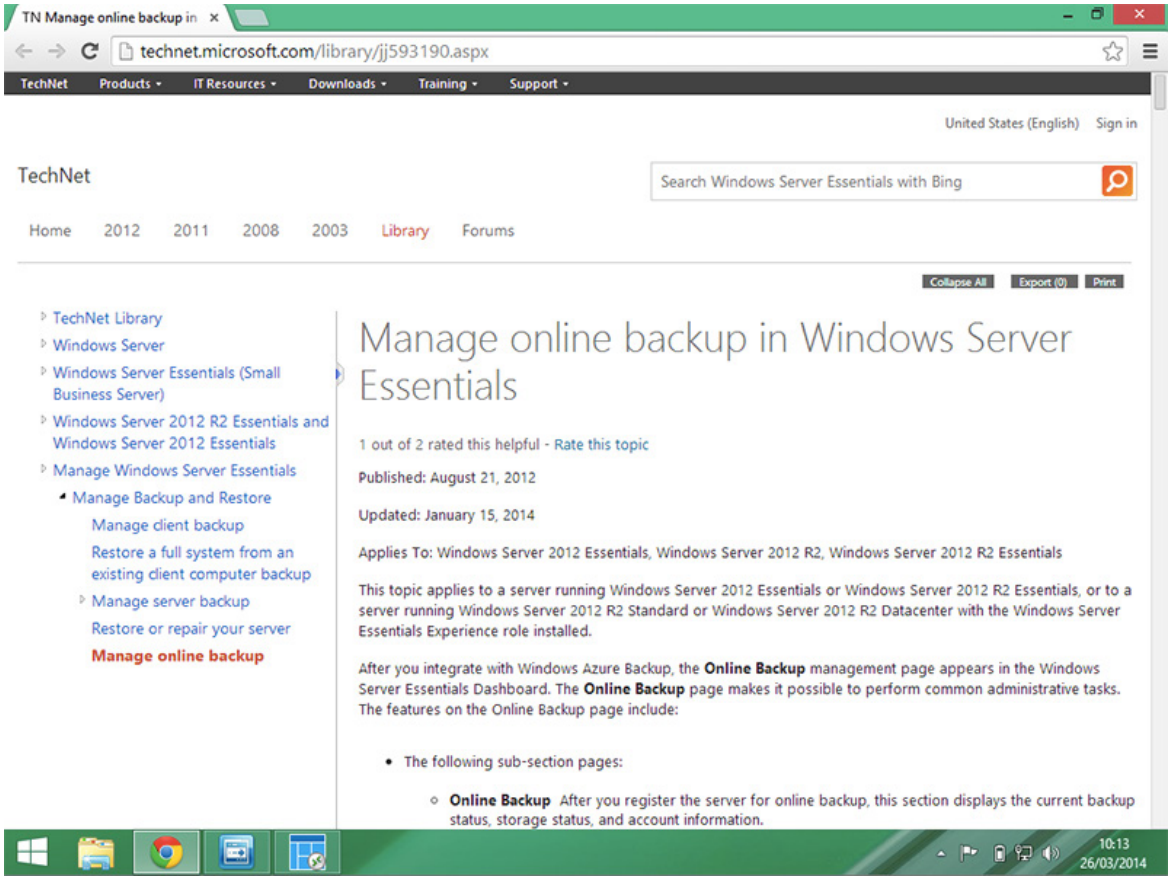
Add-in tasks.

Remove the add-in, which is the option to use if you no longer want to keep this app.



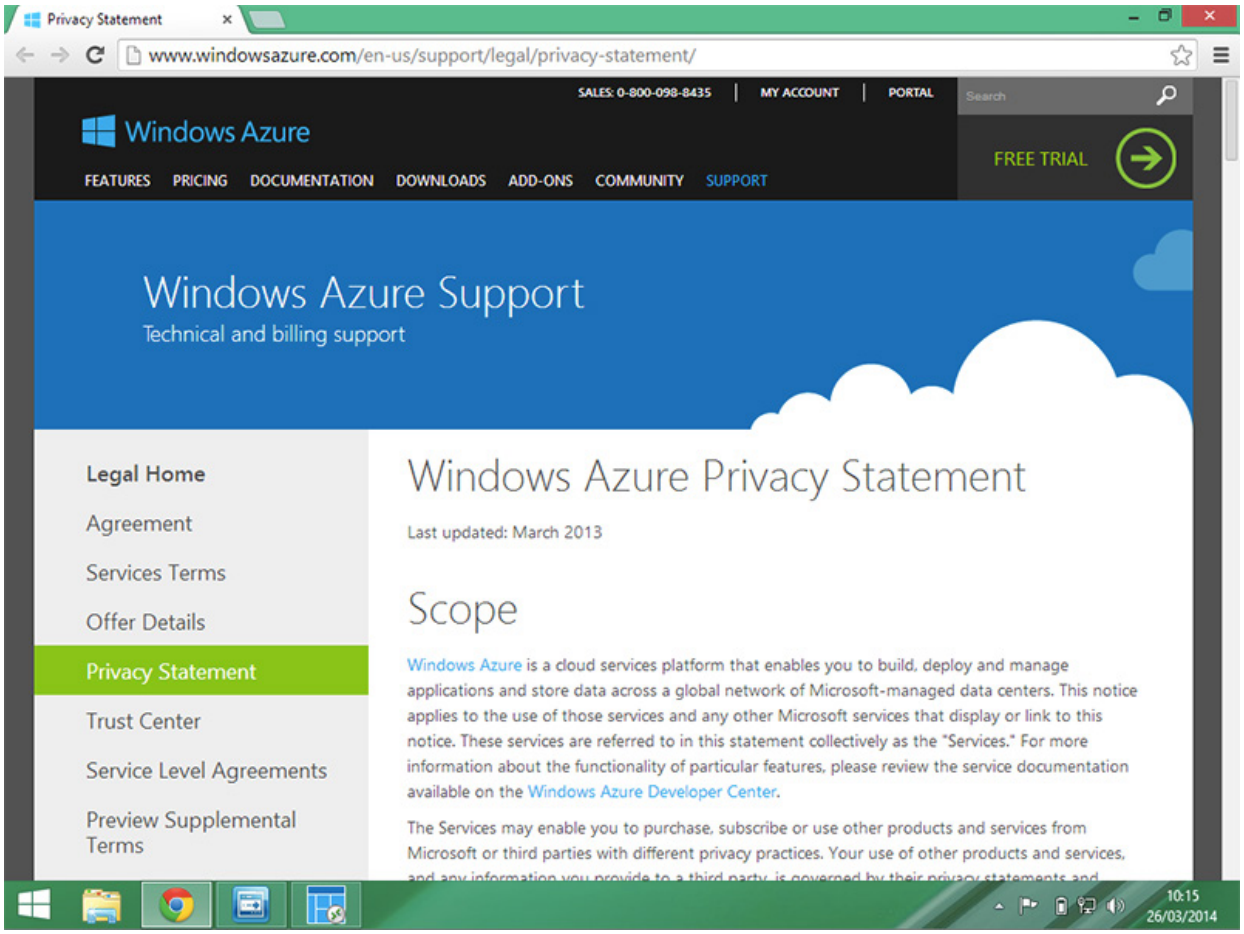
Removing the add-in.

Get help with the add-in, which opens the app documentation.



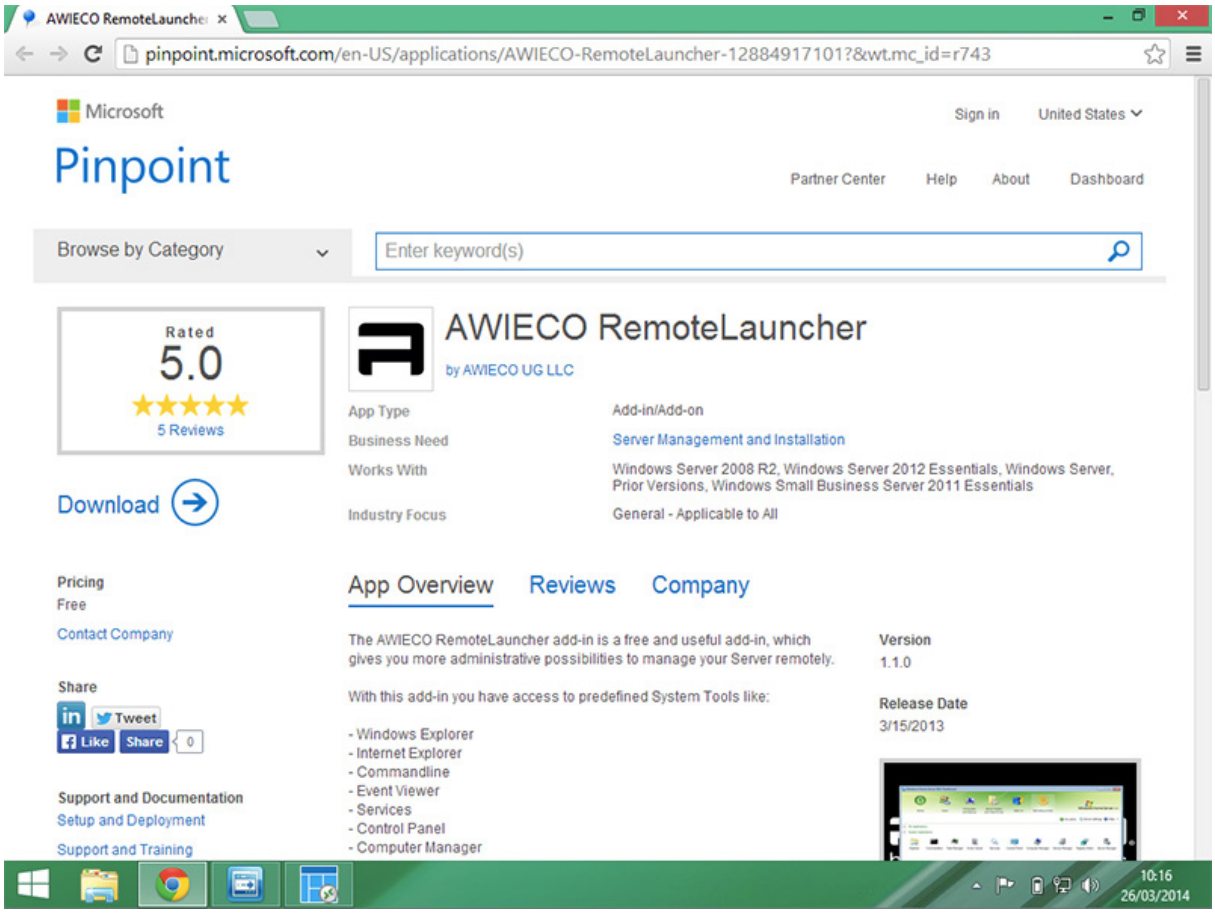
Online help documentation for the add-in.

Read the privacy statement for the Add-in, which may take us to a download link or an online page, depending on the add-in.



Installing an Add-in

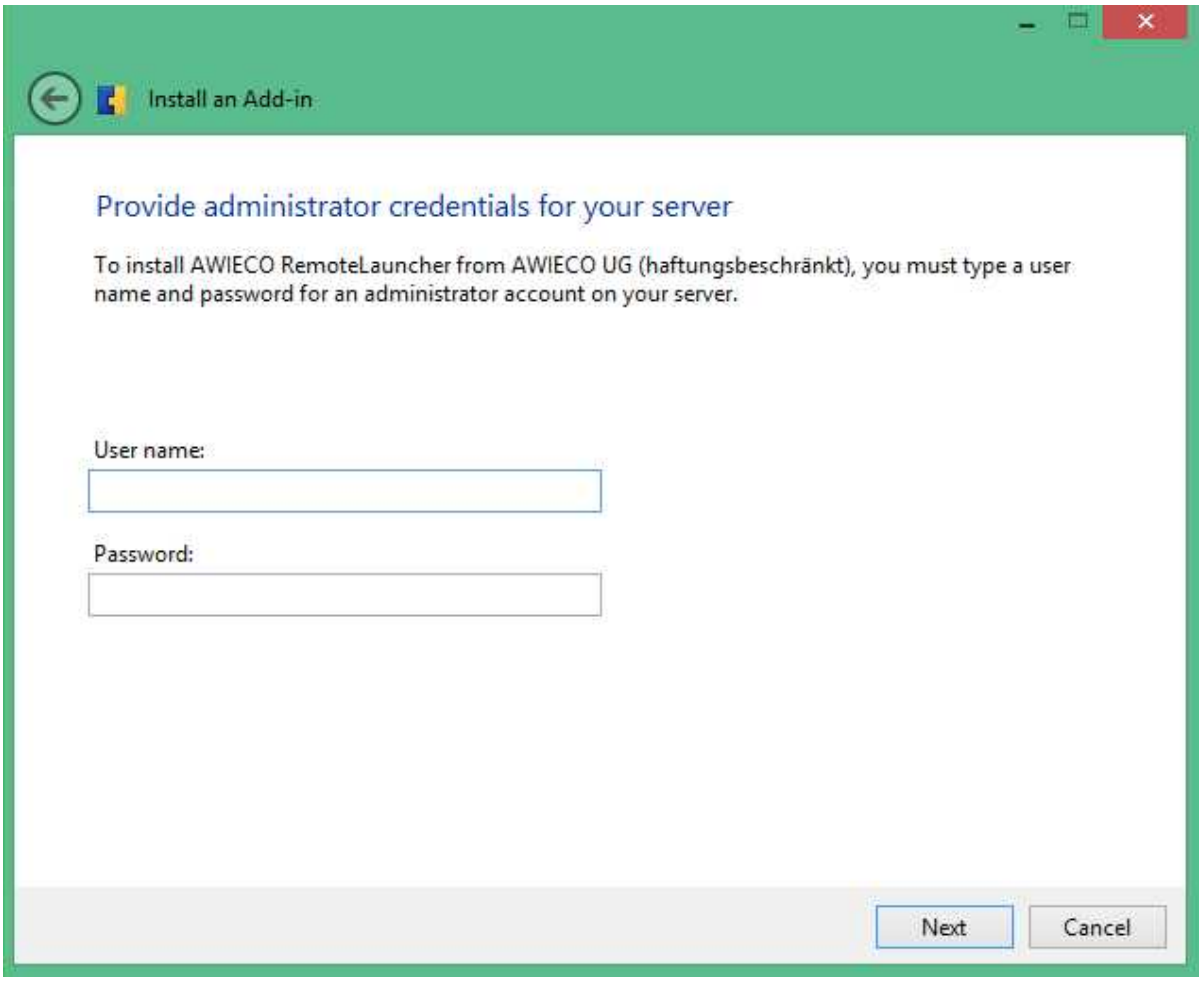
From the Pinpoint site, I chose an add-in that I find particularly useful from an administrative point of view, as it allows you to perform many tasks that would otherwise require you to logon to the desktop directly or via a Remote Desktop Connection. It's called **RemoteLauncher**.



RemoteLauncher at Microsoft PinPoint.

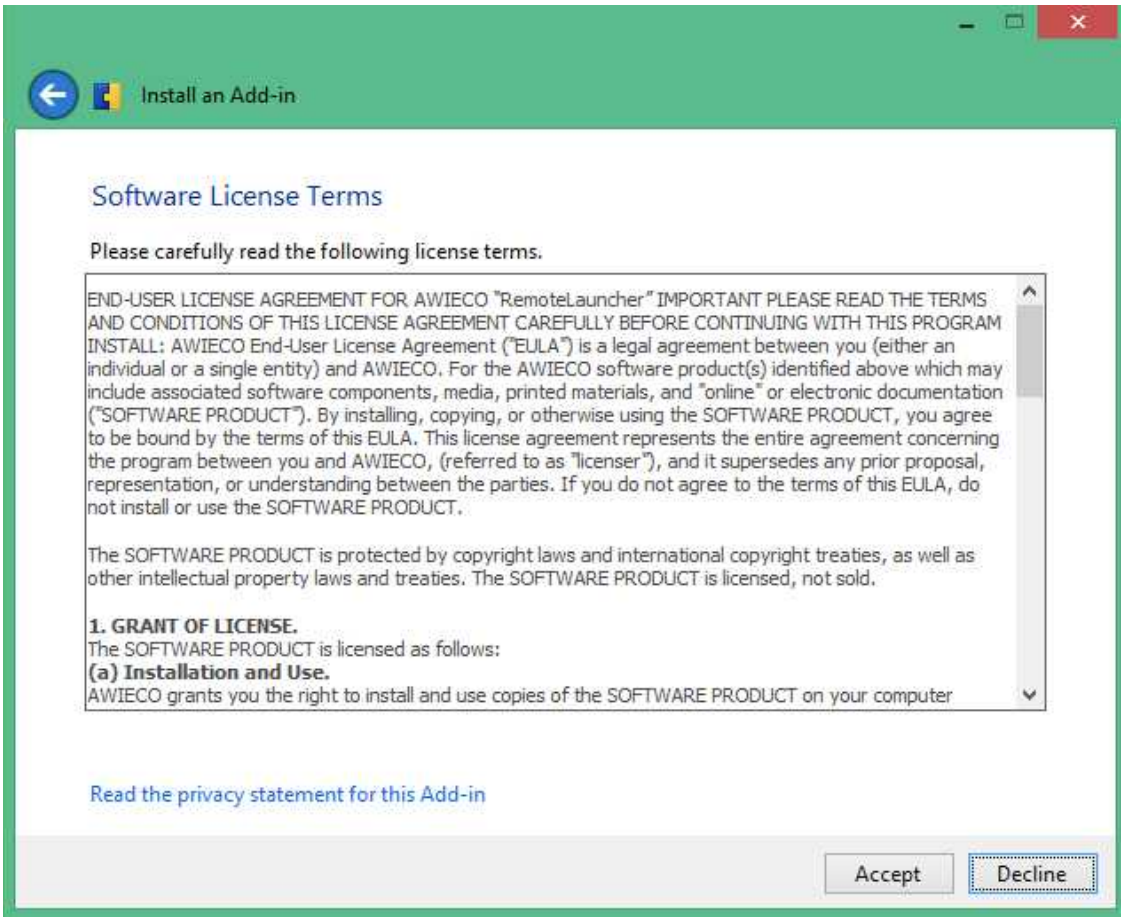
Before proceeding, I would advise you to access the Internet from a client machine. Refrain, if possible, from using Internet Explorer or an alternative browser from the server itself. This is a very simple, yet effective, safety precaution to minimize malware intrusion onto your server and the valuable data that resides on it.

Once downloaded on a client machine, locate the add-in, and double-click to install. To install the add-in, you need to provide your server administrator name and password:



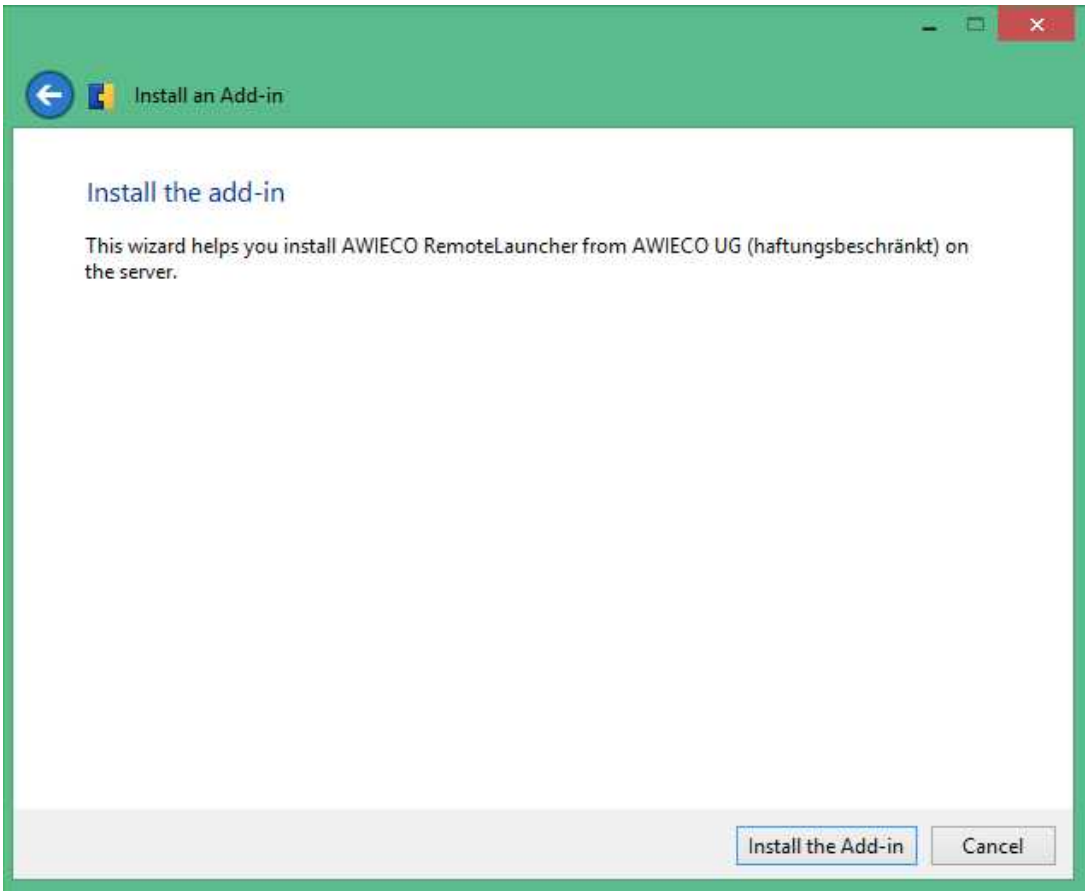
Entering the admin details.

Then, accept the license agreement to continue.



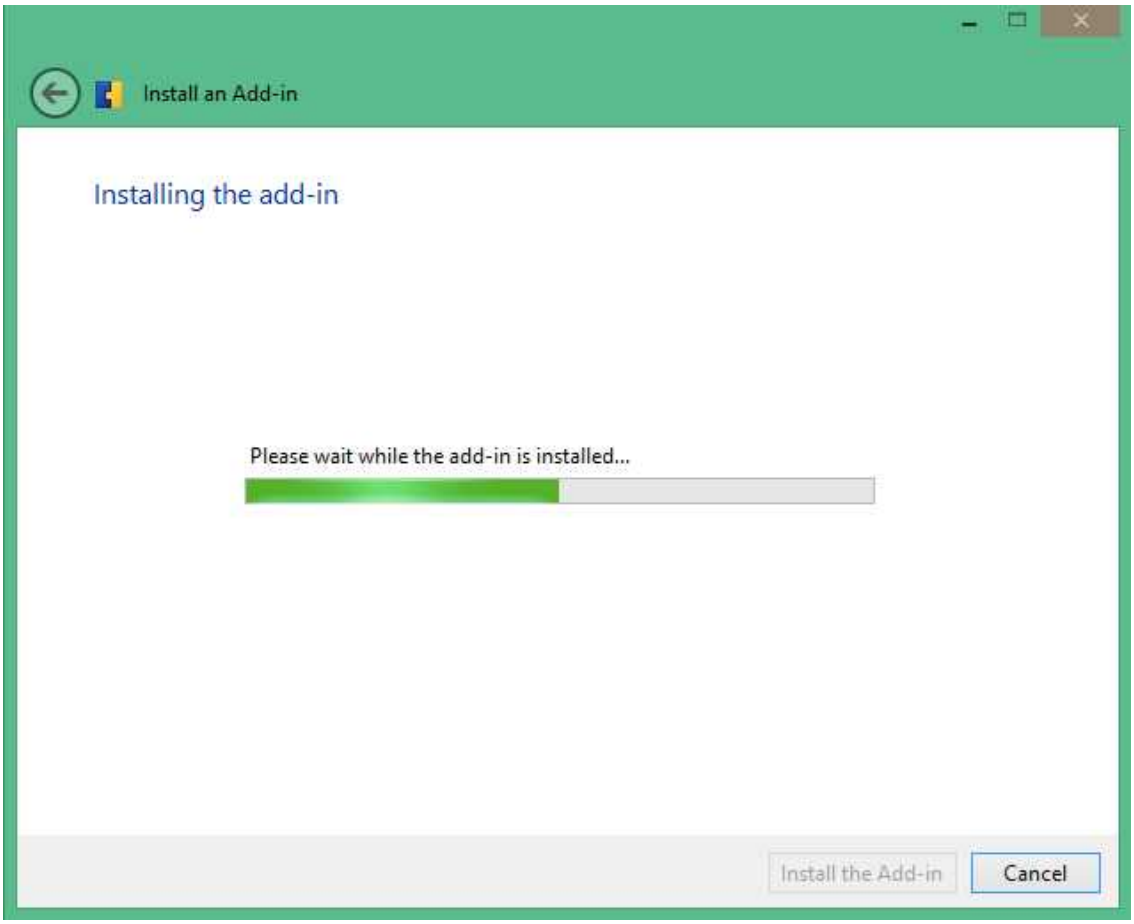
The license agreement.

Finally, we can proceed to the actual installation.



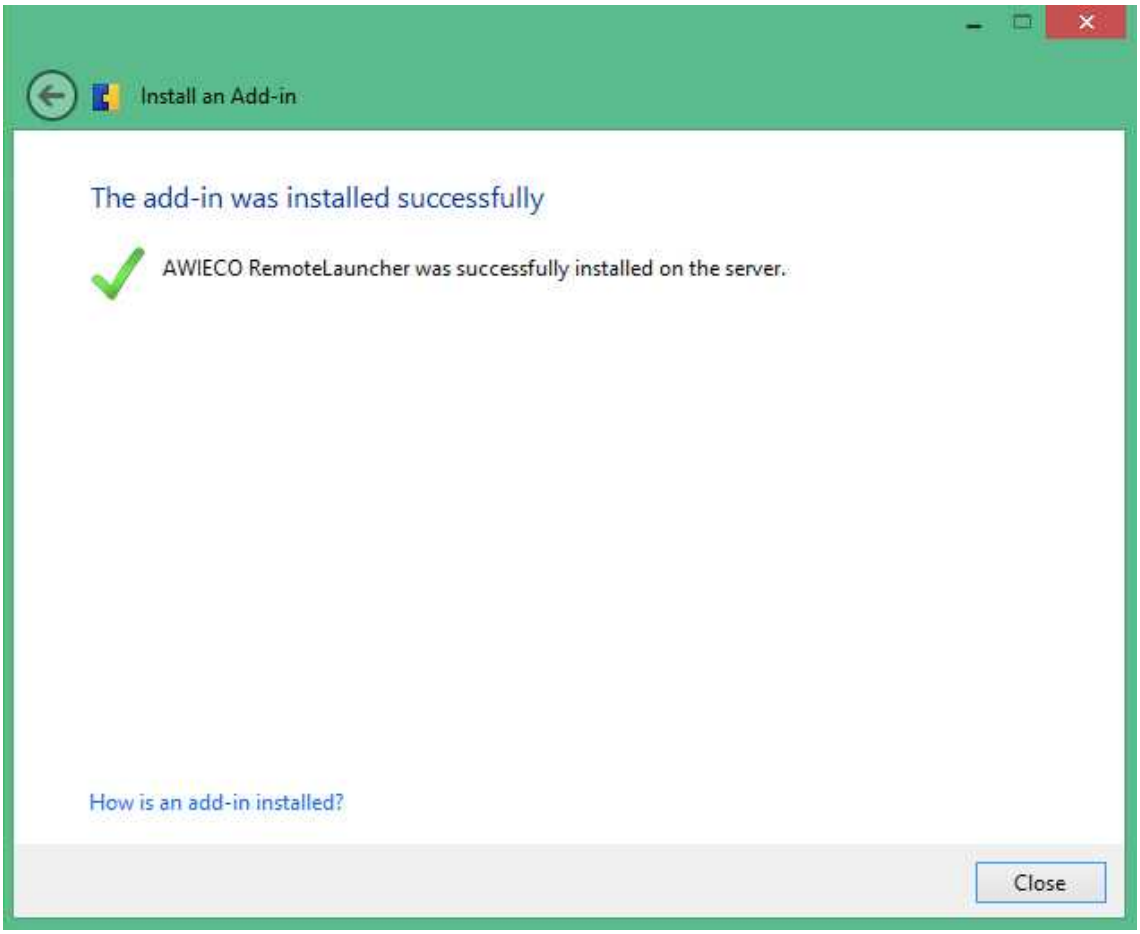
The add-in installation wizard begins.

Install:



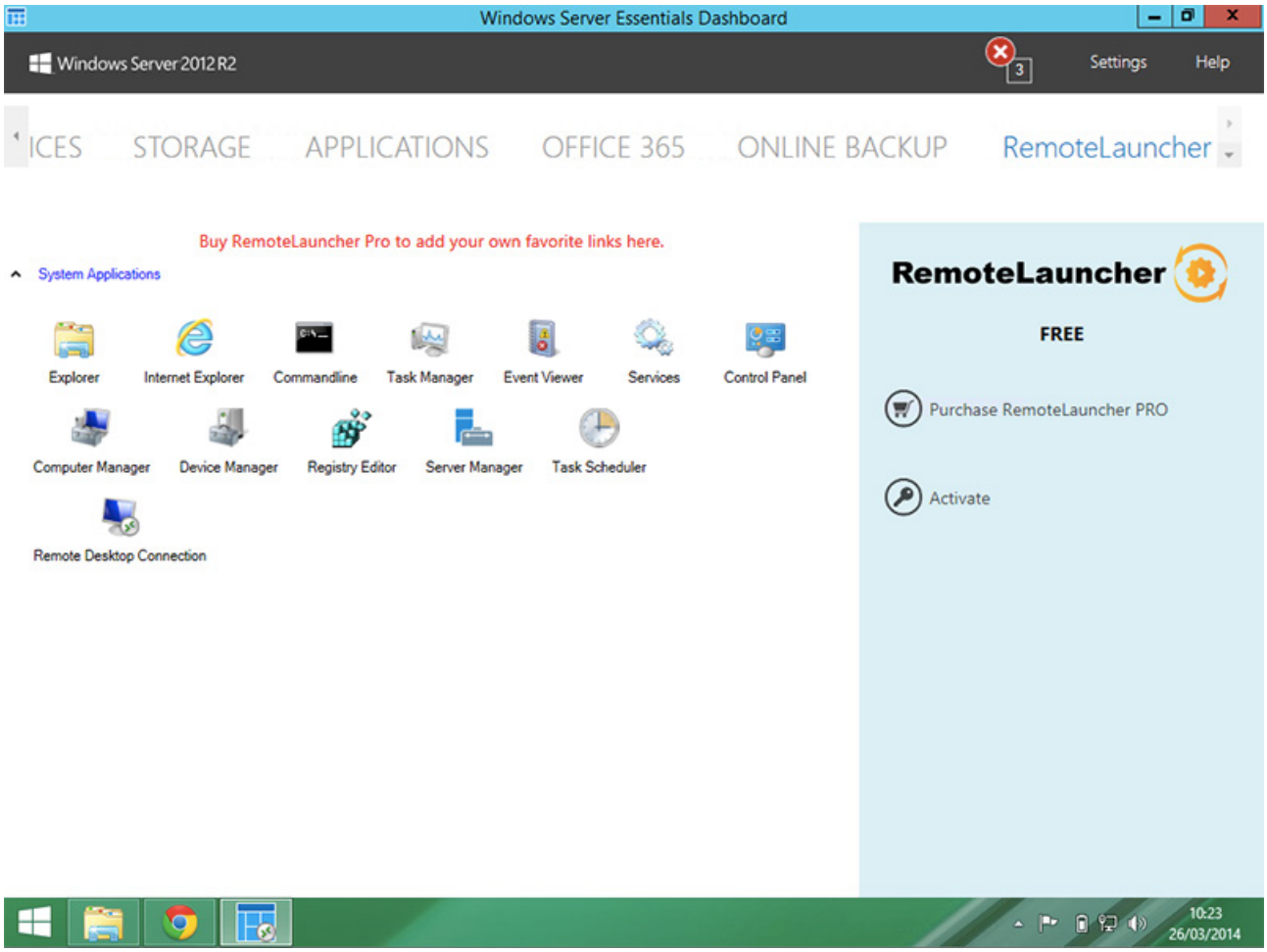
The add-in installs.

and complete:



We're done.

In order to use the add-in, we need to restart the Dashboard, and once reopened we will find ourselves a new Dashboard tab:



The RemoteLauncher tab.

Not every add-in creates a separate tab - some may integrate directly into other tabs in the Windows Server 2012 R2 Essentials Dashboard, others may simply add a task to an existing task list.

We have finally made it through the Dashboard tabs, which is your management interface for Windows Server 2012 Essentials. The Dashboard does not *completely* replace the need to work directly on the server desktop, but it does eliminate much of it. It goes a long way to make the setup and deployment of server a snap for many a small business or SOHO owner.

For you Home users, Windows Server 2012 R2 Essentials may be a relatively expensive option compared to a Windows Home Server operating system, but it provides many options that were missing in those (now legacy) home server releases.

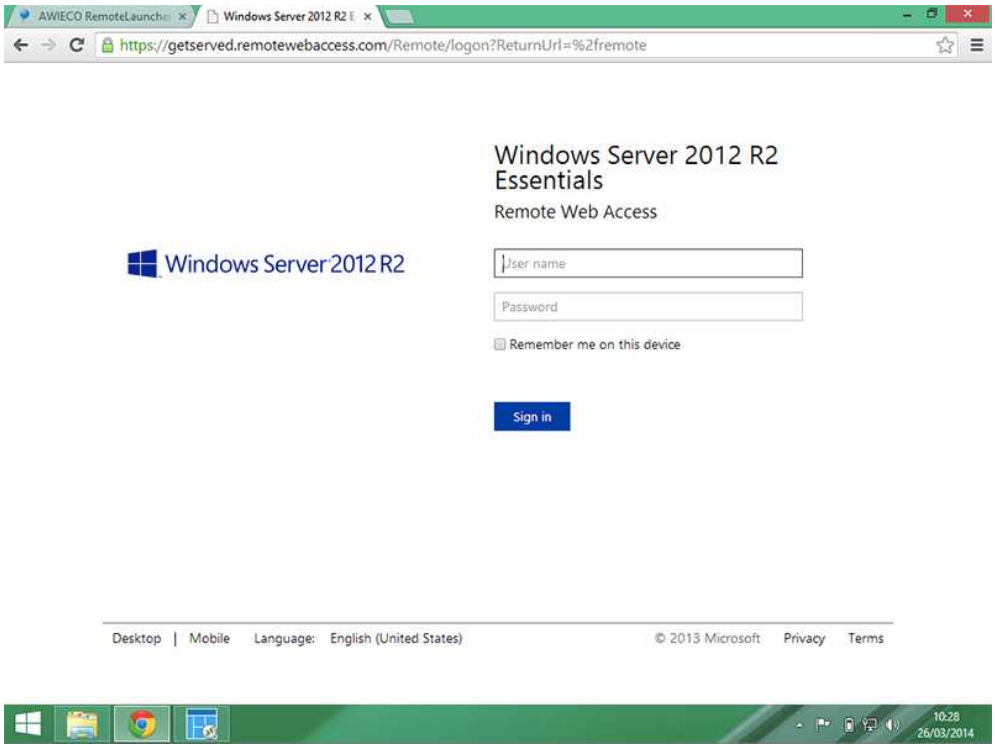
We are not finished, though, as there is much more to Windows Server 2012 R2 Essentials than just the Dashboard!

Remote Access

"With our deep dive into the Dashboard complete, it is now time to come back and discuss a few items that we skimmed over in earlier chapters. First up on this list is Remote Access (or as Microsoft calls it, "Anywhere Access") which comprises two distinct features. The first is Remote Web Access (RWA) and the second Virtual Private Networks (VPNs)."

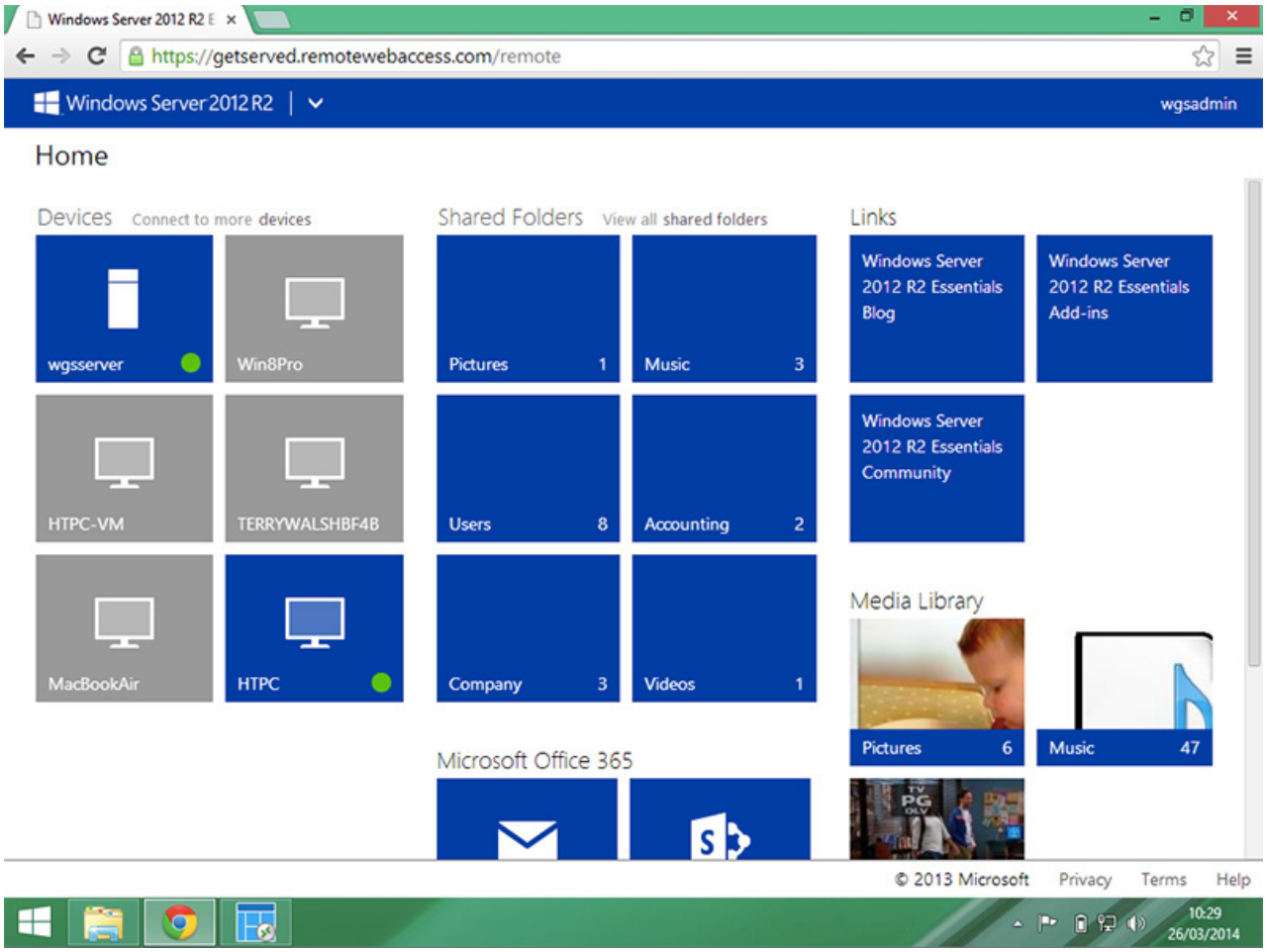
Remote Web Access

We set up and configured RWA in Chapter 5. This created a private sub-domain of **https://<servername>.remotewebaccess.com/** where <servername> is the name of your Essentials server. When you access this URL in your browser, you come to a log on page like the one below. Enter your user credentials into the User name and Password fields and click on the arrow to log-in to your server.



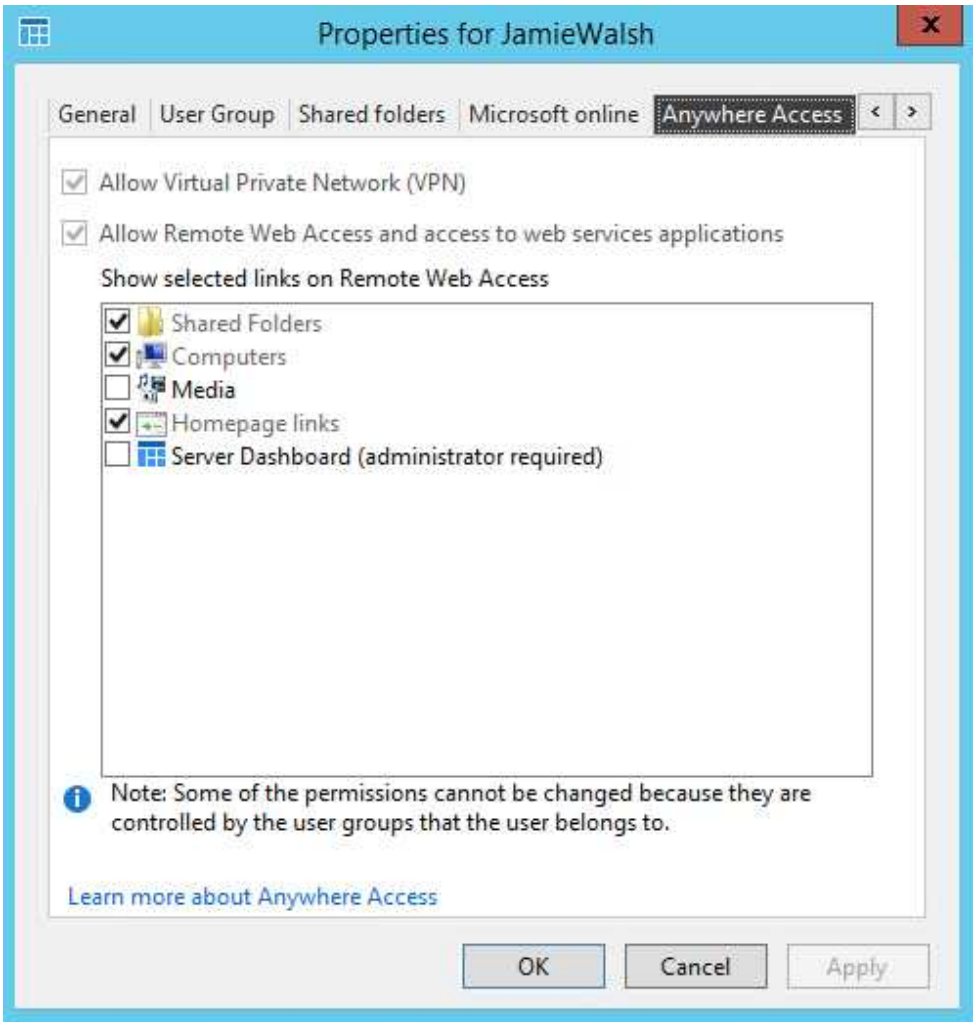
Remote Web Access.

Assuming the user logging on has the appropriate access levels, he/she will be able log directly on to compatible and connected computer desktops, access various Shared Folders, and stream Media files (as long as the appropriate media pack has been installed) - all from the browser.



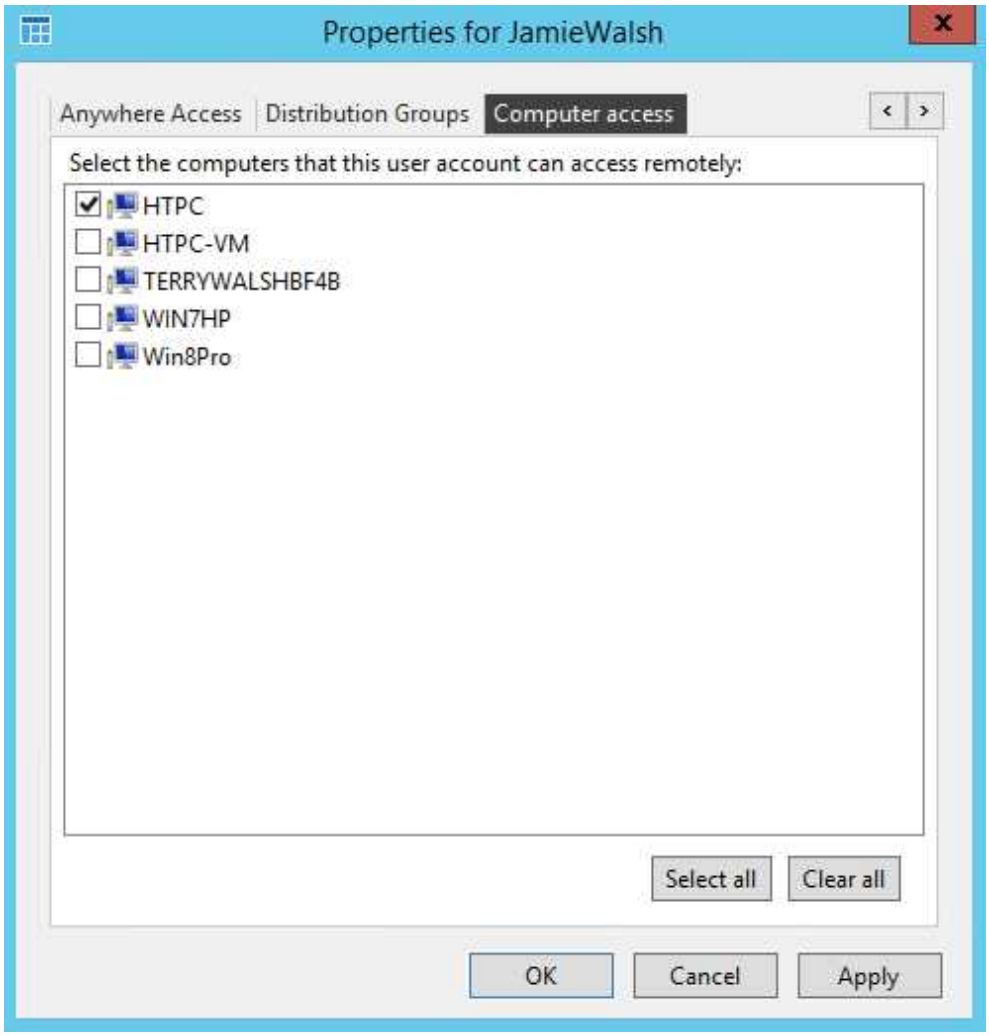
The Remote Access Website.

As can be seen in the following two screens, user access properties (available via a task in the Users tab) control what each user sees when using RWA.



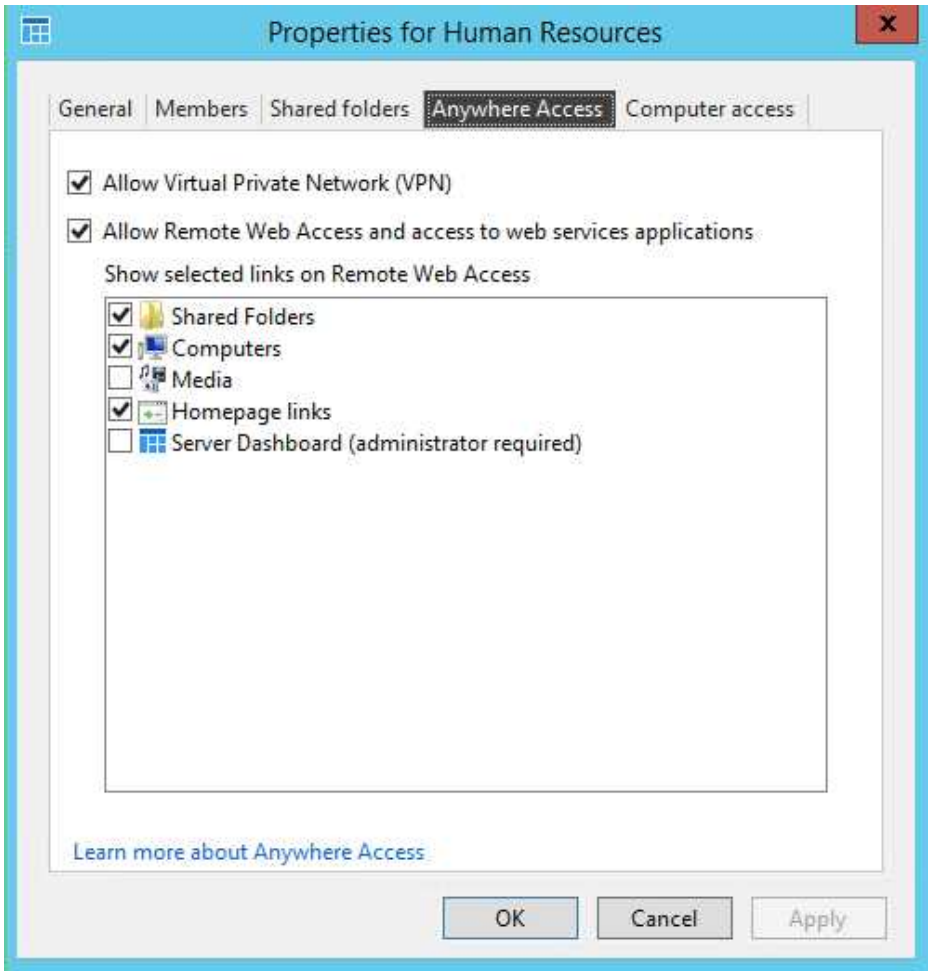
Anywhere Access settings are available from the Users tab.

Click the Computer Access tab to configure which devices the user will be able to control remote through RWA.



Computer access controls.

Remember too that in this new version of Windows Server 2012 R2 Essentials, some permissions are configured at the User Group level - these take precedence over individual user settings.



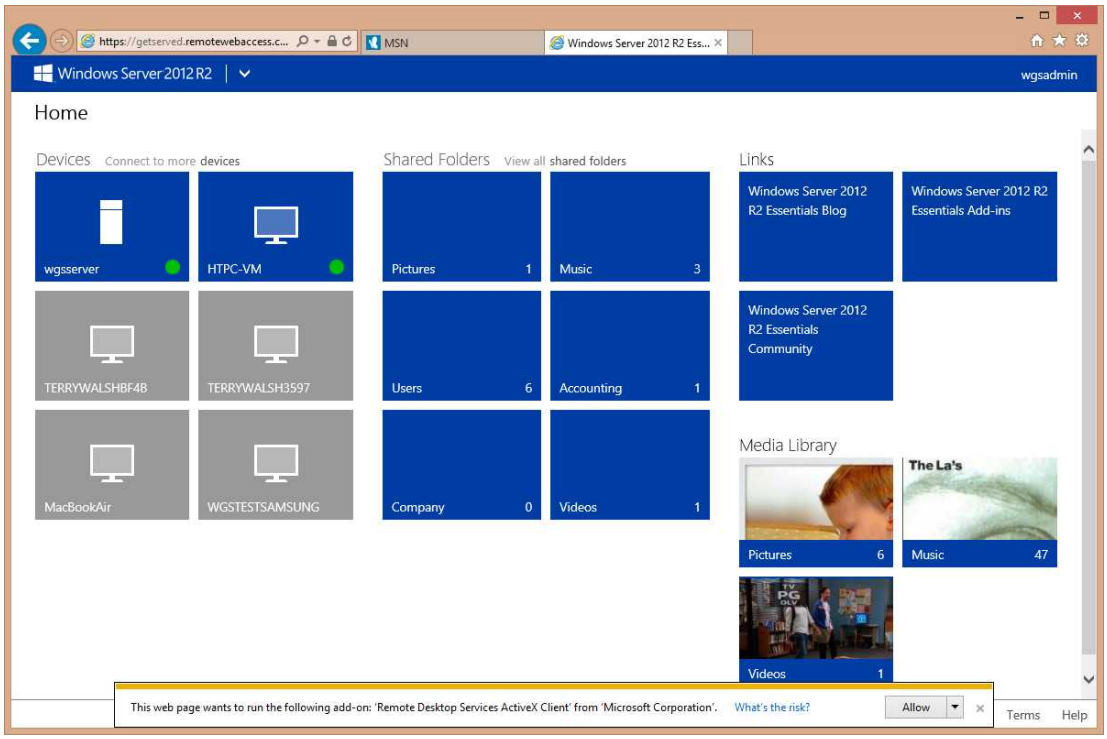
Configuring User Group Anywhere Access settings.

As a result, you can configure Anywhere Access permissions and experience for specific users and groups of users with a high degree of granularity. That keeps your server safer and your people more productive!

Accessing Computers Remotely

One of the very powerful features available to Windows Server 2012 R2 Essentials users is the ability to log into and control client PCs remotely. That includes the Server Dashboard as well as client computers.

In the following screen, I am attempting to use a Remote Desktop Connection to access a remote computer. In this case, you may see the message at the bottom of the browser to install an ActiveX add-on to allow a Remote Desktop session in the browser. You would most likely see this message also, and is required if you wish to log on to a remote computer via Internet Explorer.



Install the ActiveX control when asked.

You will need to click through the following security dialog at least once (tick the appropriate box to bypass this dialog for future connections):

Check the box to avoid this security check in the future.

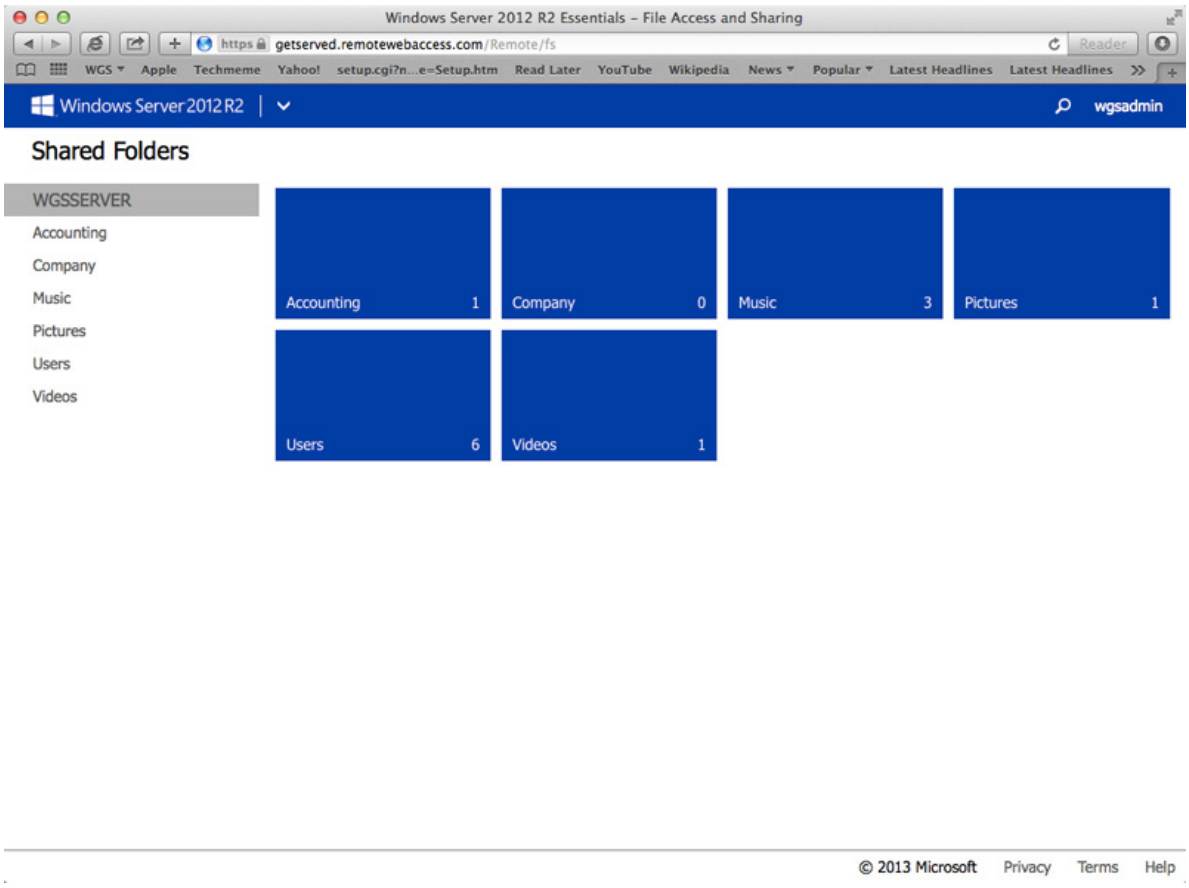
Now enter your account credentials for the computer.

Enter your network username and password to connect.

If all goes well, you will established a Remote Desktop Connection to a computer on your network from a remote location outside your network.

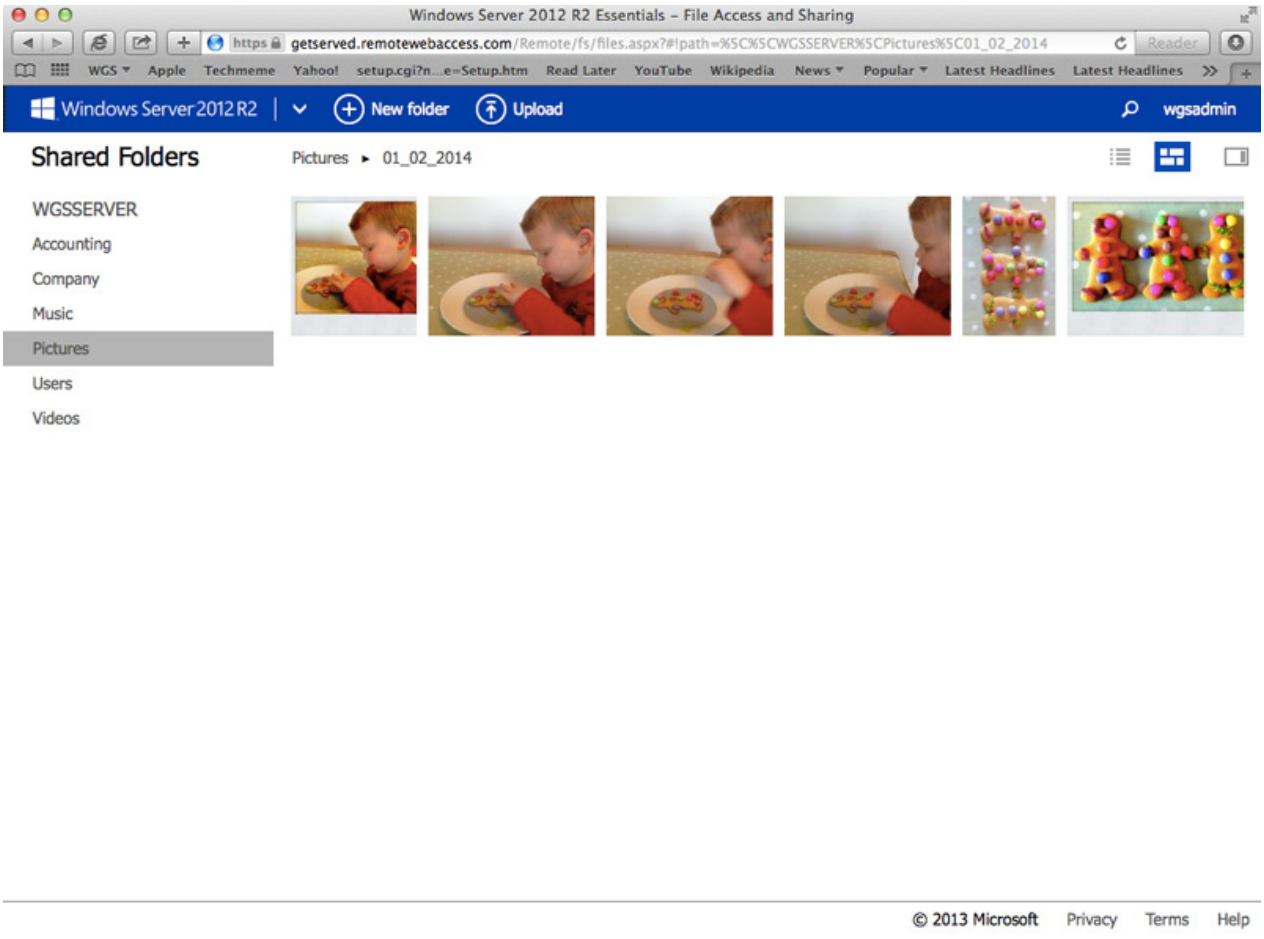
Accesses Shared Files and Folders Remotely

Using Remote Web Access, you can easily access your server's Shared Folders:



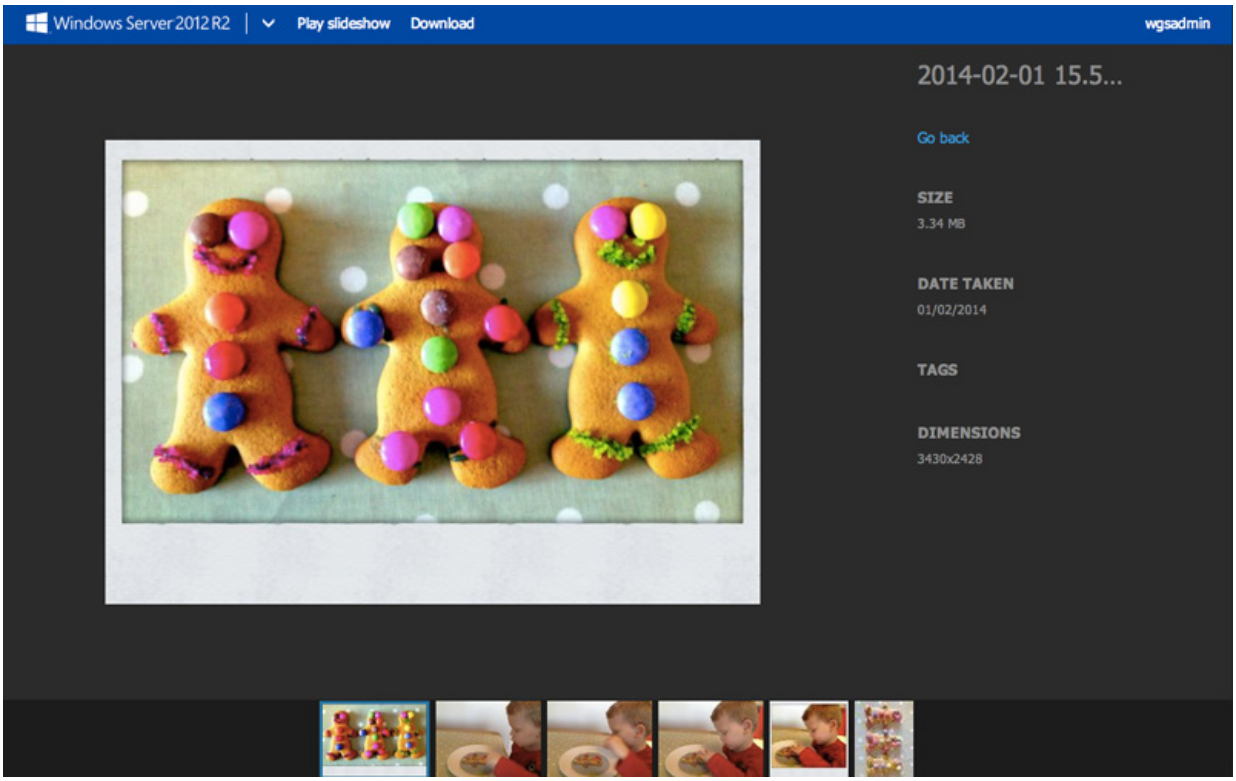
Accessing shared folders remotely.

For those who would make use of the media features of Windows Server 2012 R2 Essentials (see the next chapter for a walkthough of setting up media sharing), we have **Pictures**:



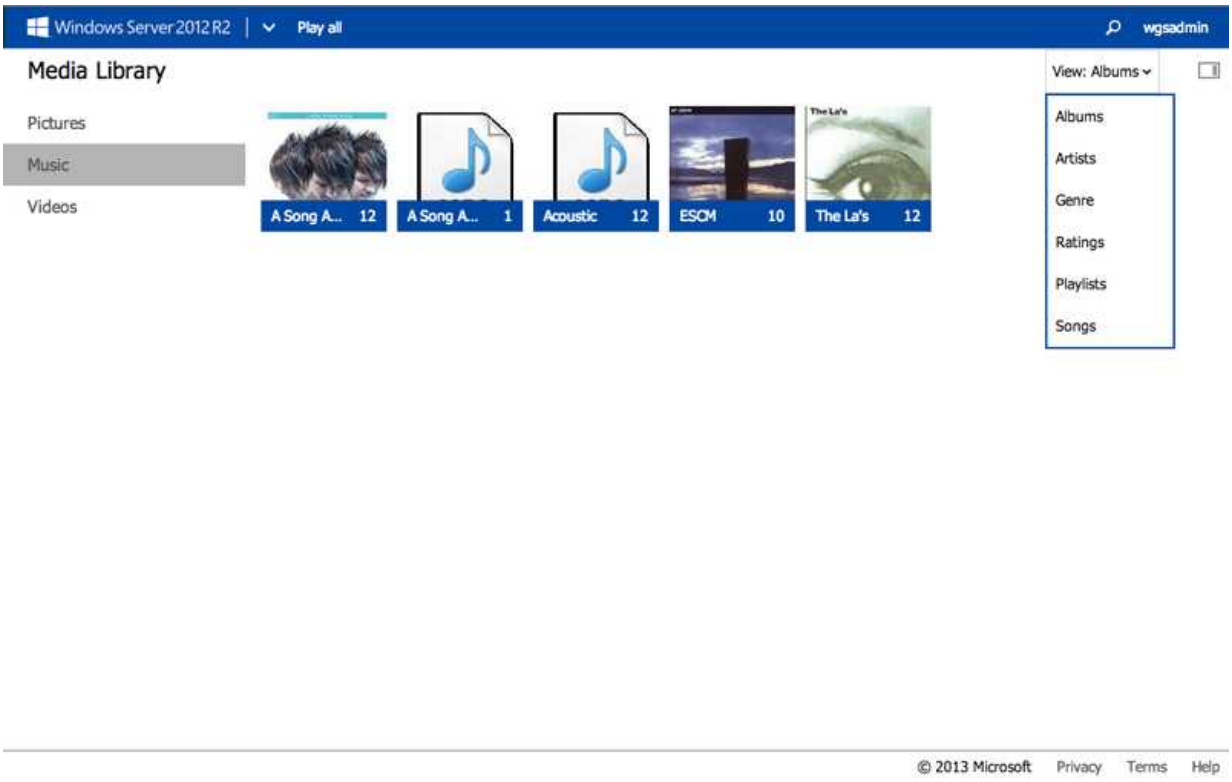
You can view full screen photos and slideshows in Remote Web Access.

Picture sub-folders can be navigated via thumbnail icons.



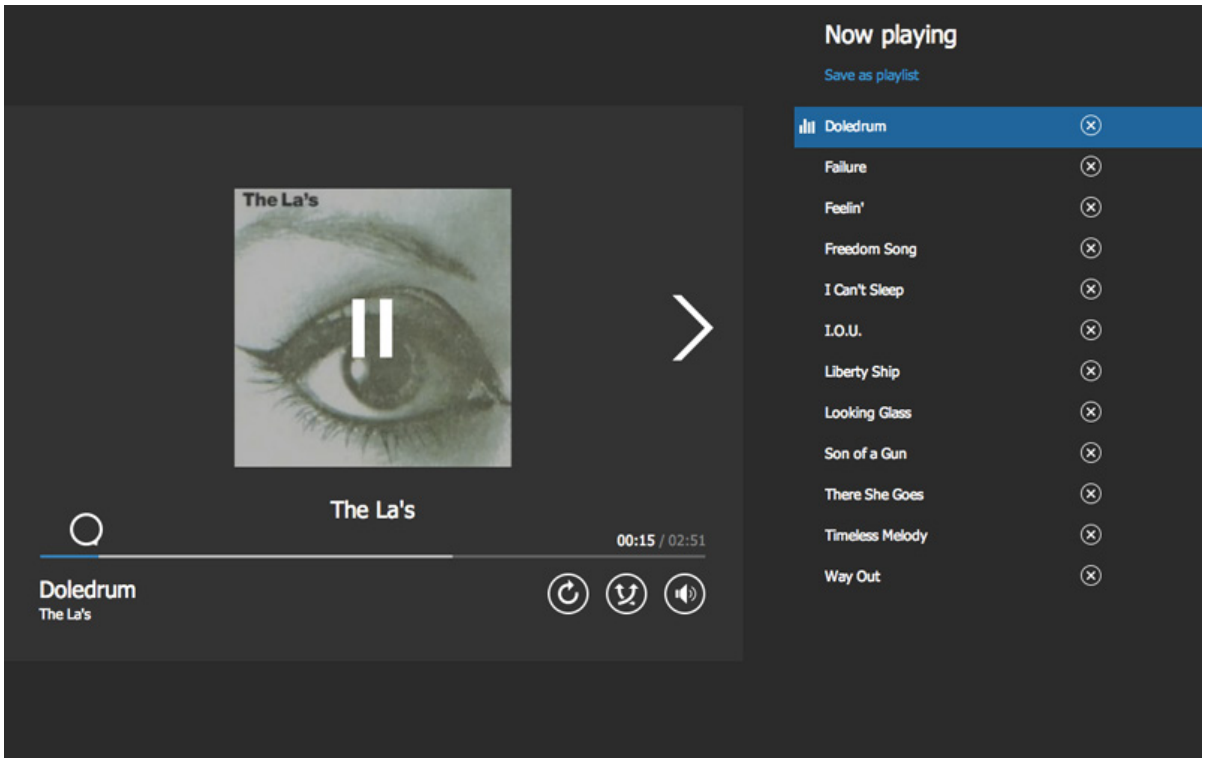
...and can be displayed in a slideshow view.

Music can be streamed directly from the server to a client via the browser:



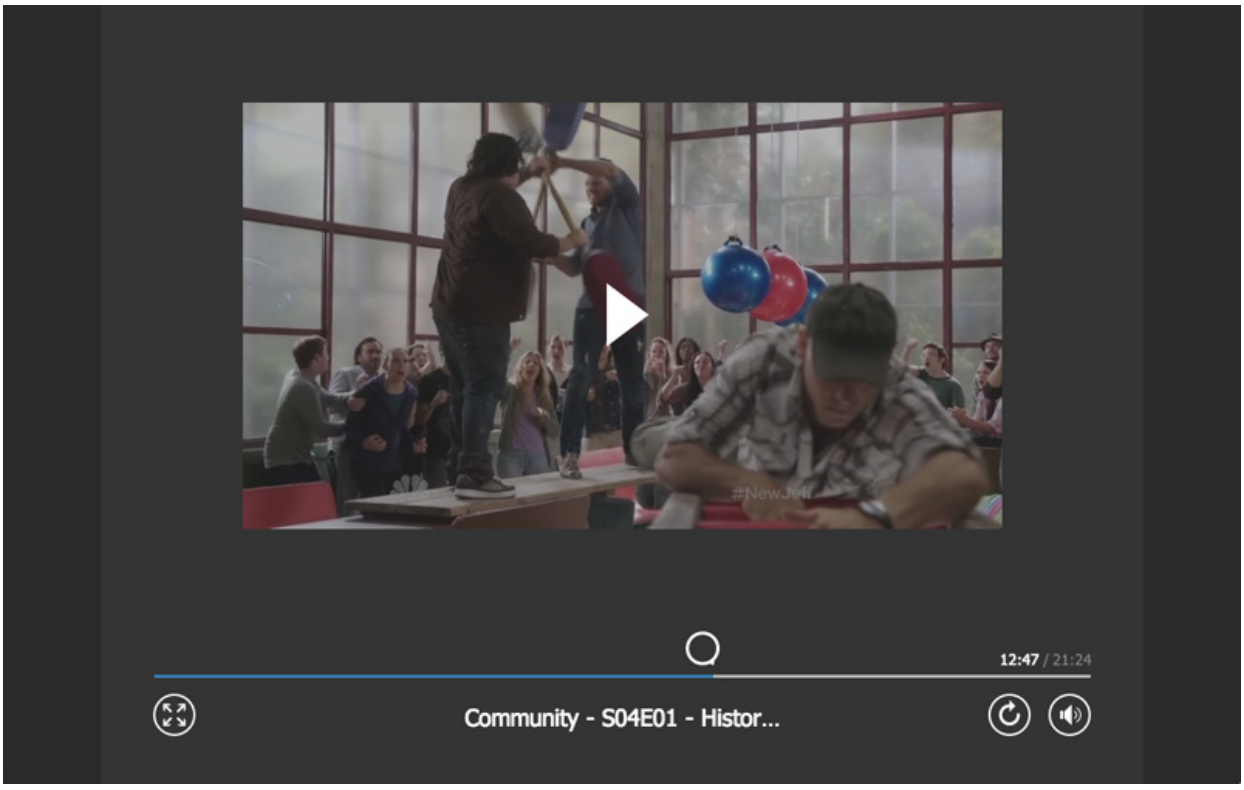
Browsing media remotely.

If you have album art, it will be displayed in the browser.



Streaming music with full navigation and playback controls.

Videos can also be streamed remotely.



If you are interested in streaming media through a browser, please be aware of the file types that Essentials can stream or transcode. Some of the more common formats are as follows:

- Windows Media formats (.asf, .wma, .wmv, .wm)
- Audio Visual Interleave (.avi)
- Moving Pictures Experts Group (.mpeg, .mpg, .mp3)
- Audio for Windows (.wav)
- CD Audio Track (.cda)

How well media plays over the Internet will vary depending upon many factors including the:

- Speed of the connection
- File type
- Processing power of your server.

If playback of certain media files seems slow or worse, you might consider changing the Video streaming quality setting. We'll cover this in the next chapter.

The better the streaming quality desired, the more processing power and faster Internet connection is required.

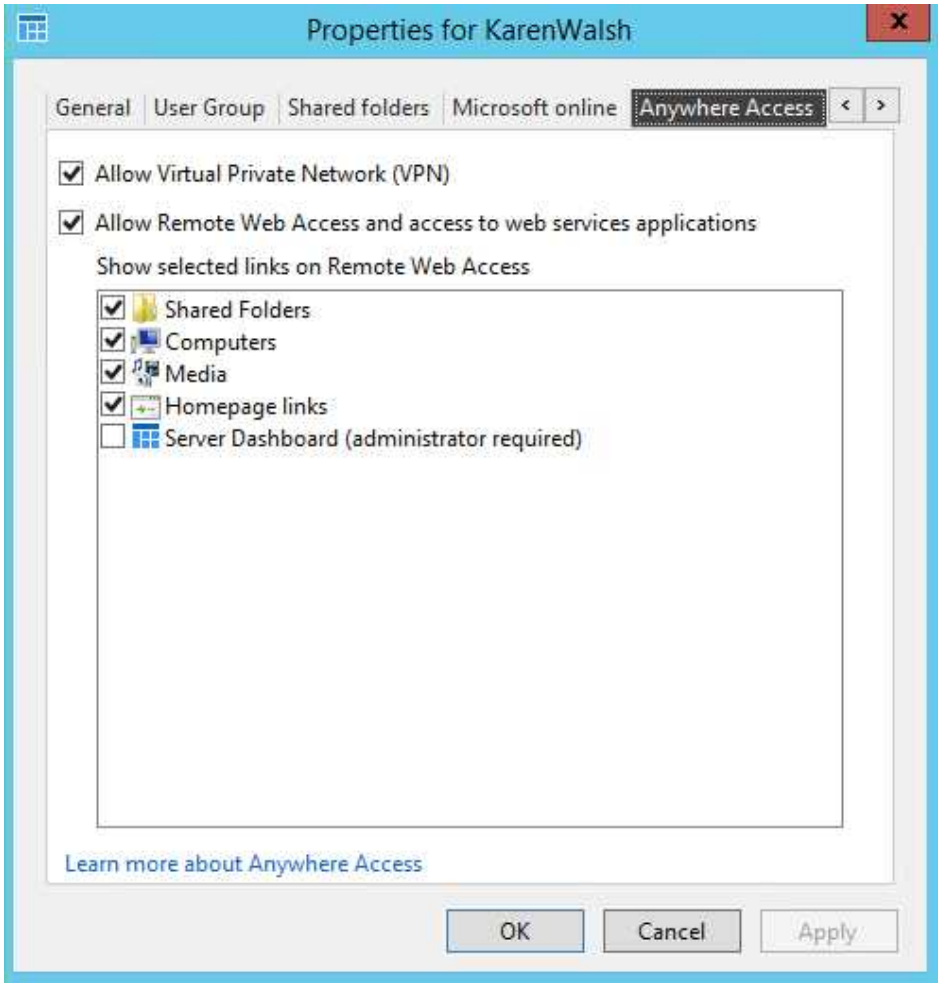
Overall, the Remote Web Access feature is simply an easy way to access client computers, server shares, and server media files on your network from a remote location.

For those who find connecting to the Internet from public Wi-Fi hotspots less than secure, Microsoft has also built into Essentials a second remote access protocol, which is VPN.

Accessing the Server Remotely via VPN

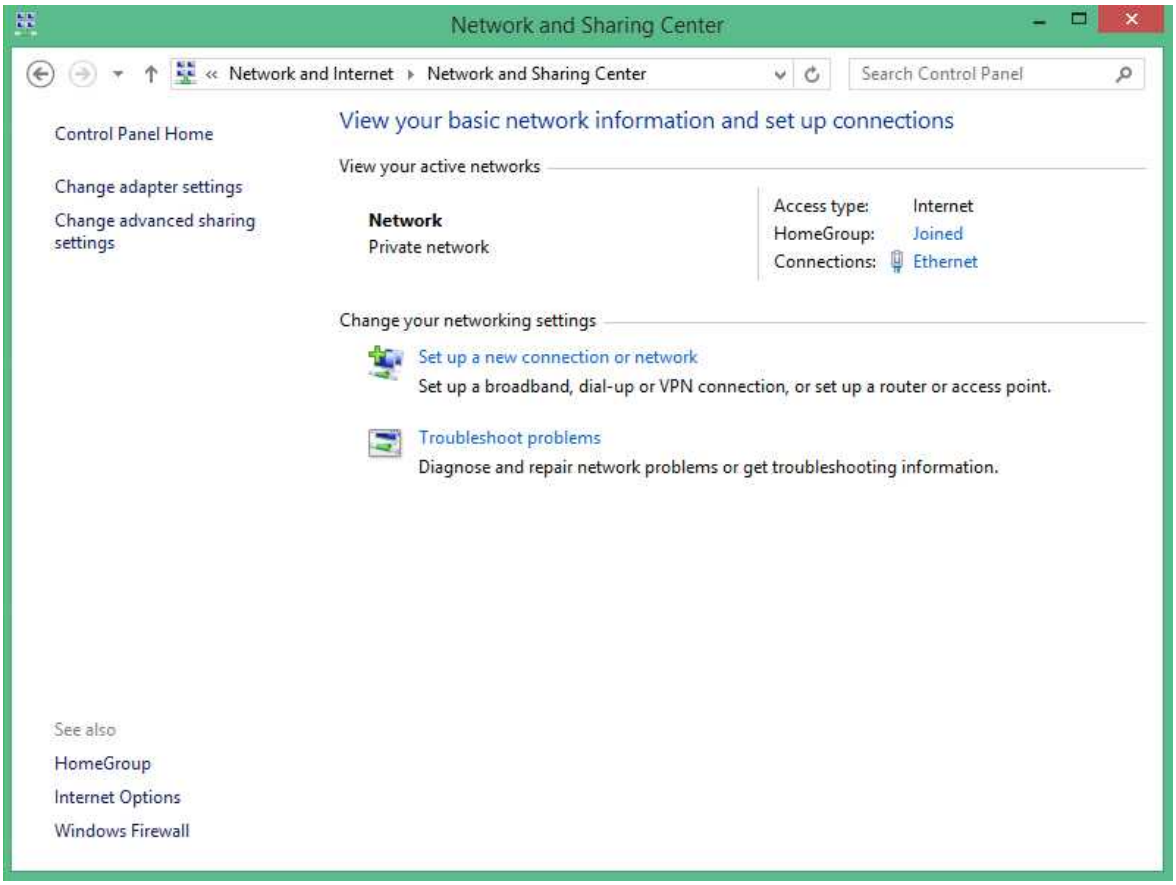
VPN is the acronym for a **Virtual Private Network**. Whereas Remote Web Access is used to access your network from any web browser, VPN is different in that it is actually a network connection similar to your NIC adapter connection. Instead of connecting directly to the Internet, a remote computer that makes use of a VPN actually accesses the network from that remote location to the Essentials server and back out to the Internet. VPN offers a more secure connection to your server.

VPN was configured on the server as part of the original setup which was discussed in Chapter 5. From the server side, you are ready to create a VPN connection - no more configuration is required. Remember, you can permit or prevent VPN access to the server at an individual user or user group level in the Dashboard's User tab. Just click on a user or group and open up the Properties, navigating through to the Anywhere Access tab.



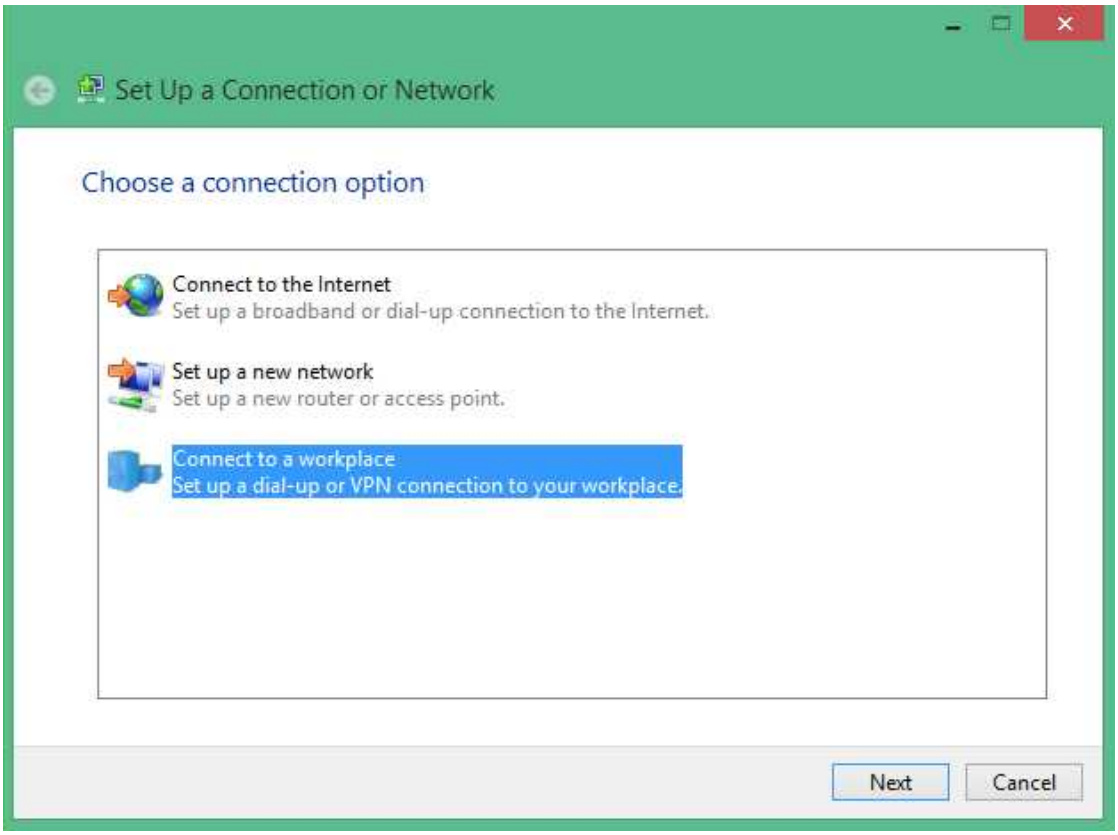
Permitting VPN Connections through the Anywhere Access tab.

All you need to do is initiate the VPN connection to the server from a client computer. For a Windows 8/8.1 computer, we open the **Control Panel** bring up the **Network and Sharing Center**, and choose the **Set up a new connection or network** option.



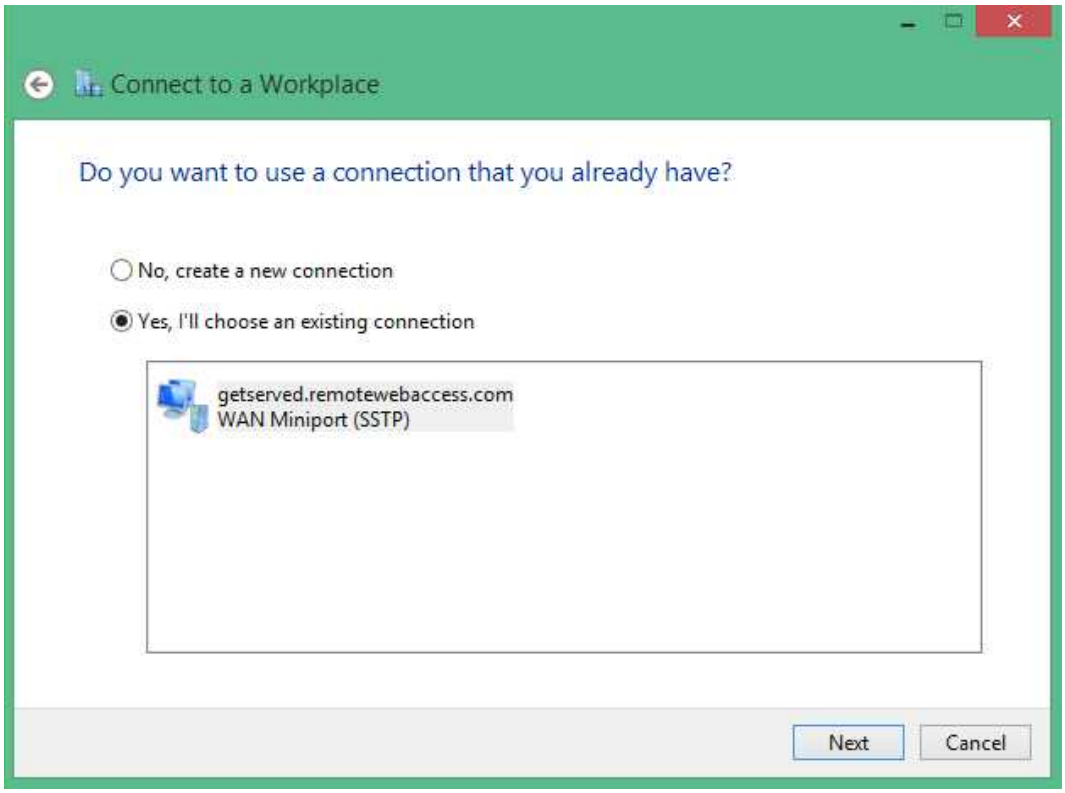
Set up the VPN connection on your client from the Control Panel.

From the dialog that opens, click on the last option - **Connect to a workplace**.



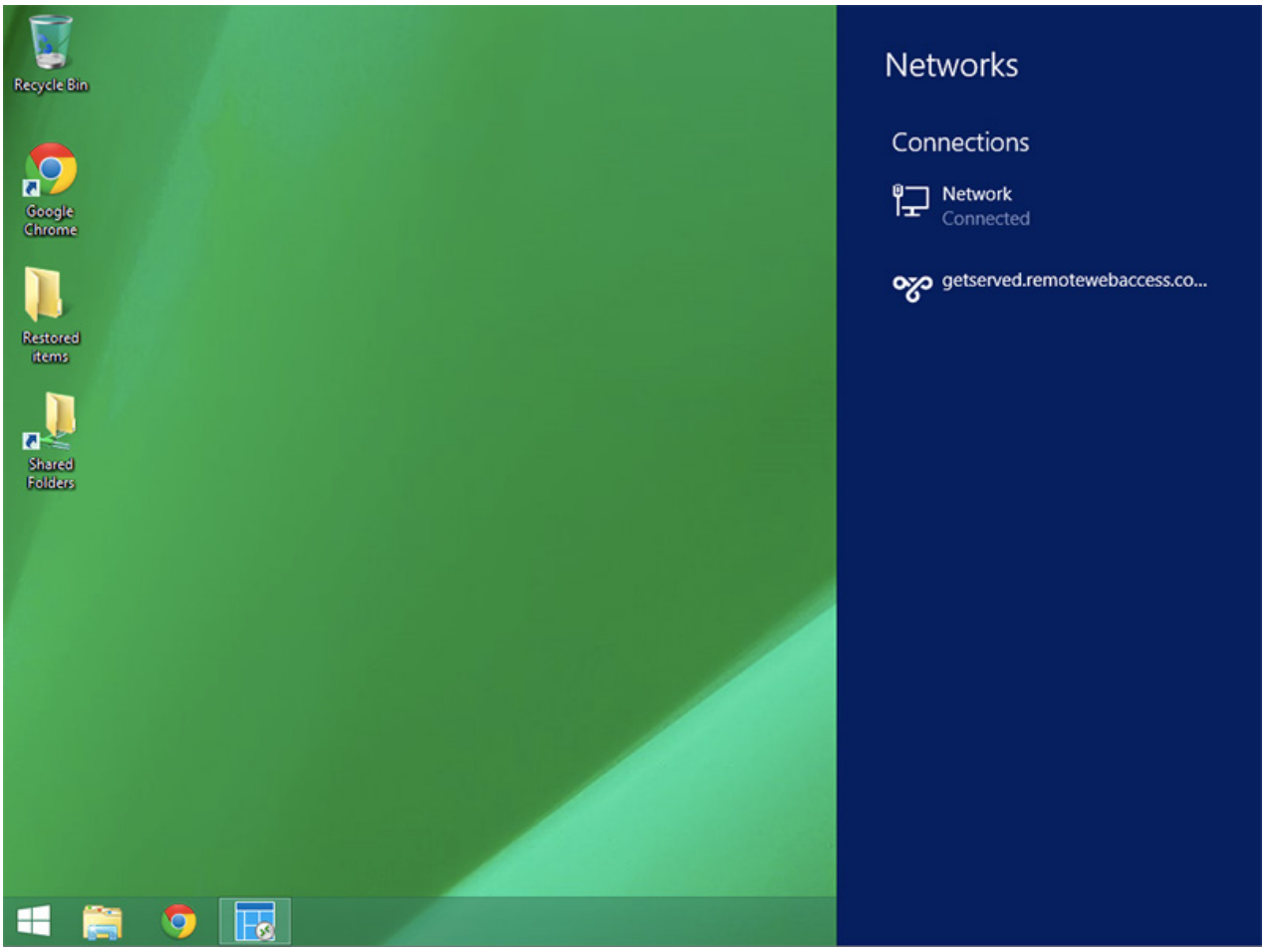
Setting up the connection.

In the next screen, we want to choose an **existing** connection, so check the appropriate radio button, select your server's remote web access connection and click **Next**.



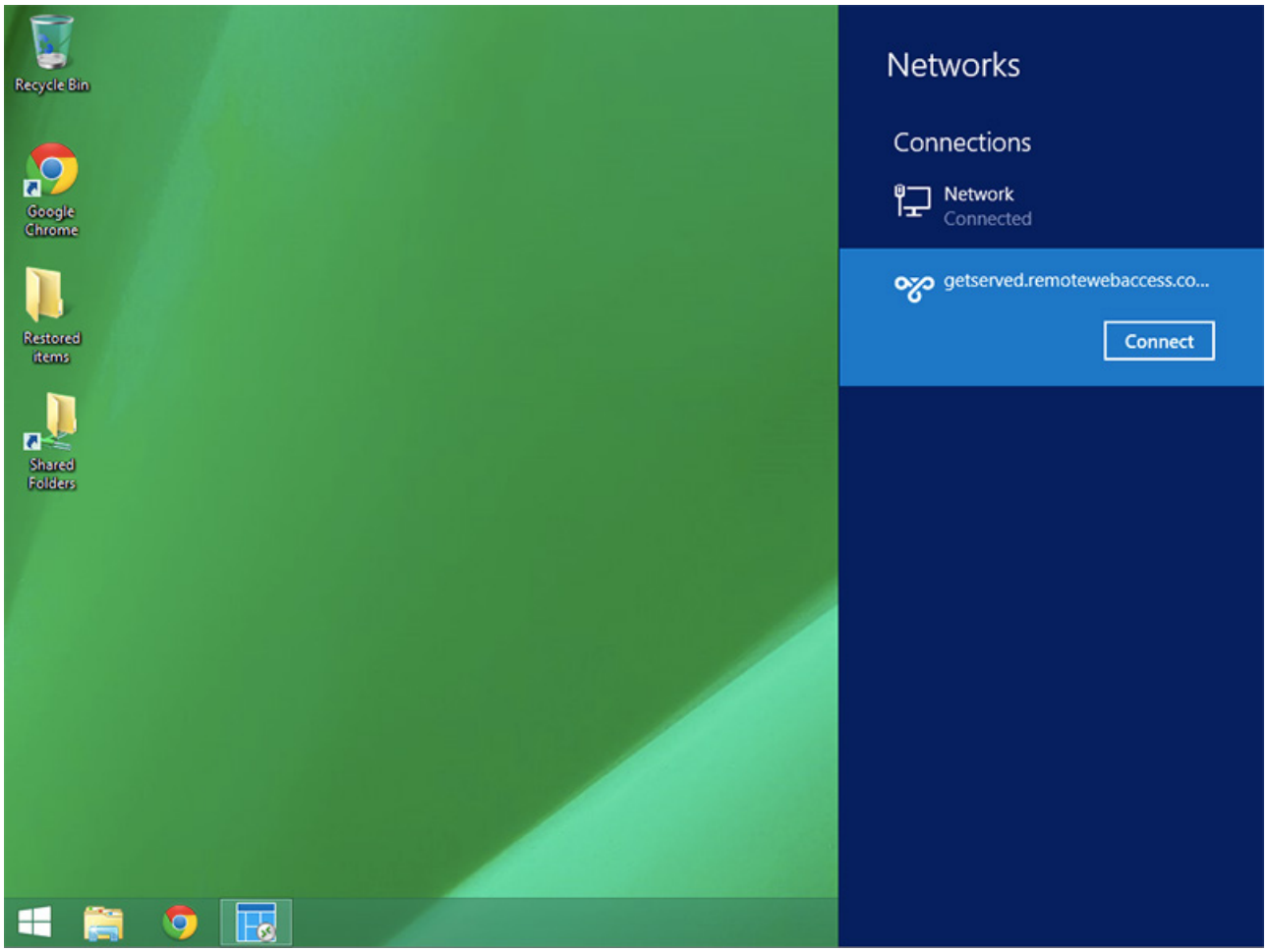
You'll see your server already listed.

This takes us back to the Network and Sharing Center, where we find that we have a new Internet VPN Connection listed. You may well also see the connection confirmed on the right hand side of the screen.



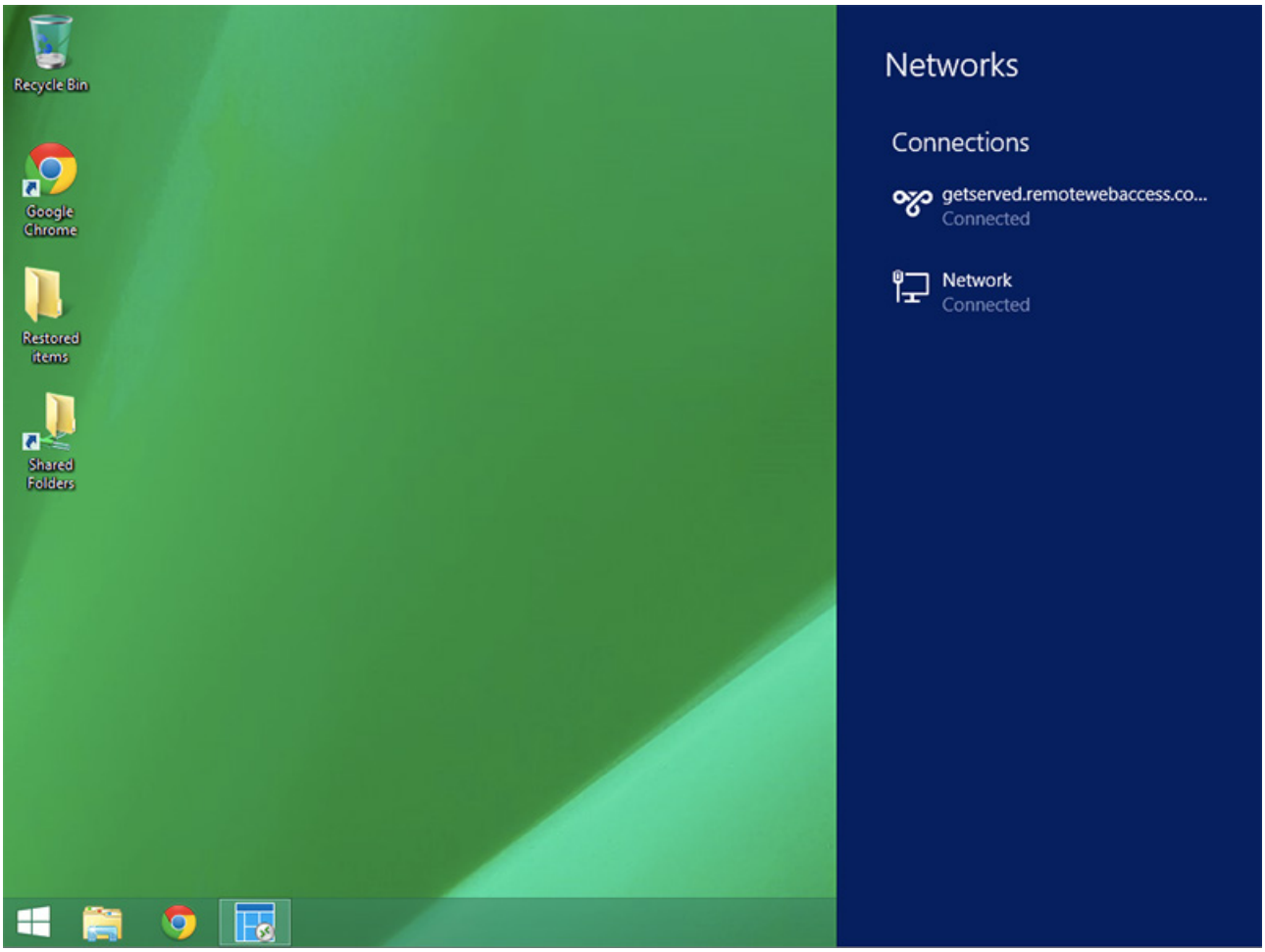
No missing that new VPN Connection, then!

Now that we have our basic connection set up, click the **Network** icon in the System Tray. You'll see the VPN Connection listed with a large Connect button, eagerly awaiting a click.



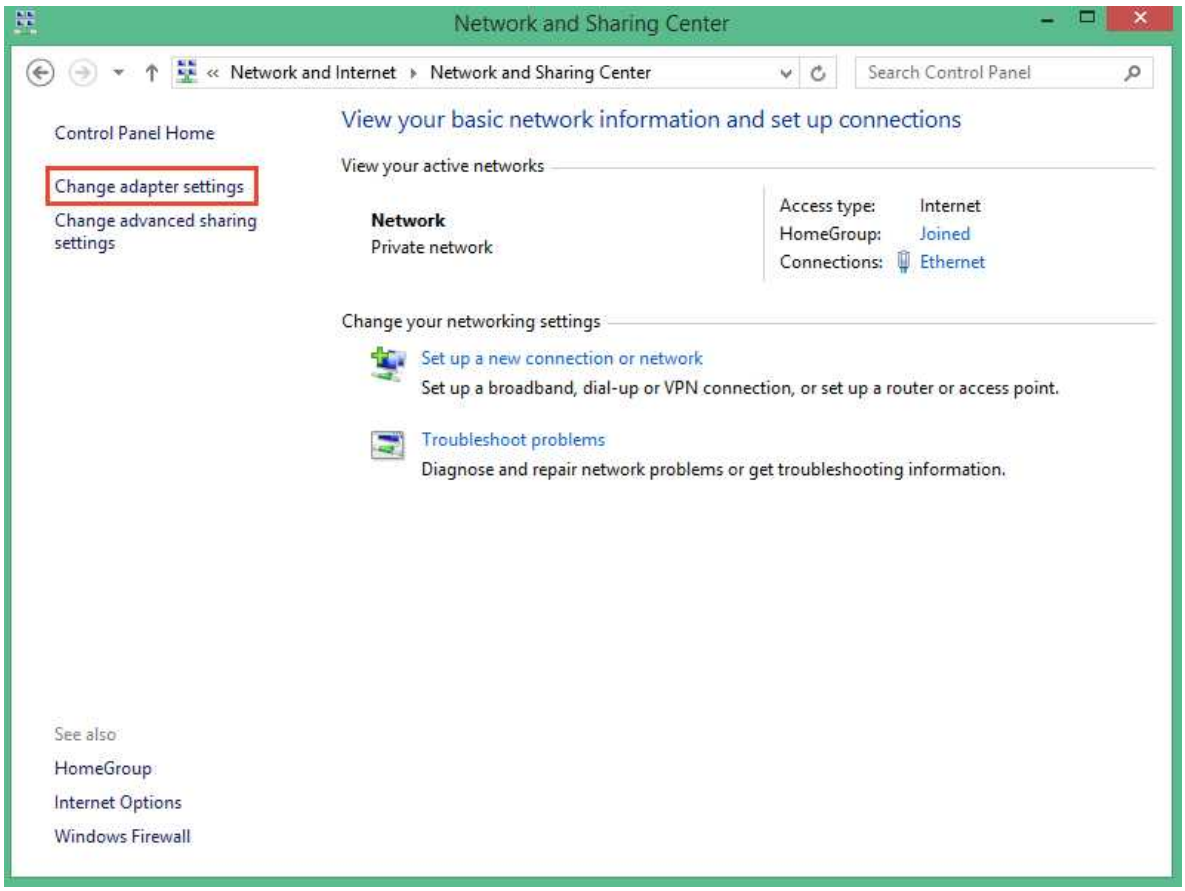
Your VPN connection is ready, sir.

Click **Connect** and the secure link will be established. Your VPN connection will be confirmed.



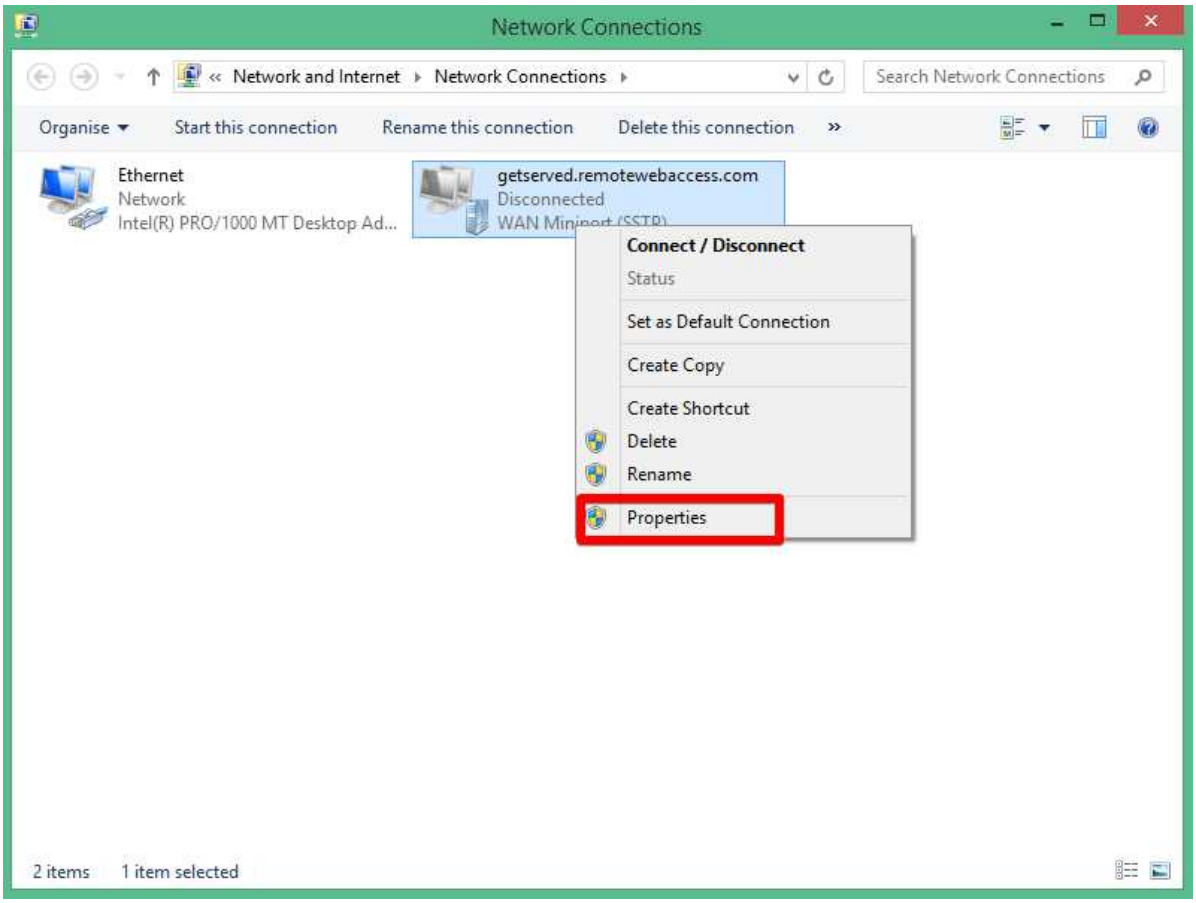
A successful VPN connection is made.

If you have difficulties connecting, then some additional configuration may be required. Back in **Network and Sharing Center**, select the "**Change adapter settings**" option:



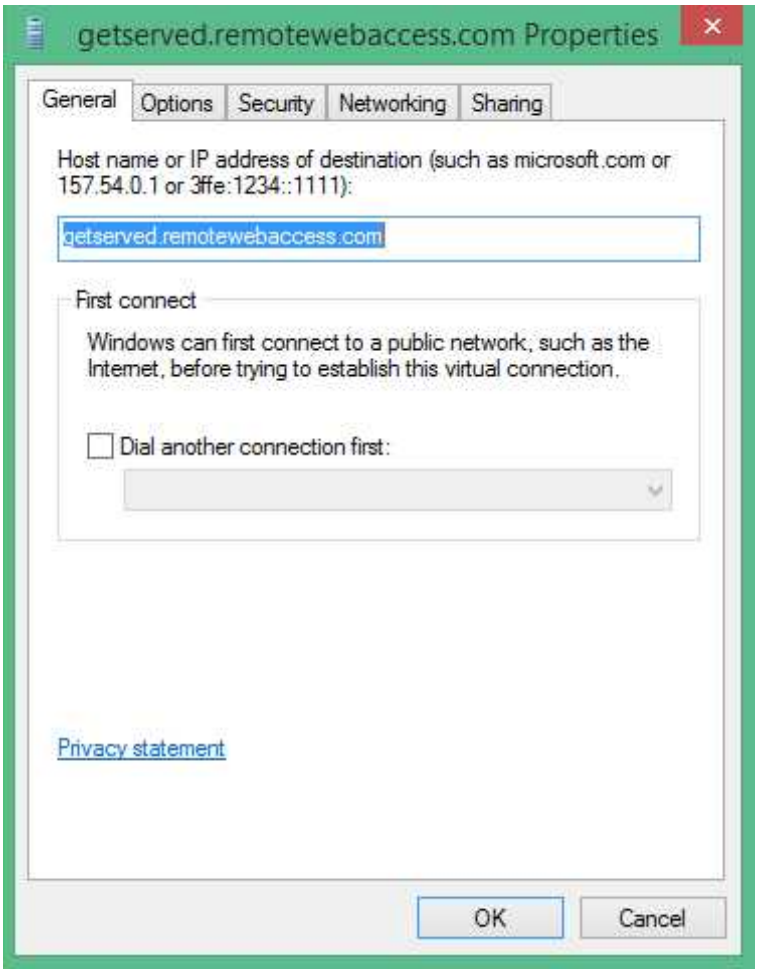
The Change adapter settings task.

Right-click on the Disconnected VPN connection and click on **Properties**.



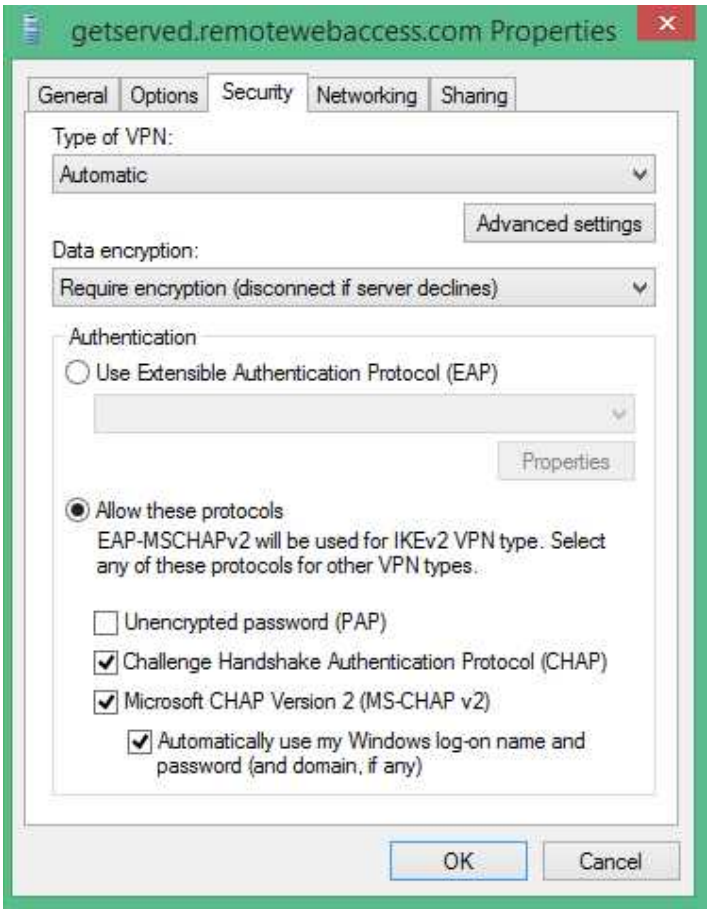
Connection Properties can be found with a right-click.

The VPN Connection Properties dialog opens:



VPN connection properties.

Select the **Security** tab.



VPN security settings.

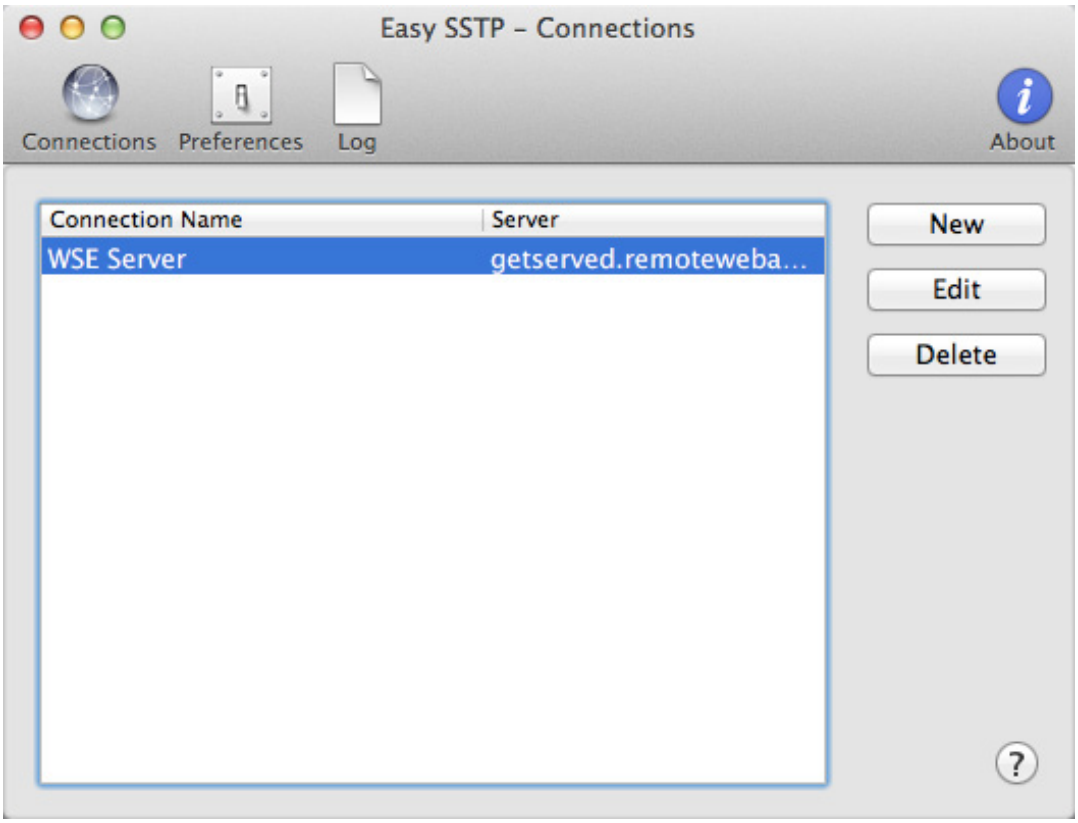
In the **Data encryption** section, select the second radio button - **Allow these protocols** - and make sure both boxes noted in the following example are checked, **Microsoft CHAP Version 2 (MS-CHAP v2)** and **Automatically use my Windows log-on name and password (and domain, if any).**

Click **OK** and once back in the Network Connections window, click the **Network** icon once again in the System Tray and attempt to connect to the server via your VPN connection.

Connecting an Apple Mac to the Server With VPN

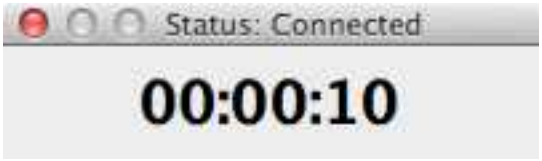
Whilst setting up a VPN connection to the server on a Windows client is pretty easy, life is a little more complex - principally because OS X does not natively support the flavour of VPN (with Secure Socket Tunneling Protocol (SSTP)) required for the connection.

Fortunately, there are a few free SSTP-supporting VPN clients available for OS X. I tested one called Easy SSTP which, once installed and opened, sits in your task bar and allows you to enter your server's remote web access URL, user name and password.

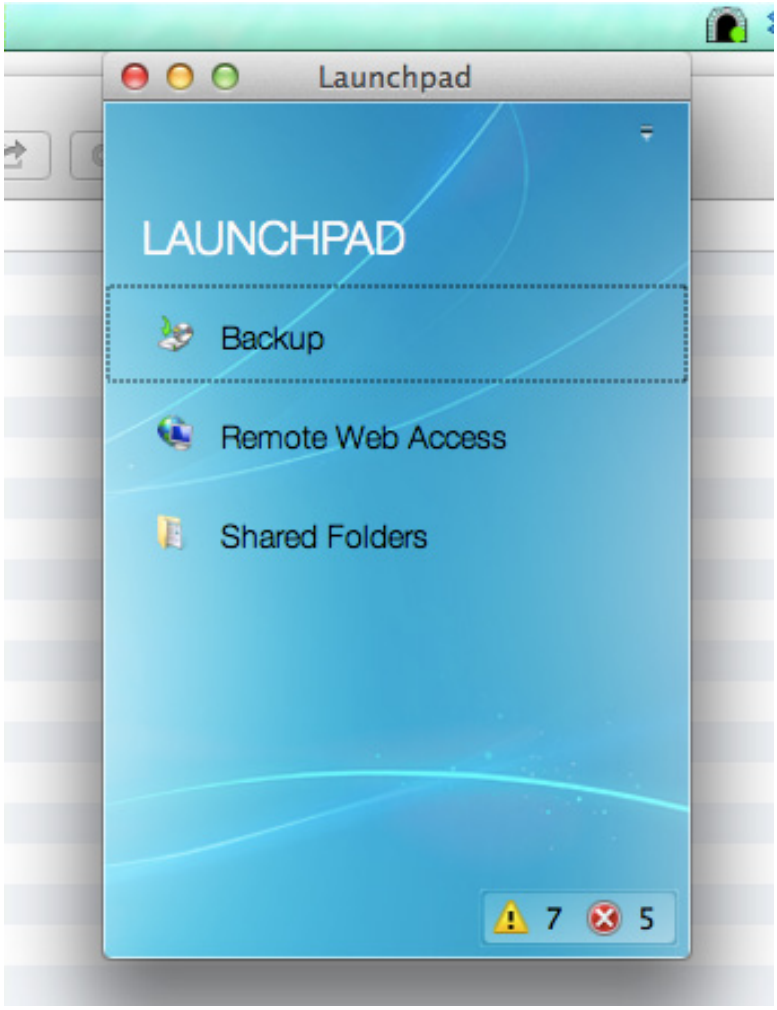


Easy SSTP creates a secure VPN connection from your Mac to the server.

Once configured, you can make a connection via the Easy SSTP drop-down menu. You'll see the app's red light turn to green when you're connected. A simple status panel shows you how long you have been connected.



Once connected, you can use the Launchpad and other features of Windows Server 2012 R2 Essentials on your Mac. Here's a screenshot taken whilst sitting on a train, with a remote VPN connection made via Easy SSTP from my Mac to the Server. The greed light next to the tunnel icon shows a secure VPN connection is established.



Once connected, you can use the Launchpad and other features of the server.

At this point, you are now accessing the your server through a secured VPN connection thus providing a significant layer of protection between your computer and any potential risks when it is connected to a public Wi-Fi access point.

Whilst RWA offers a great user experience with lots of features, VPN is generally considered to be more secure. The downside of using a VPN connection is that it is going to be somewhat slower than a direct connection.

That pretty much wraps all there is to know about Remote Access from a Windows Server 2012 R2 Essentials perspective. Unfortunately, it's not clever enough to do your work for you, but Microsoft's server platform will make it easier to remotely connect to the files and folders you need on the move!

Enhancing Windows Server 2012 R2 Essentials Media Support

"With Windows Server 2012 R2 Essentials focused on small business use, Microsoft took the decision in this release to remove some of the platform's media features. Like no one needs to listen to a little music or stream video at work! Fortunately, we can restore these features easily - let's do that now."

In the beginning, there was Windows Home Server. Windows Home Server was Microsoft's first serious attempt to create a simplified server platform that everyday users could enjoy. Now sadly deprecated, many of the Windows Server 2012 R2 Essentials features we've discussed in this book owe their existence to Windows Home Server - the Dashboard, Launchpad, Remote Web Access, Add-ins, Storage Spaces: all of these features and more can be traced back in some way to Windows Home Server.

Developed for home use, Windows Home Server also included media streaming features - the ability to store, share and stream music through Remote Web Access or to network devices around the home. As Microsoft subsequently evolved the Windows Home Server platform for use in the workplace, the decision was taken to remove media streaming support from Windows Server 2012 R2 Essentials.

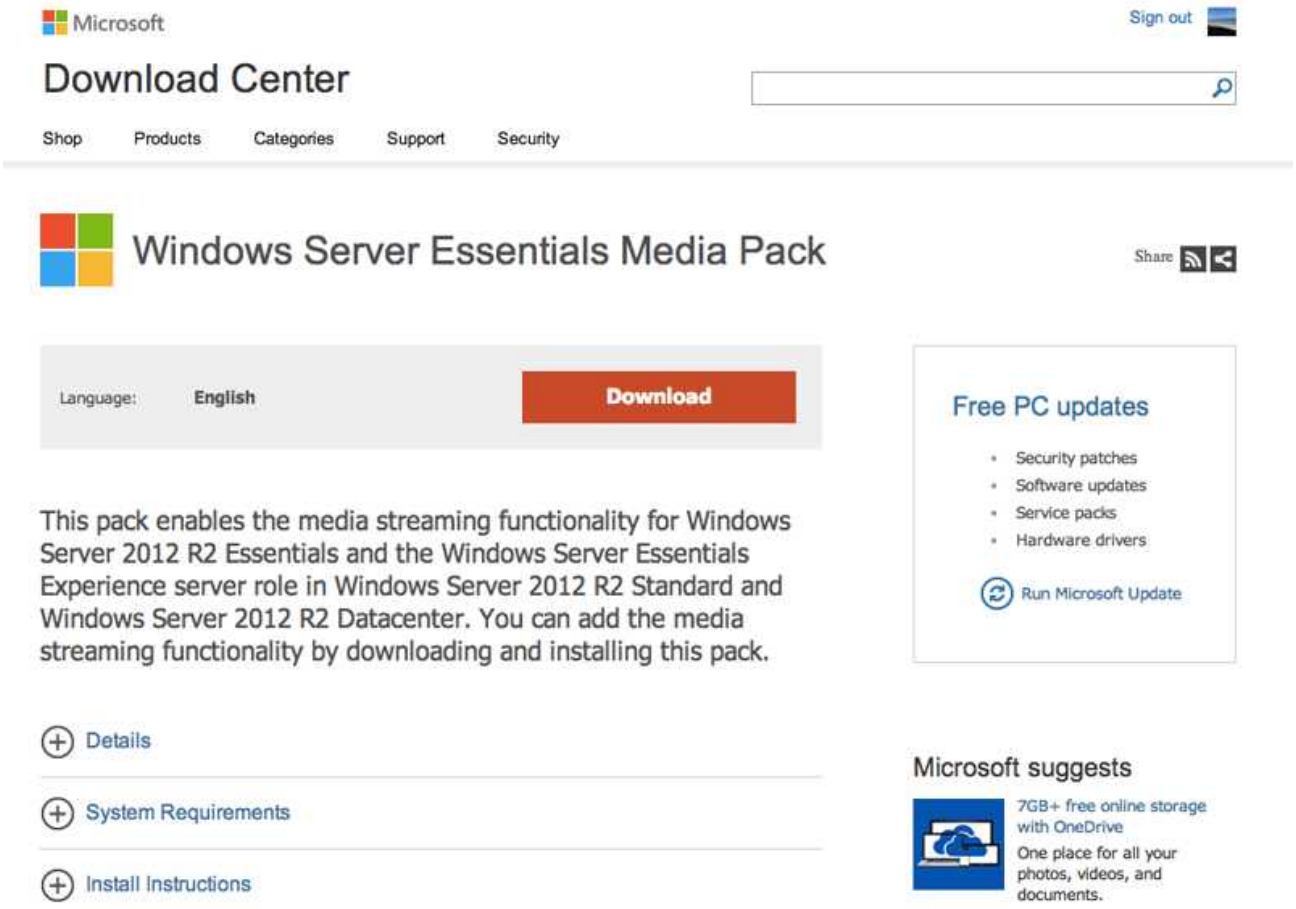
So, by default, media streaming functionality is unavailable in Windows Server 2012 R2 Essentials However, you can add media streaming features on the server by downloading and installing a **Windows Server Essentials Media Pack**. With the media pack on board, media streaming functionality makes it possible for computers and compatible media receivers to play music, video and photos stored on the server.

The server can be used to store and stream videos libraries to computers or other devices on the network, or remotely. When you turn on Media Sharing for the Music folder, you can access your music from a wide range of compatible devices, without the need for any additional user configuration. You can store your photos in a shared folder on the server and then access them from any computer, an Xbox One or Connected TVs in the home or office.

If they sound like the kind of features you'd like to enable on your server, let's get the Windows

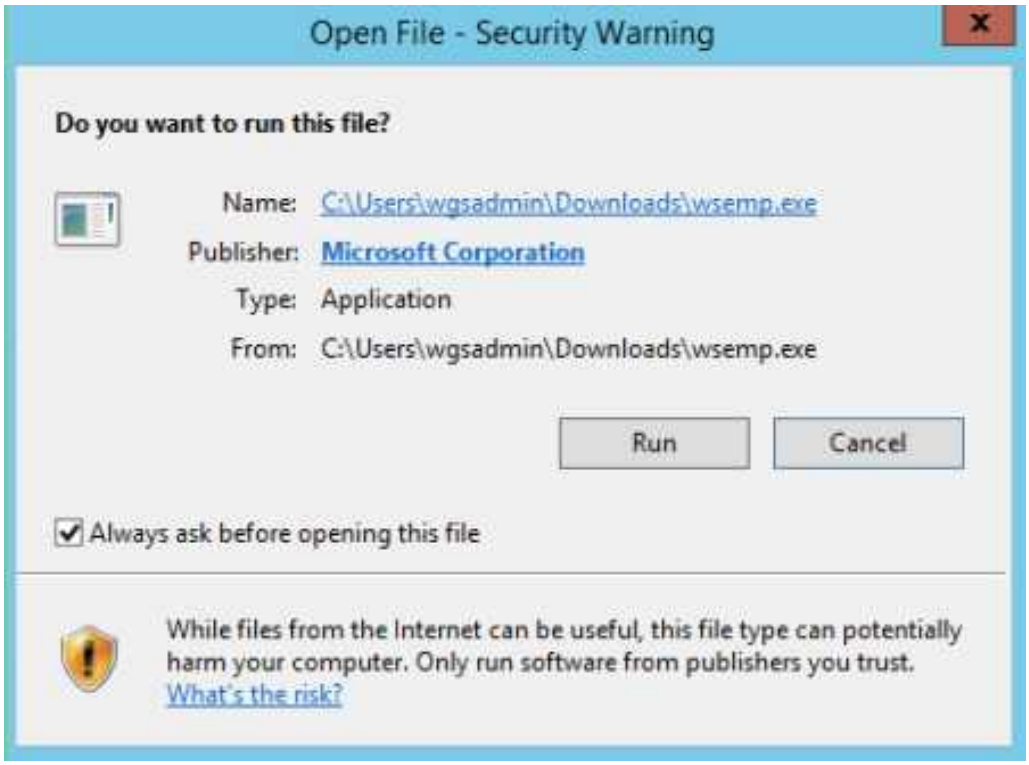
Installing the Windows Server Essentials Media Pack

The Windows Server Essentials Media Pack is a free download available from Microsoft's website (http://www.microsoft.com/en-us/download/details.aspx?id=40837).



The Media Pack can be downloaded for free.

Download the Media Pack on your server, and double click the file to install.



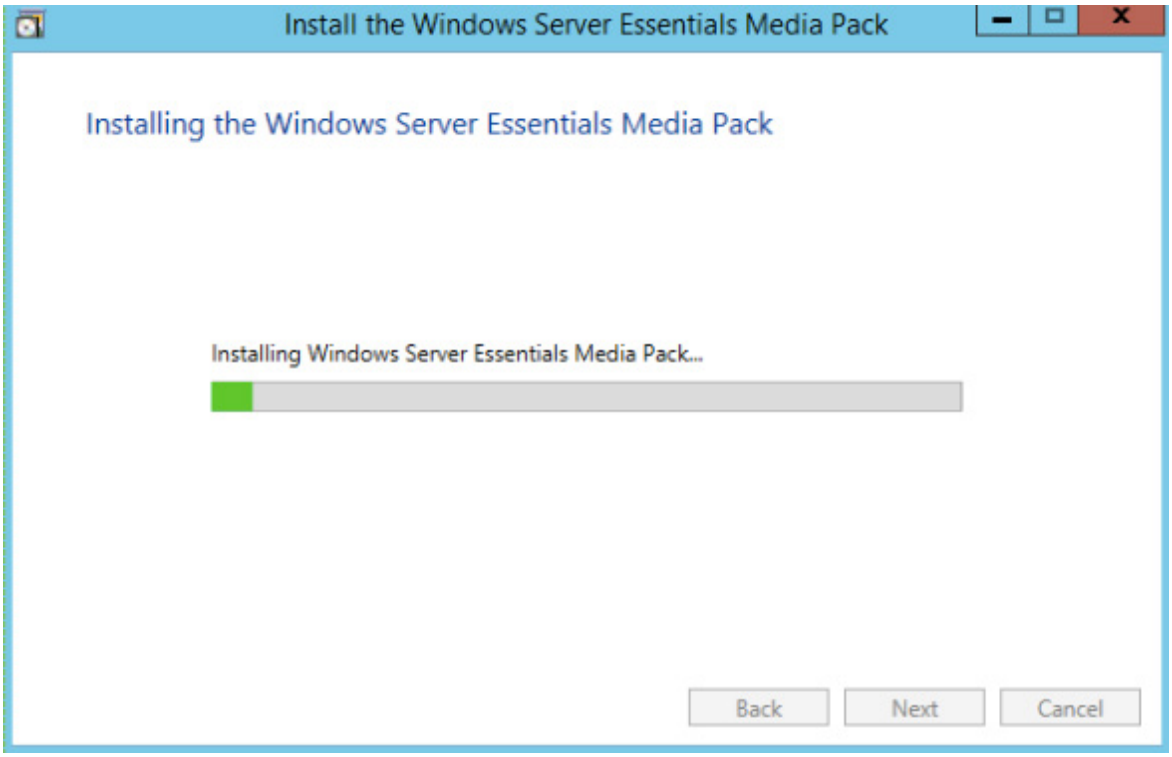
Installing the media pack.

As ever, a wizard guides you through installation.

The media pack installation wizard.

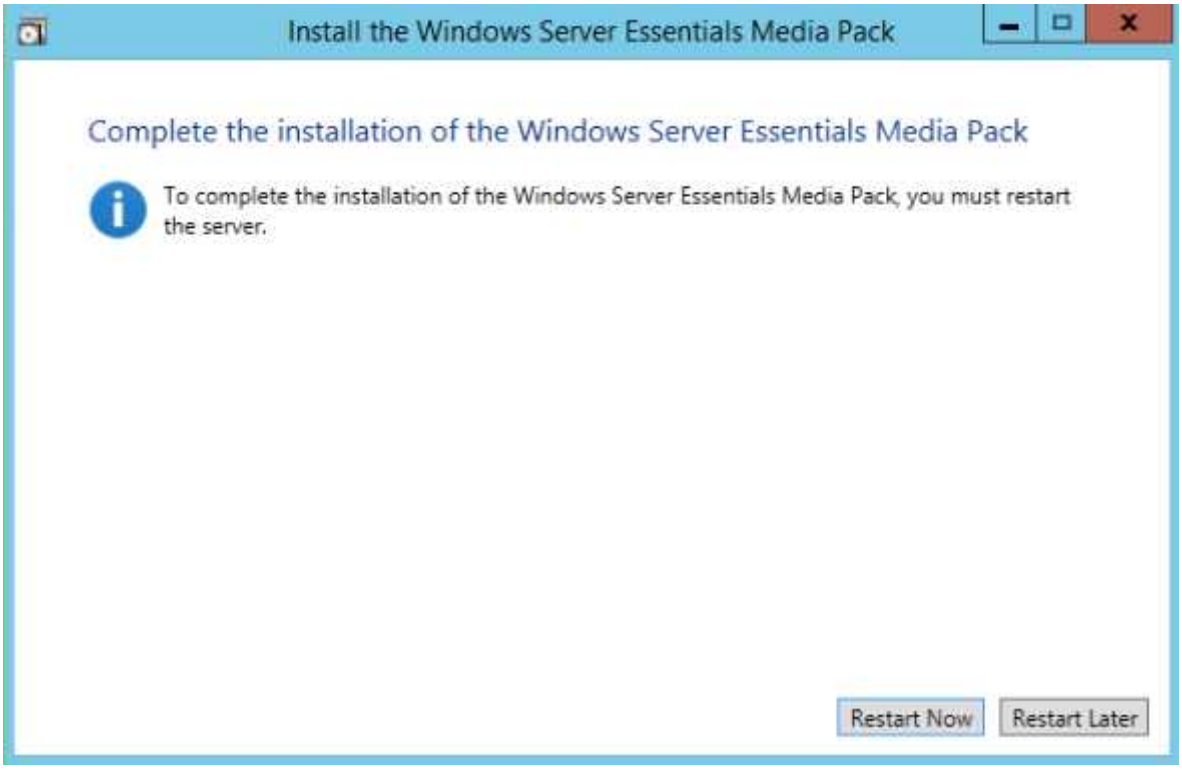
Accept the ever present license agreement, and the pack will install.

Check the box and click Next to continue.



The media pack installs.

Once the necessary bits have been installed on the server, which actually takes a few minutes, you'll need to restart the server.

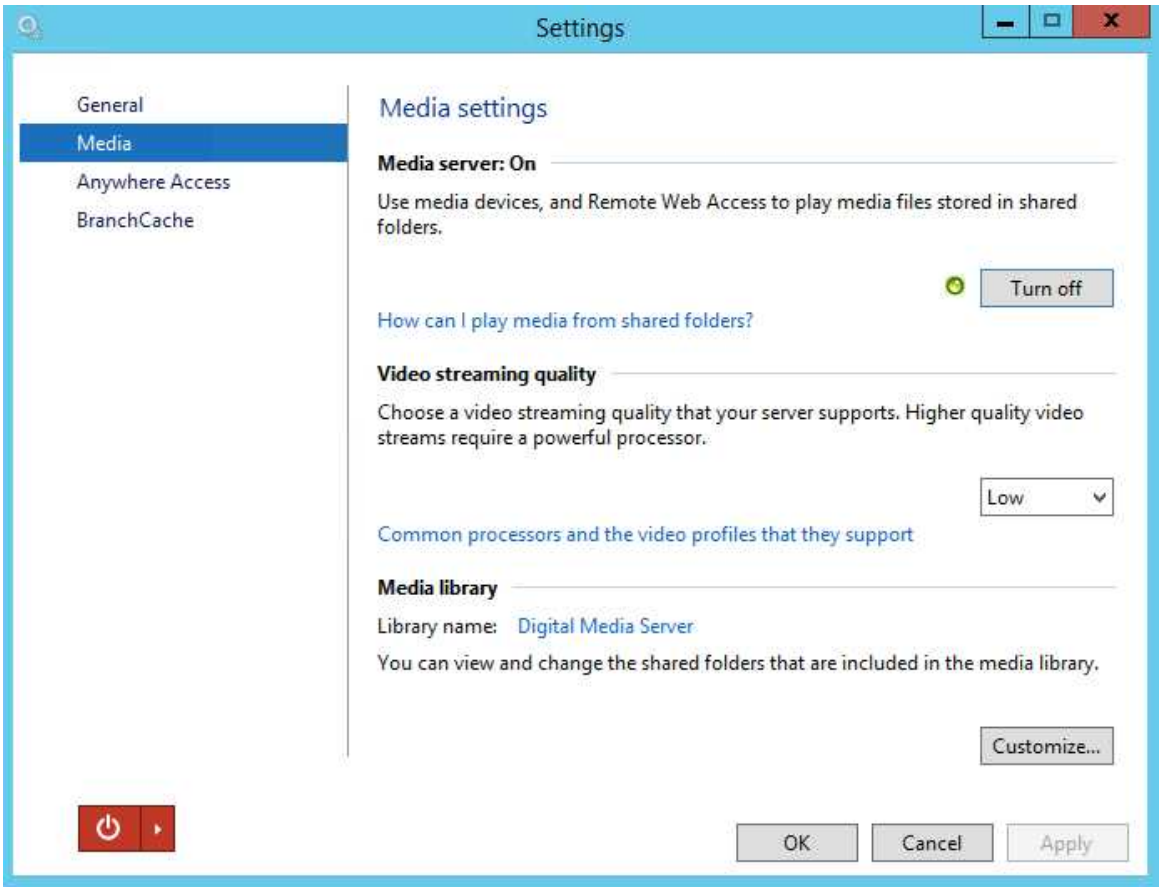


Restarting the server allows installation to be completed.

Hit **Restart Now**, and when the server is back up, open up the Dashboard and let's check out configuring the pack.

Enabling and Disabling the Media Server

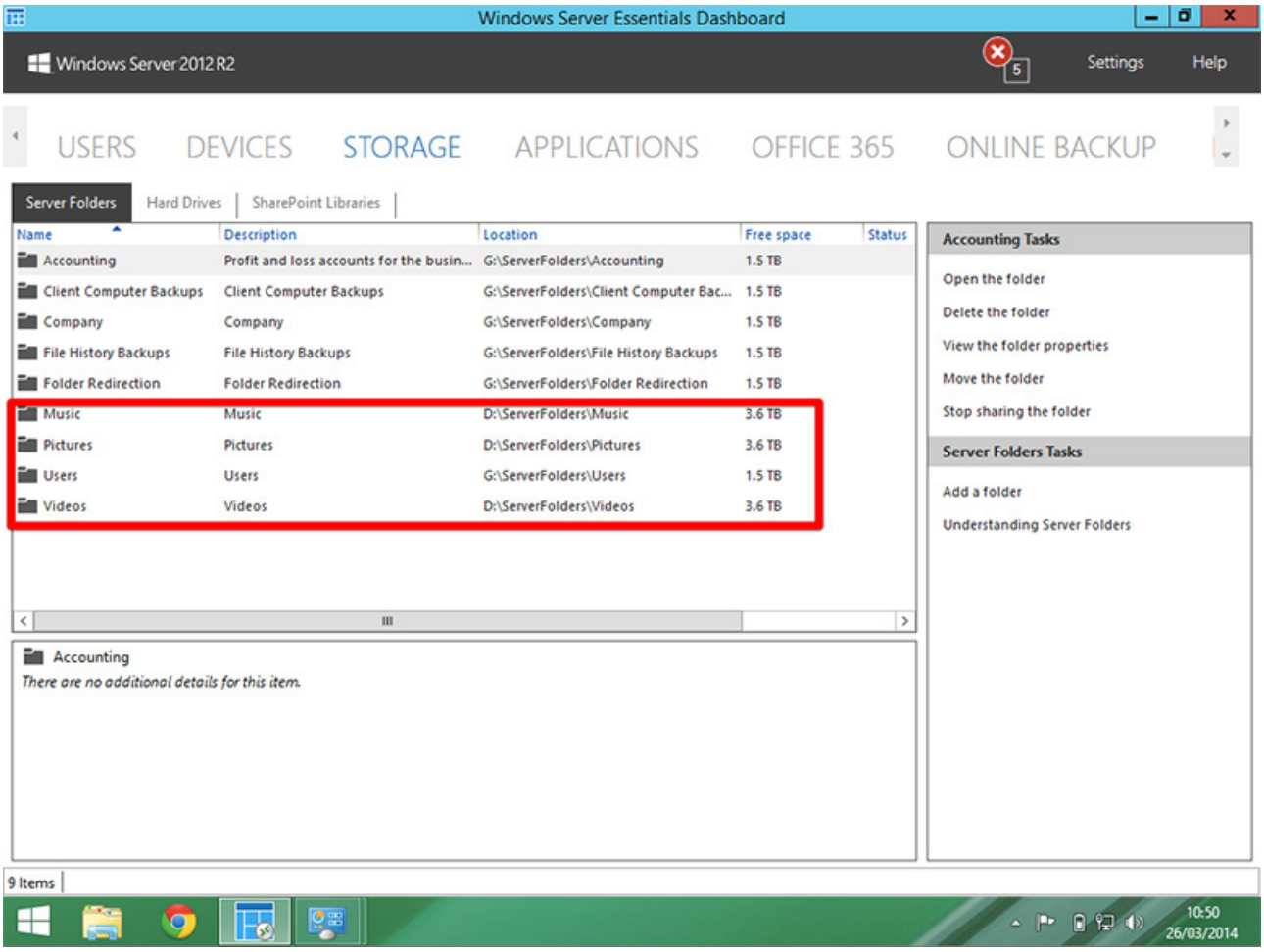
Once the Dashboard has loaded, click **Settings**. You'll see some options listed under a newly added **Media** tab.



The Media tab.

The media server is turned on by default and can be toggled with the **Turn off/Turn On** button at the top right of the panel. Changing the setting simply shares or stops sharing the media files stored in your library with network devices.

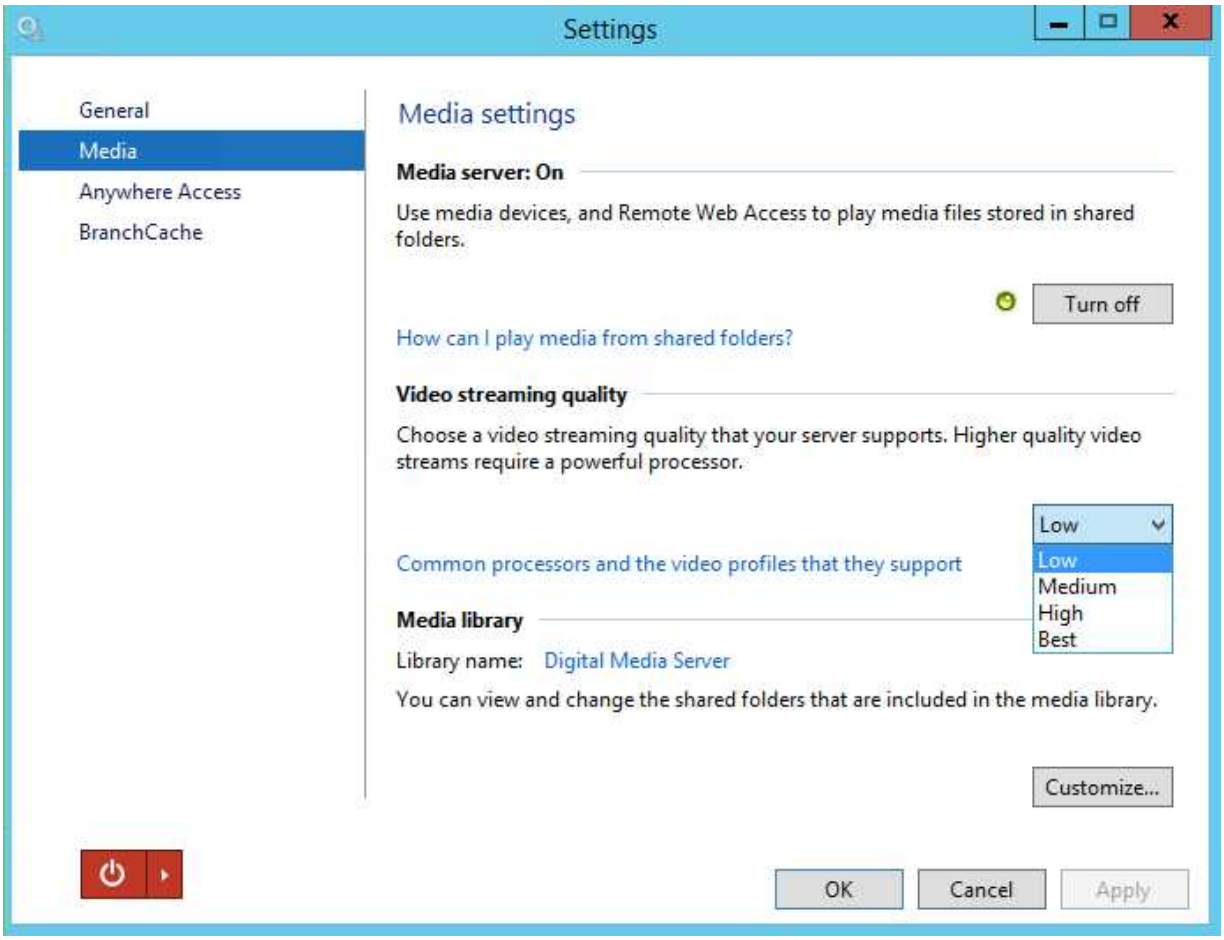
Now, let's quickly detour to the **Storage** tab where you'll see three new folders - Music, Pictures, and Videos - have been created on the server. As you've guessed, this is where you can store your media files.



New media folders have been installed on the server.

Managing Media Server Settings

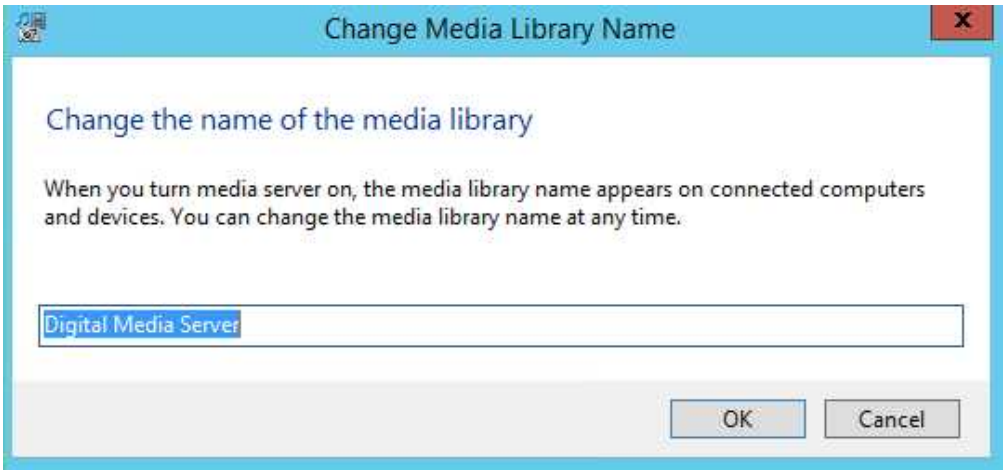
Back in the Settings panel, alongside the ability to switch the media server on or off, you'll see two additional options. **Video Streaming Quality** is an important setting that determines the quality if video that the media server plays - if you have a powerful processor on board, you can switch this to High or Best and your network devices will receive the highest quality video streaming performance (obviously the actual quality of playback is dependent on the quality of the original files too).



Use the drop-down arrow to select video streaming quality.

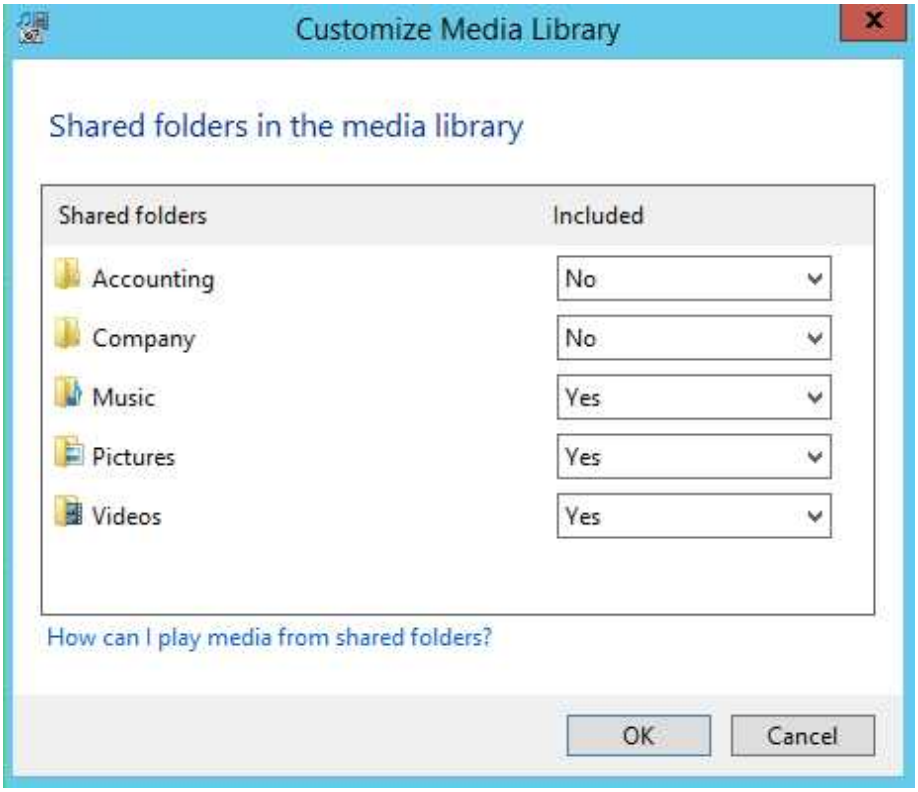
Which setting is best for your server? Unfortunately, there is no hard and fast rule, so you'll need to experiment. Work top down, selecting **Best** then trying to stream video over the network. If you experience stuttering, drop down a setting and repeat until video playback is smooth.

The final setting in the Media tab controls the name of the Media Library. This is the name that will appear in various media applications on the network and helps you identify the files stored on the server. Simply click on the library name to amend.



Naming the media library.

Don't miss the **Customize...** button here either. Clicking this allows you to change which folders are shared by the media library. That enables you to add a new folder to the server, and then share it through the media server. Only your music, video and pictures folders are shared by default.



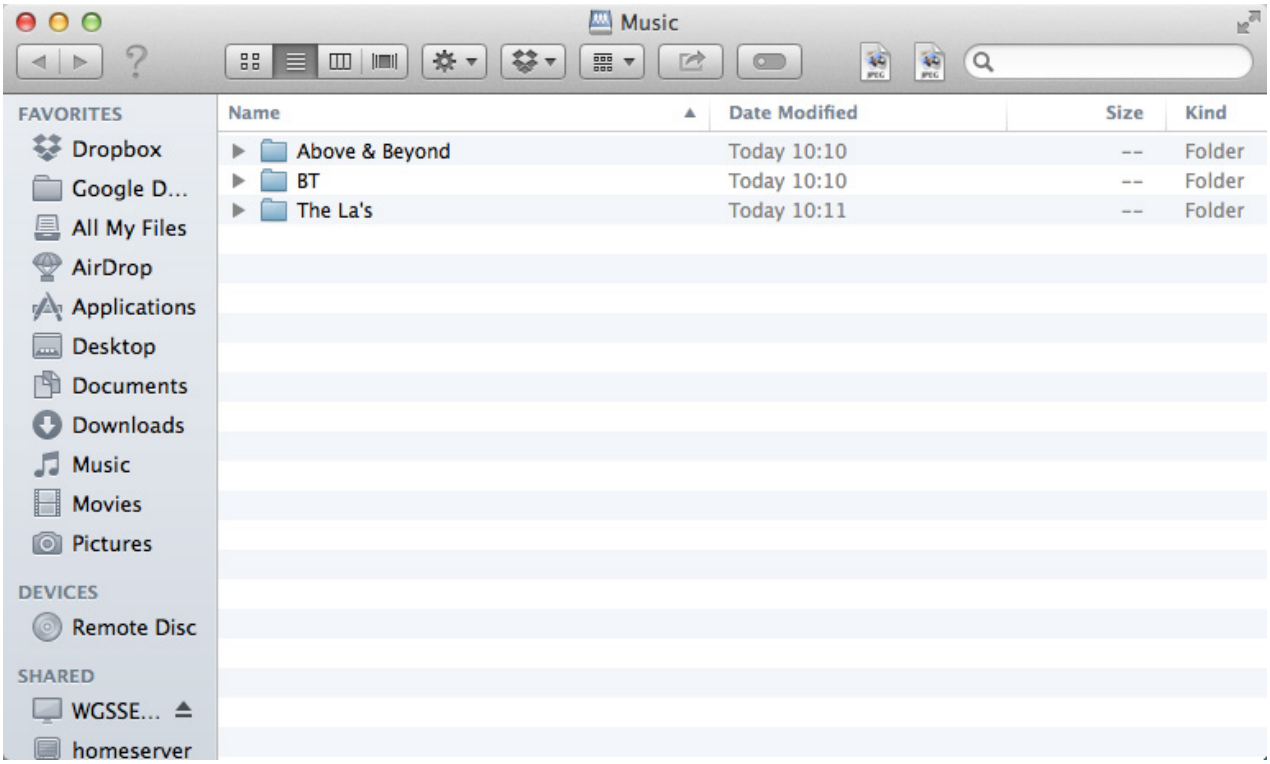
Selecting folders for streaming.

Note that Media Library Sharing bypasses any type of user-account access that you set for the shared folder. So, if you have previously set a user to have no access to a folder, and then subsequently share that folder through the media server, then the user will now be able to access media stored in the folder.

Playing Your Media

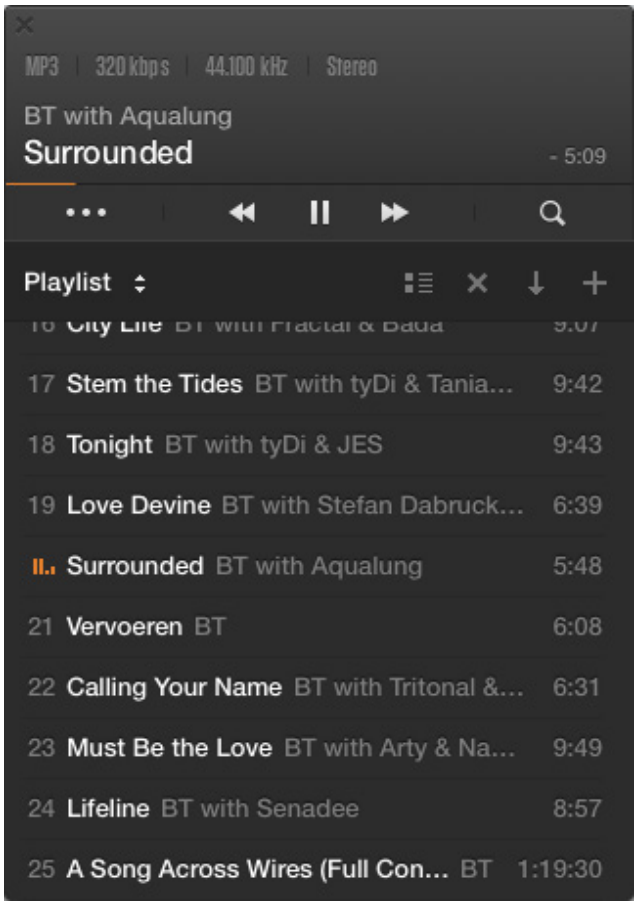
That completes configuration of the media server. All you now have to do is copy some media files over to your server and then the fun stuff begins! Populate your media folders with your music, video and pictures and then let's take a look at streaming.

You can access the media files stored on the server in a variety of ways, depending on the playback device. For compatible PCs and Macs, you could choose to open your server's shared media folders using the Launchpad.



Music files store on the server and accessible from Finder on an Apple Mac.

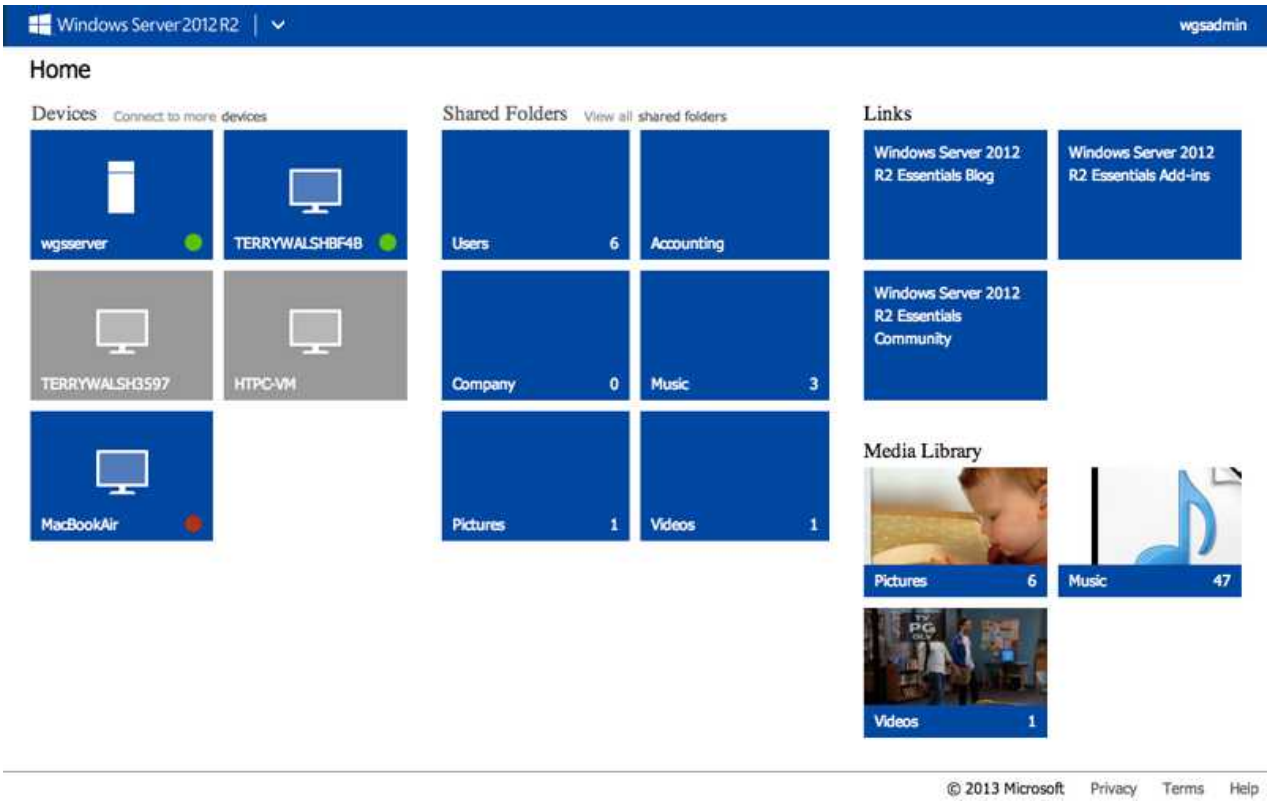
Alternatively, your media library should be discoverable in many popular media players.



Streaming music from the server.

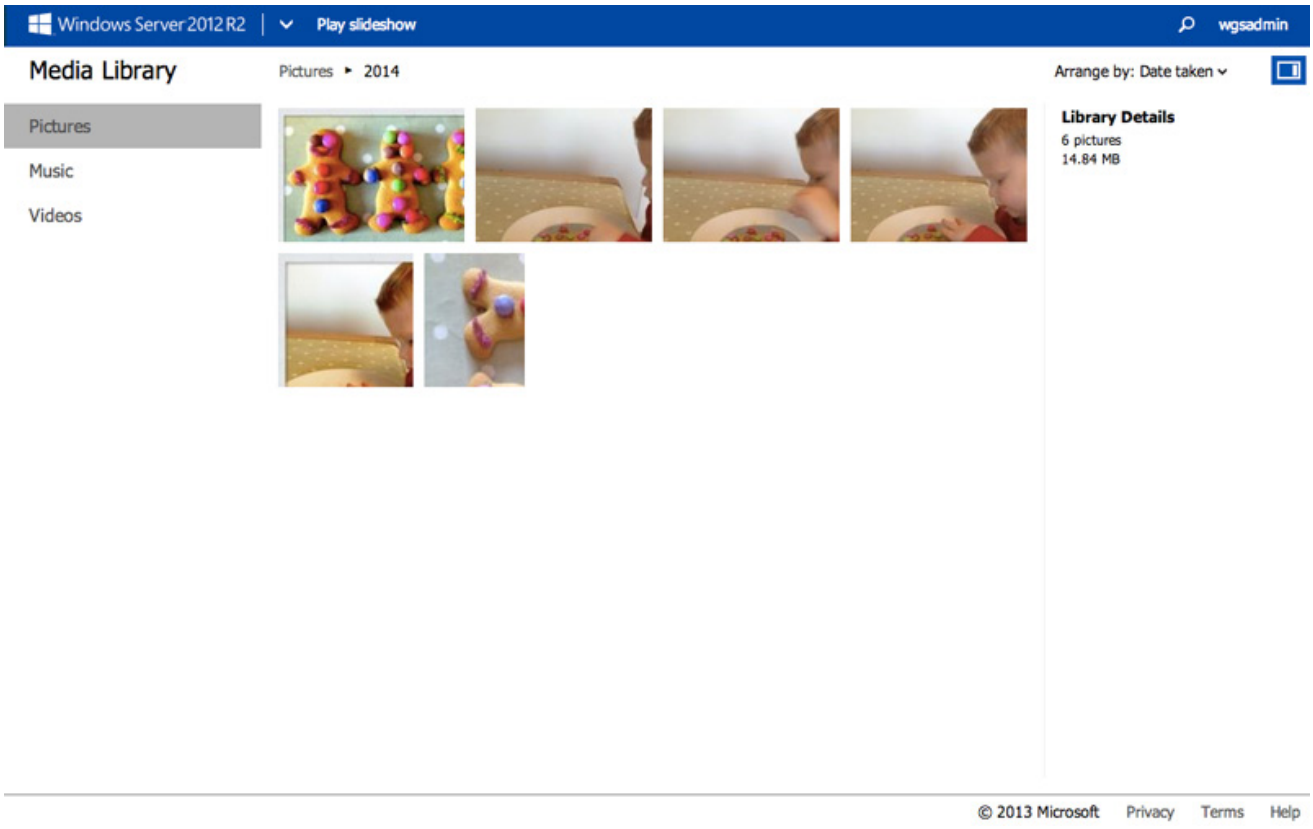
Streaming video from the server.

Of course, you can forego using any apps and head to your Remote Web Access site instead. That's right, when you install the Windows Server Essentials Media Pack, your remote access site is upgraded with an on board media streamer. Your media library will be available to check out on the bottom right of the portal.



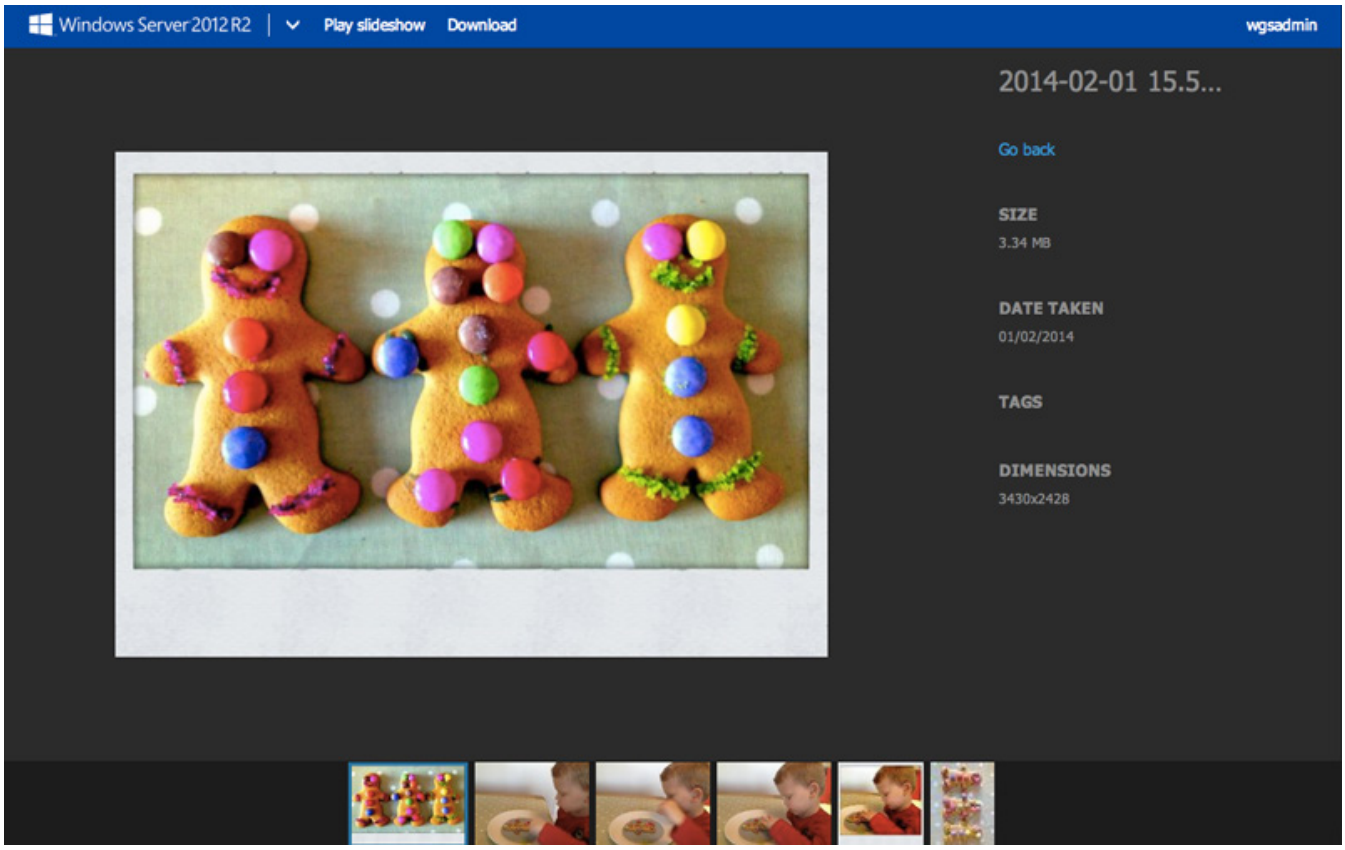
Media can be streamed remotely from your remote web access site.

Simply click on one of your media folders you view your files. You can view photos by folder, or group by date taken, using the sort bar at the top of the screen.



Viewing photos, automatically arranged by date.

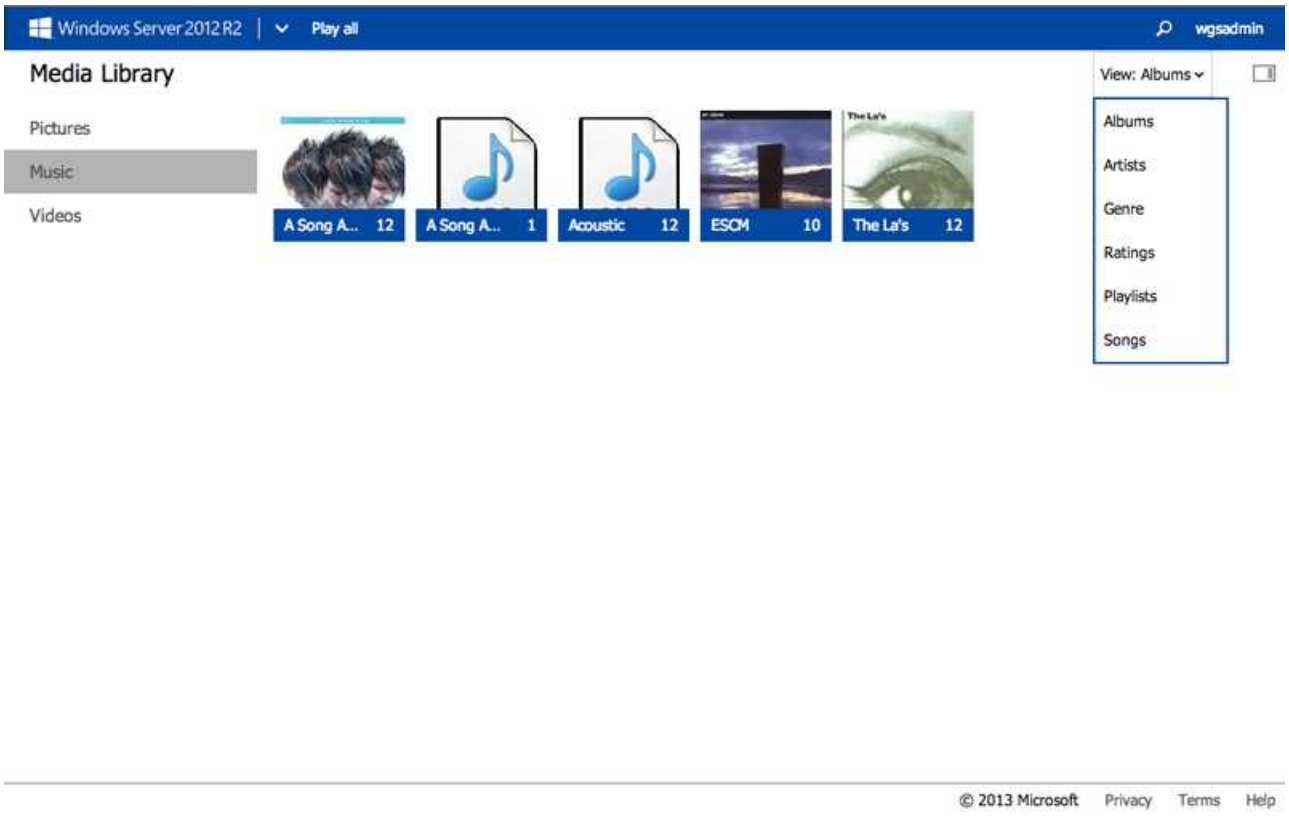
Click on a photo to view a larger version, and you can check out metadata such as date taken, photo file size and dimensions. A cool navigation bar at the bottom of the screen lets you browse the rest of your collection by thumbnail.



Photos are beautifully presented in Remote Web Access.

Links at the top of the screen allow you to download files locally to your client device or play a photo slideshow.

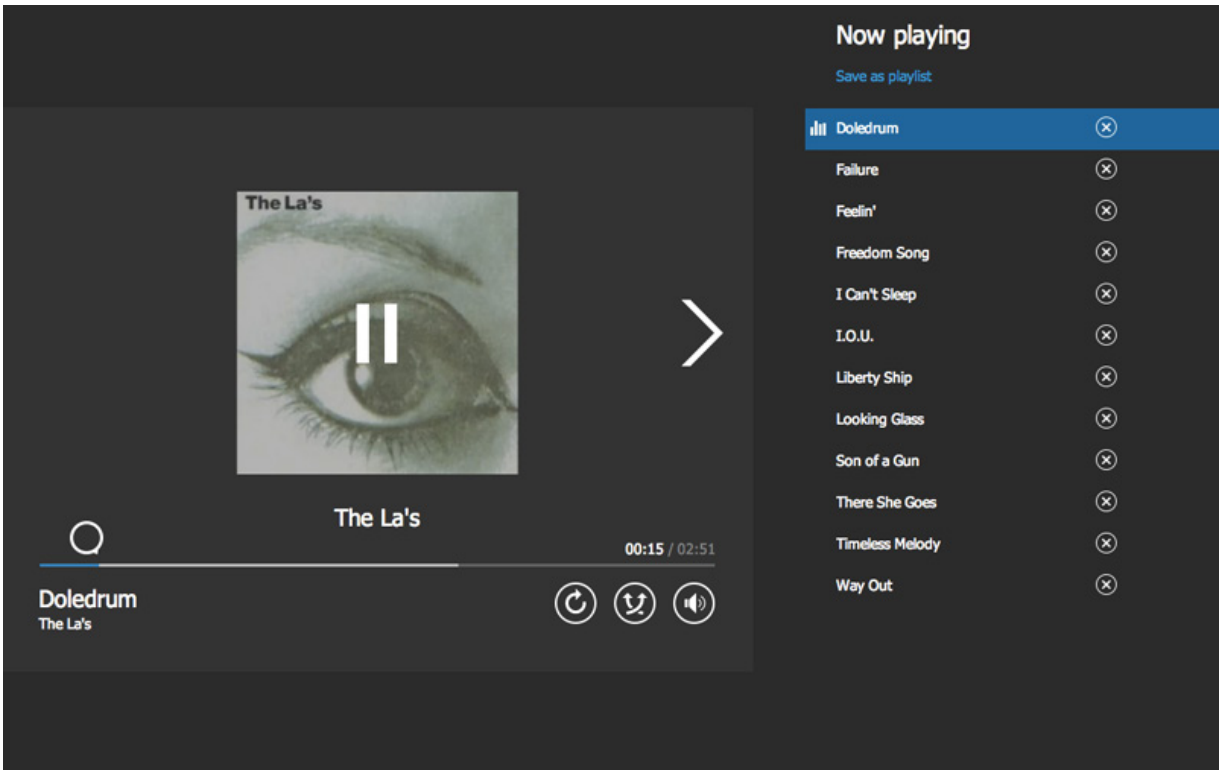
Music too is attractively presented in Remote Web Access, with sleeve art displayed if available.



Album artwork can be displayed.

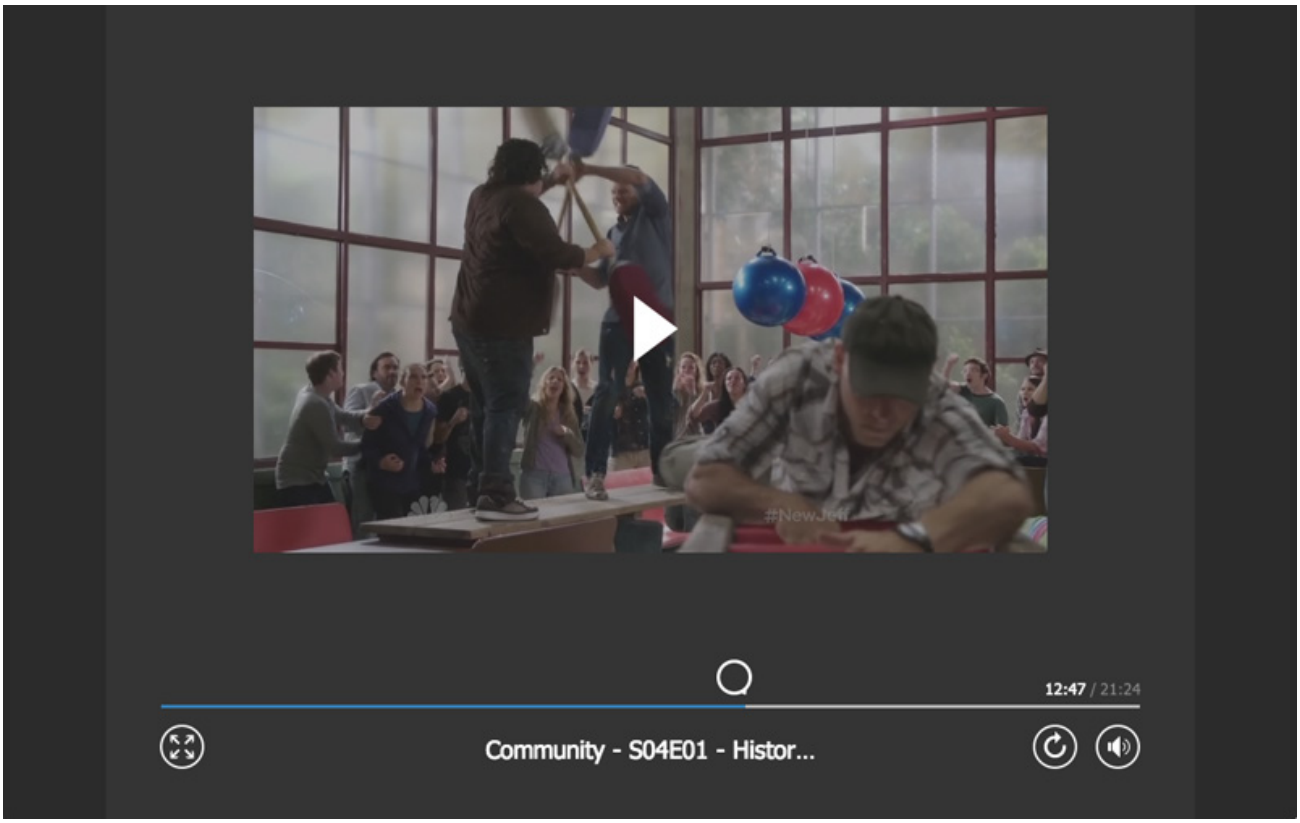
I've just included a few albums from my music collection, but if you have a larger library you can choose from a wide variety of views to aid navigation - album, artist, genre, ratings, playlists and song views are all available.

A full featured music player is included, allowing you to navigate through tracks, repeat and shuffle tracks as you wish.



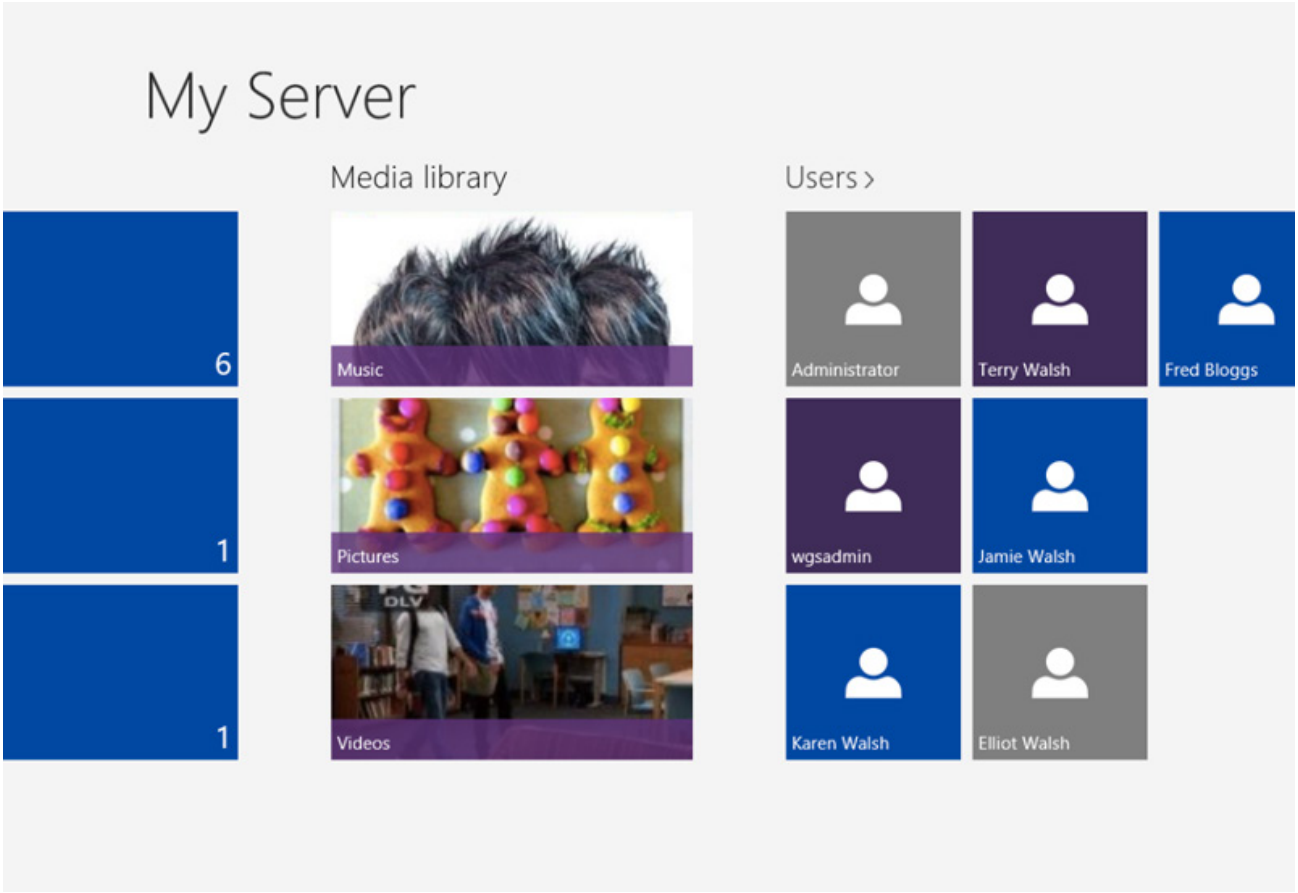
Streaming music from the server.

Of course, video is not left out - you can stream your video files remotely from the server, providing you have sufficient bandwidth.



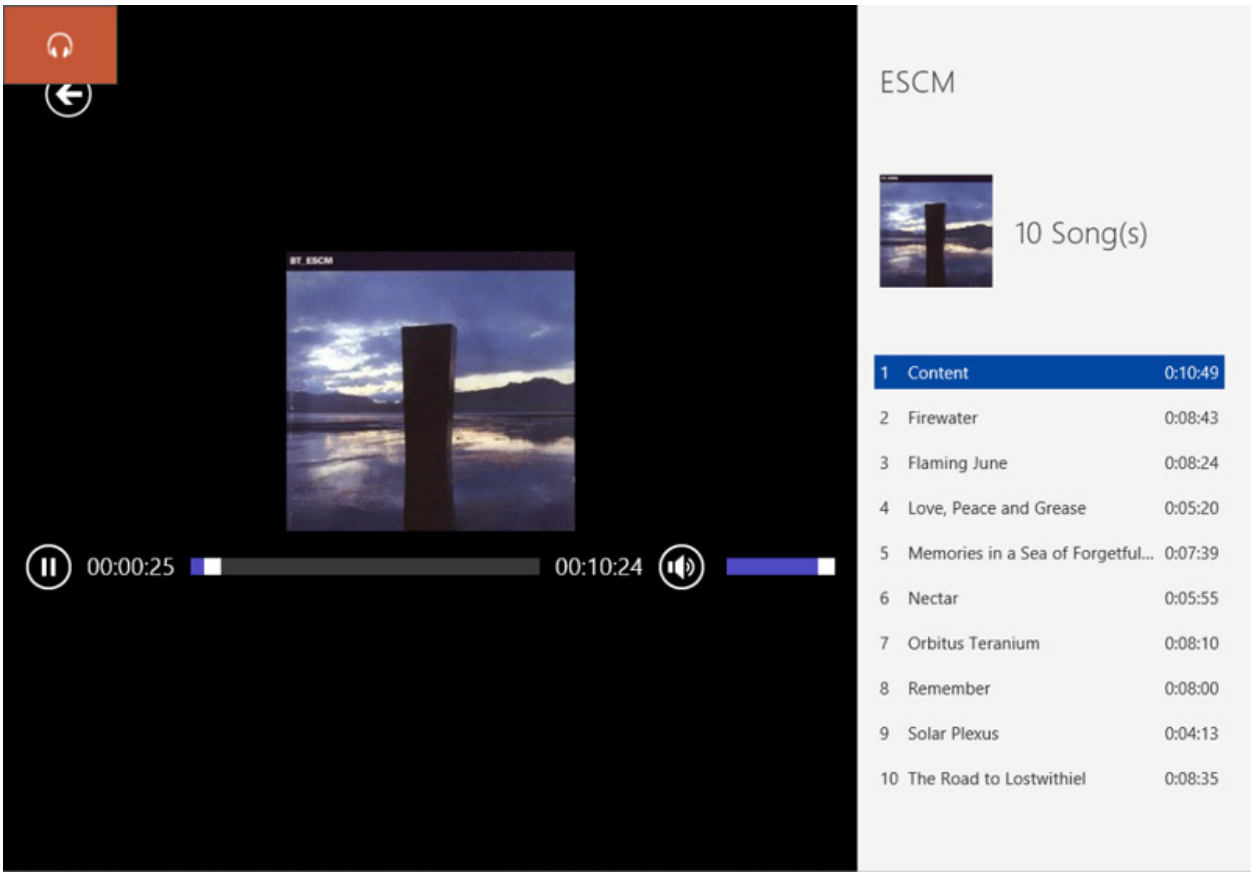
Viewing video from Remote Web Access.

Sadly, the streaming experience doesn't extend to mobile browsers but you can navigate to and download your media files from the server for remote playback - that said, if you're able to use the My Server 2012 R2 app for Windows and Windows Phone you'll be able to stream media from the server no problem.

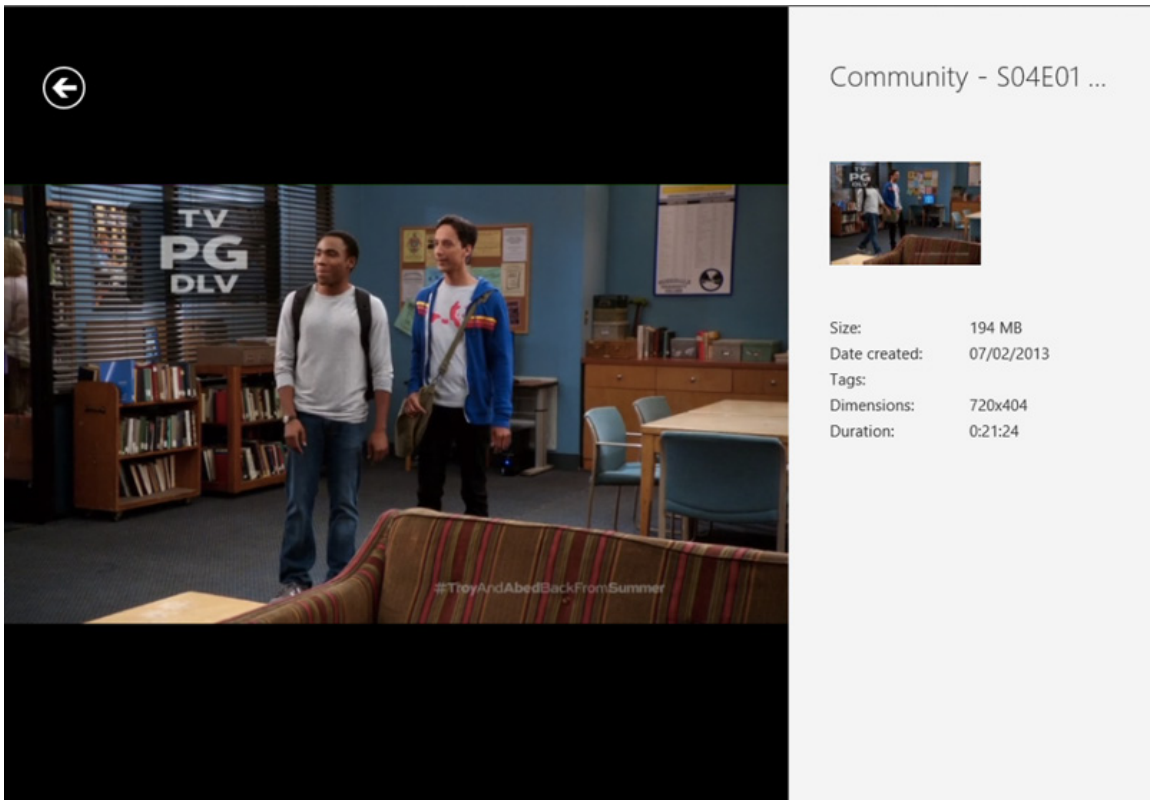


Media Libraries are available in the My Server 2012 R2 app.

Music, videos and photo can all be streamed with a fabulous user experience.



Streaming music in the My Server 2012 R2 app.



Video too can be streamed in the app.

Note that not every file format available can be streamed using Remote Web Access or the My Server 2012 R2 app, but mainstream formats such as mp3 and mp4 work without an issue.

So, when it's time to kick back from work and enjoy your music, video and pictures, with a little bit of assistance, Windows Server 2012 R2 Essentials makes for a great playmate as well as an awesome workmate. For SOHO and small business users in particular, that's got to be great news!

Protect and Restore Your Data

"In previous chapters, we have discussed various methods of protecting the most important component of any computer - the data that is stored on the server itself and on your client machines. In this chapter, we'll deep dive into protecting and restoring the data that drives your organisation."

So far, we have touched on:

- Data Redundancy
- File History
- Shadow Copies
- Folder Redirection
- Client Backup and Restore
- Server Backup

As you and I move more and more data from individual client machines to the server, the importance of protecting that data becomes increasingly critical. The ability to retrieve previous versions of a document is obviously important to many. As we become more mobile; as we use different PCs or devices depending upon our needs, we increasingly need our "identity" and our data to have the ability to move with us.

Hence the reason for the various data protection strategies and methods of data access that you now have as part of the Windows Server 2012 R2 Essentials "data protection" arsenal.

With such an important topic, I felt it best to have a dedicated chapter to review these strategies in one place, go into a bit more detail on each, and discuss backup strategies beyond what was discussed as part of the Essentials setup. So, let's recap our options.

First up on the list is:

Data Redundancy

Data redundancy is a general term that can be given to various methods or technologies that provide replication of your data on two or more hard drives. To the user, an array of hard drives set up in this manner appears as one contiguous drive. In the event of a hard drive failure, (or multiple drive failures depending upon the level of redundancy), the data remains intact and the failed hard drive can be replaced with a new working drive.

Data redundancy is in itself, *not* a form of backup. Data backup is a snapshot in time as one copies data from a source onto a remote destination. Perhaps the most traditional destination for businesses would be tape drives. Typically, a backup would occur over the evening hours and produce two physical copies; one on-site in the event of the loss of anything from a single file to the catastrophic loss of the server itself; one off-site in the event of the loss of an entire facility, through fire, flood or similar.

Data redundancy, on the other hand, is simply a form of real-time data protection (between backups) if you lose a hard drive. If multiple hard drives failed; if the computer were to totally malfunction; if a fire occurred, that data would probably be gone forever.

RAID (Redundant Array of Independent Disks) is the traditional technology employed to provide data redundancy, and is the basic technology behind many forms of drive redundancy in use today. One takes two or more drives, employs a RAID setup routine, and creates an array of drives that appears as one drive to the user. Various levels of RAID arrays can be utilised, the most common of which are:

- **RAID 0**
  Has no redundancy at all - it is simply a method to increase drive size and bandwidth performance. RAID 0 should never be employed in a business environment.

- **RAID 1**
  Typically involves a single pair of drives where the data on one drive is a mirror of the data on a second drive.

- **RAID 5**
  Uses what is called "block-level striping with distributed parity" to distribute data across three or more hard and protects the data in the event of the loss of single drive. Very large contiguous drives can be obtained using this method.

- **RAID 6**
  Takes a RAID 5 array one step further by allowing the loss of two drives in the array before data is lost.

In addition to the various RAID levels, RAID arrays can be software or hardware-based. Due the increased level of overhead required to maintain such storage configurations, software-based arrays can produce quite a penalty on system performance. Hardware-based arrays, on the other hand, take over the responsibilities of managing from the system CPU, delivering higher levels of system performance. You'll find the latter option available on many manufacturer-built servers, including Western Digital's Sentinel DS6100 Server which is pre-populated with Windows Server 2012 R2 Essentials.

When I say "traditional" RAID, what I mean by this is that the drives in the array are required to be of the same capacity and are typically grouped in arrays of the same model from a company. In addition, hard drive manufacturers have certain models that are certified for use in a RAID array.

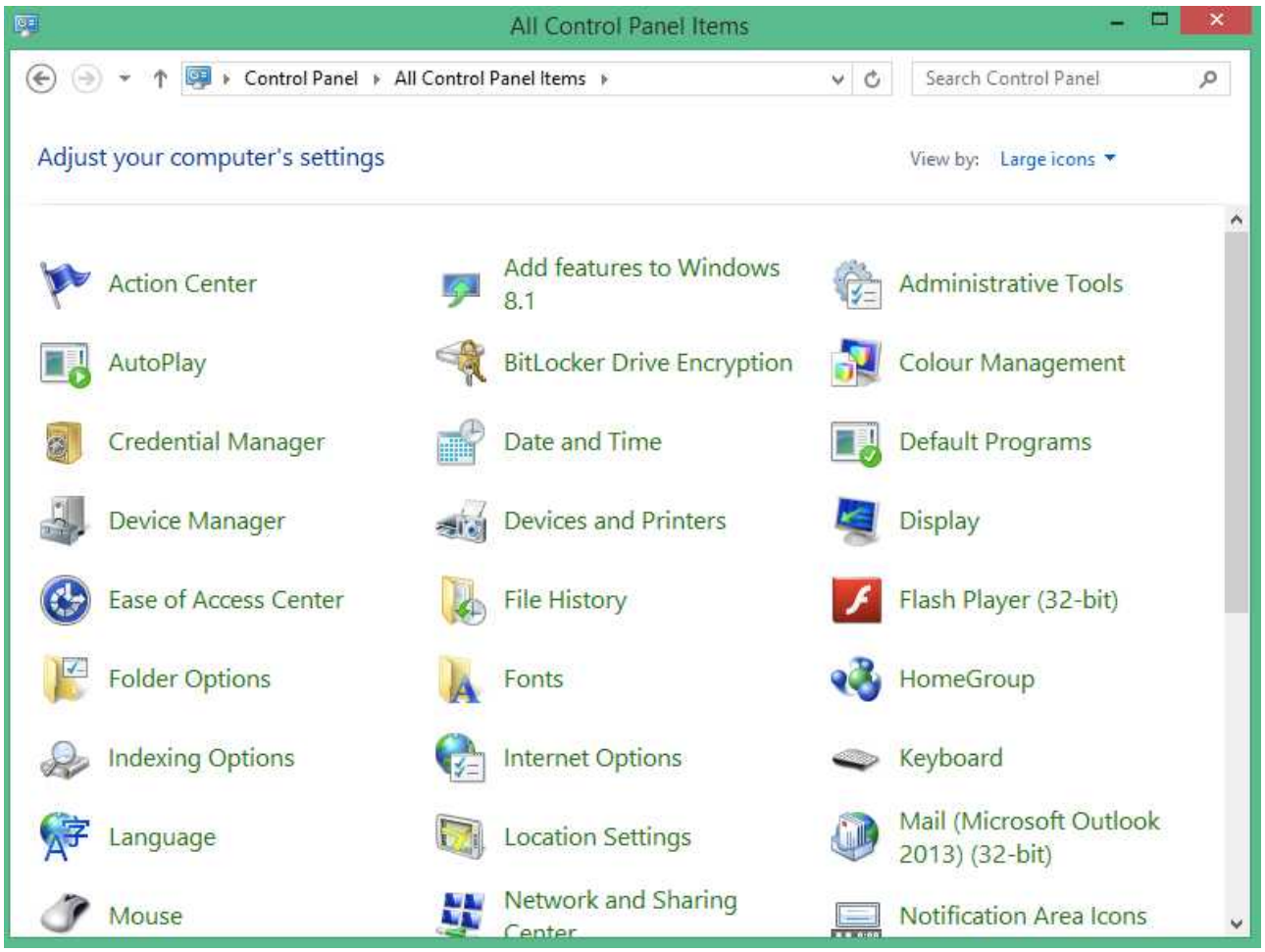
Times change and one of the more recent improvements in RAID technology has been various (usually proprietary) forms of "hybrid RAID" where disks of multiple sizes can be grouped together in storage pools.

Just about every NAS (Network Attached Storage) device on the market today has some form of "hybrid" array. There are solutions for Linux-powered computers. There are various solutions on the market today for Windows computers.

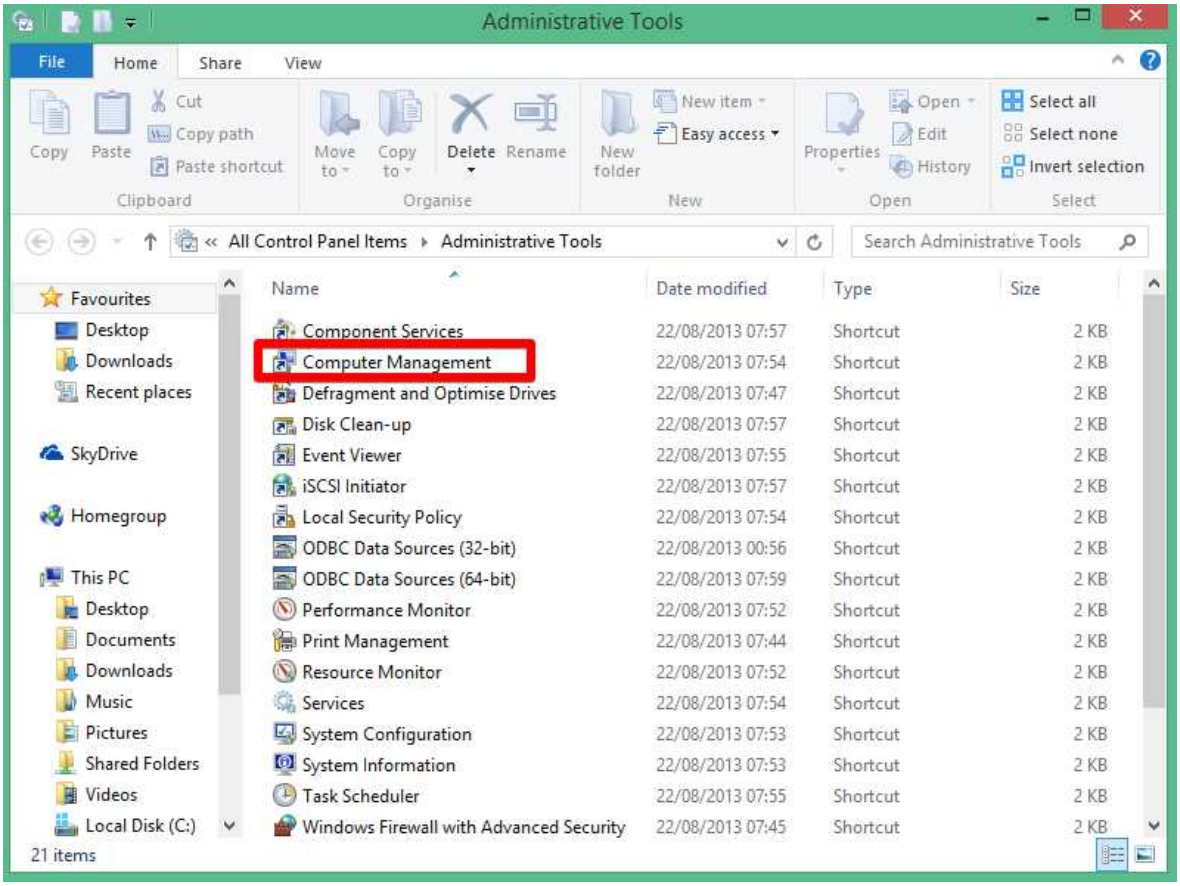
With the introduction of Windows Server 2012, Windows Server 2012 Essentials, and Windows 8, Microsoft introduced Storage Spaces. Storage Spaces is a software-based "hybrid" RAID solution that can be configured, in terms of equivalency, in RAID 1, RAID 5 and RAID 6 levels using drives of various sizes.

The recommendation here is that you should have some form of real-time drive redundancy, in addition to regular server backups. Whether that be through the use of Storage Spaces, or a traditional RAID array is up to you. Storage Spaces and traditional software RAID applications will be slower compared to a hardware-based RAID solution, which in turn is typically much more expensive than a software-based solution. Traditional RAID solutions require matched drive sizes, while Storage Spaces does not, which is its main advantage.

If you are considering a Storage Array, please refer to Chapter 14 for the process to create a an array. For those who would prefer to stick with a traditional software-based RAID array, Microsoft provides the tools to create such in array in **Computer Management.** Access Computer Management via **Control Panel > Administrative Tools > Computer Management > Disk Management.**

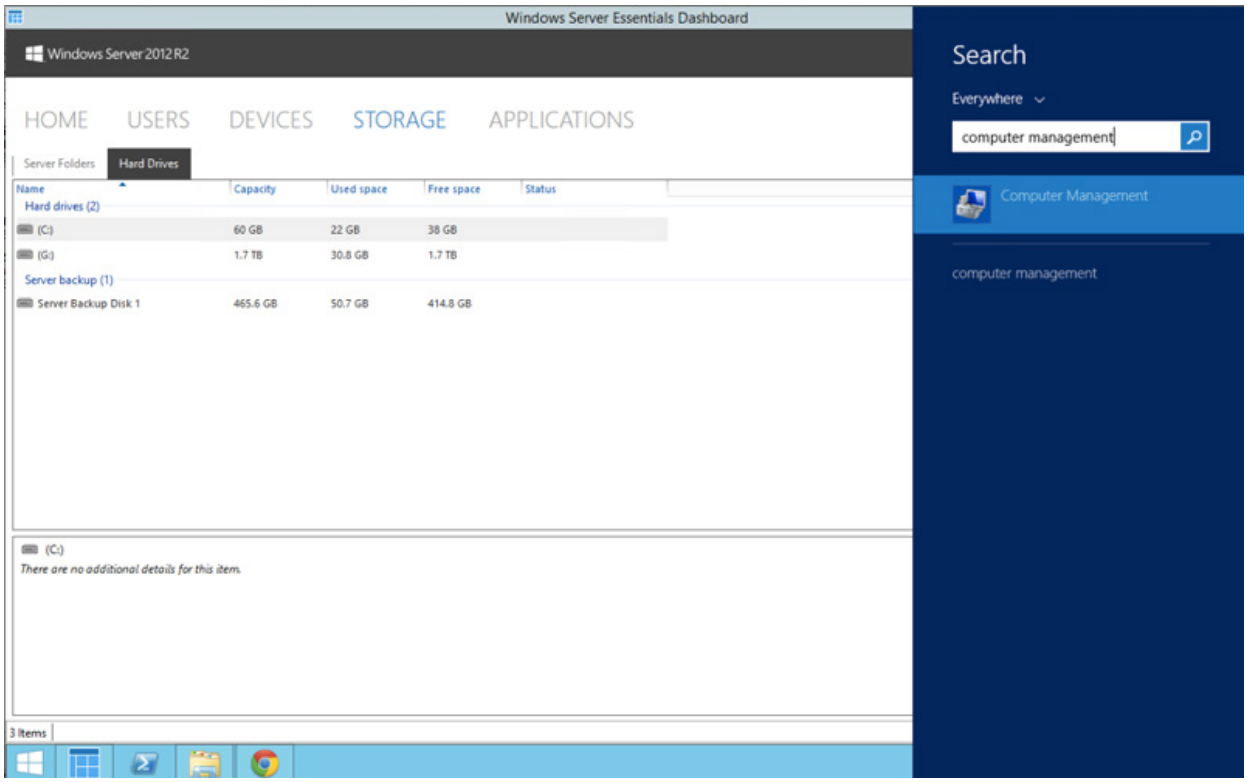


Administrative Tools in Control Panel.



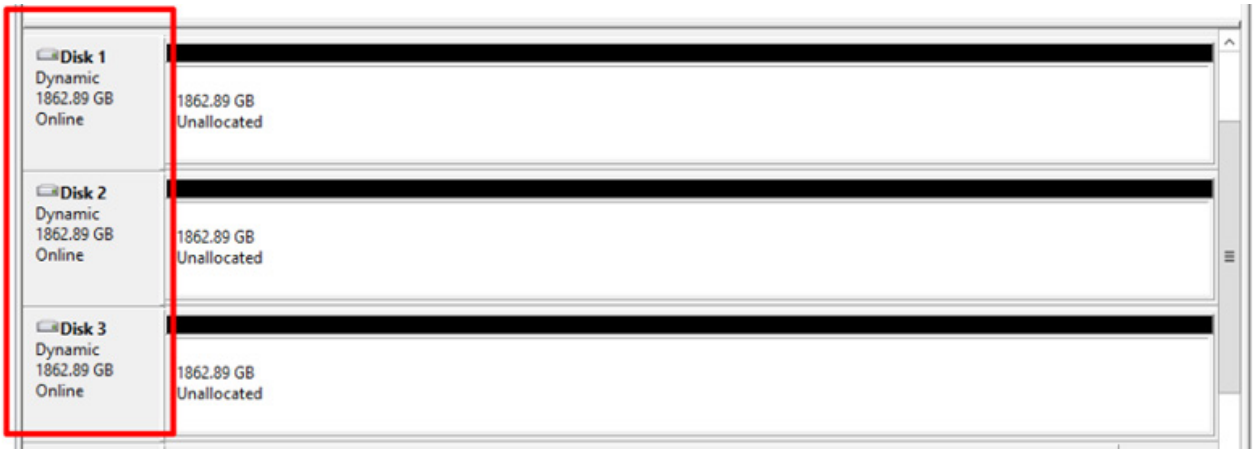
Computer Management in Administrative Tools.

Alternatively, just use the Search option in the Charms bar to find Computer Management.

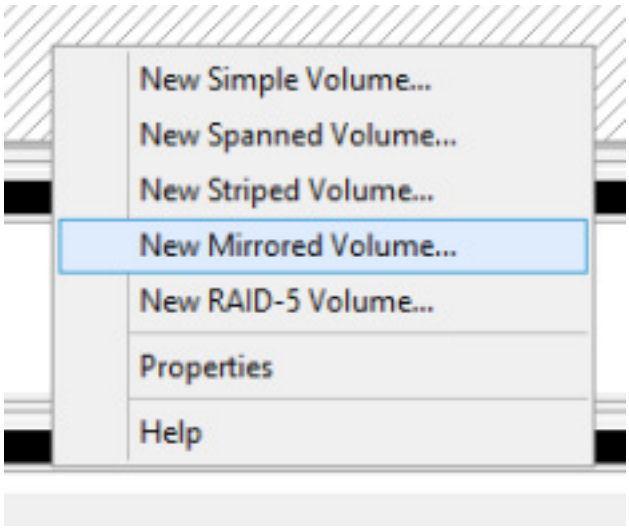


Searching for Computer Management.

In the example below, I have three hard drives that are currently unallocated and unformatted. Consequently, you cannot see these drives in Windows Explorer.



To create a RAID array, right-click on a drive. This brings up the menu illustrated in the following screen shot. The options are as follows:



Array choices.

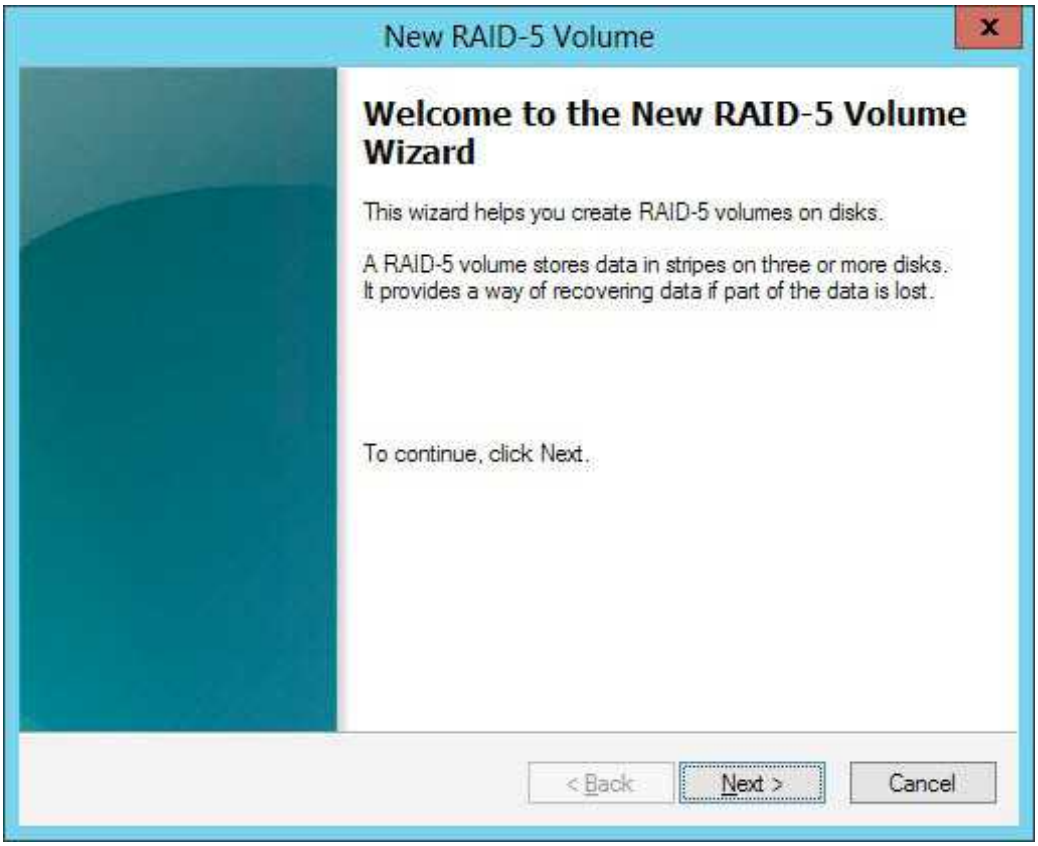
- **New Simple Volume**
  This option simply initializes, formats, and assigns a drive letter to a disk.

- **New Spanned Volume**
  Creates a "spanned" array of disks that are seen as a single drive. This option provides no data redundancy and therefore no protection if a drive is lost. If you lose a one drive, you lose all the data on a spanned volume.

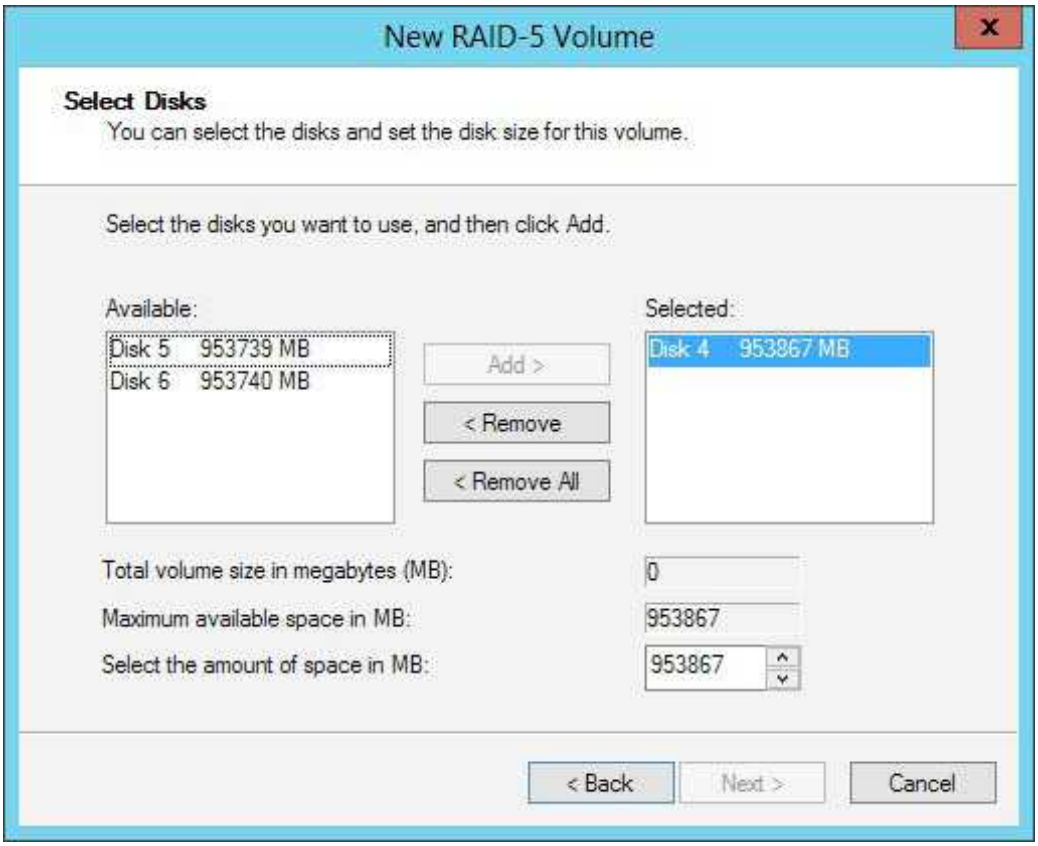
- **New Striped Volume (RAID 0)**
  Is similar to a spanned volume but the manner in which the data is written to the drives is different. As with spanned volumes, this option provides no data redundancy and therefore no protection if a drive is lost. If you lose a one drive, you lose all the data on a striped volume.

- **New Mirrored Volume (RAID 1)**
  This option creates sets of drives where the data is duplicated (mirrored) from one set to a second set. If you have (2) 1 TB drives, the resultant array is seen a single 1 TB drive. If you lose a drive, you are protected from data loss.

- **New RAID-5 Volume**
  This option uses parity to write and manage the data across multiple drives. A RAID 5 array can lose a drive without data loss, as with a Mirrored Volume, however the resultant capacity of a RAID-5 array is higher. An array of (3) 1 TB drives is approximately 2 TB.

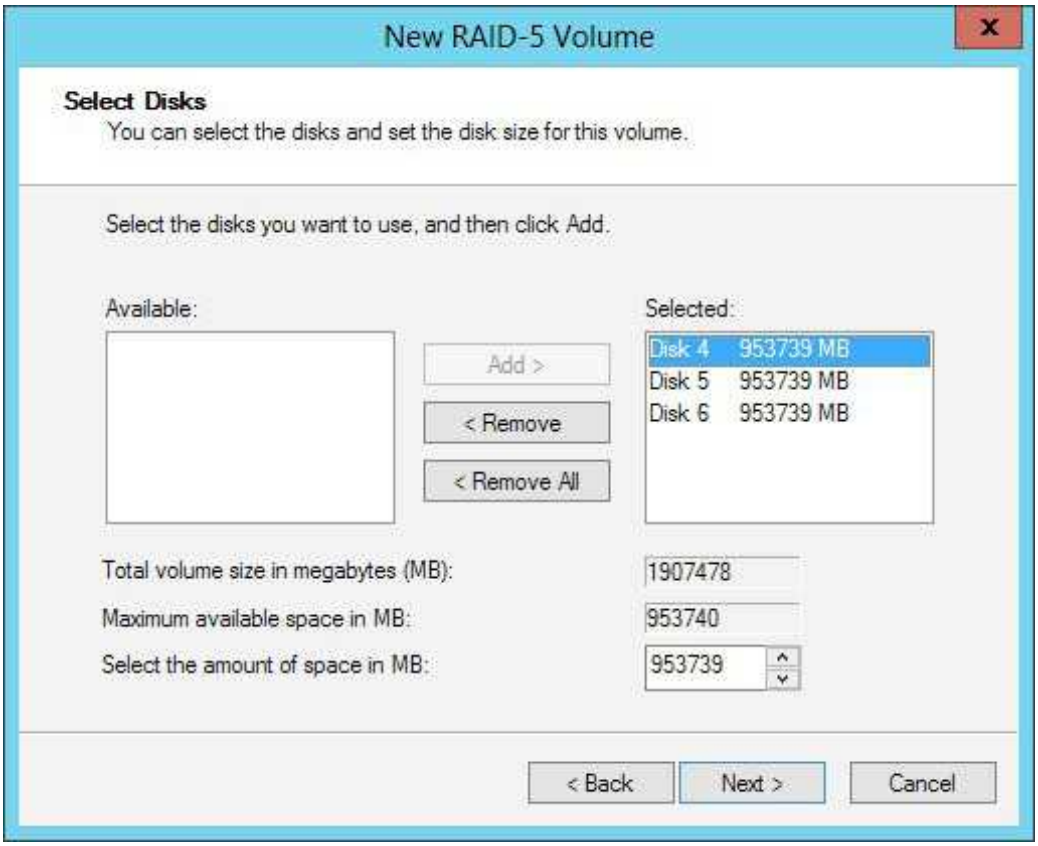


In this example, we are going to a RAID-5 array, so we will choose the appropriate option and proceed through the wizard to create the array.



Creating the RAID 5 array.

In my example here, I started with Disk 4 to create my array, and in the next two screens, we are provided with a list of disks we can add to the array (3 minimum required). Highlight a disk and click on the **Add** option to obtain the result below.

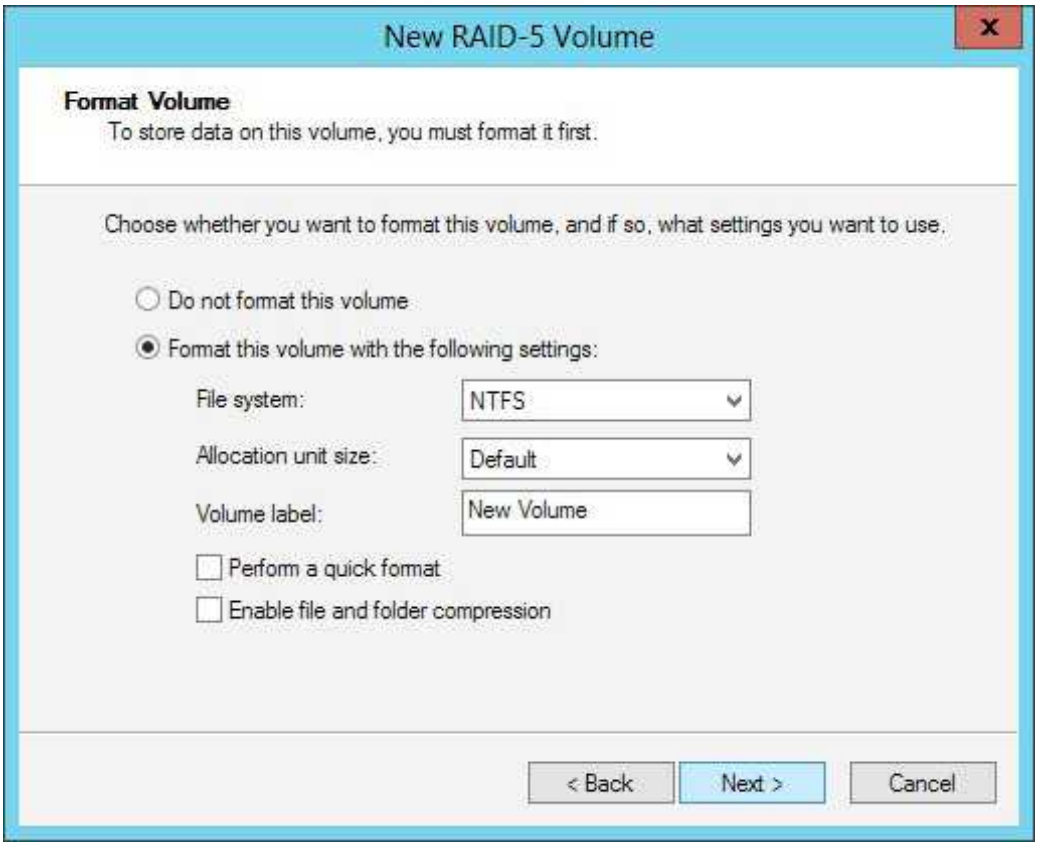


The drives are added.

In the next screen, we are given the option to assign a drive letter to the array.

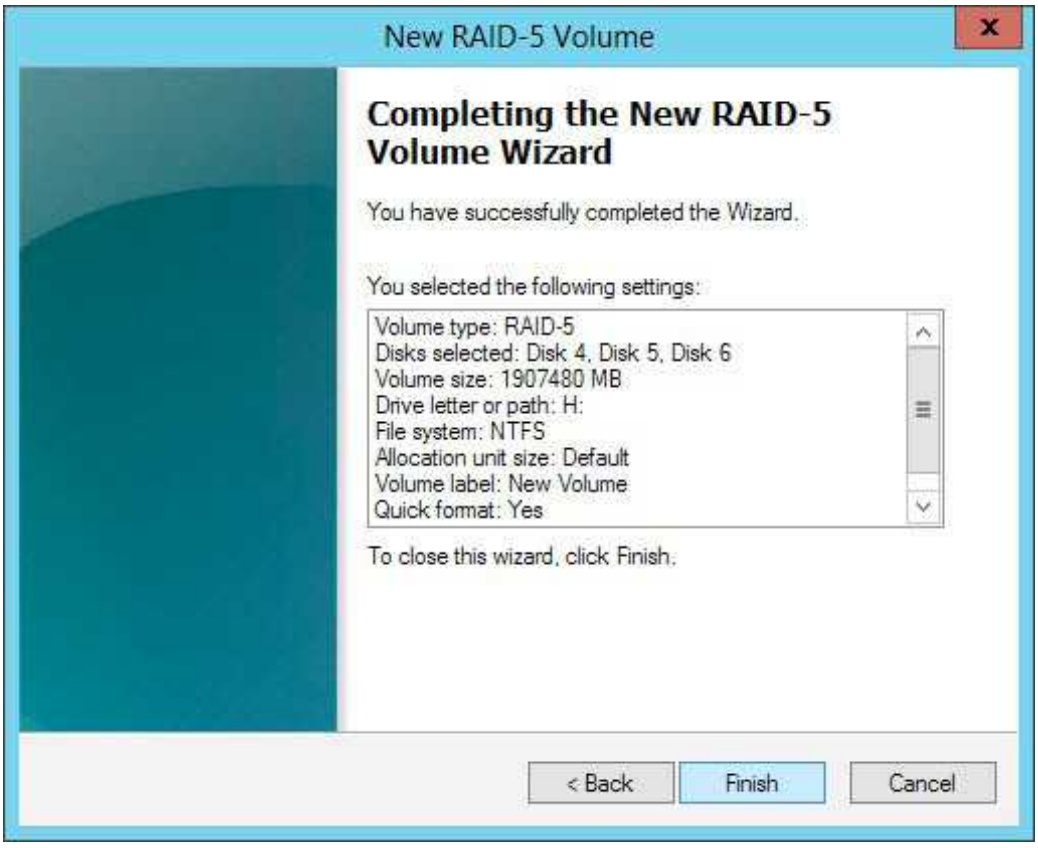
Assigning the drive letter.

Next, we are given the choice to format or not to format the array. Choose the defaults listed. A **Quick Format** is sufficient for most applications, and it is **much** quicker than a full drive format (minutes vs. hours!). However, if you feel the need to check the drives for bad sectors, etc, you may want to leave this option unchecked.



Formatting options.

The wizard completes with a dialog, alerting you if necessary, on conversion of a disk from a "basic" to "dynamic" format.



The wizard is complete.

Click **Yes** to create the RAID-5 array.

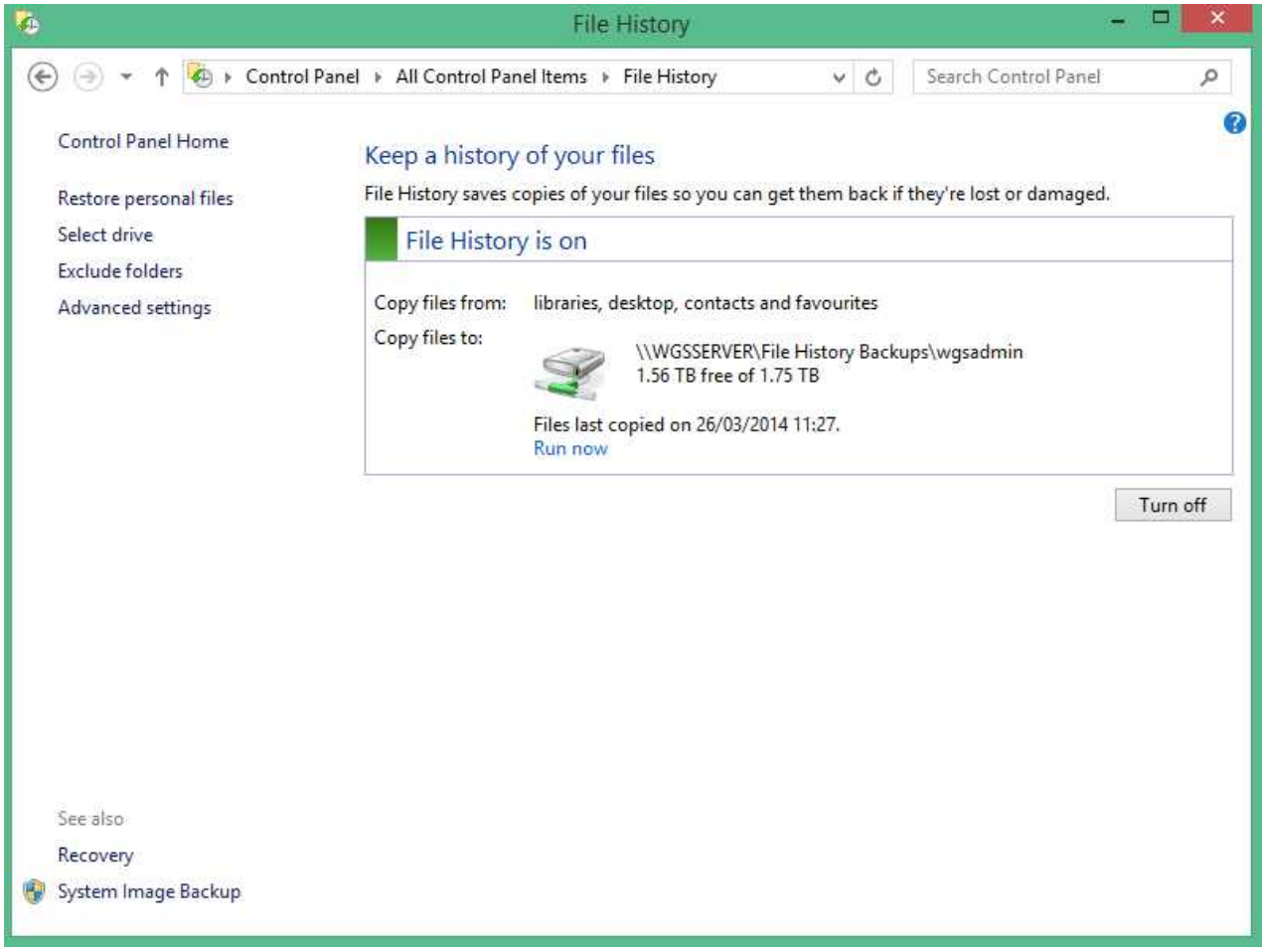
The formatting process starts and finally completes.

For software-based alternatives to Windows Computer Management and Storage Spaces, check out **Drive Bender** (http://www.drivebender.com/) or **StableBit DrivePool** (http://www.stablebit.

com/).

For a hardware-based RAID setup, there are more options/alternatives to choose from than I can list here. If you are thinking hardware RAID, I would recommend that your discuss these options with a qualified Small Business Server IT consultant to match a solution with the computer hardware you plan on using.

File History



File History in the Windows Control Panel.

File History is a Windows 8 feature that backs up files stored in the Libraries, Desktop, Favorites, and Contacts folders of each user. The advantage of File History over a full system backup is that the system scans the file system for changes on a more frequent basis which in turn means that File History builds a complete history of changes made to any personal file.

What does all this mean to you? If you are a user on a Windows 8+ client machine, and you *just*

overwrote a very important file, you can retrieve the previous version by opening the **Control Panel**, open **File History**, and click on **Restore personal files**. You can bore down to the exact version of the file you are looking for.

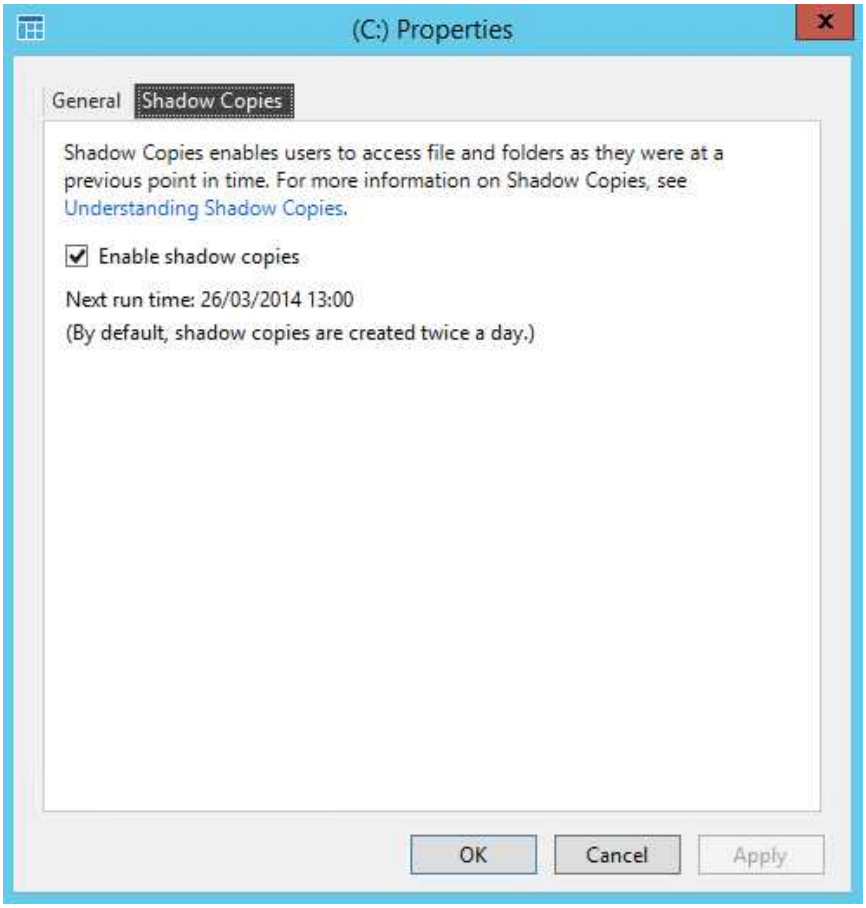
For Windows 8 and 8.1 clients connected to the Essentials server, File History is automatically turned on. The data on the Desktop and in the Documents folder is backed up on an hourly basis, with the backup being stored on the server for a year.

Please note that this option is not available for Windows 7 client machines. If you are a Mac user, this feature is very similar to Time Machine.

A complete walk-through on File History is covered in Chapter 12.

Shadow Copies

The **Shadow Copies** tab, available in the Hard Drive properties task in the Dashboard, gives you another file-based backup option.



The Shadow Copies tab.

Shadow Copies is somewhat similar to File History, except that it is focused on protecting files held on the server. With Shadow Copies, one can view and access earlier versions of shared files and folders. With Shadow Copy, a user can:

- Recover a file that was accidentally deleted.
- Recover a file that was accidentally overwritten by another file with the same name.
- Compare a current version of a file with older versions.

One of the great features of Shadow Copies is that you have the option to turn it on for only the shares you feel would be important to do so.

A complete walk-through on Shadow Copies is covered in Chapter 14.

Folder Redirection

Folder Redirection moves or copies your client user folders to a dedicated folder on the server:

Depending upon how you set up folder synchronisation on your client, this data either resides on the server only (live), or is duplicated for remote access and synced back to the server when the machine is on the network that the server is connected to.

Before you consider enabling this feature, you need to decide if it is desirable for a particular user. If a user:

- Works on multiple PCs and needs access to that on all those computers
- Does a lot of remote offsite work

then Folder Redirection might be very useful. If neither condition applies, I would recommend that you do not use Folder Redirection and simply make sure that PC backups are enabled alongside File History.

Setup and additional information on Folder Redirection is covered in Chapter 13.

Client Backup and Restore

A good few years ago, in Windows Home Server v1, Microsoft incorporated a feature called **Bare Metal Restore**. With Bare Metal Restore, one could boot a computer from a supplementary **Client Restore disk** and recover that entire machine from a previous backup - massively useful in the event of a corrupted installation or hard drive failure. This feature was incorporated in Windows Home Server 2011 and Windows Small Business Server 2011 Essentials platform and subsequently into Windows Server 2012 Essentials. As you'd expect, it's also available today in Windows Server 2012 R2 Essentials.

Client Backup and Restore is simply one of the most important features of Windows Server Essentials. For those who have had to ever deal with resurrecting a computer from scratch, the time and effort to:

- Install the Operating System
- Configure it for use by a user or users
- Install applications
- Recover any user data (if possible)

is an extremely painful task to accomplish and will never deliver quite the same "look-and-feel" of the previous installation. Furthermore, it takes you, the business owner, away from running your business and that's never good news.

With Bare Metal Restore, one can restore a computer to the exact configuration, user setup, and data that existed from the last complete backup of that computer, all in a few hours. Once started, you can simply walk away, return a few hours later, and hand the computer back to the user.

Indeed, not only can you backup and restore your PCs using Windows Server 2012 R2 Essentials, you can also restore both the data held on the server's shared folders, and perform a full system restore of the server itself. To recap:

- **Server Backup** - Backs up the data held on Windows Server 2012 R2 Essentials to an external USB hard drive. You can restore the files and folders on the server and perform a full system restore of the server.
- **PC Client Backup** - Backs up compatible client computers on the network and holds the backup data on your server. You can restore the files and folders on the server and perform a full system

restore of the PC.

As we'll see in the next chapter, a third backup option exists:

- **Windows Azure Backup** - backs up the files and folders held on your server off-site on a Microsoft cloud server. You can restore files and folders on the server.

More information on how to set up Client Backup is covered in Chapter 13.

To **restore** a client computer, firstly note that you cannot restore a computer to new hardware that is significantly different from the hardware on which the backup was taken - particularly a significantly different motherboard. That's because the drivers which control your hardware are stored safely in the backup, and obviously the backup will not include the drivers required to operate your new hardware - so the client restore will fail.

That said, you **can** restore your client backup to a larger hard drive than the one being replaced. That can be a handy feature if your system volume is full and you need to replace it with a bigger drive.

Note too that if you've encrypted your client system, files or folders using Microsoft's BitLocker file encryption feature, then don't worry - you'll still be able to restore the PC. That's because Windows Server 2012 R2 Essentials captures an unencrypted version of the data during backup. It is this unencrypted version that is copied back to the client hardware, after which you'll need to manually re-enable BitLocker on the client.

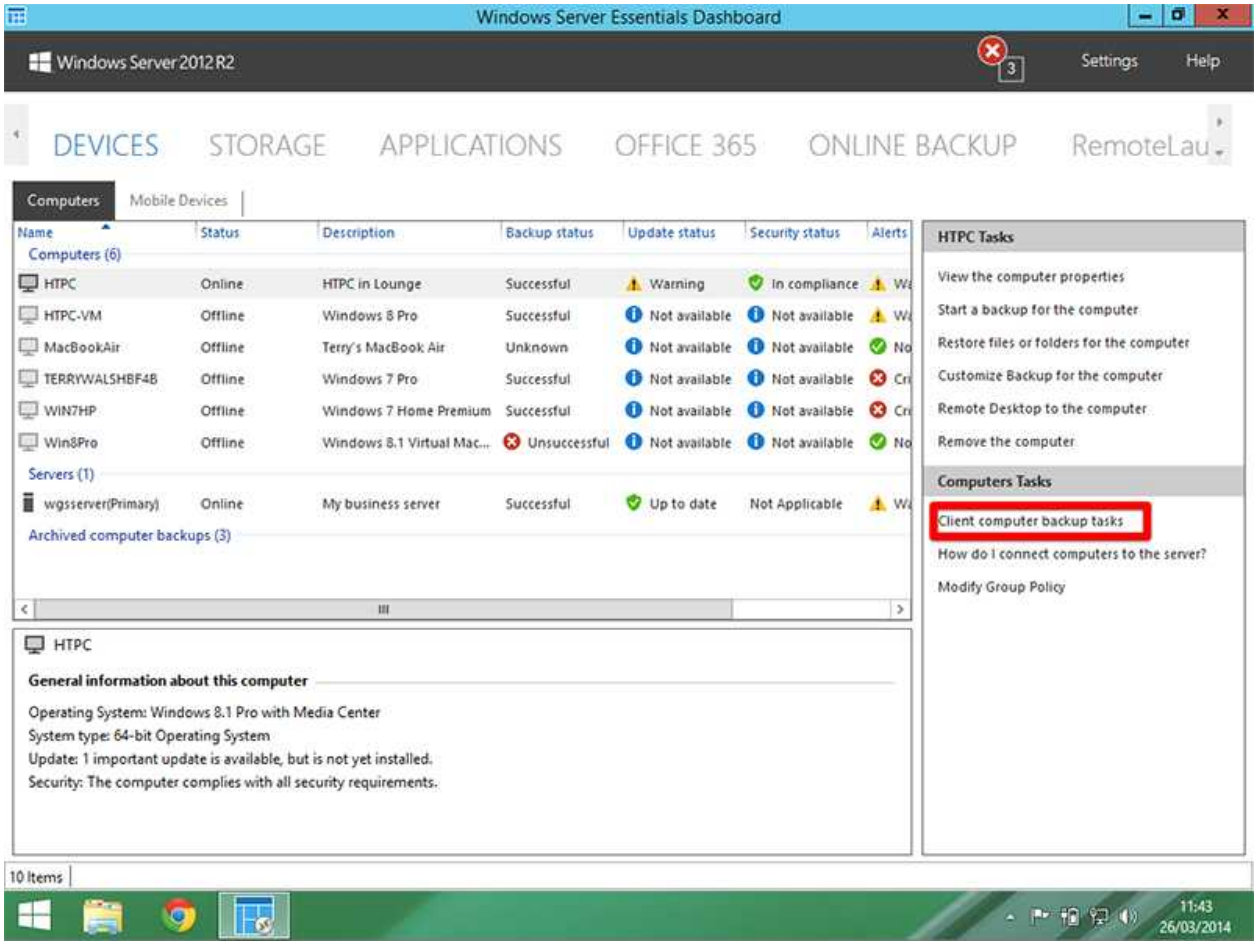
First, ensure your client PC is physically connected to the network - no wireless restorations are available - sorry!

Whilst Windows Server 2012 Essentials utilised physical media to restore the client (a client restore disk), the new R2 release abandons that in favour of two new methods from which you can choose. You can use the **client restore service**, which restores the client over the network and does not rely on physical media, or using a USB flash drive. The latter is used to boot your client PC into the Windows Preinstallation Environment (WinPE) - the state required to restore your client operating system, settings and data. If you use the client restore service, as we'll see, this simply installs the bits required to boot the client into the Windows Preinstallation Environment over the network. Both routes get you to the same destination, which is the Windows **Full System Restore Wizard**.

Restoring a Client Using a USB Disk

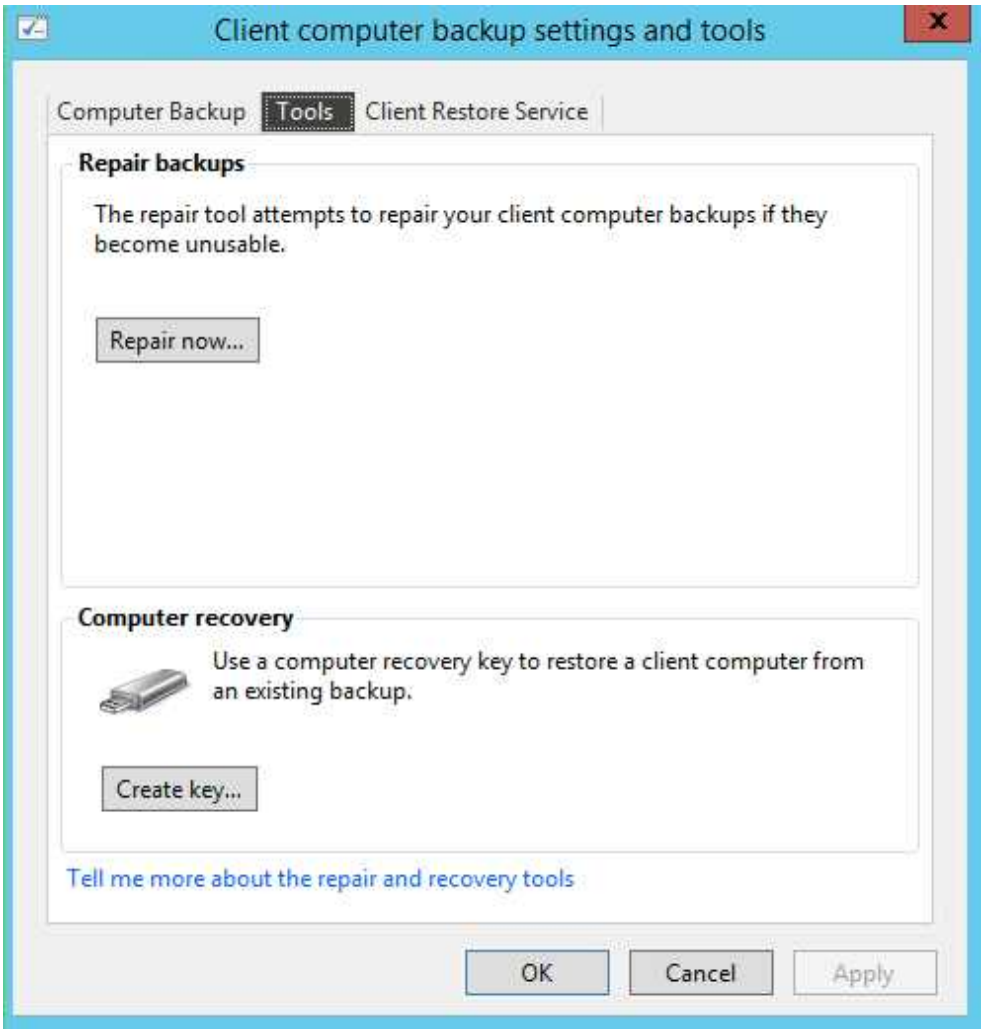
First, we'll need to create our USB Restore Disk. Head to the Server Dashboard and click the **Devices**

tab. In the task pane, look for a task called **Client computer backup tasks**. Click it.



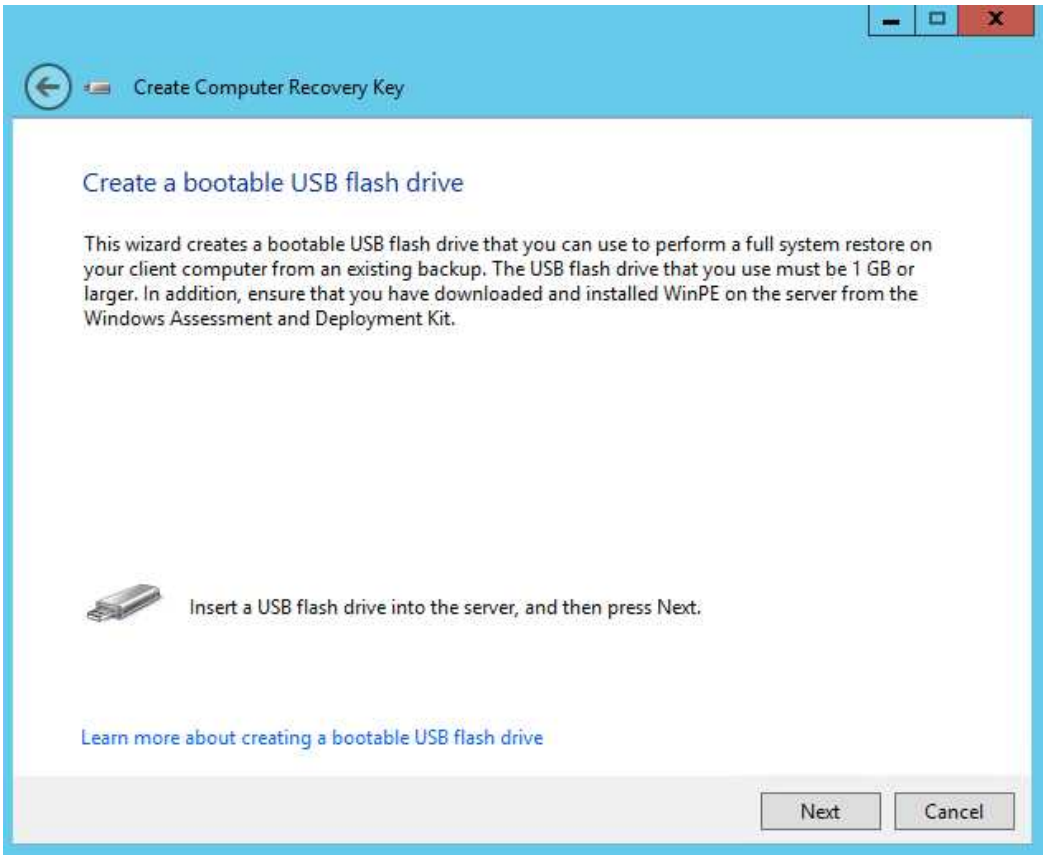
Client computer backup tasks in the Dashboard.

Click the **Tools** tab, and then click **Create key...** in the Computer recovery section. You'll see a new wizard called **Create Computer Recovery Key Wizard** open.



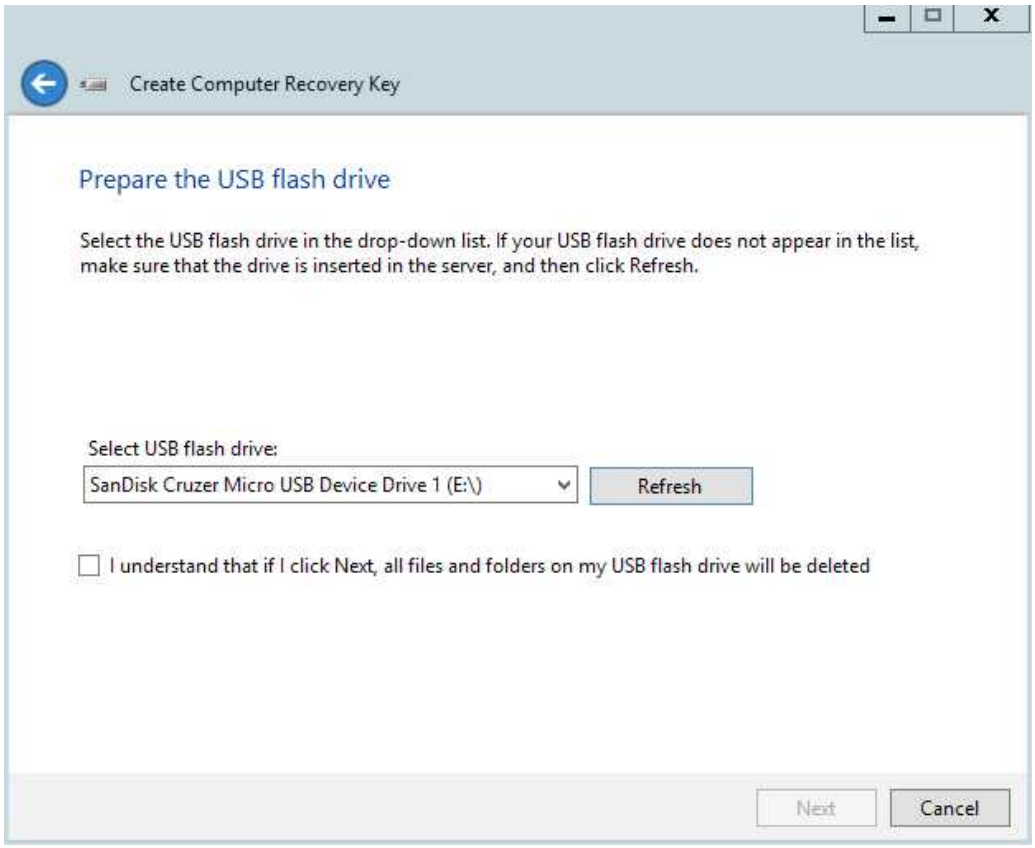
The Tools tab.

Follow the wizard step by step to create the Recovery Key for your client. Note that you'll need to use a USB drive with at least 1GB capacity for the task. Yes, it's going to be formatted, so ensure you do not need any data held on the disk before proceeding. As you'll see from the dialog below, you will also need to have already installed the WinPE environment on the server - you'll remember that we completed this task earlier in the book.



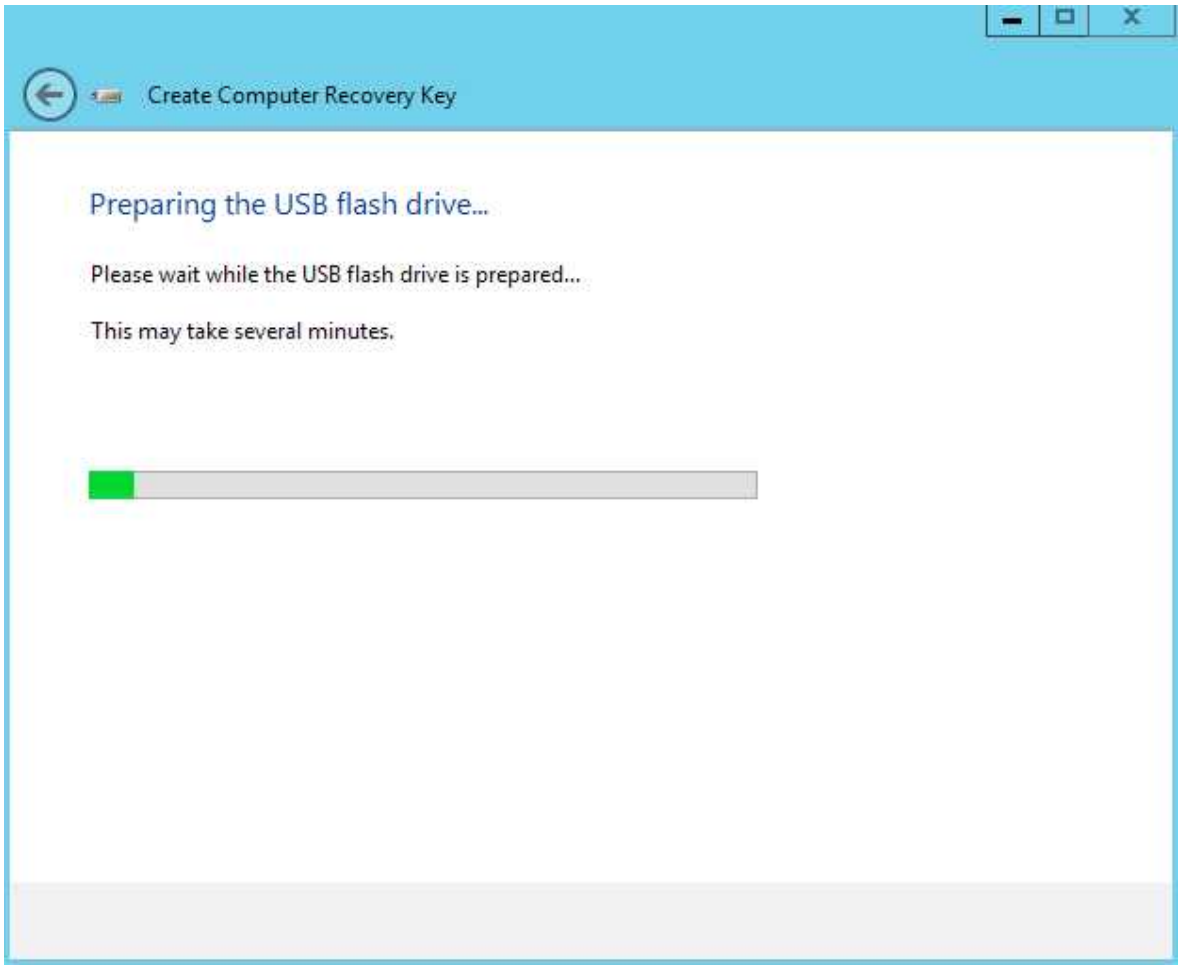
Creating the USB key.

Once the wizard begins, you'll be able to select the USB drive on which you wish to install the Recovery bits:

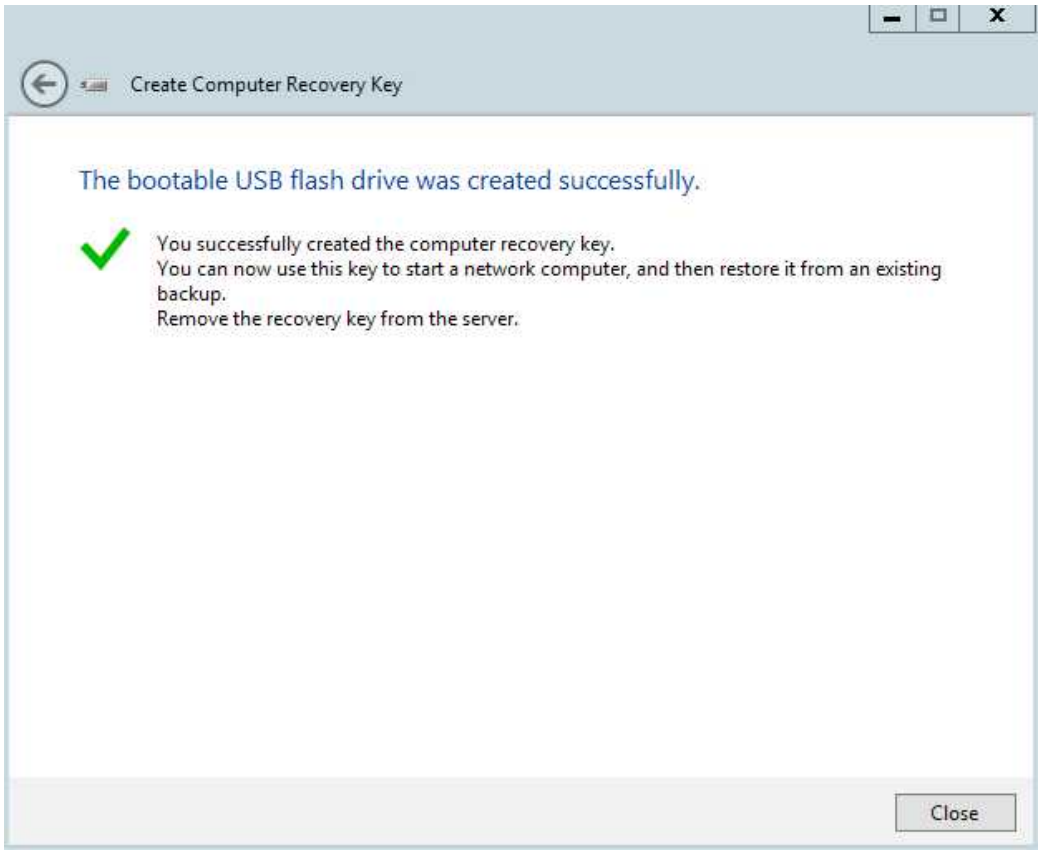


Selecting the USB hard drive.

The drive will take a few minutes to prepare...



Preparing the recovery key.



...and done.

Once the wizard has finished, you'll be able to head over to the client and start the recovery. But hold on a second whilst I briefly cover the second option mentioned earlier - the **Client Restore Service**.

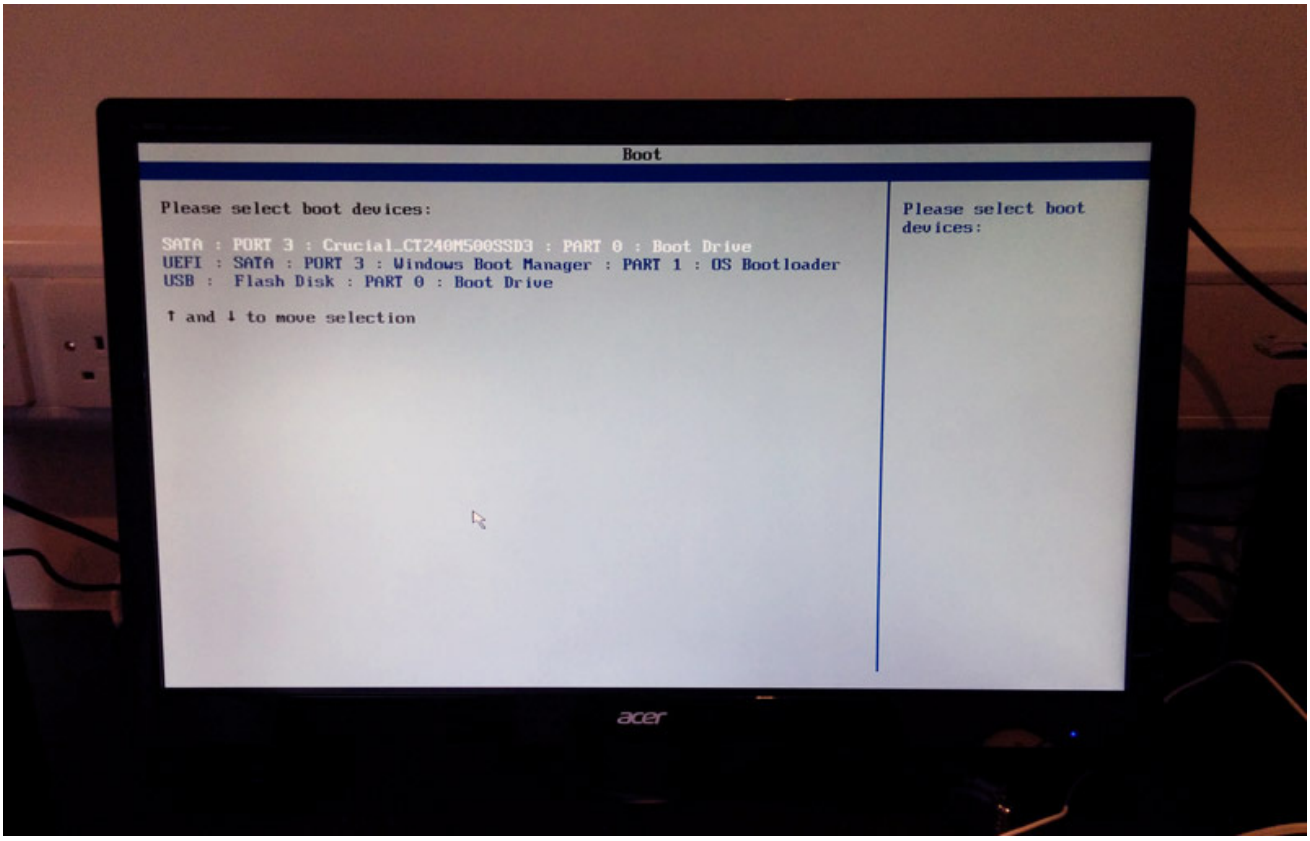
Restoring a Client Using the Client Restore Service

As mentioned, whilst you can boot your client PC from the USB disk to place the computer in the Windows Preinstallation Environment, there's also a cool option which allows you to simply boot the PC from the network and download the necessary bits required for WinPE operation directly from your server.

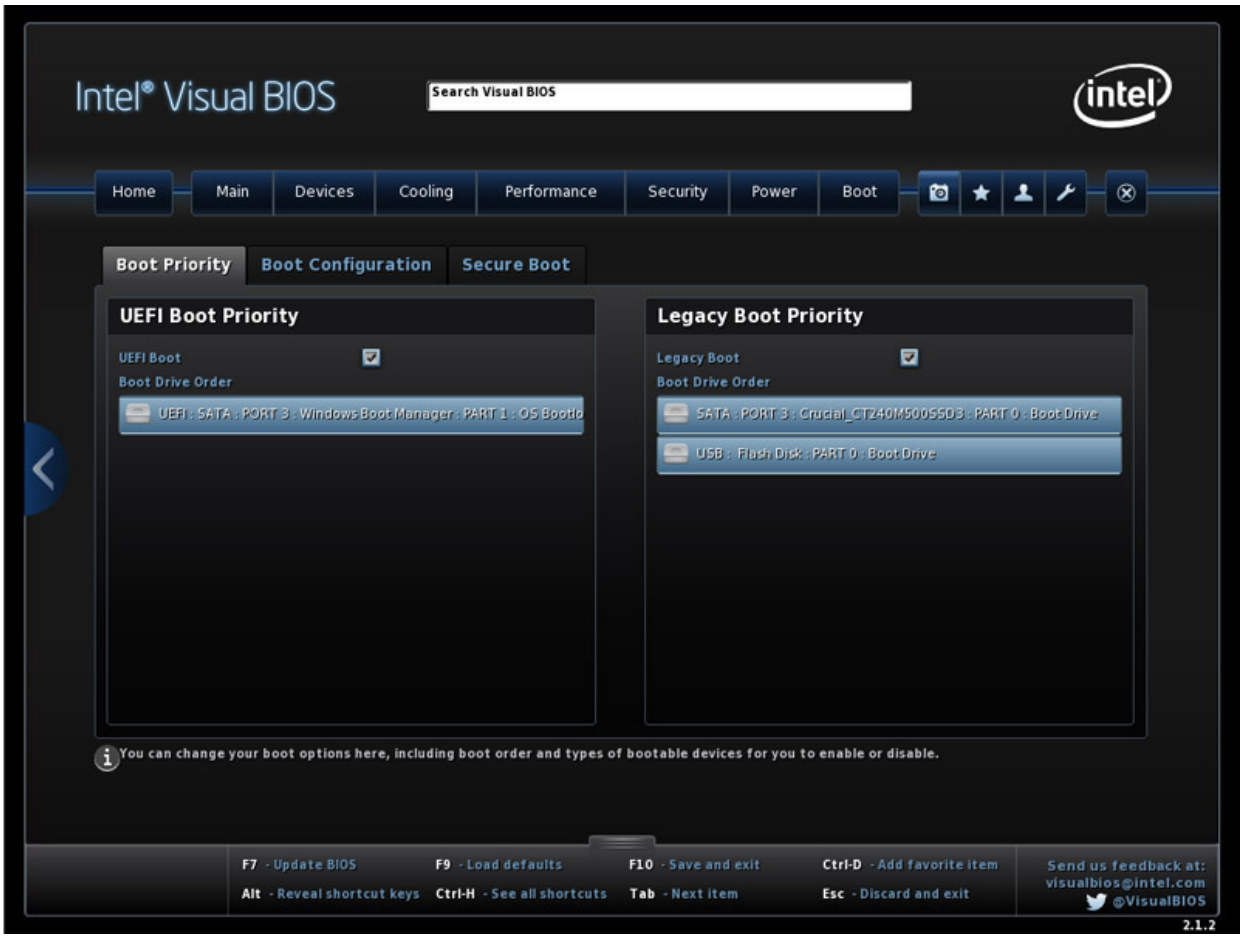
The key difference is that, firstly, you don't need to go through the Computer Recovery Key wizard we just completed, and secondly, you'll boot your client PC in a slightly different way.

If you've gone for the USB Recovery Key option, start the Client PC you wish to restore and during the Power On Self Test (POST), press the appropriate function key (F-key) to access the computer's Boot Device Menu (different computers use different keys so check your instructions or (more like-

ly) keep bashing Function Keys until you find it. Select the option to boot from the USB drive.

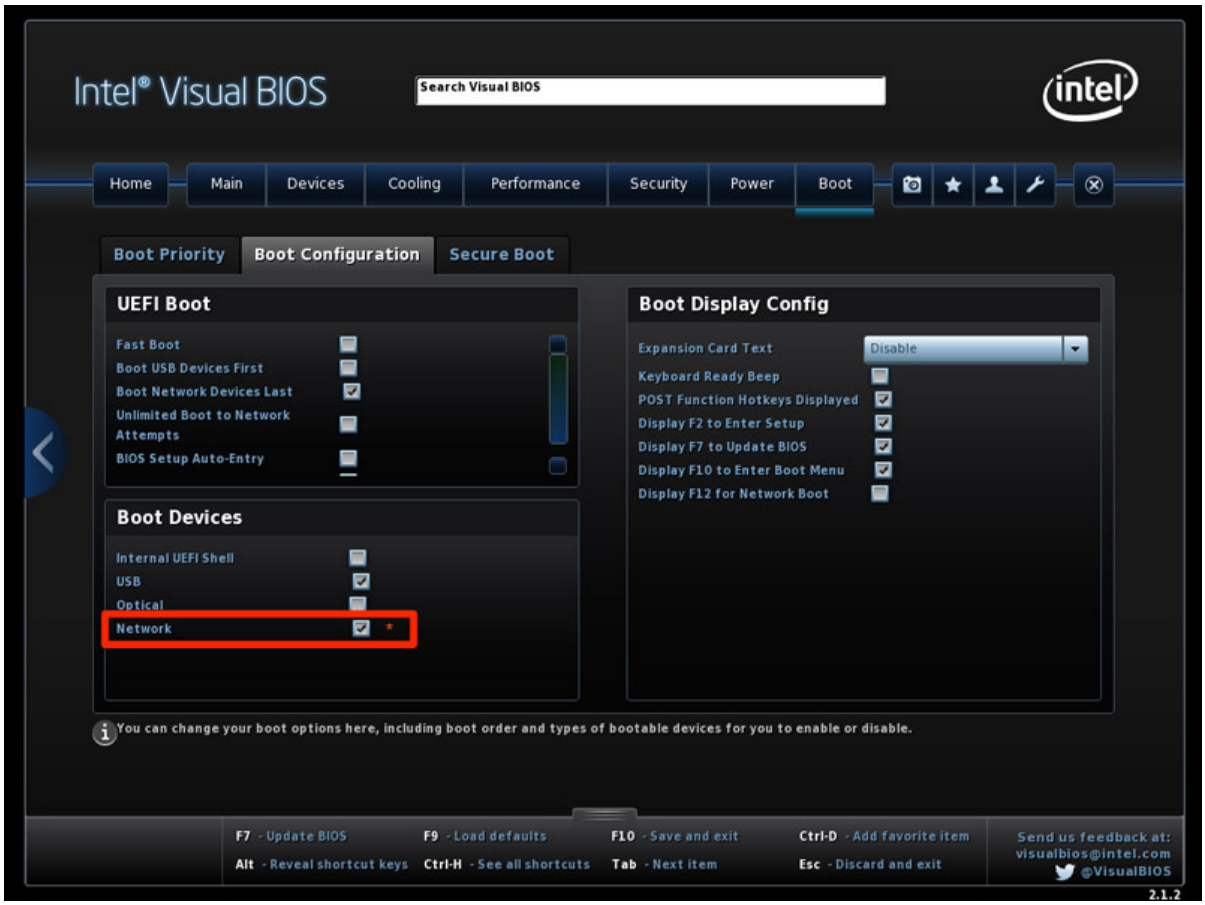


Boot menus traditionally look like this.



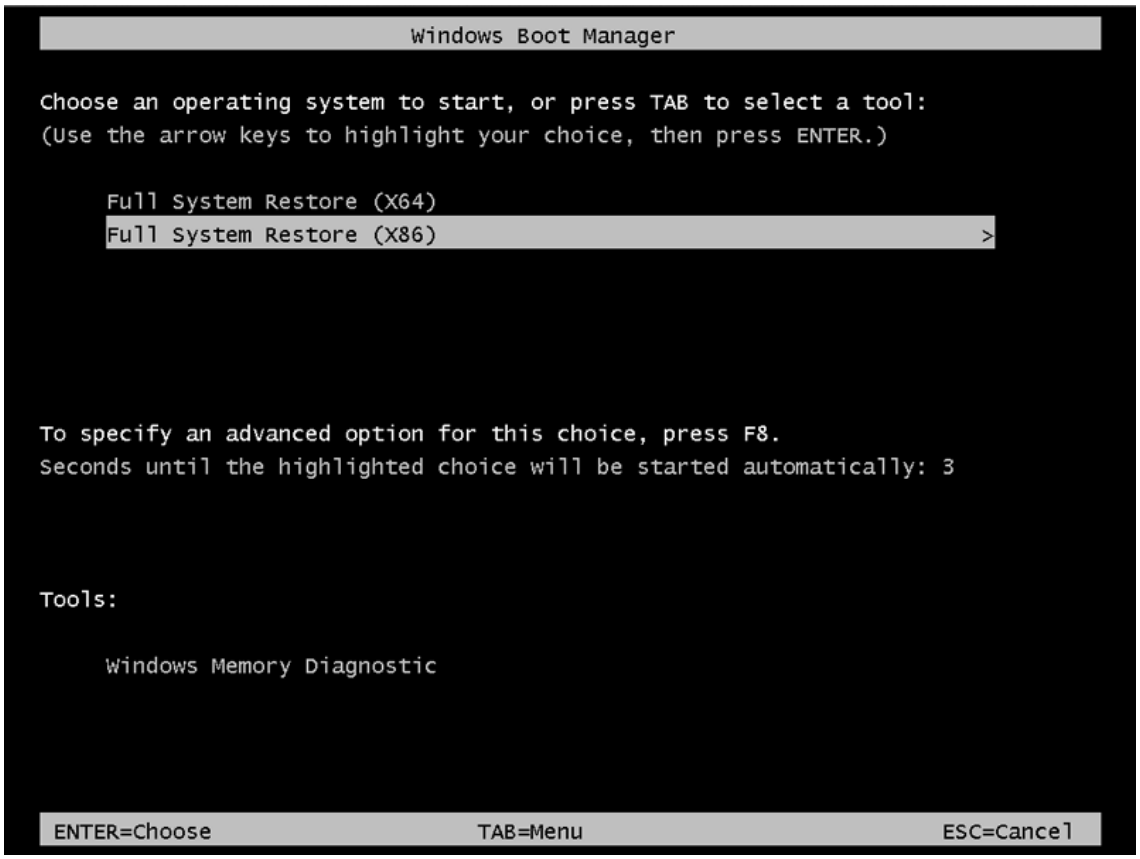
If you have a new, fancy visual BIOS menu like this, you can find a boot menu in there too.

If you're using the Client Restore service, you'll need to power on the PC and use those F-keys again to enter the Boot Device Menu. This time, look for an option to Boot From Network (or similar). If you can't see it immediately, you may need to dig into your BIOS settings to enable it. In the example below, Network Boot is an option tucked away in the BIOS' Advanced Boot settings.



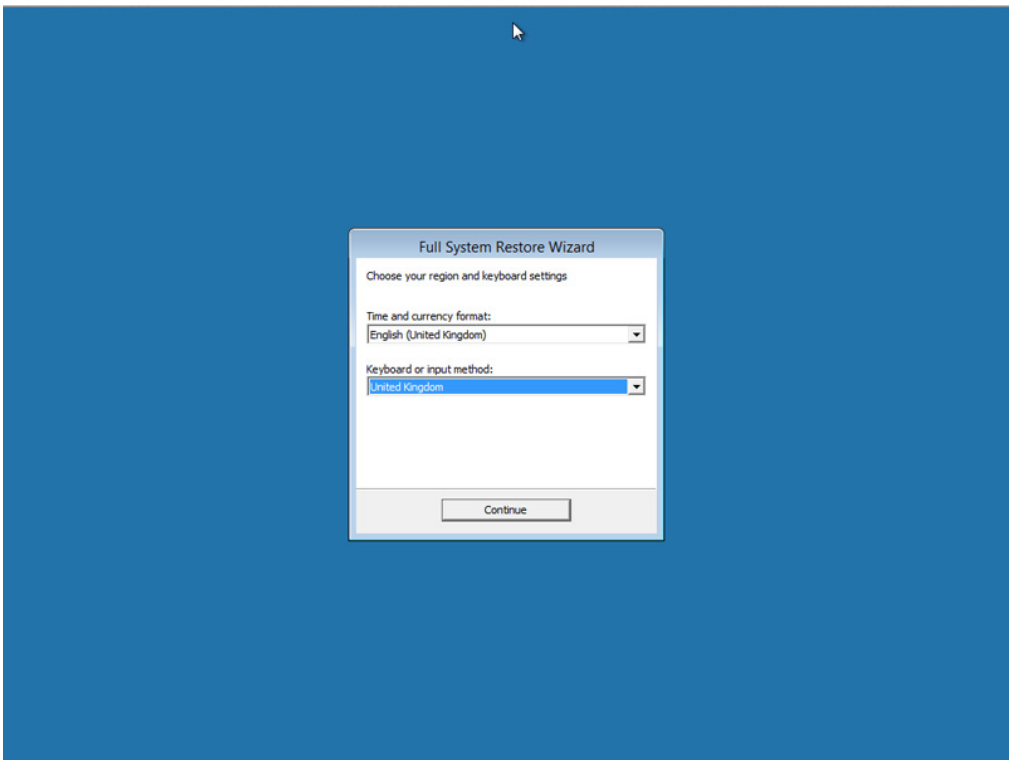
Network Boot may have to be enabled in the BIOS.

Once booted, you are asked to select either a 32-bit (X86) or 64-bit (X64) restore. For Windows 7 or Windows 8 machines, they are almost guaranteed to be a 64-bit installation, but it is useful to document beforehand which type of installation each computer has.



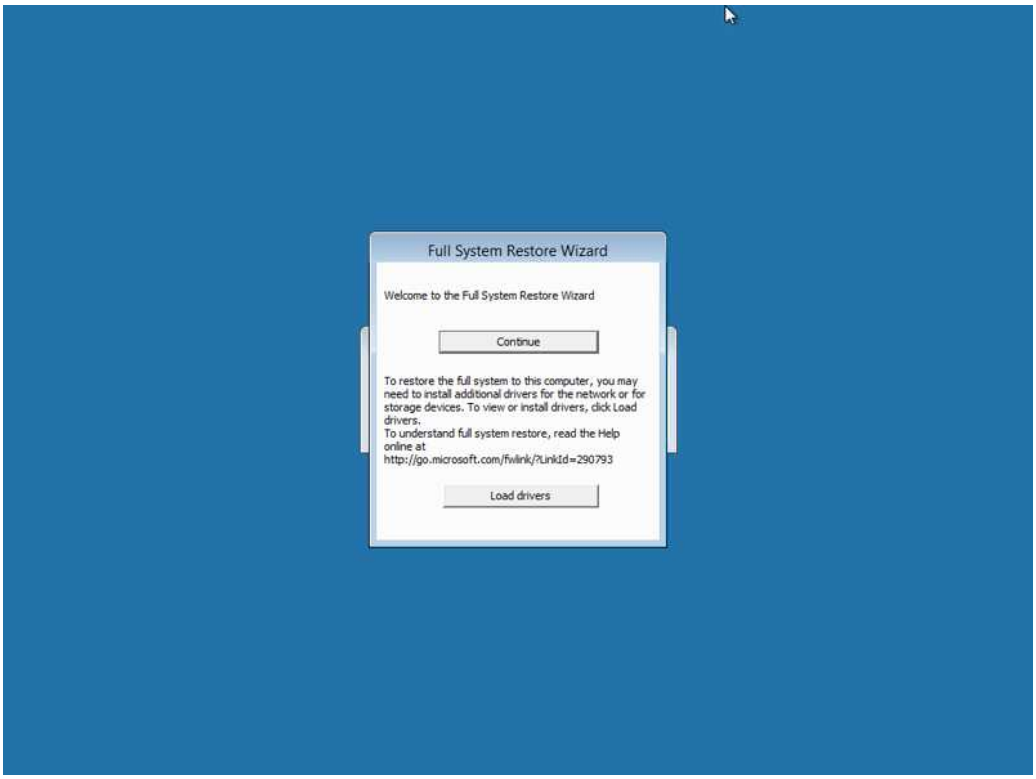
Select the right flavour of Full System Restore for your client.

Once the Windows Preinstallation Environment has booted and the initialization process has started, you will be asked a number of familiar installation questions, including time and currency format and desired keyboard layout.



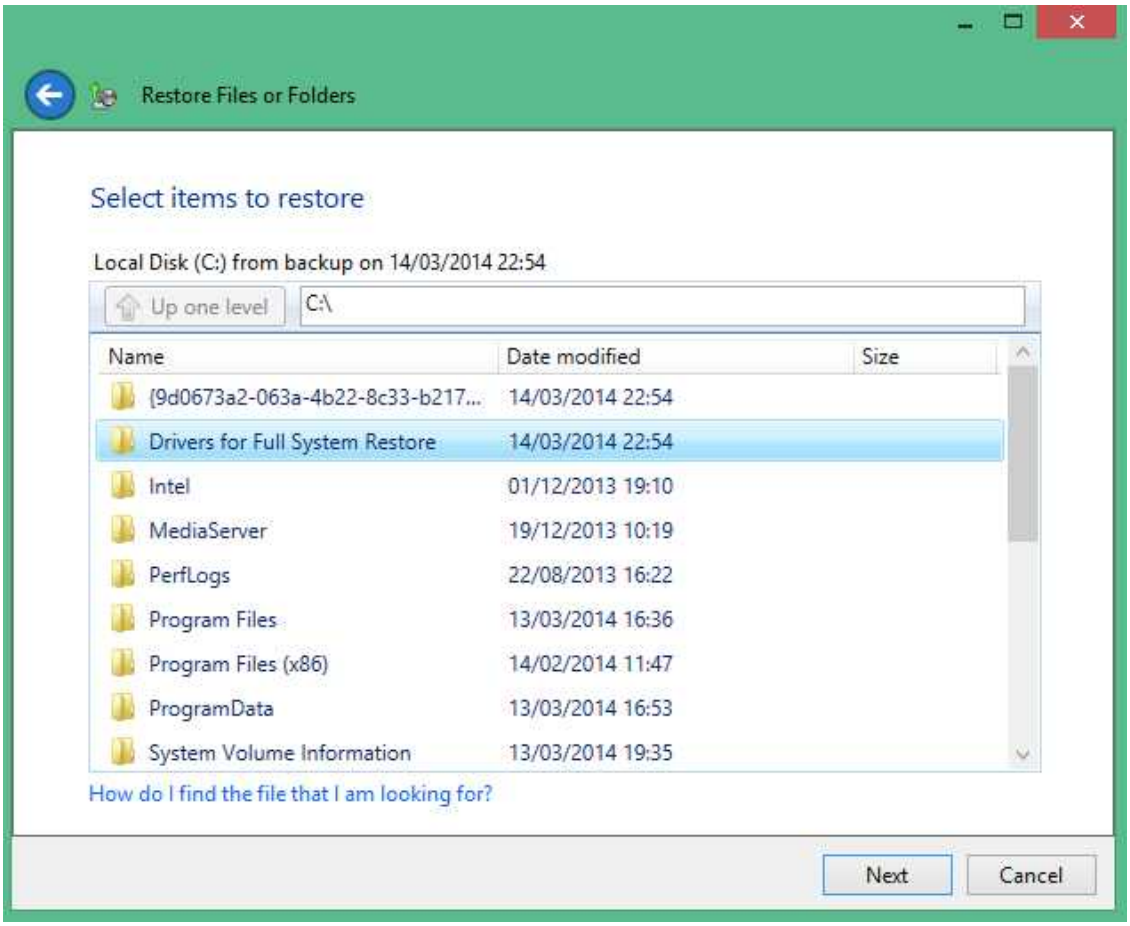
Selecting keyboard, date and time options.

You'll be given the opportunity to install any drivers needed for the client machine. As Windows Server 2012 Essentials is (at the time of writing) a modern operating system the odds are that you will not have to install drivers separately.



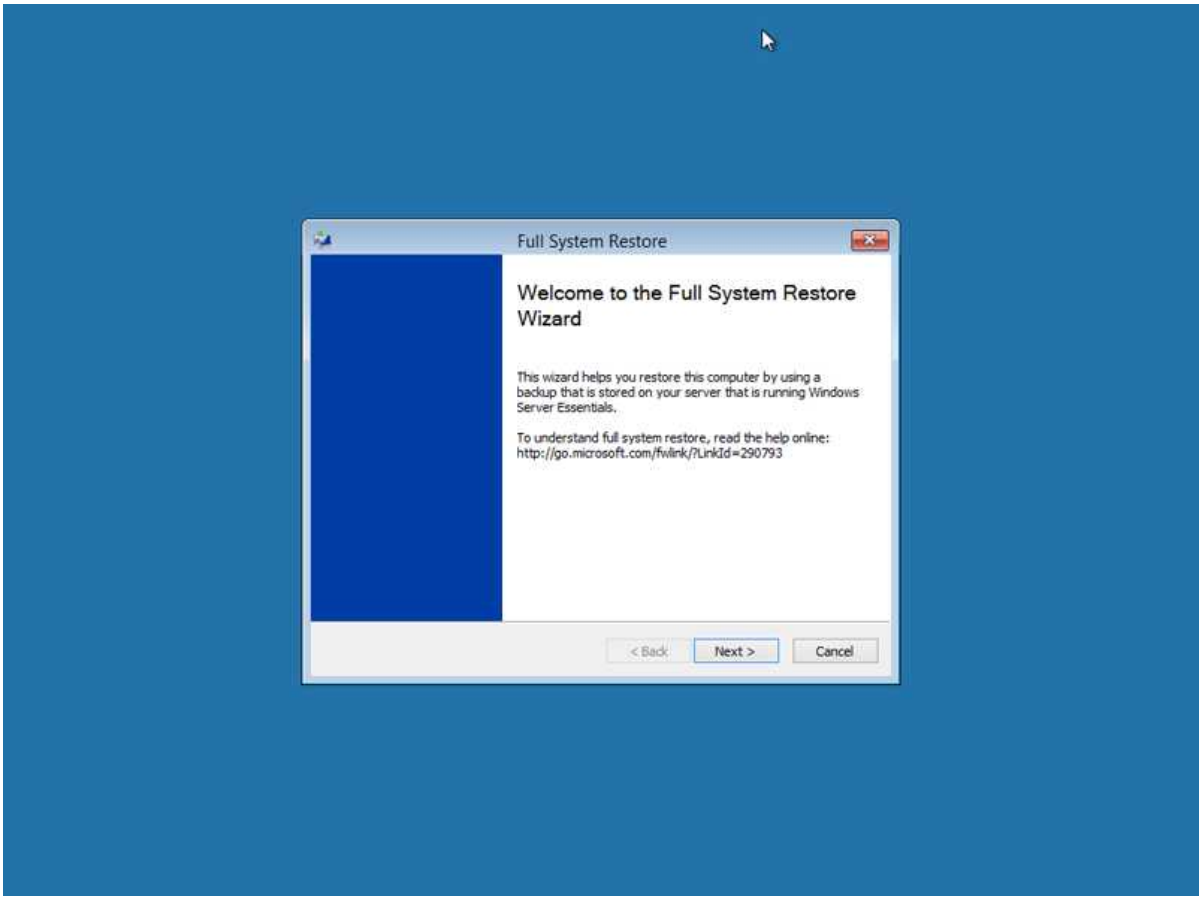
Load drivers for your network or other devices if you need them at this point.

However, if the restore process fails due to the lack of a driver, you will need to open a backup of the computer you are trying to restores from another machine and copy the folder highlighted below on to a USB drive, use the **Load drivers** option above.



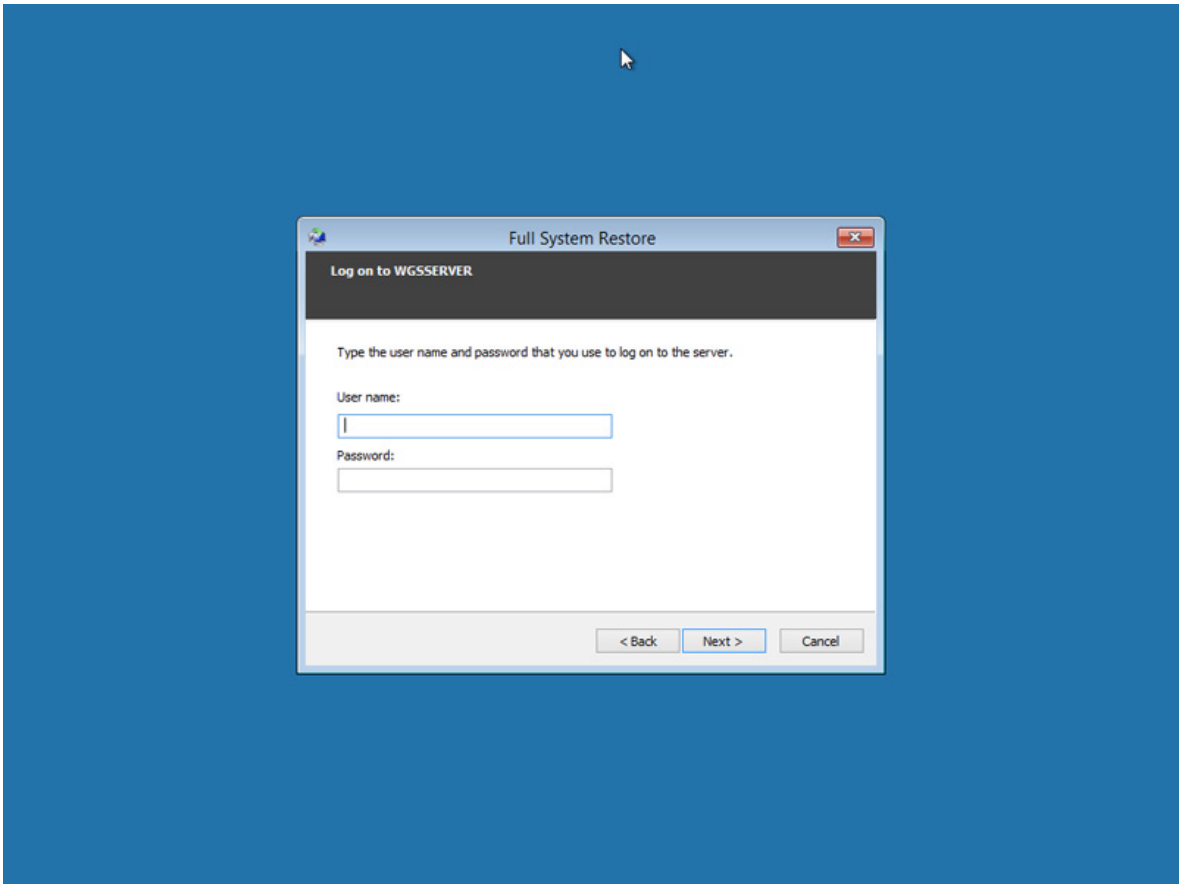
Drivers for your client are handily saved in a folder for your convenience.

Once past the drivers screen, the restore wizard continues. Click on **Next**:



The Full System Restore Wizard begins.

Your server will be hunted down on the network:

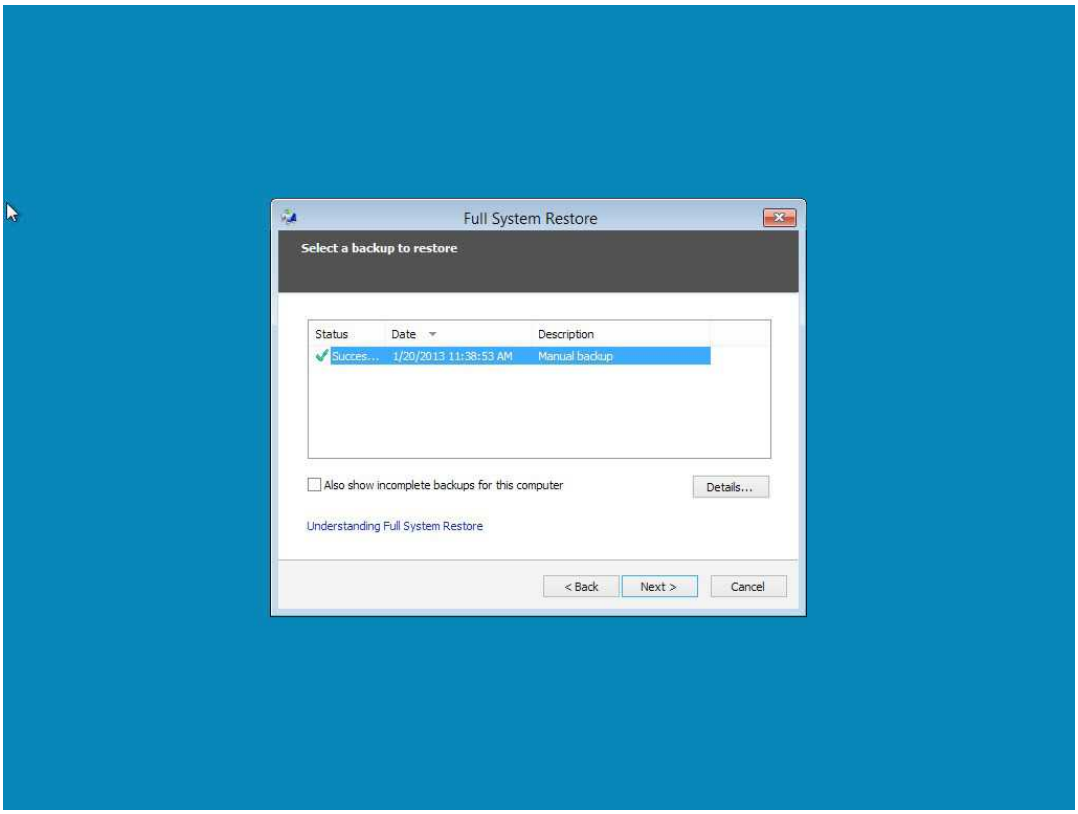


The server has been found.

If you have multiple servers on the network, you can use a drop-down menu to select the correct Windows Server 2012 R2 Essentials installation. Alternatively, if no server is found, use the **Find the server manually** option and search by both the server name and IP address.

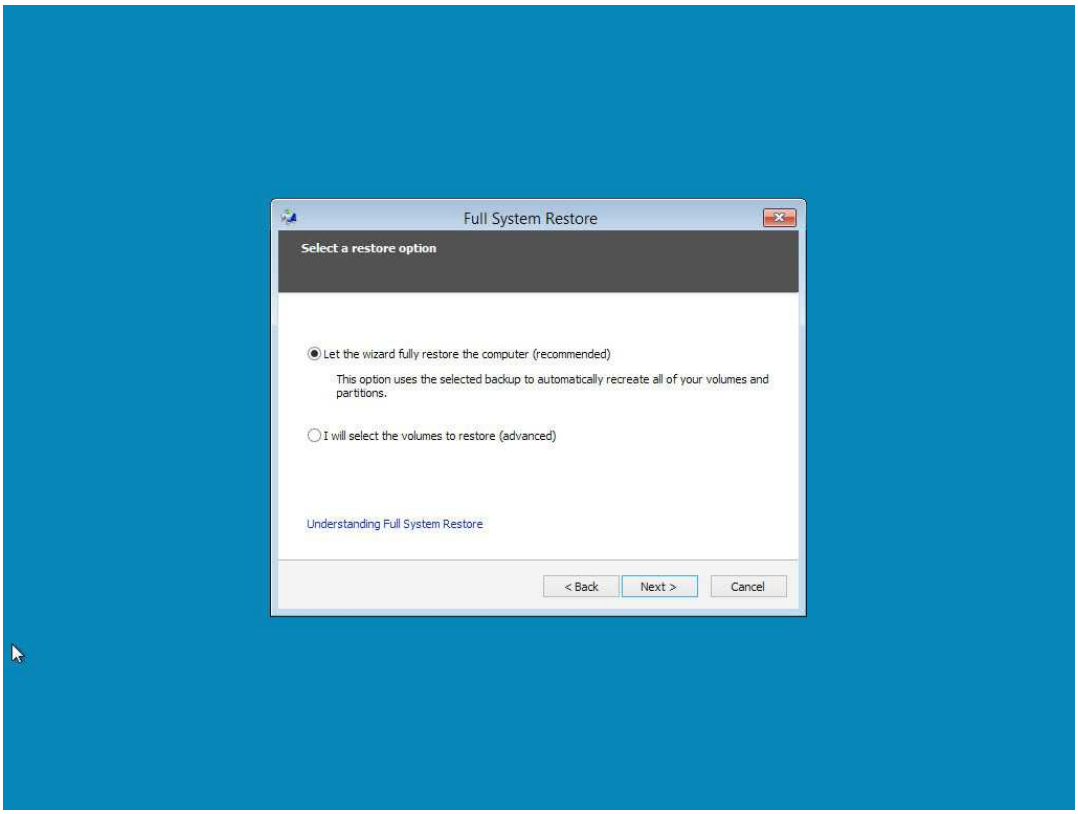
Once the server is located, you are asked to provide your admin credentials to proceed with the restore. In the next dialog, you need to select the computer you wish to restore. The Full System Restore Wizard should automatically select the client you're using, but if not, click **Another computer** and then use the drop-down which activates to select your computer.

Next, select which backup to restore. In this example, I am "lucky" as I have only one choice!



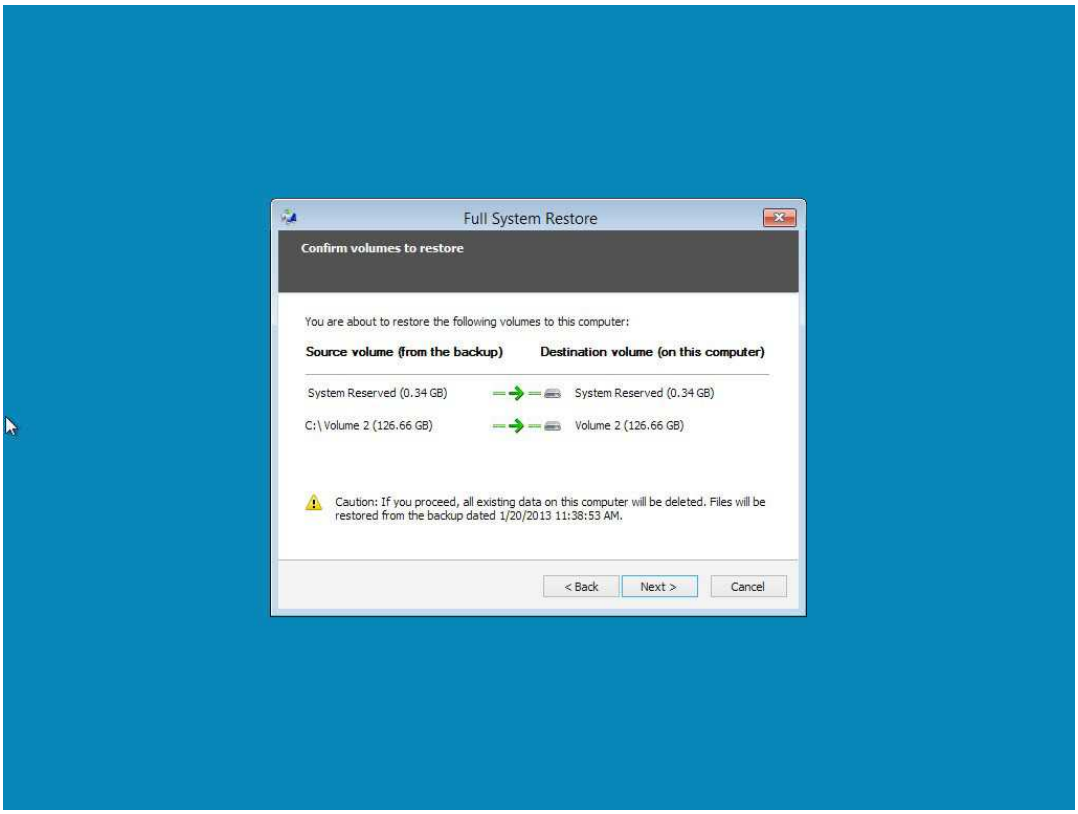
Selecting the backup to restore.

In most cases, simply let the wizard proceed perform a full restore. In some cases, you may need to only restore a boot drive in a multiple-drive computer and solid state drives can sometimes be a bit problematic - hence you are given the second choice below to select which volumes to restore.



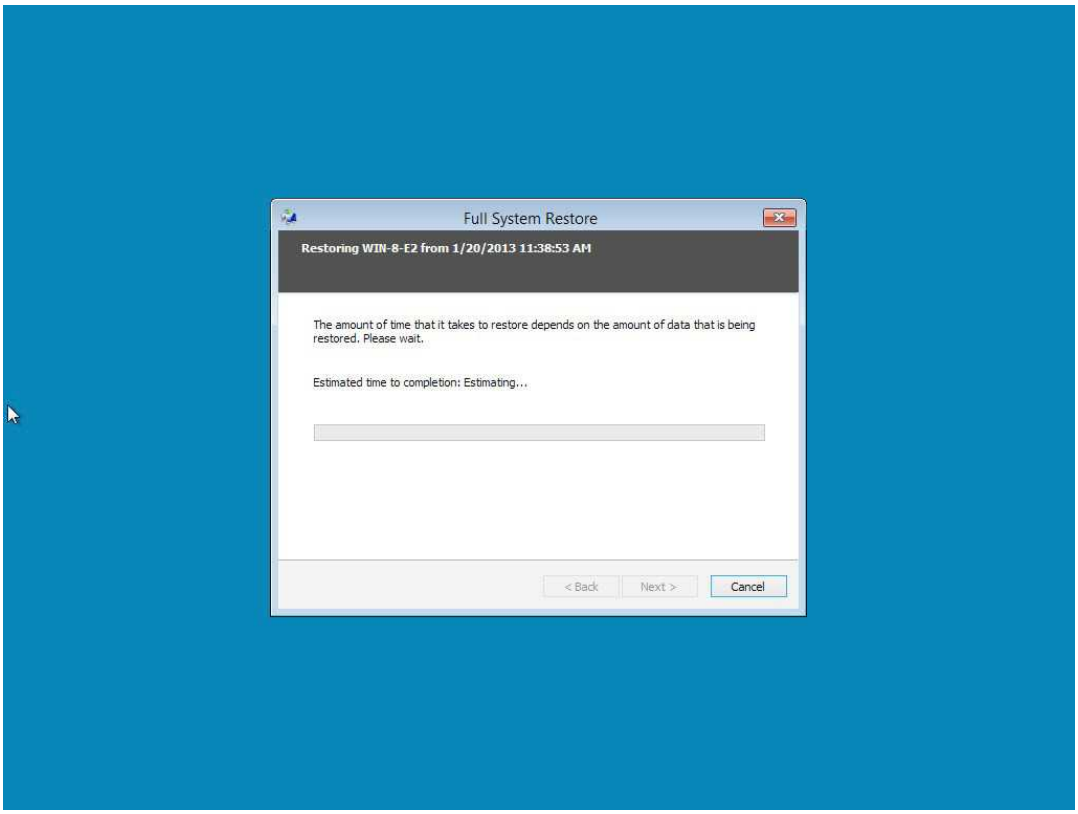
Choose a full restore.

The following screen is the most common one you will see, the System Reserved partition and the C: drive. Make sure both arrows are green and click **Next** to start the restore process.



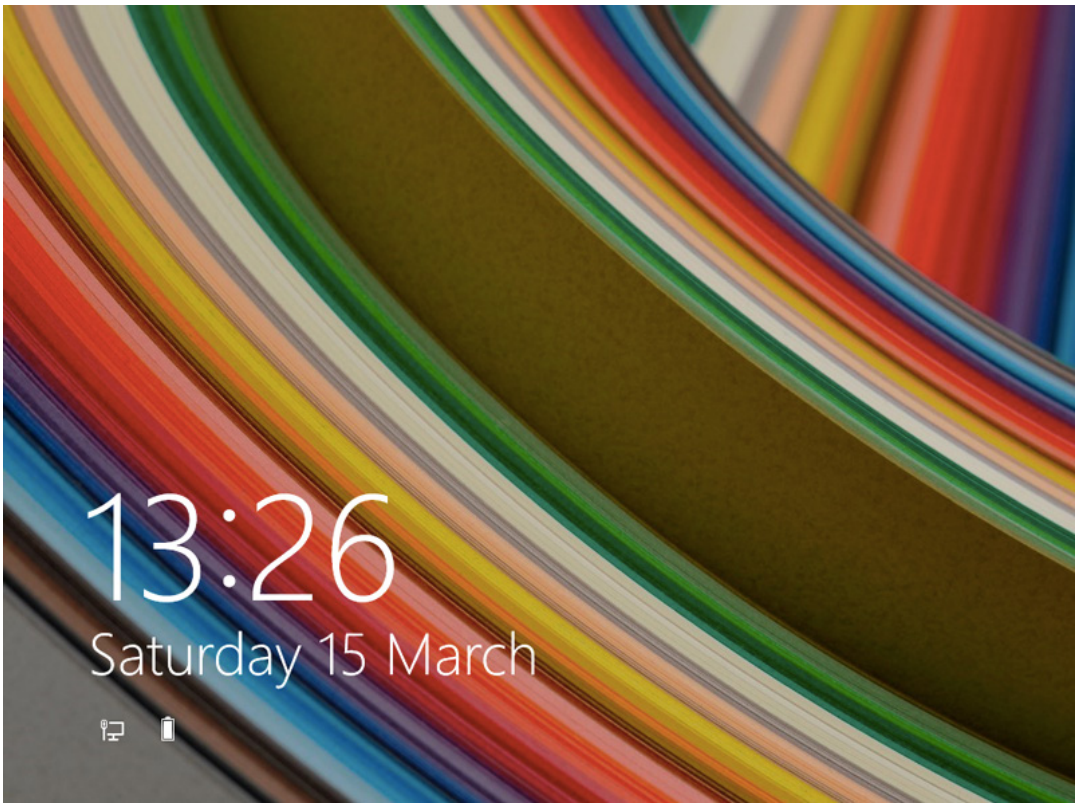
Matching up the volumes to restore.

The restore process begins (time to grab a drink):



The restore process begins.

Before long, the restore is finished. Click **Finish** to reboot the computer and return to the log on screen.



The PC is back with us.

The total time to get to this point was approximately 20 minutes, mostly because this machine had just a base install, and very few apps installed. 20 minutes to resurrect a computer with approximately 15 GB of disk usage is much quicker than if you had to start from scratch, however!

Server Backup and Restore

This brings us to Server Backup. A complete walk-through on setting up Server Backup was covered in Chapter 5. Assuming you have a current backup of the server's System Volume and if your server Operating System becomes unstable or the boot drive dies, you can restore the server itself from the Windows Server 2012 R2 Essentials installation DVD. If you have a manufacturer-built server, they should have provided installation media, or an alternative method of recovering the server - check you manual for details.

Recovering the server will restore the settings and folders from the backup that you choose. Once installed, you will only need to configure any settings and restore data created after the backup. As server backups are placed on an external hard drive, you'll need to have this connected to the serv-

er when you recover it.

Microsoft offers the following guidance with regard to how server restoration varies based on the number of drives involved:

- *If the server has a single hard drive and the drive is not replaced, the drive partition information is left intact when you restore the server. The system volume is restored, and the data on the remaining volume is preserved.*

- *If the server has a single hard drive and the drive is replaced, the system volume is restored, and then you must manually restore folders to the data volume. Any non-default shared folders need to be created because they are not created when the server storage is recreated.*

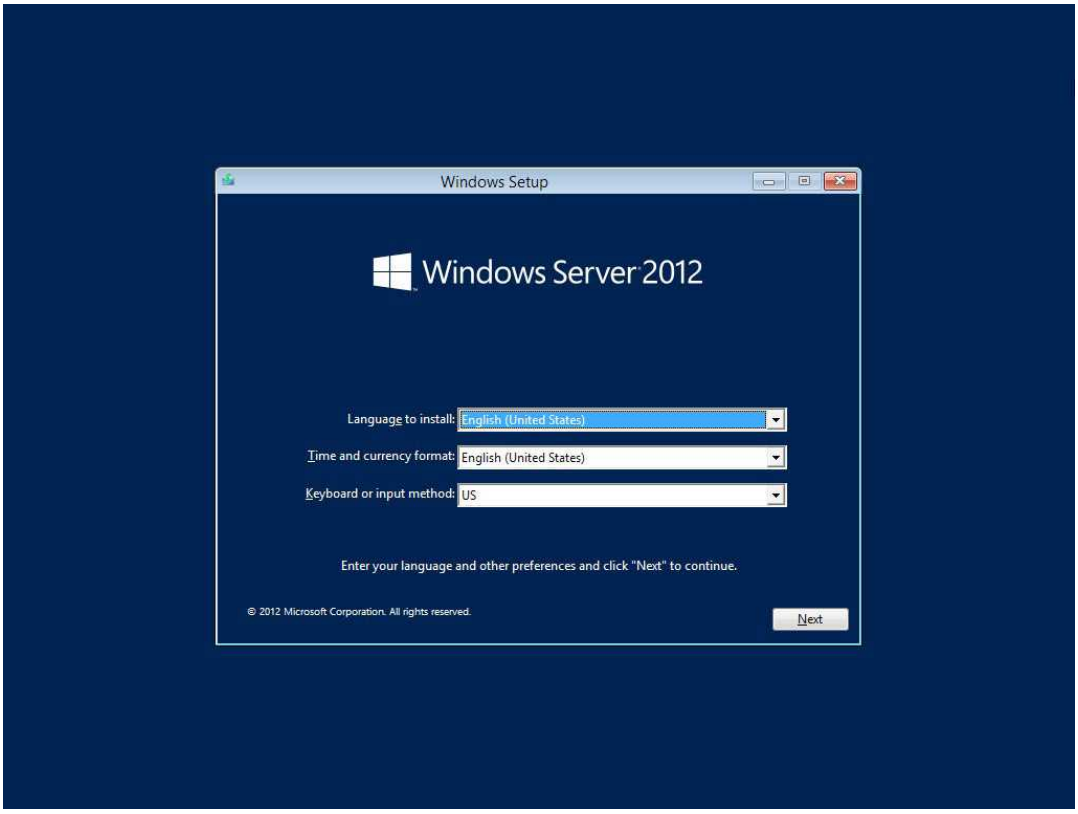
- *If the server has multiple hard drives, and drive 0 (contains the system volume) is not replaced, the drive partition information is left intact when you restore the server. The system volume is restored, and the data on all remaining volumes is preserved.*

- *If the server has multiple hard drives, and drive 0 (contains the system volume) is replaced, the system volume is restored, and then you must manually restore any shared folders that were previously stored on drive 0.*

First, make sure that the client is configured in the BIOS to boot to an optical drive.

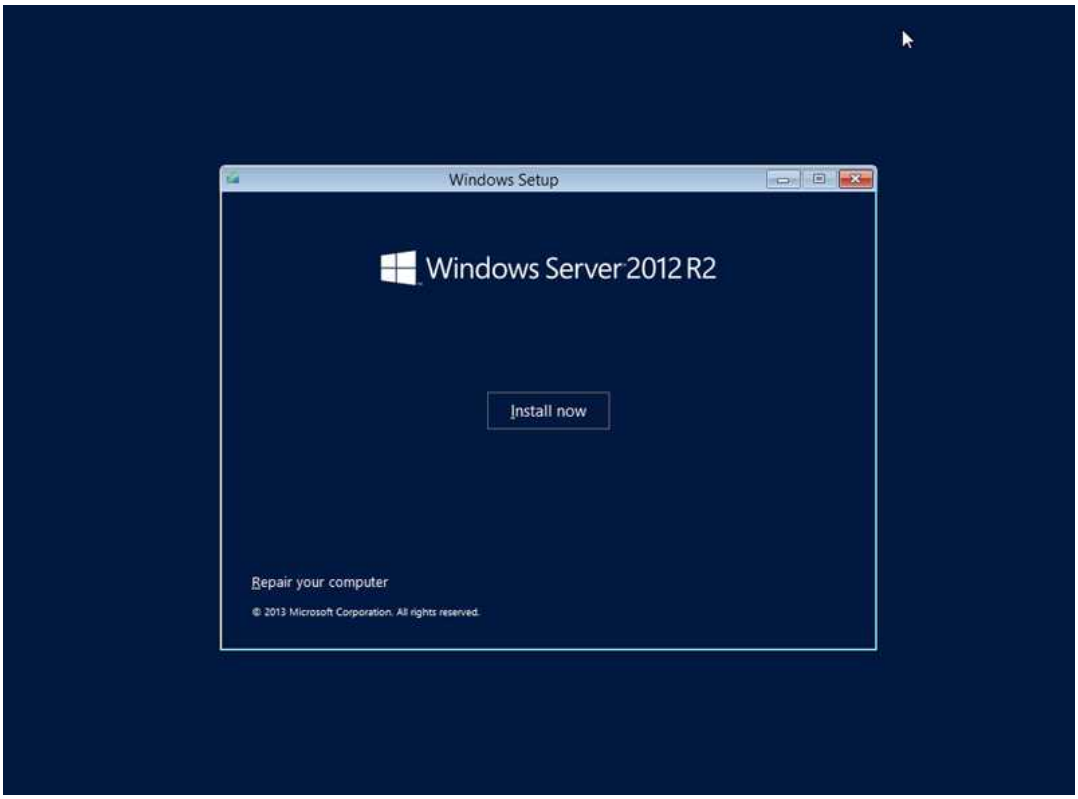
Booting from an optical drive.

Next, locate and insert the **Windows Server 2012 R2 Essentials Installation disk** into that optical drive, turn on the computer and follow the prompts. Press a key as indicated to boot to the optical drive. Once the server installation files have loaded, select your regional preferences, and then click **Next**.



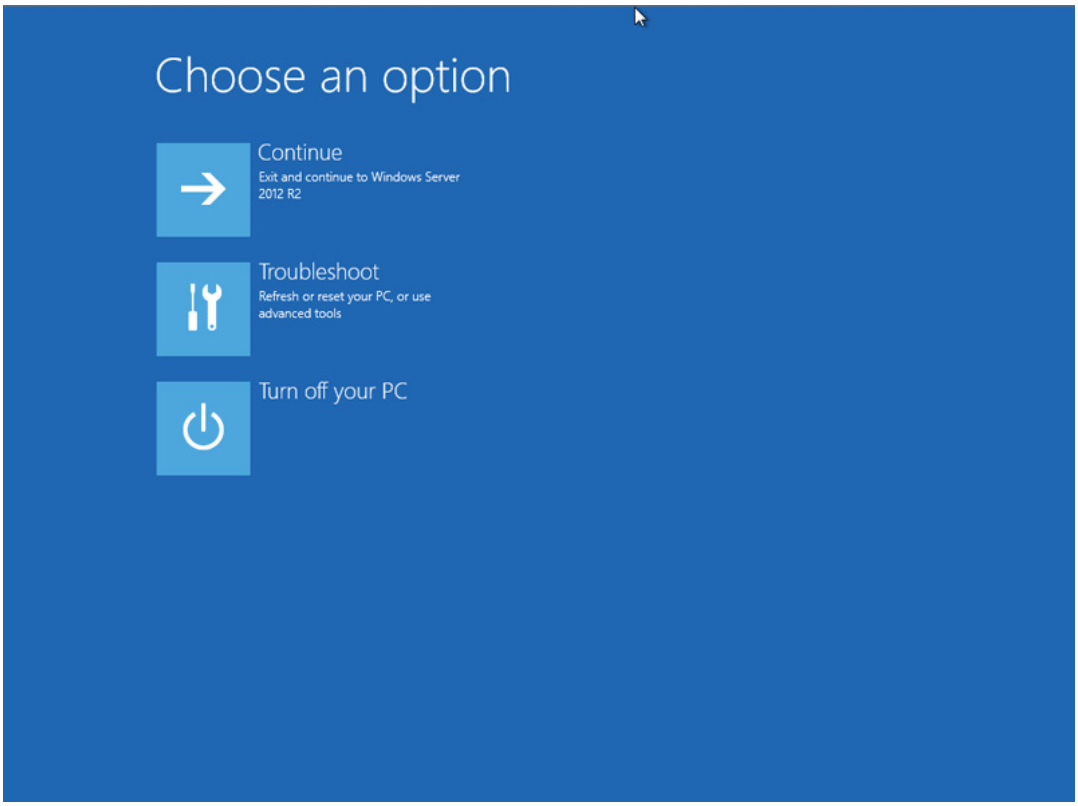
Selecting regional preferences from the Windows Server 2012 R2 Installation Disk.

In the next dialog, click **Repair your computer**.



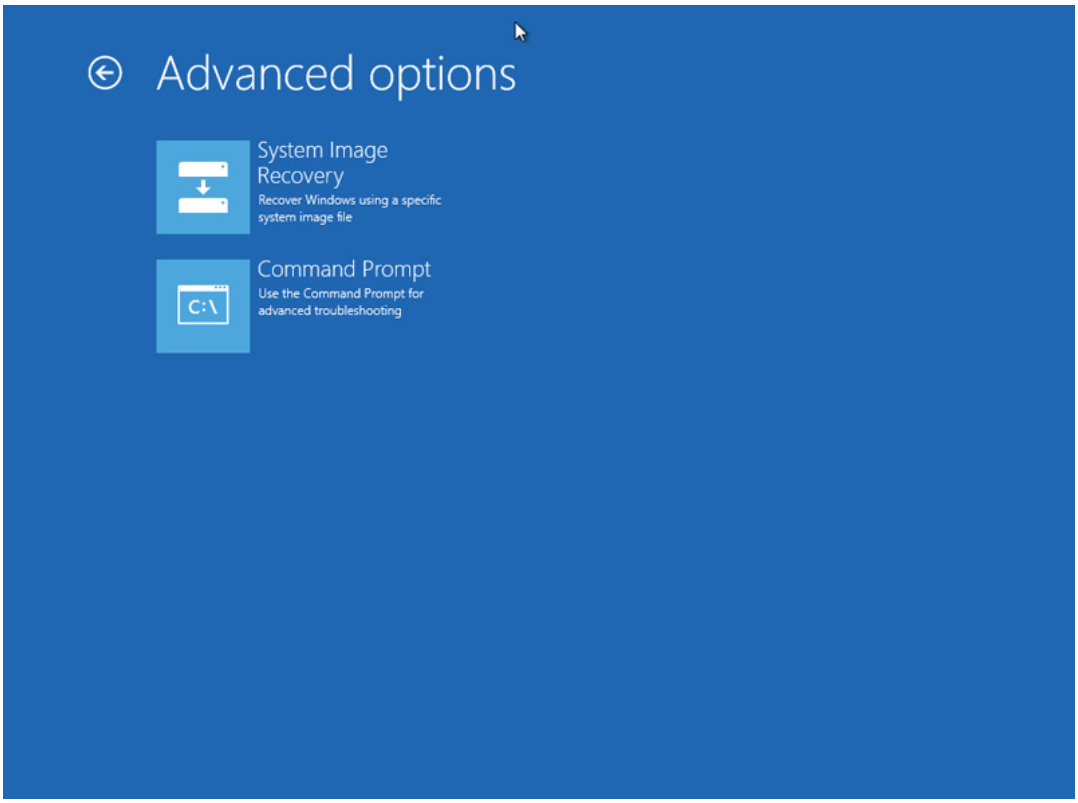
You may not have noticed the Repair your computer link at the bottom of the dialog.

In the next dialog, click **Troubleshoot**:



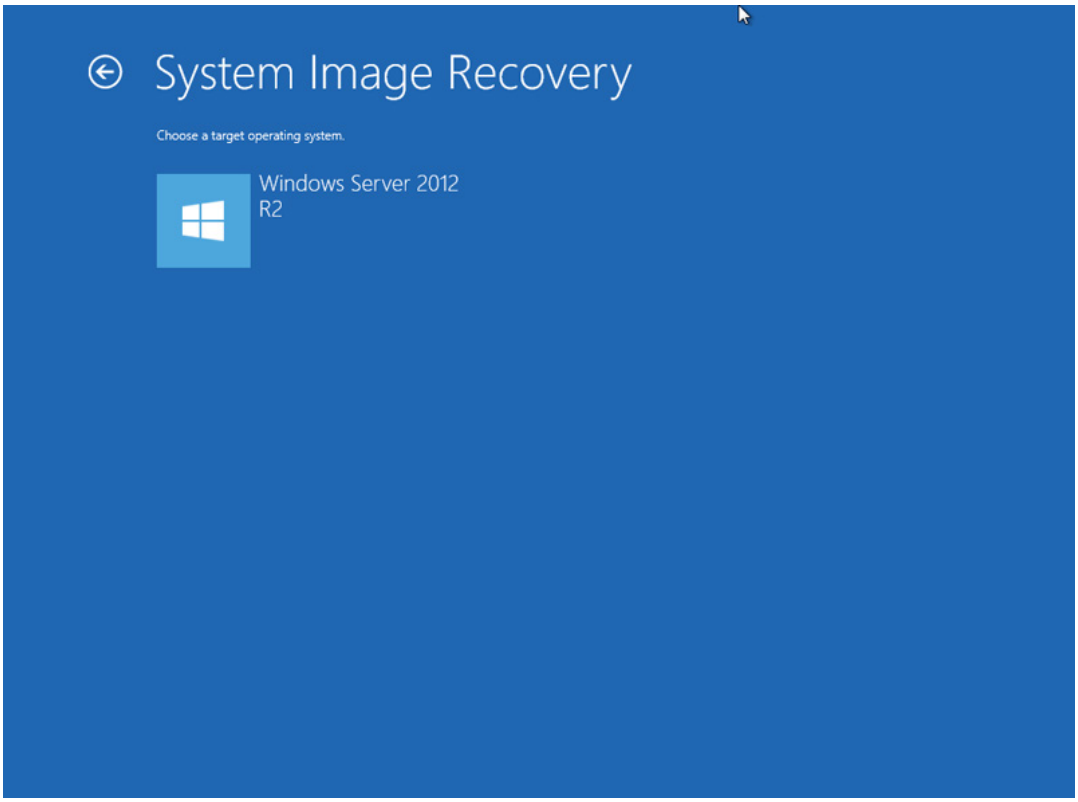
Troubleshooting options.

Now select **System Image Recovery**:



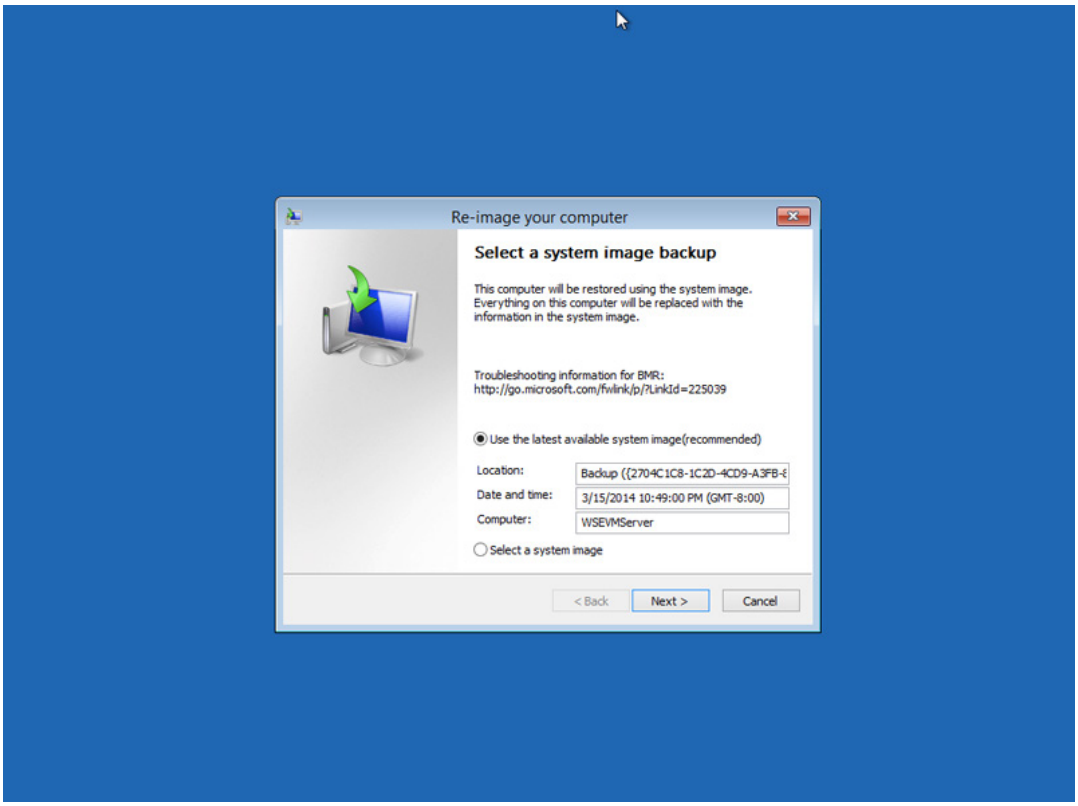
Just two options available here, System Image Recovery and a Command Prompt.

Click **Windows Server 2012 R2.**



Select your operating system.

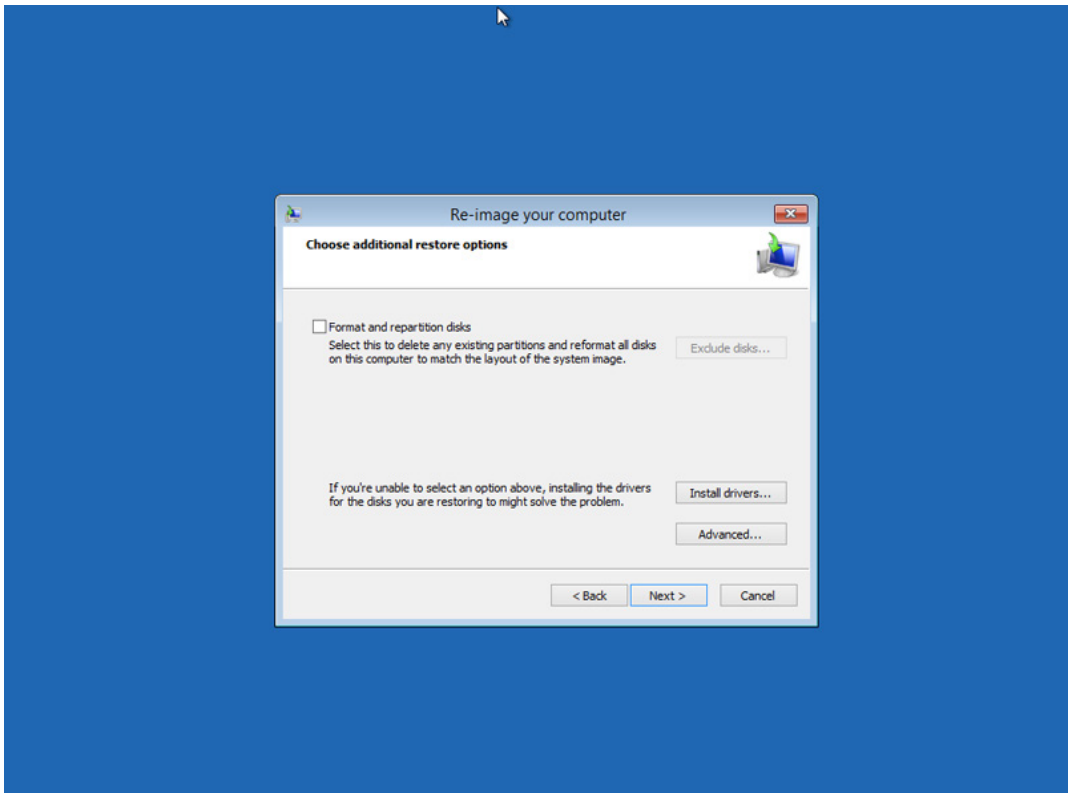
The Re-image your computer wizard appears from which you can select your system image backup. Simply follow the prompts to restore your server.



Selecting the backup to restore.

Think carefully about the backup you wish to restore - if you've experienced a driver issue or a virus, then you'll need to restore the server to a time before the issue occurred. But bear in mind that the earlier the backup you restore, the more settings and data you may need to subsequently update. Click **Next** to continue and you'll be provided with options to format, repartition and/or exclude disks from the restore. If it's just your system volume you wish to restore, then you can exclude any partitions or disks that hold your server data.

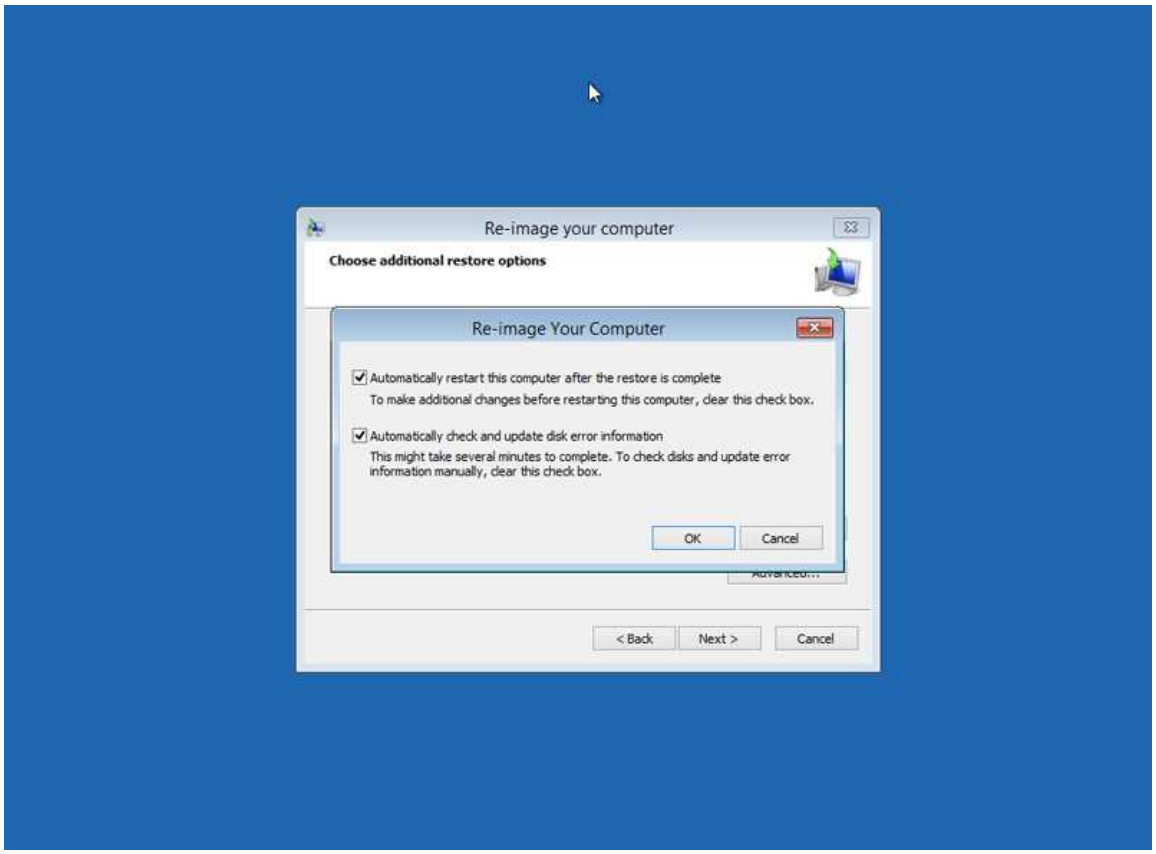
Simply check the box called **Format and repartition disks**, at which point the **Exclude disks** button will be enabled. From there you can configure your restore.



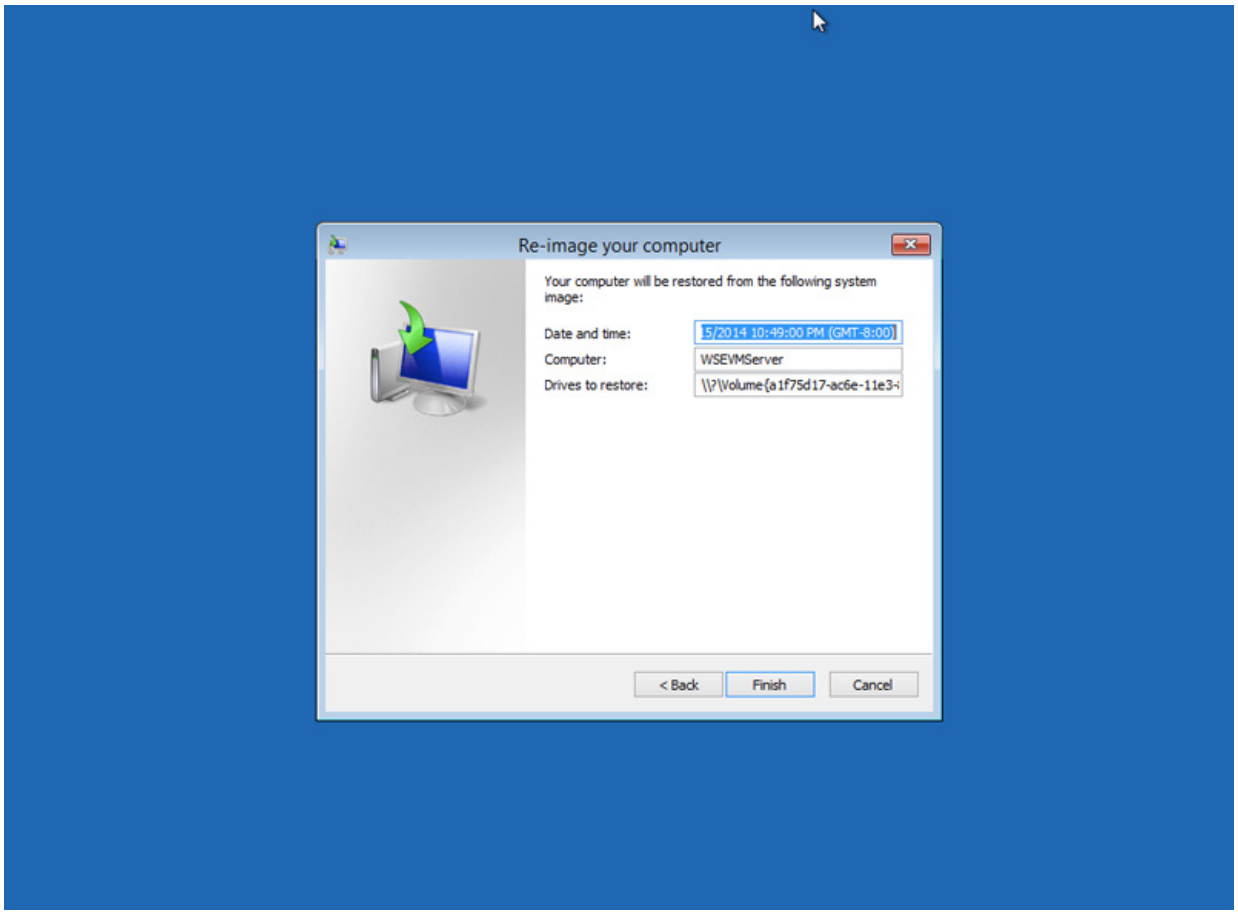
Use the Format and repartition disks option to make changes to your restore.

Other options available here are to Install drivers, if you're having issues with your restore. Just like Client Restore, you can install drivers for your server ahead of completing a restore.

The **Advanced** button allows you to prevent the server from rebooting once the restore is complete - just in case you wish to perform some additional manual tasks ahead of the restart. You can also toggle the disk checking feature during restore.

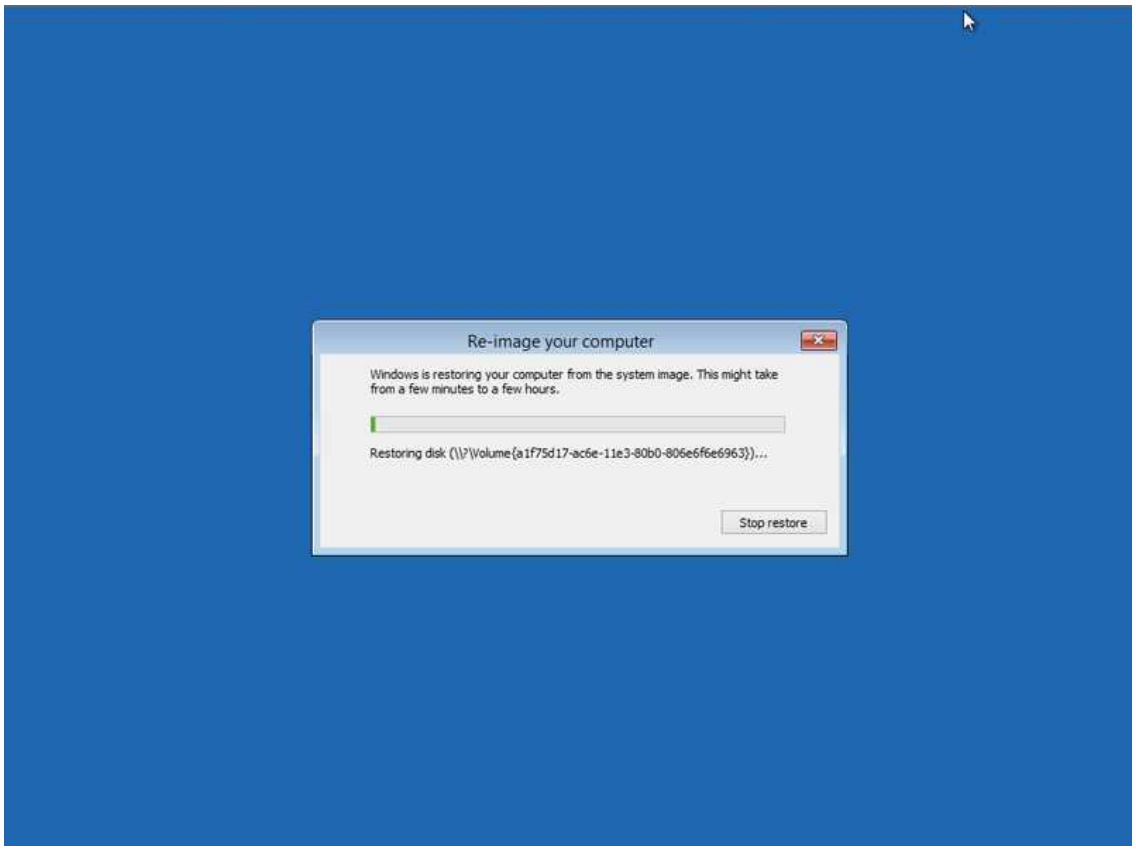


Once you've configured the restore, you'll see a dialog confirming what's going to happen. Click **Finish** to get started. (That sounds a little, strange, but that's what the button says!)



Ready to restore.

The restore begins - depending on the size of the disks you're restoring the process will take a few minutes up to a few hours.

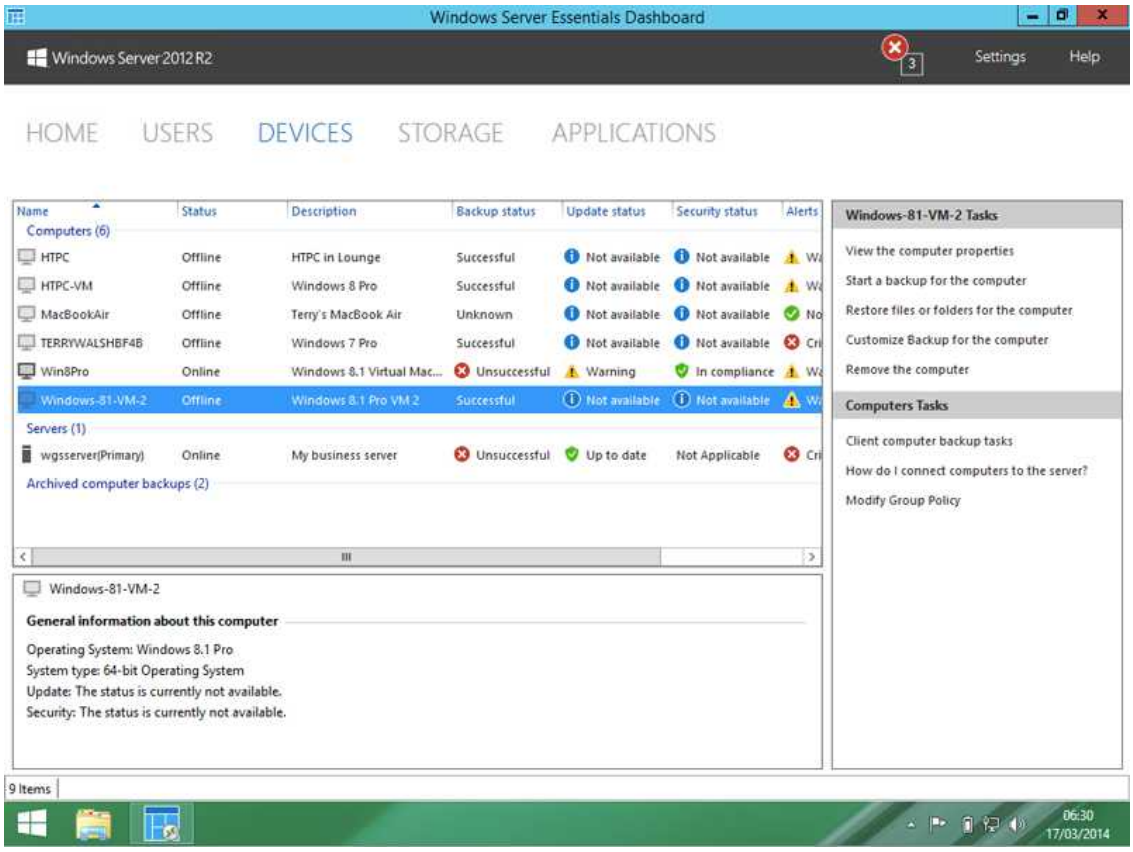


Restoring the server.

Restoring Client Files and Folders

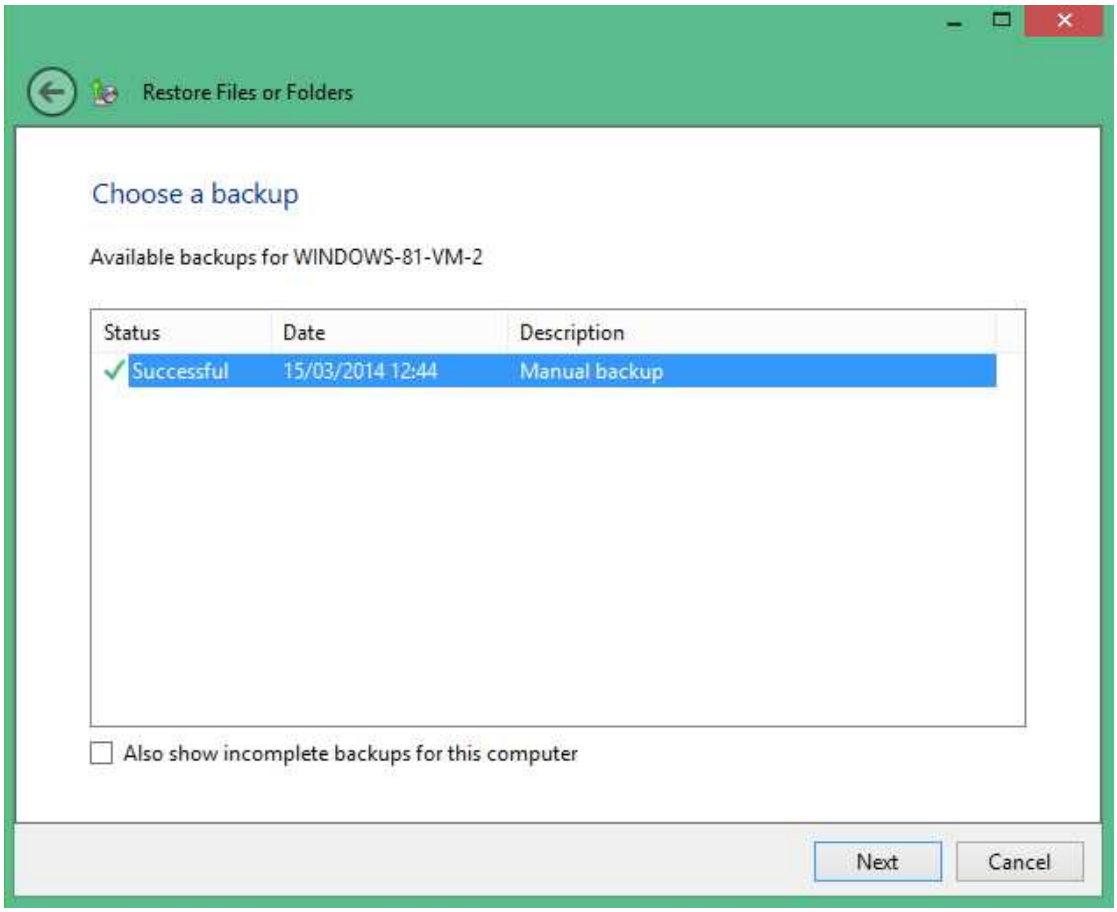
Of course, a full system restore is only going to be needed in the case of disaster striking - hopefully it's a feature of Windows Server 2012 R2 Essentials that you never need to use. It's more likely that you'll find the need to restore individual files and folders from your backups - once again you can do this with both client and server backups. Let's look at restoring files and folders on your clients first.

Open up the Dashboard on one of your clients. As an administrator, you can access backups from any of your connected clients on any client with the Dashboard. Head to the **Devices** tab and in the Task pane, look for a task named Restore files or folders for the computer.



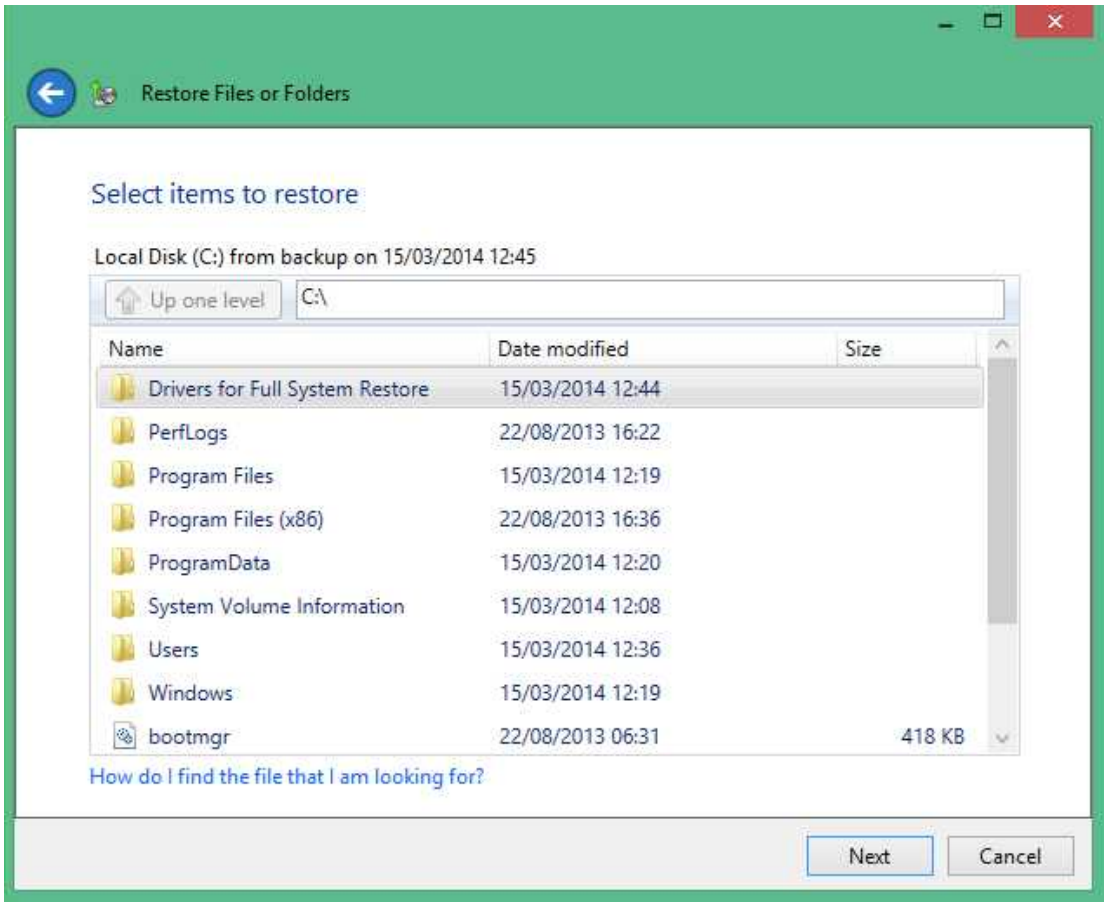
The Devices tab.

Click the task and you'll be presented with a list of available backups to choose from, sorted in date order. A checkbox at the bottom of the dialog also allows you to view incomplete backups for the client.



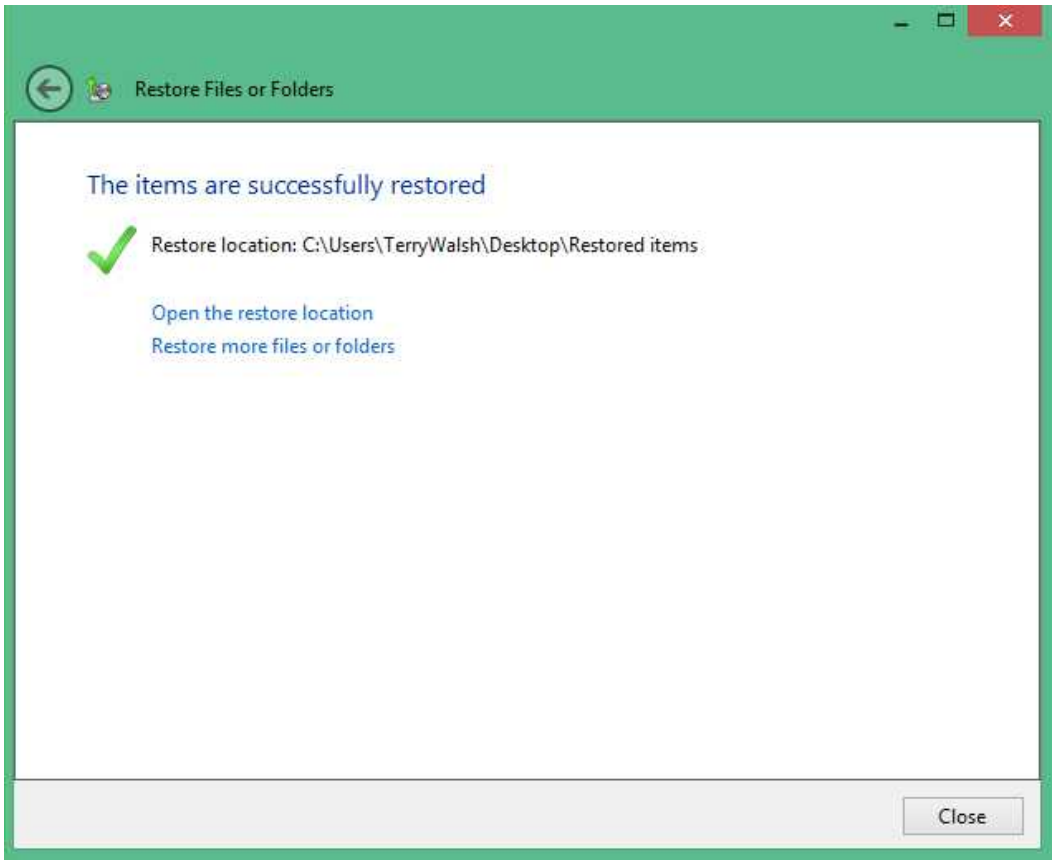
Our test client has only completed a single backup, so the choice is easy!

Select a backup and click **Next** to open it up. You'll be presented with a view of the files and folders stored in the backup. As usual, double click on a folder to dig down, and use the **Up one level** button near the top of the dialog to return.



Selecting items to restore from your backup.

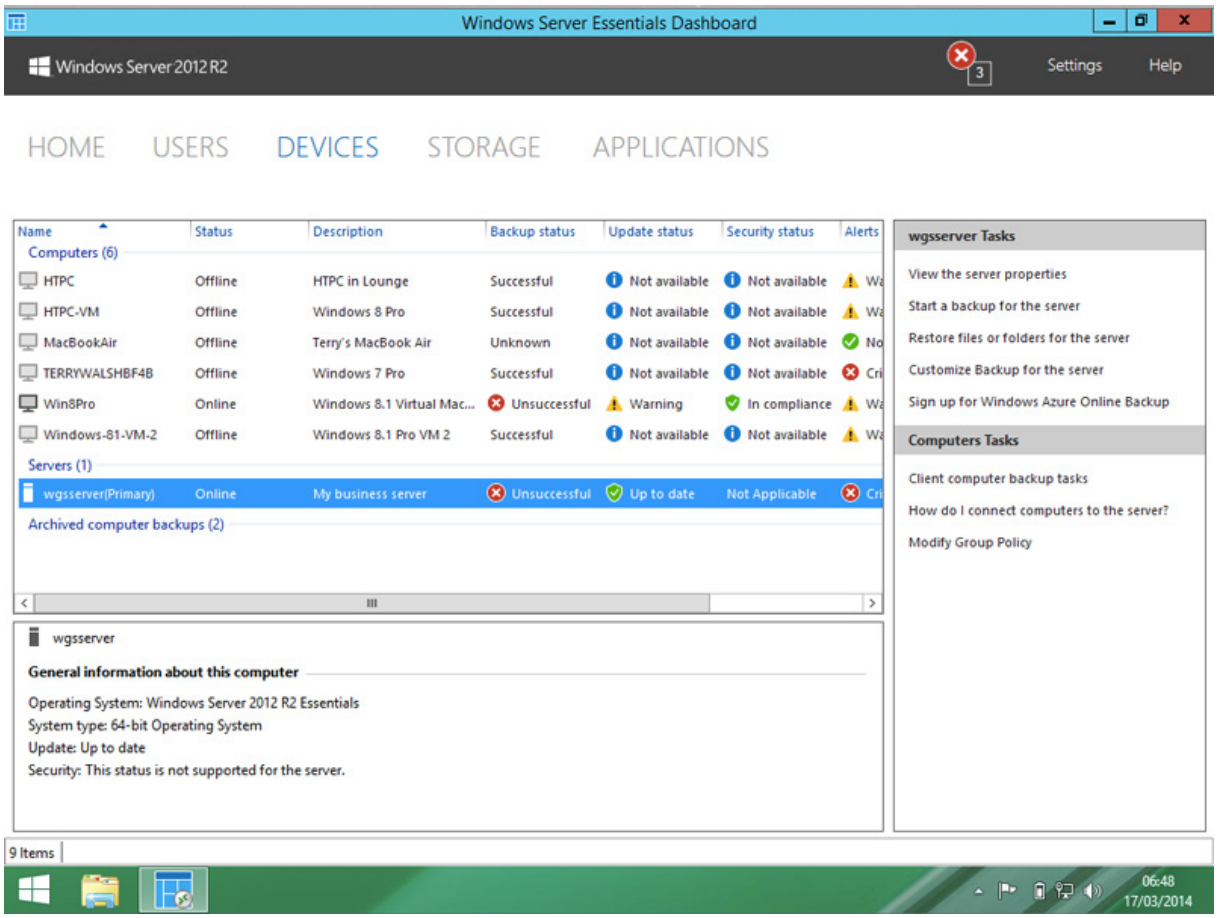
Select the files or folders you want to restore and then click the **Next** button. You'll be asked to choose a location to restore the file to - you can choose to directly overwrite the file on your client by using the **Browse... button**, or opt for the default Restored Items location. Hit **Next**, and the backed up data will be copied over.



The data is restored.

Restoring Server Files and Folders

The process to restore files and folders from a server backup (for example, data from your shared folders) is a carbon copy of the client restore process. Still in the Dashboard's Devices tab, this time highlight the server and select **Restore files and folders for the server.**



Select the server this time.

As with restoring files and folders from the client, you'll be asked to select a backup to open, after which you can navigate to the files and folders you wish to restore and select the location to which you want to copy your restored data.

That completes our dig into various backup and data protection strategies that are included in Windows Server 2012 R2 Essentials. The platform's client and server backup and restore features are very simple to use - so easy in fact, that it's quite possible to take this fabulous feature for granted. But, take it from me, having worked with many network attached storage and server platforms over the last few years, I promise you that there's little to touch Windows Server 2012 R2 Essentials when it comes to Windows PC backup.

Beyond the backup options incorporated in Windows Server 2012 R2 Essentials, you so have additional options available.

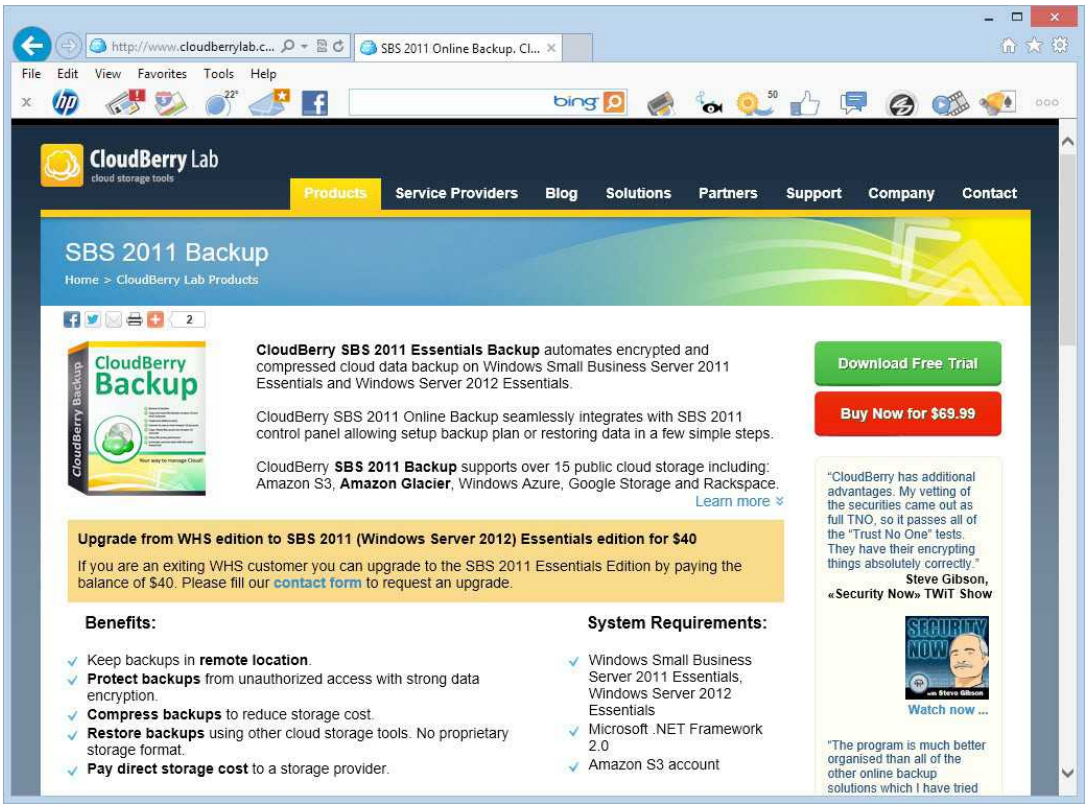
Cloud Backup

Still the buzz of the tech world, you won't be surprised to hear there are a plethora of cloud-based backup options that will work with Windows Server 202 R2 Essentials and your connected clients.

Microsoft integrates a cloud-based backup solution in the platform, and we'll be taking a look at that in the next chapter. A form of client backup, File Synchronisation, is also an option and of course, Microsoft will continue to push their OneDrive (formerly SkyDrive) service to you with its strong integration with Windows.

There are a swathe of competitors to OneDrive you should also check out, including Dropbox (http://www.dropbox.com), Box (http://www.box.com/) and Google Drive (http://drive.google.com). I've used all three and can recommend any and all of them.

On the server side, you can also find third-party server backup solutions which integrate neatly with the Windows Server 2012 R2 Essentials Dashboard. I suggest a Dashboard Add-in from Cloudberry Labs, called **Cloudberry Online Backup**. More information on this add-in can be found at http://www.cloudberrylab.com/ - it costs $69.99 for the SBS 2011/Server 2012 R2 Essentials version.



The Cloudberry Labs website.

Via this chapter, I hope you now have a sense of the various methods that can be employed by Microsoft and third-parties to protect your precious data. Remember, an organization can rebuild after a fire (or other disaster), but if you lose the company history and data, recovery becomes quite problematic.

Integrating Windows Azure Online Backup

"Whilst Microsoft has dominated personal and enterprise computing for decades, there have been mis-steps along the way. The company was slow to see the fundamental shift in our daily lives heralded by the Intenet, and the company's success in Mobile is well behind Apple and Google.

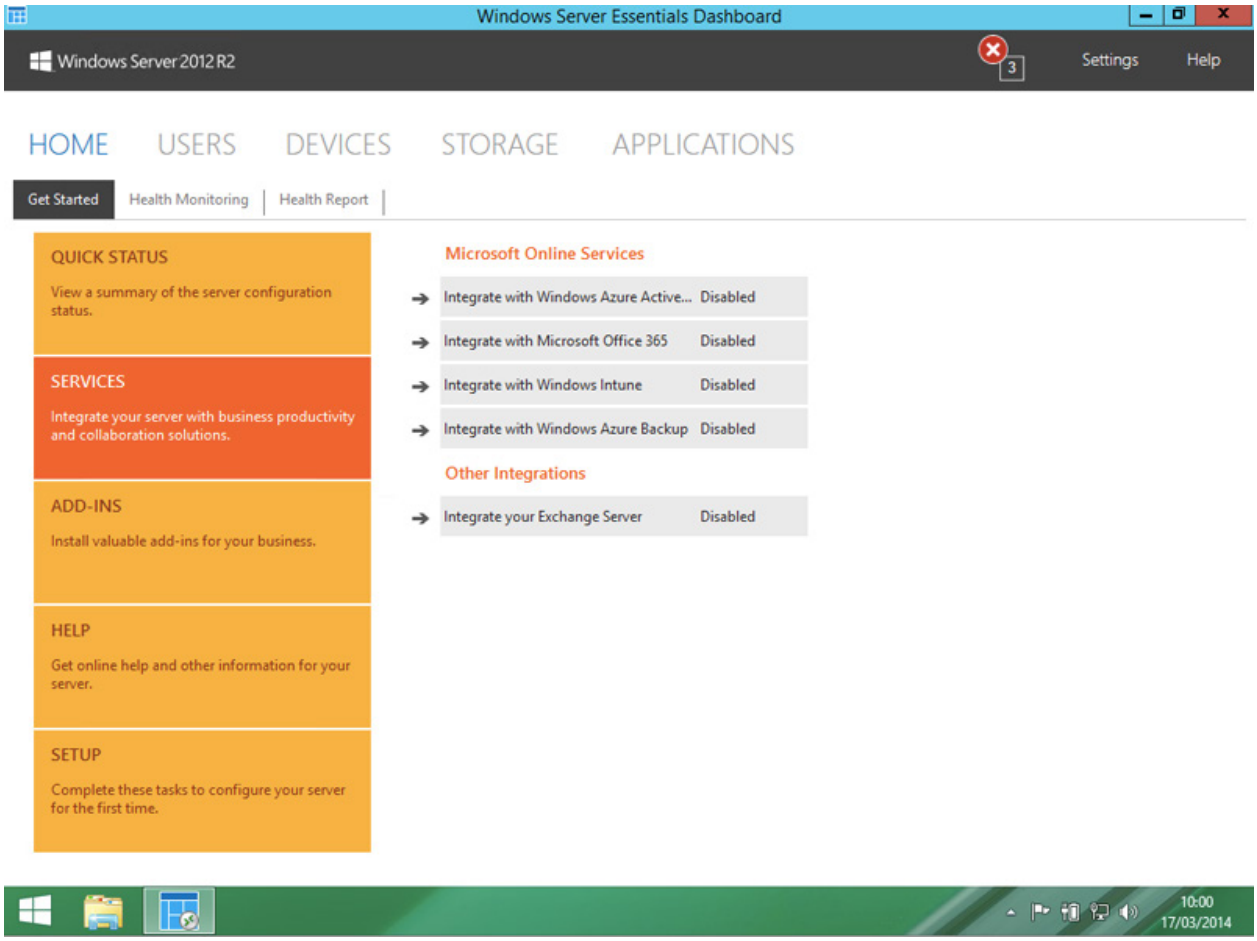
It would not make the same mistake with the Cloud."

Way back in October 2008, at that year's Professional Developers Conference, Microsoft announced it was preparing a Cloud Application Platform called Windows Azure. The platform would allow developers to create and run applications on Microsoft-hosted servers located and managed remotely in specialist data centers. Importantly, developers - and Microsoft itself - would be able to sell subscription services which permit access to those server and the applications running on them.

In 2010, the platform was opened up for business and a new line of revenue opened up for the Windows ecosystem. Today, thousands of servers are running in datacentres across the globe supporting Windows Azure services and applications.

As I mentioned in Chapter 5, core to Microsoft's small business server strategy is the development of the "hybrid" cloud. A combination of reasonably cheap **on-premise** equipment (that'll be your Windows Server 2012 R2 Essentials machine) storing local data and managing local network services for clients and users with a suite of **off-premise** services and applications providing additional value.

Over the last three years, Microsoft has continued to develop and build a range of Cloud-based services targeting small businesses - several are now tightly integrated with Windows Server 2012 R2 Essentials and, whilst disabled by default, can be easily enabled from the Dashboard. The Services section of the Home tab reveals all.



Microsoft's online services suite.

The Services on offer include:

- **Windows Azure Active Directory** - allows single sign-on and password synchronization between the local Active Directory and cloud services such as Office 365. User Group management and synchronisation have also been enabled.

- **Microsoft Office 365 Enhancements** - Deeper integration with Office 365 in the Dashboard - again targeted at larger environments. These include the ability to create and manage email distribution groups, mobile device management (MDM) features such as remote wipe, policy and access management. There's also a new SharePoint Online Library Management feature which will allow you to create and manage SharePoint libraries for your organisation.

- **Windows Intune Integration -** Windows Intune is a cloud-hosted solution for managing client PCs. You can manage devices, security configuration, endpoint protection, patch and application distribution and much more. In Windows Server 2012 R2 Essentials you can manage users, secu-

rity groups, and licenses for Windows Intune services.

In the next few chapters, we'll walk through the setup and configuration of some of these services, allowing you to determine whether they're appropriate for your organisation. Throughout our walkthrough, remember that there are competitor services available out there that may serve your needs better - they may not be as convenient as the tightly integrated Microsoft services, but may offer better value for your specific situation.

Windows Azure Backup

As we've just covered Backup in the last chapter, let's start here with integration of Microsoft's cloud-based backup service. The benefits of cloud-based backup should be clear, but I'll briefly reiterate.

Windows Server 2012 R2 Essentials, as we saw in the last chapter, offers a slew of server and client backup features that protects you from data loss in the event of your computers breaking down, suffering a virus infection, or simple user errors like deleting a file or folder accidentally. What it doesn't do is protect your data from burglars breaking in and stealing your server and client computers, or a disastrous event like a fire or flood destroying your premises and the data held on your computers.

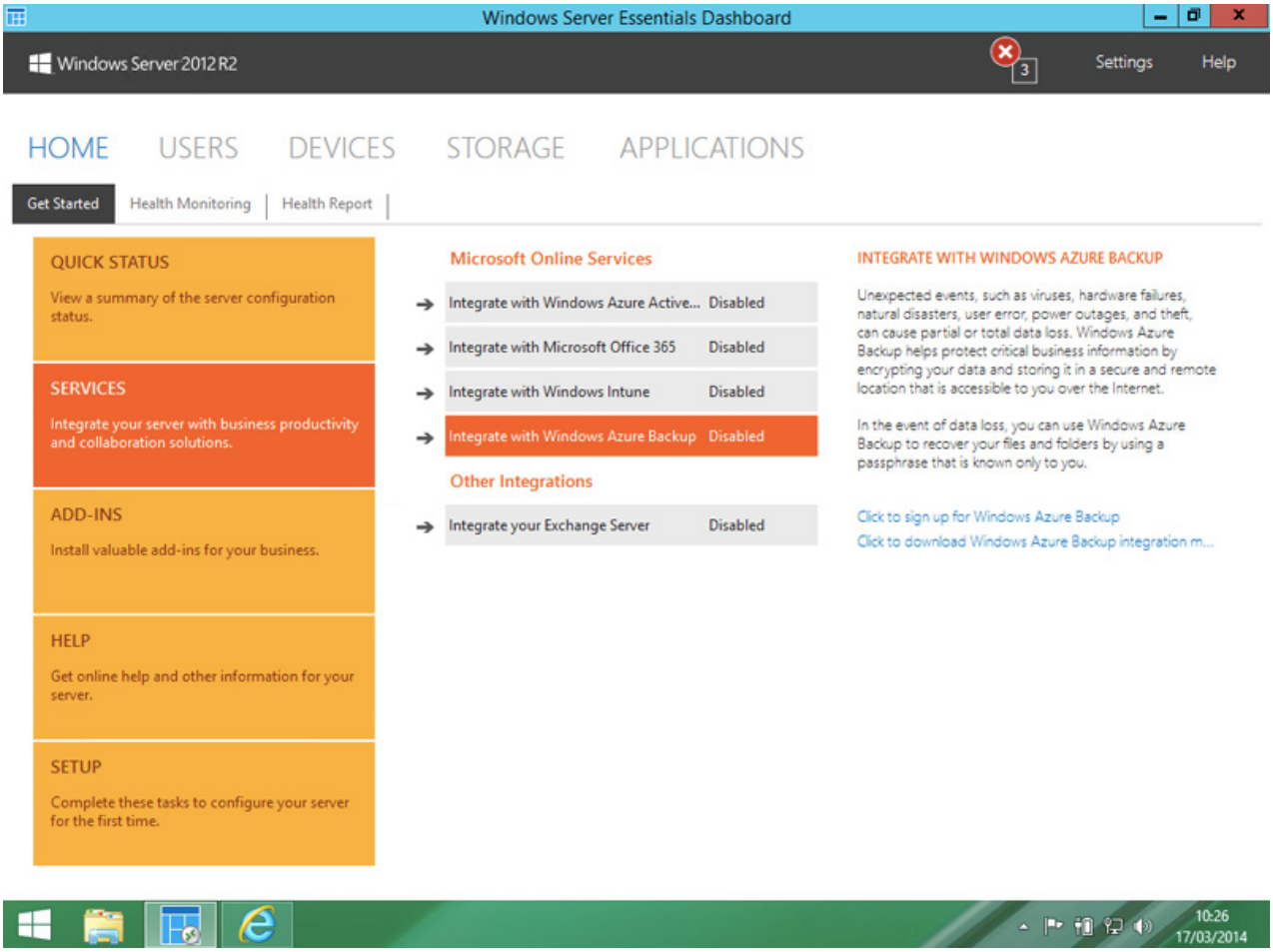
So, however you choose to do it, an off-site backup of your data is an essential element of a decent data backup and protection strategy. Think of cloud backup like a modern equivalent of copying your data to a USB hard drive and storing it off-site.

Windows Azure Backup is Microsoft's cloud-based backup service. Backups are encrypted before transmission and stored encrypted in Windows Azure. After data is backed up to the cloud, authorised users can easily recover data from cloud-hosted backups - of course you're now an expert on that after reading the last chapter! Backups are *incremental*, which means that once you have a copy of your original data stored in the cloud, only changes made to that data are transferred - that reduced bandwidth and storage requirements, both of which optimise performance of the network and save you money.

Ah, yes - money. You'll need some of that - potentially. At the time of writing, Microsoft is offering up to 5GB of backup storage for free. Over that, you'll need to pay service fees on a contract or pay as you go basis. Full pricing details for your region are available online (http://www.windowsazure.com/en-us/pricing/details/backup/).

Installing the Windows Azure Backup Add-in

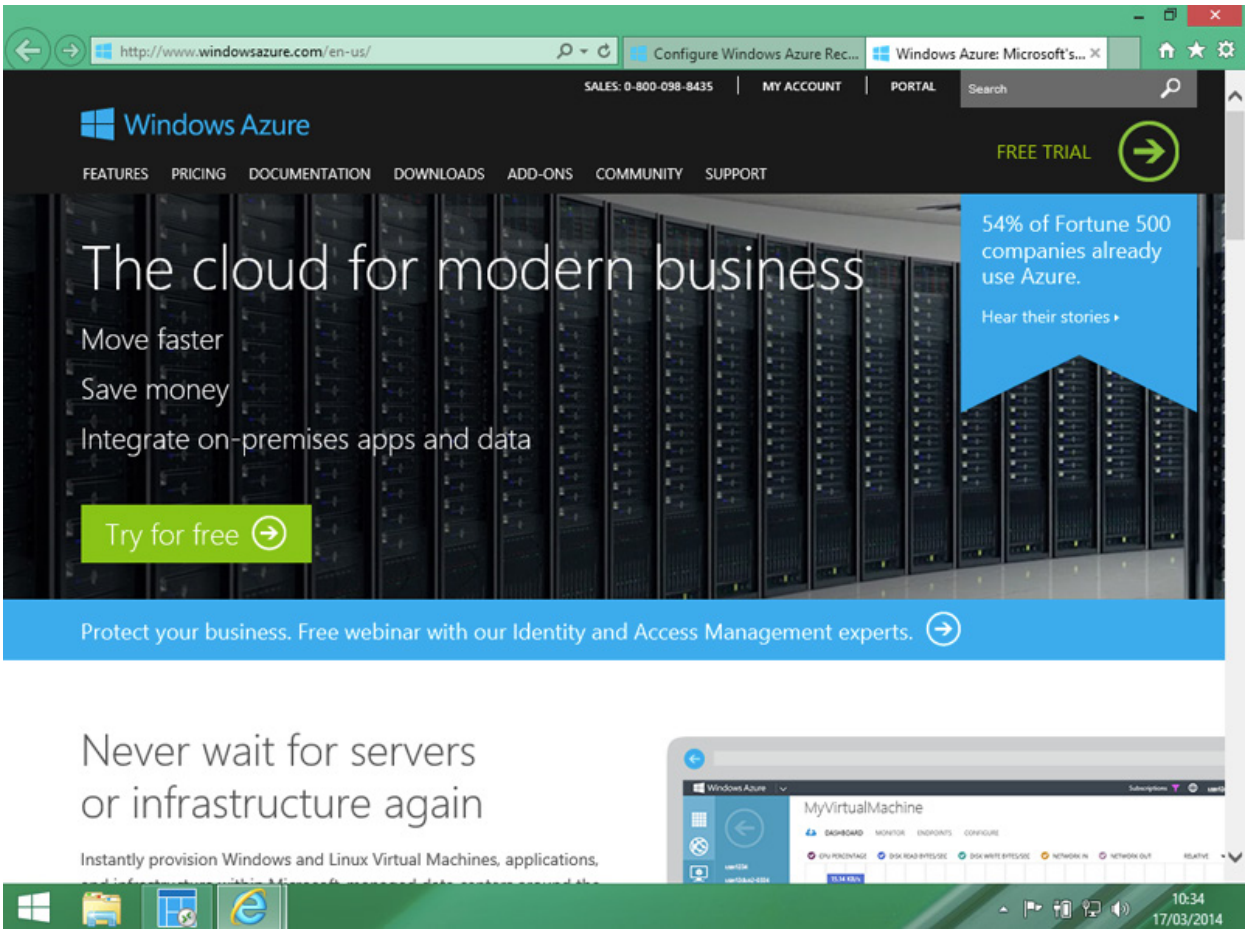
We'll kick off at the Windows Server 2012 R2 Essentials Dashboard. Click the **Home** Tab and then go to the **Services** section. In the list of services available, click the entry entitled **Integrate with Windows Azure Backup**.



The Windows Azure Backup integration task.

On the right hand side of the window, you'll notice two new links appear, underneath a description of the service. We'll use the bottom link, **Click to download Windows Azure Backup integration module** shortly, but first click on the top link **Click to sign up for Windows Azure Backup**.

You'll land on Microsoft's Windows Azure website - yes, an integrated sign-up process in the Dashboard *would* be great, wouldn't it? Alas, maybe in the next version of Windows Server Essentials!

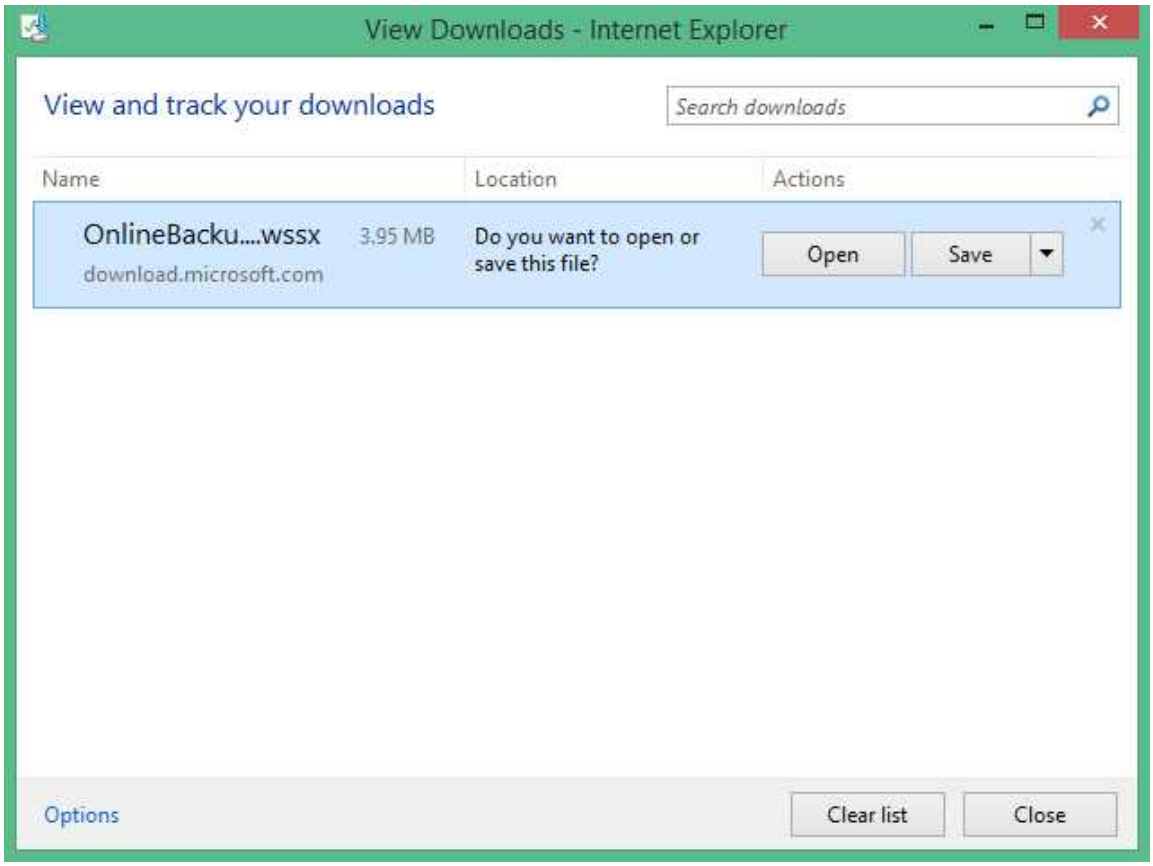


You'll need to sign up for a Windows Azure account at Microsoft's website.

We'll sign up for a free trial to get us started. You should see a relevant link at the top of the page. but if not, head to http://www.windowsazure.com/en-us/pricing/free-trial/. You'll need the ubiquitous Microsoft Account to sign up. Importantly, you'll need to select your region during sign-up - this cannot be changed after registration and will determine where data you backup is held geographically, so ensure your local region is selected correctly.

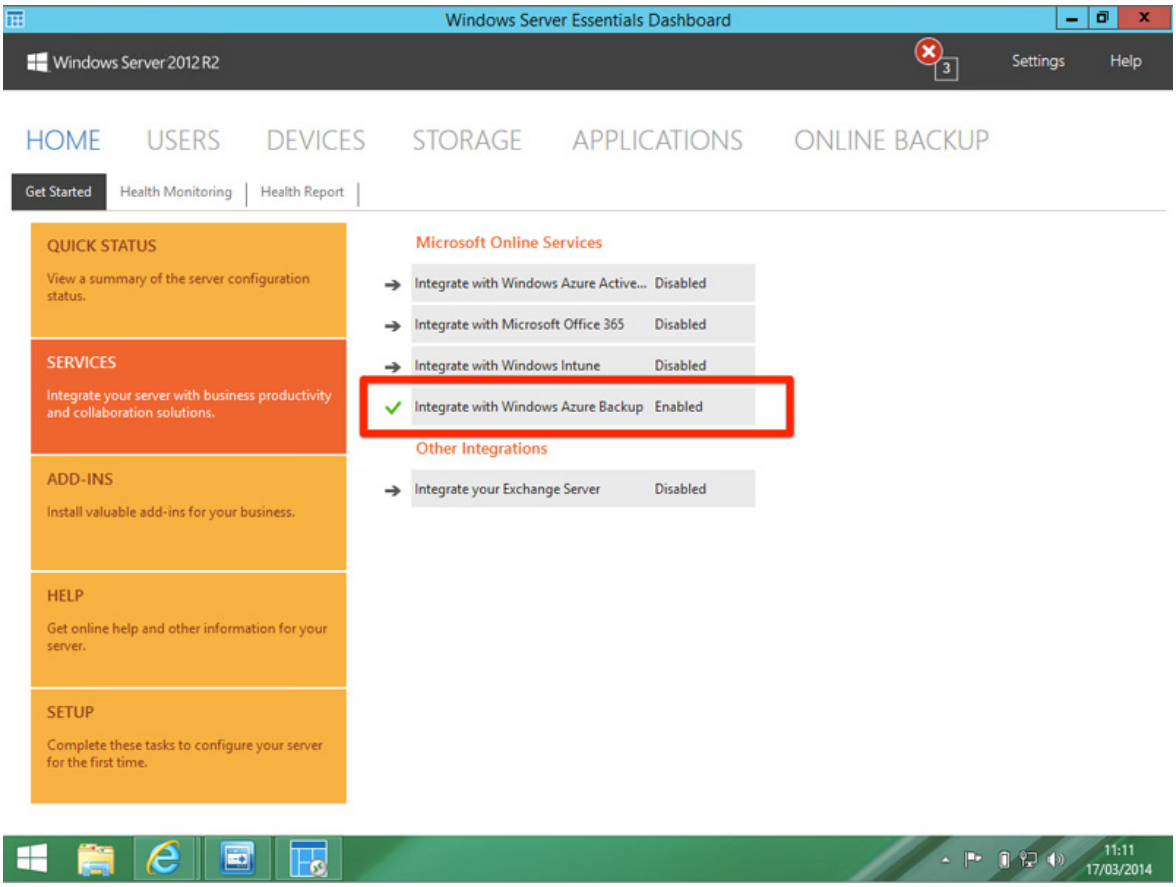
Enter your personal details (you will need to verify your registration with a code sent to your mobile via SMS text message or another validation method) and complete sign up.

Once the account is registered, head back to the Dashboard and click that second link, **Click to download Windows Azure Backup integration module.** As you've probably guessed this downloads a Windows Server Essentials add-in that will integrate the service into our server. Note that you'll need to install the add-in directly on the server, rather than from a client (as you can with other add-ins). If you try to install the Windows Azure Backup ad-in from a client, it'll fail.



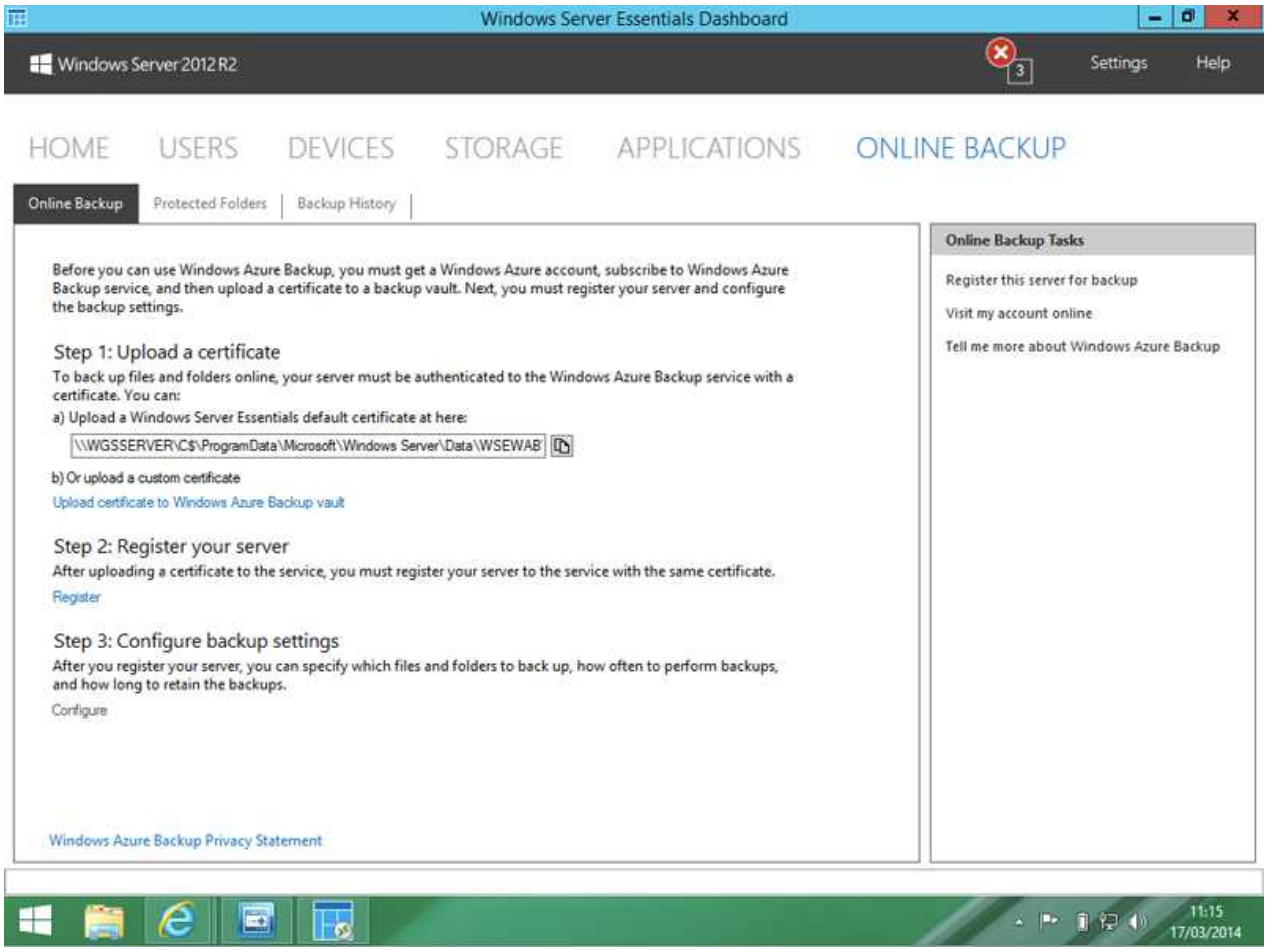
Downloading the Windows Azure Backup add-in.

Once downloaded, run the wssx file to install the add-in. When the installation completes (I found it took a few minutes, so give it some space it if looks like installation has frozen), close the installation wizard and then close and re-open the Dashboard. Check the Services section of the Home tab once again, and your Windows Azure Backup integration should now be enabled.



A green tick signals successful installation of the add-in.

A new tab, **Online Backup** should now be visible at the top of the screen. Click it to continue configuration. You'll see we have a little more work to do!

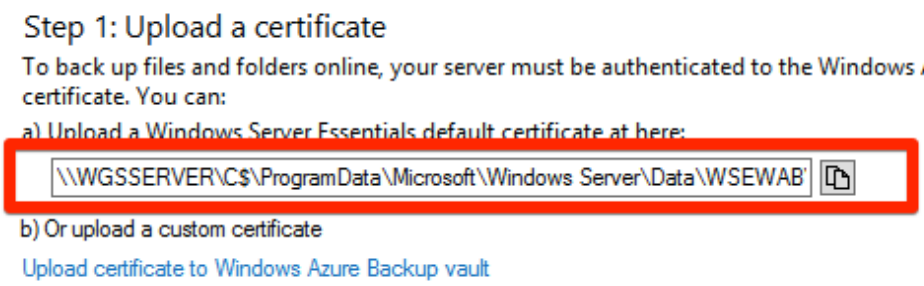


You'll find instructions for the remaining configuration tasks in the Online Backup tab.

Configuring the Windows Azure Backup Service

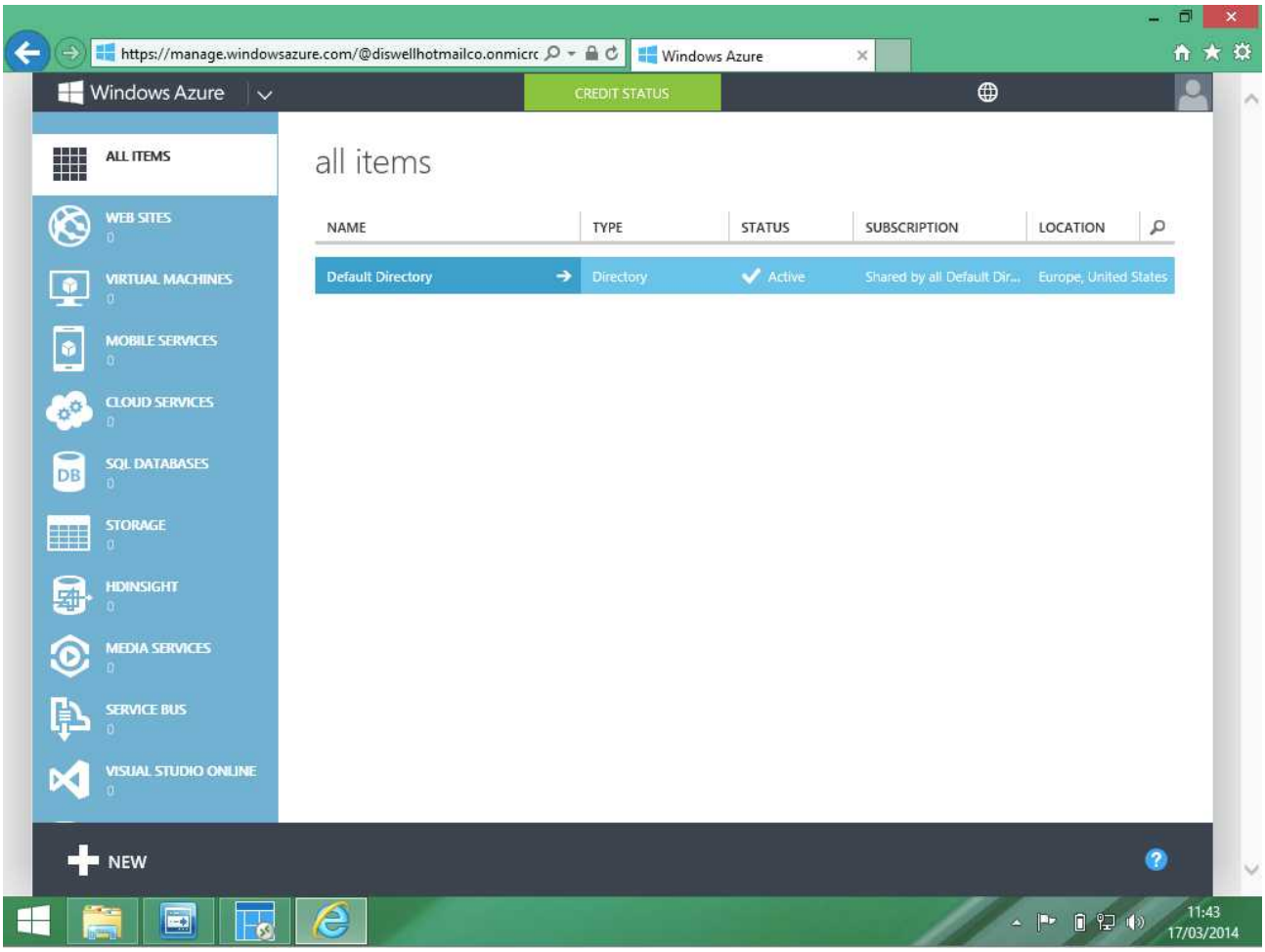
OK, the next task for us to complete is to upload a security certificate to our Windows Azure Backup account (or "Vault" as it's referenced here). I mentioned earlier that backups were security encrypted and uploaded to the Windows Azure platform to protect your data from prying eyes. A security certificate ensures this process works seamlessly between your server and the off-site datacenter, ensuring your server is authenticated by Windows Azure.

Fortunately, we do not have to go through the pain of purchasing and configuring our own security certificate (although if a custom certificate is preferred, you'll find you can do that too). Underneath the poorly written statement **Upload a Windows Server Essentials default certificate at here** (Tsk - really!) you'll see a box containing a folder link and a copy icon. Here it is:



The link to our security certificate.

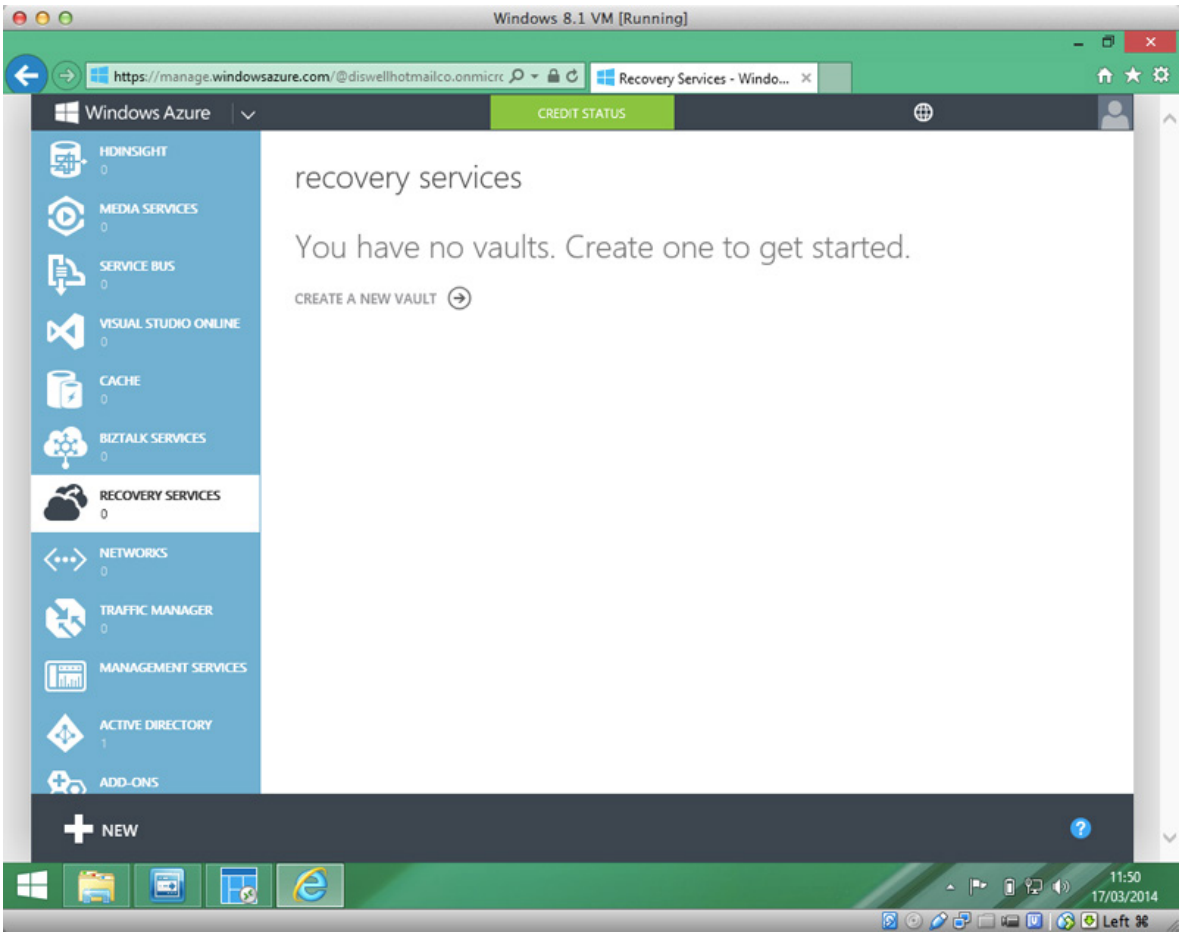
Click the copy button to copy the location of your certificate to the clipboard. Now, click on the link named **Upload certificate to Windows Azure Backup vault**. You'll be taken to your Windows Azure account online where you may need to sign-in again with your Microsoft Account details.



Erm, OK. What next?

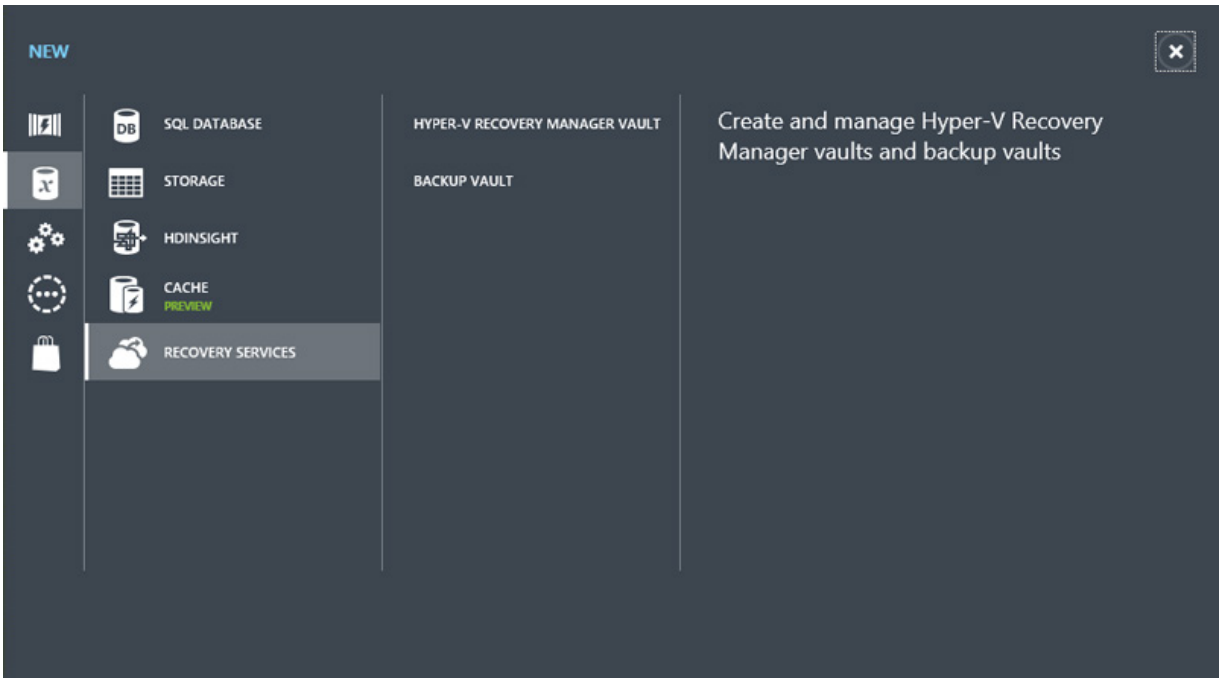
At this point, you'd be well within your rights to scratch your head, shrug your shoulders and give up as it's not at all clear in what you should do next. But that's why we're here, so follow on!

In the left hand side of your account, look for the menu option called **Recovery Services** and click it. You'll see a screen that looks like this:



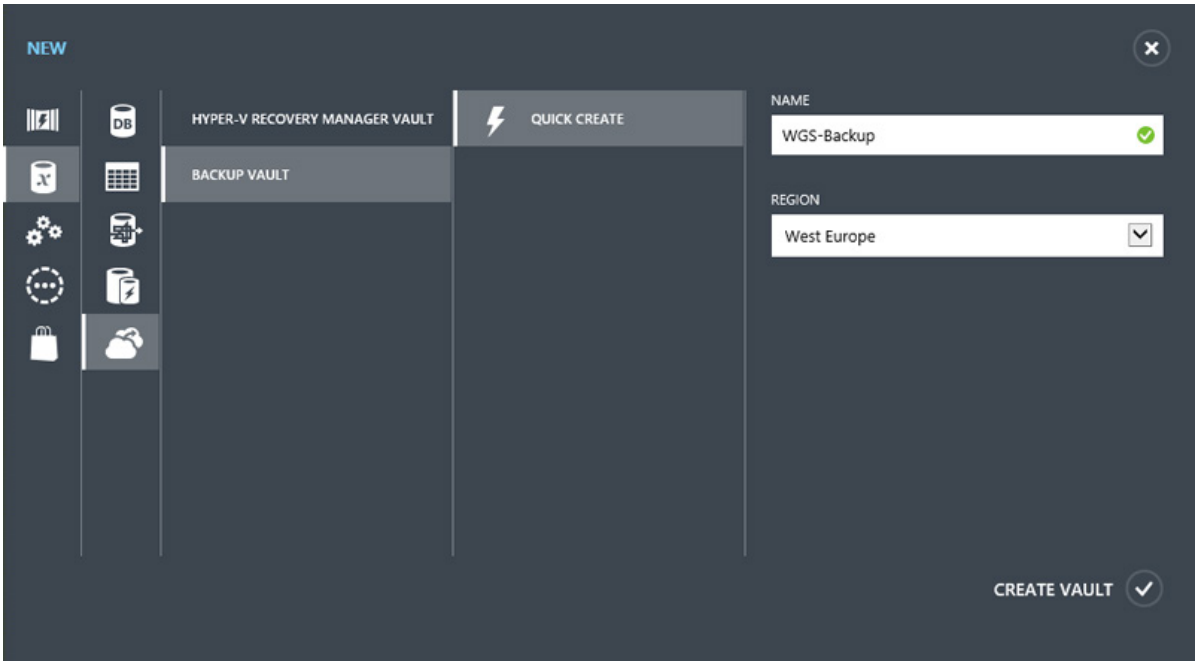
The Recovery Services panel.

We now need to create a **Vault** in Windows Azure that will be used to hold our backup data (think of it like a folder, specific to your server). Click the **Create a New Vault** option. A new panel pops up and asks us what kind of vault we wish to set up. The answer, of course, is a Backup Vault.



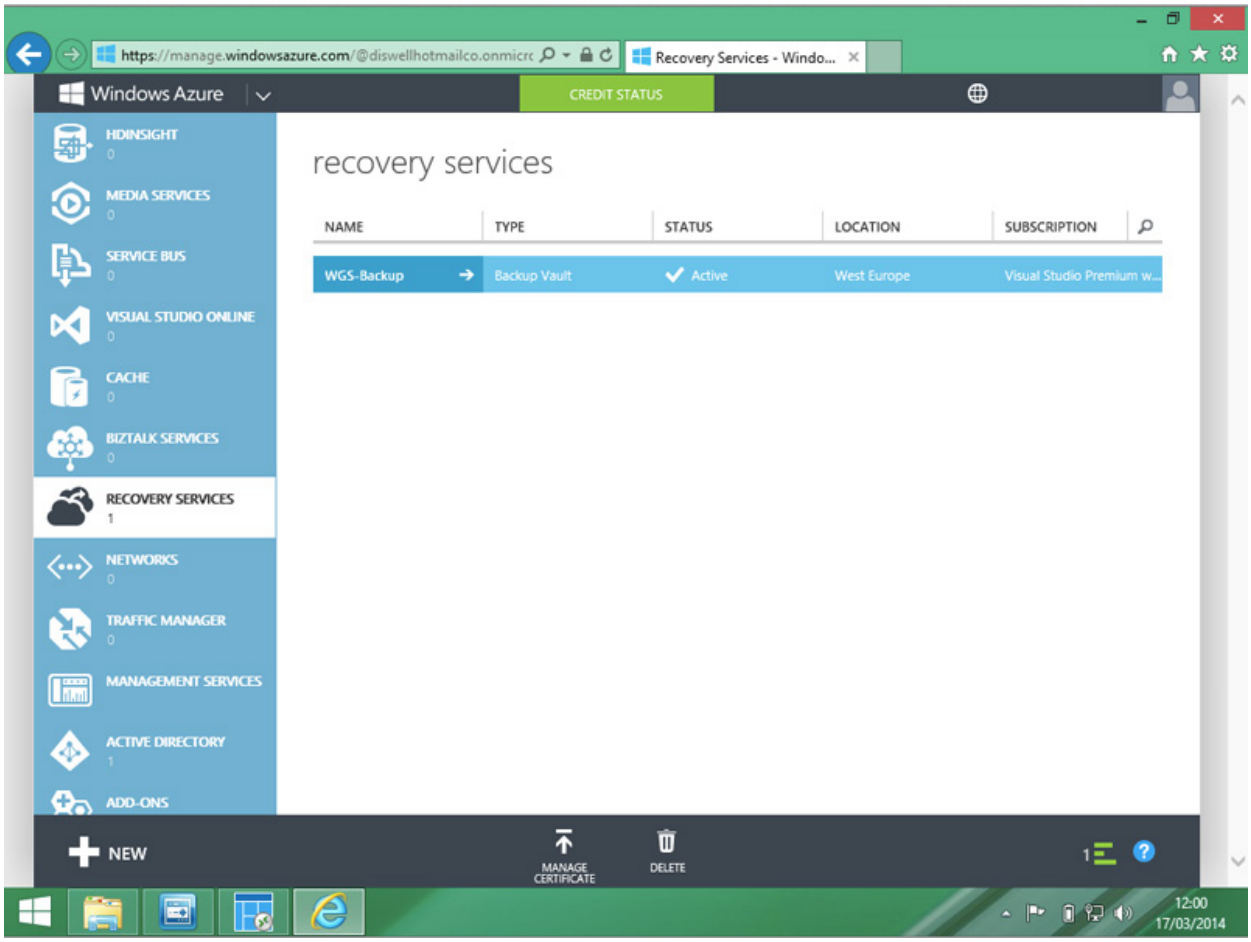
Select Backup Vault to continue.

Click the relevant option, then select the **Quick Create** button. You'll need to provide a name for the vault (letters, numbers and hyphens only) and choose your region once again.



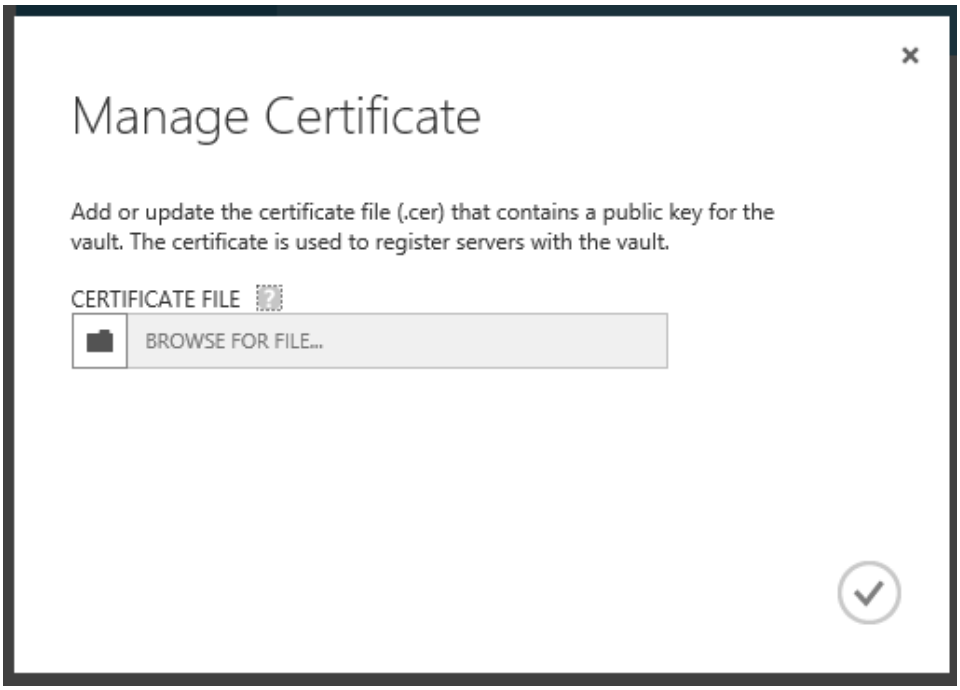
Configuring the vault.

Once that's done, hit **Create Vault** to continue. You'll see Windows Azure whirr away for a little while creating the Backup Vault, following which it should be listed in the Recovery Services panel with an Active status.



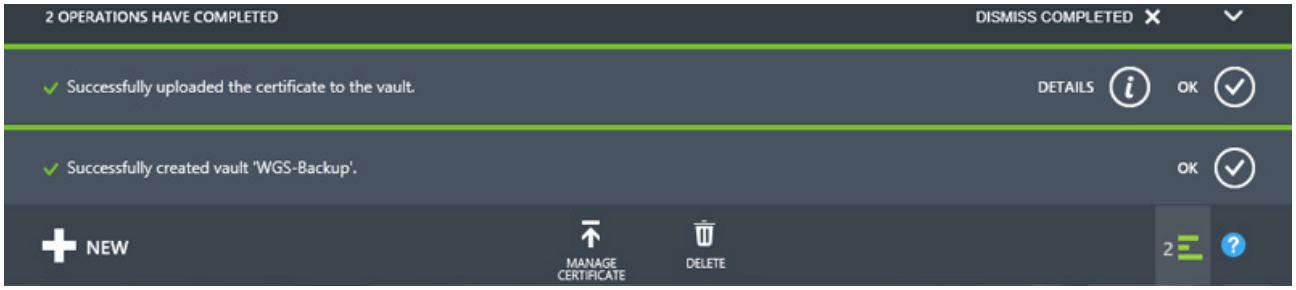
The Vault has been created.

OK, now glance towards the bottom of the screen and you should see a take named **Manage Certificate**. That's where we're headed - click the task and you'll be asked for the location of the security certificate that has been stored on the server. You can browse to the location provided in the Dashboard, or simply paste in the address.



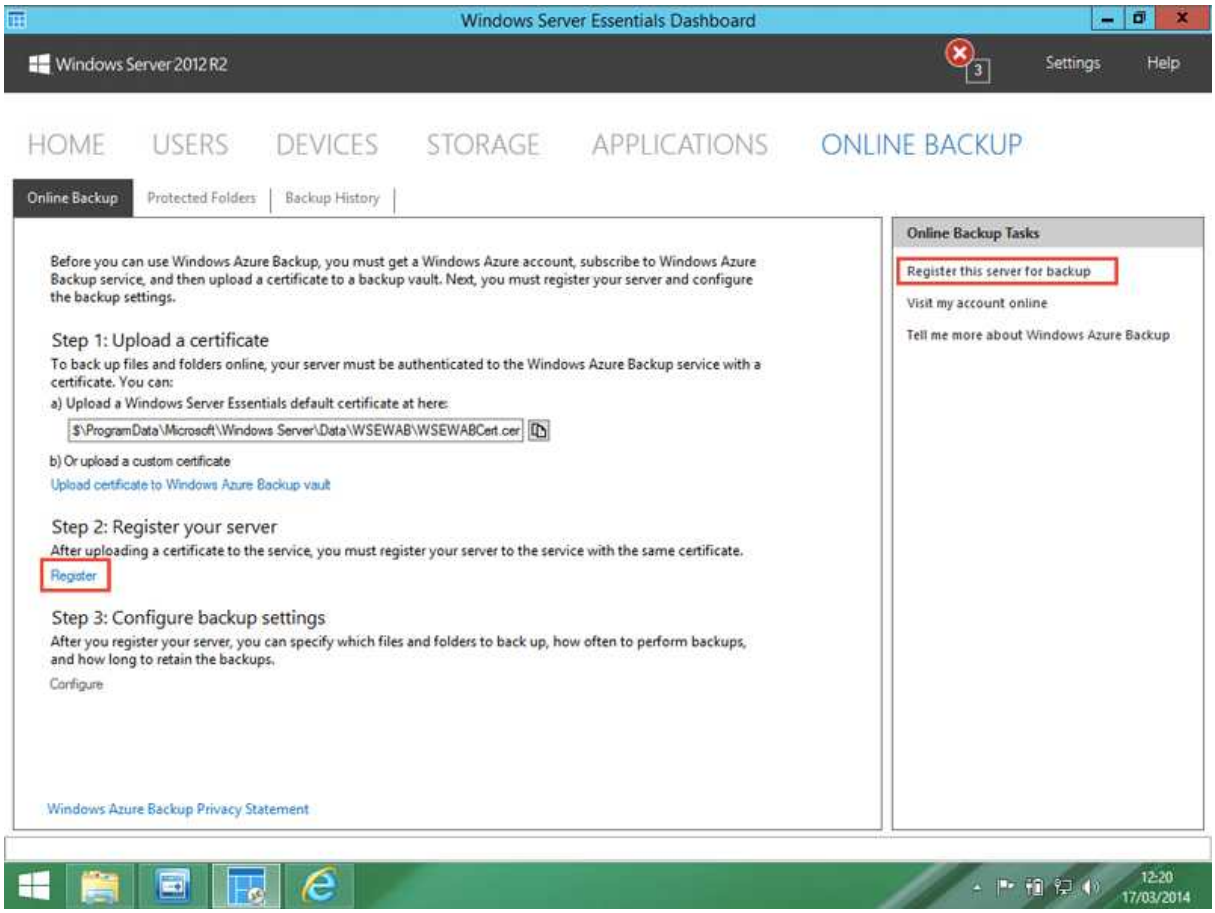
The certificate request.

The certificate uploads and you'll see the bottom panel report back once the upload is complete.



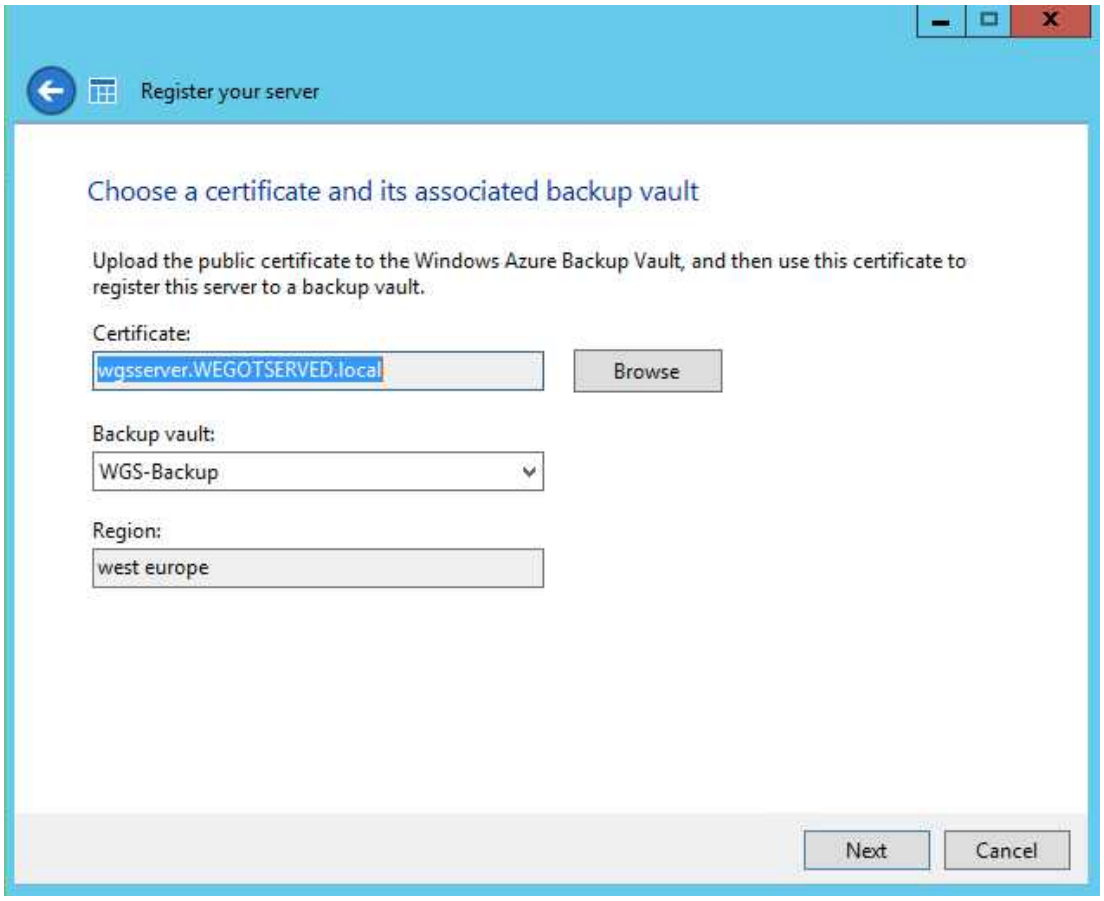
The certificate is uploaded.

Head back to the Dashboard and the **Online Backup** tab we visited earlier. Now that the security certificate has been uploaded, we now need to register our Windows Server 2012 r2 Essentials Server with the online backup service. To do this we can use the **Register** link in the main panel or the **Register this server for backup** task over in the Task pane.



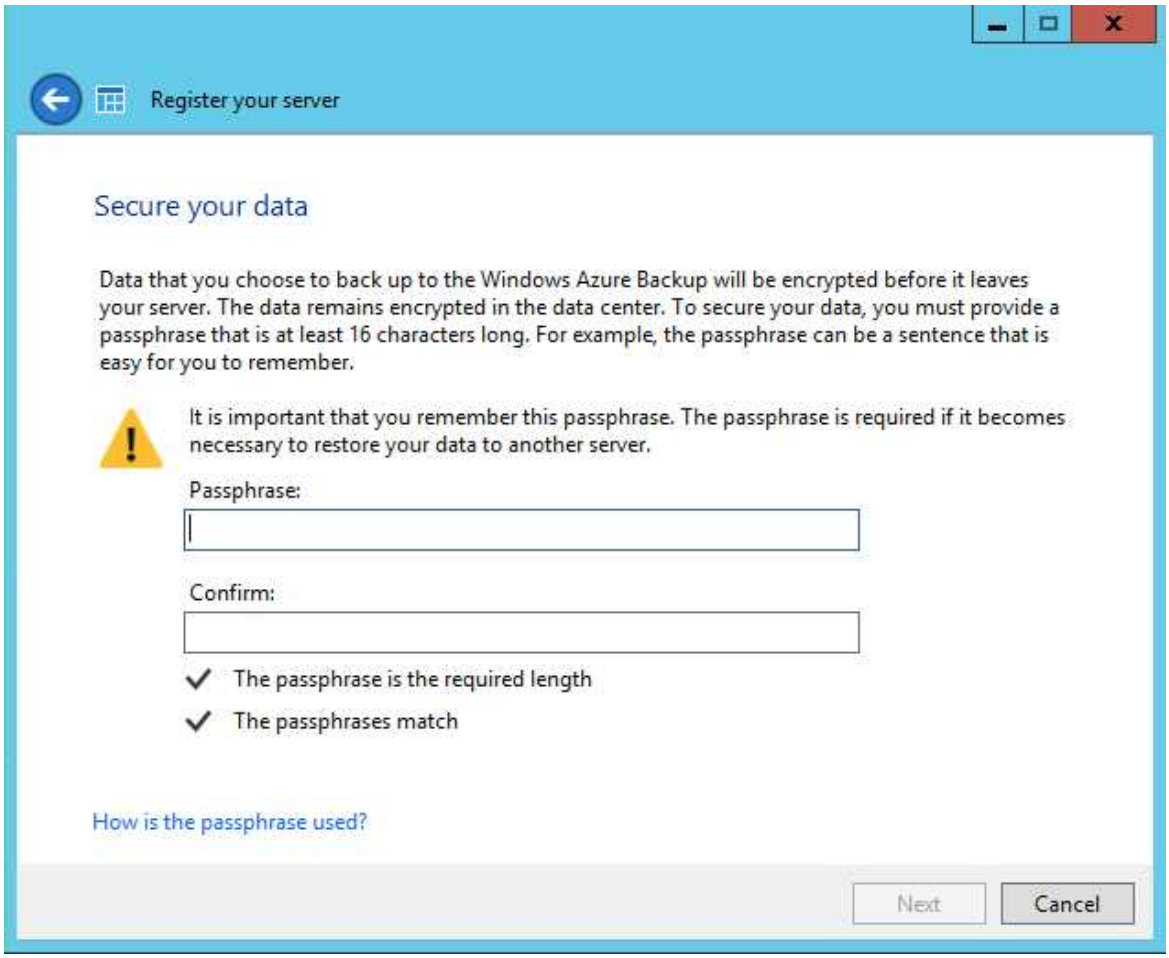
Both registration links take you to the same panel.

A panel opens which should be automatically populated with the **certificate name**, your **Backup Vault** name and your **Windows Azure region**.



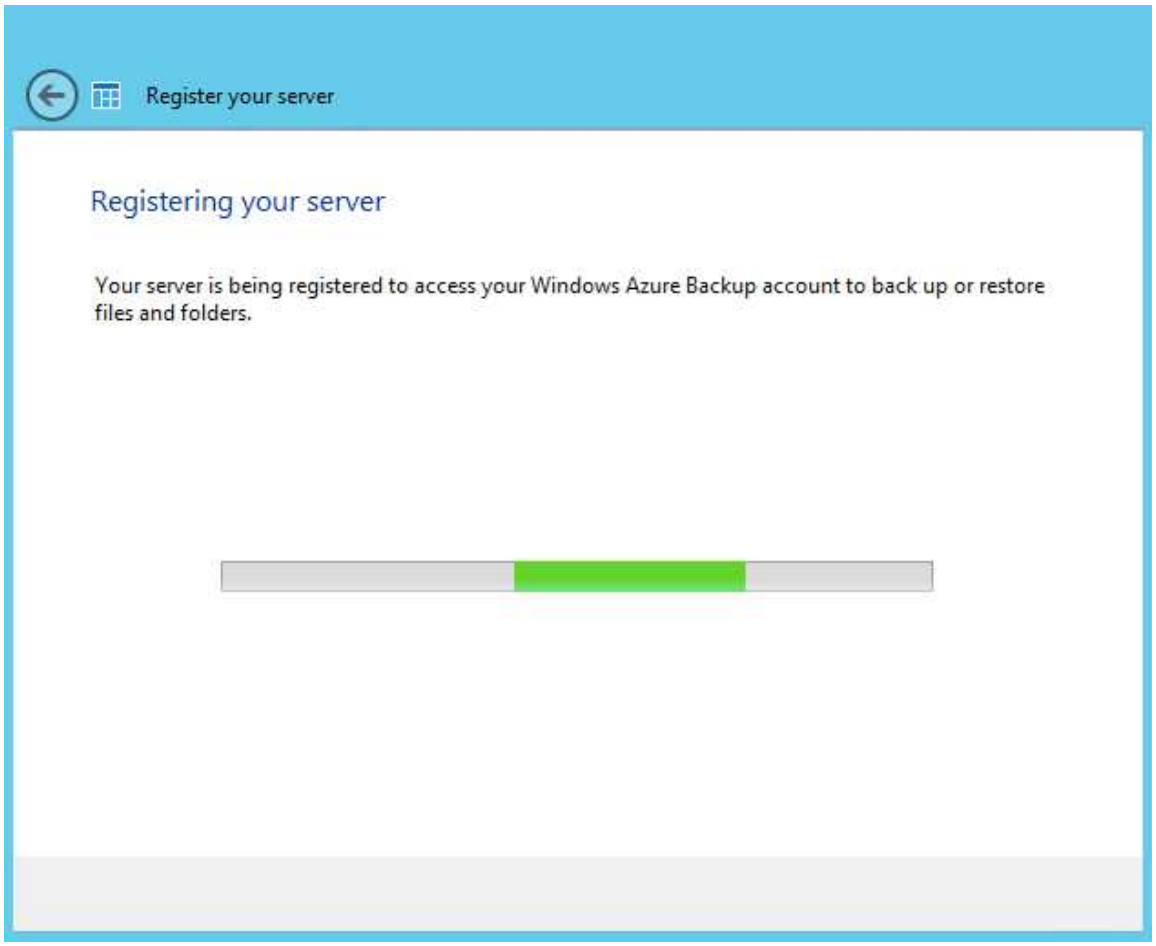
Registering the server.

Click **Next** and you'll be invited to enter a reasonably long (at least 16 character) passphrase that will be used to secure your data.



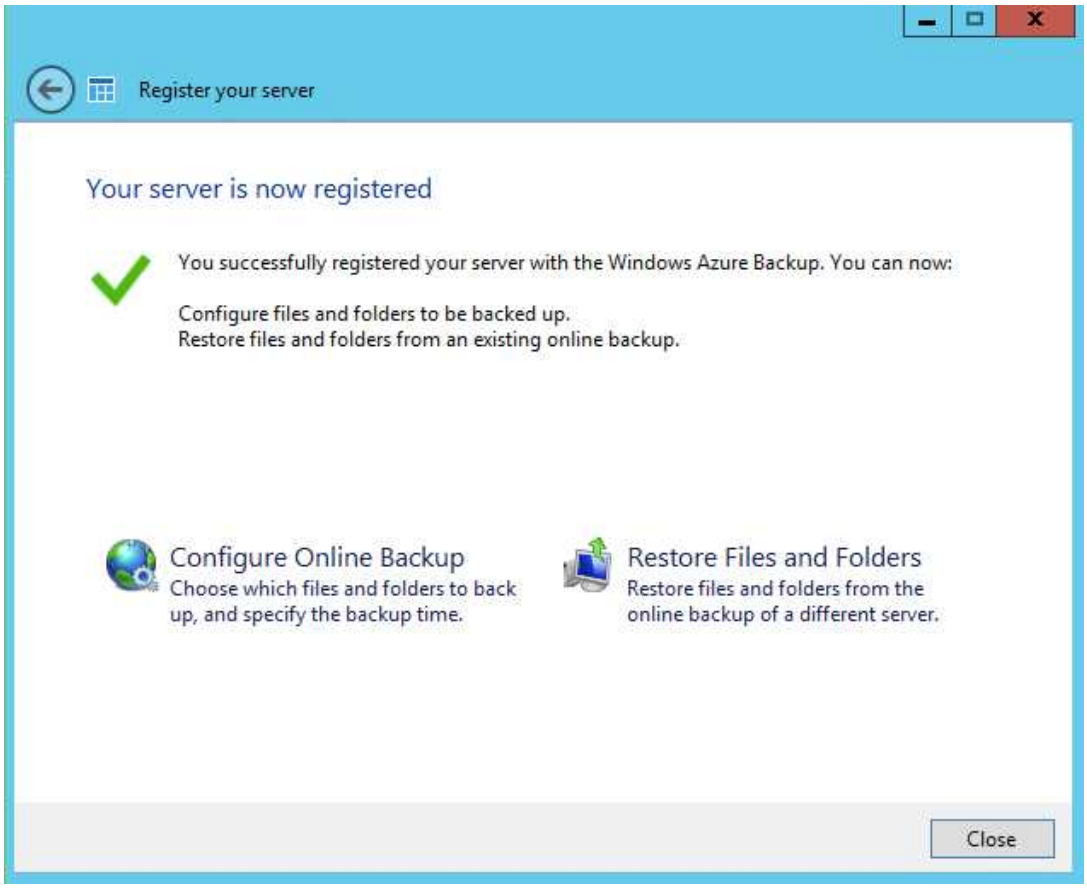
Your data will be secured with a passphrase.

The passphrase is most commonly needed when you need to restore your data from the online backup. Once entered and accepted, your server will be registered to Windows Azure Online Back-up.



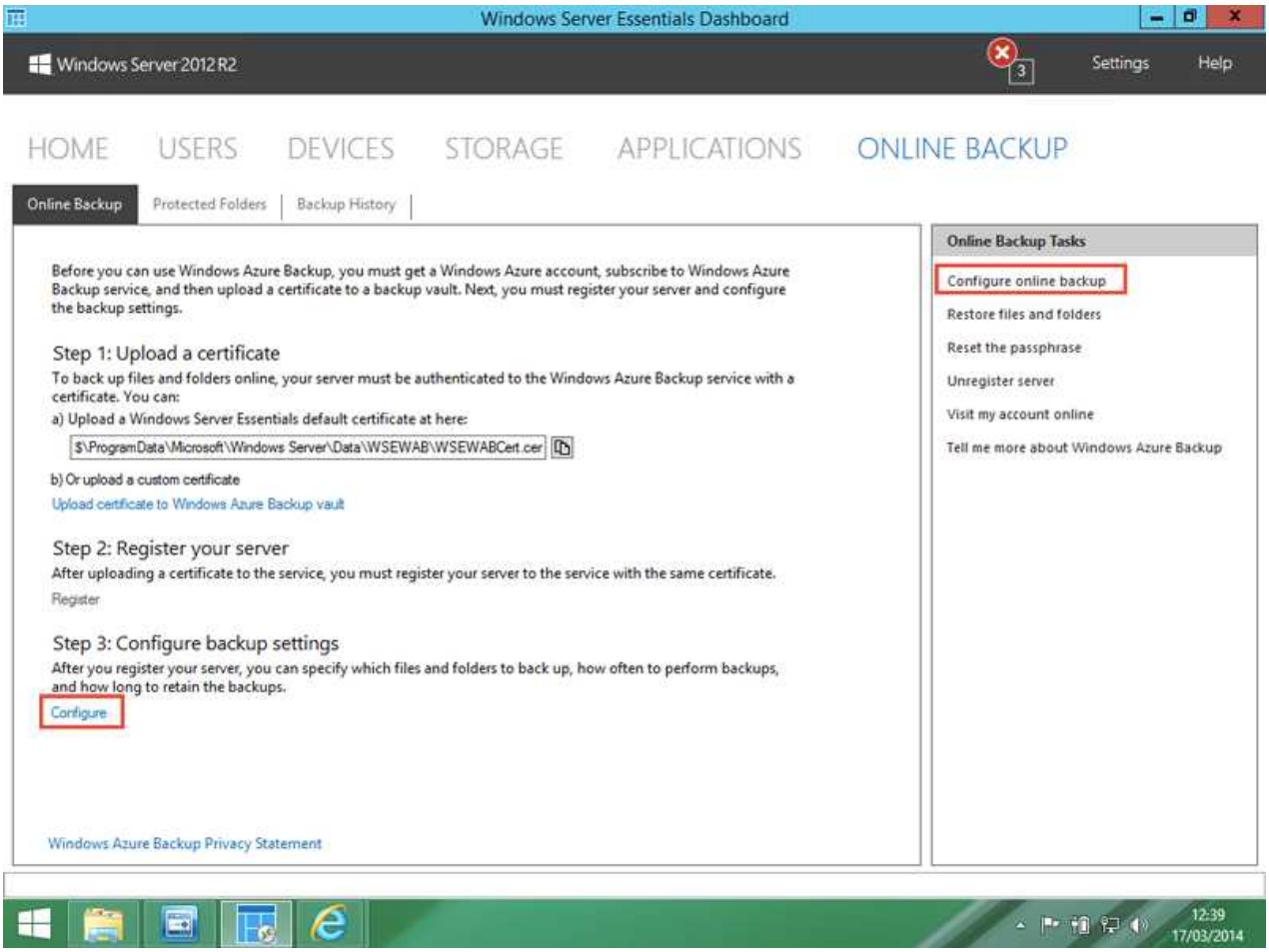
The server is registered.

That complete your configuration. The registration wizard now allows you to configure your online backup or restore files and folders. Clearly you'll need to do the former before performing the latter!



You can now configure the backup.

If you decide to close the wizard, you can configure online backup directly from the Online Backup tab, which now has a new set of tasks available.

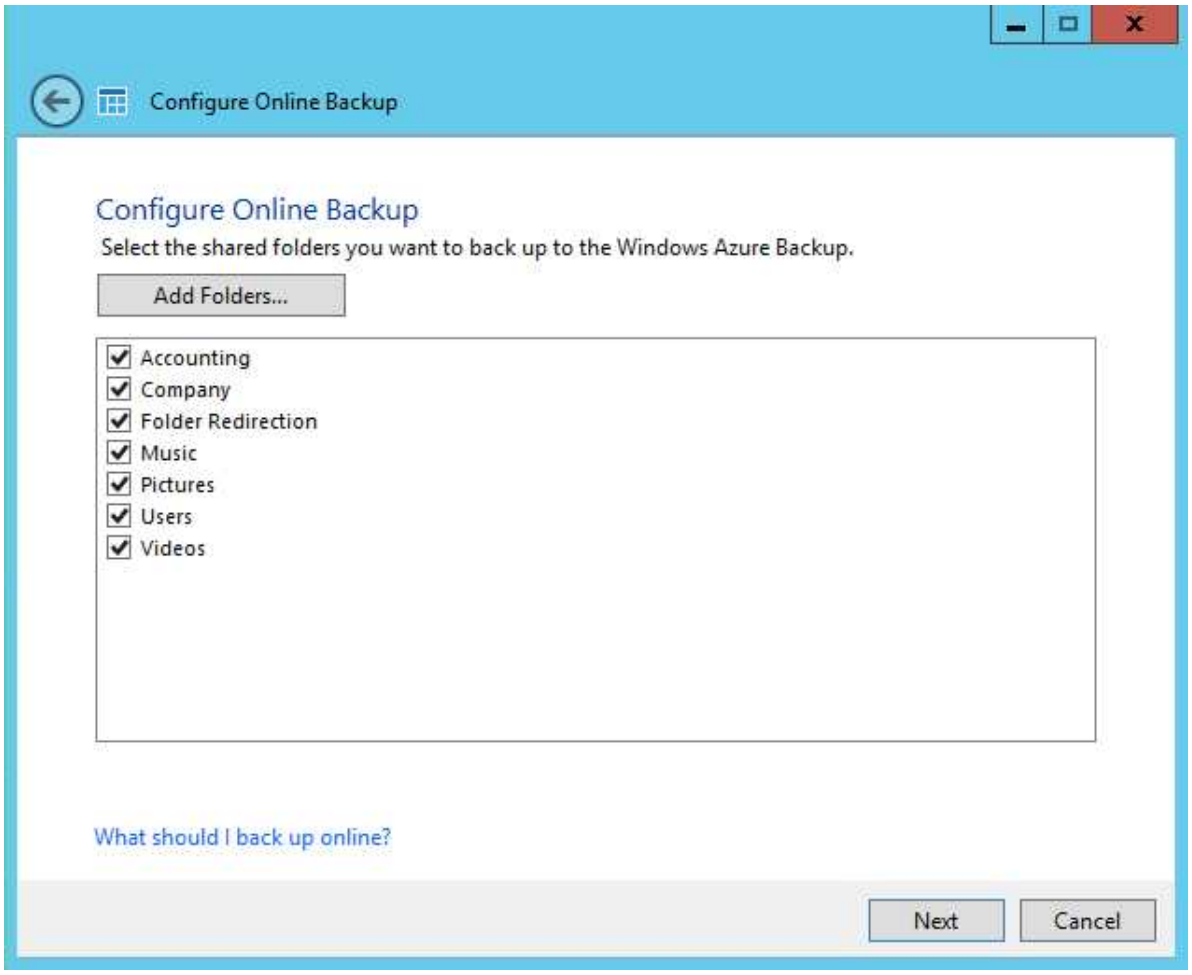


Configuring Online Backup tasks.

Configuring Windows Azure Backup

Click one of the **Configure Online Backup** tasks highlighted in the screenshot above to open up the configuration panel. As you'll have already configured a variety of backup services on Windows Server 2012 R2 Essentials, configuring Windows Azure Backup will require little explanation, but before we head into the options, one note - Windows Azure Backup is positioned to support backup of your essential shared data folders, rather than operating system files. If disaster strikes, you can pick up a replacement copy of Windows Server 2012 R2 Essentials easily, but you won't get your shared folder data back.

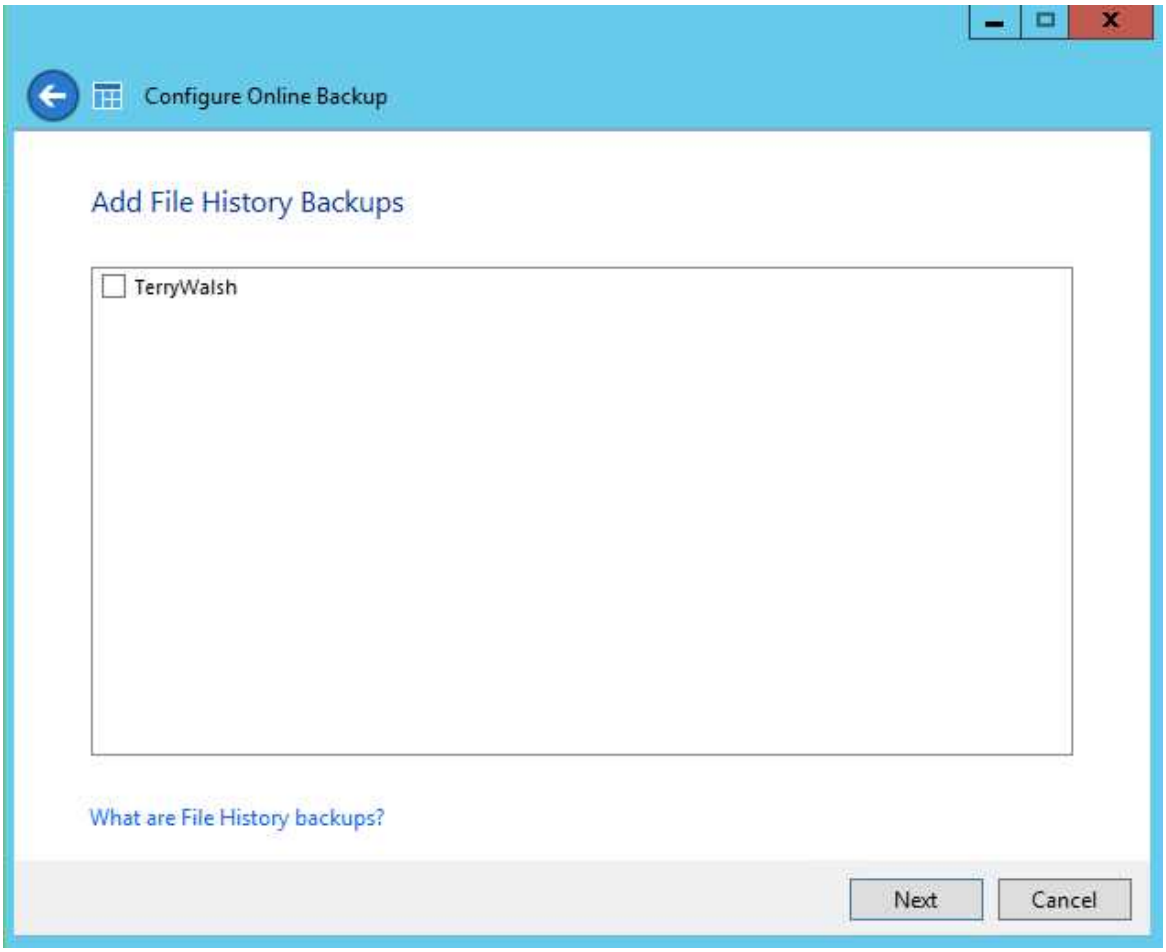
So, by default, the Backup configuration wizard will show you your shared folders, plus an Add folders... button for any additional data you need to protect online. As you'll be paying for online storage of this data, it makes sense to think carefully about what data you really need to protect against disaster striking.



Selecting folders for backup online.

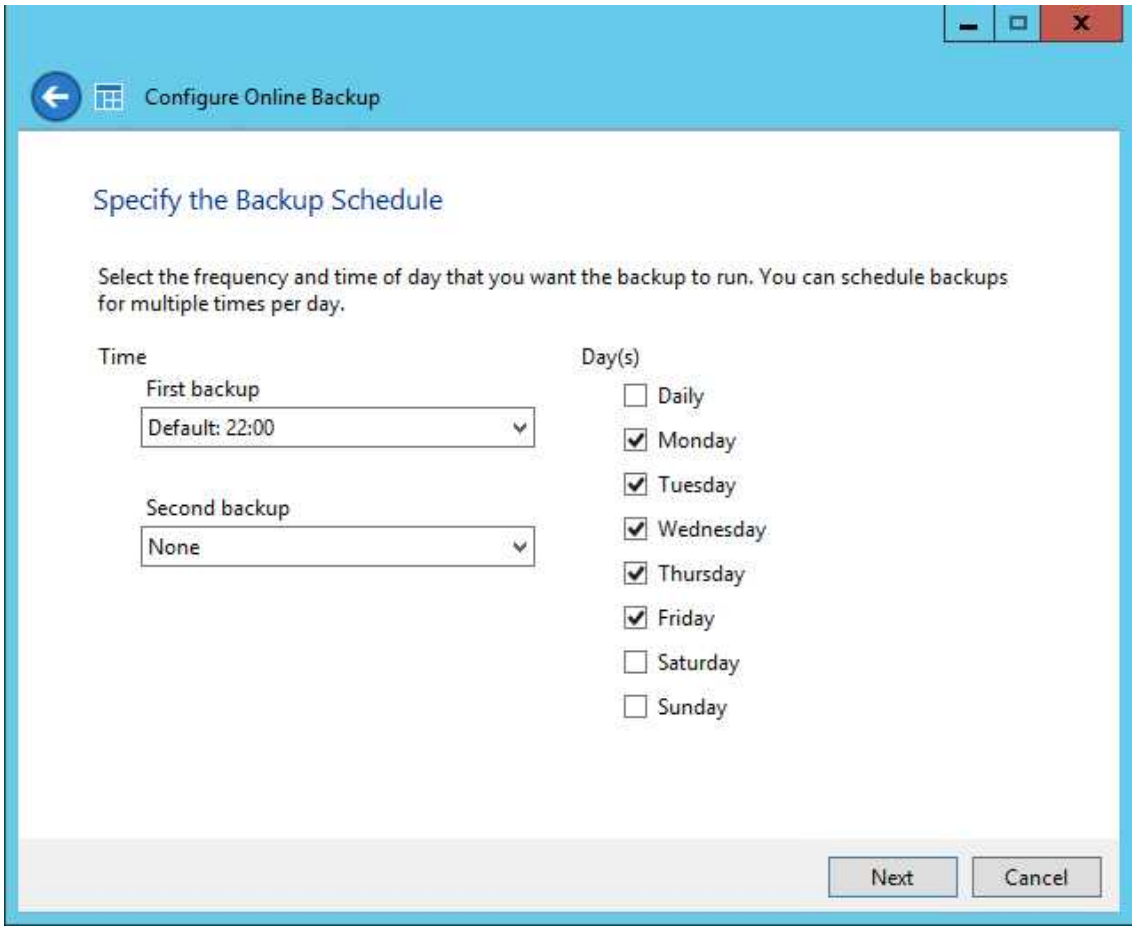
Note too that you cannot select a folder that is not located on your local server, or a folder that is on a drive formatted as ReFS.

To preserve user libraries, you can also choose to include File History backups for eligible users in your Windows Azure Backup.



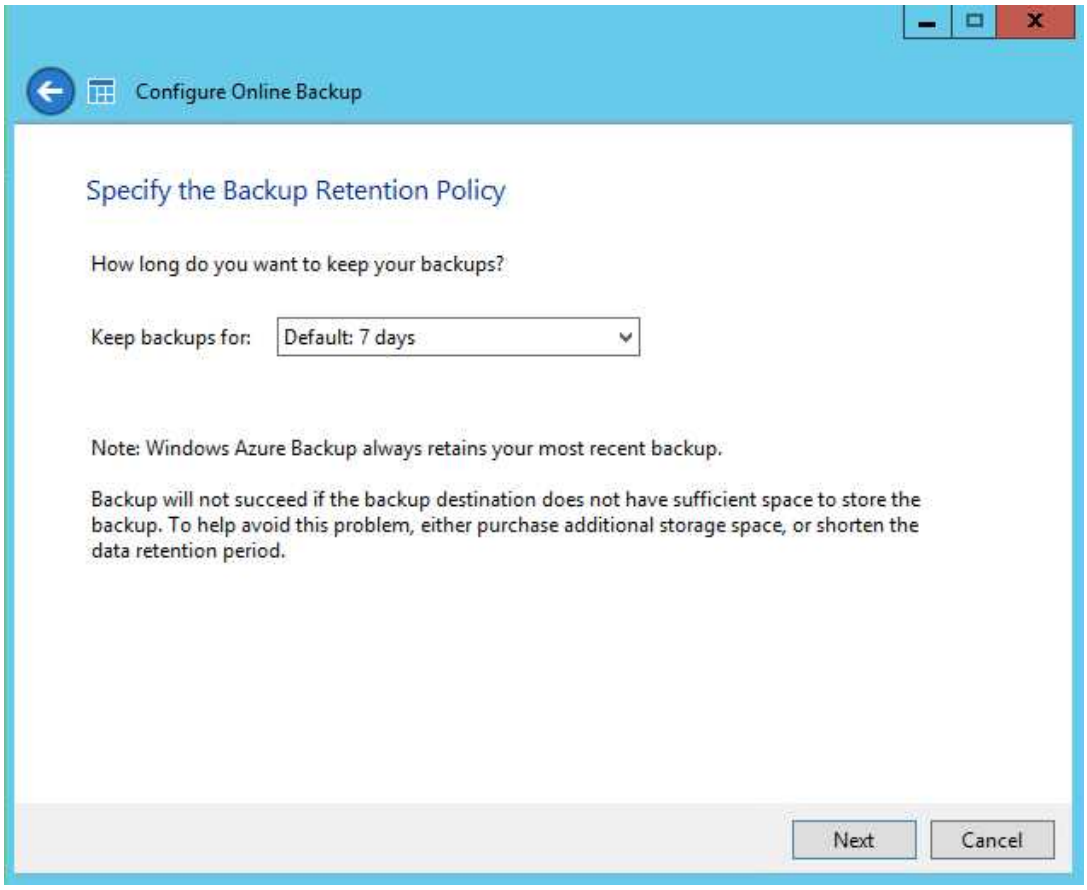
Adding File History Backups to the online backup.

You can configure your backup to run up to twice a day and have full control over which days the backup schedule runs.



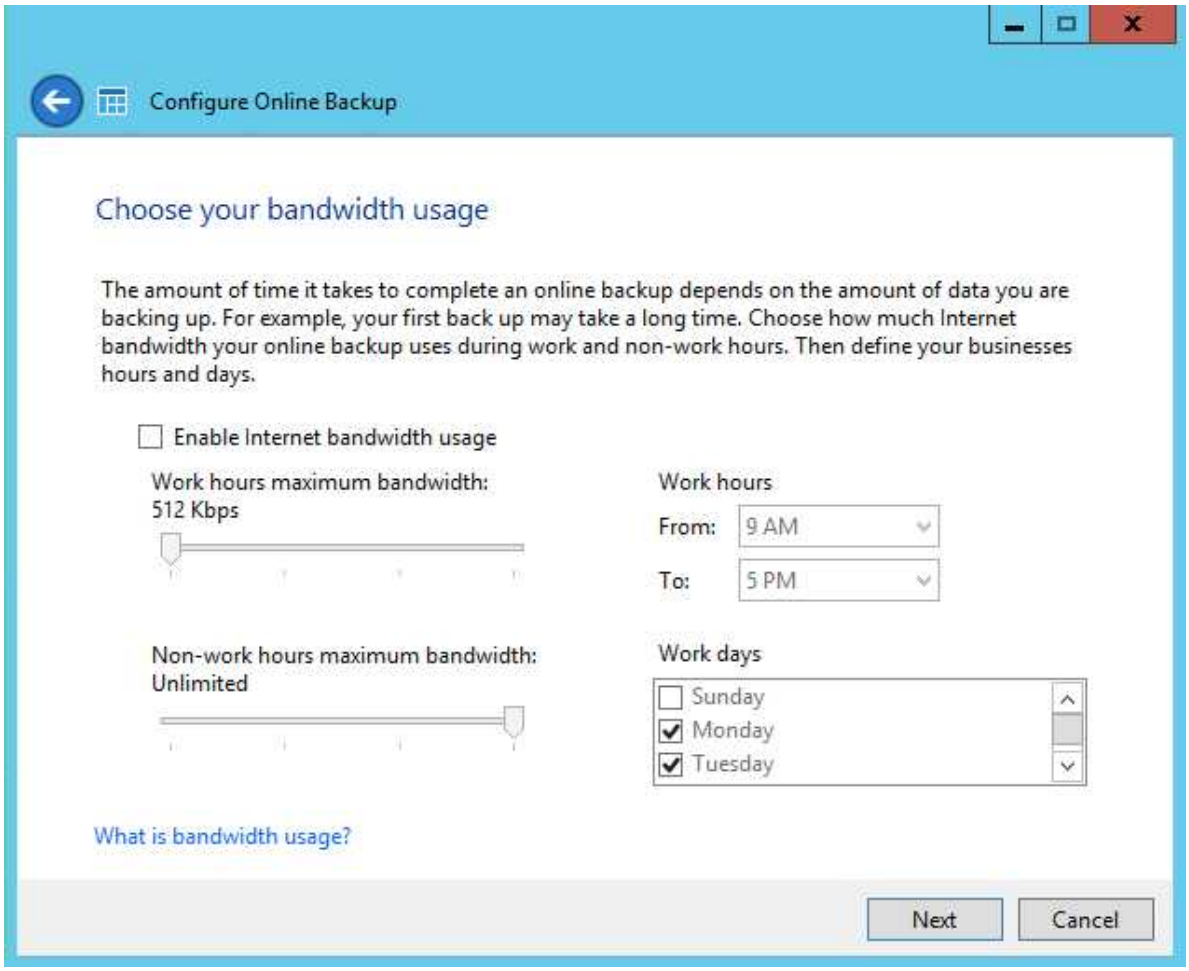
Configuring the backup schedule.

Once the backup schedule is set, you'll be asked to set the **Backup Retention Policy** - this governs how long your backups are kept on the remote servers. Your latest backup will always be kept safe, but to conserve storage space you can reduce how long backups are kept. The default option is 7 days, but this can be extended to 15 or 30 days.



Specifying backup retention.

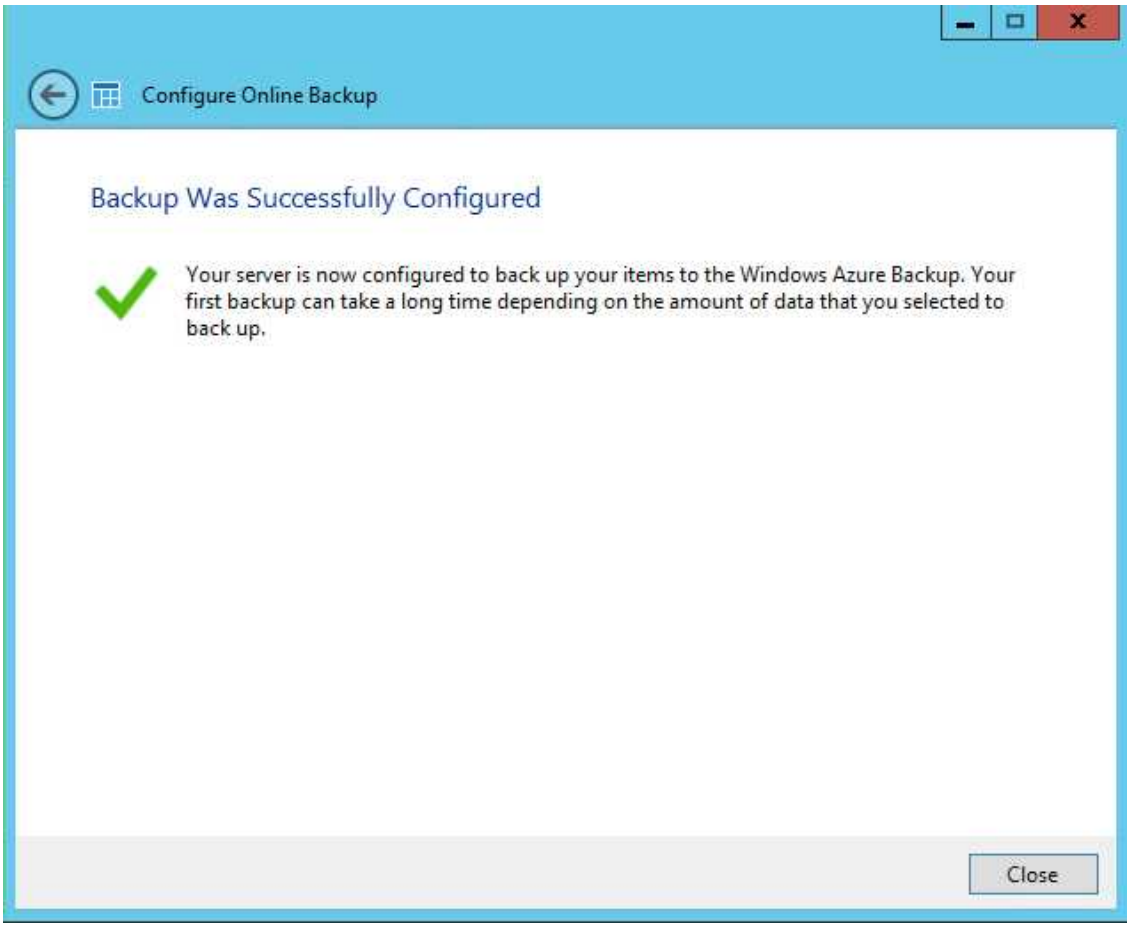
The next panel, **Choose your bandwidth usage** can be really handy if you have a lot of data to back-up. As backups can take some time to upload to the Windows Azure datacenter (depending on the upload speeds provided by your ISP), uploading may need to be conducted during business hours. Now, you don't want your internet connection fully tied up with uploading backups and preventing any sensible Internet usage for your employees and colleagues, right? So, you can throttle the amount of bandwidth used at certain times of the day to ensure a good balance between backup uploads and general Internet use.



Configuring bandwidth usage.

Simply use the sliders, checkboxes and drop-down menus to configure your business operating hours and bandwidth allowance for backup uploading during work hours and non-work hours.

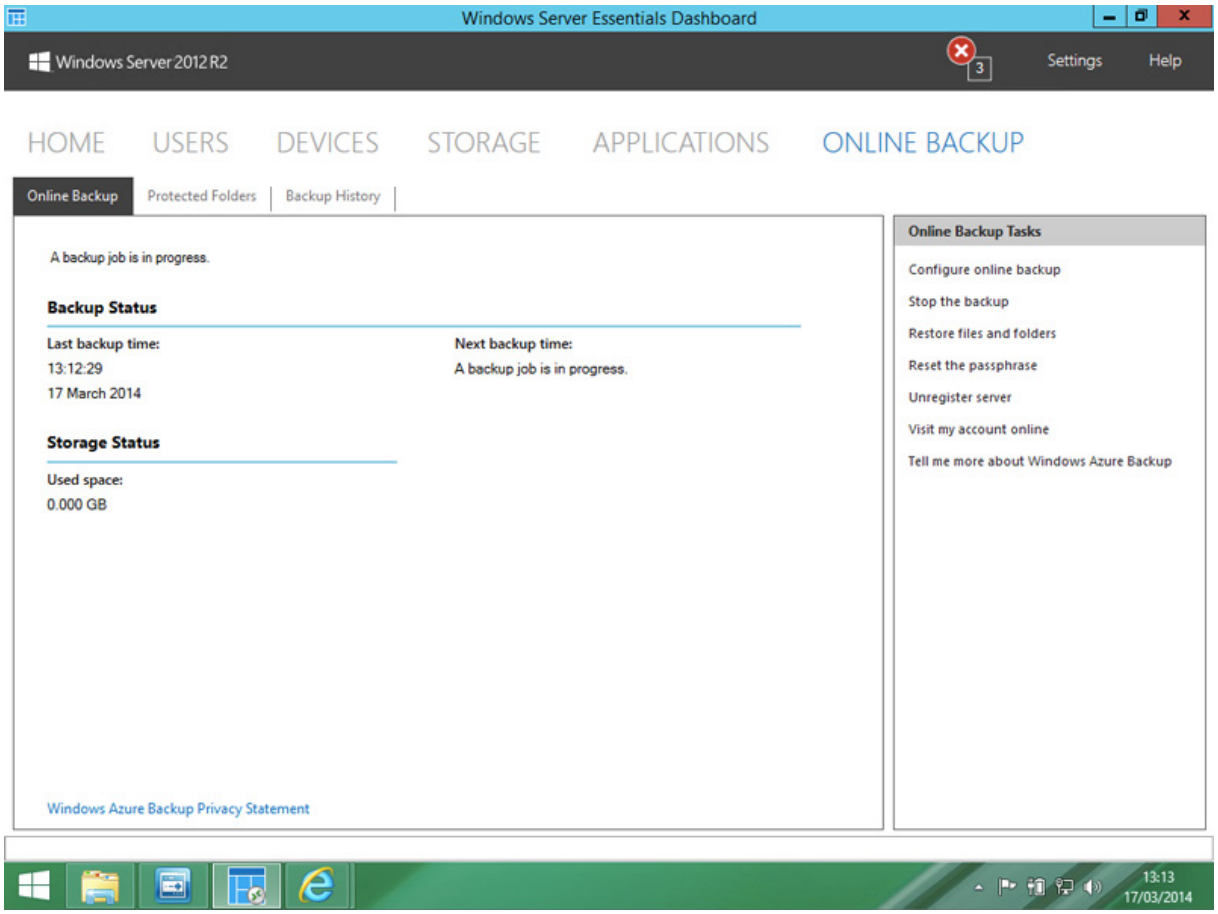
That completes configuration and your first backup will begin at the time specified in your backup schedule.



The backup is configured.

The Online Backup Tab

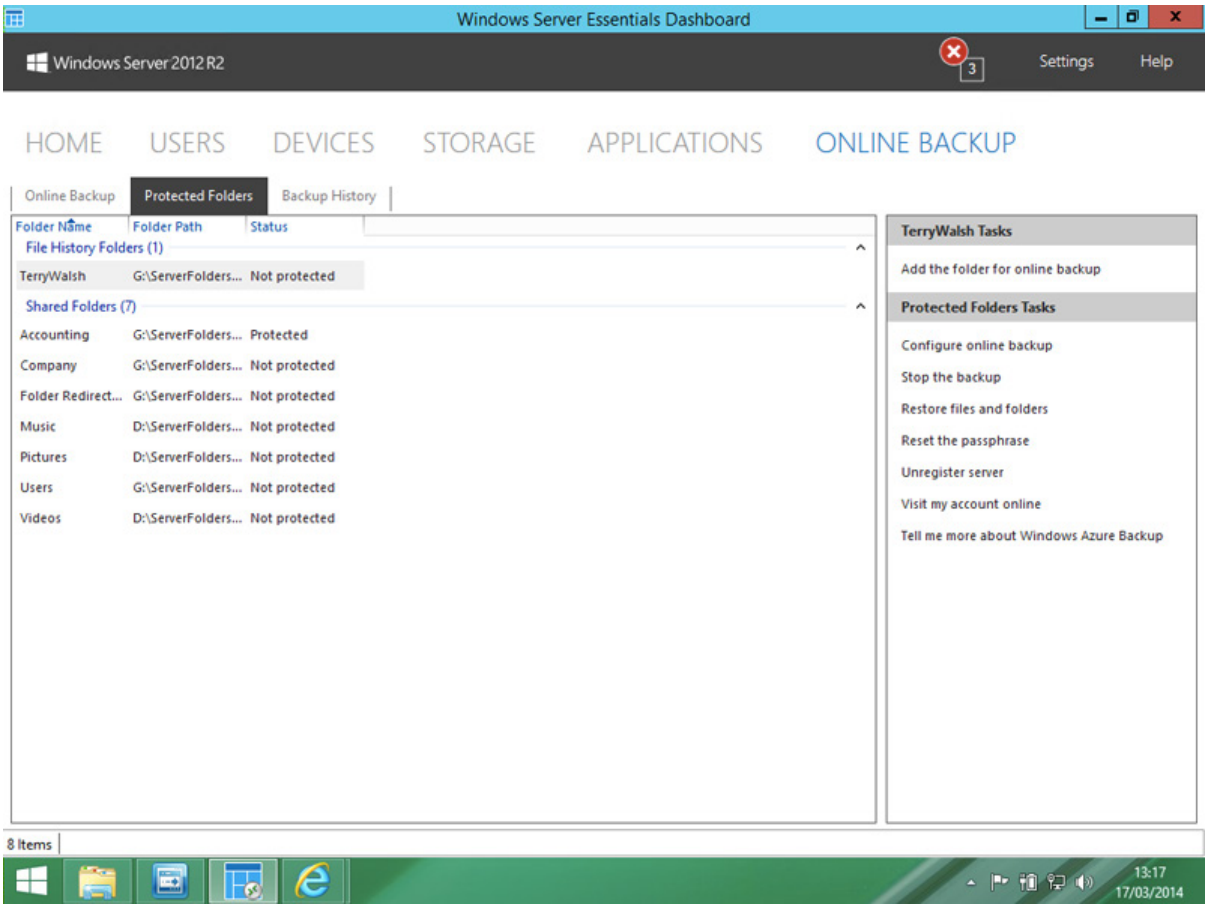
Once your backup job has been configured, the design of the Online Backup Tab changes dramatically. Configuration instructions are replaced by a new, three-tab view of your backups, with a suite of tasks available from the task pane.



The Online Backup tab now looks very different!

The first tab, **Online Backup**, is where you can check your backup status at a glance. You can see when your last backup was created, check when the next backup is due and see how much storage is currently being used.

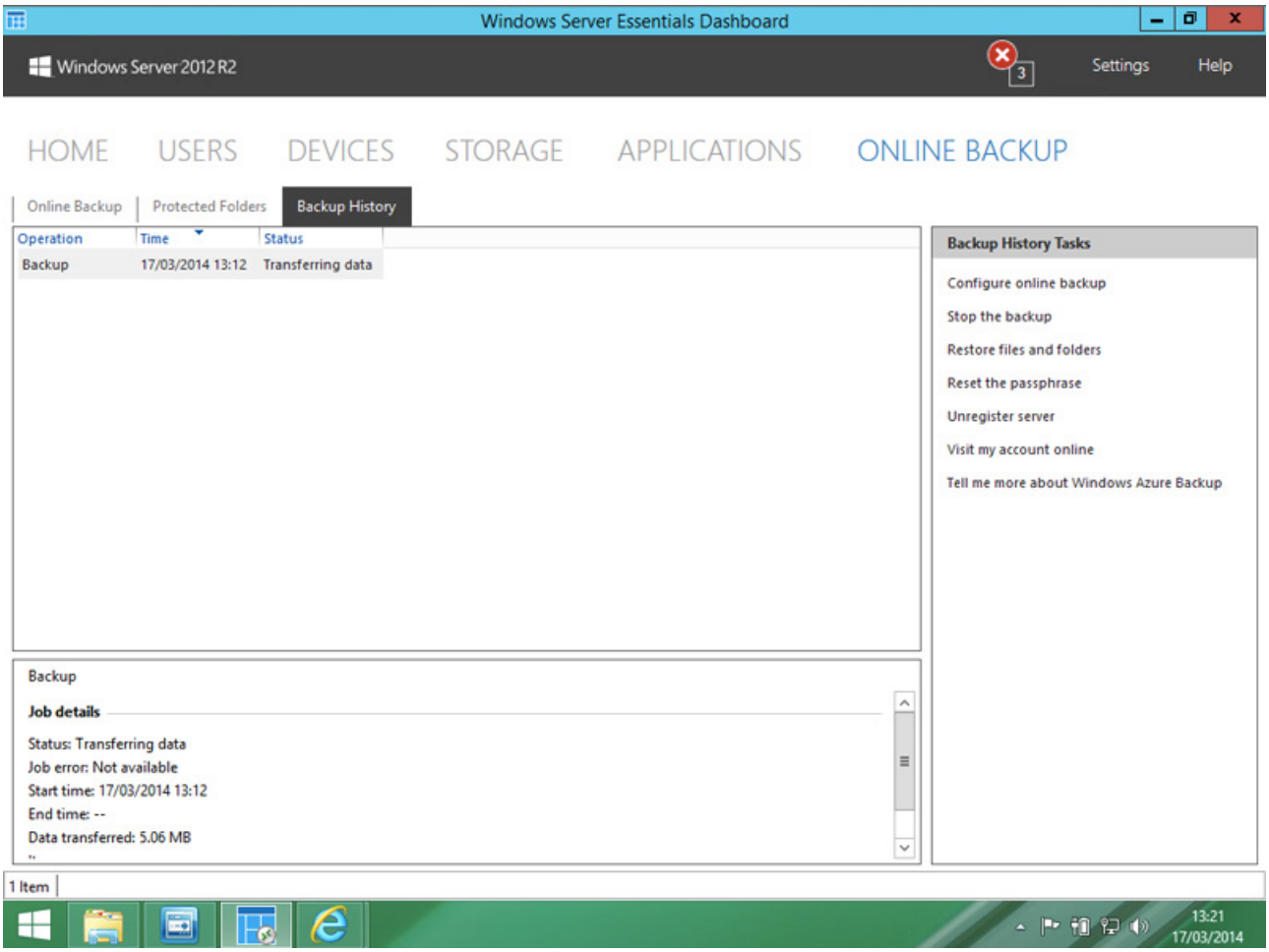
Protected Folders presents a list of your shared folders and reports whether they're currently being protected with a Windows Azure Backup.



The Protected Folders tab.

If your File History backups aren't being protected, you can use the **Add the folder for online backup** task to wrap it in.

Meanwhile the **Backup History** tab will display a log of backups performed by the server.



The Backup History tab.

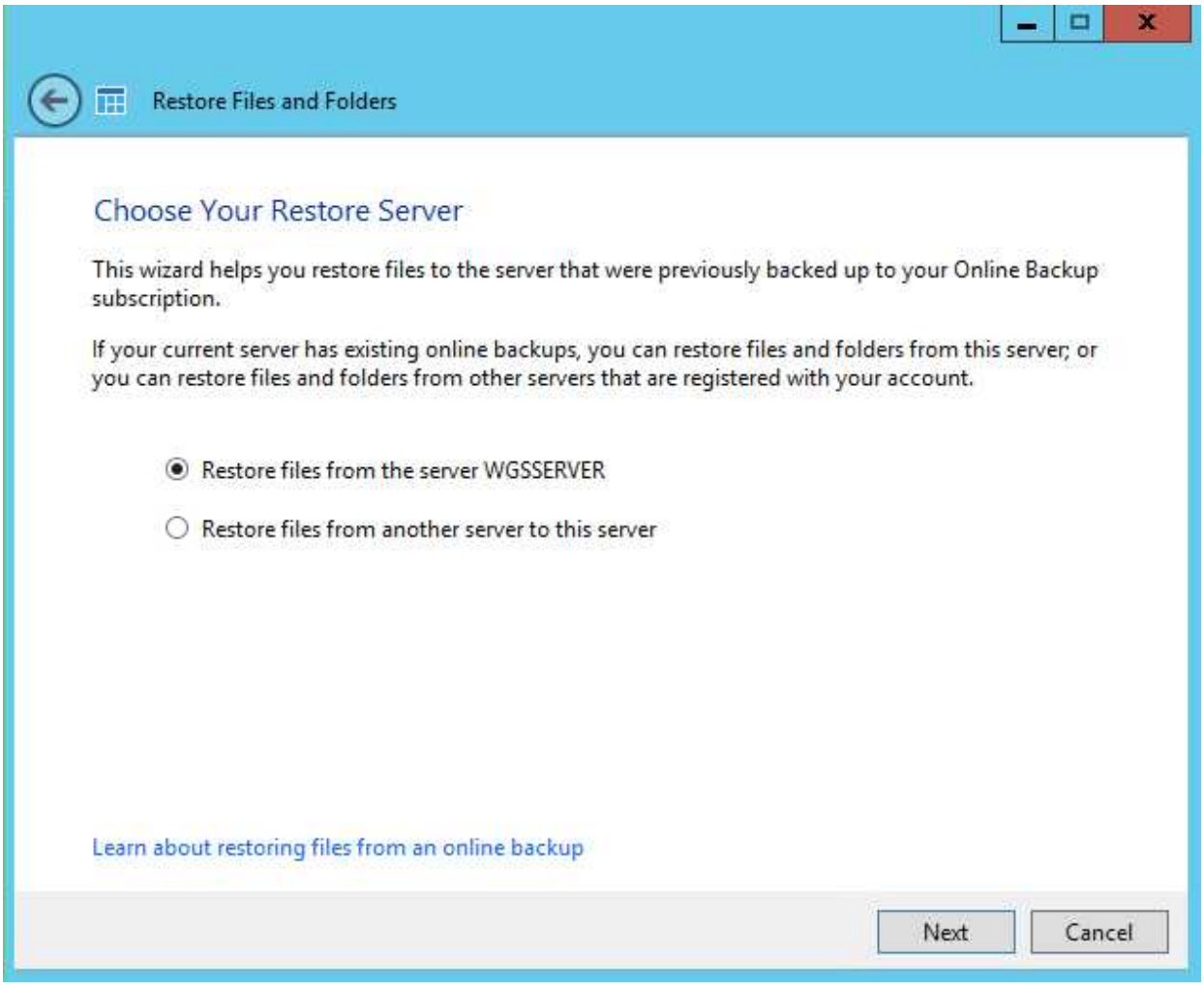
The Online Backup task pane offers all of the controls you need to manage the Windows Azure Backup service. Making changes to your backup configuration is easy with the **Configure online backup** task, which simply repeats the configuration wizard we just completed. You can choose to run a manual backup at any time with the **Start a backup** task (which sensibly changes to **Stop the backup** when a backup is in progress). Other tasks allow you to **Reset the passphrase**, **Unregister the server** from the Windows Azure backup service as well as **Visit your Windows Azure account online**.

One additional task is present which we'll look at now - it's to **Restore Files and Folders**.

Restoring Files and Folders in Windows Azure Backup

You're now an old hand at this file and folder restoration malarkey, so we'll walk through the process quickly - principally as it's quite similar to how data restoration works elsewhere in Windows Server 2012 R2 Essentials.

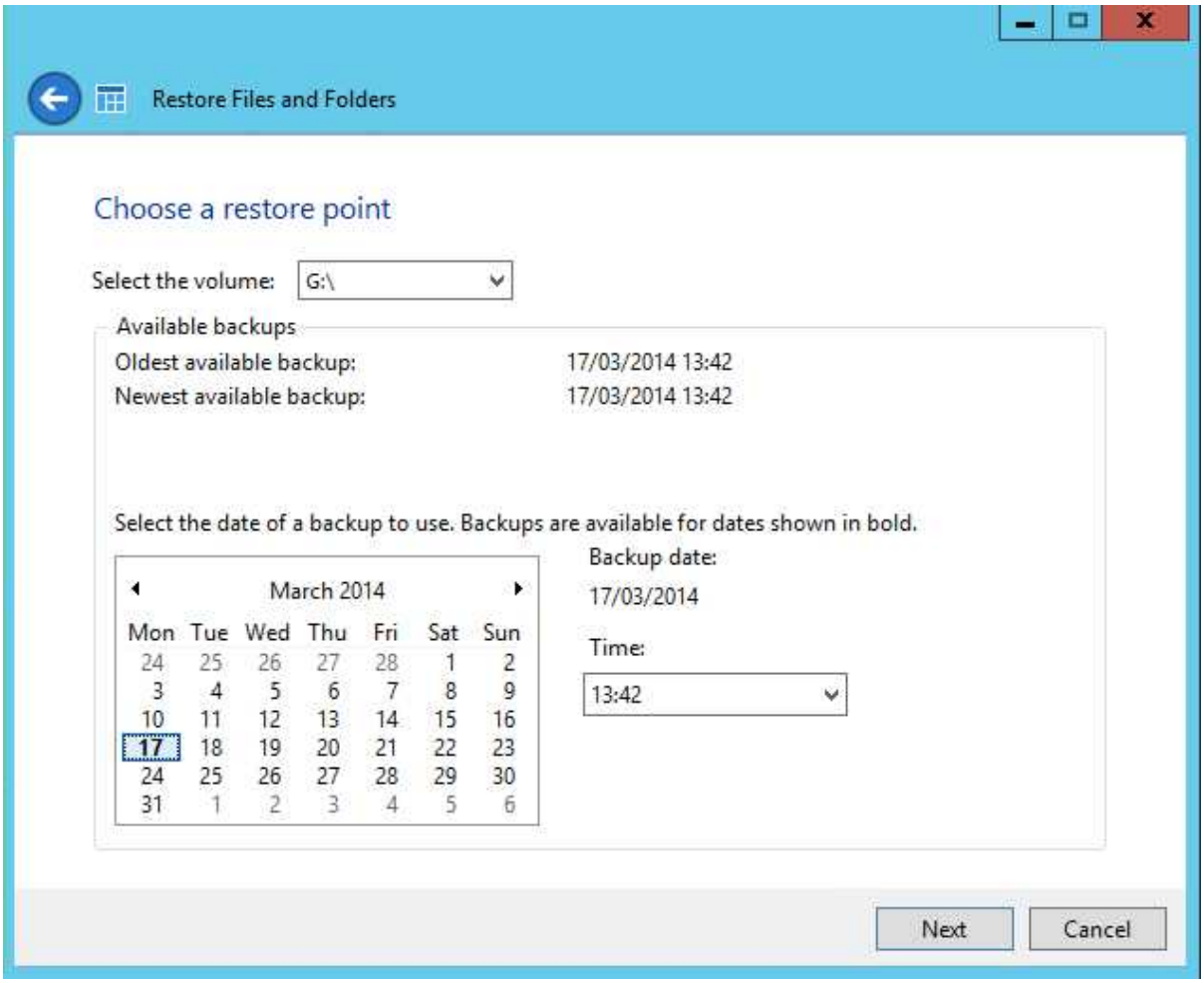
Click the **Restore Files and Folders** task to get started. Obviously, you'll need to have a completed backup available from which to restore your data! Note too that you are blocked from restoring data if a backup is currently running.



Selecting the server backup to restore data from.

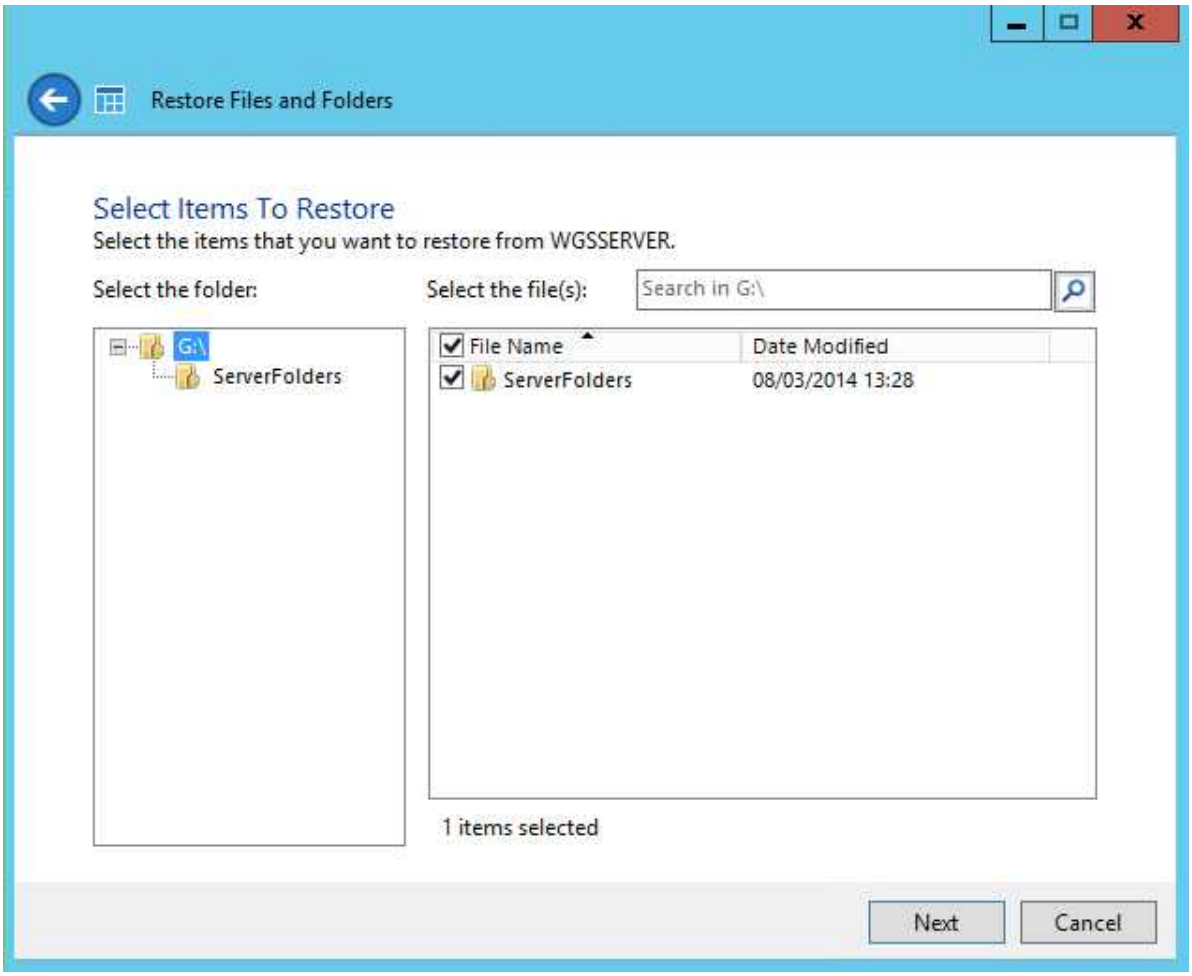
As Windows Azure Backup supports the protection of multiple servers, you'll first need to state which server backup you wish to restore your data from. For most users, this will be the Windows Server 2012 R2 Essentials server backups stored online, but if you have multiple servers on your network backed up, then you can select the option to **Restore files and folders from another server to this server**. Make your selection and click **Next**.

You'll now need to select a Restore Point - a date and time for the backup from which you wish to restore your data. A calendar allows you to select the date, and a drop-down menu adjacent allows you to select the specific backups stored from that day.



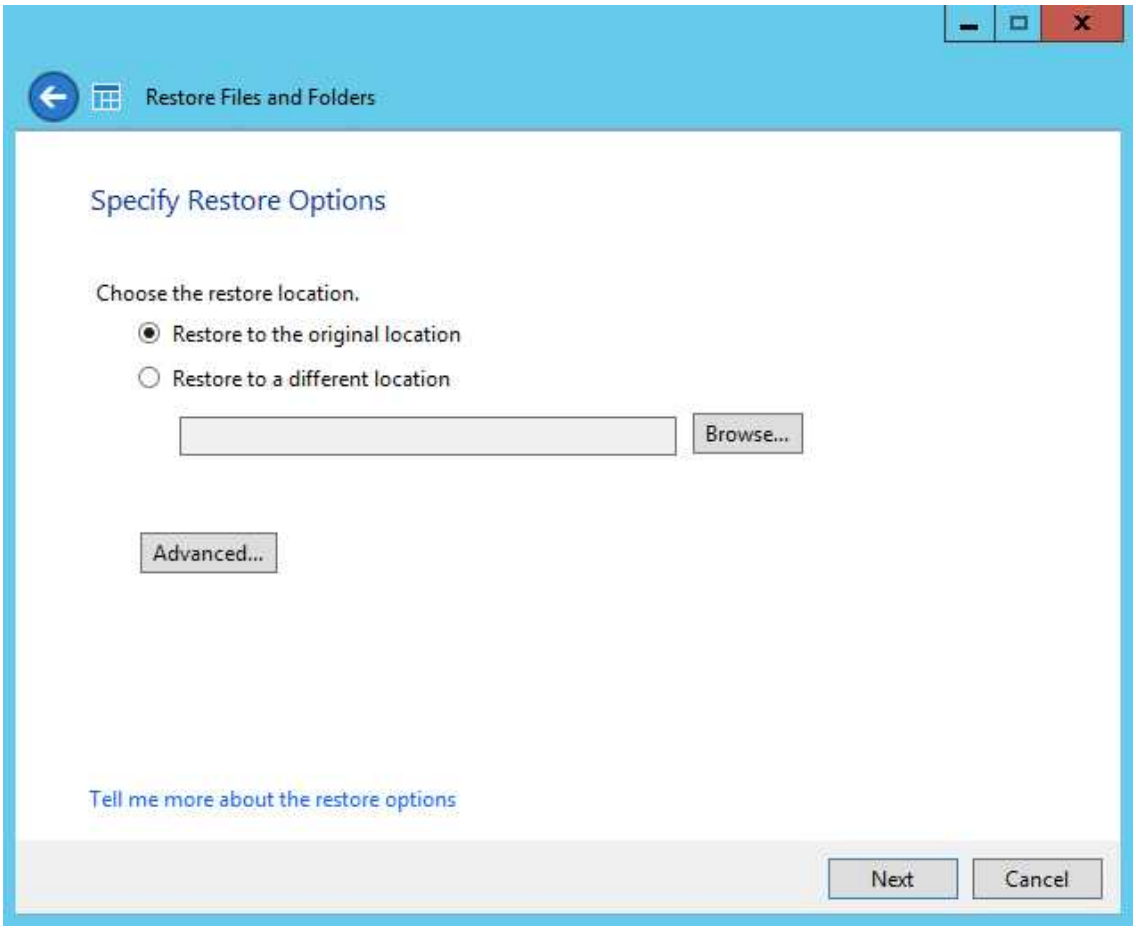
Selecting the restore point.

Choose the data which you wish to restore:



Selecting the data to restore.

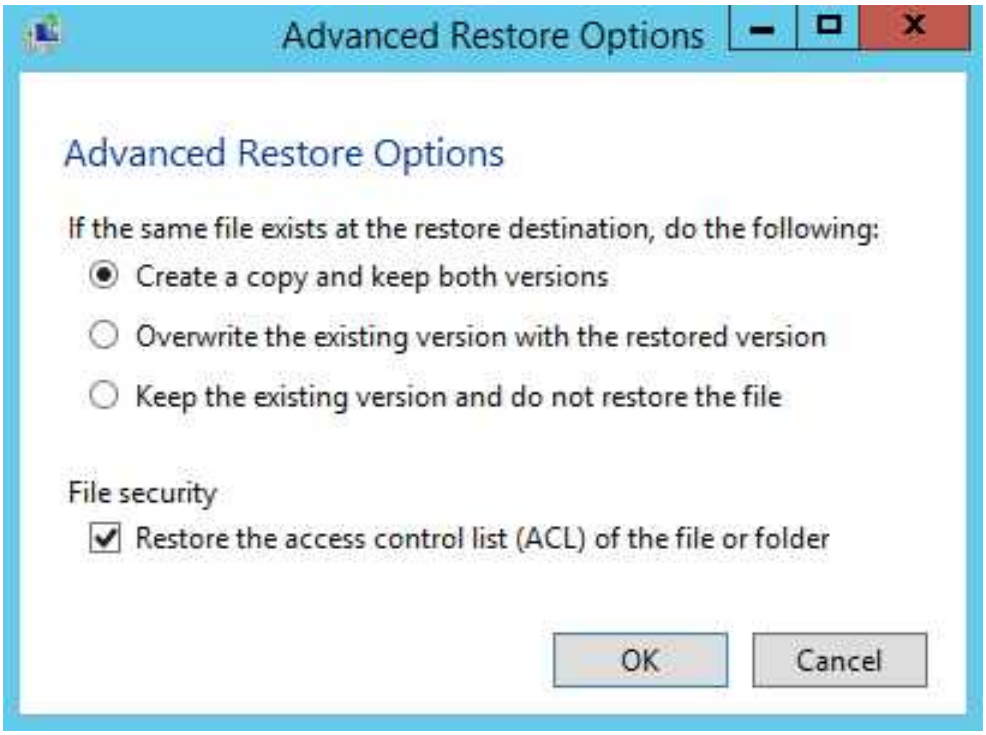
You can choose to restore your files to their original locations, overwriting any current versions of the files. Alternatively, hit the **Browse...** button to restore the data to a different location.



Choosing the restore location.

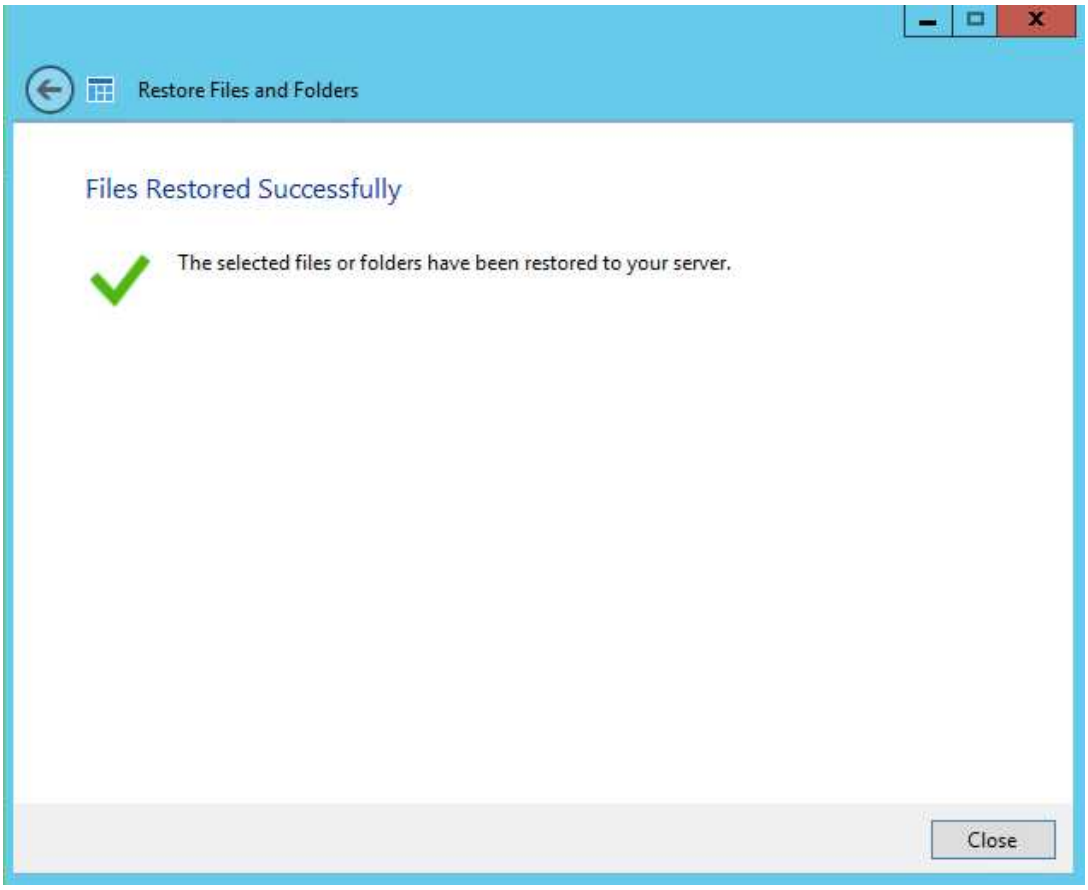
If you are going to restore the files to their original location, click the Advanced button to control what happens if a duplicate (existing) file is found. You can create a copy of the file and keep both versions, overwrite the existing file with your restored file or keep the existing version and not restore the file at all.

If you've made changes to access privileges on the data you're going to restore, you can choose to retain those changes or overwrite with their original permissions.



Configuring Advanced Restore Options.

You'll be asked to confirm your settings for restoration, after which the process begins. You can close the wizard at any time and restoration will continue in the background. Restoration time will vary depending on your bandwidth and amount of data to restore - once complete, you'll see restoration confirmed.



You're done!

That's all there is to Windows Azure Backup - admittedly, setup is a little fiddly, but once you have the certificate uploaded and the server registered, Windows Azure Backup offers a great extension to your Windows Server Essentials experience. Data backup and restore follows much of the same principles as seen throughout our on-premise server platform, so it's a breeze to use.

Whether you choose Windows Azure Backup, another provider or those good old USB hard drives, just make sure you have some method of off-promise data protection in place to keep your precious data protected in case of a disaster!

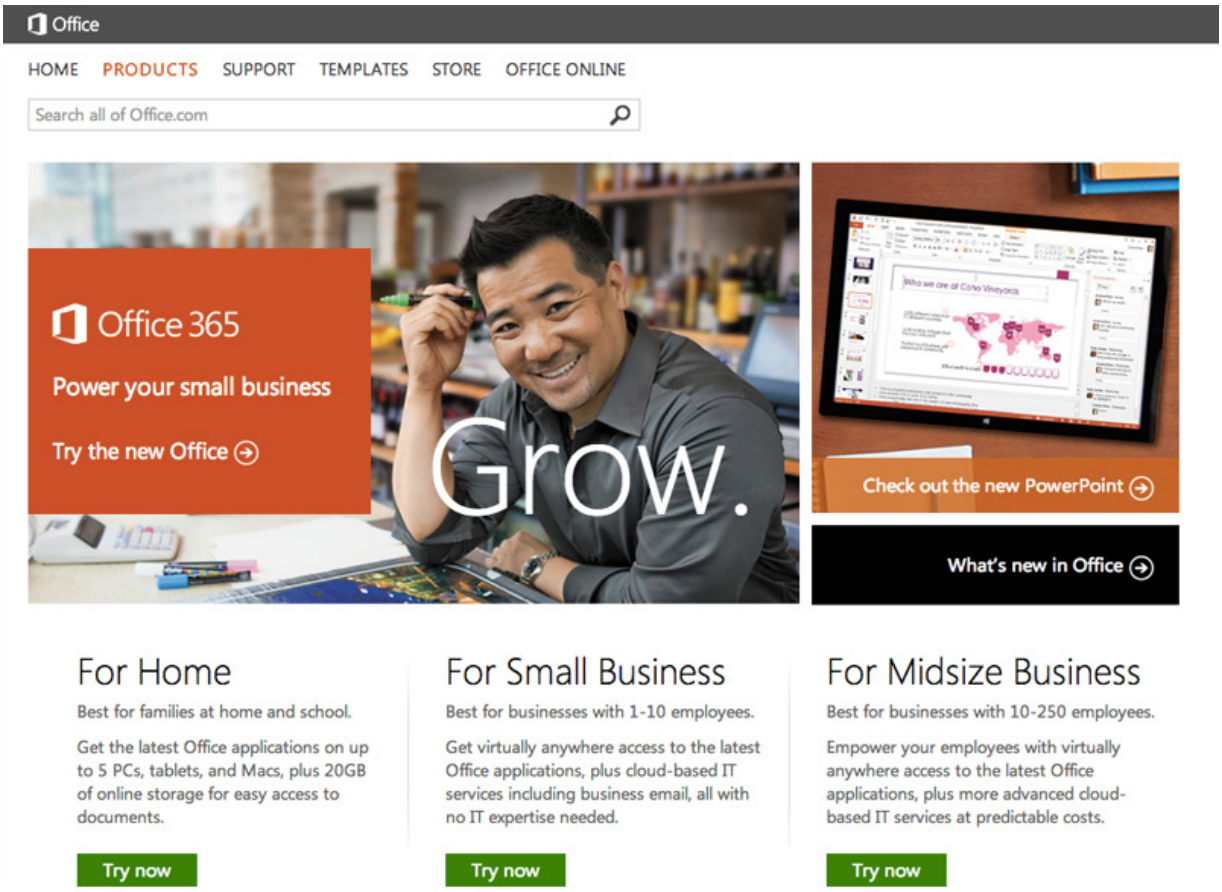
Managing Office 365 Accounts With Windows Server 2012 R2 Essentials

"Alongside a heavy push to the Cloud, the move away from standard software licensing in favour of subscription-based services is another core pillar of the modern Microsoft. This shift is no more apparent than in the development of Office 365"

Launched in Summer 2011, Office 365 is a "software plus services" business productivity suite, heavily based around Microsoft's popular Office platform - that's right, the one that gets you Microsoft Word, PowerPoint, Excel, Outlook and so on.

It was originally developed to counter Google's growing penetration of Google Apps in the workplace as businesses worldwide tightened their belts and sought cheaper productivity software. The idea was simple - rather than have businesses purchase software licenses for a single release of a Microsoft Office suite at a reasonably high price, you could pay a regular subscription for each user who would always have access to the latest and greatest version of Microsoft Office. The benefit for Microsoft is, of course, regular cashflow and the potential of a far higher average revenue per user than the traditional licensing model could deliver.

At the time of writing, much like the traditionally-licenced edition of Microsoft Office, Office 365 is available in a variety of flavours positioned for home, small business and medium business users.



The Office 365 website.

Attempting to list all of the available Office 365 packages in a book such as this is folly - no doubt packages will change the minute I press Enter on the keyboard, so I'll let you peruse the Office 365 website (http://office.microsoft.com/) for up to date options. However, to give you a flavour of what's available, here are a couple of the packages currently available:

- **Office 365 Home Premium** - Offers Microsoft Word, Excel, PowerPoint, OneNote, Outlook, Publisher and Access for up to 5 PCs or Macs. Also included is an addition 20GB OneDrive Cloud Storage Space and 60 minutes Skype calls per month.

- **Office 365 Small Business Premium** - Offers Microsoft Word, Excel, PowerPoint, OneNote, Outlook, Publisher, Access and Lync for up to 5 PCs or Macs per user. Up to 25 users can be licensed, each for a monthly fee. Also included is hosted email, shared calendars, 50GB storage space and the ability to use your own domain name. You'll also get a host of online services such as web conferencing, file sharing, a public website, spam and malware protection, a SharePoint intranet site, Active Directory integration with your server (we'll come to that), Office web apps and mobile apps which will allow you to view, create and edit Office documents on the road,

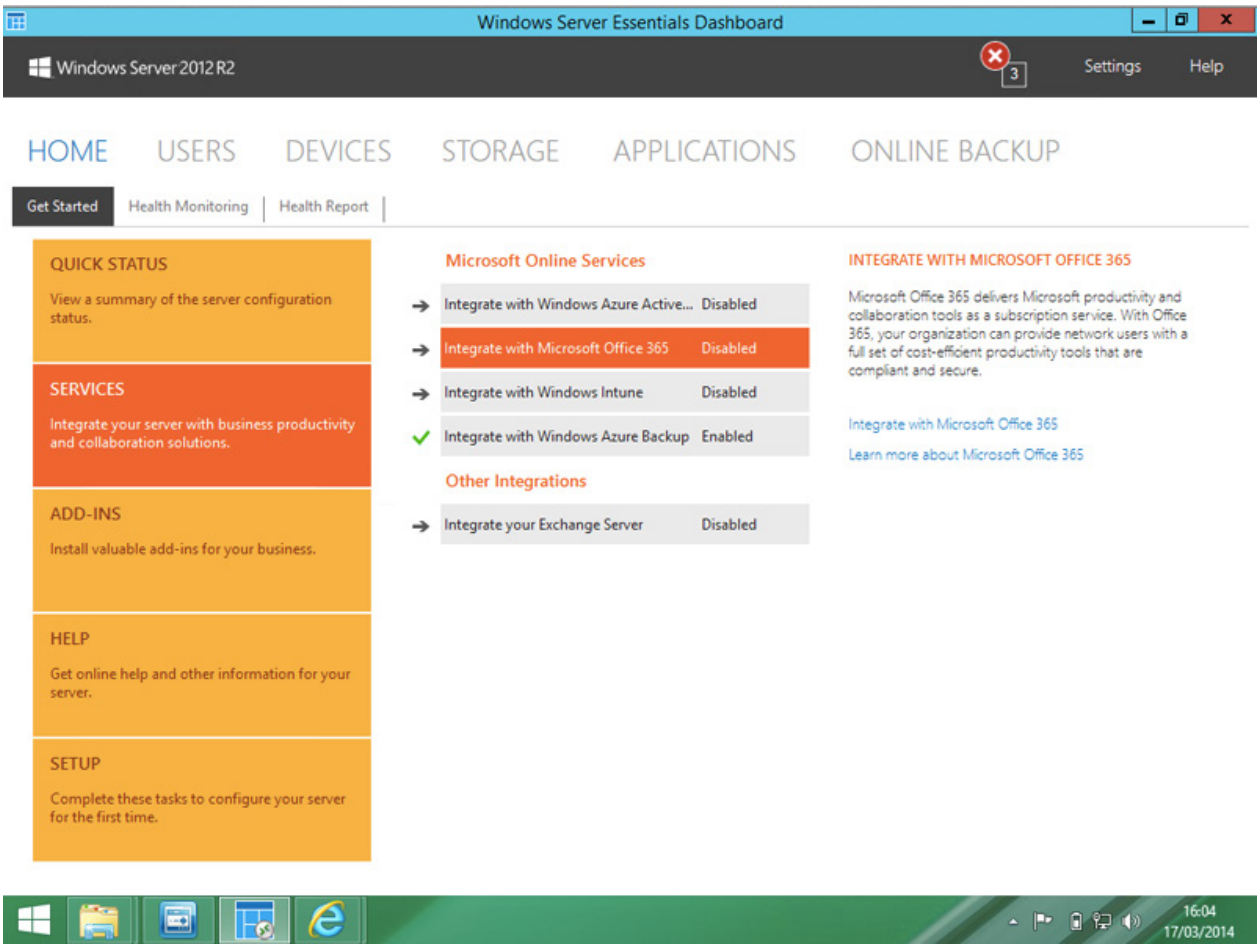
Office 365 is only compatible with Windows 7, Windows 8, and Mac OS X 10.6 or later.

When you integrate Office 365 with Windows Server 2-12 R2 Essentials, life gets even sweeter. You'll be able to manage individual Office 365 accounts in your subscription directly from the Dashboard and keep your users' passwords synchronised between Office 365 and the domain network. Change the network password, and the user's Office 365 account password will automatically be updated.

Furthermore, integrating Office 365 enables mobile device management support for iOS, Android and Windows Phone devices, all from the Windows Server Essentials Dashboard (check back to Chapter 8 for more on this).

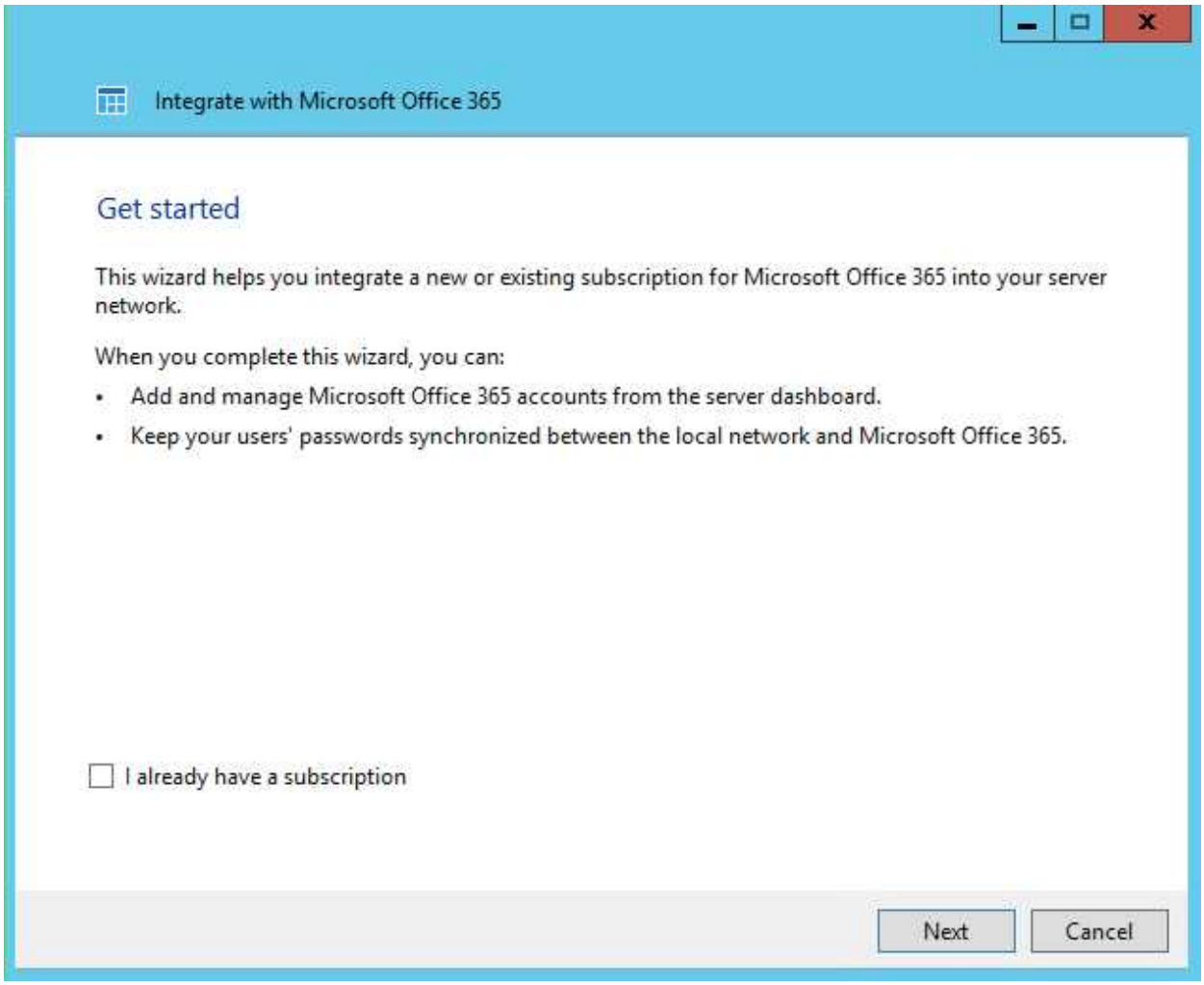
Integrating a New Office 365 Subscription

At this point, I'll make an assumption that you do not currently have an Office 365 subscription - if you do, don't worry, you can still follow this walkthrough as there's an option for you guys too. First, go to the Dashboard's **Home** tab and click on the **Services** section. Under **Microsoft Online Services**, you should see a link to **Integrate with Office 365** that will currently be disabled. Click it and let's get it enabled!



The Home tab.

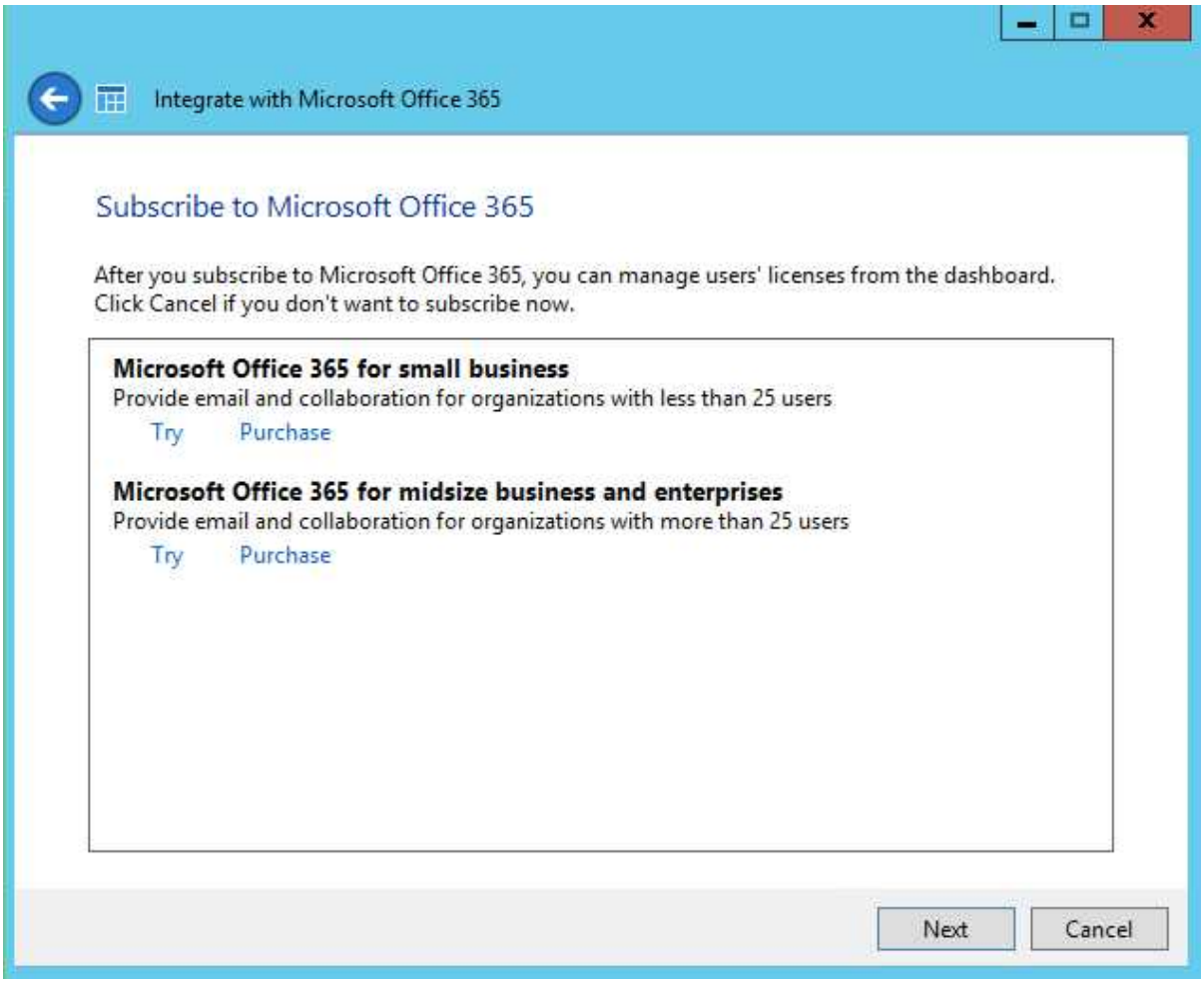
Over on the right hand side, you'll see some information about Office 365 and a link that repeats **Integrate with Office 365**. Click it to begin. As if by magic, a wizard appears.



The Office 365 integration wizard.

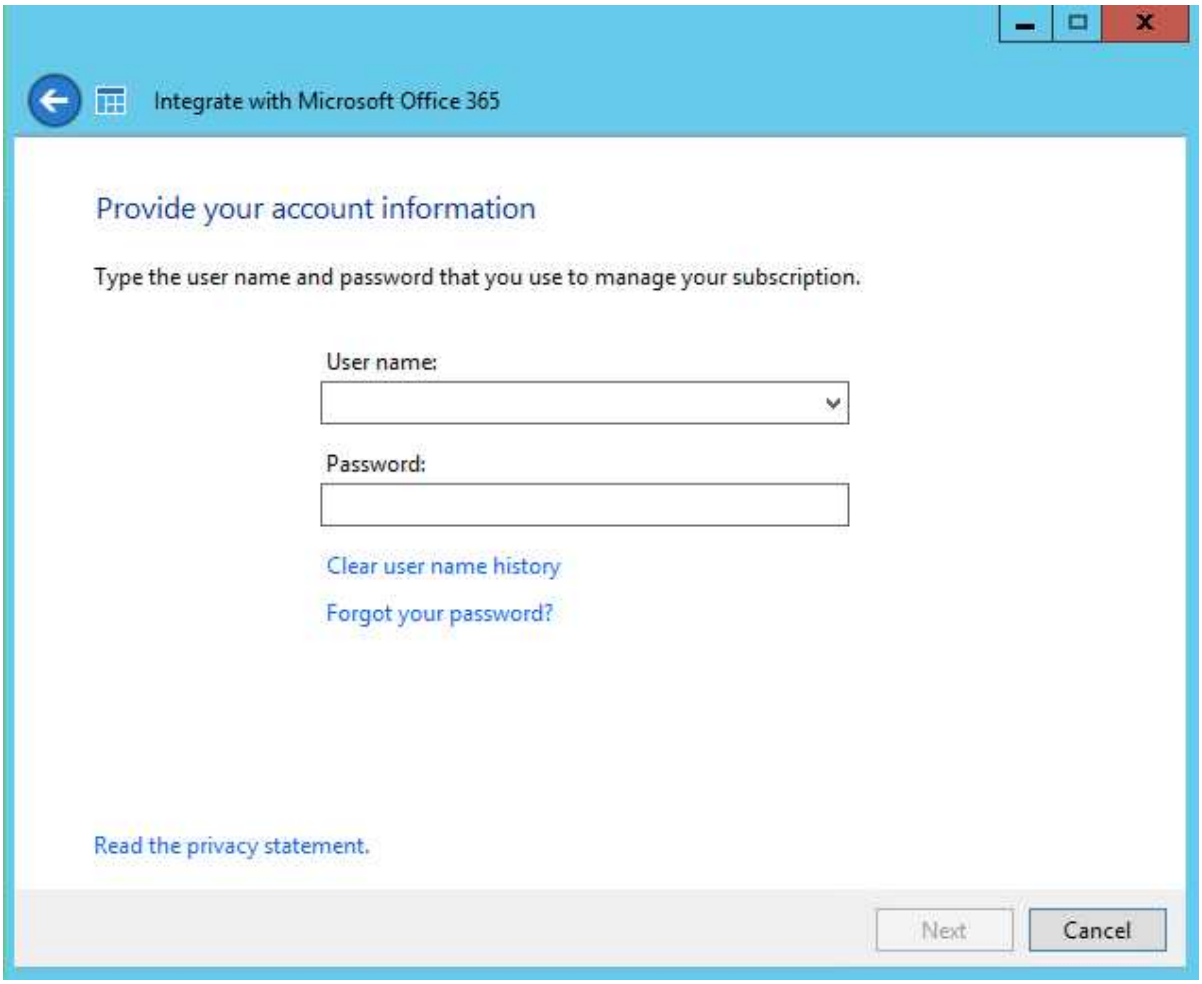
If you have an existing Office 365 subscription, ensure that checkbox at the button the panel is selected - everyone else, leave it blank and click next to continue.

The good news is that we can set up a new subscription directly from the Dashboard - better still, we can try out Office 365 on a free trial basis for 30 days. Small Business and Enterprise versions of Office 365 are presented, each with a **Try** and **Buy** option available.



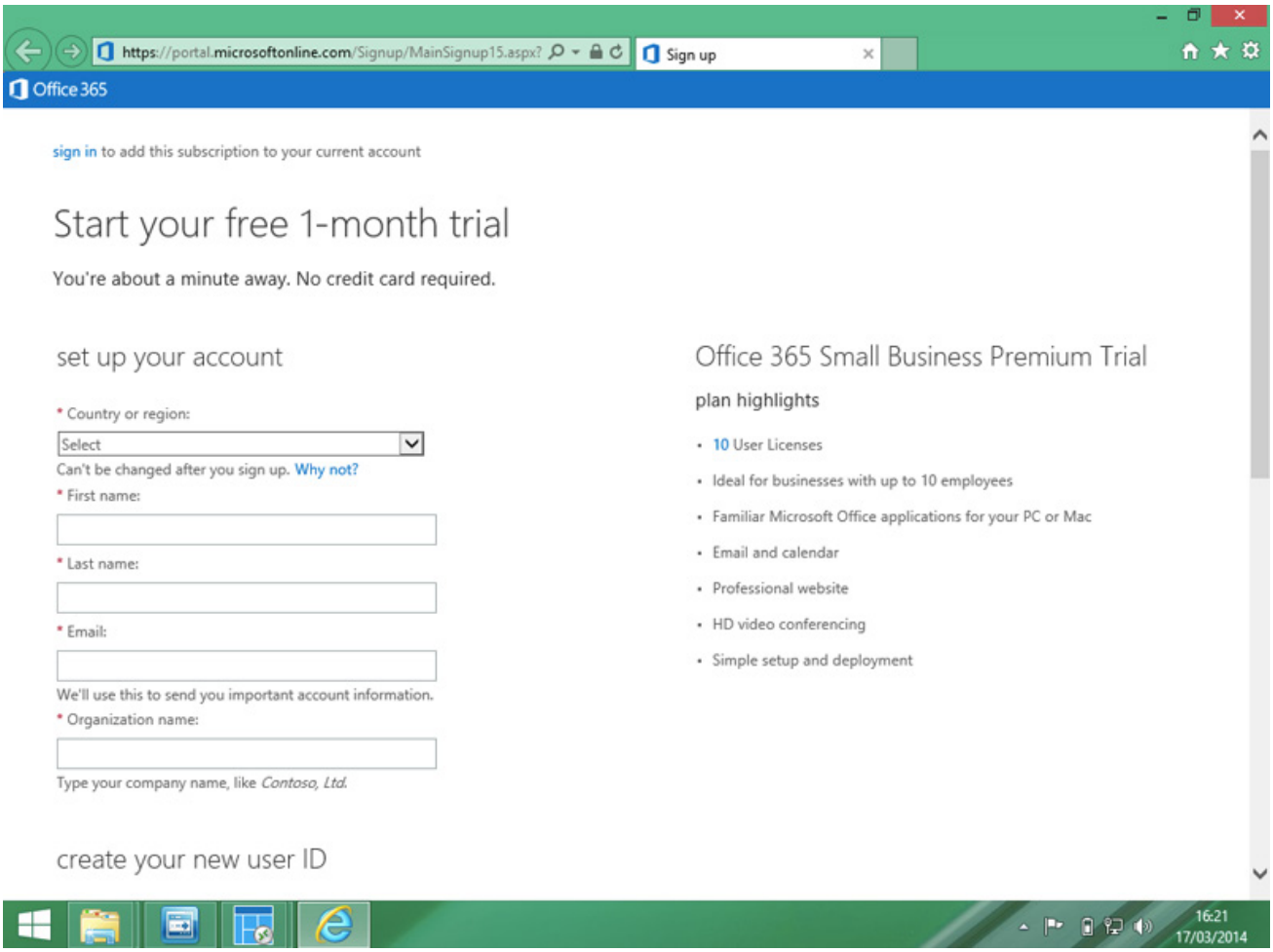
Your Office 365 subscription options.

If you have an existing subscription, you'll simply be asked for your log-in details:



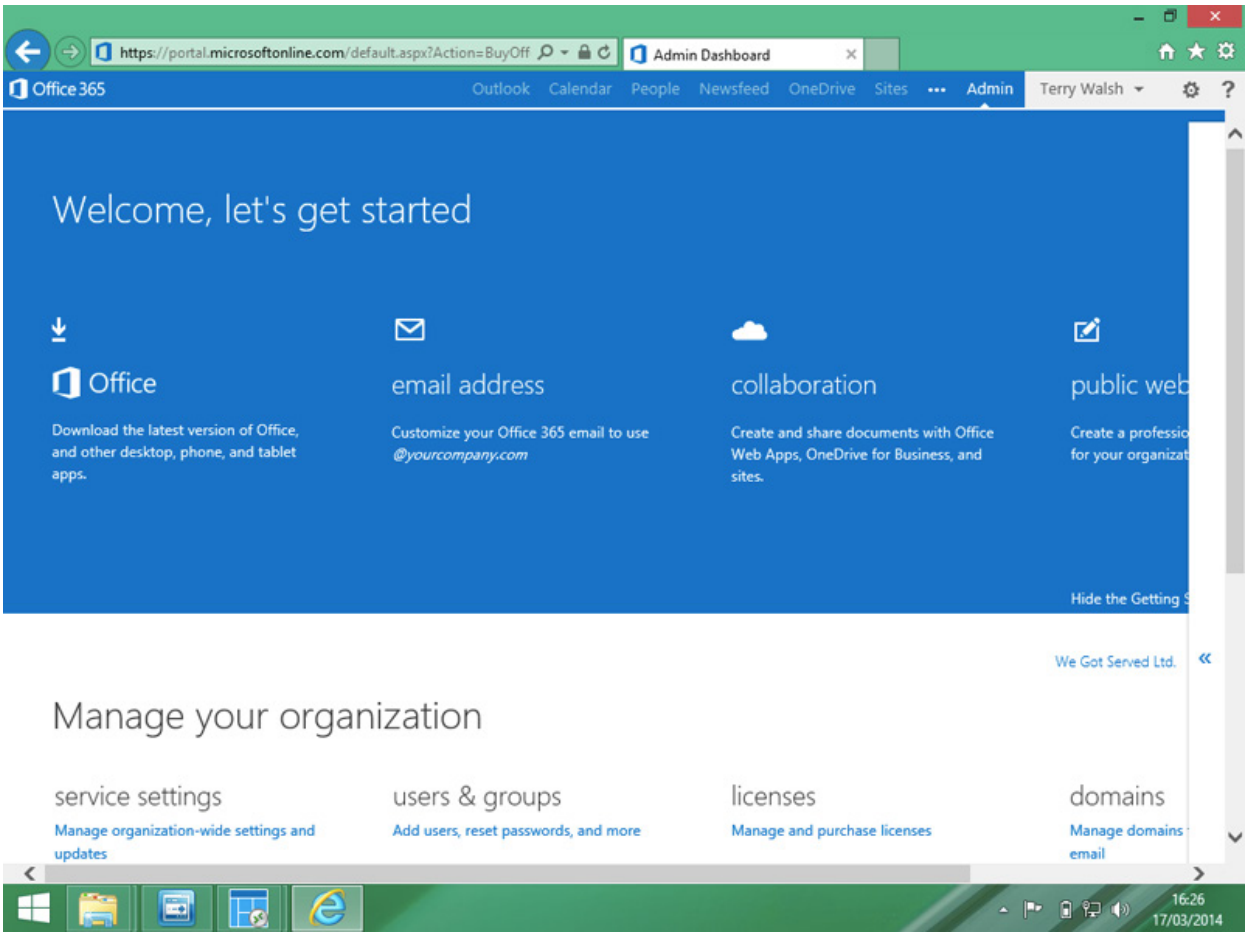
Entering your existing Office 365 subscription details.

I'm going to select the **Try** option for **Microsoft Office 365 for small business** - you select whichever option is right for you!



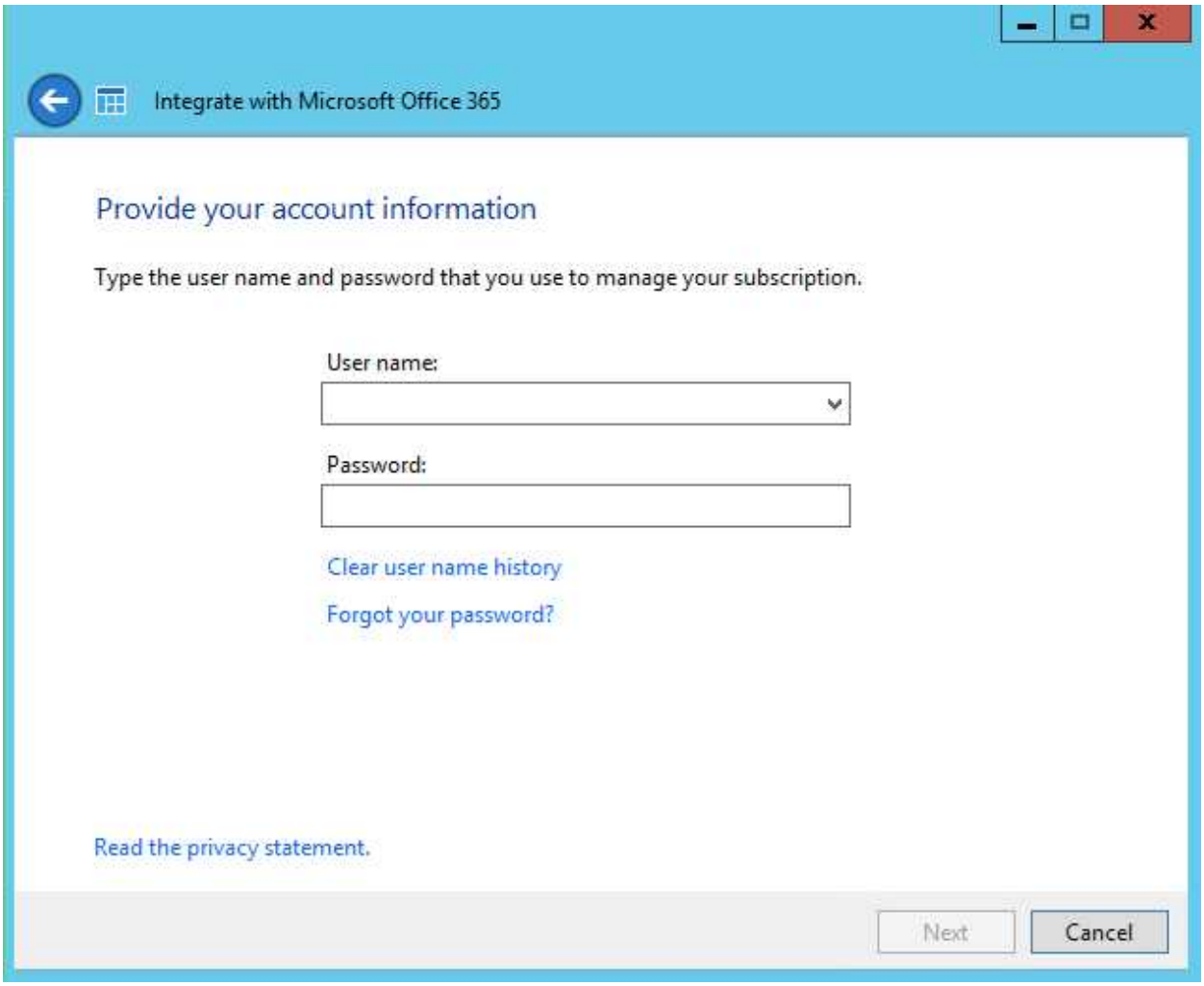
Registering for the free one-month trial.

You'll be taken online to the Office 365 registration portal where you can sign up for the service selected. Complete your registration with the details requested and once complete, you should have full access to the Office 365 account portal.



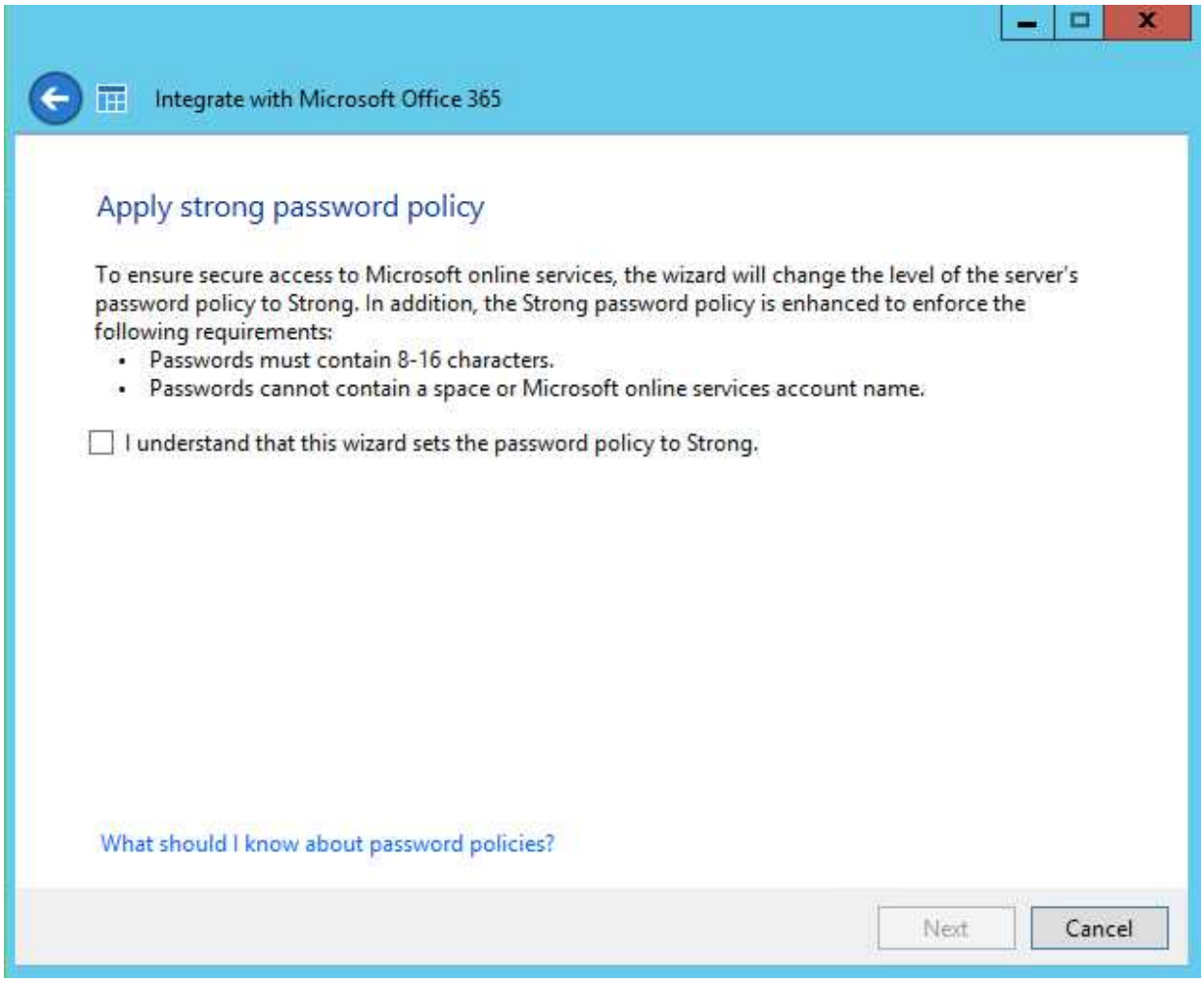
Woo hoo! Let's download some software!

Now, before you dive into the online portal and get distracted with the good stuff you just unlocked, let's complete integration on the server! Head back to the Dashboard and click **Next** to move past the subscription selection panel. Enter the new *onmicrosoft.com* username and password you just created for your Office 365 subscription.



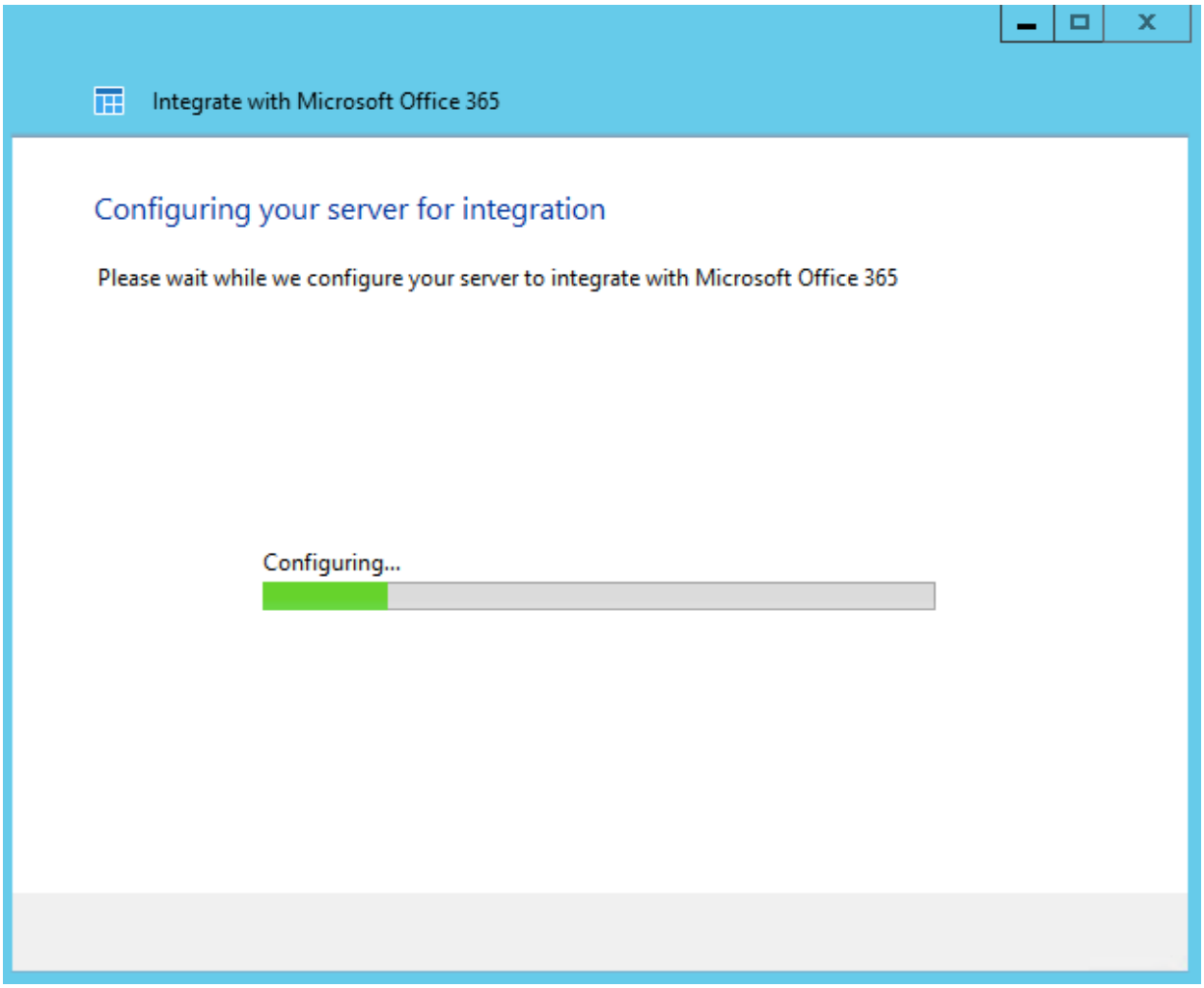
Linking the server to your Office 365 subscription.

Note that as part of integrating Windows Server Essentials and Office 365, your server password policy will be set to only allow Strong passwords. That means 8-16 character passwords as a minimum from now. That aligns the local password policy with Microsoft's own policy for Office 365 user accounts, and can't be changed - bear that in mind when thinking about the suitability for Office 365 in your organisation.



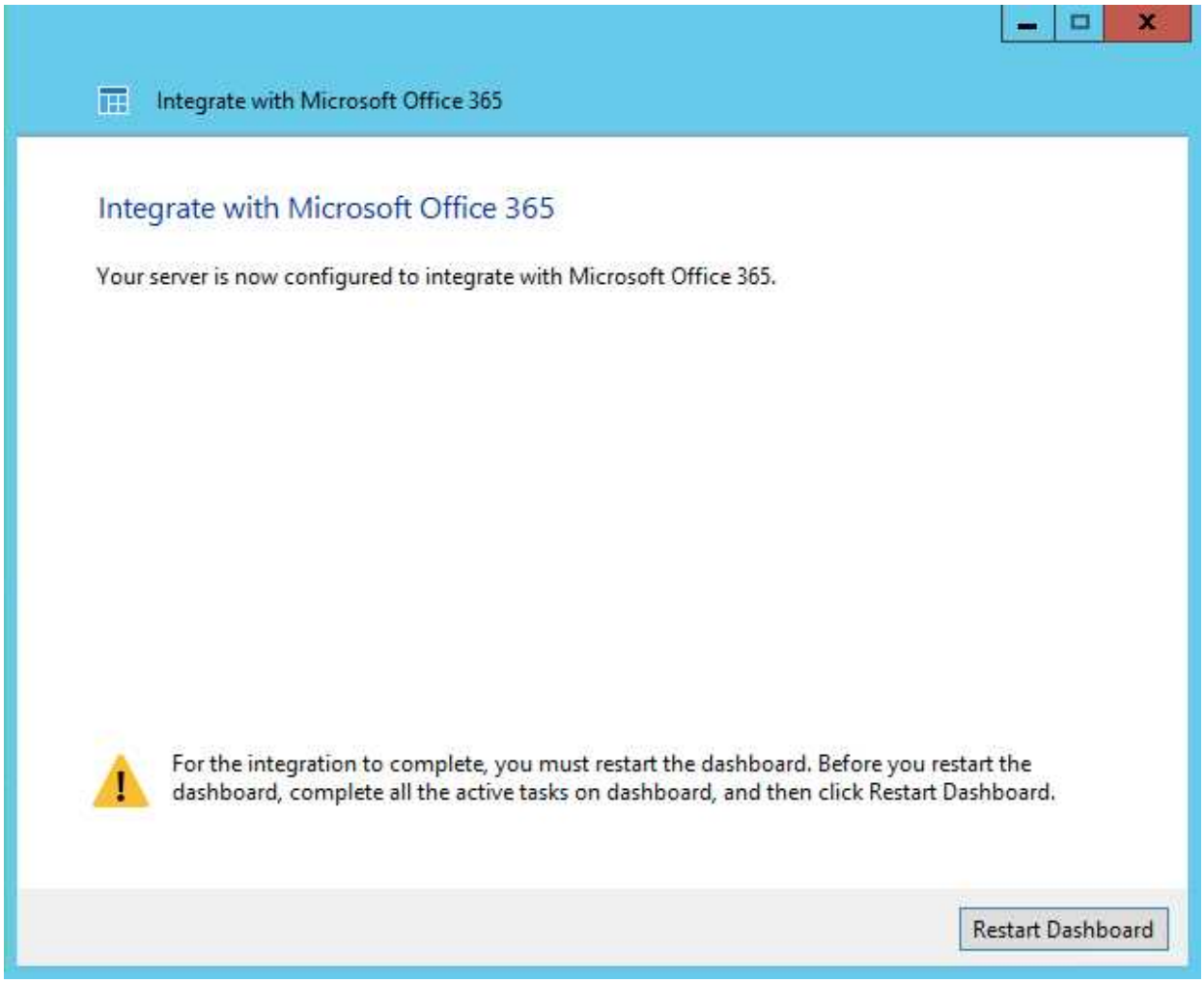
Your password policy will be strengthened if required.

Once you're happy to proceed, check the box that agrees with the policy change, and then Next. Integration of the accounts will begin.



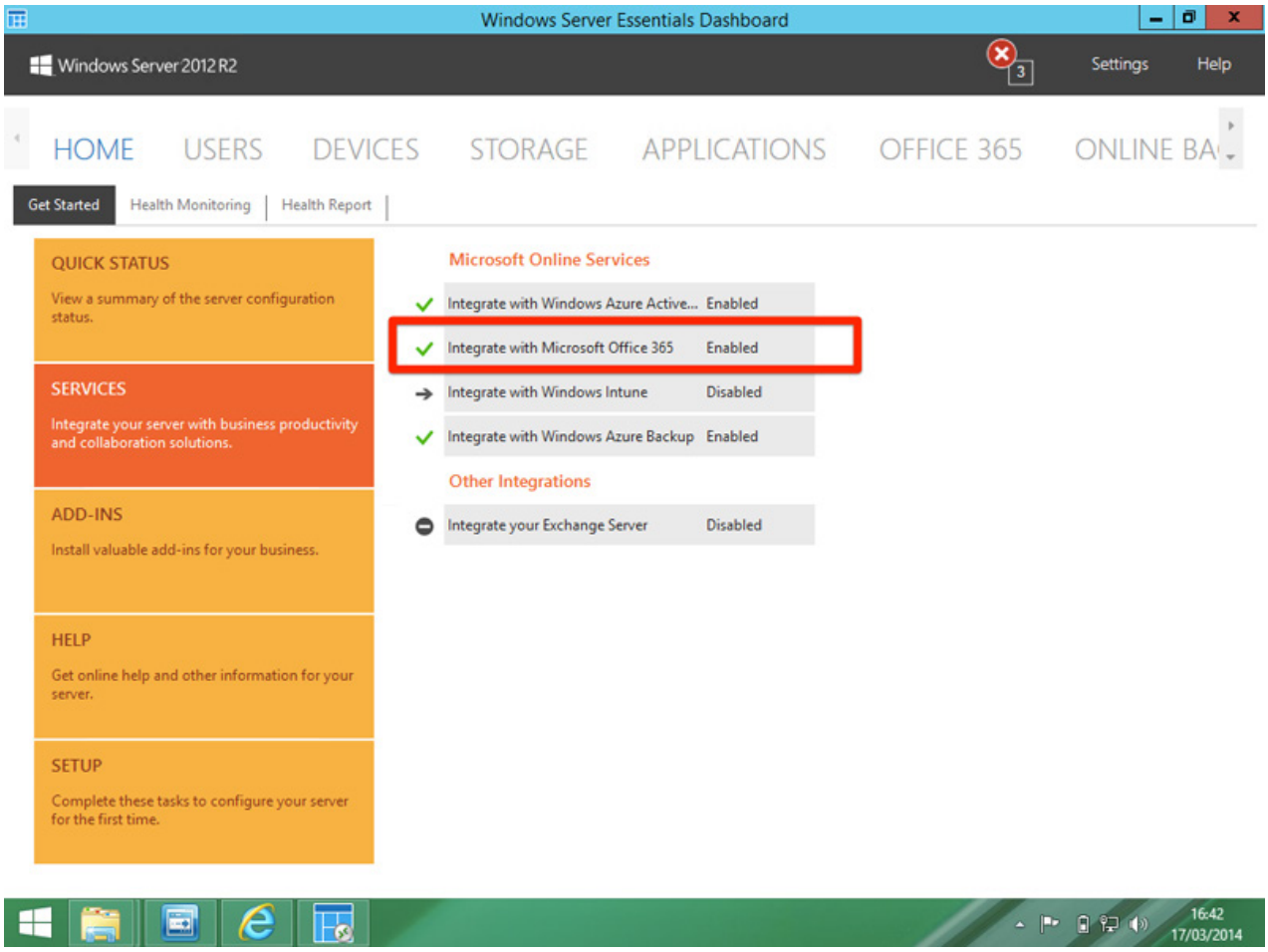
Account configuration proceeds.

Integration only takes a minute or so. Once complete, you'll be asked to restart the Dashboard - a button is provided at the end of the wizard.



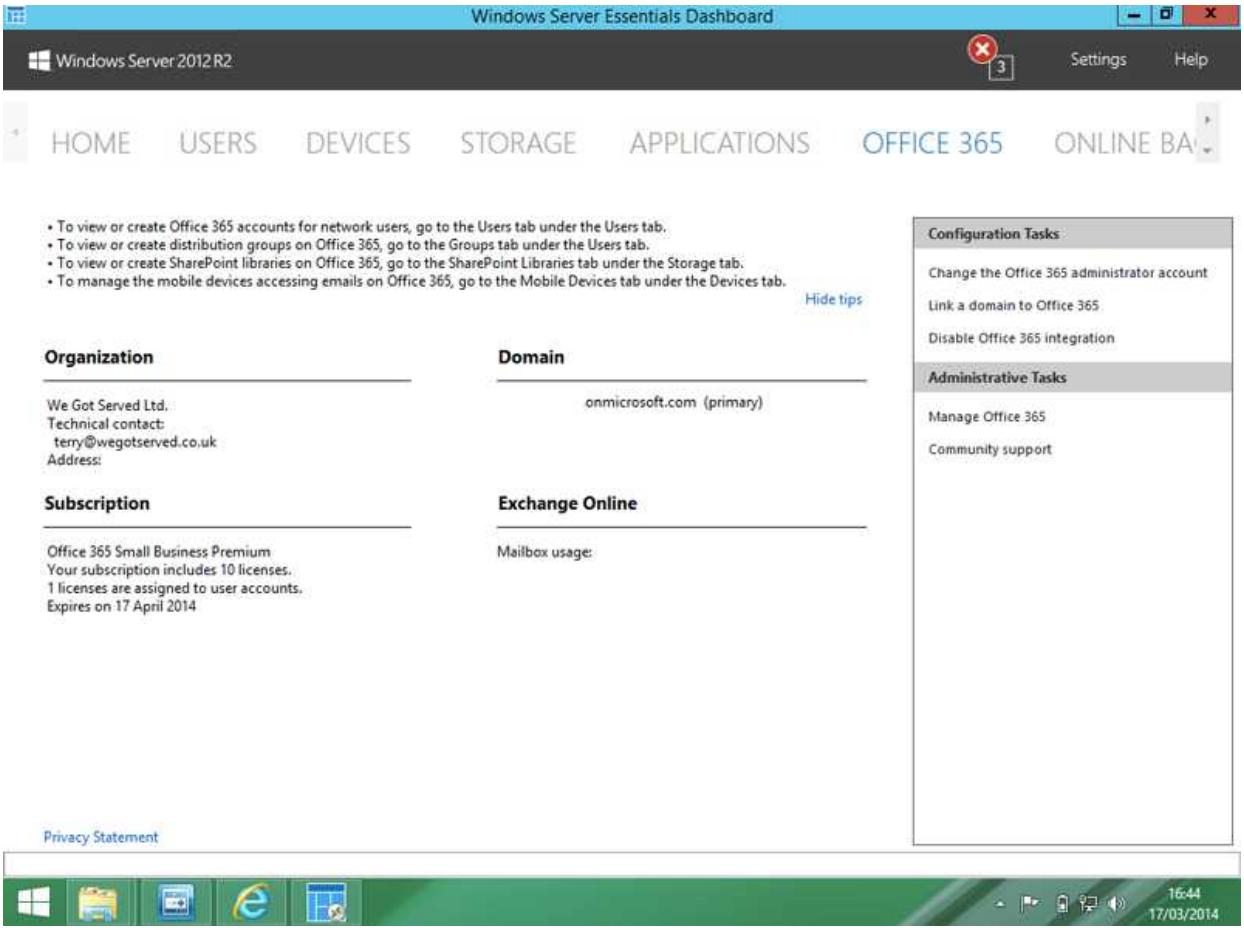
Hit the button to restart the Dashboard.

The Dashboard reopens and if you head back to the **Services** section of the **Home** tab, you'll see that Office 365 integration is now enabled.



Another green tick.

At the top of the window, you'll have noticed a new Office 365 tab has appeared. Click it and let's check out what's going on there.



Your new Office 365 tab.

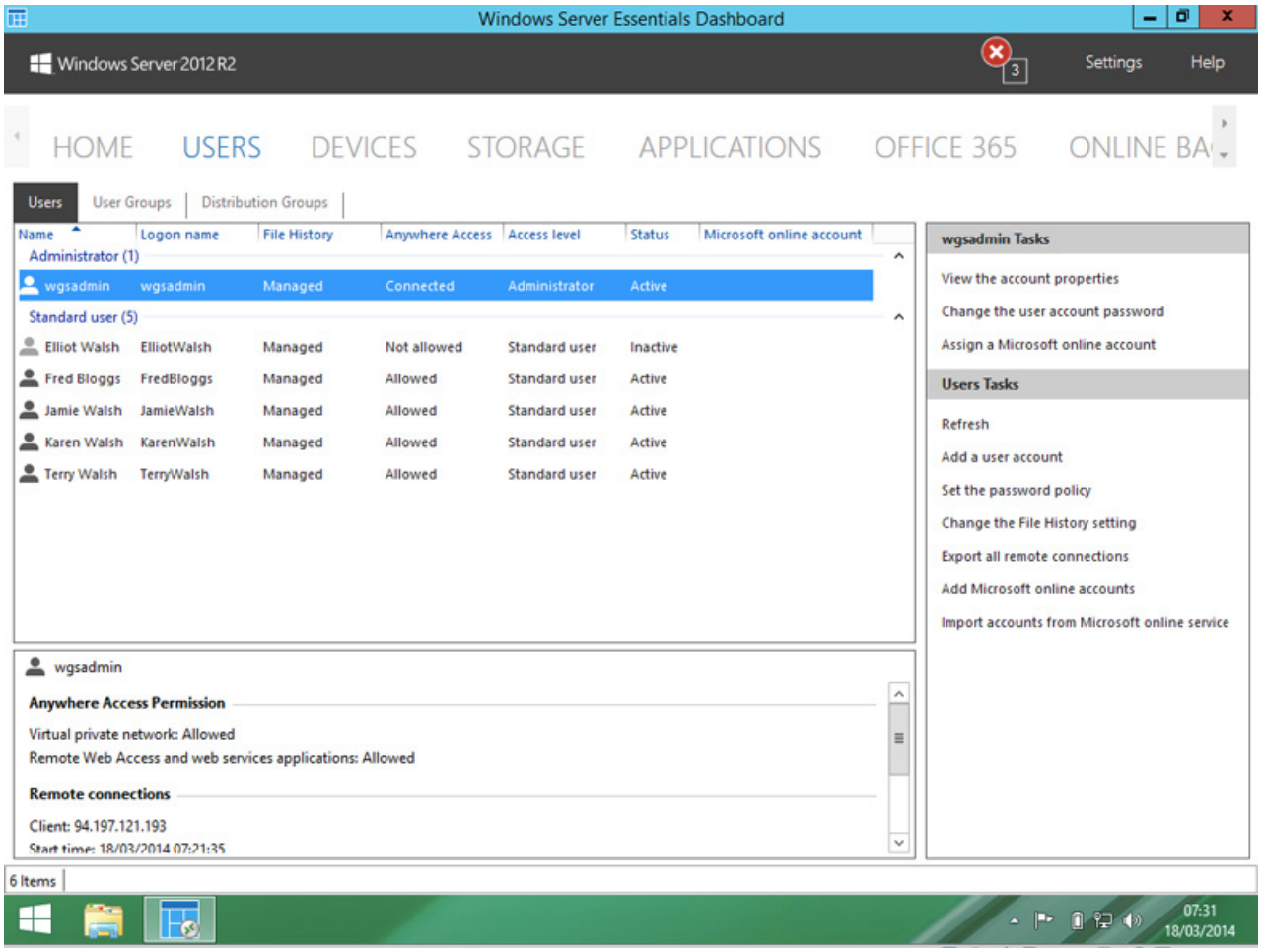
The answer is "quite a lot!" The Office 365 tab holds important status information about your subscription and account. You can check your Organization, Domain and Subscription status quickly, plus (if you're using it) your Microsoft Exchange Online mailbox usage.

On the right hand side, configuration tasks allow you to make changes to your Office 365 administrator account, you can link an external domain name to your Office 365 installation (unfortunately, a remotewebaccess.com account is not approved for Office 365 connection - you'll need to purchase a standard domain name from an approved supplier and link it to your server, or use different domains for your server and Office 365 installations). Finally, you can Disable Office 365 integration, manage your account online and access community support.

All well and good, but dig around the dashboard a little and you'll now see that a range of new options have now been added to your Windows Server Essentials Dashboard. Let's walk through the changes.

Adding an Office 365 User

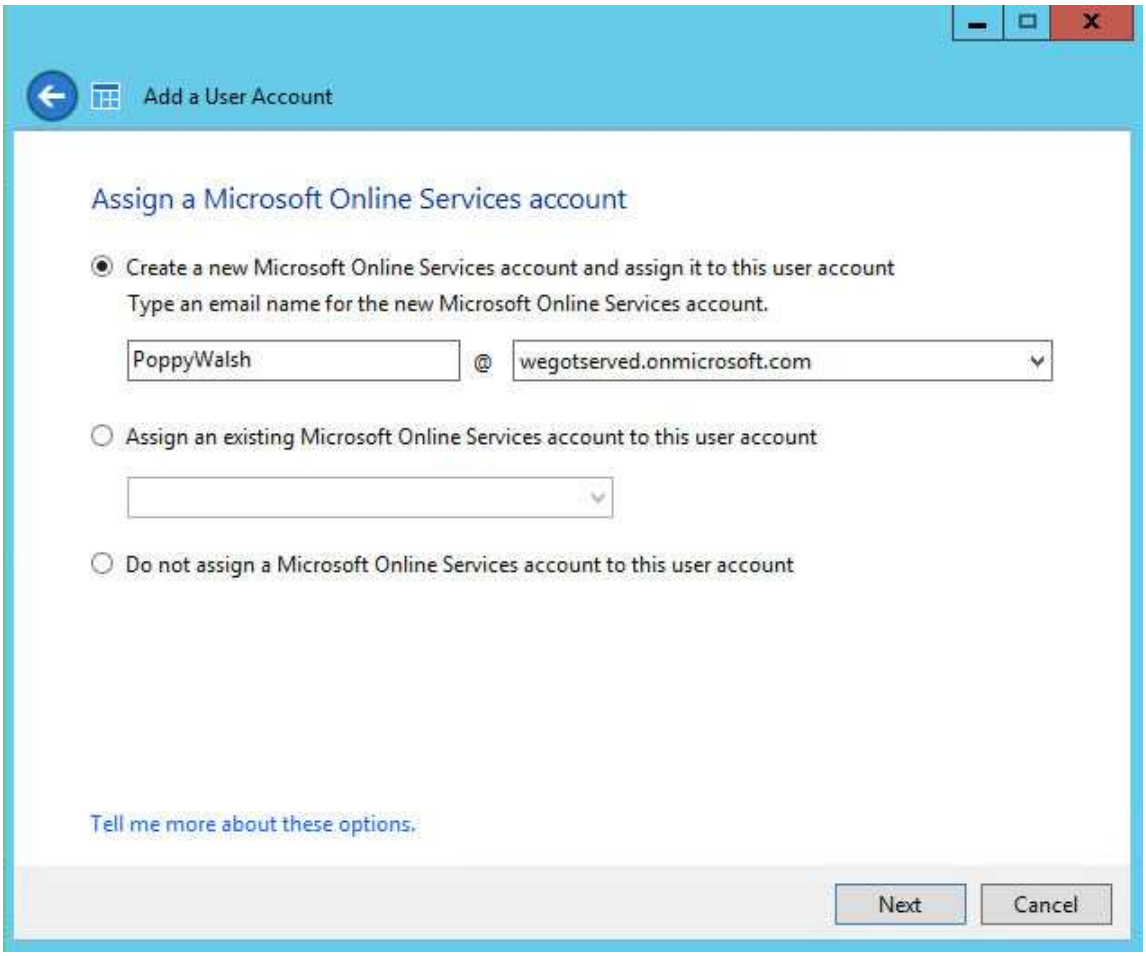
We manage Office 365 accounts for our network users via the Users tab in the Dashboard. Head there now and you can see a number of new tasks have been added to the Task pane.



The updated user panel now includes a range of tasks for Microsoft online accounts.

Alongside the new tasks, **Assign a Microsoft online account, Add Microsoft online accounts** and **Import accounts from Microsoft online service** there's a new column in the main task pane called Microsoft online account.

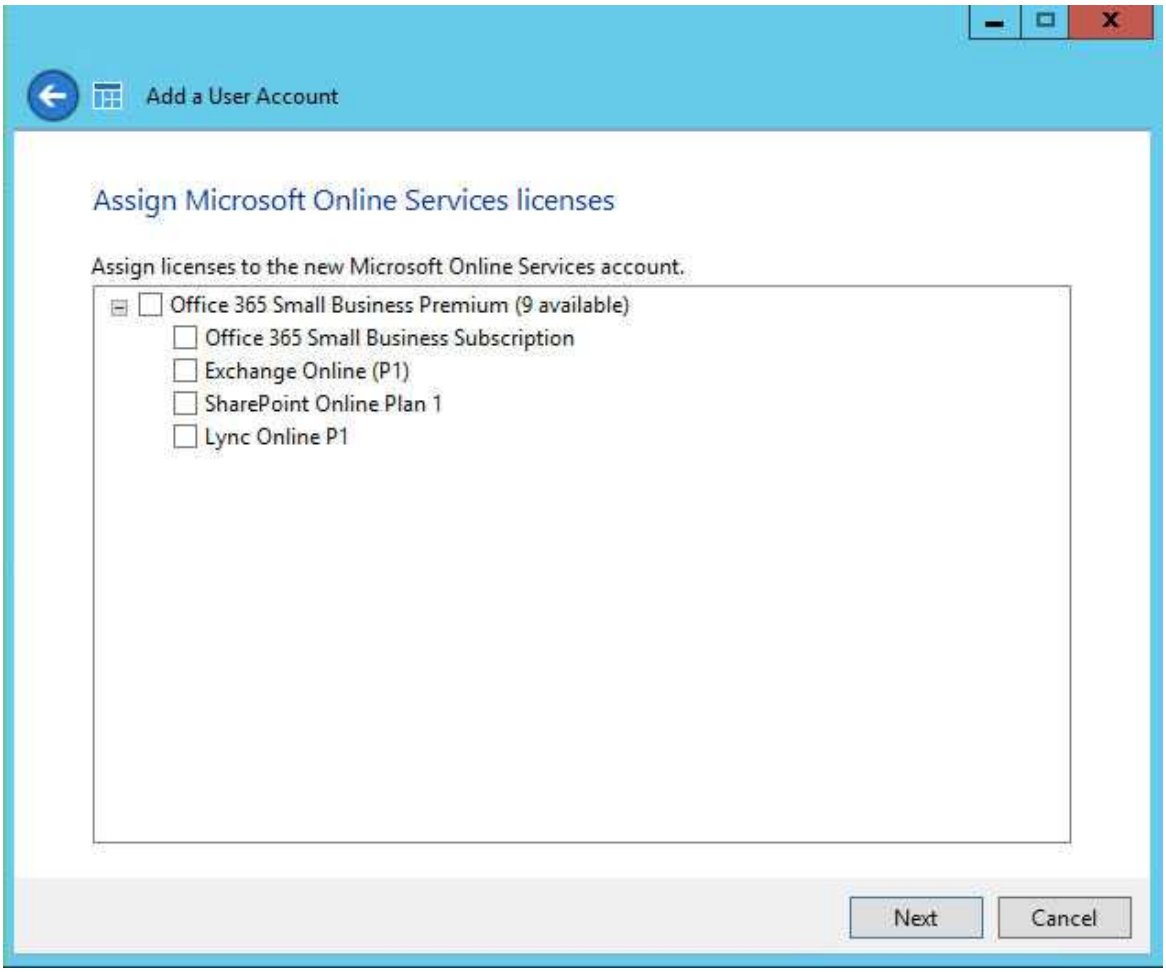
With Office 365 now integrated with the server, the standard Windows Server Essentials **Add a User Account** wizard has been upgraded to include the option to create a new Office 365 account for the user, or assign an existing account for the user. That means as new employees arrive and have user accounts created, you can easily provide them access to Office 365.



Adding a user account with Office 365 account support.

During account setup you can choose to create a new Office 365 account to integrate with the network user account, assign an existing Office 365 account to the user (via the drop-down selector) or decide not to assign an Office 365 account to the user. Microsoft currently call Office 365 accounts "Microsoft Online Services" accounts in Windows Server 2012 R2 Essentials, which is a little confusing, but as long as you know these are Office 365 accounts, then you'll be fine.

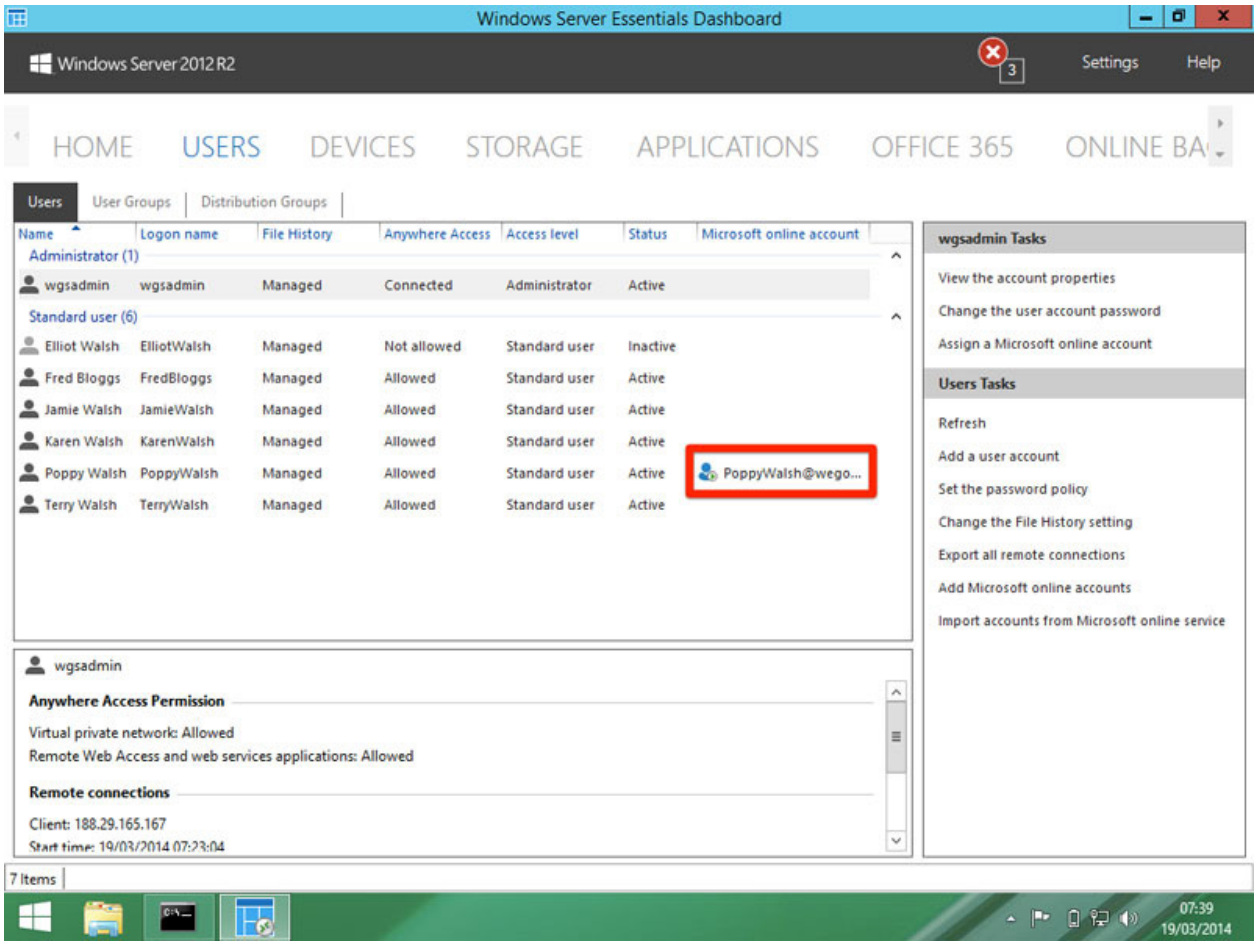
Click **Next** to continue and you'll be invited to assign application licenses to that user. You'll be shown how many licenses you have available and will be able to check the specific items you wish to enable for the user. Here you can see we have an **Office 365 Small Business Subscription** (which covers all of the standard Office apps like Word, PowerPoint, Excel and so on), a license for Microsoft's **Exchange Online** email service, **SharePoint Online** for business collaboration and finally **Lync** for messaging, audio and video calling. Make your selections and click **Next**.



Assigning Office 365 licenses.

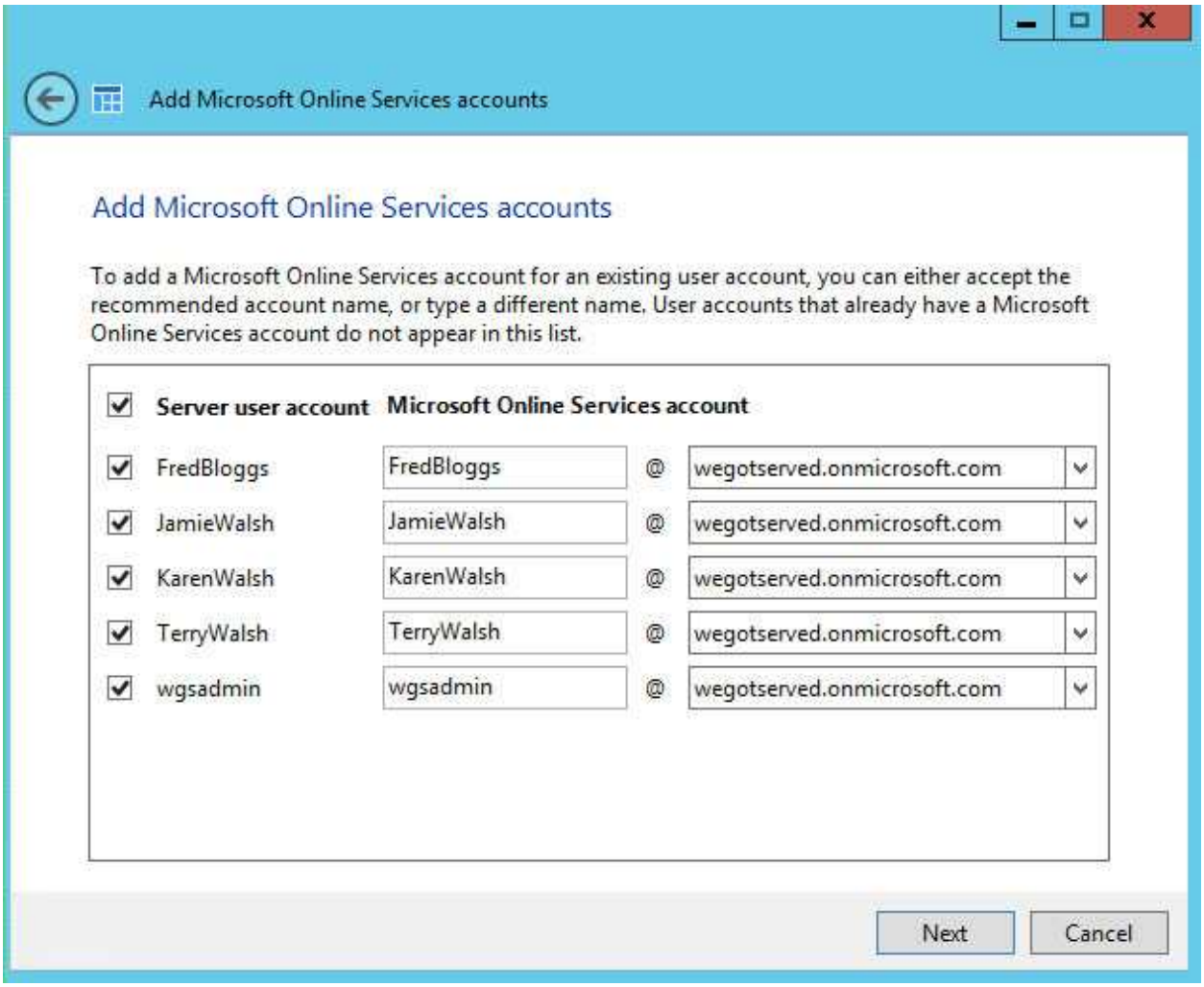
That will complete the Office 35 element of account setup and you can process to configure user group membership, folder access privileges and remote access settings.

Once the Add a User wizard has finished and has been closed, you should see an entry for Microsoft Online Services alongside the new user account in the main pane.



The account has Office 365 support.

For existing users, you can create and assign new Office 365 accounts (or in Microsoft's current nomenclature, **Microsoft online accounts**) using the **Add Microsoft online accounts** task.

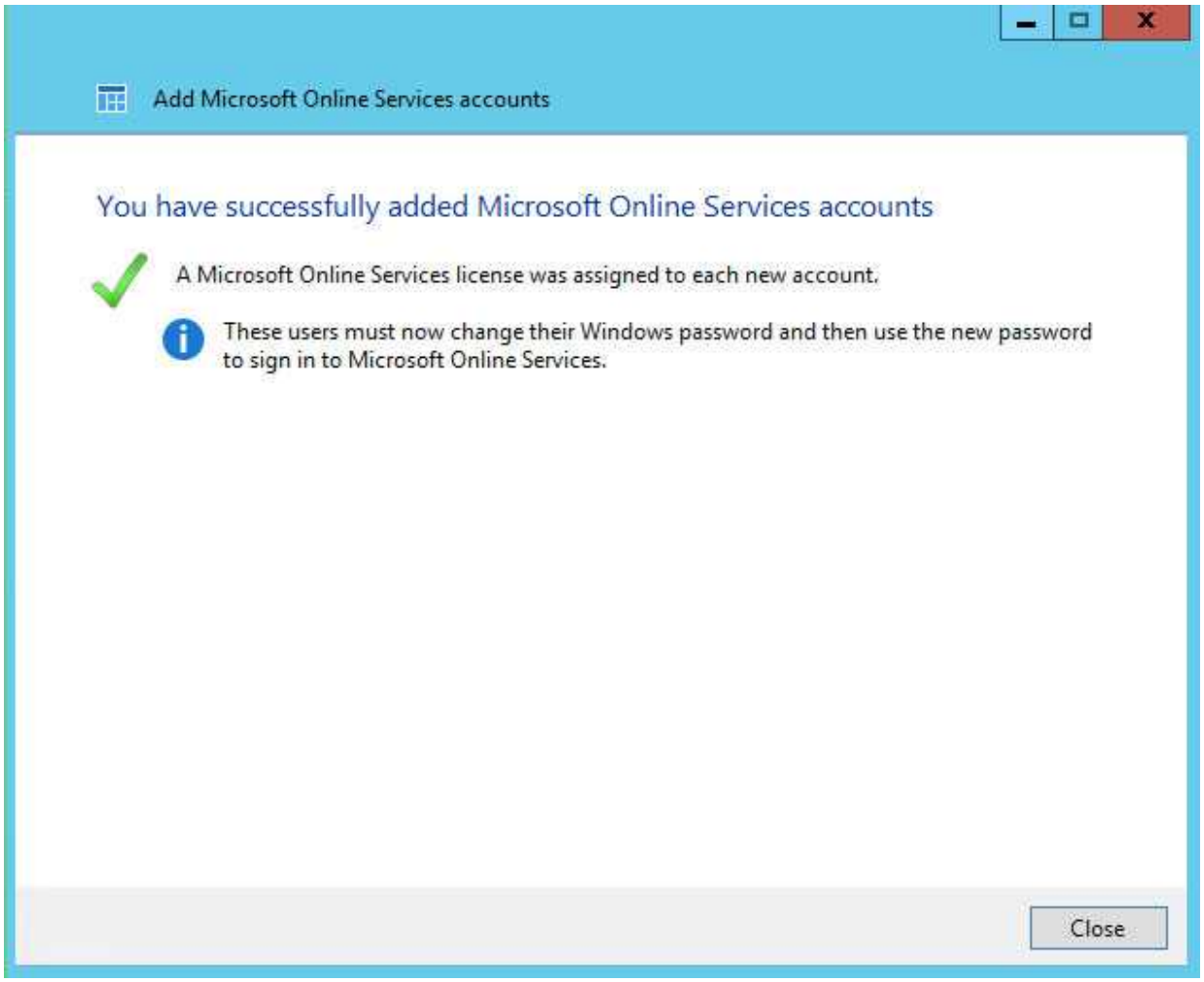


Adding new Office 365 accounts for existing users.

This provides a simple way to create and integrate new Office 365 accounts for all of your users. You can choose which users should have accounts created using the checkboxes next to each user and amend the Office 365 user account name which should be created. Note that only users that do not have an Office 365 already integrated will be shown in this list - you can see that the PoppyWalsh account we just created does not appear.

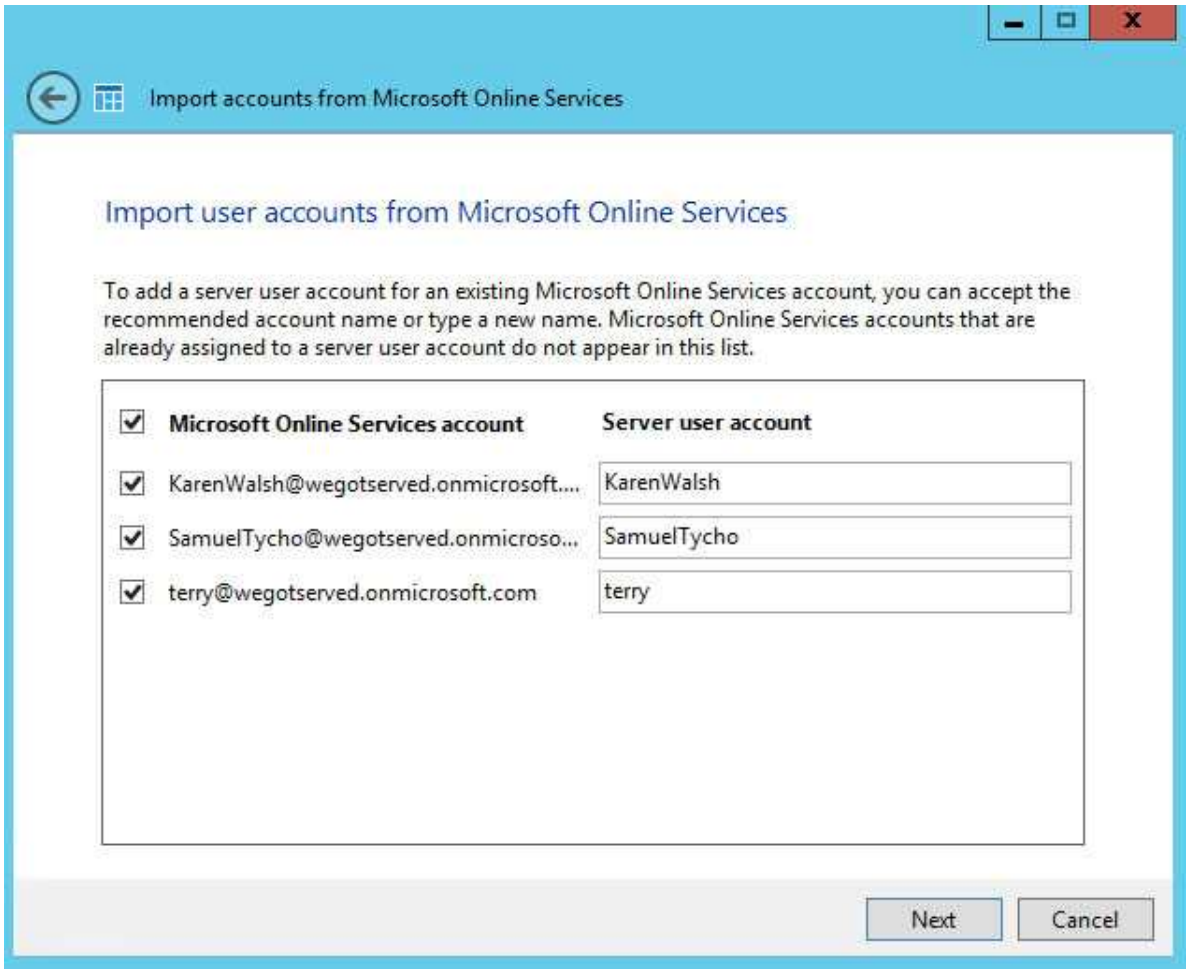
As with setting up a new user account, you'll be asked to select the applications to assign to your users. Unfortunately, this is completed as a "batch" so using this route, you can't set different assignments for individual users - to do so, you'll need to integrate each user account separately but highlighting the user in the main pane and selecting the **Add Microsoft online accounts** task.

To enable password synchronisation, each user must then reset their Windows network password which will then also be tied to the Office 365 account.



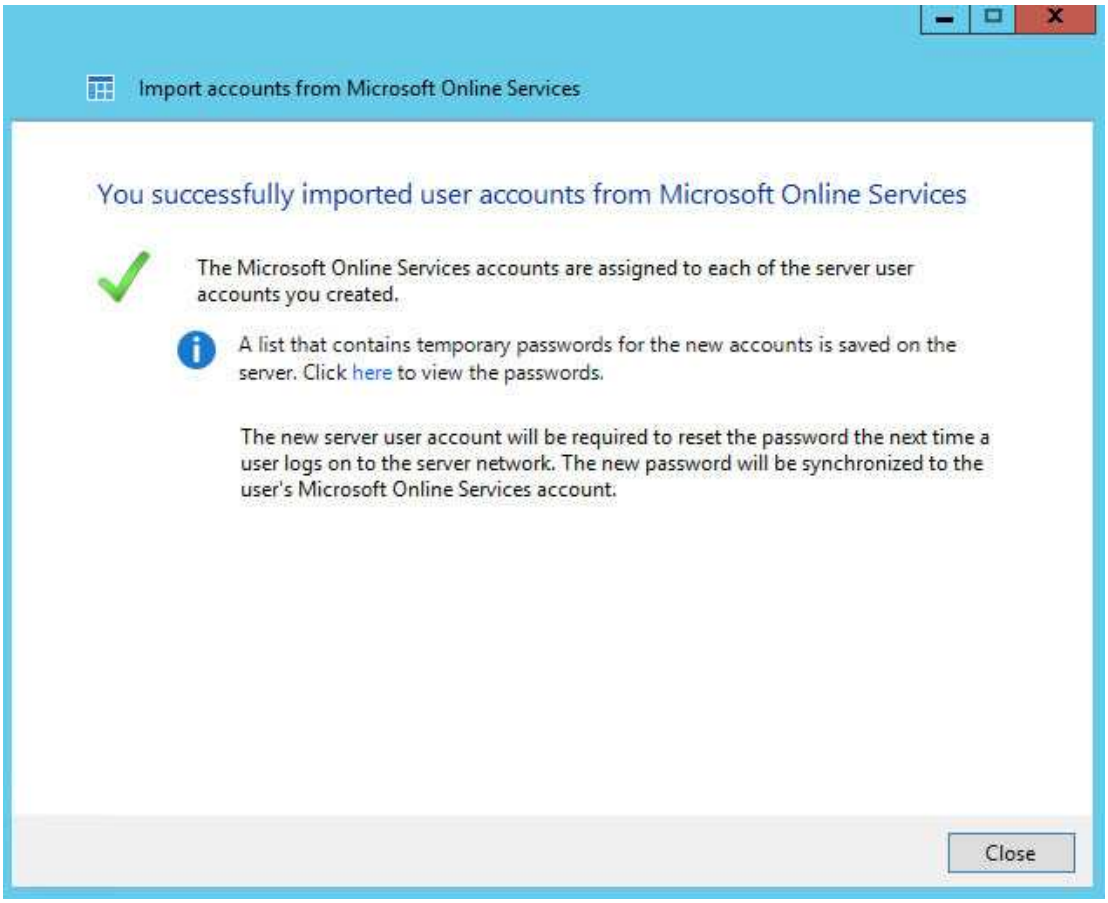
Password resets for your users are not the most fun, but it's necessary for synchronisation to take place.

Alternatively, if you have existing Office 365 accounts for users that do not currently have network accounts set up on the server, you can use the **Import accounts from Microsoft online service** task to open a wizard which will import and create user accounts on the server.



Importing Office 365 Accounts.

The import wizard will check your Office 365 account online and pull down any account information for Office 365 accounts that are not currently connected to a user. You'll be asked to create a new network account name to pair with the Office 365 account. Note that if you try to connect an Office 365 account to an existing network account using this particular wizard it will be blocked. Once you've selected the accounts you wish to sync, click **Next**.



The user account is created.

As the account has already been set-up in the Office 365 online portal, there's no need to assign licenses from the Dashboard - it should have already been done when the account was initially set-up online.

The user will be forced to reset their password when they first log-on to the network using their new network account. This process will force the network and Office 365 account password to sync. Of course, you can reset the password yourself as the domain administrator from the Windows Server Essentials Dashboard.

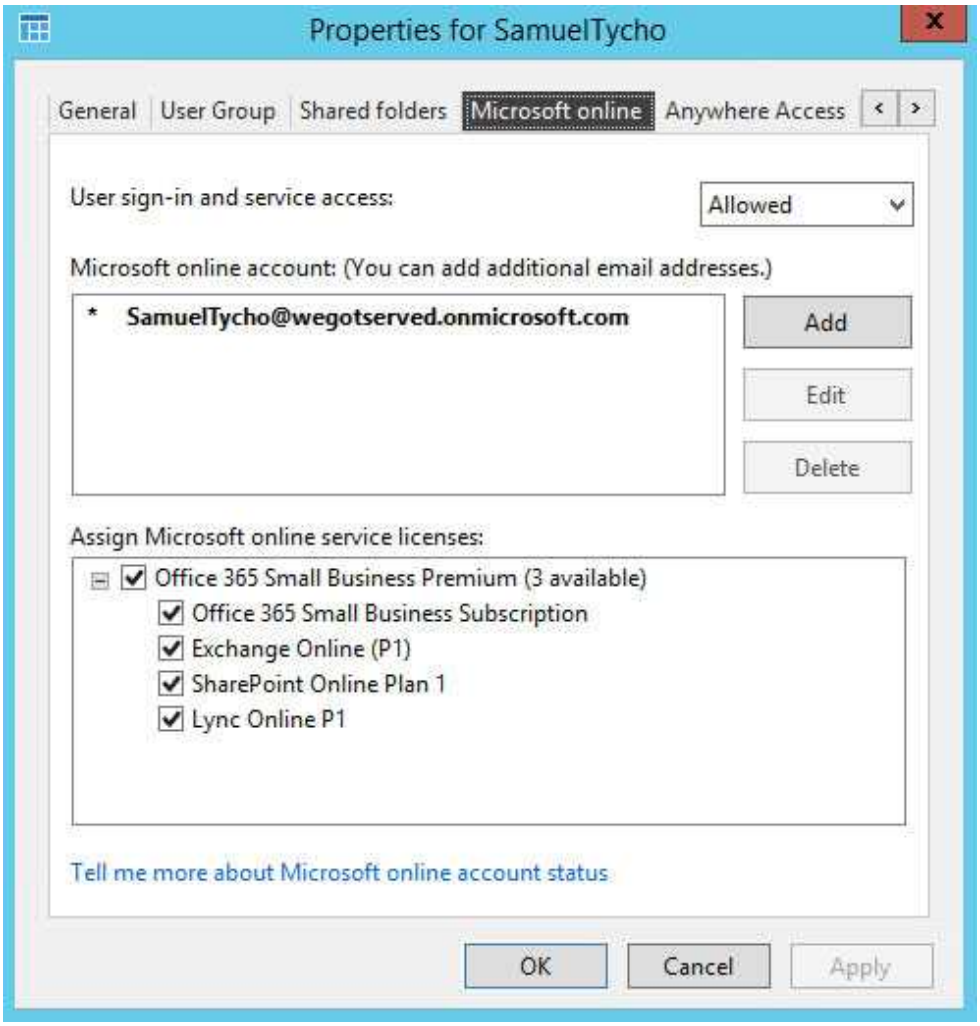
Once a network user account is connected to an Office 365 account - however the connection has been made - the Windows Server Office 365 Integration Service automatically synchronises the user's network password with their Office 365 account, and manages that synchronisation. That means the user only needs one password to access the network and their Office 365 account, and there's the added bonus that users can also use their Office 365 user name as the name for their Windows Server Essentials user account.

Once the accounts are synchronised, users and admins should only manage their passwords from the server going forward, not the Office 365 website. If the password is subsequently changed on the Office 365 website, synchronisation will break. Be sure to let your users know!

If you or users subsequently try to log into Office 365 online and see a message stating your ID or password is not recognised, try resetting the user account password from the Windows Server Essentials Dashboard to force a re-sync with Office 365.

If you see this error, try resetting the user's network account password.

Once your user accounts have been connected to an Office 365 account you can view Online Account Properties directly from the dashboard. Simple double click on a user and check out the new **Microsoft online** tab that has been added to the User Properties dialog.

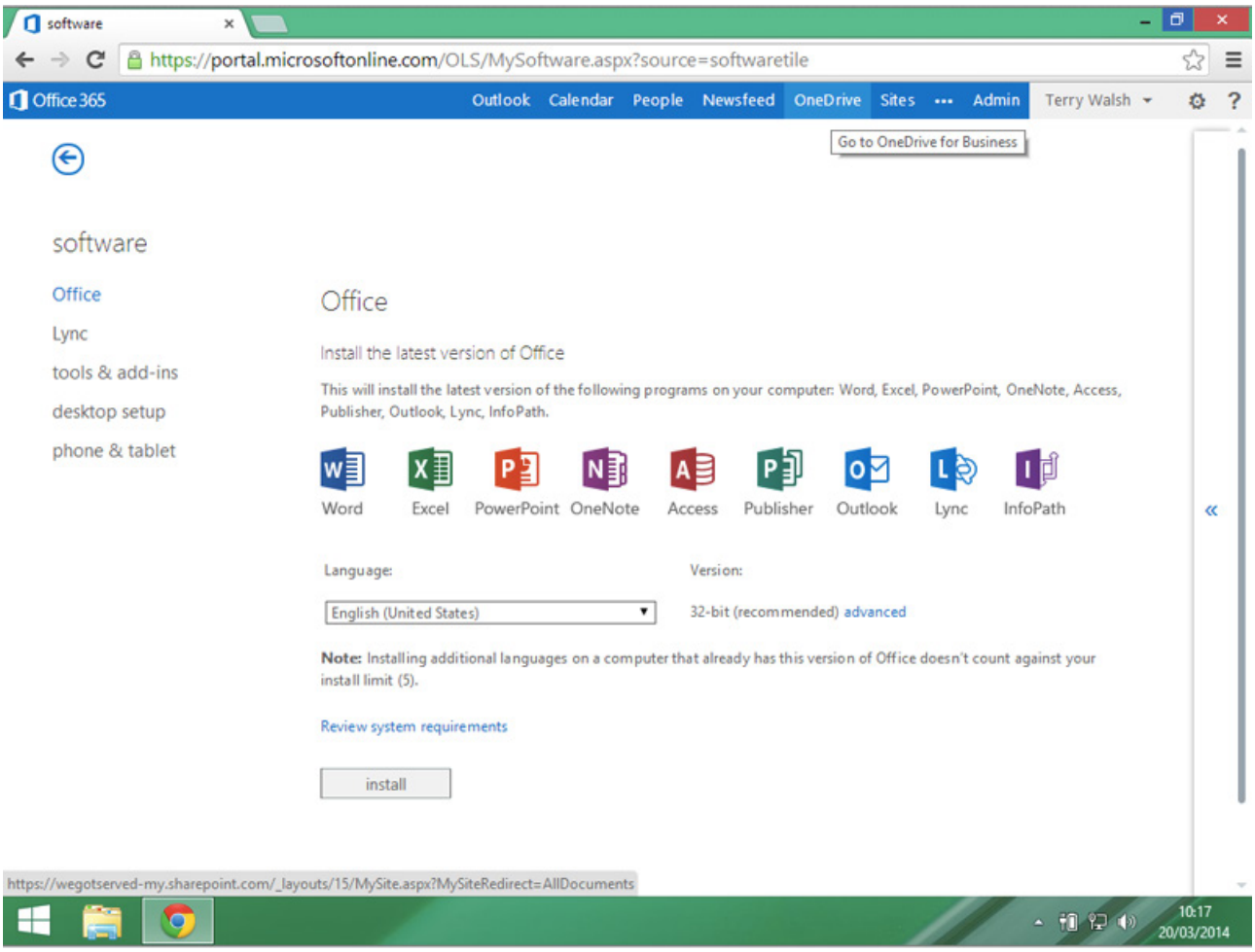


Microsoft online properties.

From here, you are able to block or allow online sign-in to Office 365, add or edit the online account name and email address and make changes to Office 365 application licensing.

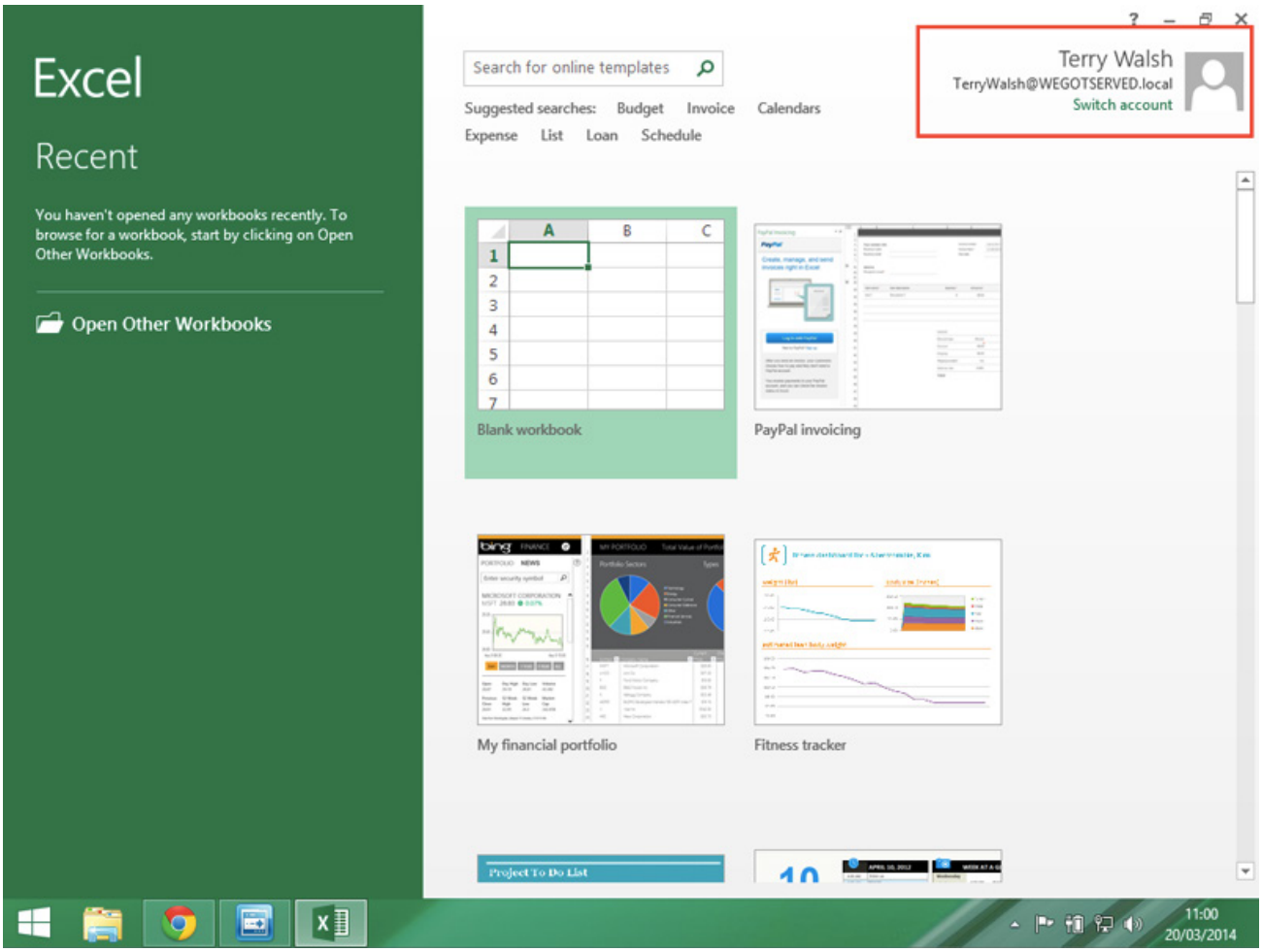
Installing and Using Office 365 Applications

Once your network user accounts have been integrated with Office 365, you and/or your users can download and install the various Office applications you need on your client PCs. It's beyond the scope of our Windows Server 2012 R2 Essentials book to walk you through all of the applications, but to close the loop on our account integration, I'll show you that when you install and use Office 365 on the client, your newly integrated network account should work fine with Office 365.



Downloading Office applications.

Once you've installed Office 365 and open an app, you'll see your account credentials have been assigned.

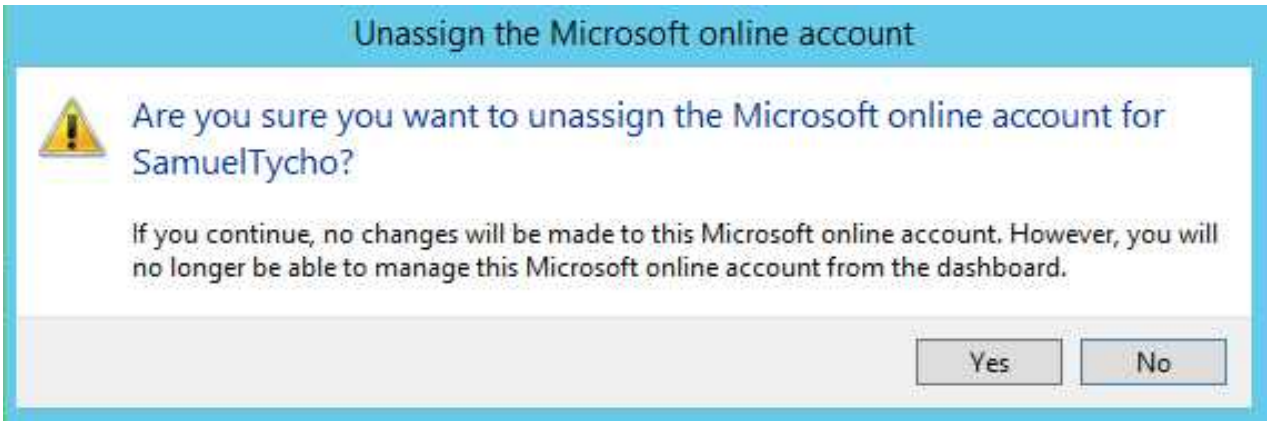


Using Office 365 with your network account.

Deactivate and Remove Office 365 Access

When it comes to deactivating and removing users from your Office 365 account, that is also integrated into your Windows Server Essentials user controls. A range of options are available.

If you select the Unassign a Microsoft online account task, the network account and Online 365 account will remain intact but Office 365 synchronisation will be removed - you will no longer be able to manage that particular user's Office 365 account from the Dashboard.

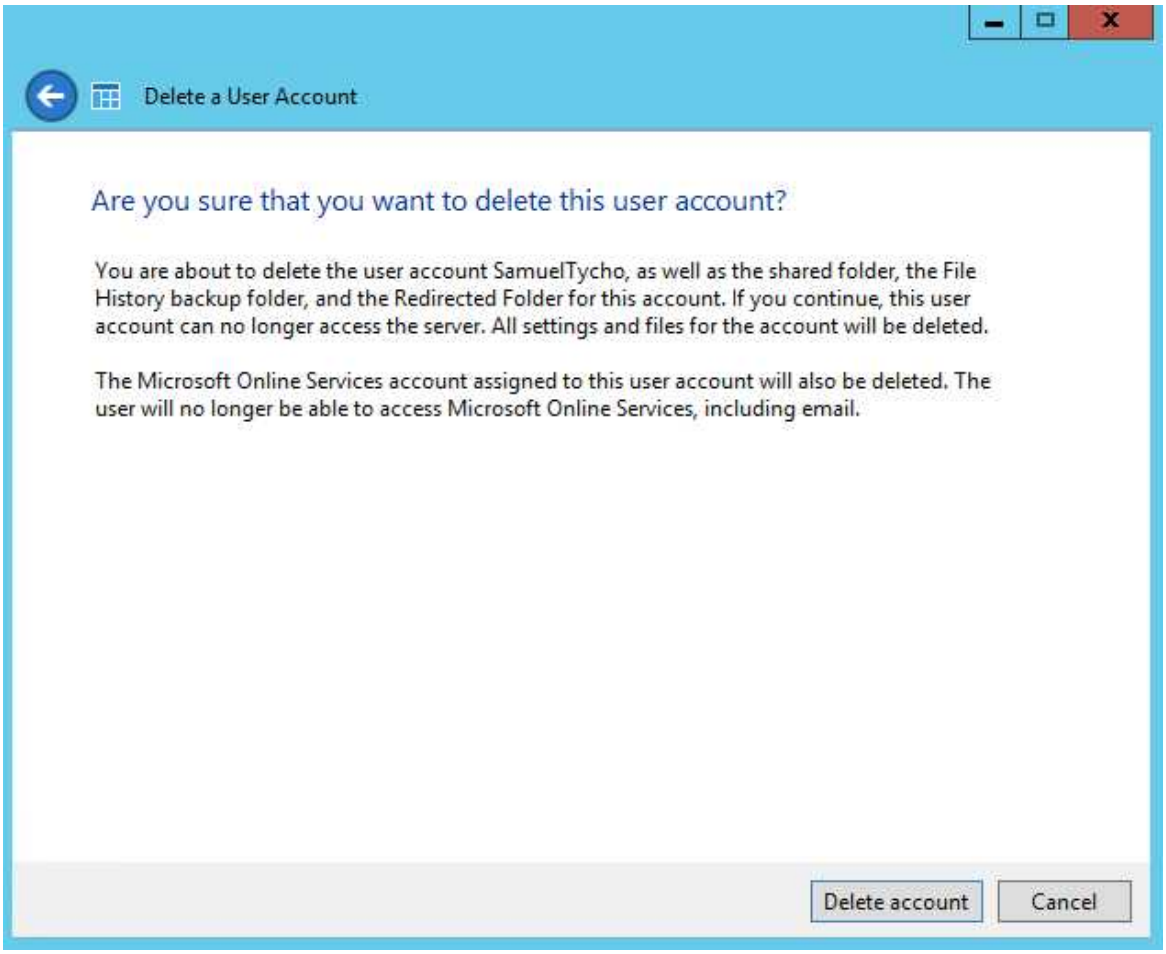


Unassigning the Office 365 account.

Click on the **Deactivate the user account** task and the Office 365 account assigned to this user is also deactivated. The Office 365 license assigned to the account is removed, and the user is blocked from logging on.

Deactivating the user account does not remove the Office 365 online account, but will block access.

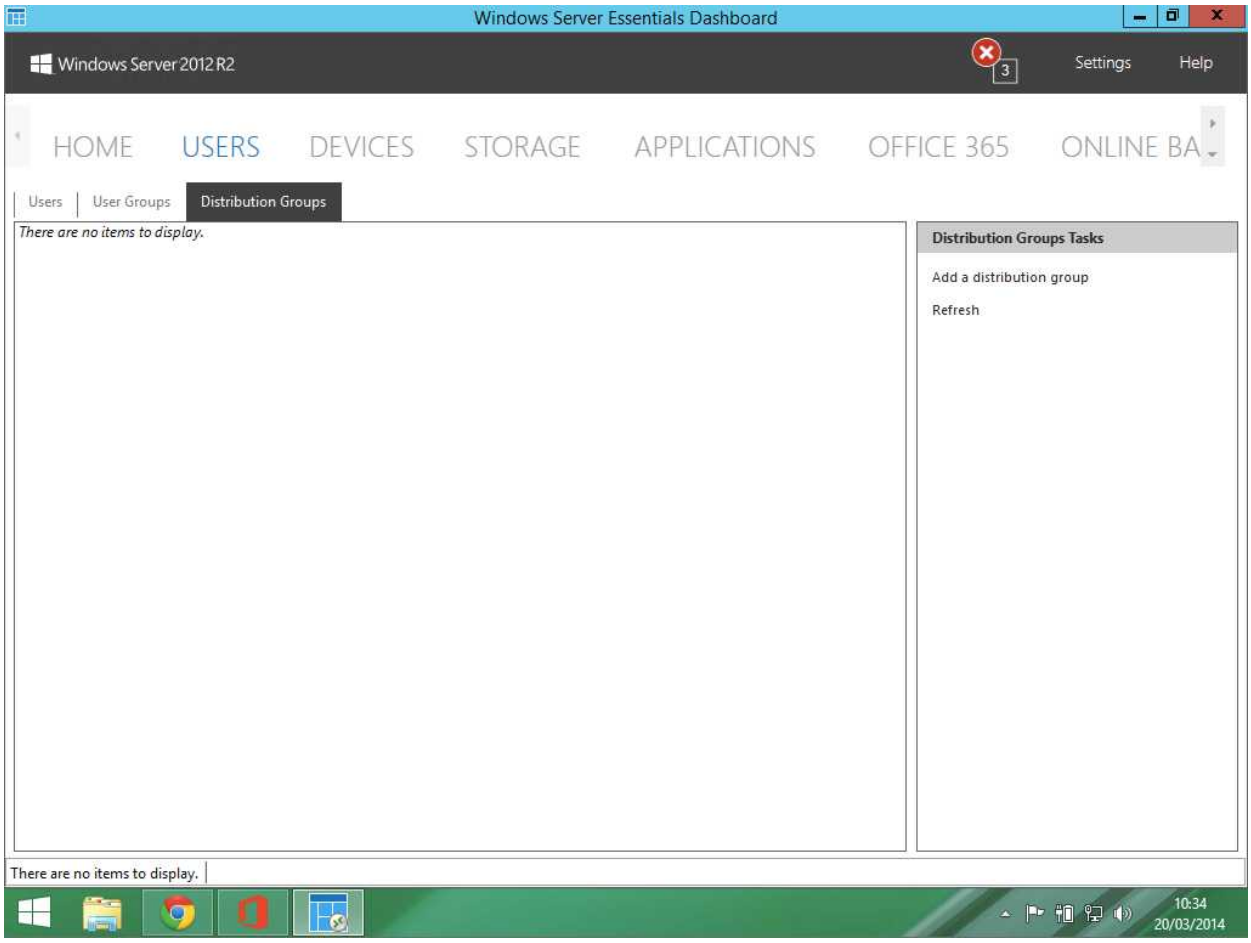
If you continue on to remove the user account with the associated task, the Office 365 account is also removed. All of the data associated with the Office 365 account, including email, is handled in accordance with the established Office 365 retention policy.



Deleting the user account will also remove the online account from Office 365.

Configuring and Managing Distribution Groups

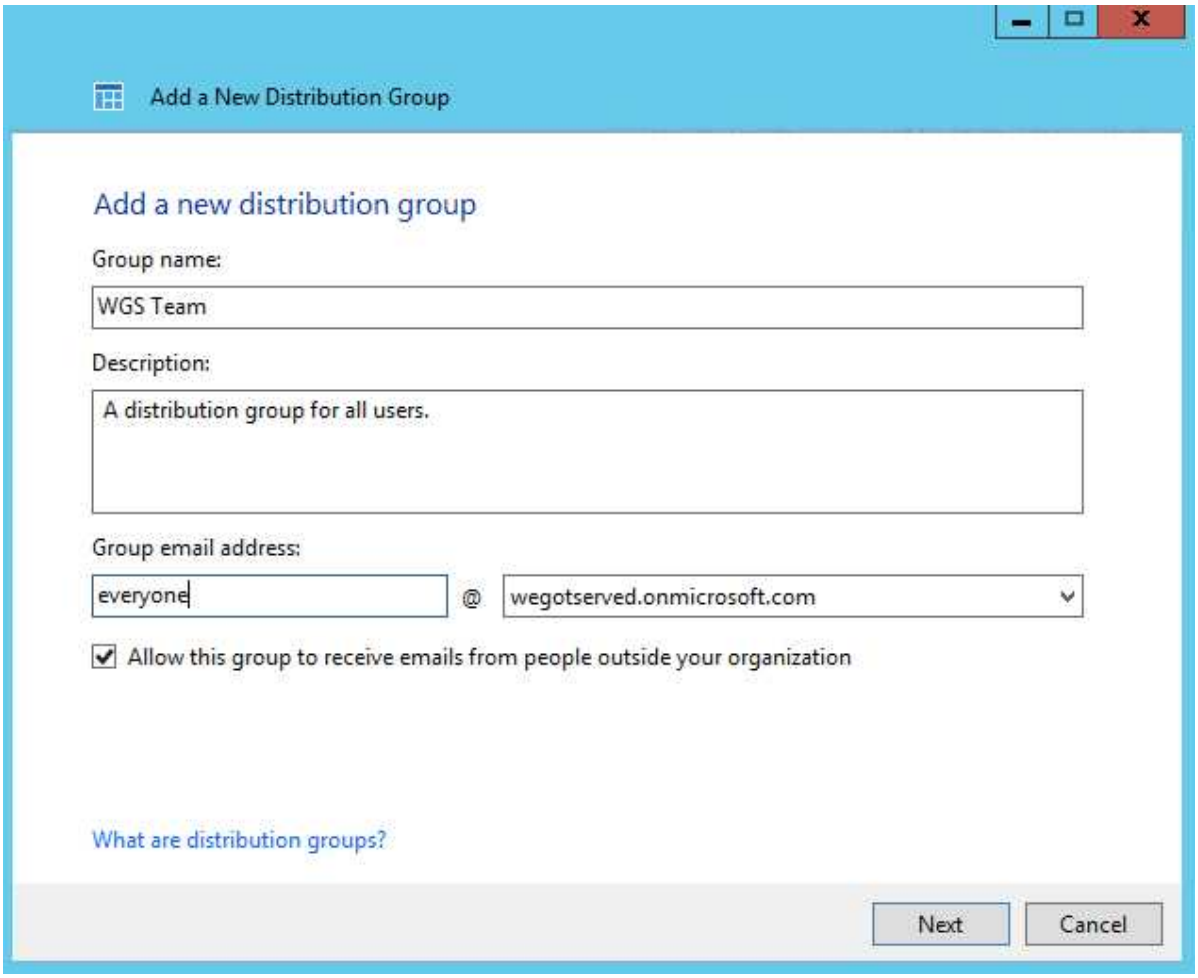
Another Office 365 feature exposed in the Dashboard Users tab is Distribution Groups. You'll see a new tab with that name has been added to the Users tab next to User Groups.



Distribution Groups in the Windows Server Essentials Dashboard.

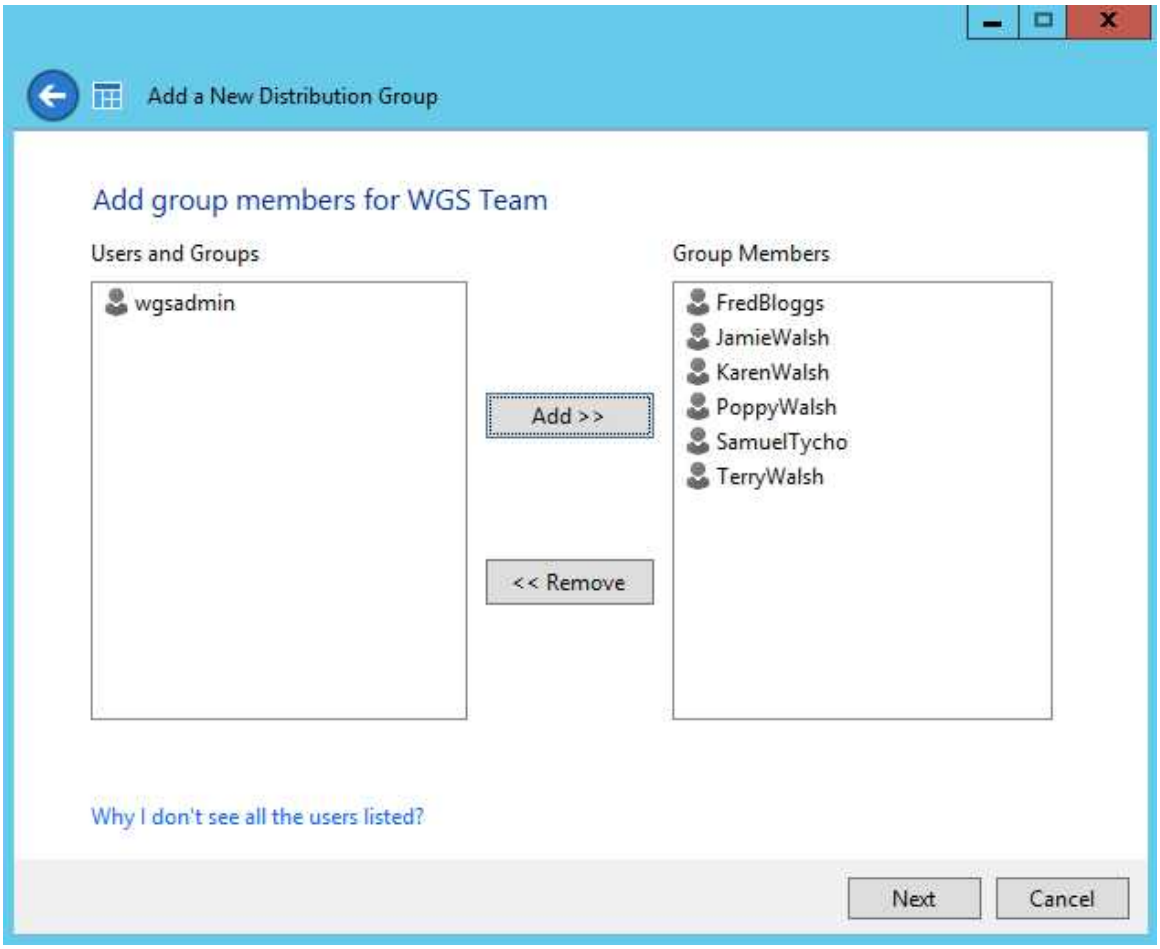
Whereas a user group is a collection of users that share security and access privileges, a Distribution Group is a collection of users that appear in a shared address book. Once a distribution group is created, you can send an email to the group and all users in that group will receive the email. Whilst normal Office 365 users have to go to the online Office 365 portal to create and manage distribution groups, you can do the work in the comfort of your Windows Server Essentials Dashboard.

You'll have guessed by now that to create a distribution group you'll need to use the **Add a distribution group** task that looks a little lonely in the task pane right now. It's a very simple process that involves providing a **distribution group name** and **description**, setting an **email alias** for the group and permission or banning external communications to that email address.



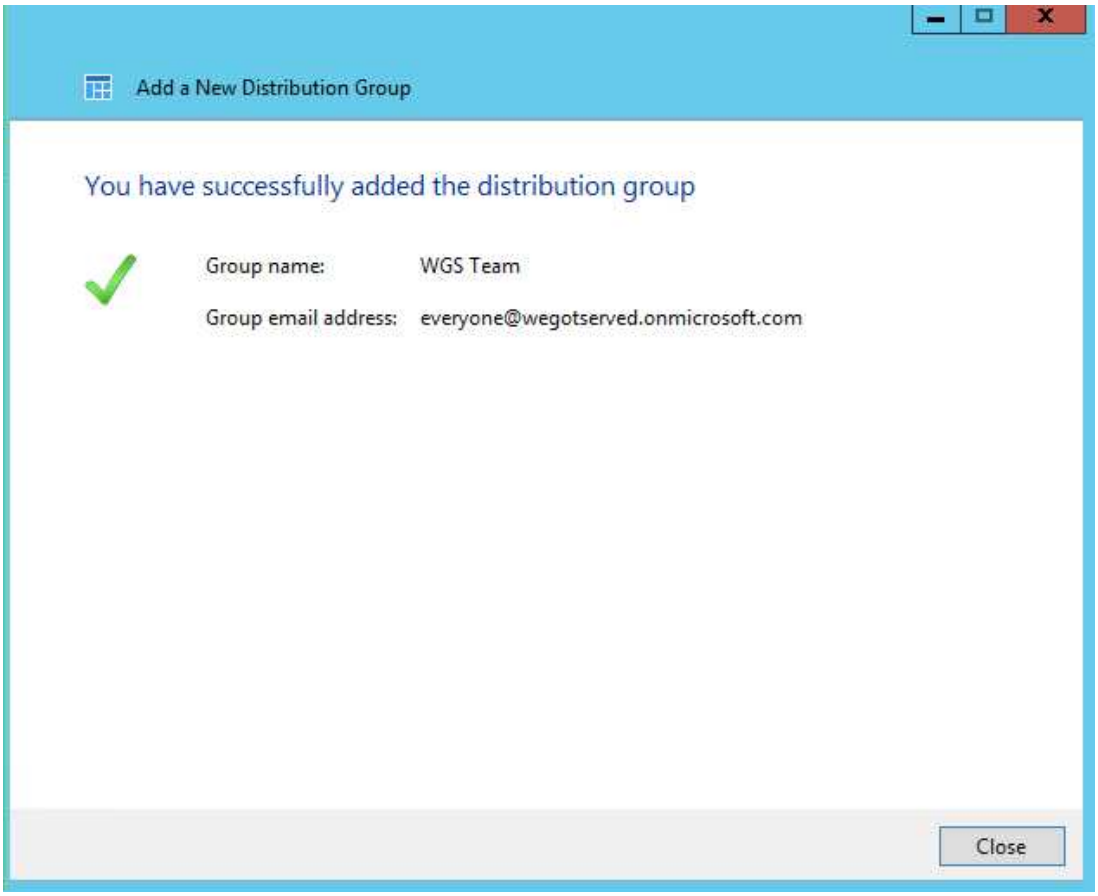
Adding a distribution group.

Once you've named the group, you can add users to it - note that online users with Office 365 accounts connected can be added to a distribution group.



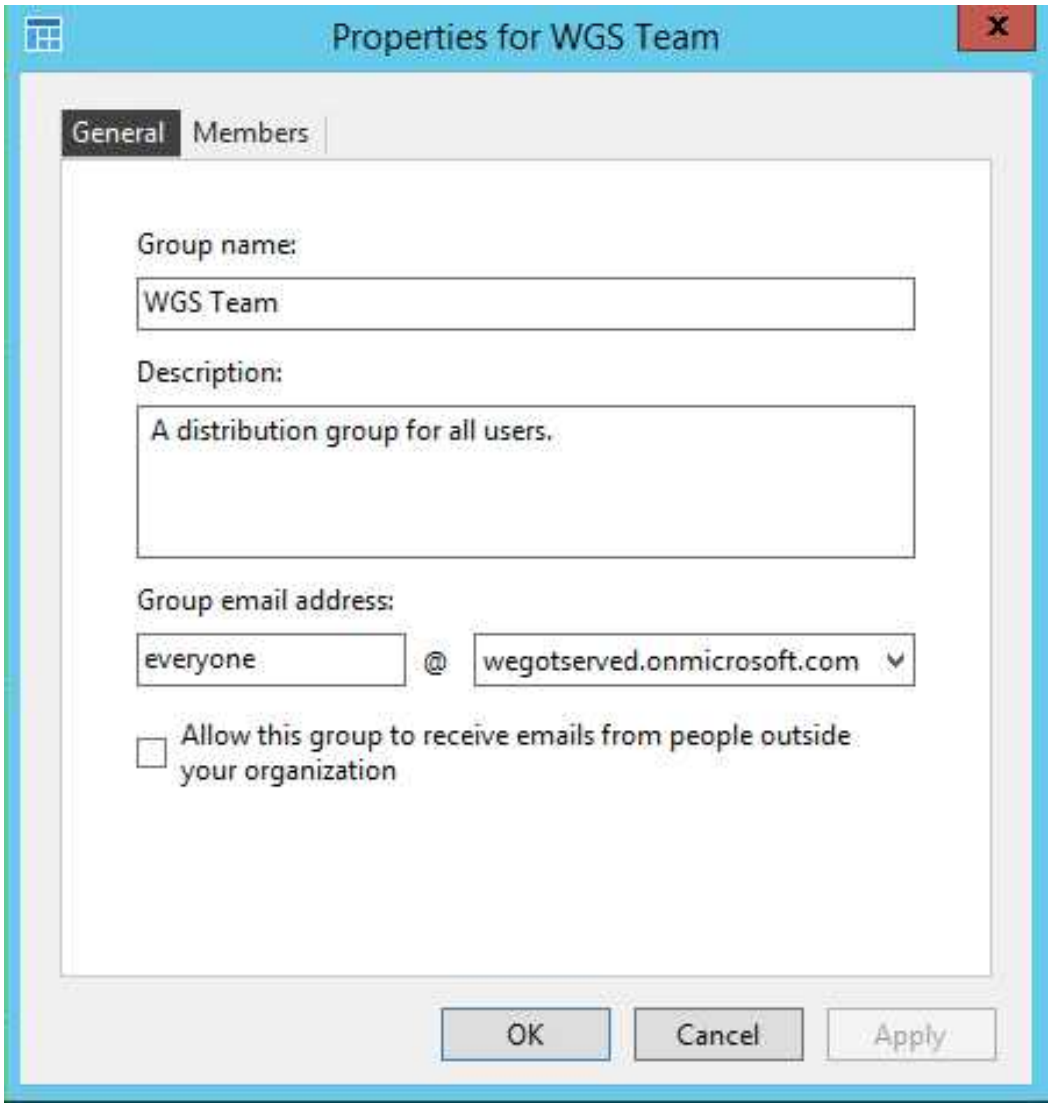
Adding Office 365 users to the group.

Hit **Next** and the distribution group is created. Big green tick time!



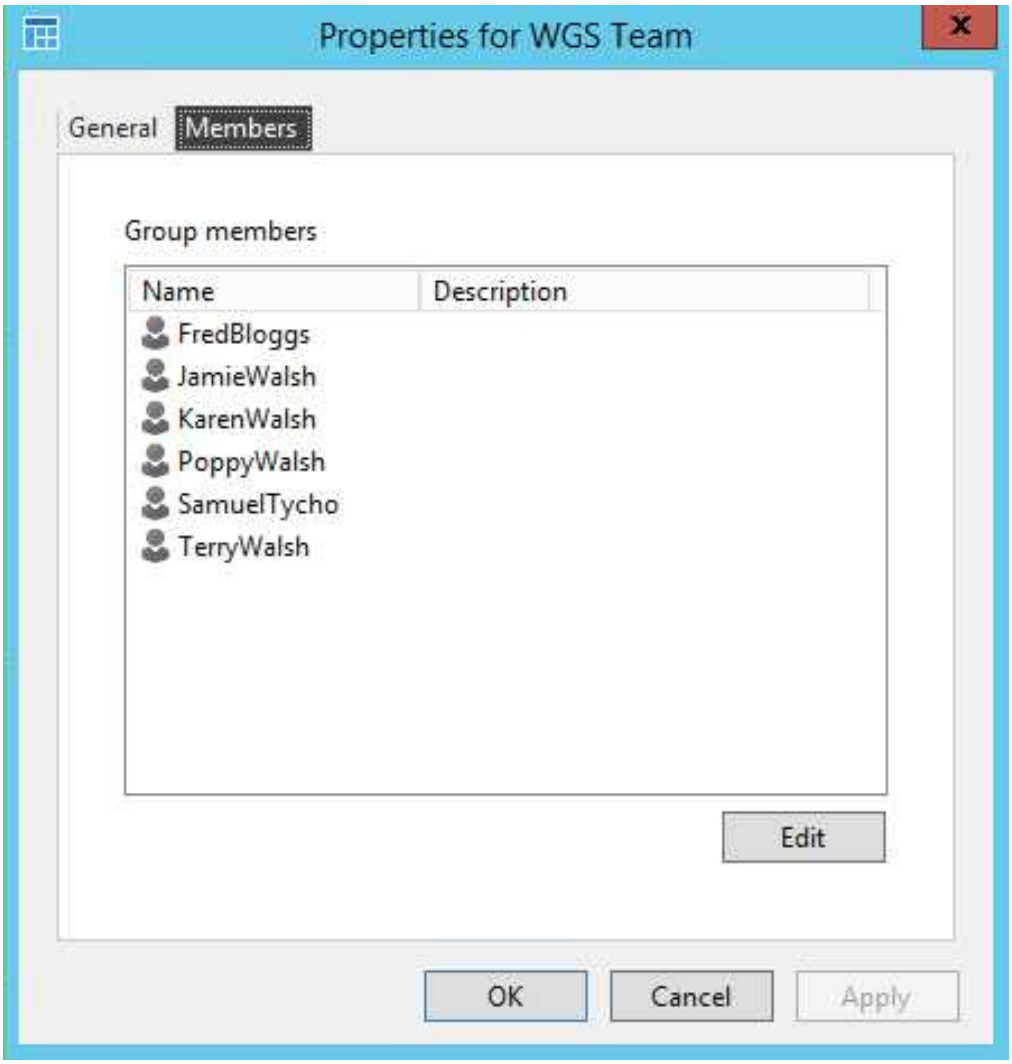
The distribution group has been added.

Once created, additional management tasks will be added to the Distribution Groups tab. You can **View the group properties**, which allows you to amend the configuration details for the group.



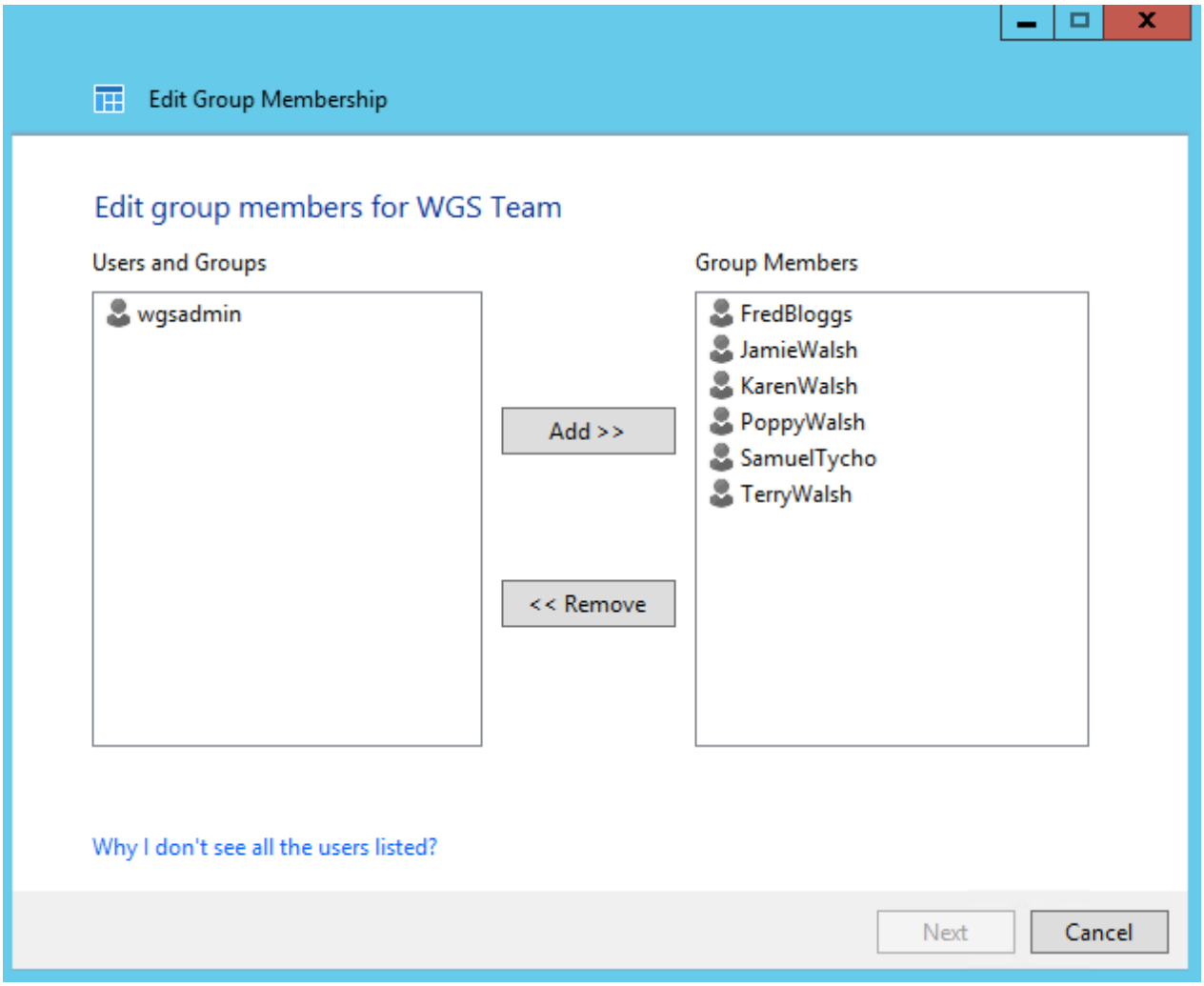
Viewing distribution group properties.

Two tabs are available allowing you to view your **General** settings, and then **Members** - it mirrors the structure of the initial group creation wizard.



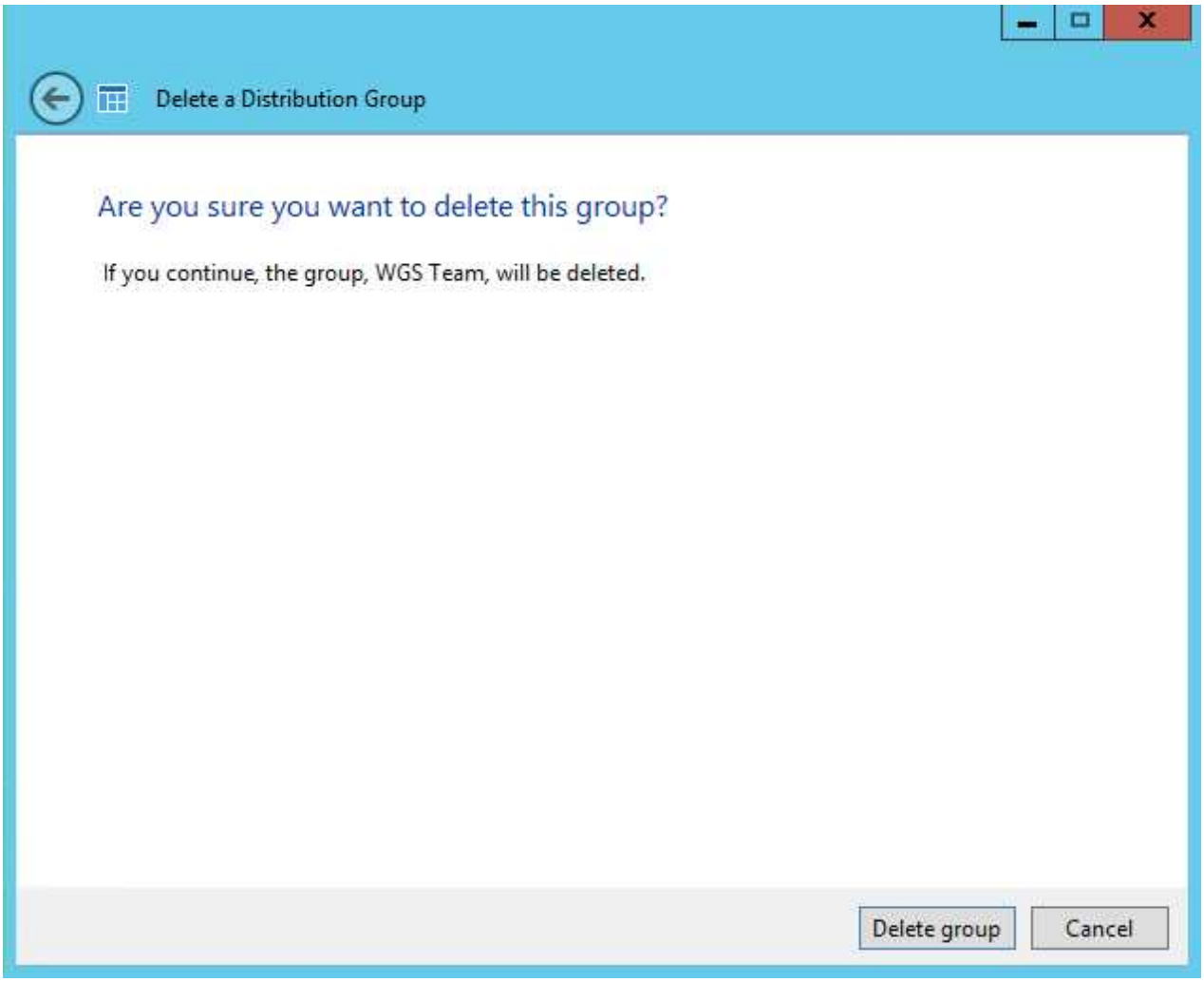
The Members tab.

You can edit group settings from the Properties dialog as well as launch a panel to edit membership of the group. A separate task is also available in the task pane to launch the same panel.



Editing group membership

If you wish to remove a distribution group, you'll find a relevant task available too.



Removing the distribution group.

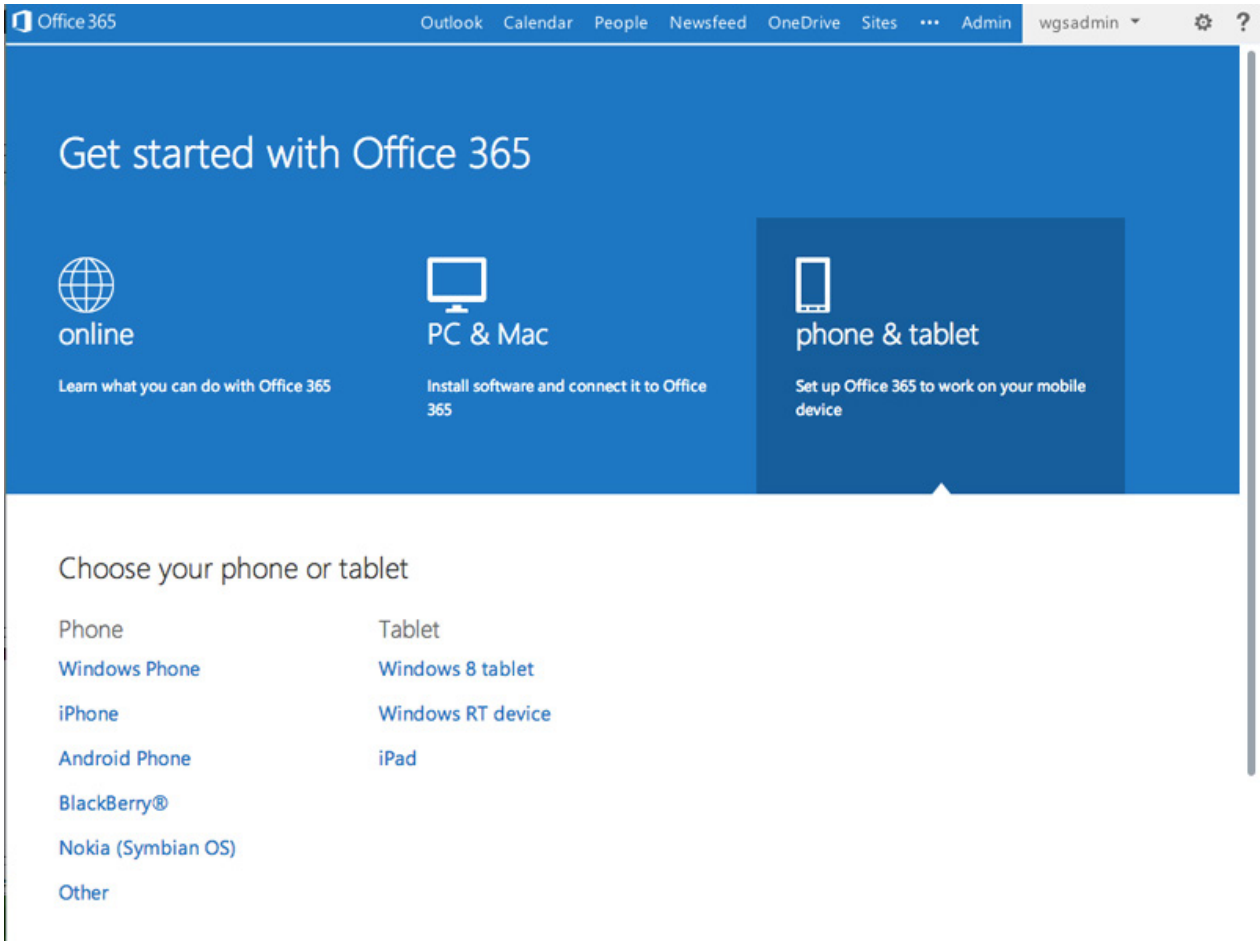
Office 365 Mobile Device Management

One of the major reasons for integrating Windows Server 2012 R2 Essentials with Office 365 is that your server functionality receives a boost in the area of Device Management. Way back in Chapter 8, we walked through the standard device management features in Windows Server Essentials - you thought it was cool that the server could manage Windows PCs as well as Macs, right? Well, with Office 365 on board, **mobile device management** is added to your server!

That's right - whether you and your team rock Android, iOS, BlackBerry, Symbian or Windows Phone devices, they're all welcome now in your newly upgraded Windows Server 2012 R2 Essentials.

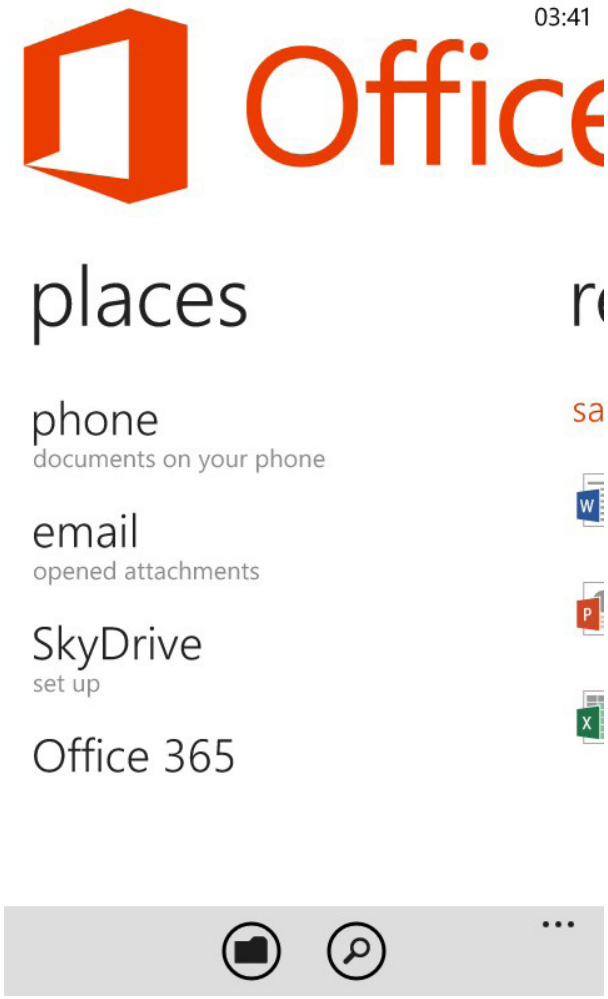
There's no connector available within Windows Server 2012 R2 Essentials for mobile devices - you'll need to connect them to Office 365 via its online portal. Simply log-in to the Office 365 portal

and visit **Office 365 settings > Get started > Phone & tablet** for full instructions on getting your mobile devices configured and apps installed.



Sadly, there's no mobile device connector for Windows Server 2012 R2 Essentials.

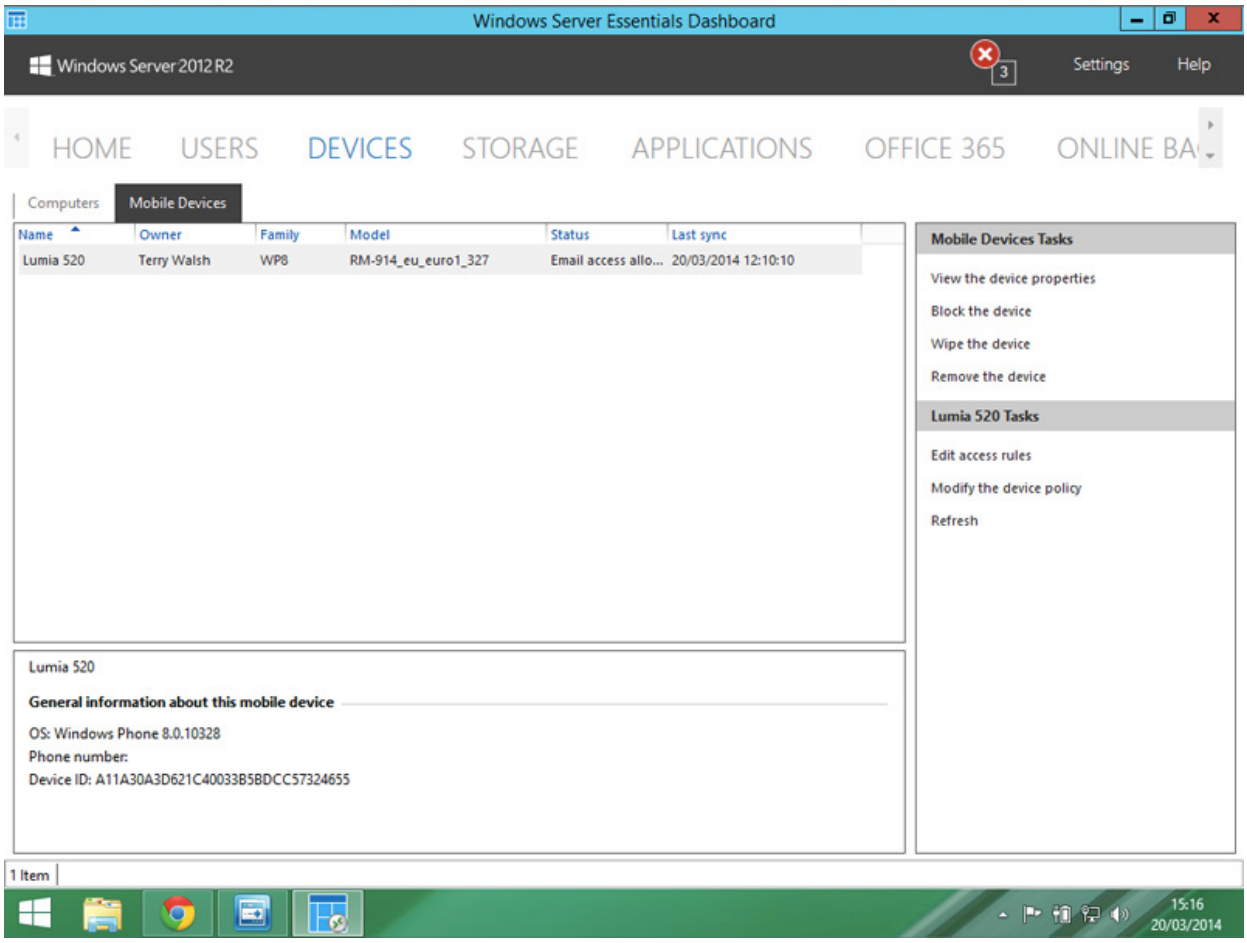
When you have your Office 365 mobile apps installed, you can simply log-in with your account credentials.



Mobile Office on Windows Phone.

Mobile Office on Android.

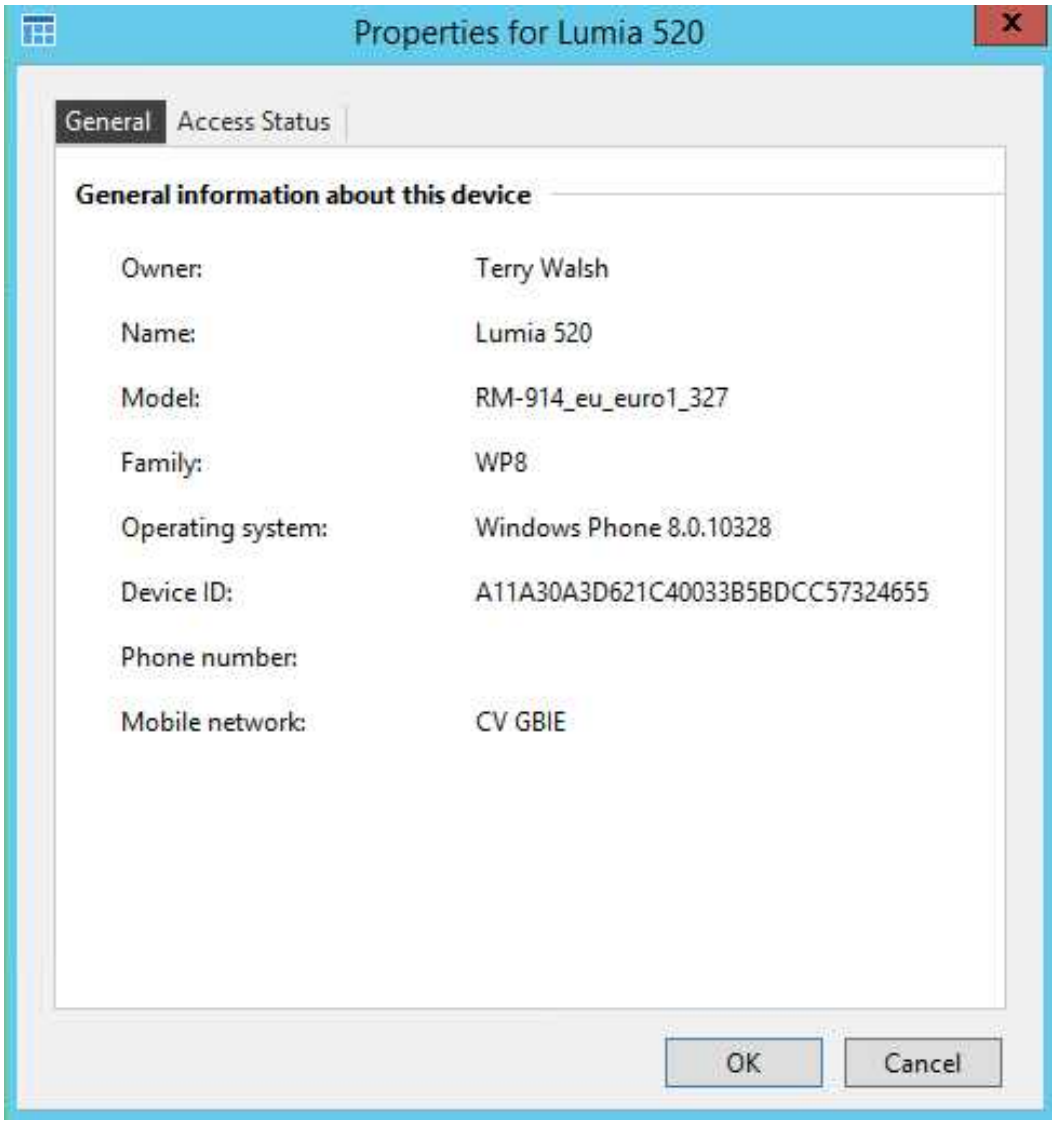
Once you've signed into Outlook on your mobile, refresh the Devices panel in your Dashboard and in the Mobile Devices tab you should now see the device listed.



Here's our test subject, a Nokia Lumia 520 Windows Phone.

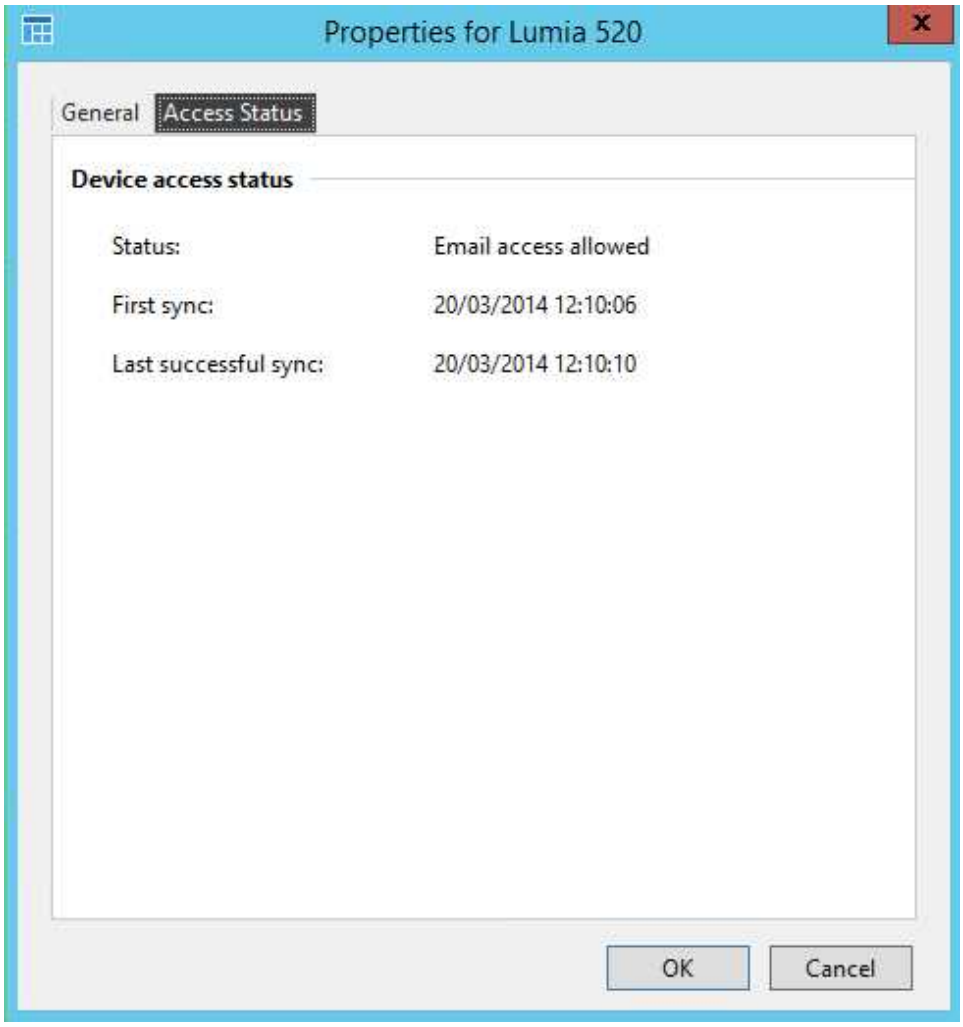
Each device will be listed with a name, owner name, family (operating system), model number, status and the date and time of its last sync with Office 365 Exchange.

You'll also see the Task Pane has now been filled with options for managing your mobile devices. **View the device properties** additional detail about the device alongside what you can view in the main pane - Device ID, Phone Number and Mobile Network. You'll need to have a SIM plugged into the device for the last two entries to make any sense.



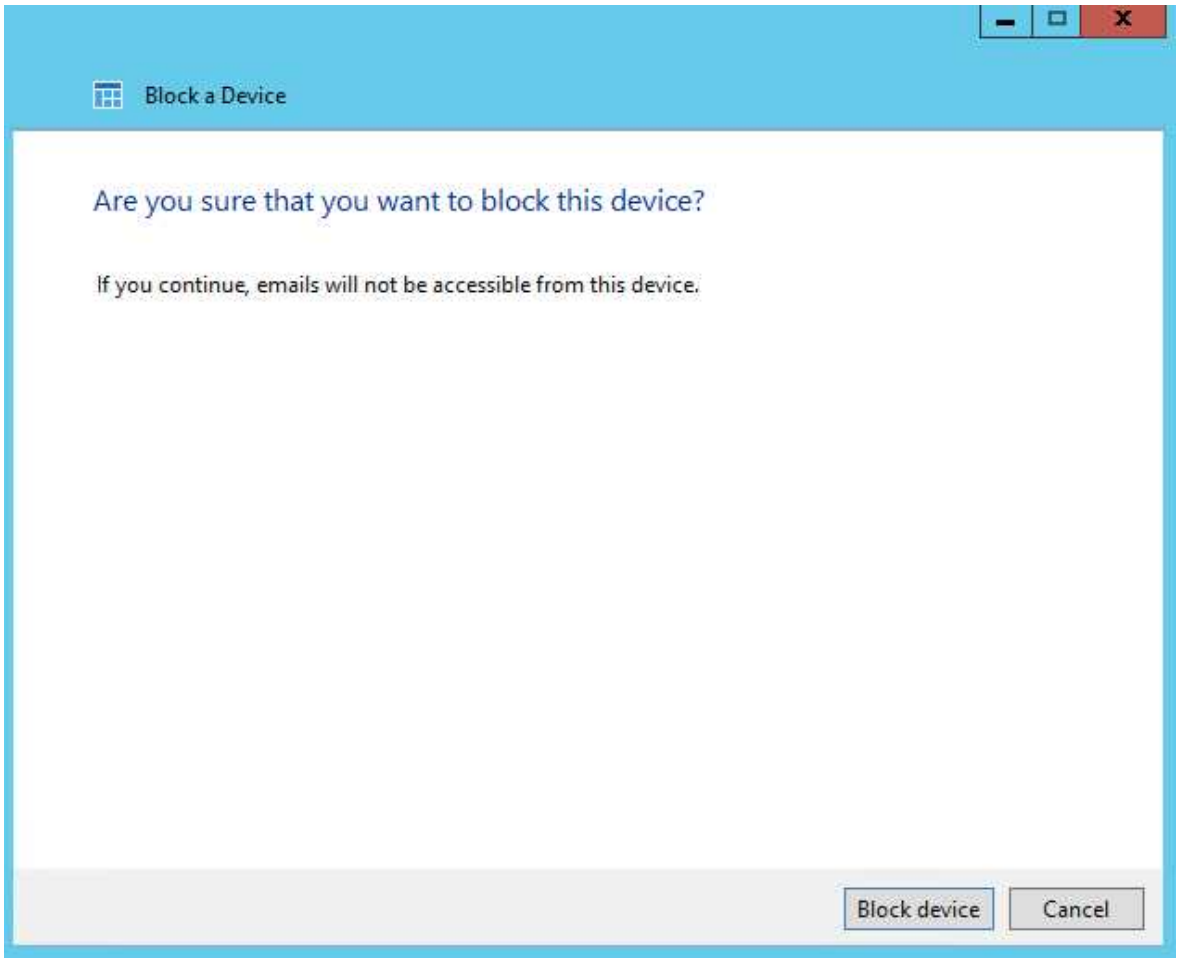
General device properties.

A second tab in Device Properties, **Access Status**, confirms whether email can be accessed on the device as well as the date and time for the device's first and most recent successful sync with Microsoft's online servers.



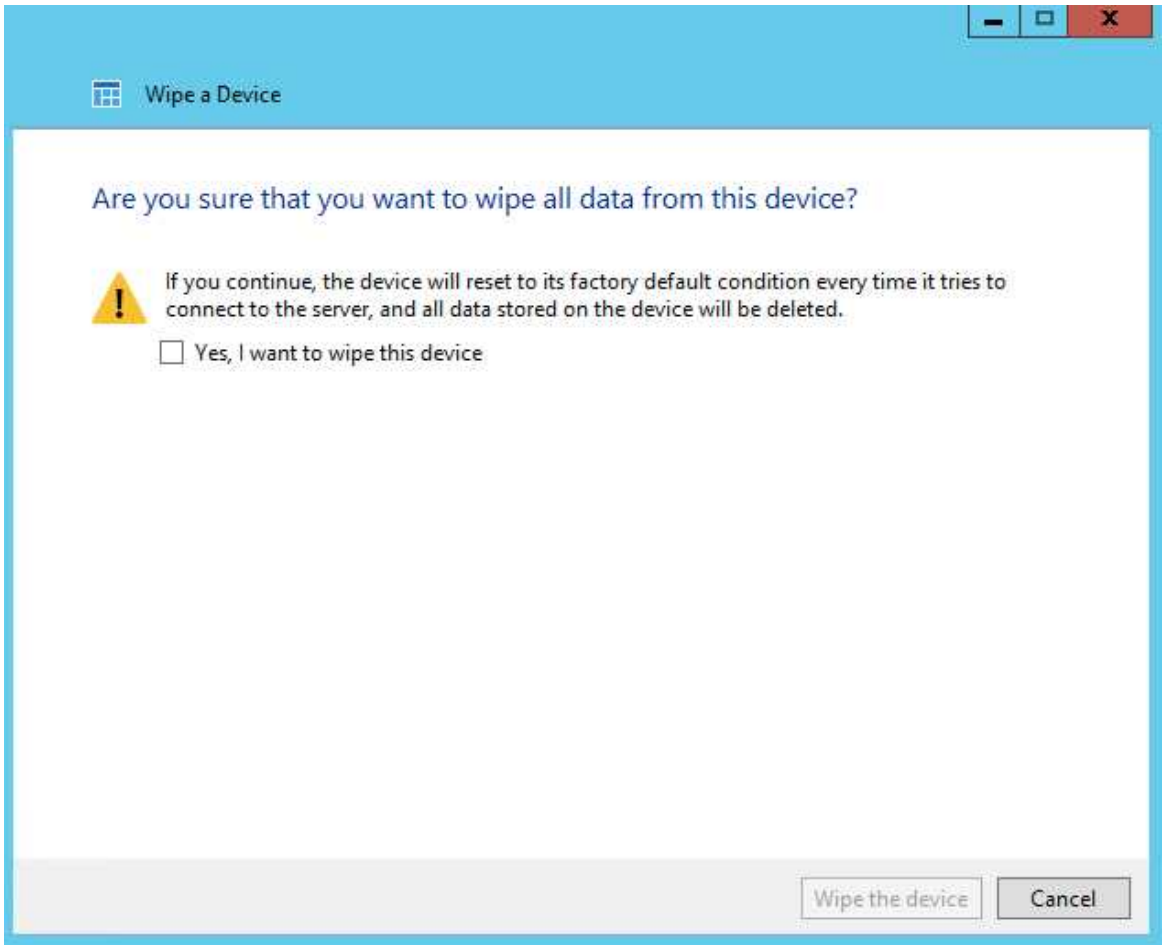
Access status properties.

Moving through the task list, **Block the device** allows you to remotely block the mobile device from accessing Office 365 email - a handy security option if the device gets left on a bus, train or in a bar!



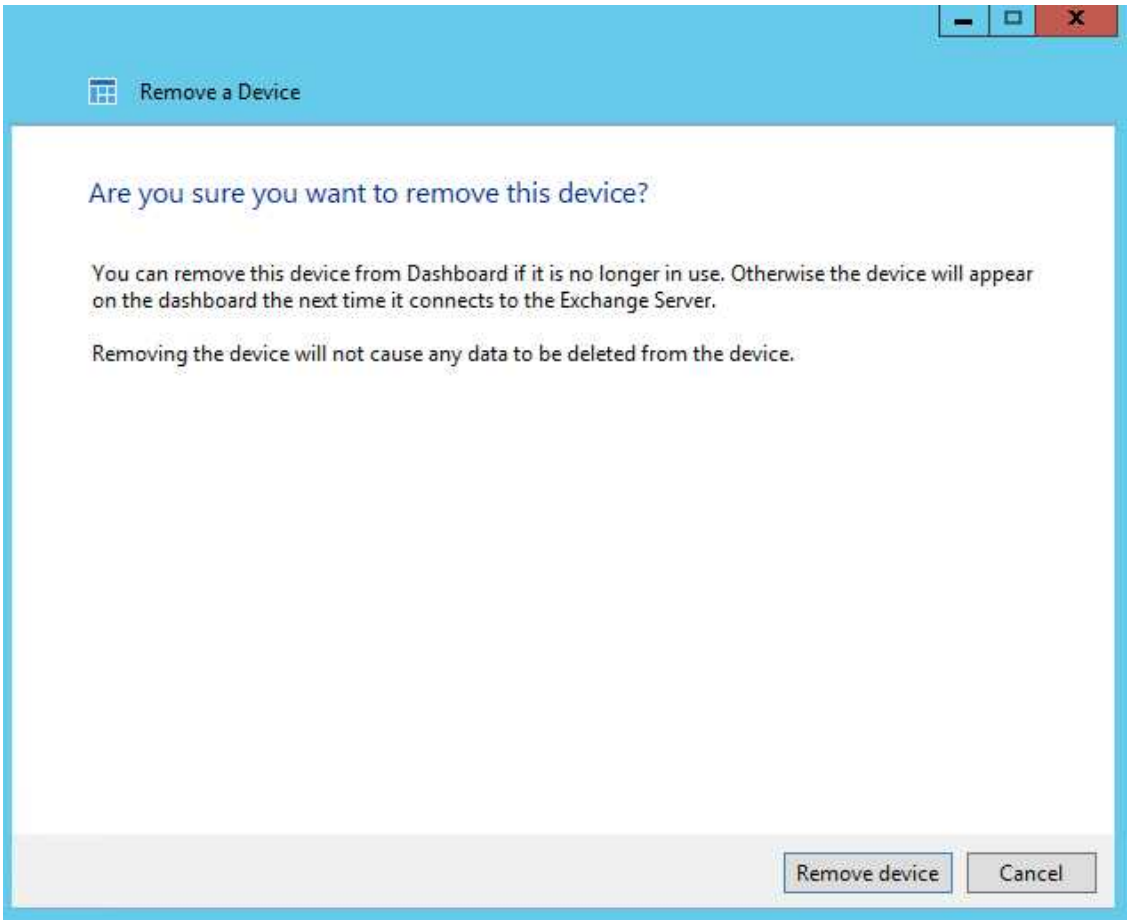
Block the device to prevent access to email.

If that's not secure enough, you can choose to **Wipe the device** which deletes all data from the device and will reset it to factory defaults whenever it attempts to access the server.



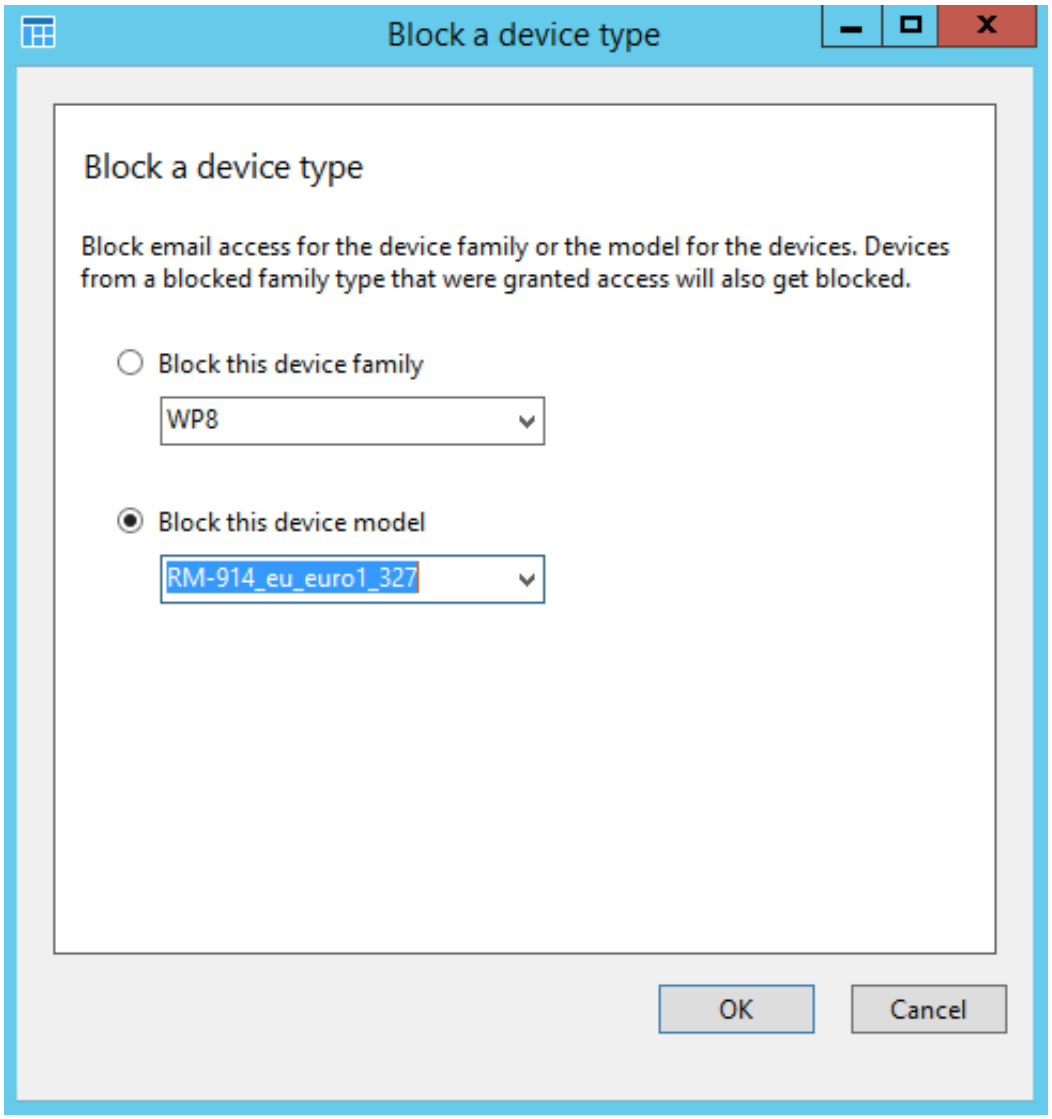
Wiping the device obliterates all of the data held.

When it comes to the time to replace the mobile device with the latest, greatest and shiniest offering from your mobile vendor du choix, you can **Remove the device** from the Dashboard with a couple of clicks.



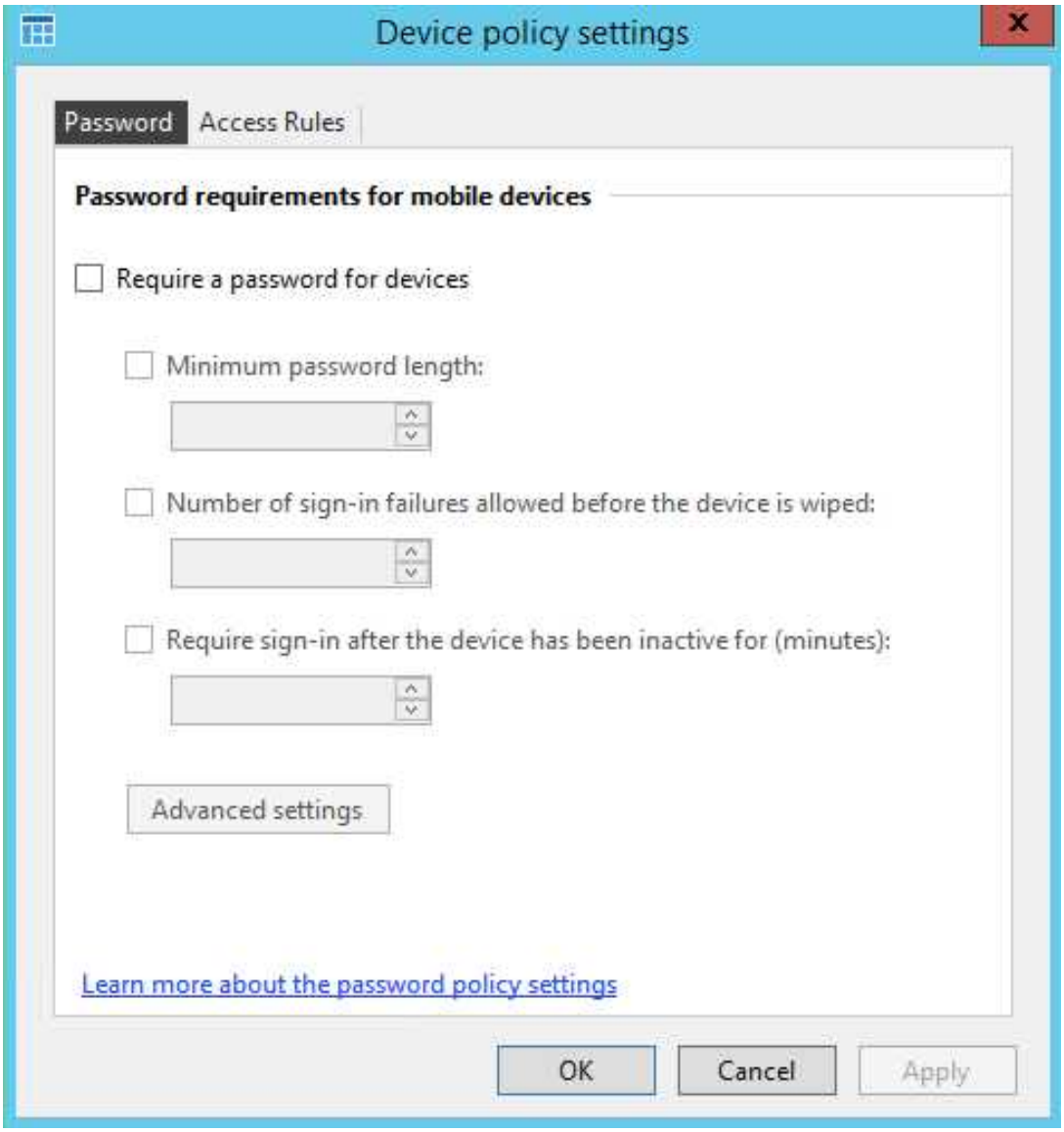
Removing the device from the Dashboard.

Lower down the task pane are a couple of more advanced controls for managing the device. Think of these as options to configure specific device policies - **Edit Access Rules** allows you to block families of devices or specific models from accessing Office 365 email.



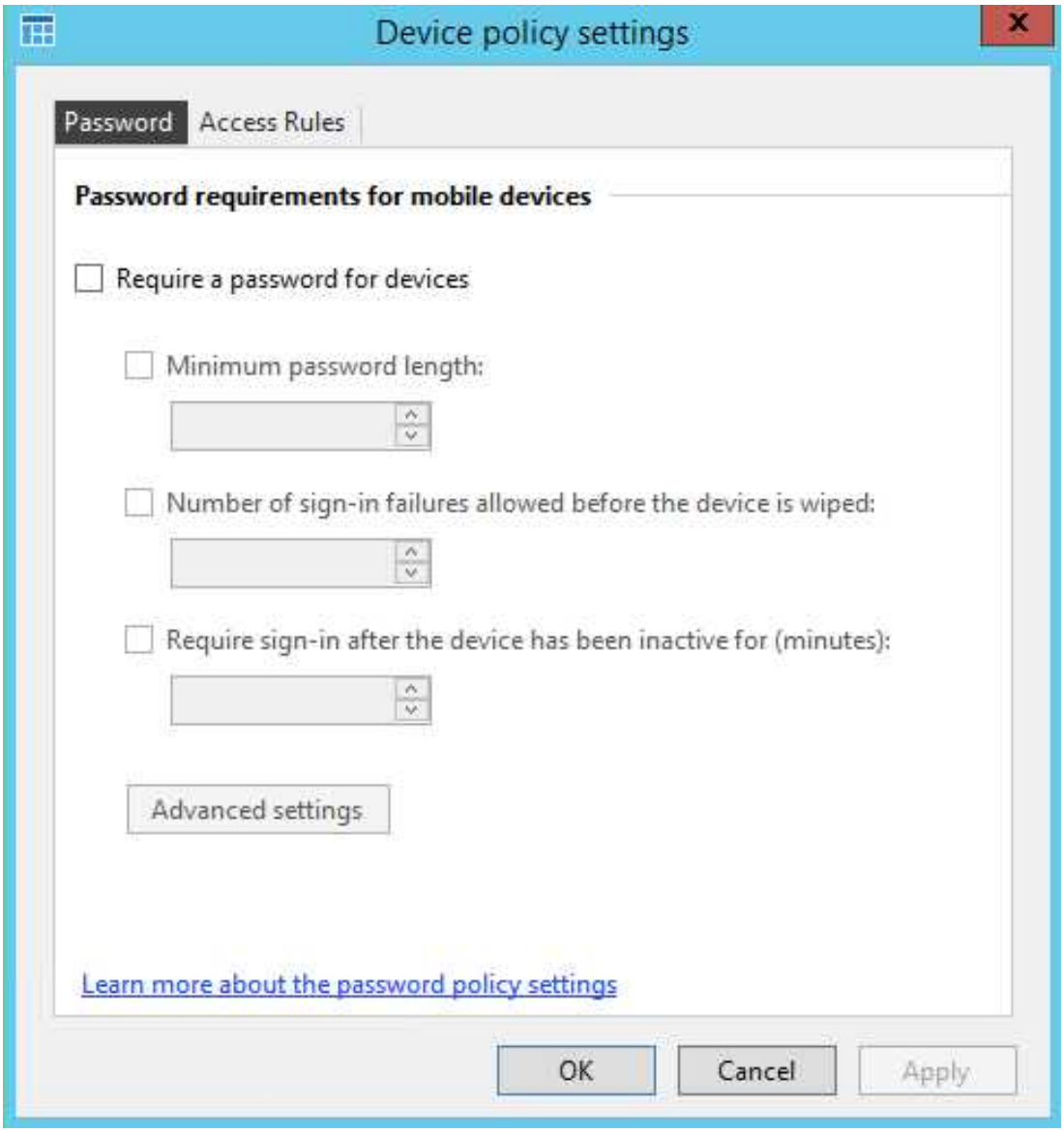
No email for you!

Meanwhile, Modify the device policy opens up a panel for detailed configuration of mobile device password policies.



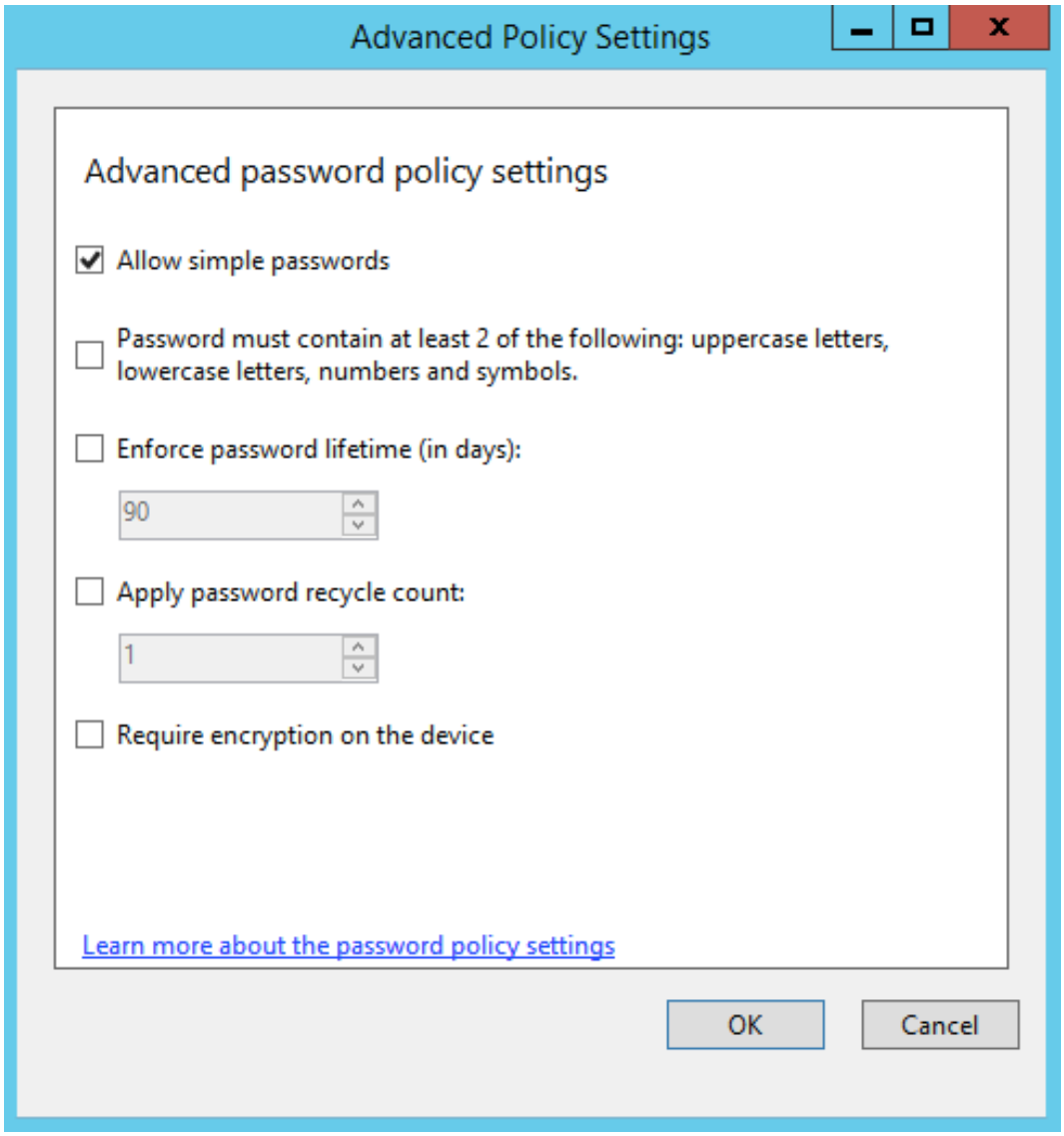
Office 365 integration also allows you to configure password policies on mobile devices.

Options include mandating the use of passwords on devices, setting a minimum password length, setting an automatic remote wipe of the device after a number of failed sign-ons, and requiring the device to be signed into again after a defined period of inactivity.



Strengthen device security.

Hit the Advanced settings button and even greater security controls become available - you can choose to allow or block simple passwords, configure password strength requirements, enforce password lifespans and recycle counts and mandate device encryption.



Advanced policy settings.

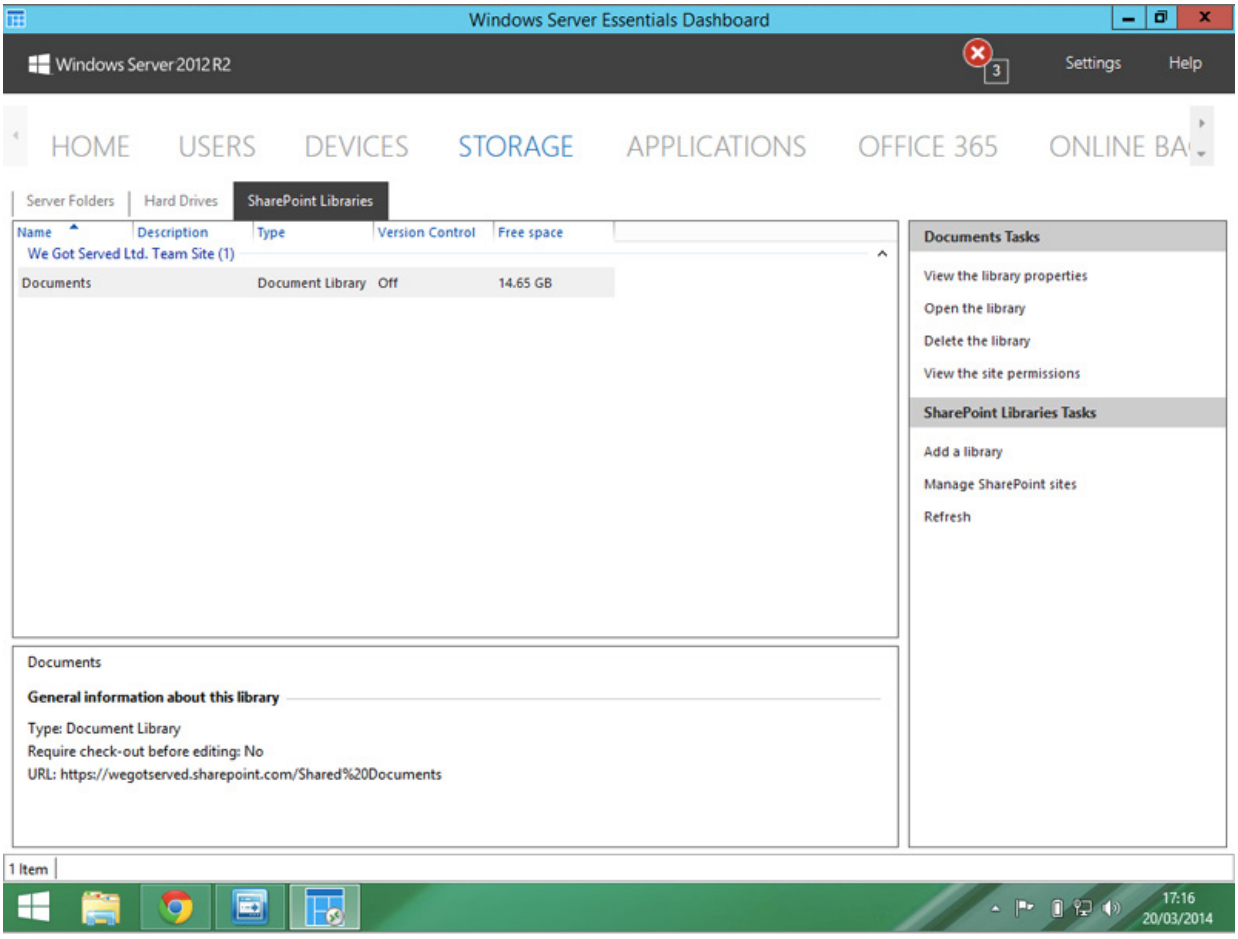
With Office 365 integrated into Windows Server 2012 R2 Essentials, the Dashboard becomes an even more essential tool for managing your small business IT infrastructure.

Managing SharePoint Libraries in the Windows Server Essentials Dashboard

SharePoint is Microsoft's collaboration platform. With Office 365, you can create and manage your own SharePoint website on which you can post internal documents, share calendars, exchange information and so on. With Office 365, this is all hosted for you on SharePoint Online but, like other elements of Office 365, you can manage specific features of your SharePoint Online site from the

Windows Server Essentials Dashboard.

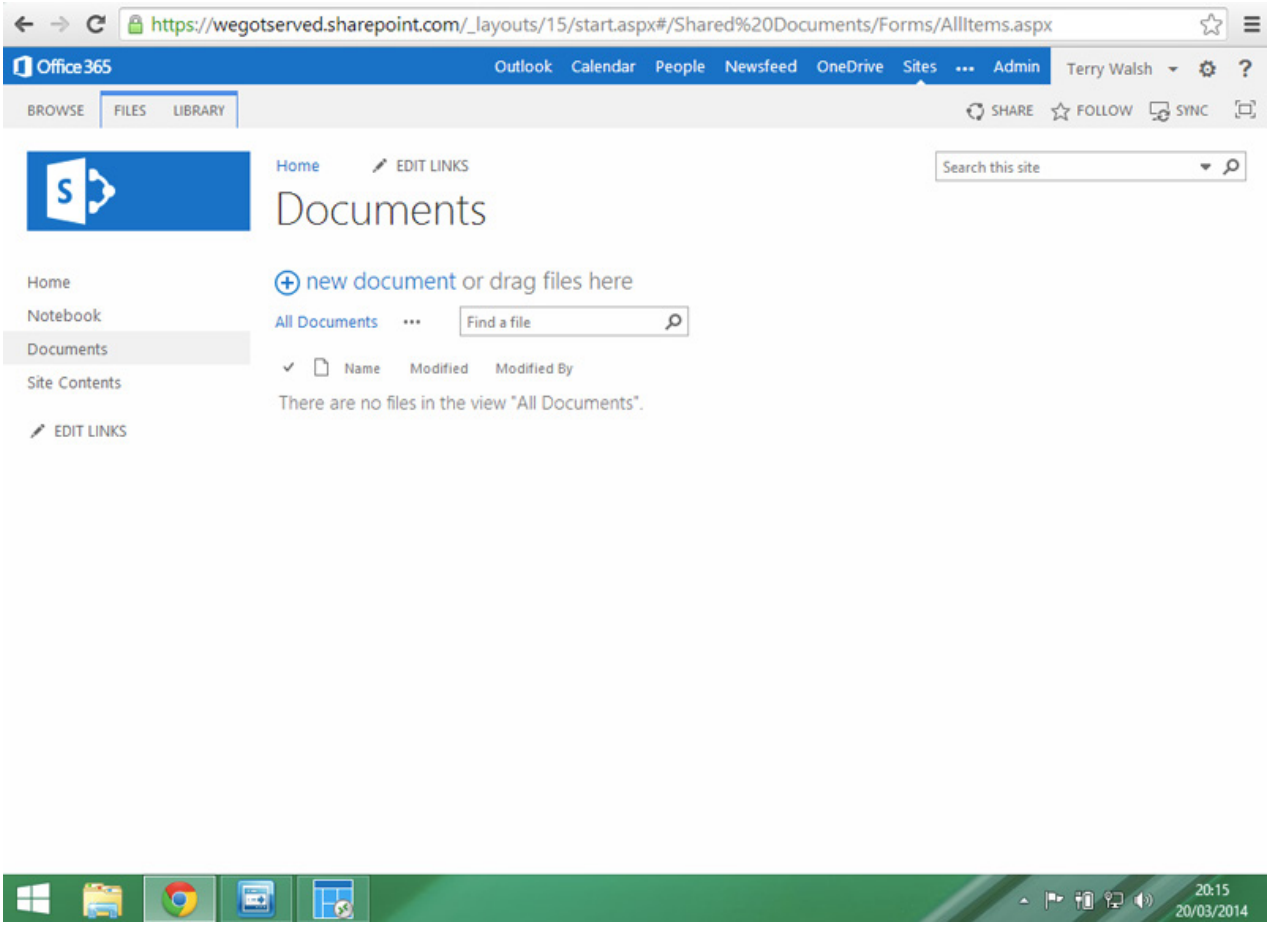
It all happens in the **Storage** tab, where you'll find a new **SharePoint Libraries** tab.



A new SharePoint Libraries tab is added to Storage.

So what's a SharePoint Library? Put simply, a SharePoint Library is a location on the site where you and your users can upload and share files - a little like your Company shared folder on your server, but obviously hosted on SharePoint Online. So, for security purposes, you may not wish to upload any sensitive materials on there.

In SharePoint Online, a library looks a little like this:

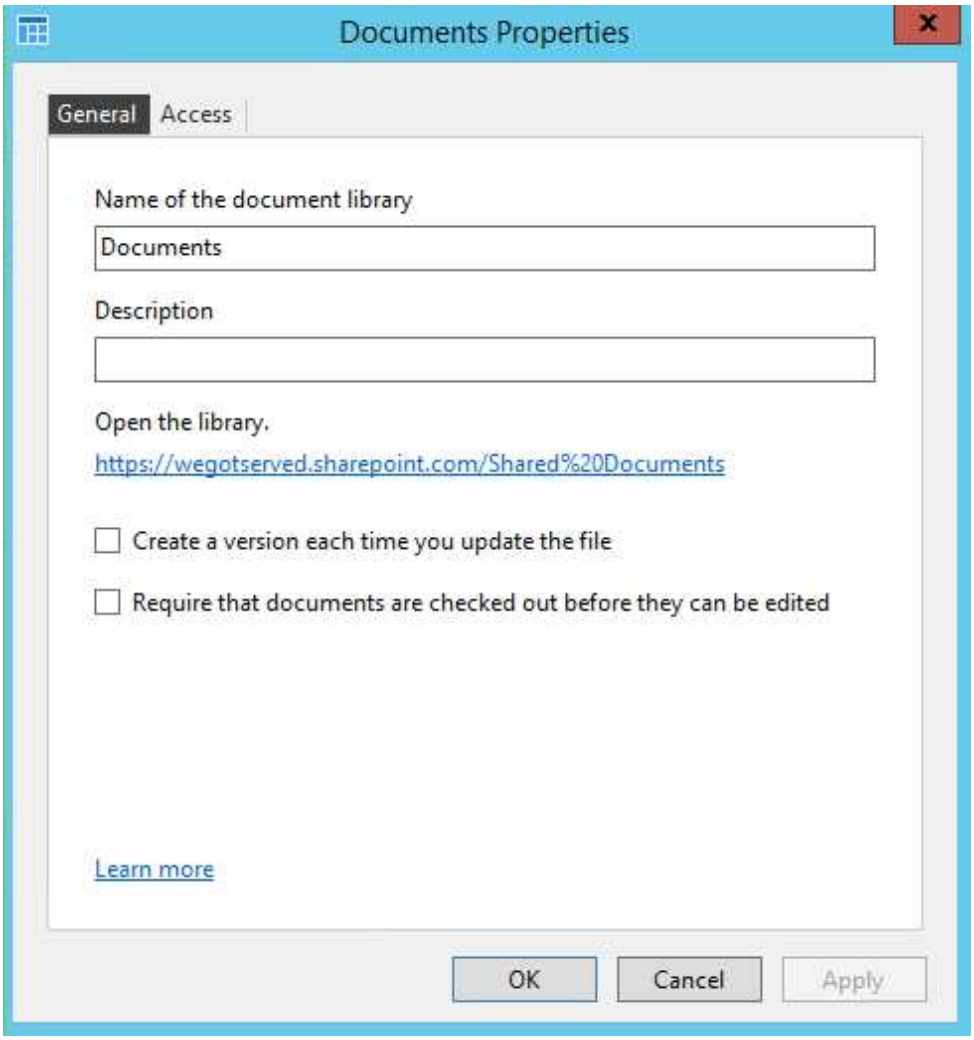


The default Documents library in SharePoint Online.

SharePoint allows you to create multiple libraries that can be utilised as you need - for different types of data, for different SharePoint pages or for different users. It's up to you! For more on SharePoint Libraries, check out this article at microsoft.com (http://office.microsoft.com/en-gb/office365-sharepoint-online-enterprise-help/introduction-to-libraries-HA102771924.aspx)

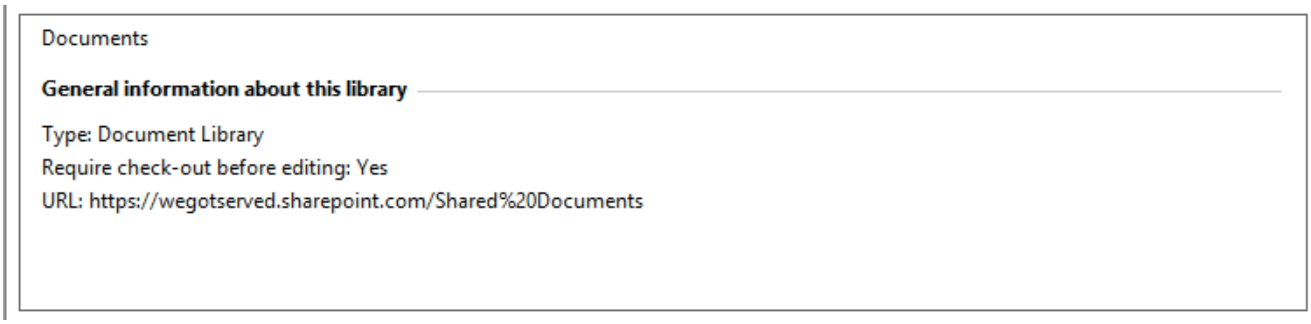
As you can see from the screenshot above, you're provided with a single library called **Documents** by default. All of the SharePoint Libraries that are created in your Office 365 account will be listed in the Dashboard's Storage tab with their name, a description (if created), the type of library it is, version control status and free space available.

Click the task named **View the library properties** and a now familiar dialog will be displayed giving you the lowdown on your SharePoint library.



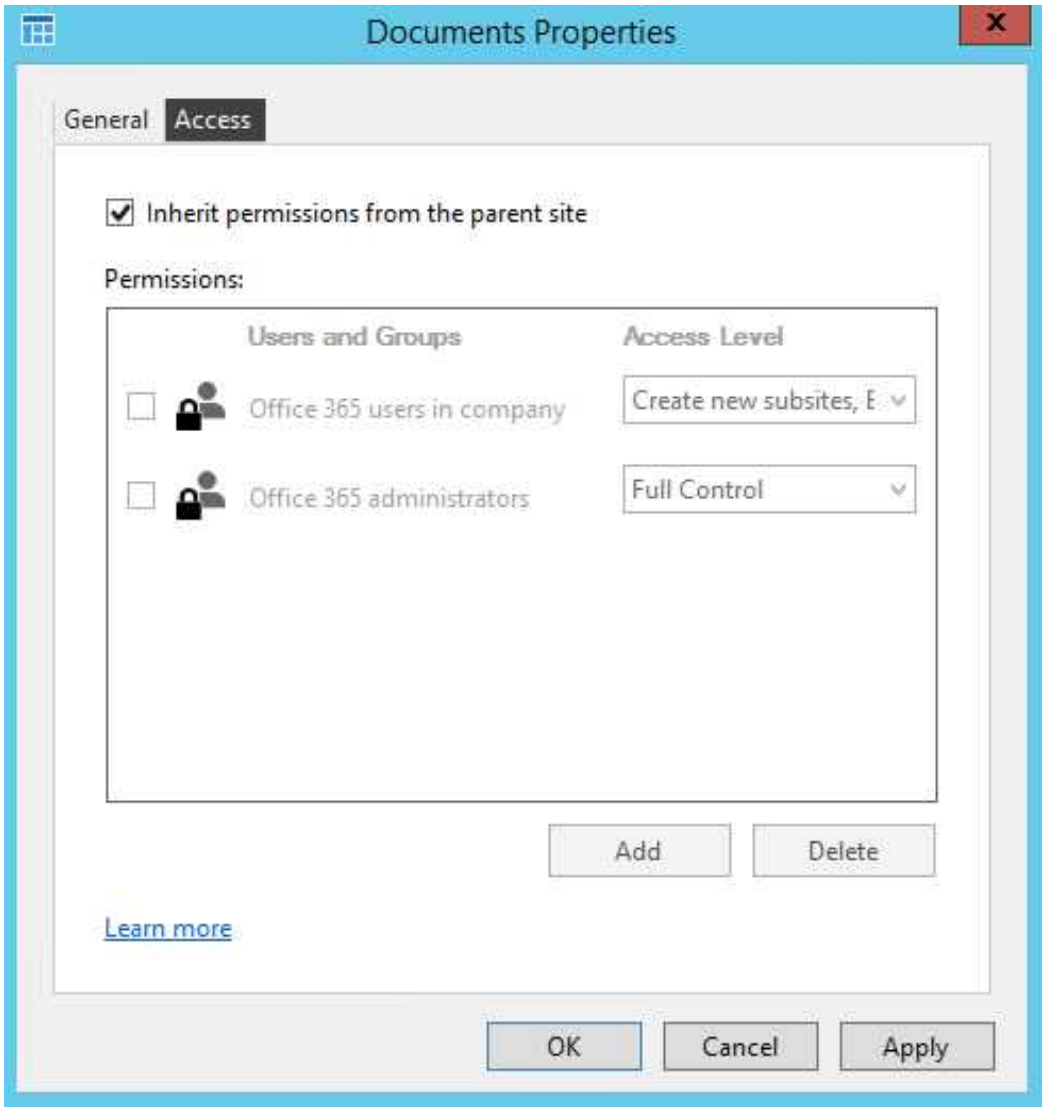
SharePoint Library properties.

The General tab allows you to view and edit the name of the library and its description. You'll find a handy link to open the library in SharePoint Online. You can enable version control on the library by checking the box marked **Create a version each time you update the file** - handy so you can roll back any changes you've made to your files that you're not happy with. You can also require that files are "checked out" by users before they can be edited - this ensures that a document isn't updated by multiple users simultaneously. If you change check out settings you see those changes reflected at the bottom of the main details pane.



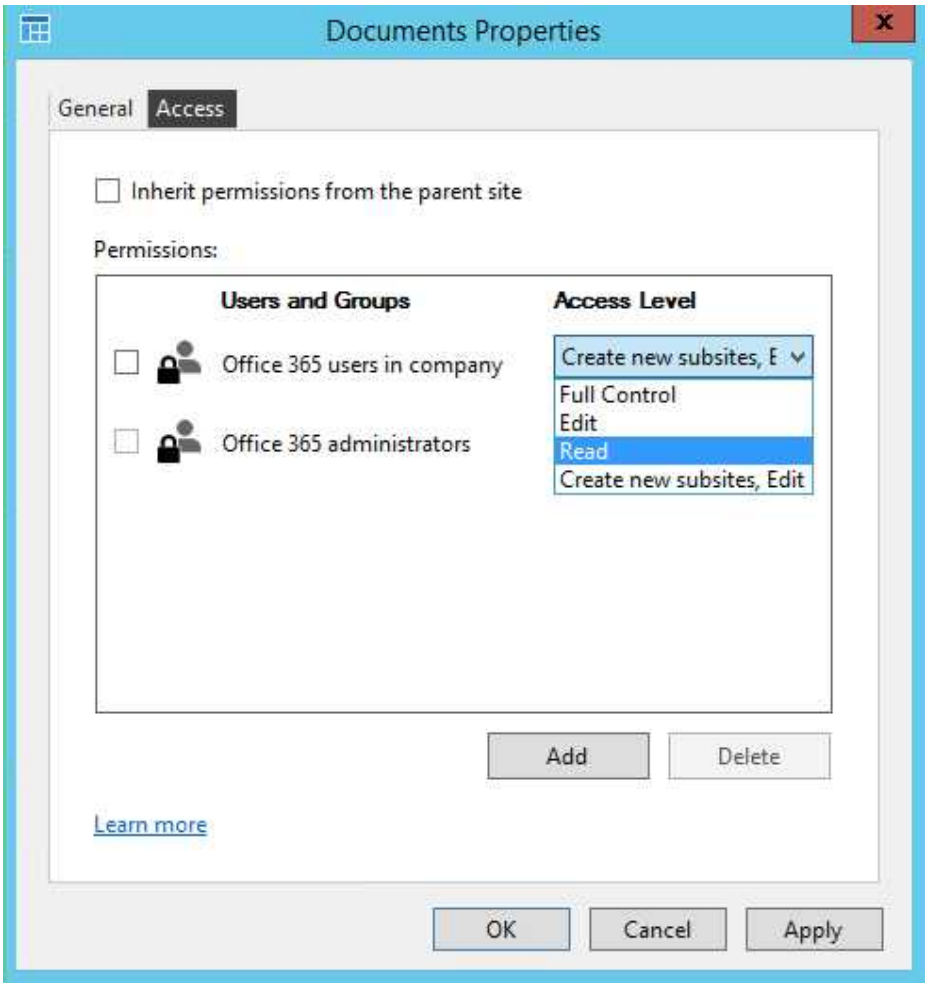
Check-out settings are displayed in the General information panel.

Switch to the **Access** tab in your Library Properties and you'll see that default access permissions are set on your library. They allow your Office 365 users to create new SharePoint subsites and edit existing sites. Office 365 Administrators get Full Control over all settings in SharePoint Online.



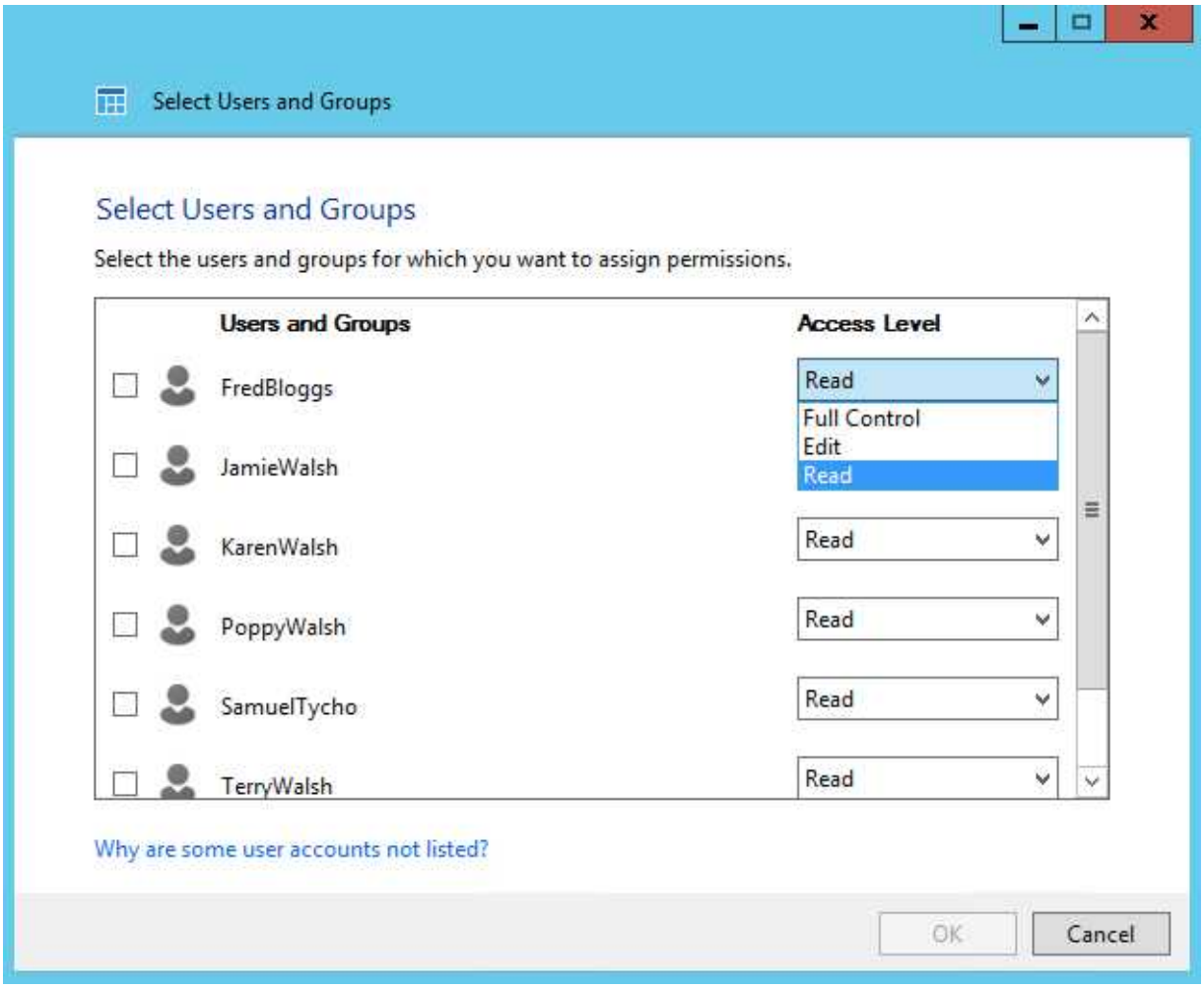
Default access permissions for the SharePoint Library.

It's easy to change the default settings by unchecking **Inherit permissions from the parent site**. This enables the **Users and Groups** and **Access Level** controls underneath, allowing you to set **Edit**, **Read**, **Full Control** or **Create new subsites, Edit** permissions for each type of user.



Configuring access privileges.

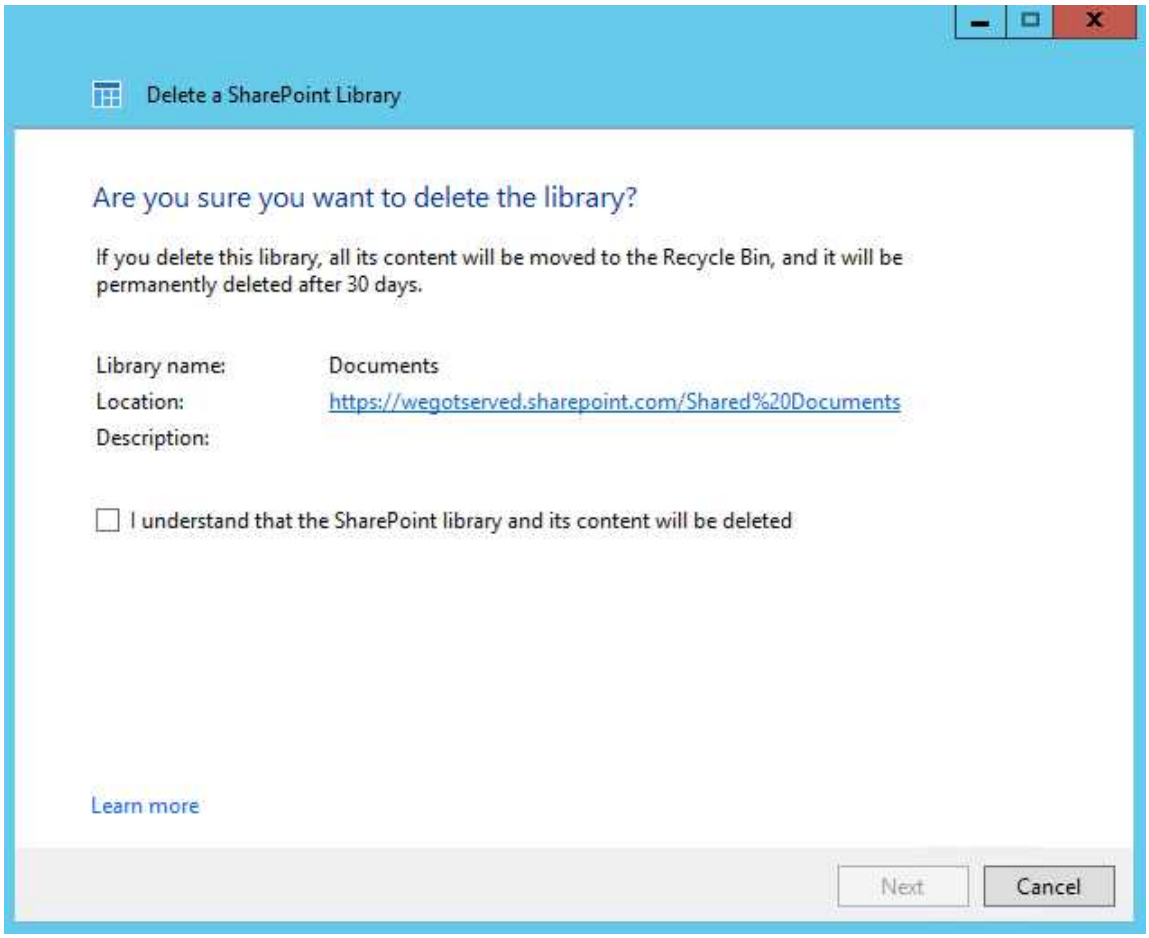
If you're looking for something a little more granular, simply hit the Add button, and you'll be able to configure access rights at the individual user level.



You can configure per-user rights for SharePoint Libraries.

Back to the Task bar and the **Open the library** link provides a very convenient way of accessing the files stored in your library. Click it and a browser window opens, taking you to your library in SharePoint Online.

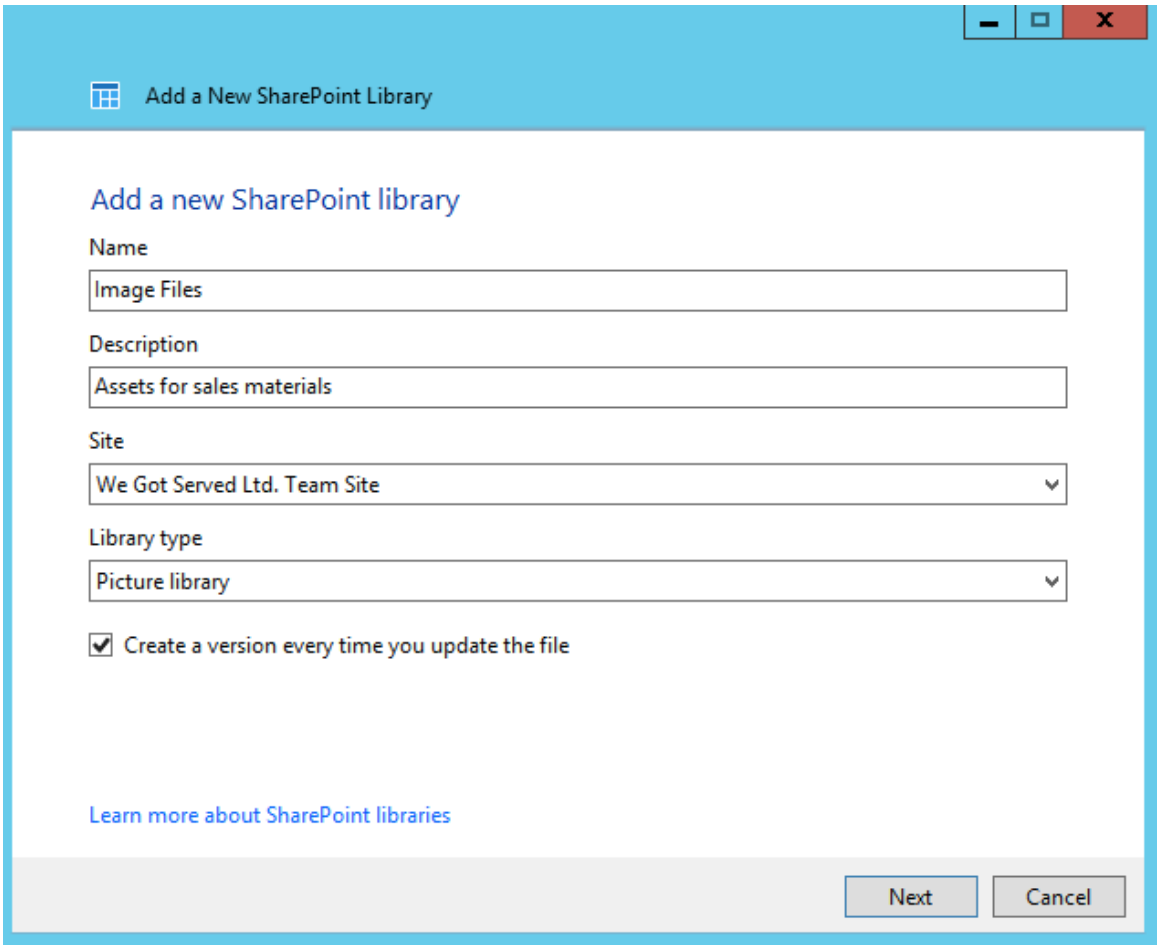
Delete the library does exactly what you think it will, removing the files from your SharePoint Library to a Recycle Bin where they will be stored for 30 days before permanent deletion.



Deleting the library.

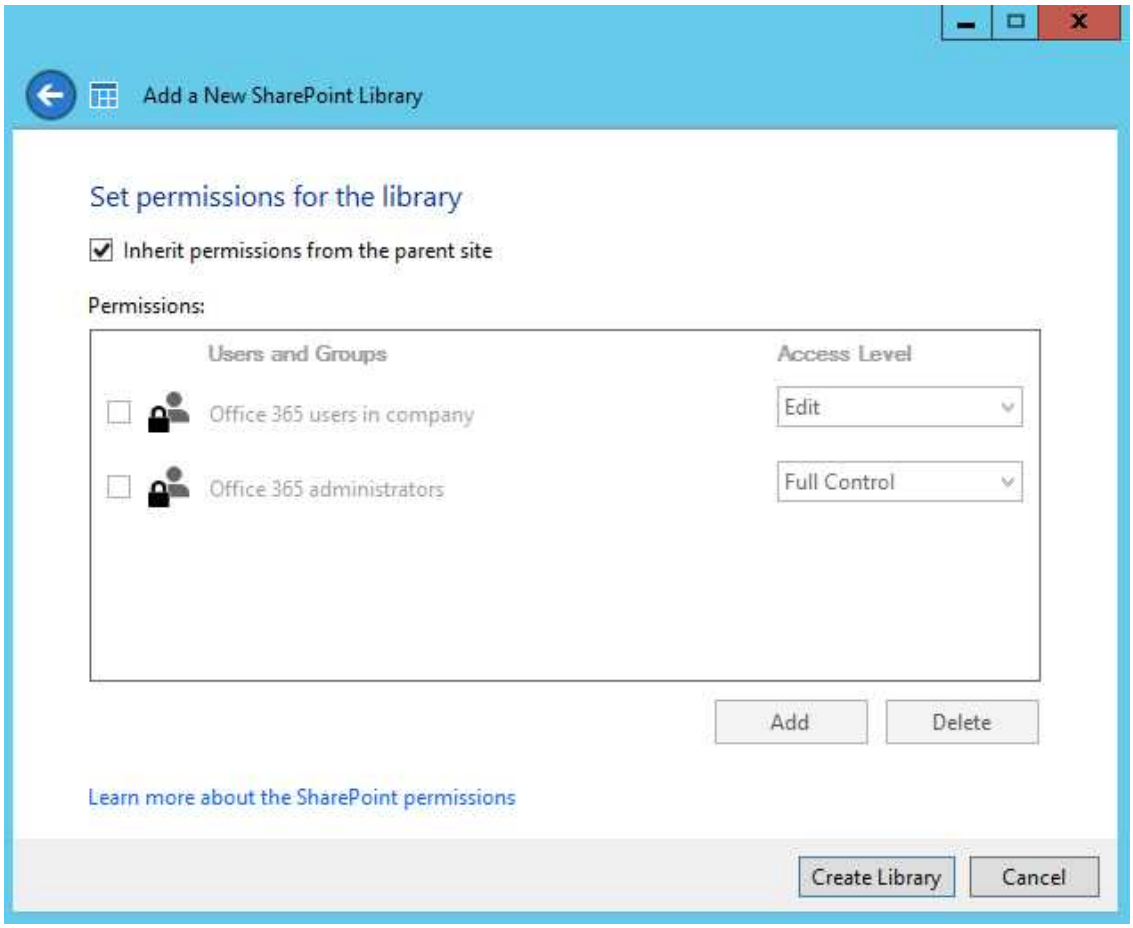
Meanwhile **View the site permissions** opens up a similar dialog to the Access settings we just played with, but this configures privileges across the SharePoint site, as opposed to just the Document Library. This setting amends the default "parent" site permissions that can be applied to any Document library.

If you wish to create a new library, you can do so with the cunningly named **Add a library** task. This opens a wizard asking for the library name plus a description and the SharePoint Site you wish to place the library in (if you have multiple sites attached to your account, use the drop-down menu to select). You can also change the type of library you wish to create, using the associated drop-down menu - choose from Document library, Picture library or Wiki page library. Finally, decide whether you wish to enable Version Control and click **Next** to set permissions.



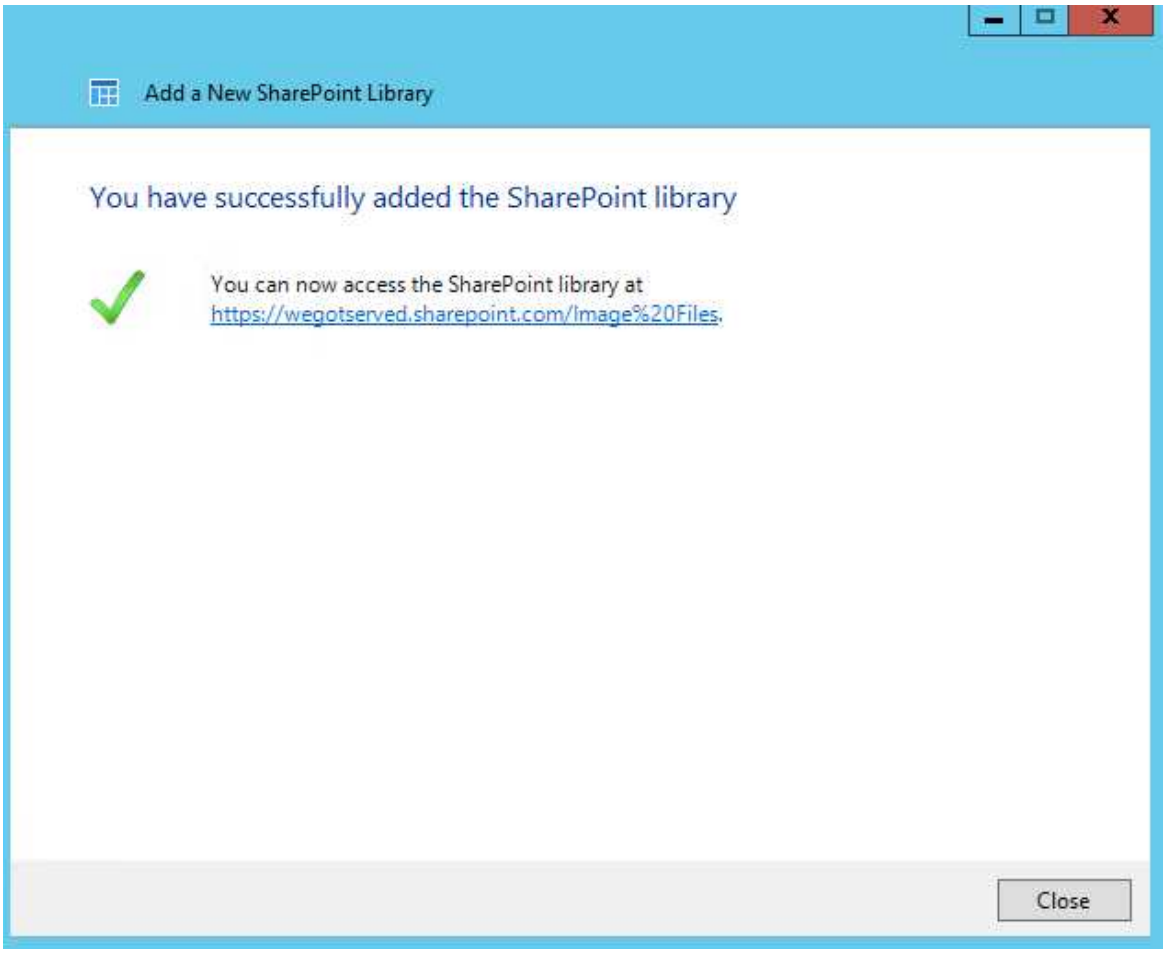
Adding a new Image library.

The permissions dialog takes its lead from the previous examples we've encountered. You can simply inherit settings from the parent site, configure permissions by Office 365 account type or once again, by individual user.



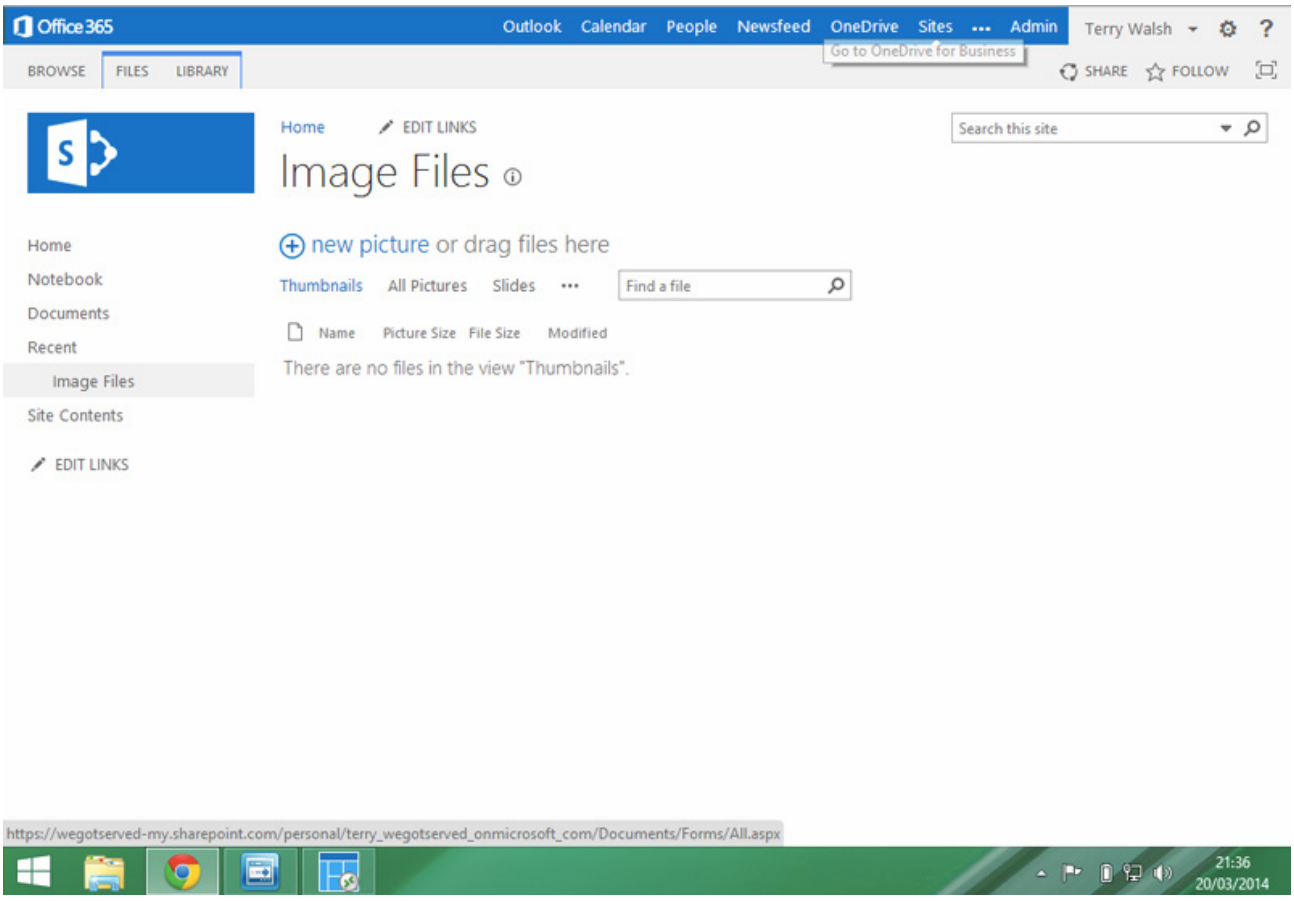
Setting permissions for the new library.

Click Create Library and Windows Server Essentials will connect to Office 365 to create the library in SharePoint online. The wizard completes with a link to your new library online.



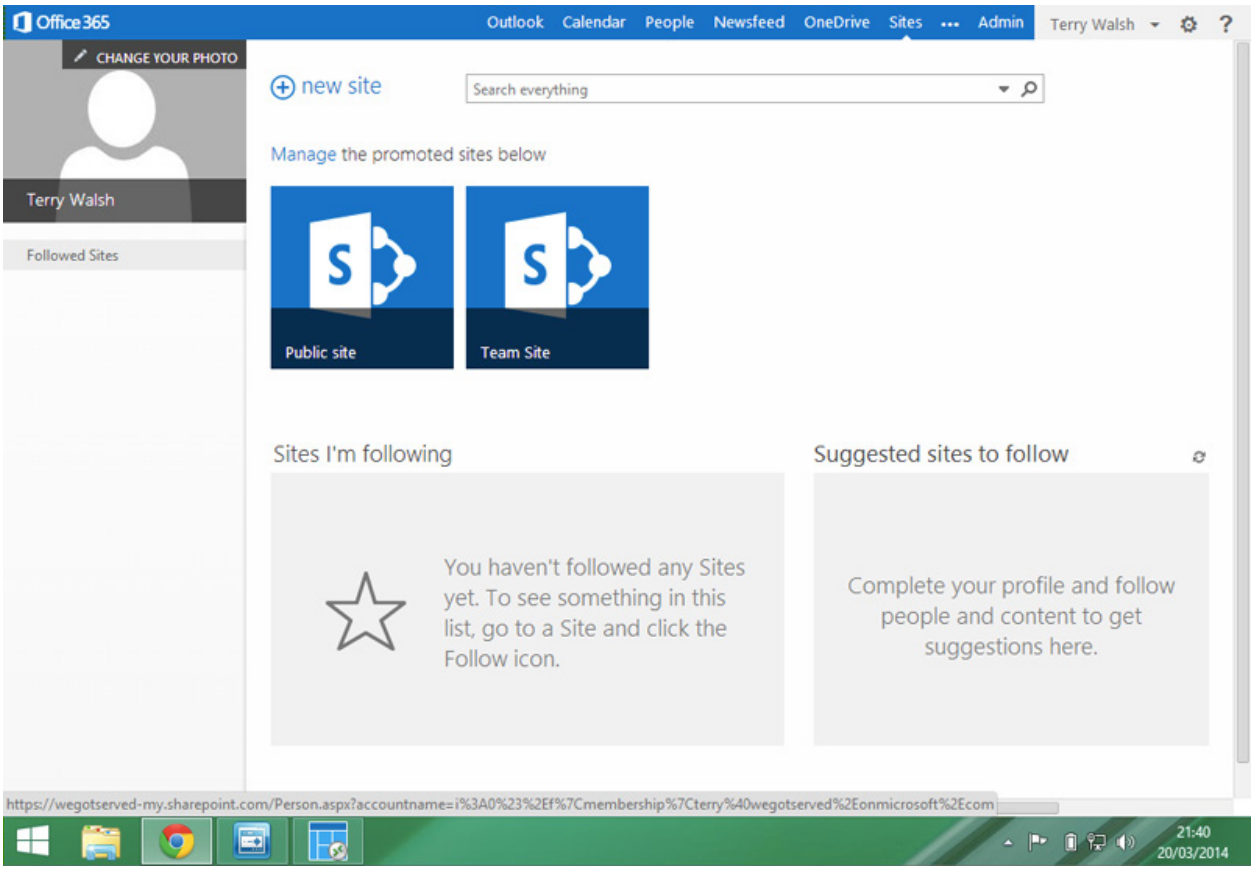
The library is ready.

Click the link and your brand new SharePoint library is available online, awaiting your content.



The new library is open for content.

The final task in the SharePoint Libraries tab, **Manage SharePoint sites** simply takes you online to your Office 365 portal where you can work on your SharePoint site. The nature of the "hybrid cloud" is that you'll do some work on the server, and some work in the cloud.



You'll manage your SharePoint sites in the cloud.

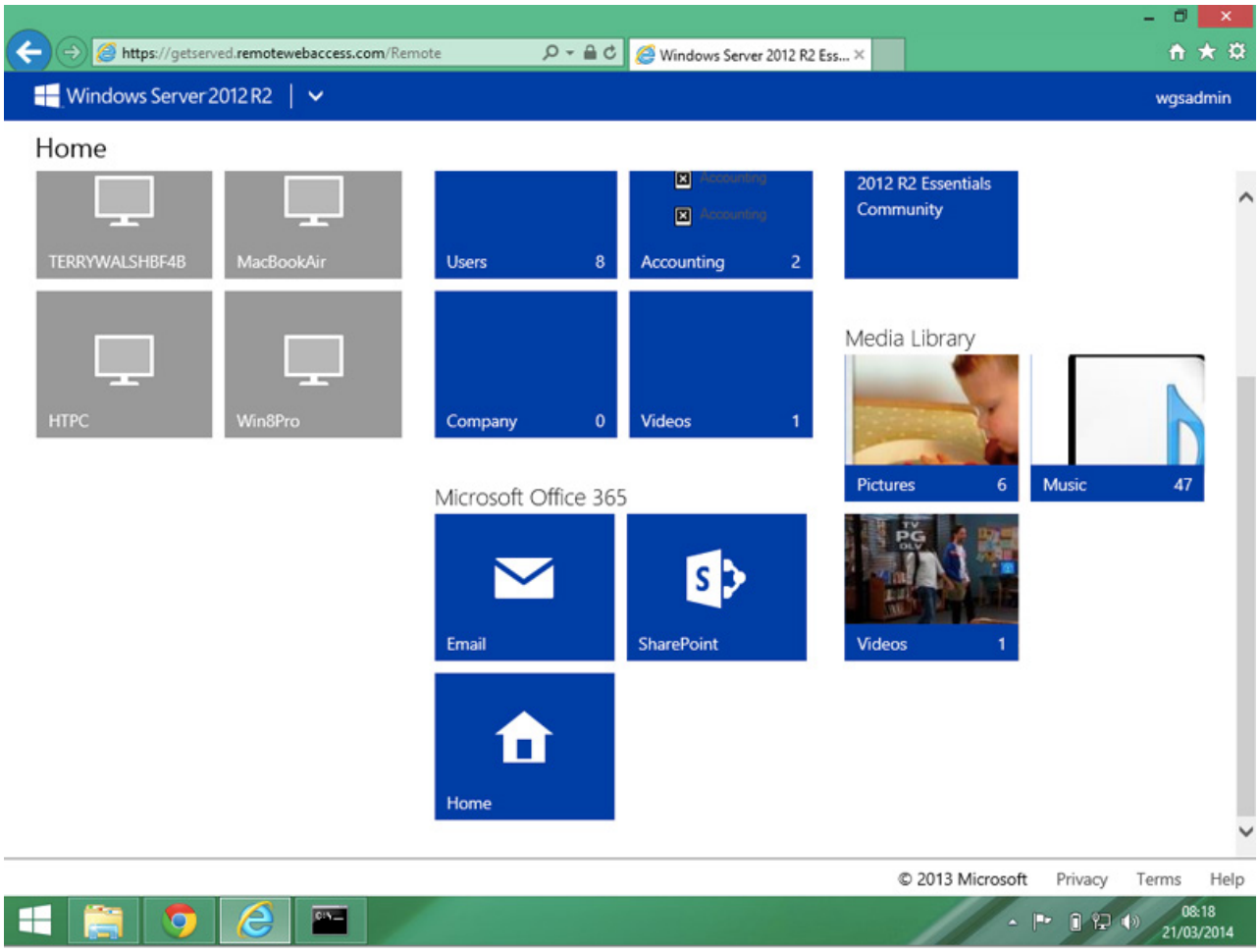
Office 365 and the Launchpad

That pretty much completes the rundown of how Office 365 and Windows Server 2012 R2 Essentials integrate tightly to create a "hybrid cloud" server. But there's one final thing to show you. It's been a while since we mentioned the good old Windows Server Essentials Launchpad, isn't it? Well, when you integrate Windows Server 2012 R2 Essentials with Office 365, the Launchpad gets a little boost too, with new links created to help you access and manage your Office 365 installation.

New links appear in the Launchpad.

Remote Web Access Enhancements

You may not realise at first, but integrating Office 365 also embeds a number of new links in your **Remote Web Access** website.



A new Office 365 panel appears in Remote Web Access.

From your remote website, you now have convenient links to **Email** (which will take you to the Outlook Web Access webmail client), your team's **SharePoint Online** collaboration site and a **Home** link, which routes through to the main Office 365 portal. No need to remember all of those new URLs!

The integration of Office 365 and Windows Server Essentials is a key pillar in Microsoft's strategy for small business. With each release of Windows Server Essentials, we're seeing more features and improvements to the integration experience which come together to provide an easy, convenient and powerful way to manage business productivity applications with the Server Dashboard.

Whether Office 365 is right for you and your business, only you can decide - we haven't had the opportunity to touch on the individual applications included in Office 365 as that would require a whole book to go with this one! But, if you like what you see, and you need to acquire Microsoft Office licenses for your team, then remember that Windows Server 2012 R2 Essentials offers fabulous integration options for Office 365 that will undoubtedly make your life easier.

Managing Client PCs With Windows Intune

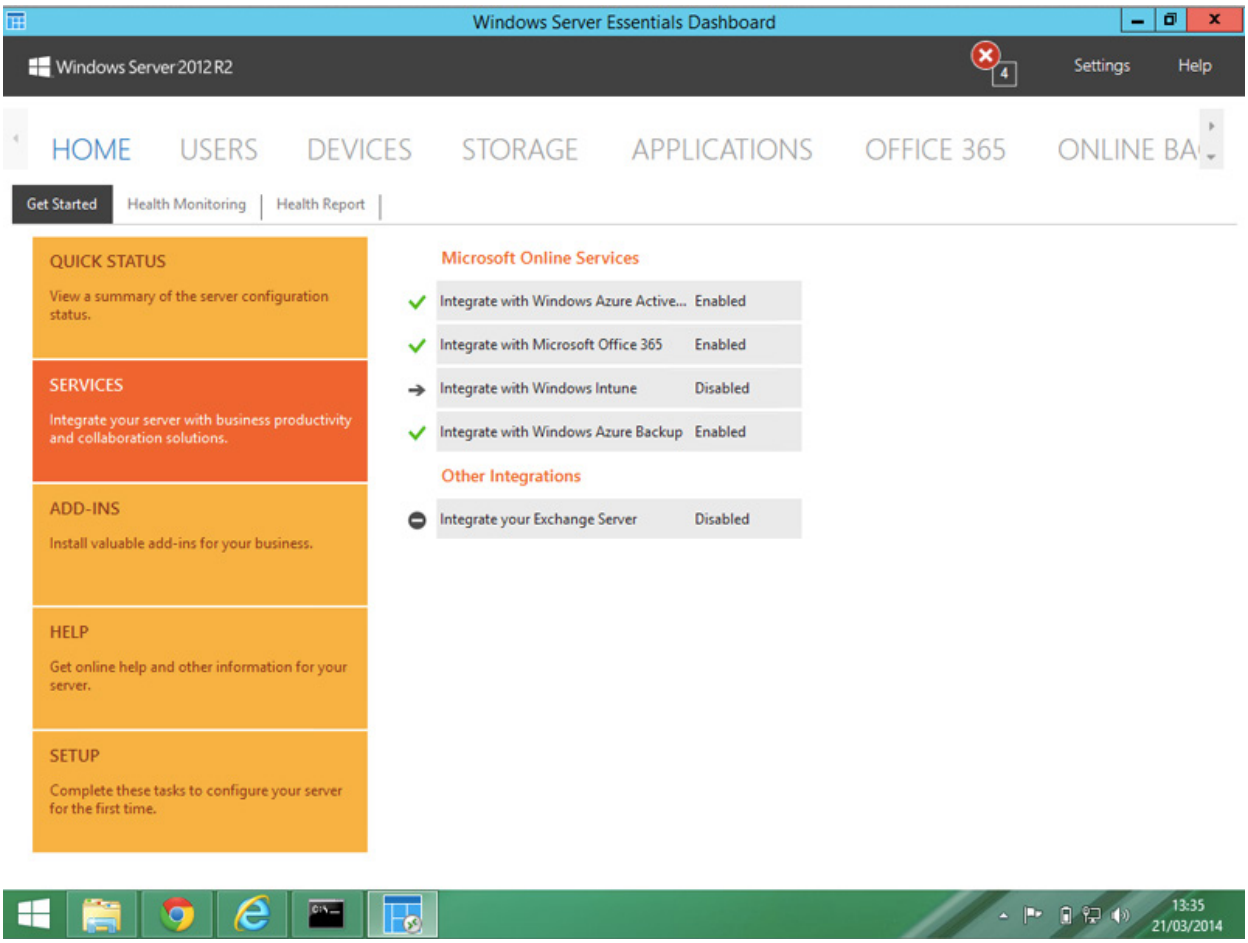
"We've already learned about the powerful fixed and mobile device management capabilities in Windows Server 2012 R2 Essentials. To further enhance the features set, you can integrate another Microsoft cloud service with your server - Windows Intune."

Microsoft Intune is a cloud-based device and policy management solution which Microsoft launched in 2011. It's specifically aimed at small and medium business owners and administrators and can manage organisations of up to 500 PCs.

Windows, Windows RT, Windows Phone 8, Apple iOS, and Android devices can all be managed through the subscription-based service. Using Intune, an admin can distribute and install software applications, create and deploy management and security policies, ensure PCs and devices are continually updated with the latest operating system patches and features and keep a check on hardware and software computer inventory.

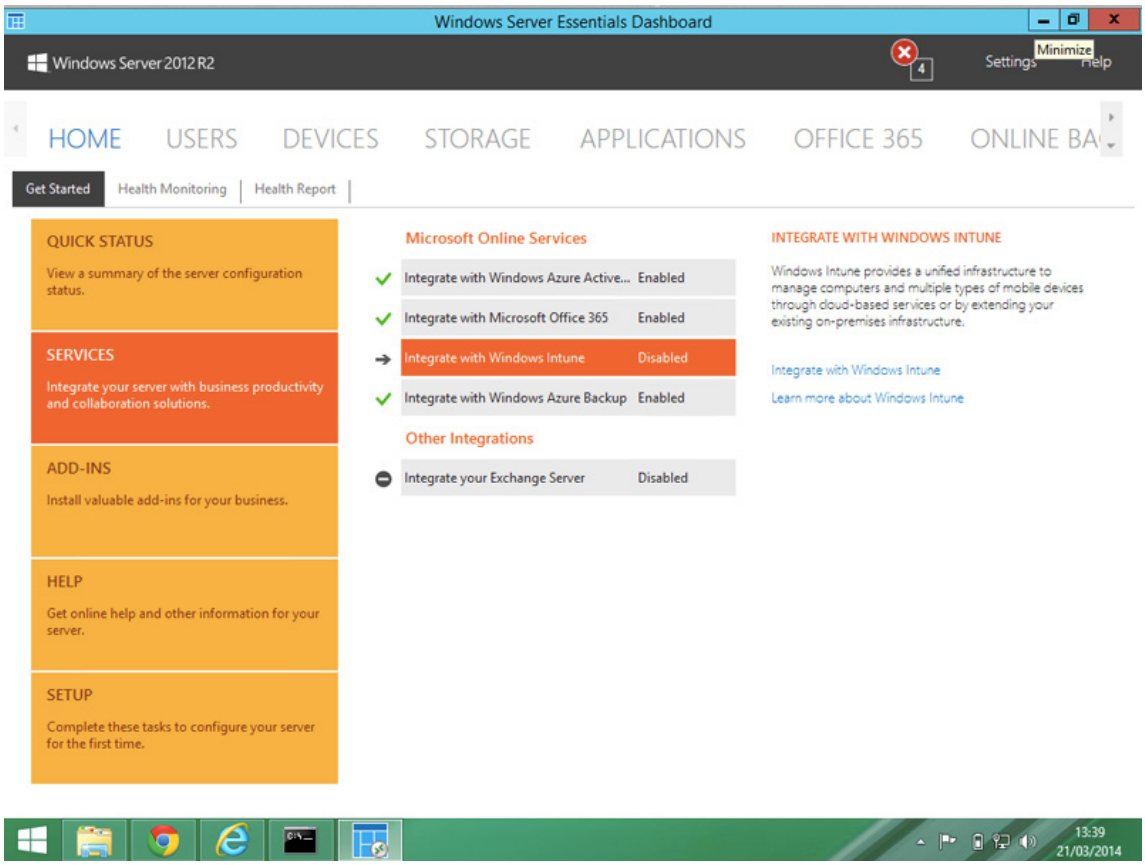
In a similar fashion to Office 365 (but using a different infrastructure) Windows Intune can also help protect your mobile devices, offering Remote Lock and Wipe features for mobile devices and the establishment of secure password policies.

So, if that sounds like the kind of feature set you'd like to check out, open up the Dashboard Home tab and click on the Services section. If you've been following along step by step, you'll see that we've almost completed integrating the list of Microsoft cloud services available. Even Windows Azure Active Director has been enabled as that's a prerequisite of using Office 365 with Windows Server 2012 R2 Essentials.



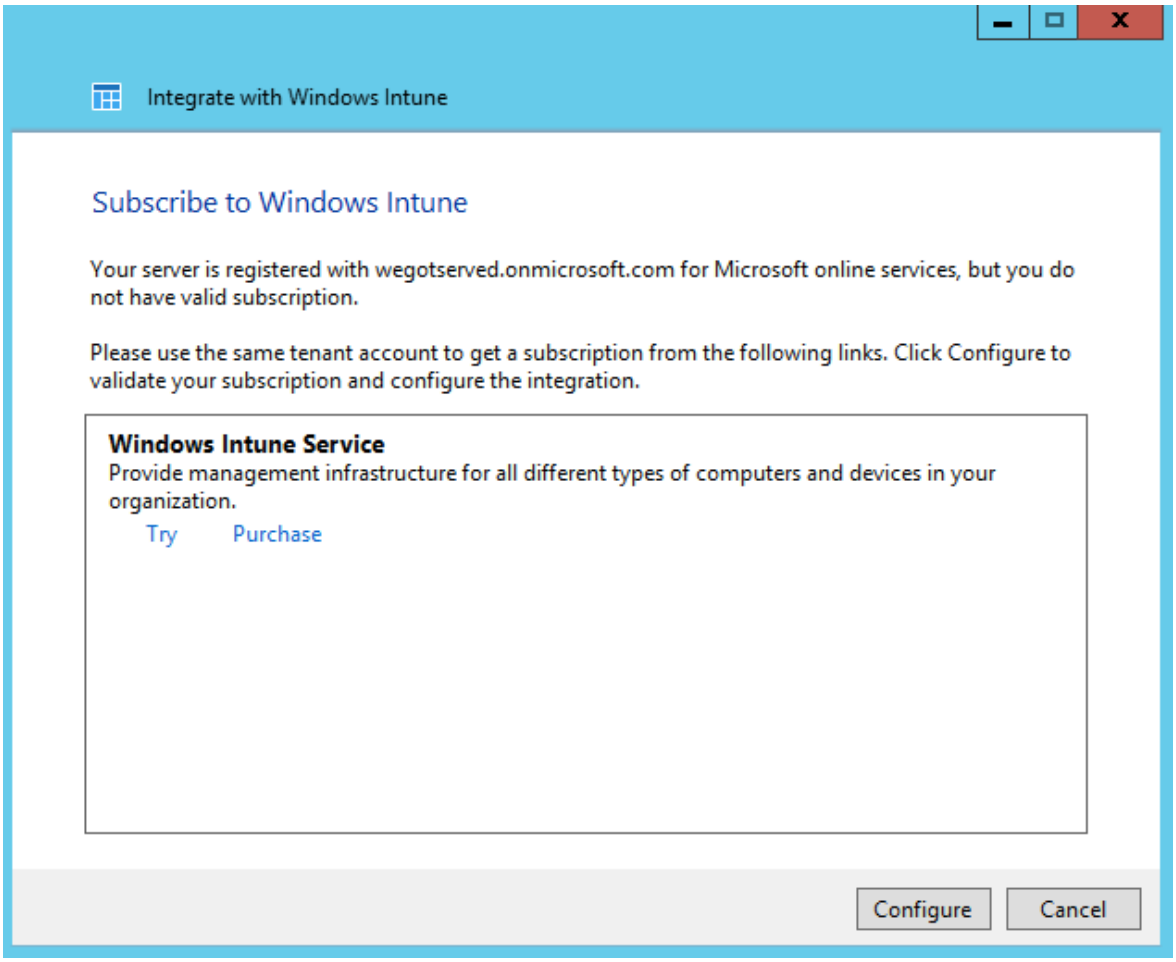
Our cloud service integration is nearly complete.

In the list of services available, click Integrate with Windows Intune. You'll be offered an explanation of the service over on the right hand side of the screen, plus two options.



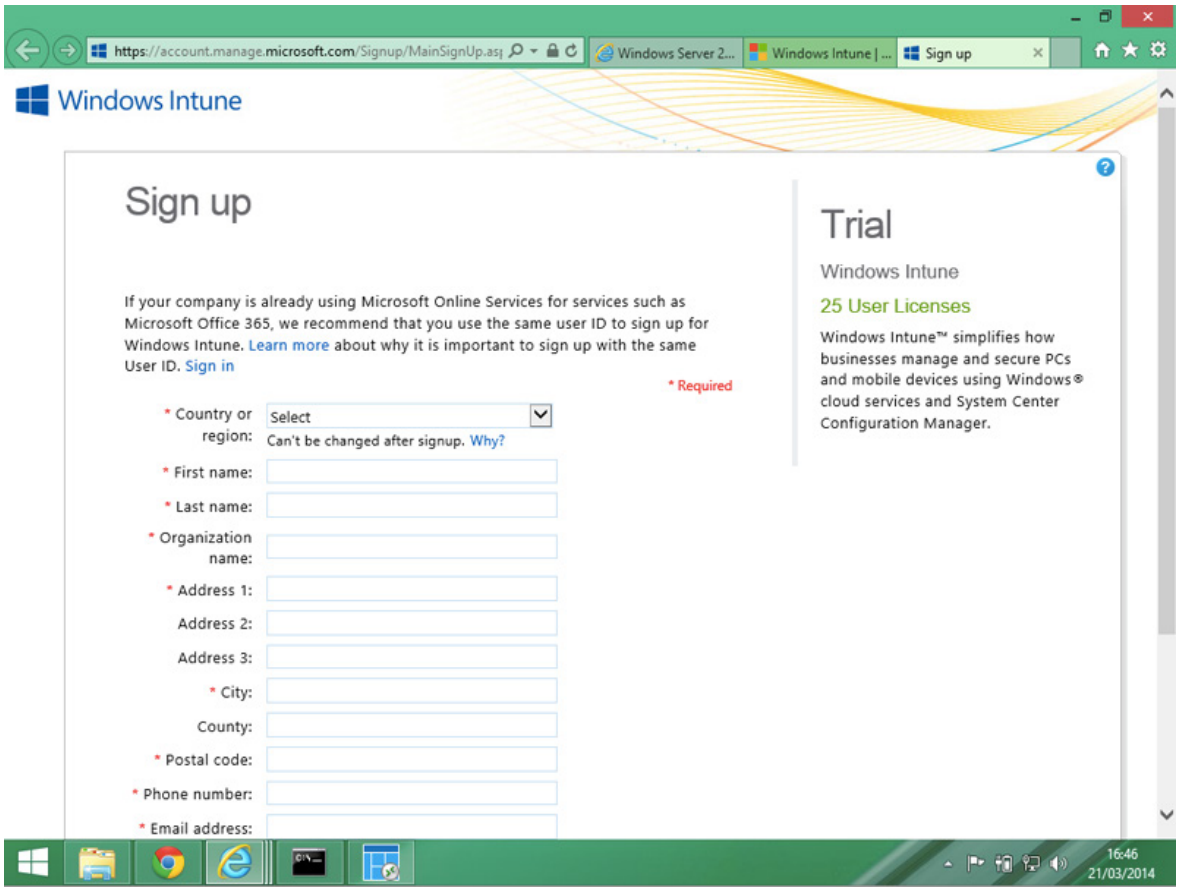
Your Windows Intune installation options.

The bottom task, **Learn more about Windows Intune** will open up a browser with a rundown of the Windows Intune feature set. For now, click the first option, **Integrate with Windows Intune** to get started. As we've already integrated Office 365 on the server, there's no need to register again - however, we do need to either purchase a Windows Intune subscription or take advantage of the free trial.



The Windows Intune integration wizard offers a free trial or subscription to the service.

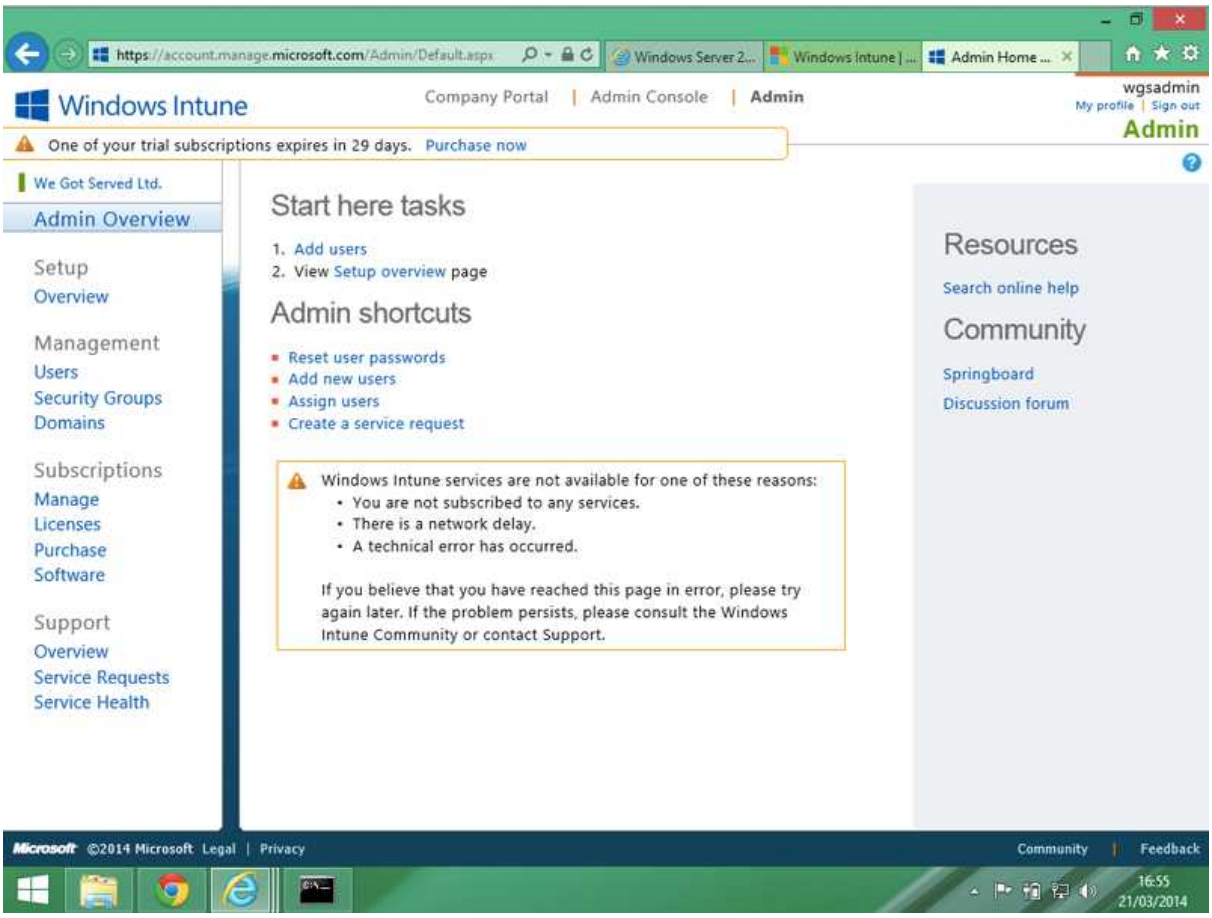
Decide whether you wish to trial the service or jump right into a purchase and click the appropriate link. For this walkthrough, I'll be using the free 30 day trial. If you find (as I did) that the **Try** link doesn't work correctly, simply use Google or Bing to find the Windows Intune site online and register for the trial there.



Signing up for Windows Intune.

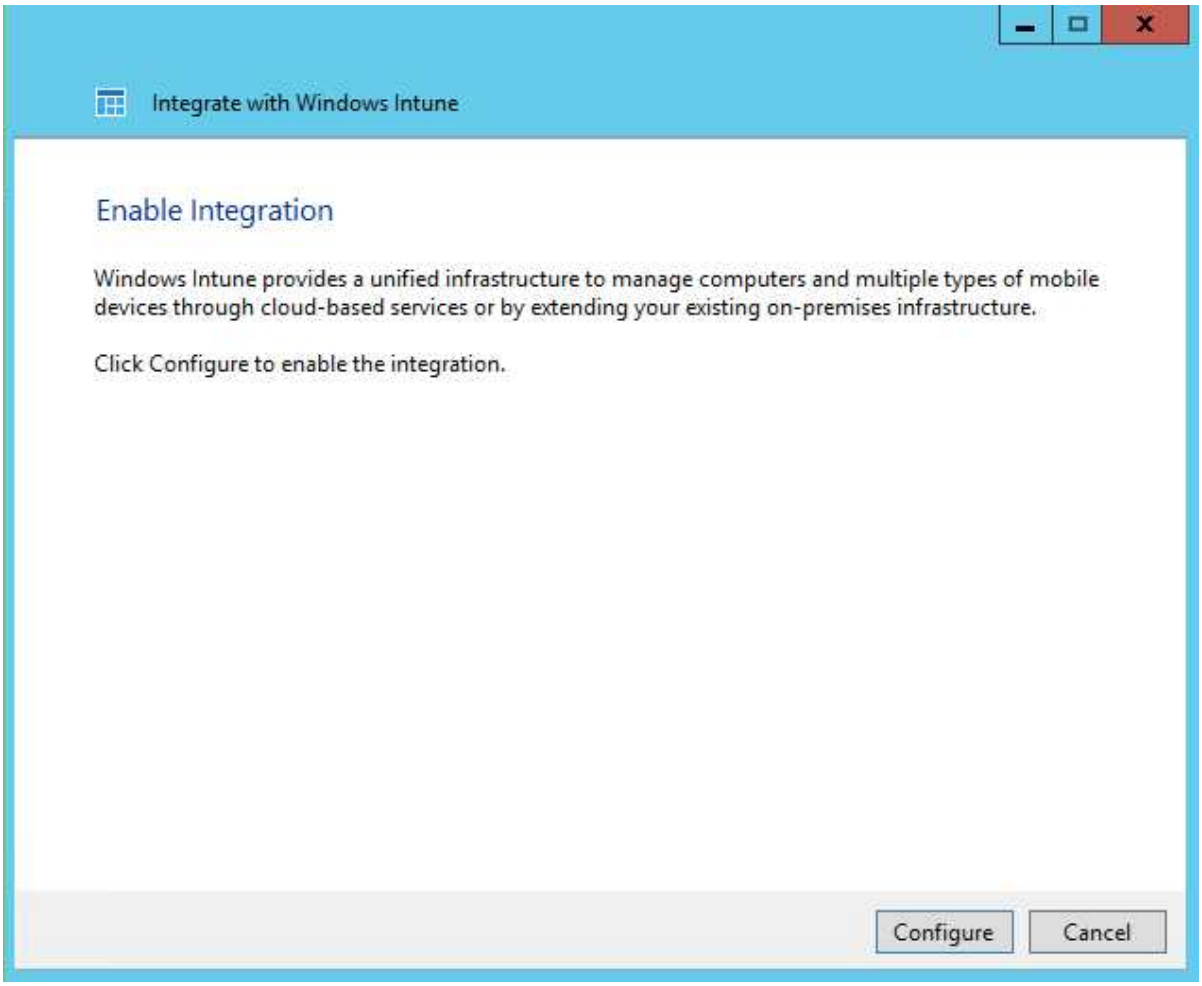
If you've already integrated your server with Office 365, use the same Microsoft Online account credentials to register with Windows Intune - that way, everything will be tied in correctly to the same identity. To do so, use the (reasonably easy to miss) **Sign In** link in the top paragraph of the web page.

Sign up is very quick and in a couple of shakes, you'll arrive at the Windows Intune online portal.



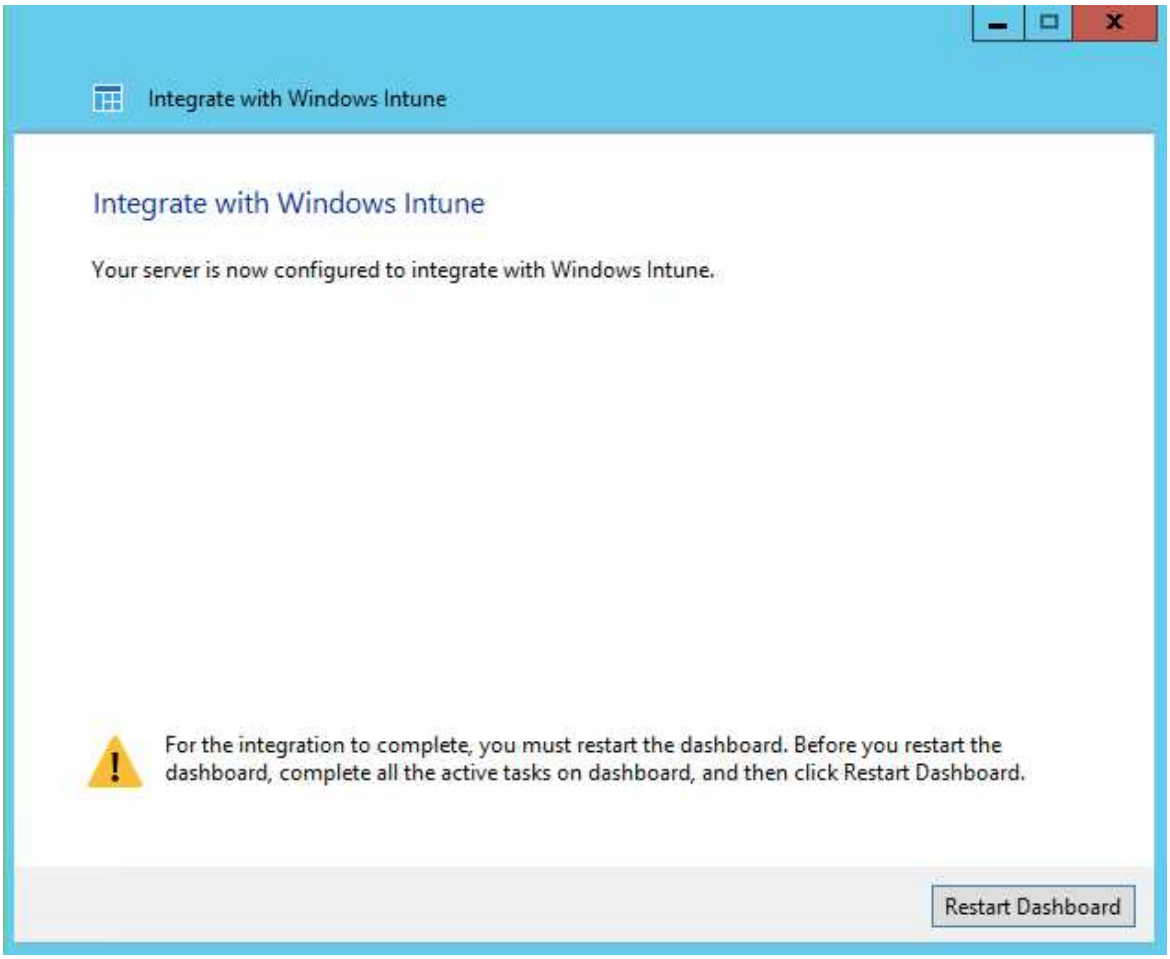
The Windows Intune portal.

Good news! Now that you have the service registered, we can continue with our Dashboard configuration. Back in the Dashboard, click the **Configure** button to allow the server to go online and hunt for your new Windows Intune account.



When your Microsoft online is detected, you can jump straight to configuration.

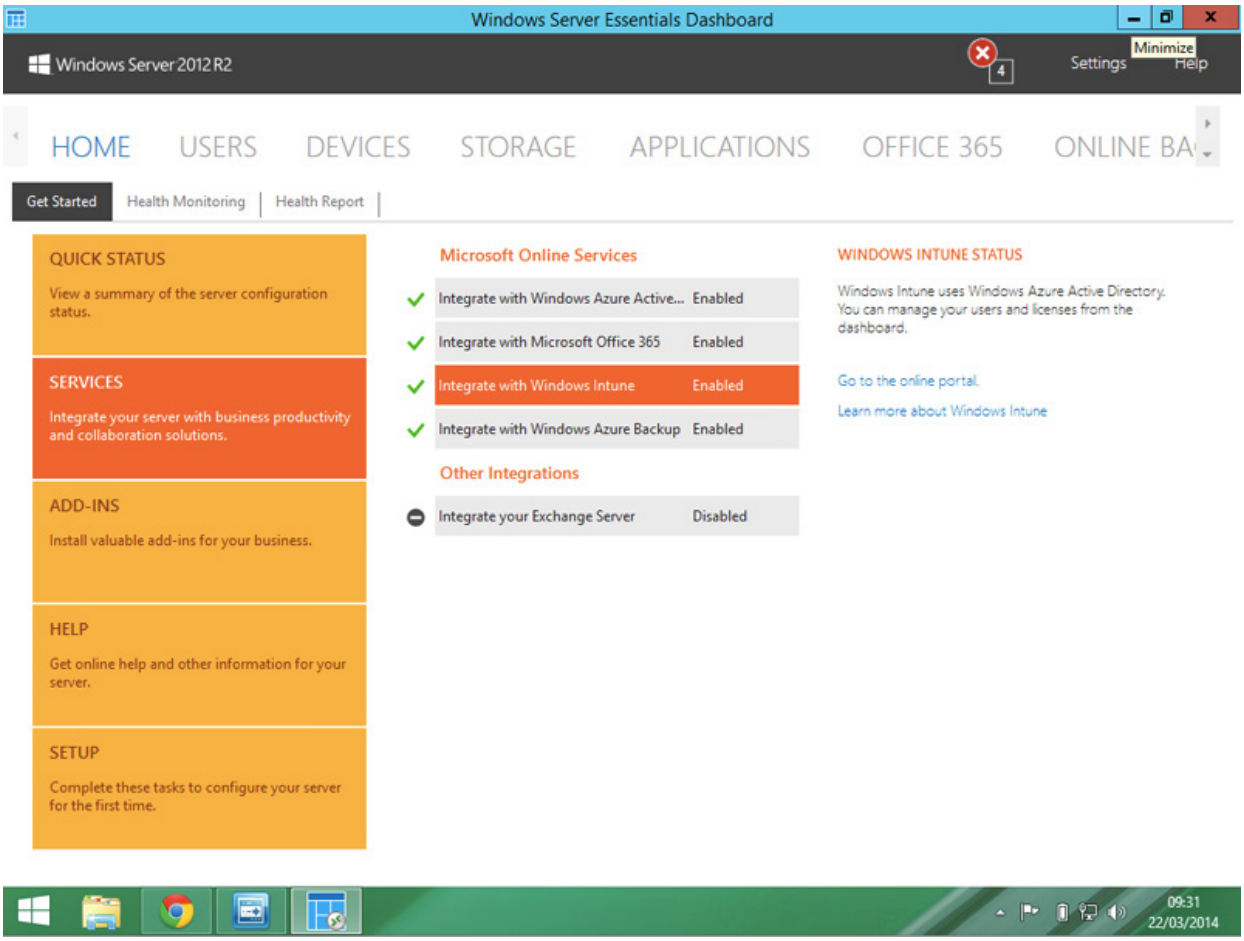
Integration takes a matter of seconds and once complete, you'll be asked to restart your Dashboard.



Restart the Dashboard to complete integration.

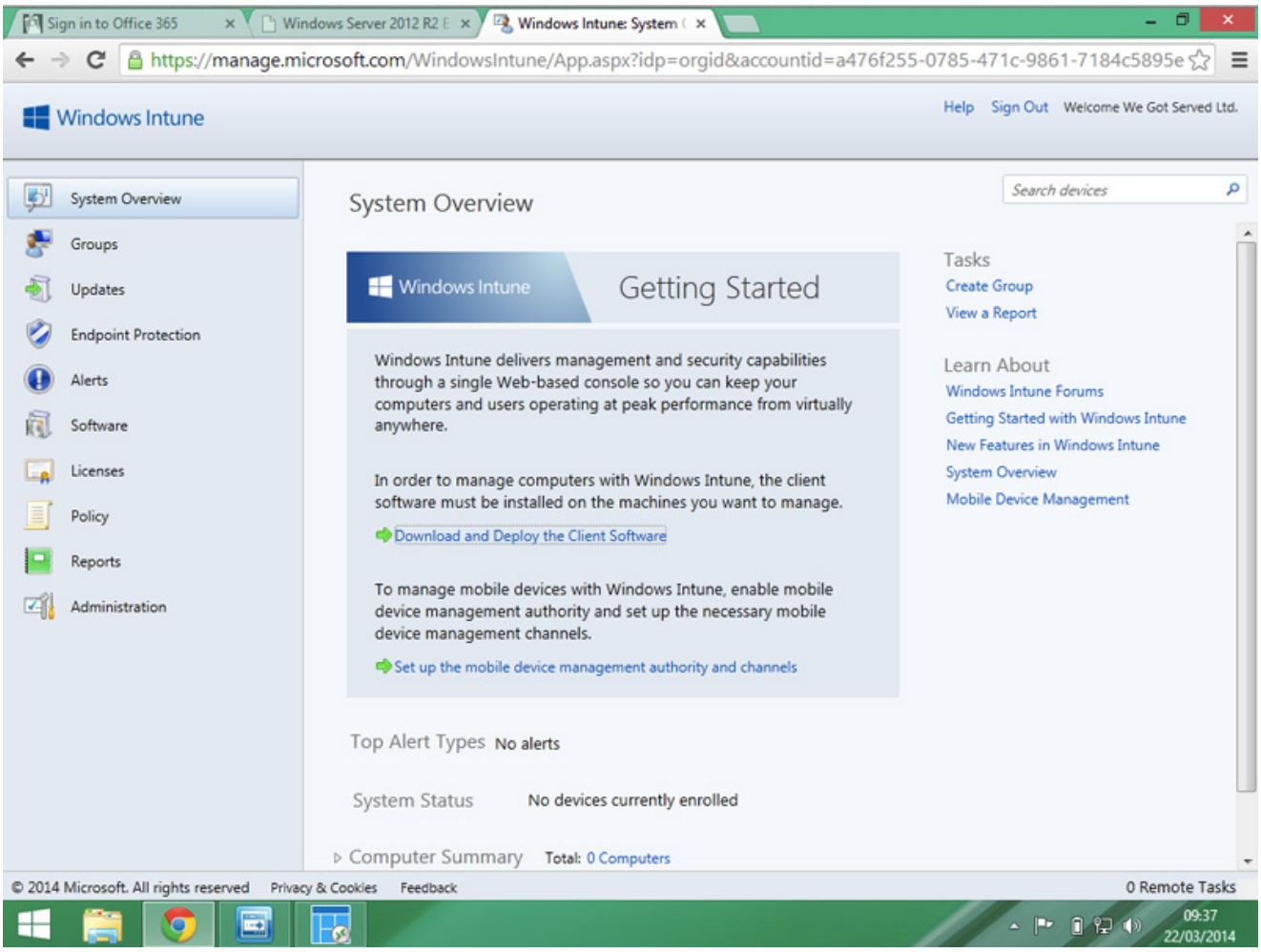
When you restart, you'll notice that Windows Intune integration is much less visible than we saw in Office 365. There are no dedicated tabs, and you'll need to hunt around the Dashboard for the hooks that have been placed for Windows Intune. Here they are:

Firstly, head to the **Services** section of the **Home** tab once again. As you'll anticipate, we now have our Windows Intune integration enabled. If you click on the **Integrate with Windows Intune** task, you'll be able to access your online portal from the Dashboard.



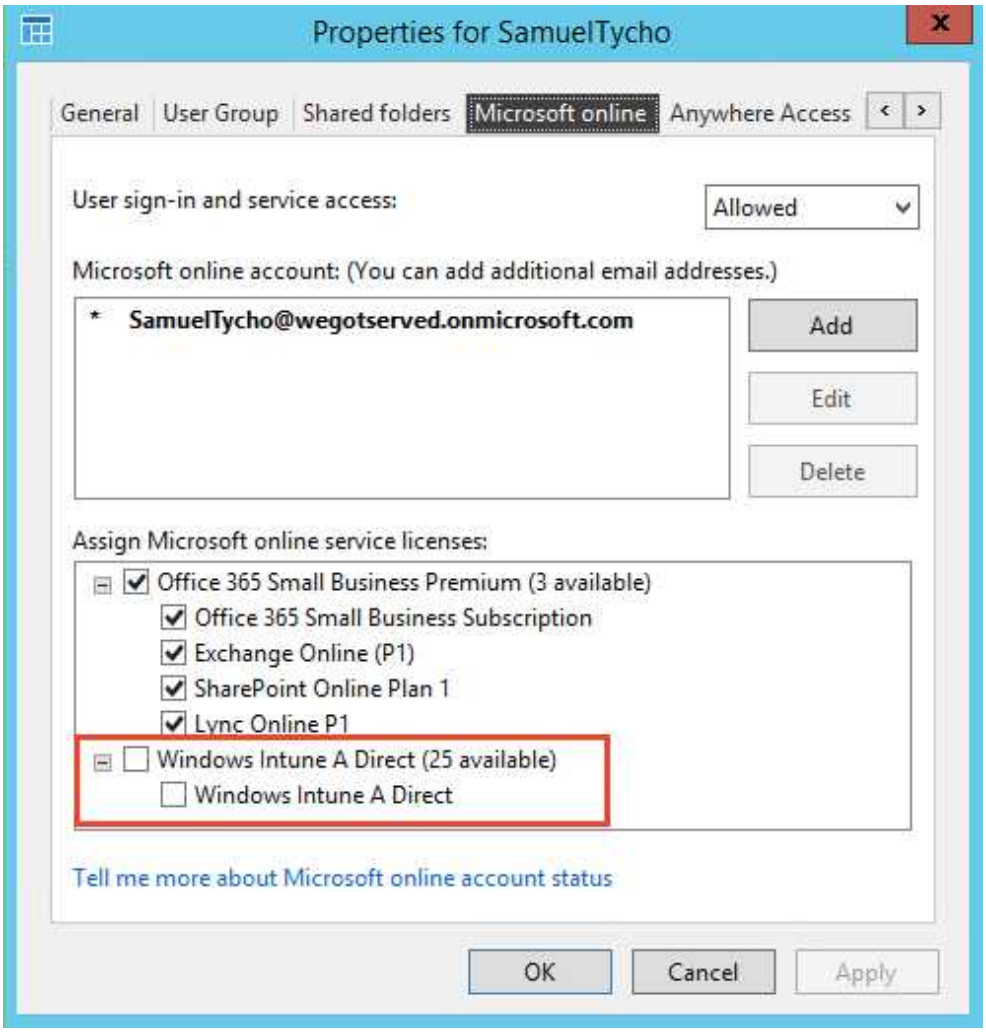
A link will now take you to your Windows Intune portal.

Actually, what I need to say here is that the link *should* take you to your online portal. But at the time of writing, it actually takes you to the main Windows Intune web page and leaves you to hunt for the portal sign in page. It's here: https://manage.microsoft.com/windowsintune/app.aspx?id-p=orgid



The Windows Intune portal.

Back in the Dashboard, let's visit the **Users** tab. Again, at first glance, you'd be hard pushed to spot any integration here with Windows Intune, but if you select a user and click on **View the account properties**, then head for the **Microsoft online** tab you'll see you can assign your Windows Intune licenses on a per-user basis.



Assigning the Windows Intune license.

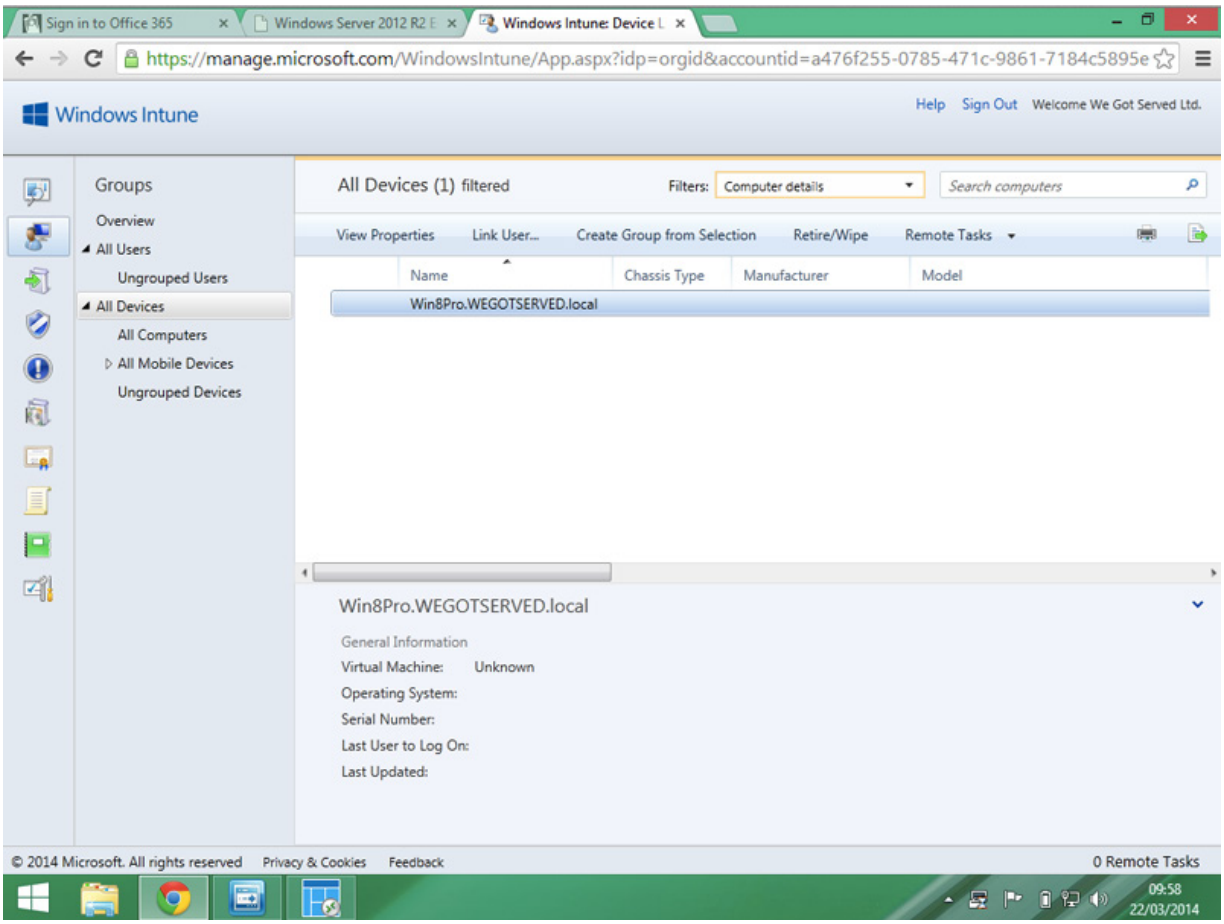
Simply check the box and click **OK** to assign the license. The same rules apply in Windows Intune for licensing and account management as we saw in the last chapter with Office 365. Network account deactivation and deletion will be carried through to your Microsoft online account, changing access status for both Office 365 and Windows Intune.

Adding Your Clients to Windows Intune

Once you have your server integrated and accounts assigned, you can start adding clients to Windows Intune. To do so, you'll need to visit the Windows Intune portal online and download the Intune client on to each PC. In the future, I'm guessing this experience will be more tightly integrated into the Windows Server Essentials Dashboard, but for now, that's what we need to do.

Downloading the Windows Intune client software.

Once the Windows Intune software is installed on your client PCs, you'll be able to view and manage them from the Windows Intune portal.



Managing devices in the Windows Intune portal.

From here you can have fun exploring the Windows Intune portal. Unfortunately, space doesn't allows us to go into a deep dive into Windows Intune - it's a comprehensive PC management platform that would really require its own book to do it justice. But, now that you have the trial up and running, Windows Intune integrated with your server and your PC clients installed in the portal, why not set up a test PC to manage through Windows Intune and experiment with its powerful administration features?

That completes our look at Windows Azure and Microsoft cloud integration with Windows Server 2012 R2 Essentials. In the future, we're bound to see an increasing number of services tied into the company's small business server platform which will continue to extend the power and value of having Windows Server Essentials at the heart of your organisation's network.

Supporting Applications and Features

"Up to this point, we have installed the Windows Server 2012 R2 Essentials operating system, set up the system for your users, connected computers to the server, covered backup and restore and integrated your server with a number of cloud services. We've accomplished a lot!"

That is the focus of this book and I trust that I have succeeded to that end. But as a popular platform for developers, there are plenty of traditional Windows applications that are compatible with Windows Server 2012 R2 Essentials, so it's worth highlighting a few to check out.

When discussing additional software to install, let me make a couple of points before proceeding.

While add-ins are classed as "additional software", they are specialized in that they are integrated into the Essentials Dashboard. We covered add-in software in Chapter 15 - the apps discussed in this chapter are not add-ins and will not integrate into the Dashboard.

The software releases discussed here are specific to the health and general maintenance of a business network and the computers on that network.

In effect, I will not be discussing applications needed to run a business, such as accounting software, or how to set up a website on a server. Entire volumes of books and training manuals are devoted to discussing various business software applications. I will not be discussing various applications that one might want to install in a home or a SOHO. Examples of these application might be centered about various media applications designed to catalog and stream music, video, and other media throughout a local network. Once again, discussions surrounding such applications deserves a full treatment at a later date.

What does that leave us? Like I said, the applications that are specific to the health and general maintenance of a business network and the computers on that network.

First up on that list is:

Malware Protection

Perhaps the more recognized term is **anti-virus**. Malware, however, has become a broader term to use to define a set of malicious software applications designed to disrupt, steal data, and/or gain access to a computer system for other reasons that are harmful to you.

If you are a Mac user, you are not exempt from malware intrusion. If you are an iOS or Android user, you are not exempt either.

But the focus today is on your Windows Server 2012 R2 Essentials machine and the protection of this system from malware attacks. If you've integrated Windows Intune on your network, then you can take advantage of powerful malware protection (they call it *Endpoint Protection* - more on that shortly, but it amounts to the same thing) for your clients - but what about your server?

First and foremost, the first rule in server protection is very simple:

- DO NOT USE Internet Explorer ON YOUR SERVER
- DO NOT INSTALL AND USE ANOTHER BROWSER ON YOUR SERVER

Internet Explorer on a server is configured, by default, to use an Enhanced Security Configuration providing an increased level of security. This can prevent web sites from displaying correctly in Internet Explorer and restrict access to various network resources. Do not change it and do not use IE on your server. Do not install and use an alternative browser on your server.

Why?

Most malware comes from infected websites. If you click on the wrong item or go to the wrong website, the consequences can be dire, and in some cases you may not even know that your server is infected. If you find at some point that you want to have an on-premise email service, you should consider your options with a trained consultant who can advise you of the best methods to keep your data and email separated.

When it comes to solutions to protect your server from malware, anti-malware companies typically produce and promote unified products to protect your server and clients. These products fall into a product niche called **Endpoint Security**.

Endpoint Security software is required on both clients and servers. Depending upon the feature set of a particular software solution, an application can determine if various features of a "endpoint", such as

- The Operating System
- The Web browser (or browsers)
- Software Applications
- Anti-malware signatures
- Firewall and other security components

are up to date before allowing access. These devices can then be updated as needed before access is granted.

Endpoint security software can either be on-premise or cloud based. Depending upon the product, it can protect not only the server and PCs, it can also protect mobiles devices such as smartphones, tablet and other devices that might connect to a business network.

If you want protection for your organization that includes a centralized server, anti- malware companies are looking to install a complete protection package using an Endpoint Security model.

What follows is a sampling of the companies that sell complete protection packages for a server-based network. I am not endorsing any particular company or product, and this list is certainly not a complete listing of all the companies that produce these products. Some of these products may state Windows Server 2012 R2 compatibility and not list Essentials (as it's new). Typically a company will designate this as the "Server 2012 family" of products. Verify before you buy!

- **System Center 2012 R2 Endpoint Protection**. Part of the Windows System Center 2012 R2 feature set, Endpoint Protection ensures both clients and servers are protected from malware.
- **McAfee SaaS Endpoint Protection Suite**. Compatible with Windows Server 2012, Essentials is not listed. Compatible with Windows 7 and Windows 8.
- **Kaspersky Endpoint Security for Business**: Compatible with Windows XP, Vista, 7, 8 and 8.1 and Windows Server 2012 R2 Essentials.
- **AVG Antivirus Business Edition.** Compatible with Windows Server 2012, Essentials is not specifically listed. Compatible with Windows 7 and Windows 8, XP and Vista clients.
- **Symantec Endpoint Protection Small Business Edition 2013**. Compatible Windows Server 2012 R2, Essentials is not specifically listed. Compatible with Windows XP, Vista, 7, Windows 8 and Windows 8.1 clients.

- **Webroot SecureAnywhere Endpoint Products**: Compatible with Windows Server 2012 R2, Essentials not listed. Compatible with Windows XP, Vista, 7, 8 and Windows 8.1 plus Mac OS X 10.7+.
- **ESET Endpoint Protection**. Compatible with Windows Server 2012 R2, Essentials is not listed. Compatible with Windows XP, Vista, 7 and Windows 8.
- **Avira Small Business Security Suite.** Not officially supported to work with Windows Server 2012 or R2.
- **BitDefender Small Business Products.** Not listed as compatible with the Server 2012 R2 family. Compatible with Windows 7 and Windows 8.
- **Trend Micro Worry-Free Business Security Services**: Windows Server 2012 R2, Windows Server 2012 R2 Essentials both supported. Compatible with Windows XP, Vista, 7, 8 and Windows 8.1 clients.

Please note that compatibility details will change from the time I created the list above.

While security of your organization is a critical requirement, so is cost. With so many options on number of clients, types of devices, and the protection features available to choose, it is hard to provide any sort of guideline as price varies considerably between products. Contact the various companies and/or check out the developer's website to answer those questions relevant to your particular organization.

Software Update Applications

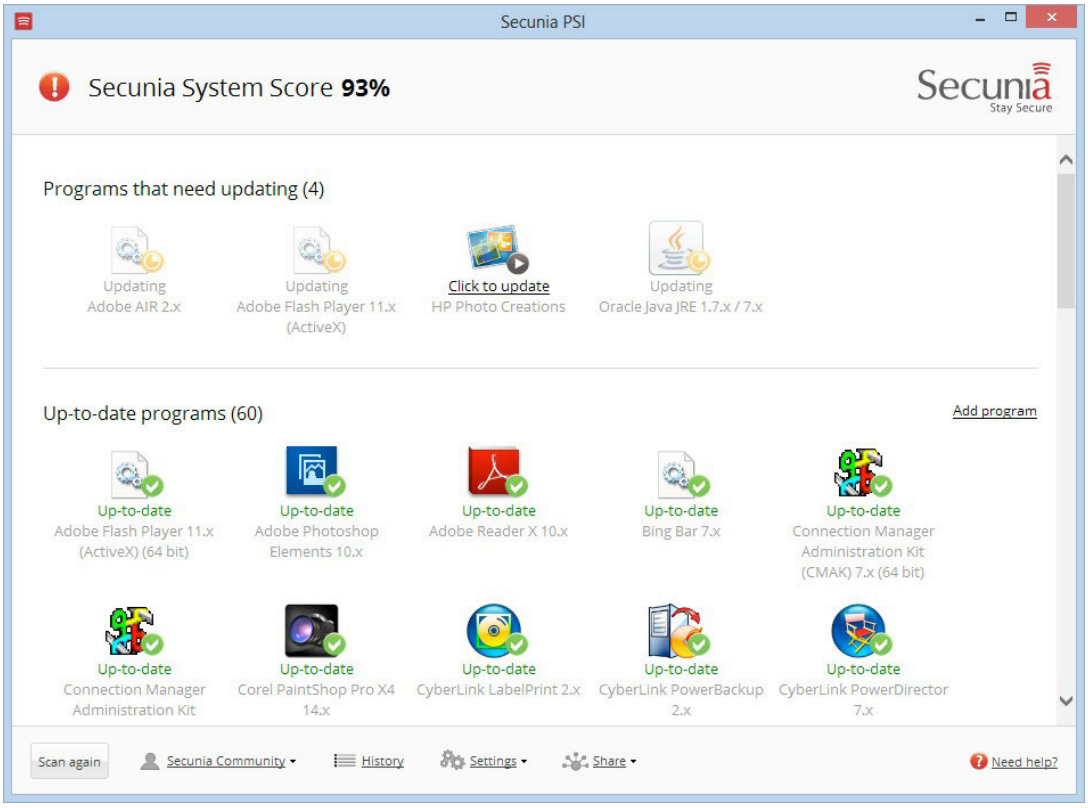
As part of any security program you might have in place, there is one segment you may wish to include, which is software update applications. There are several solutions available - the one that I recommend for both business and personal use is **Secunia** (http://secunia.com/).

The company produces both corporate products (Corporate Software Inspector and Vulnerability Intelligence Manager) and a free consumer product (Personal Software Inspector).

Per Secunia:

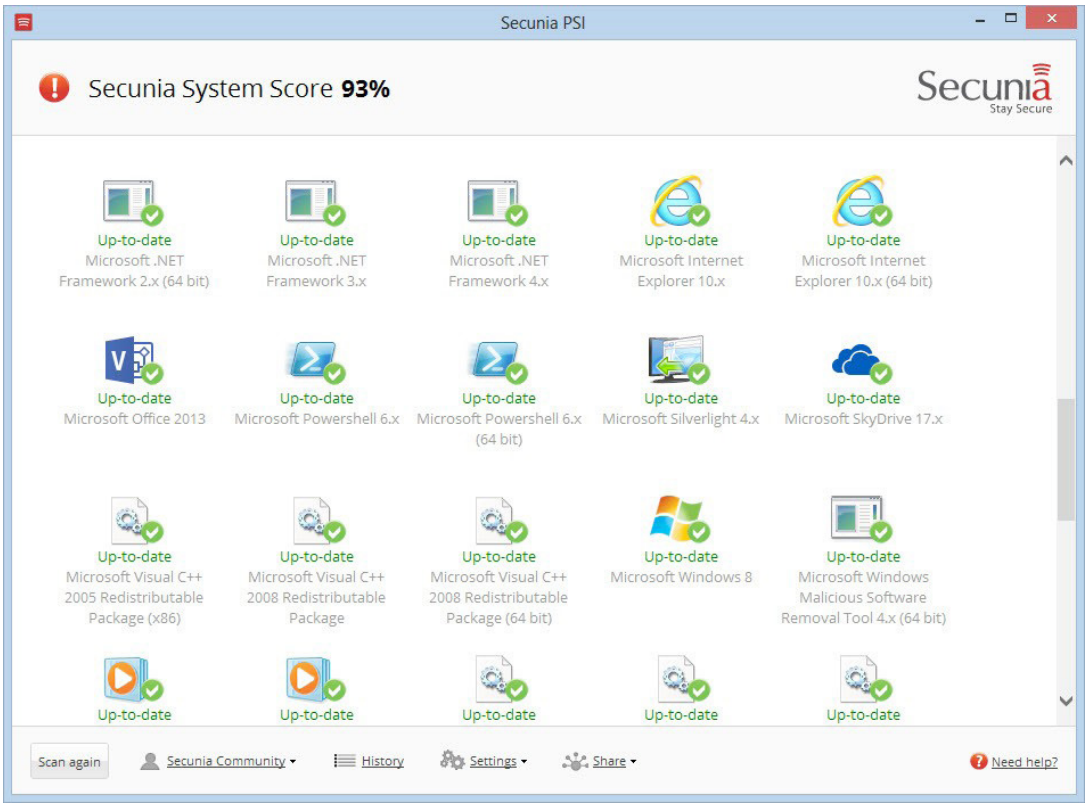
The Secunia CSI 7.0 combines scanning and patching, thereby meeting the requirements of both IT security and IT operations. This combination of vulnerability intelligence, vulnerability scanning, patch creation and patch deployment is unique in the industry.

While I have yet to use the corporate versions of Secunia, I have used the personal version for quite some time. It checks both 3rd-party applications:



Checking for software updates.

and OS related applications.

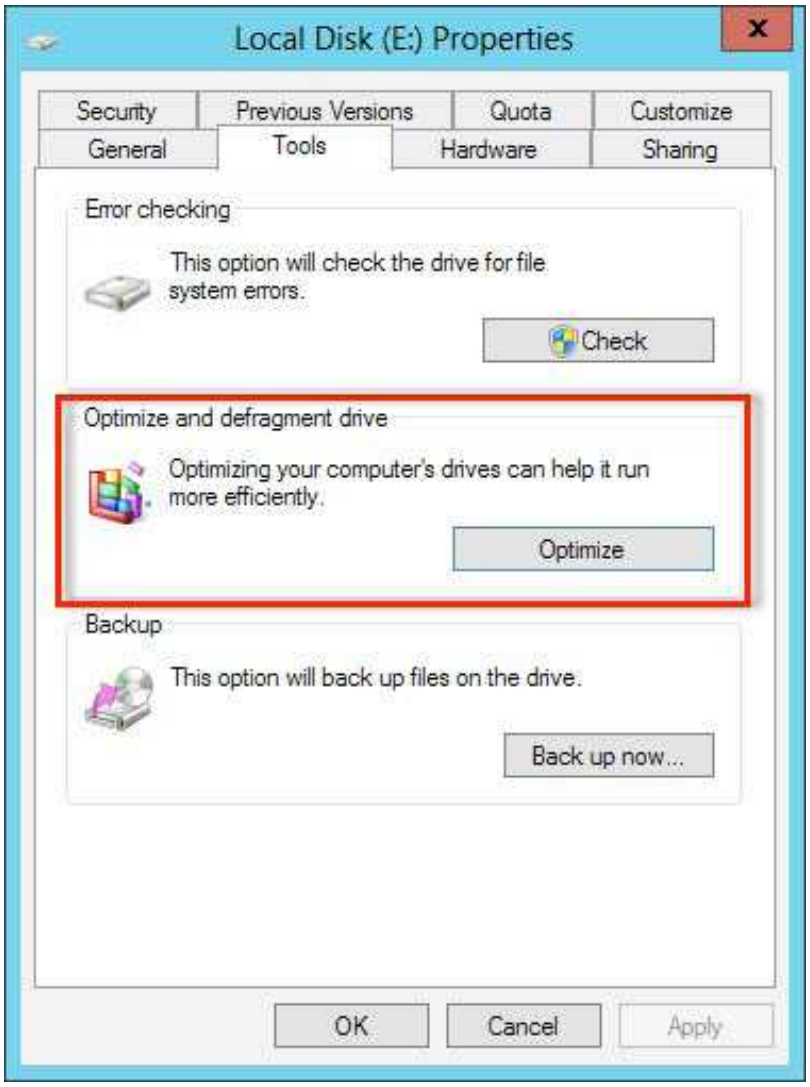


Checking OS updates.

Quite honestly, Secunia (or similar programs) make software update management easy.

Disk De-fragmentation Applications

Windows has included a disk defragmentation/optimization program with their operating systems, since, well, forever. De-fragmentation moves blocks of data around your hard disk to optimize file transfer speeds.



Windows includes a disk defragmentation application.

How well it works depends upon who you ask. If you were to search out reviews of defragmentation programs, I doubt you will even find the embedded Microsoft solution is included as an option. All that means is that there is really no one to ask!

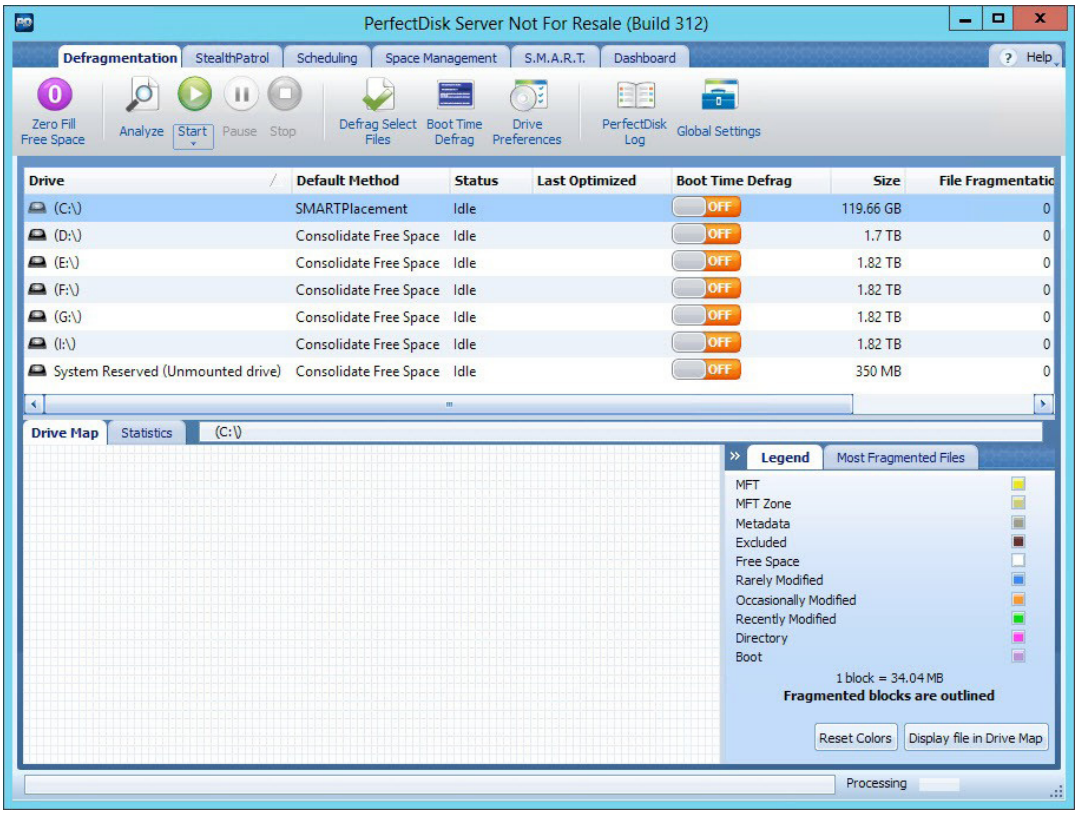
Commercial defragmentation programs have been around almost as long as Microsoft. Two of the more advanced and recommended programs are:

- **Diskeeper** http://www.condusiv.com/products/diskeeper/.
- **PerfectDisk** http://www.raxco.com/

The last time I looked at these programs head-to-head in a review, I found both programs did a fantastic job of optimizing hard drives, albeit using somewhat different methods. How different or similar they are these days I cannot say specifically, but they do provide significant enhancement options and reporting features over the built-in Microsoft solution. For use in a server; for use in a multiple PC/user environment; hard drives are going to take a beating. Keeping those drives optimized should be a priority of anyone responsible for a server.

Installing Raxco PerfectDisk.

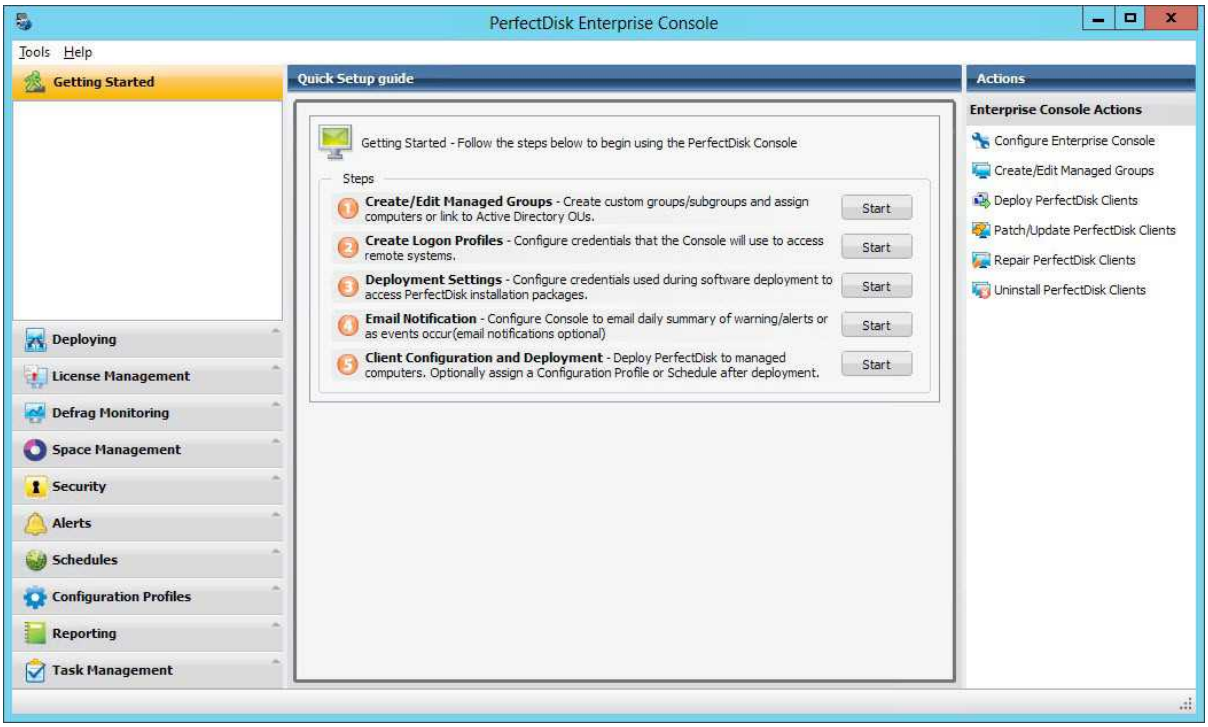
As an example of the what to expect for a server-based organization, the PerfectDisk solution consists of three modules. The first module is PerfectDisk Server that you might guess installs on the server. Once installed, the program provides an almost overwhelming panorama of information about and defrag options for your hard drives. The **Defragmentation** module is the workhorse application for your server hard drives. If you are only concerned about defragmentation of your server, you can rest here.



Defragmenting your disks.

However, PerfectDisk does provide a second, free module for installation which acts as a Centralized Management & Reporting tool for PerfectDisk on the server and any clients you want to manage.

As can be seen below, you have quite a selection of tools at your disposal for deploying, managing, and monitoring your Disk Defragmentation software.



Application deployment options are included.

You could stop at this point, but you do have the option to purchase and deploy client- based versions of PerfectDisk as part of various bundled packages.

Other Software

Depending upon whether your server is in the home, a SOHO, or business, you may feel the need to install certain pieces of software such as:

- Hardware and Software inventory software
- Browser History Tracking software
- Internet Filter Software

These suggestions would be of the most interest to a small business. For a company with a significant amount of hardware and software to document and maintain, the first suggestion can be quite beneficial. Again, Microsoft's Windows Intune cloud service offers inventory management as part of its feature set.

If any company has a significant number of employees whose main function requires the use of a

computer, browser history tracking software may be beneficial in ensuring an employee is working and not "surfing the web" or updating their Facebook status all day. Yes, it does happen.

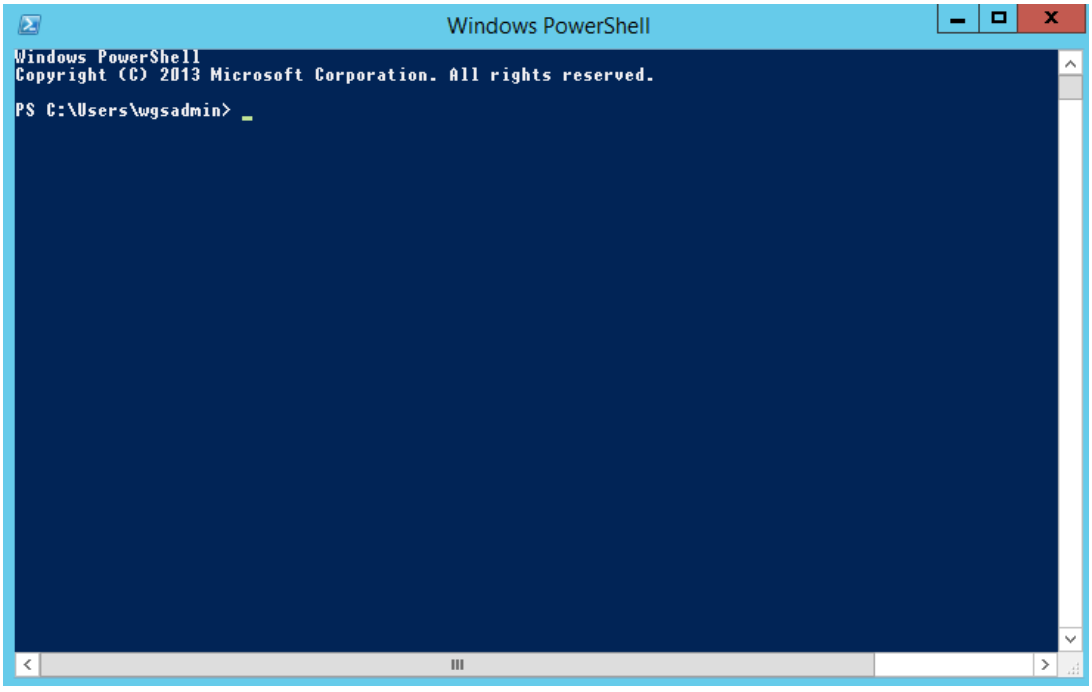
The last option can be beneficial to anyone with young children away from sites they should not have access to, or for employers who feel the need to restrict access to certain sites from their employees. No one likes to be supervised 24/7 and no one likes to micromanage an employee. The sad truth is that abuse does occur, and restricting access to various websites can also reduce the possibility of encountering malicious software.

In this chapter, I have given you a taste of what you need to protect, monitor, and maintain not only your server but all of your computer assets. In a business, your employees are only as good as the way in which you treat them; the same can also be said of a computer network, especially one that has a server at its core.

If you do something that **really** messes up, you did remember to create a server backup, right? If you do something really bad, you will quickly understand why IT administrators are incredibly conservative.

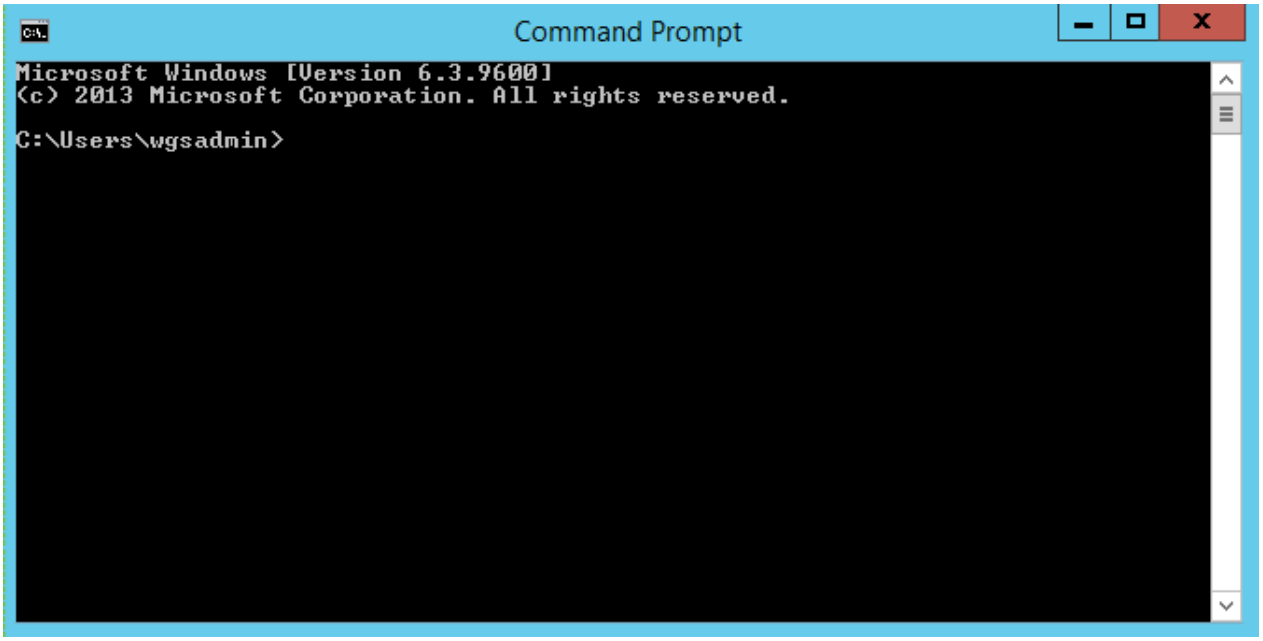
Hopefully, I have scared you off from reading further (!), but if not, first up on our journey is:

Windows PowerShell



Way back in Chapter 5, I used a command window to list the IP configuration of my server. This was

done in Windows PowerShell simply because it is a conveniently placed tool on the Essentials desktop. While a PowerShell window is similar to a Command Prompt window:



A command prompt in Windows Server 2012 R2 Essentials.

they are actually quite different in their capabilities and use. While you can use such commands as **ipconfig** in either window, Windows PowerShell can do much more and is designed for system administration.

So, what is PowerShell?

A very good answer to that question was provided by a Microsoft employee in response to the question "What is the difference between the Command Prompt and Windows Powershell?" in the TechNet forums (http://social.technet.microsoft.com/Forums/en- US/categories):

Windows PowerShell is a task-based command-line shell and scripting language designed especially for system administration. Built on the

.NET Framework, Windows PowerShell helps IT professionals and power users control and automate the administration of the Windows operating system and applications that run on Windows.

Built-in Windows PowerShell commands, called cmdlets, let you manage the computers in your enterprise from the command line. Windows PowerShell providers let you access data stores, such as the registry and certificate store, as easily as you access the file system. In addition, Windows PowerShell has a rich expression parser and a fully developed scripting language.

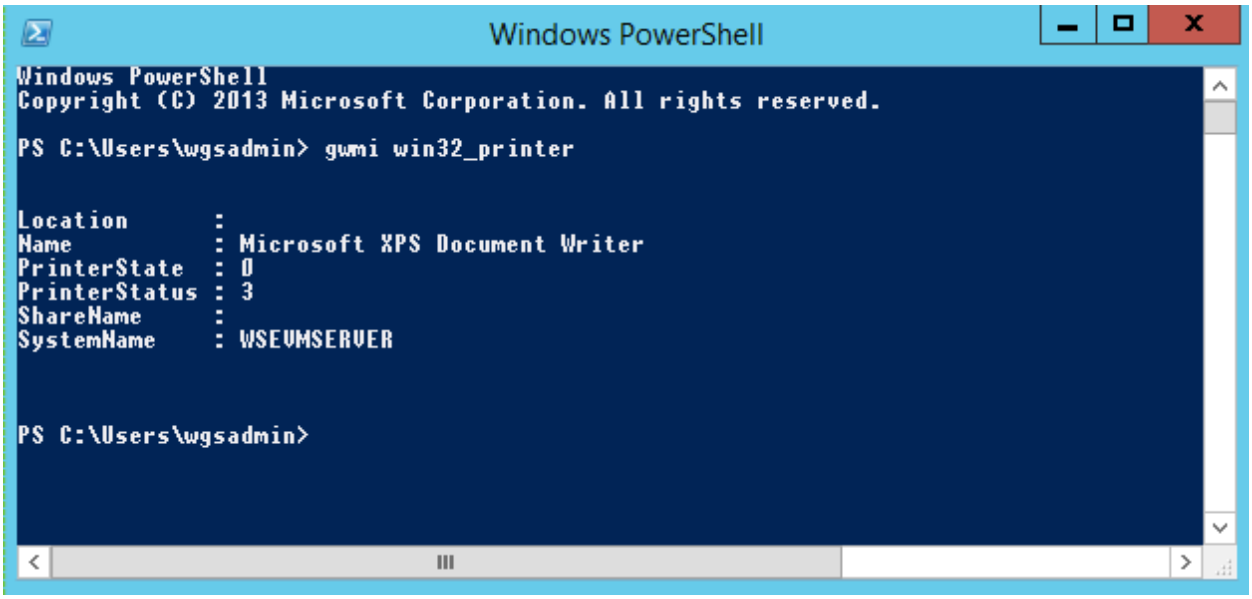
Windows PowerShell includes the following features:

- Cmdlets for performing common system administration tasks, such as managing the registry, services, processes, and event logs, and using Windows Management Instrumentation.
- A task-based scripting language and support for existing scripts and command-line tools.
- Consistent design. Because cmdlets and system data stores use common syntax and naming conventions, data can be shared easily and the output from one cmdlet can be used as the input to another cmdlet without reformatting or manipulation.
- Simplified, command-based navigation of the operating system, which lets users navigate the registry and other data stores by using the same techniques that they use to navigate the file system.
- Powerful object manipulation capabilities. Objects can be directly manipulated or sent to other tools or databases.
- Extensible interface. Independent software vendors and enterprise developers can build custom tools and utilities to administer their software.

For more information, please refer to the following links: http://msdn.microsoft.com/en-us/library/ms714418(VS.85).aspx http://technet.microsoft.com/en-us/magazine/2007.02.powershell.aspx

A very simple PowerShell command lists the printers associated with the server:

```
gwmi win32_printer
```

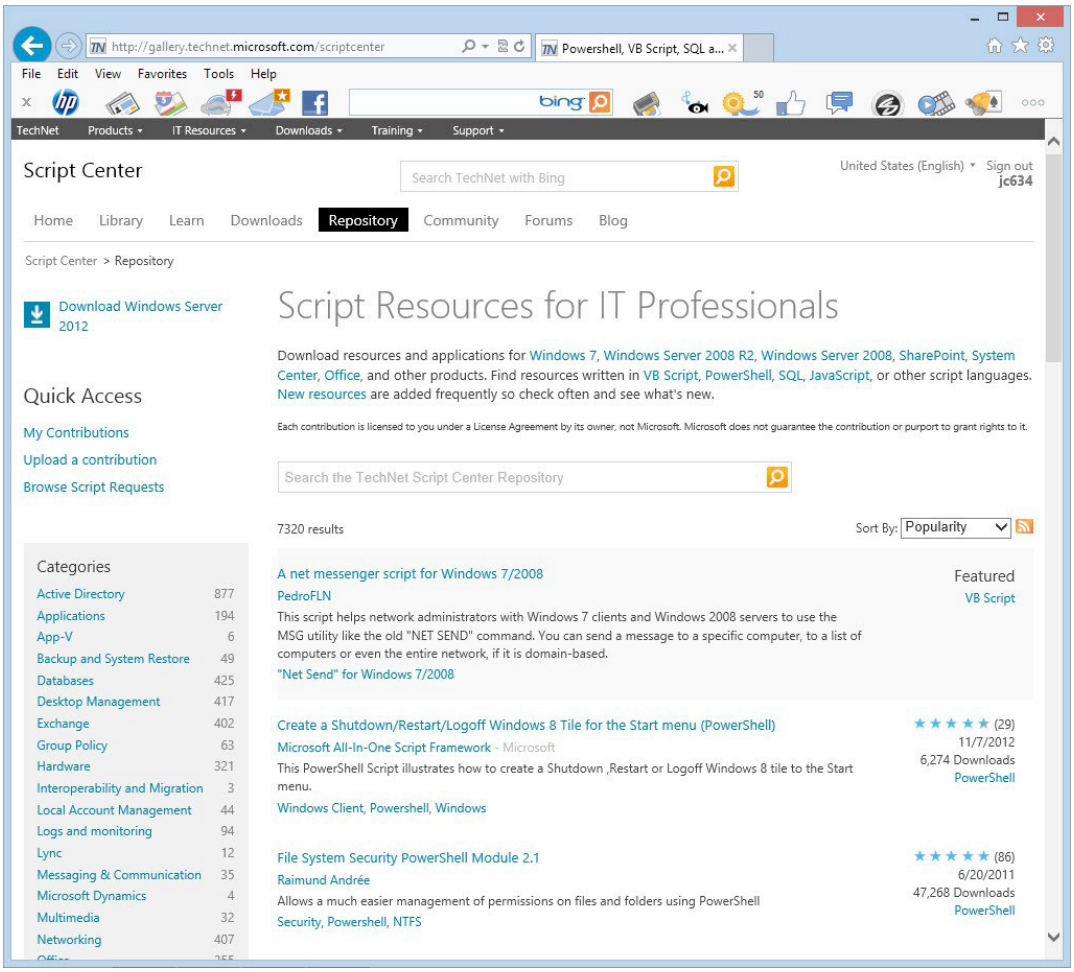


Listing printers.

While the above list seems rather limited, (as I do not actually have any printers configured in Essentials yet), if you have an organization where you have several printers in your network you may find a script such as this one useful as a quick status check of those printers. This particular command, or a variation of this command, can be especially useful if you were to set up your Essentials server as a print server.

An incredibly useful resource of scripts written for Windows PowerShell can be found at

http://gallery.technet.microsoft.com/scriptcenter

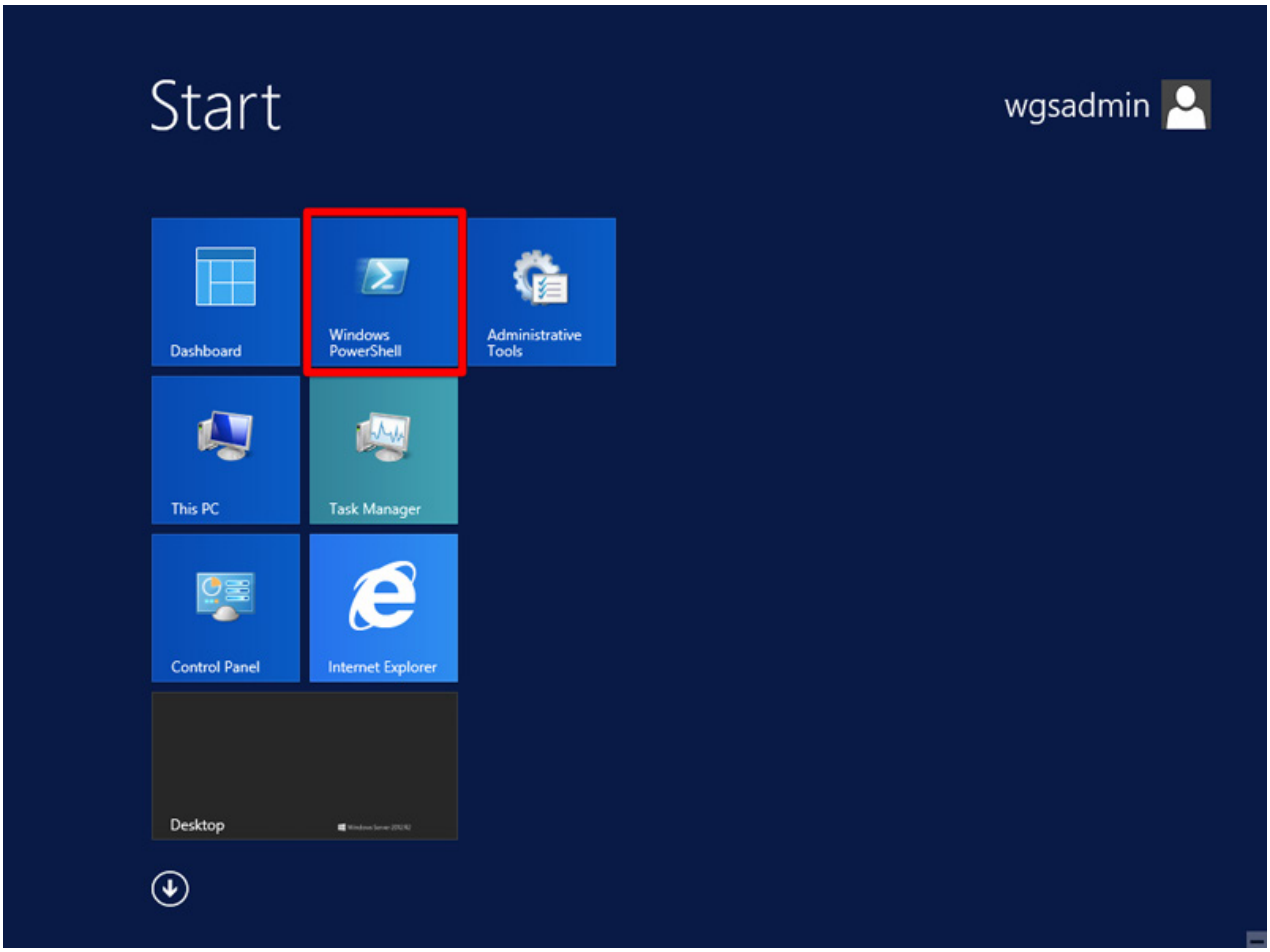


PowerShell scripts can be found online.

One of the scripts that you should be very interested in is a script to require users to change their password. This is something that you can have your users do on a regular basis for obvious security concerns. One such script can be found at this link: http://gallery.technet.microsoft.com/scriptcenter/030d1ff1-df99-47fe-b9c3-ecd4d98ffd7d and you could always automate this task via the **Task Scheduler** administrative tool.

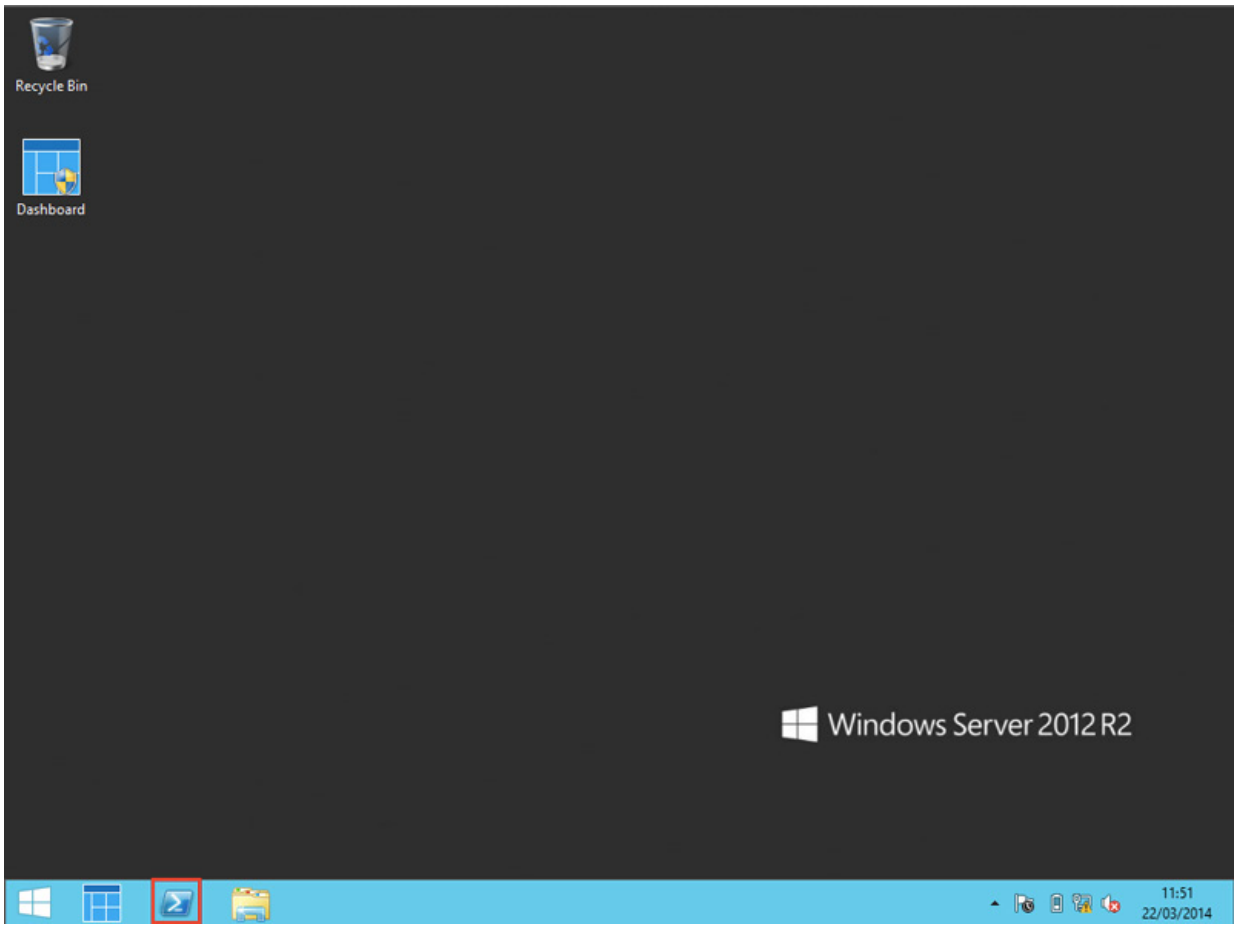
If you have ever used a Command Prompt, you will find Windows PowerShell a greatly enhanced variation of a shell application, designed specifically for system administrators.

To access the PowerShell app, you will find it either on the "modern" Start Screen:



The PowerShell tile in the Windows Server 2012 R2 Essentials Start Screen.

Alternatively, it can be found on the taskbar of the Essentials Desktop.



The PowerShell taskbar icon sits next to the Dashboard icon, by default.

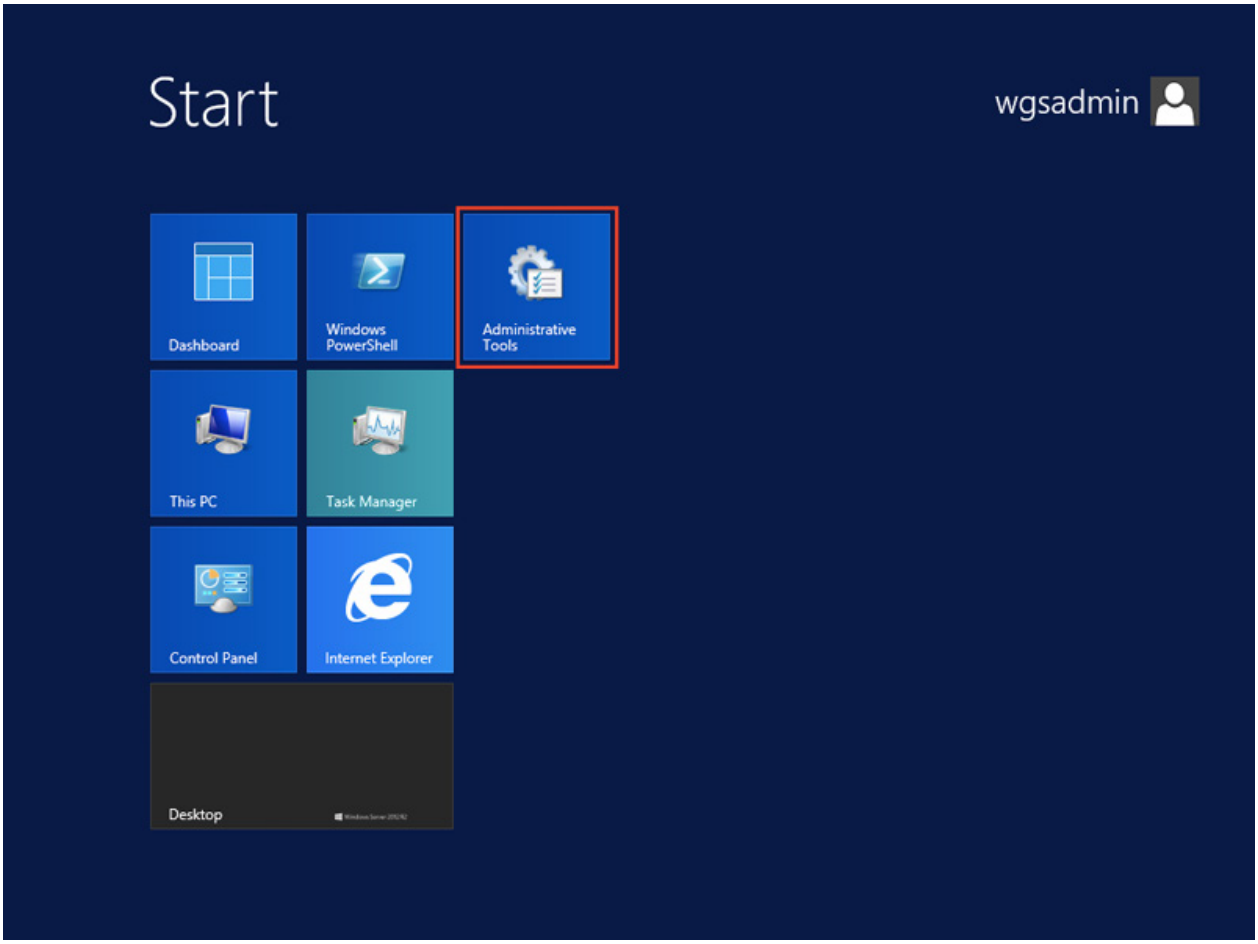
Next up is that suite of tools generally termed **Administrative Tools**.

Administrative Tools

The server administrative tools that ship with Windows Server 2012 R2 Essentials provide the ability to manage almost any level of services that the standard version of Windows Server 2012 R2 provides. For the most part, the Essentials Dashboard provides the necessary tools to manage your server assuming that the needs of your organization are relatively simple. In a small business, growth may dictate the need to access some more advanced administrative tools. If you decide to integrate an Exchange Server for email, host your business website on an Essentials server, or perhaps turn on various server "roles" such as Print or Windows Update services, you will need to access these various tools.

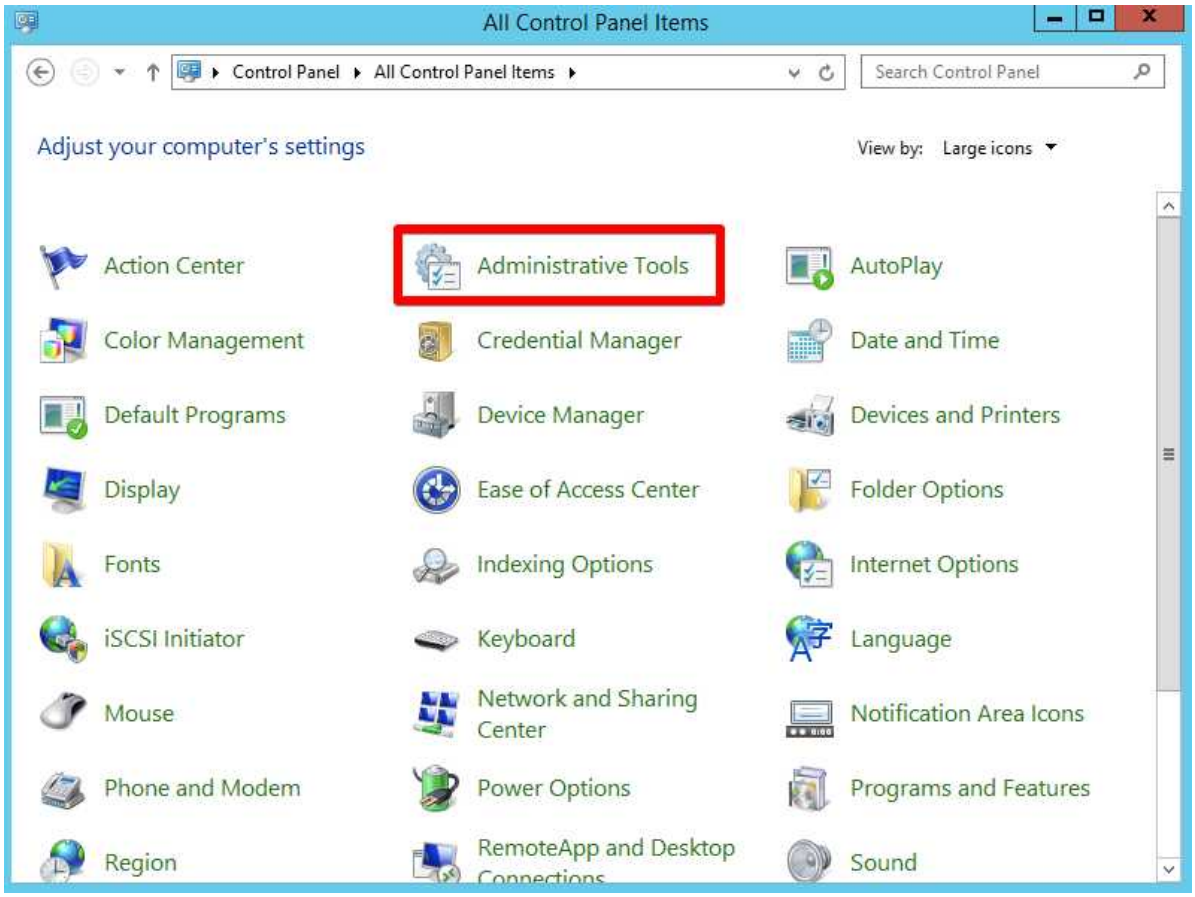
An introduction is simply all we are doing here though as this book is predominately designed to get you up and running with Windows Server 2012 R2 Essentials - we starting to stray into advanced topics that require fuller explanations to really do them justice. I will point you in the right direction of where various modules are and what they do. If you need to delve into the intricacies of server management beyond what the Dashboard provides, you need to devote the time and IT management training required to effectively manage your server at this advanced level.

The Windows Server 2012 R2 Essentials Administrative Tools can be accessed directly from the Server Start Screen:



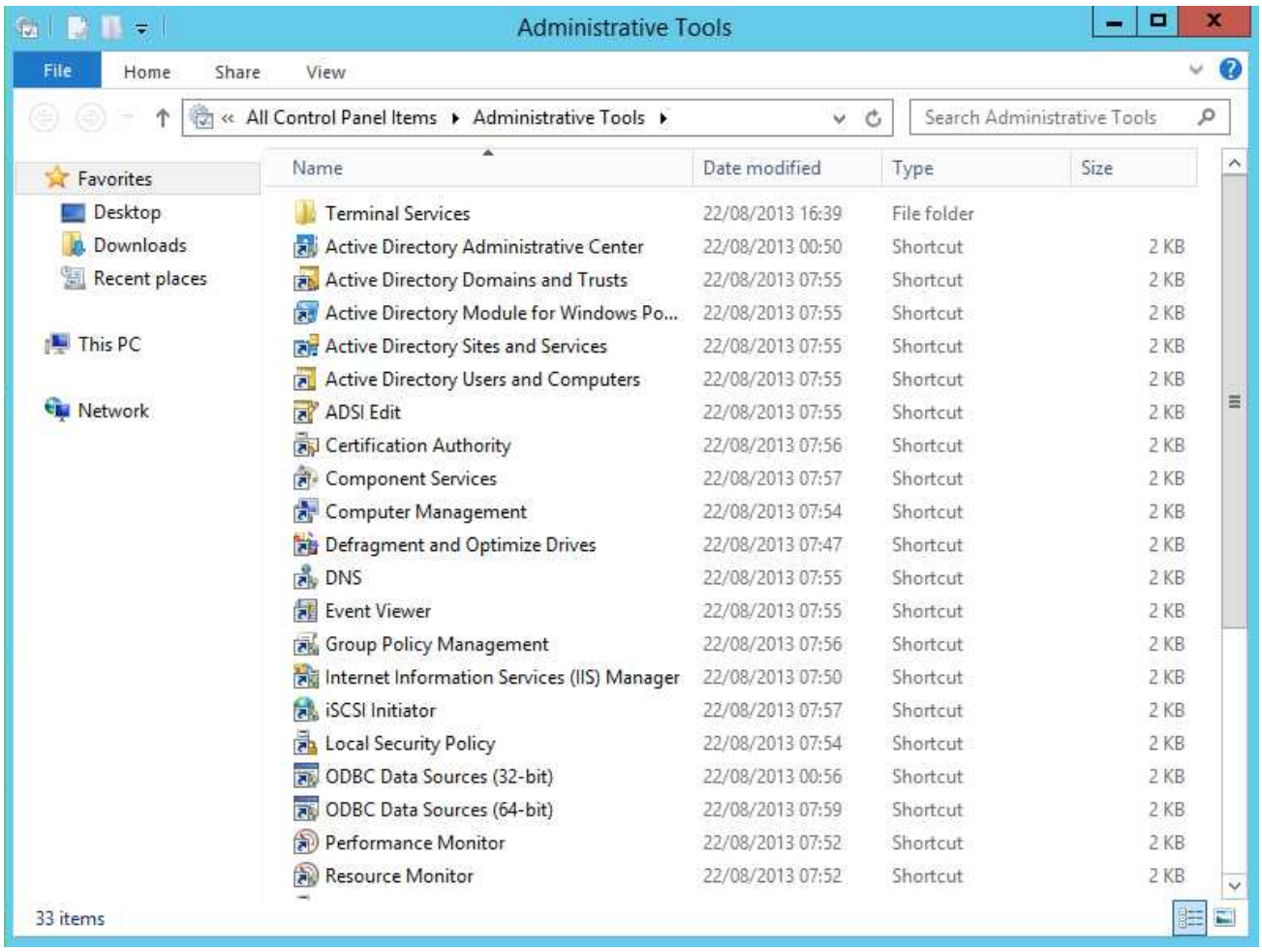
Administrative Tools in the Start Screen.

They're also available from the Control Panel:



Administrative Tools in the Control Panel.

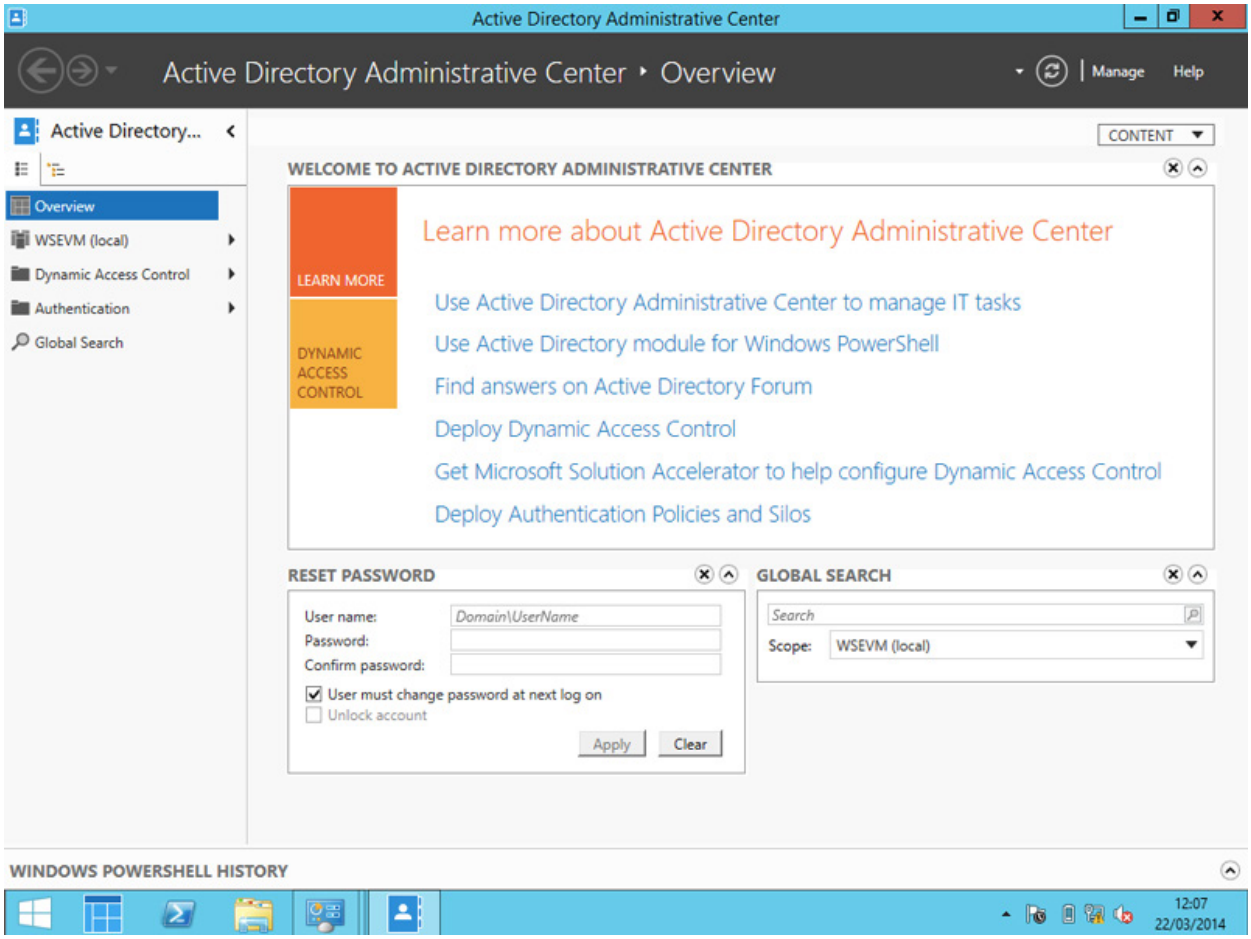
The Windows Server Essentials administrative tool chest:



The tools are revealed!

As you might notice above, PowerShell is a tool that you will also find on a Windows 8 Pro machine. As for the differences between the tools available on the server versus client editions of Windows, the first item you might notice is the Active Directory components.

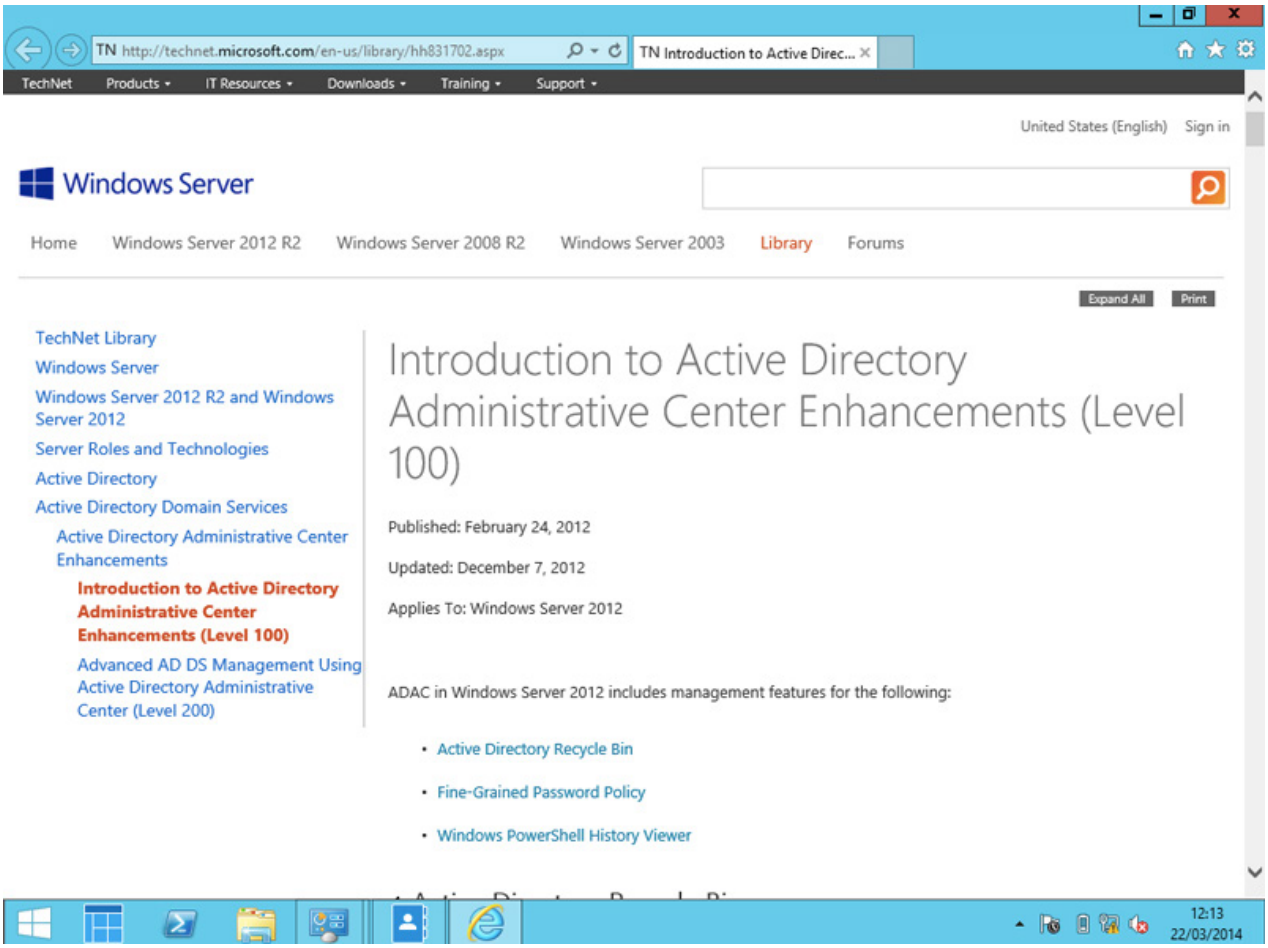
Active Directory



The Active Directory Administrative Center.

Active Directory is the central location for network administration and security. Server computers, such as Windows Server 2012 R2 Essentials, that use Active Directory are called **domain controllers.** These servers manage all users and computers in a Windows domain network, such as user passwords and enforce security policies for all computers.

It is from the Essentials Dashboard that the basic requirements for Active Directory management are handled, thus minimizing the need to make use of other Active Directory tools. If you feel the need to expand your horizons at some point, by all means open the **Active Directory Administrative Center** and give yourself the guided tour. Read around and learn before delving into the details behind Active Directory.

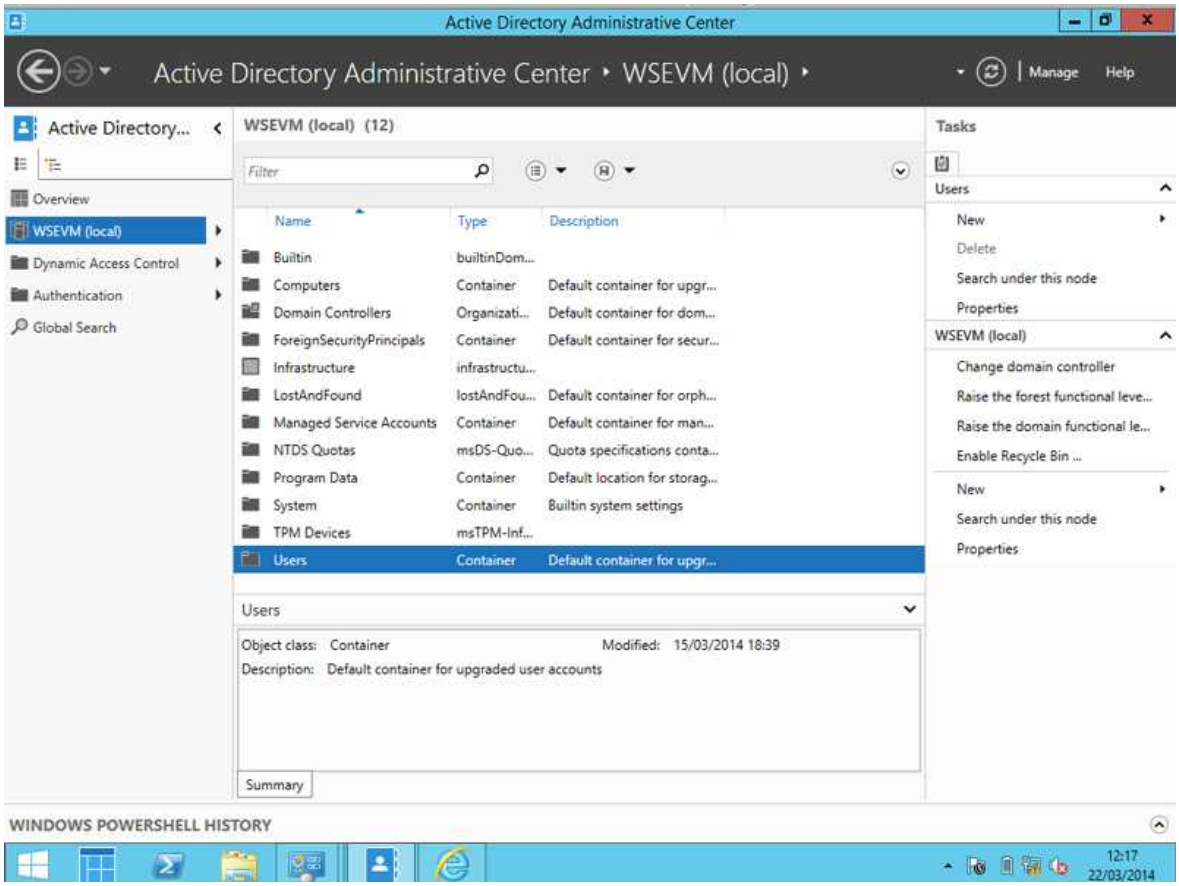


TechNet's walkthrough of the Administrative Center.

Clicking on one the options, such as the first one, "**Use Active Directory Administrative Center to manage IT tasks**" is a link to the Microsoft TechNet guided tour of the this specific topic.

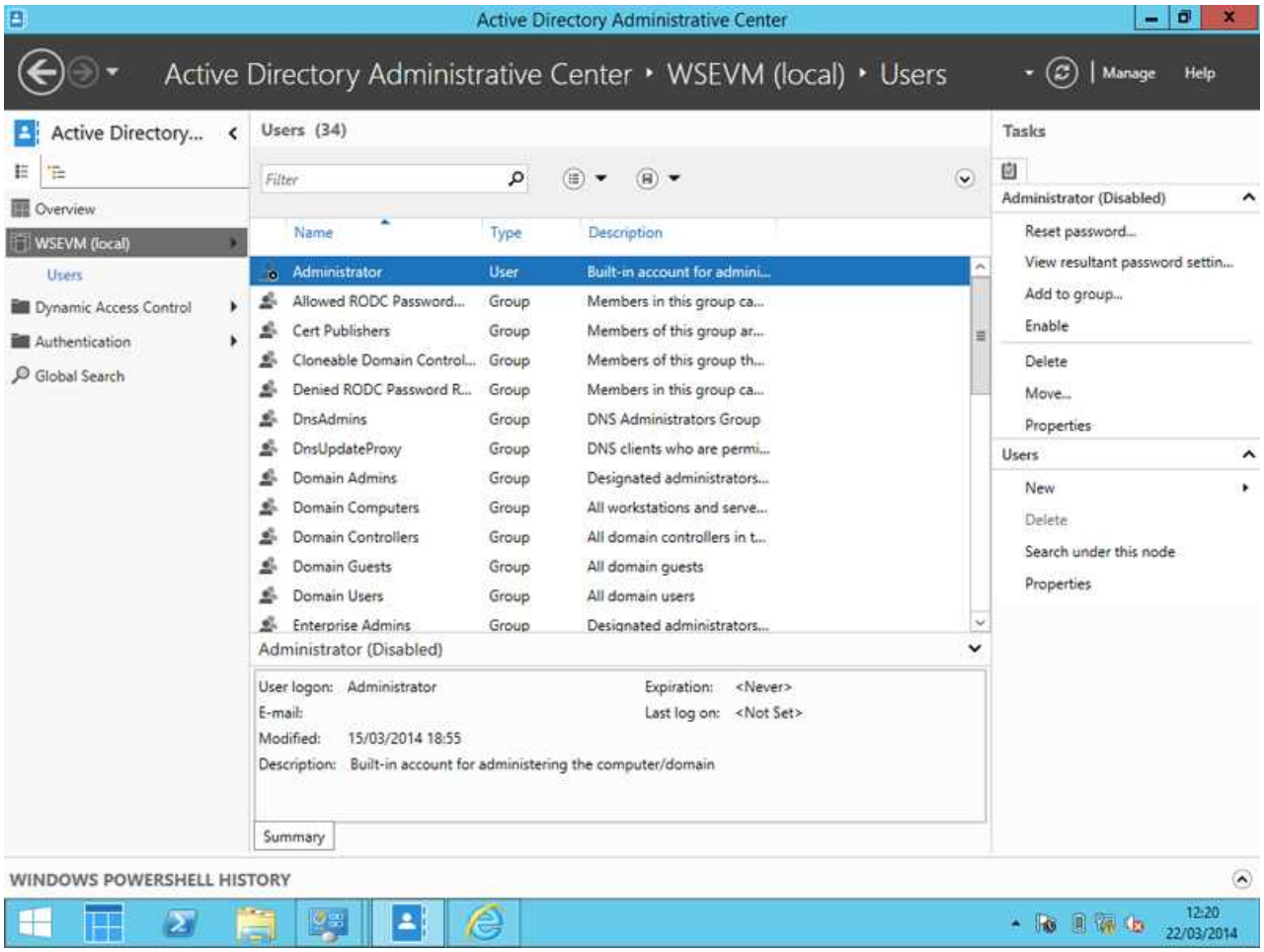
If you really want to go through the various training modules and try out some of the more advanced features in Active Directory, I would suggest you set up a test server with a trial version of Essentials, perhaps in a virtual machine, create a test domain, and then delve into Active Domain as well other server tasks. It is simply much better to break something on a test machine than in a production environment.

As you might notice above, User Password management is up front and center on your administrative task list. As you can see below, there are levels of server tasks that you may never want or need to know more about in a home, SOHO, or small business environment.



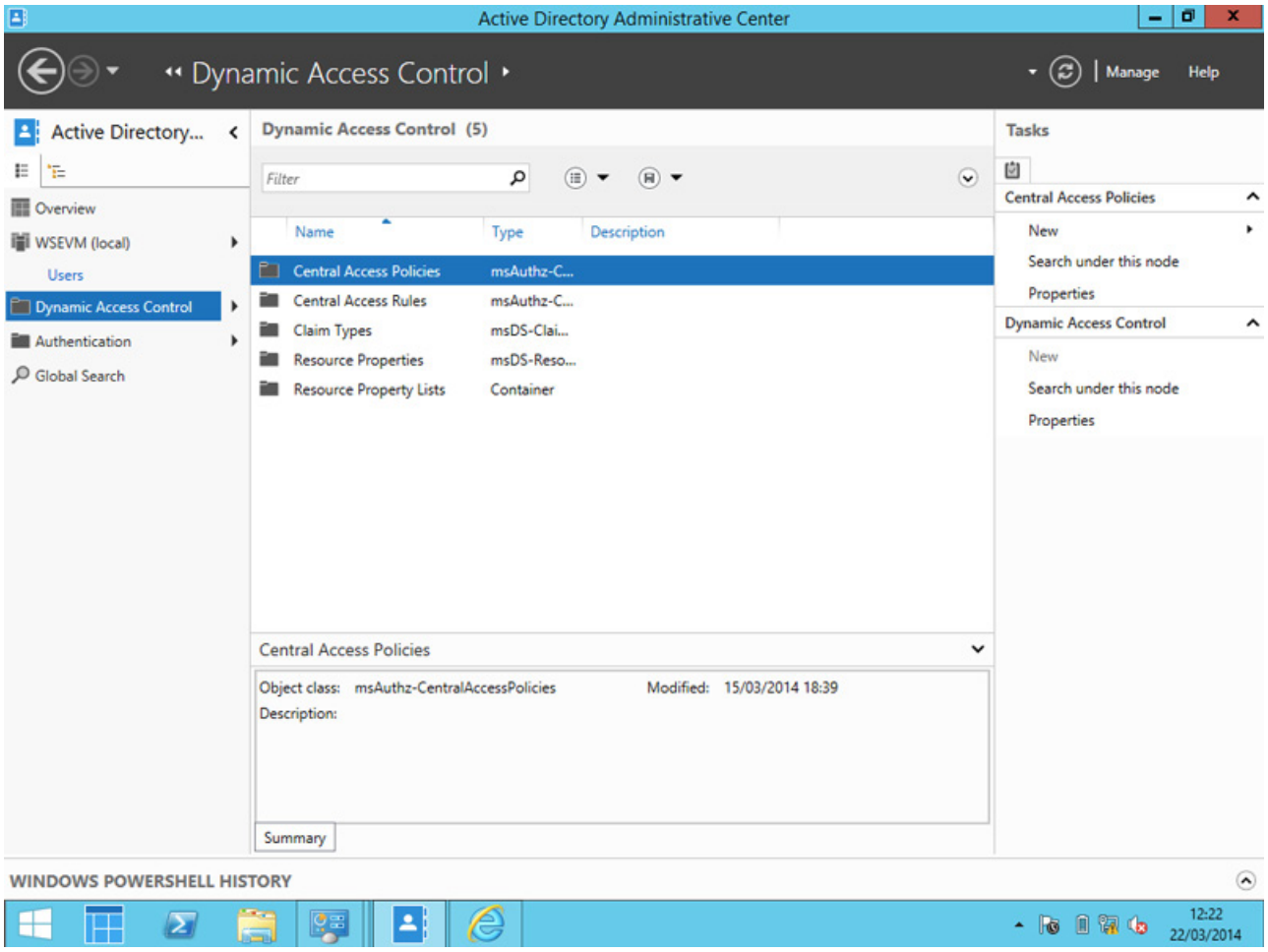
Managing Users.

This is particularly evident when you peruse the **Users** section, as illustrated below. Just as in the Dashboard, you can create "groups" of users that have certain rights; you can then move users from one group to another, or make them members of several groups. There are several built-in groups that you will probably never need or make use unless your needs grow beyond the capabilities of Essentials and into the standard version of Windows Server 2012 R2 - but even then, with the Windows Server Essentials role available for the Standard version of Windows Server 2012 R2, you can see that Microsoft are making server administration simpler for all with the Dashboard.



Extended user management controls are available in the Active Directory Administrative Center.

If you want to take a peek, check out **Dynamic Access Control** which is the set of rules and properties that define central file-access policies at the domain level. This is feature was introduced with Windows Server 2012 and as with most Active Directory components, should be left to those trained to set up and implement them properly. Or, once again, test out various scenarios on a test server before implementing them in a production environment.



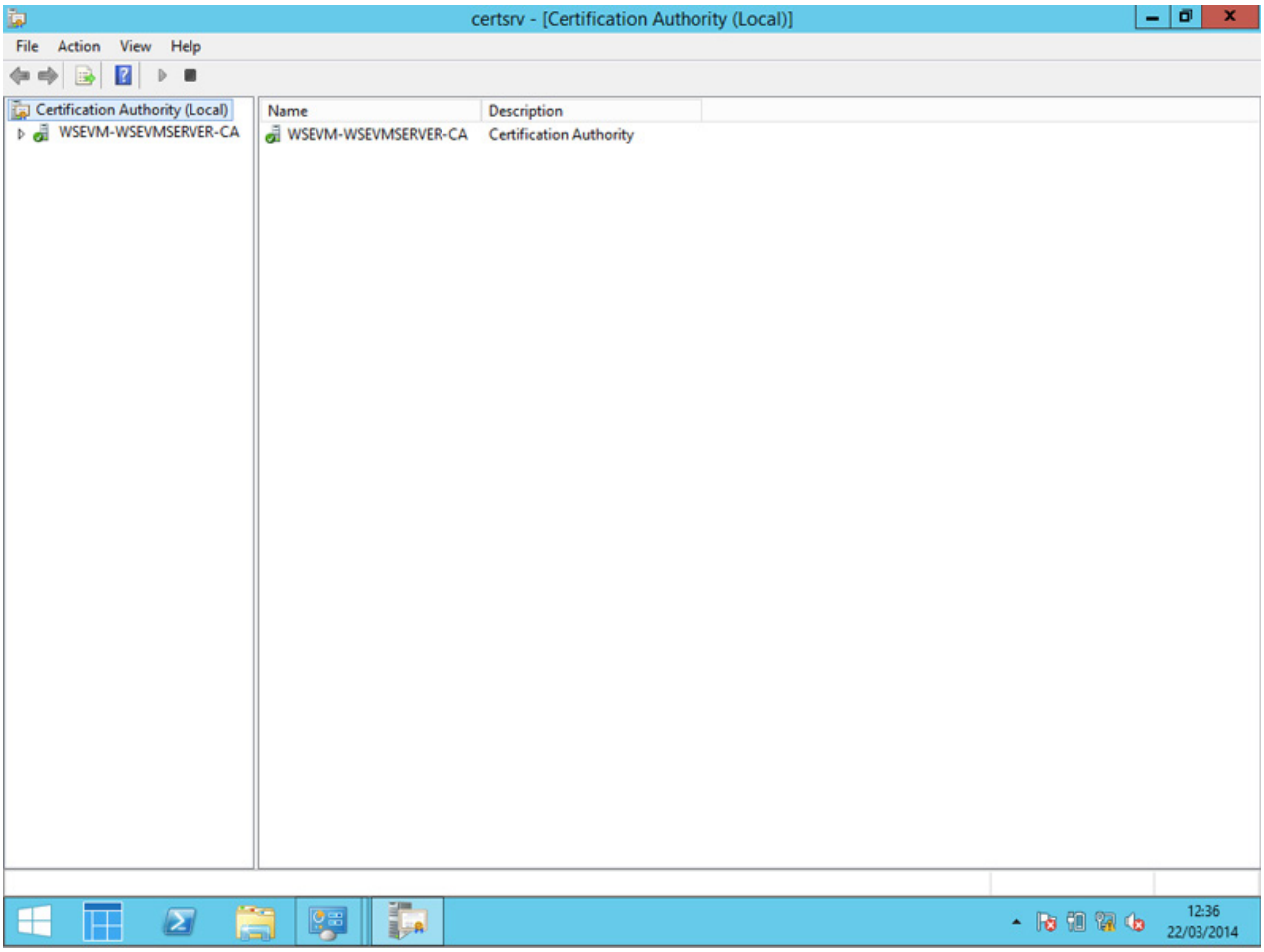
Dynamic Access Controls.

Certification Authority

Certification Authority (CA) is a process that issues digital certificates for security purposes. The digital certificate certifies the ownership of a public key by the named subject of the certificate. For example, a certificate of a "device" called CINDY-PC "certifies" the identity of the device to the domain and server.

Certificate Information.

When opened, the **Certification Authority** module looks like this:

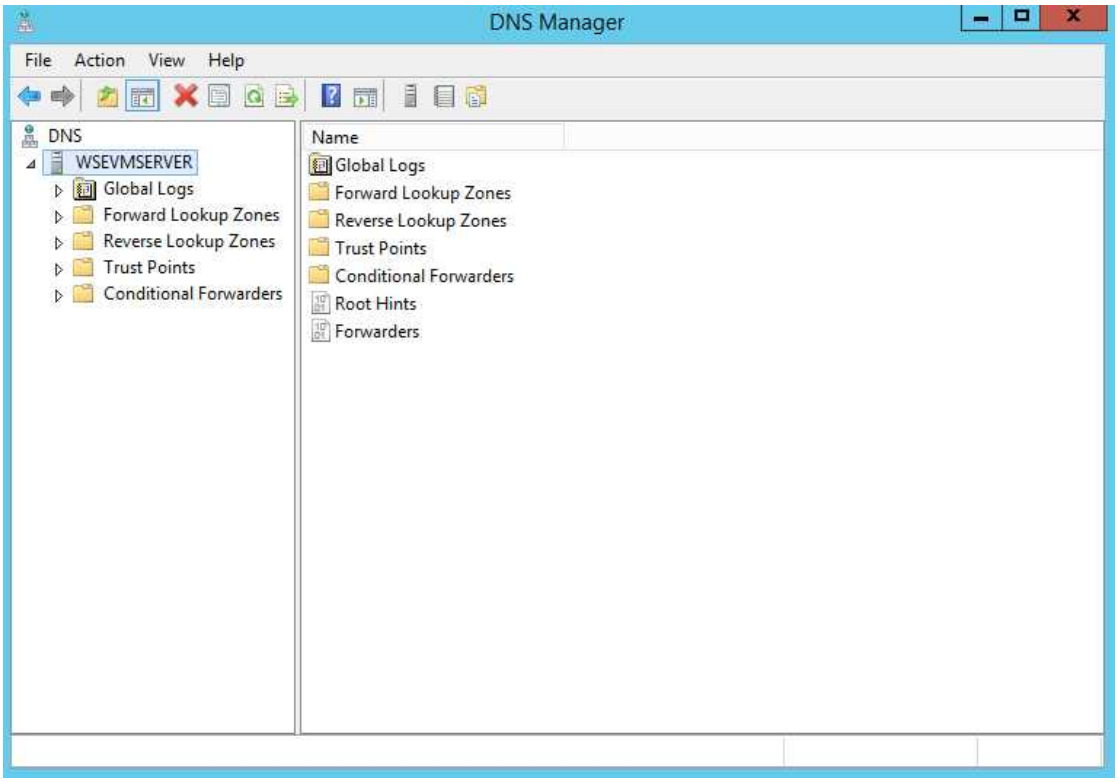


Certification Authority.

For the basic setup of Windows Server 2012 R2 Essentials, you should never have to deal this area of server administration.

DNS Manager

Dynamic Name System (DNS) is the method through which computers and device identify and communicate with each other. DNS is used on the global Wide Area Network (WAN) and locally in a local Area Network (LAN). In a local domain network, the server such as an Essentials server oversees and manages this service.

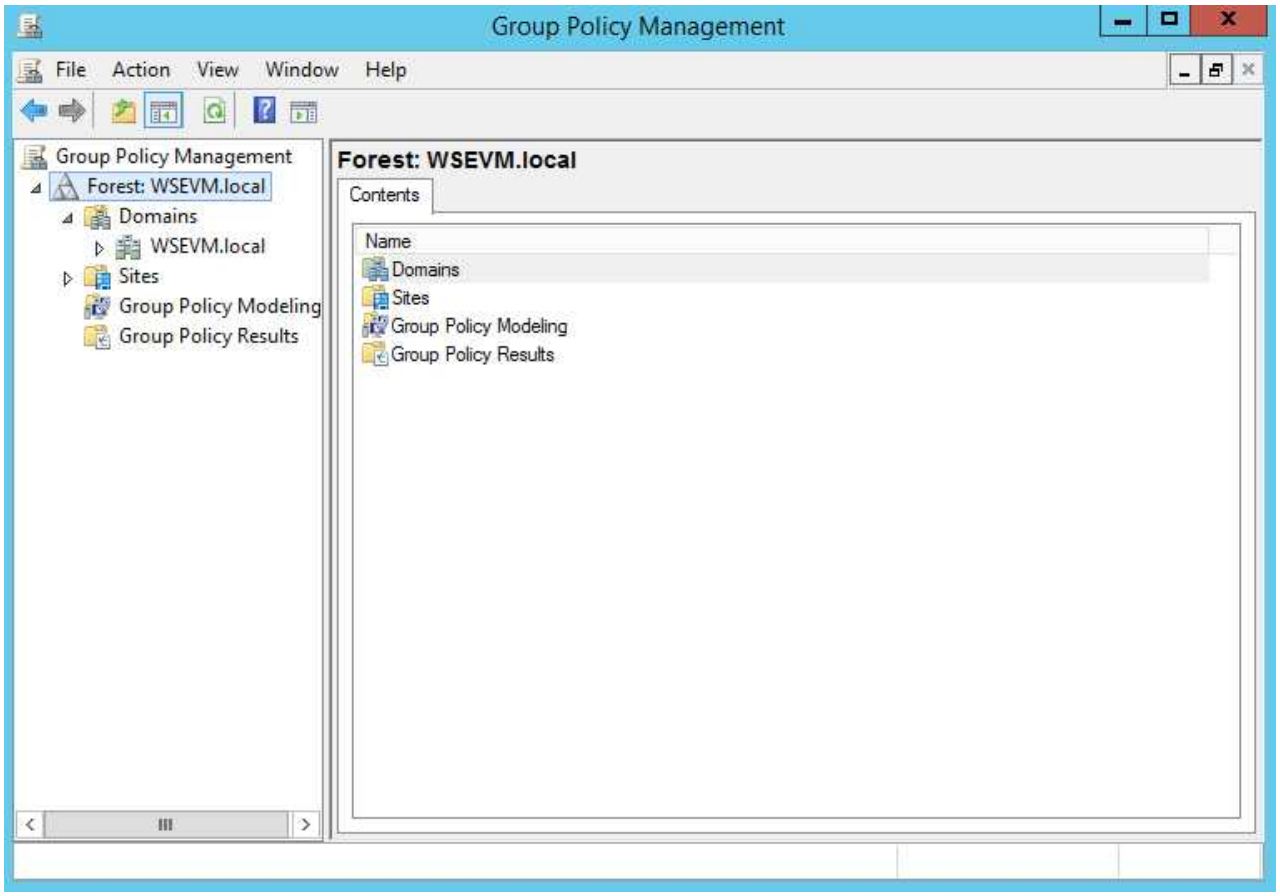


DNS Manager.

As with Certificate Authority, for the basic setup of Windows Server 2012 Essentials, you should never have to deal this area of server administration unless you experience an issue connecting clients to your server, browsing the Internet or logging into the domain.

Group Policy Management

Group Policy Management (GPM) is an area that you may want to explore as the user base of your domain grows. Group Policy allows granular configuration of computer settings, targeted at specific devices, users or groups of users.



Group Policy Management.

The Group Policy Management Console integrates the Group Policy functionality provided by the following tools into a single console:

- Active Directory Users and Computers
- Active Directory Sites and Services
- Resultant Set of Policy
- Access Control List Editor
- Group Policy Management Console Delegation Wizard

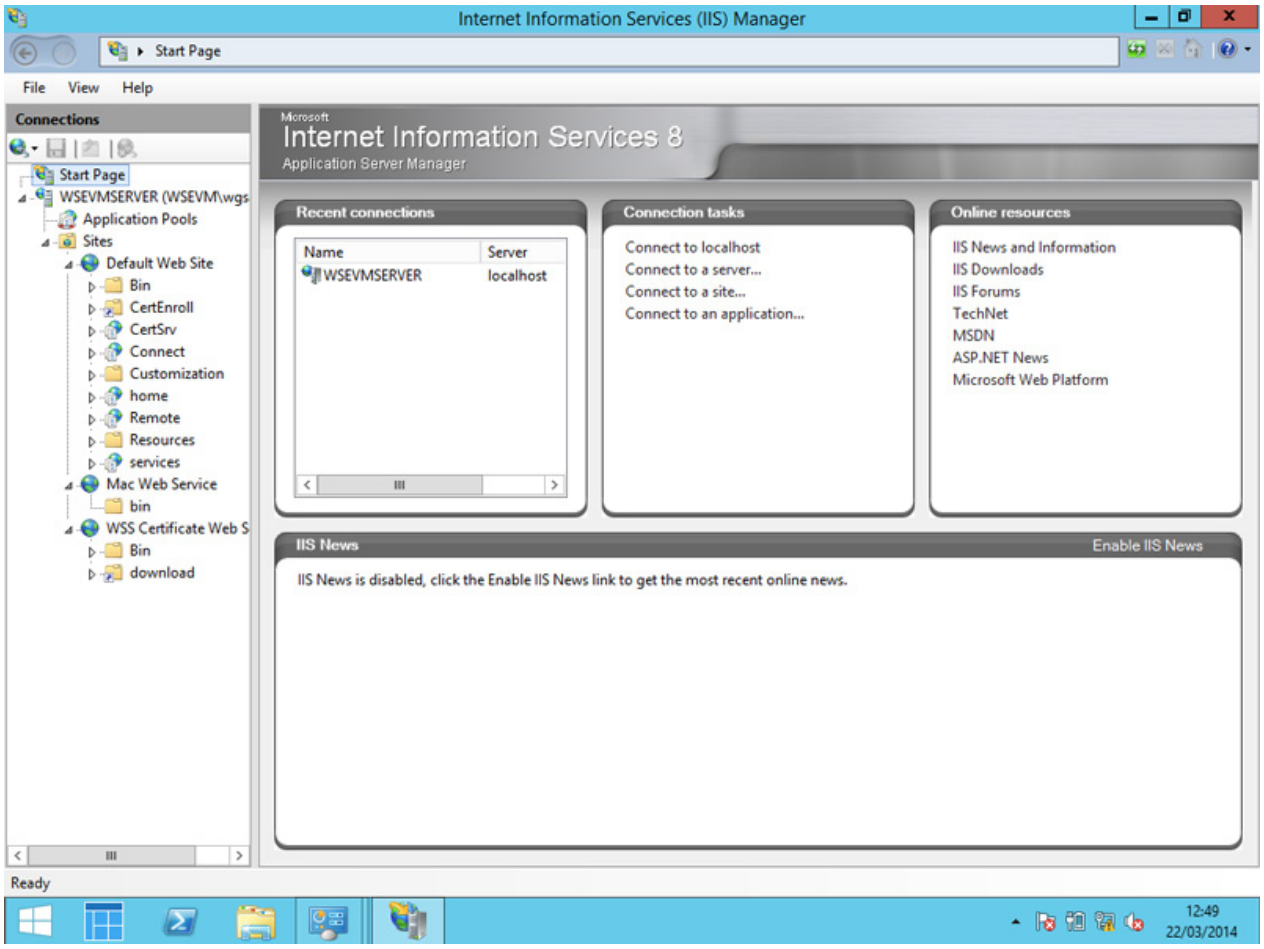
For a simple Home, SOHO, or micro-business, you should never have to deal with GPM. As the user base of a small business grows and becomes more specialized, you may want to make further use of Group Policy to define and deploy security policies on your client PCs. In the last release of Windows Server Essentials, the administrator (you) would have been forced to utilise GPM to de-

fine user groups - now, that's been added to the Windows Server Essentials Dashboard. Over time, perhaps more features will be added to the Dashboard, or alternatively, they may end up in cloud services like Windows Intune (which features similar client security policy management features).

This is a very powerful section of administrative management modules, and should only be used by those who understand how to make use of this module.

Internet Information Services (IIS)

Internet Information Services (IIS) is the web server software module that supports and manages HTTP, HTTPS, FTP, FTPS, SMTP and NNTP protocols. Without IIS, you have no Remote Web Access, you have no VPN. Without IIS, you cannot have an on-site web page for your organization.

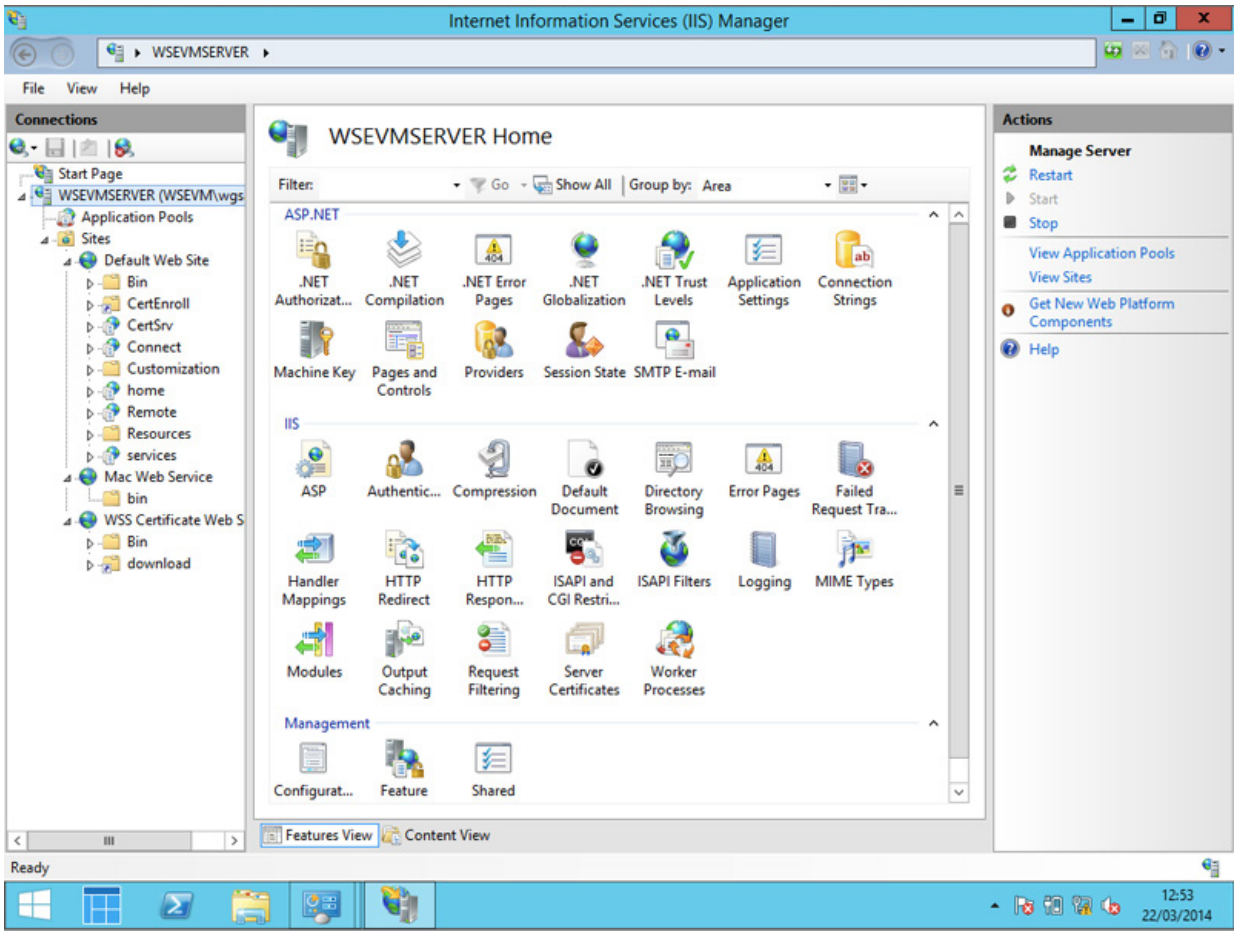


IIS Manager.

If you make any changes or additions to the web services available to Windows Server 2012 R2 Essentials (and we have a number of guides available at We Got Served Store that enhance web

features - http://store.wegotserved.com/collections/windows-server-2012-essentials) then you'll probably pay a visit here.

When first opened, the IIS manager module appears deceptively simple. Once you start expanding the tab on the left, simplicity turns to complexity rather quickly.

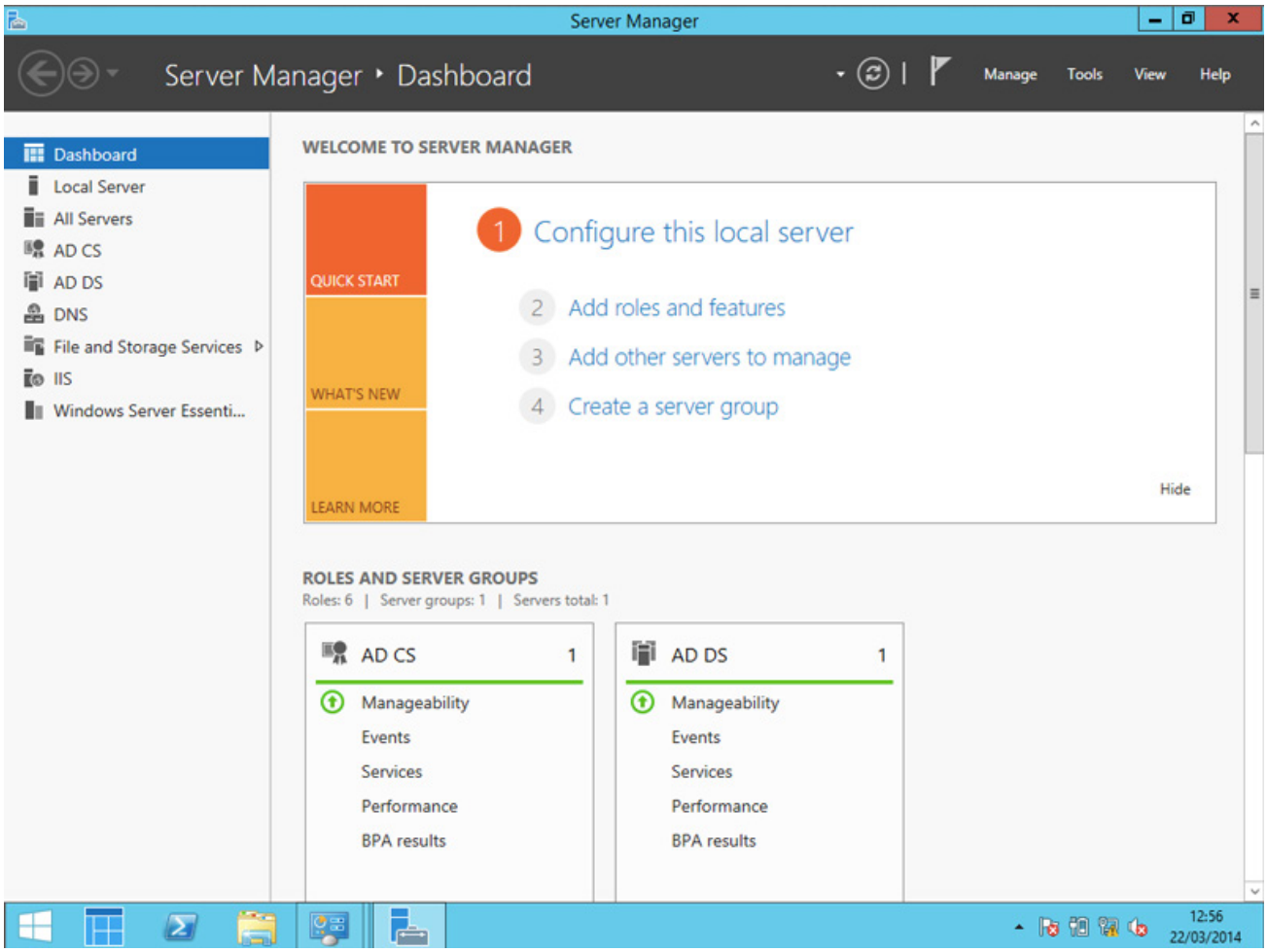


IIS includes granular features to control web access and services configuration.

As with just about every module outlined here in this chapter, you should only use this module once you have obtained the proper training, or are working with detailed walkthroughs.

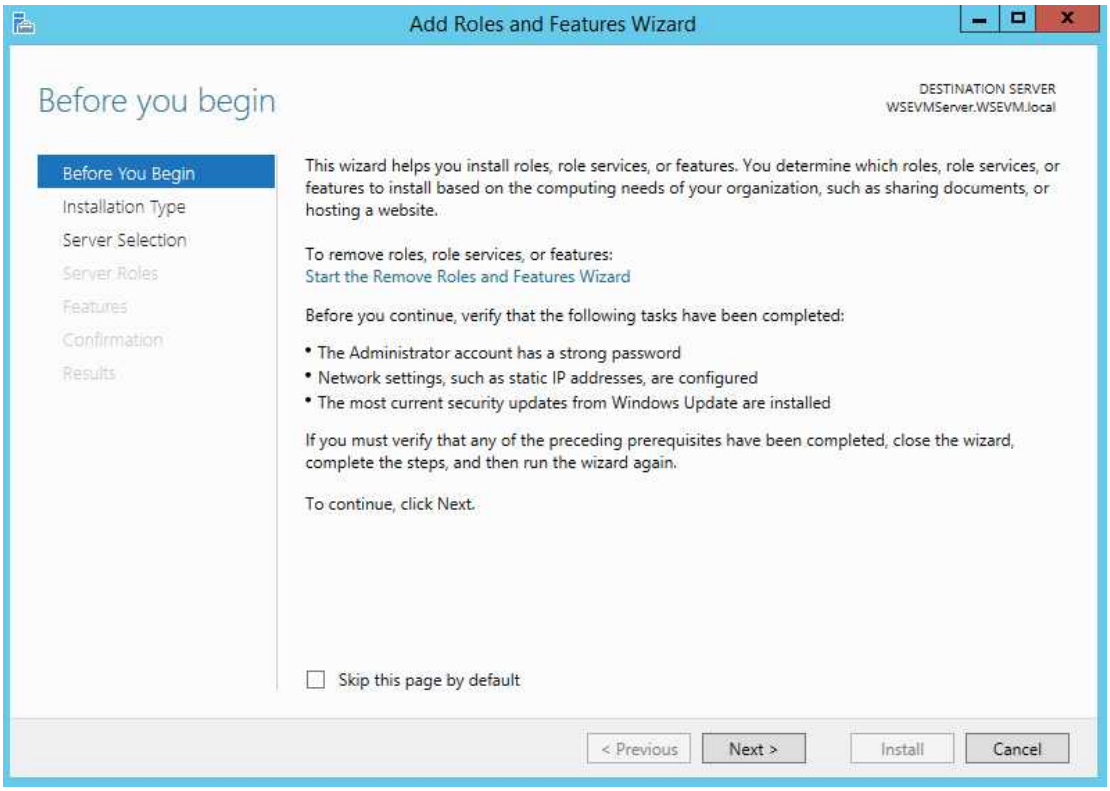
Server Manager

The basis of just about everything we have outlined in this chapter, and those we have not, is setup and made available by the Server Manager through the use what Microsoft terms **roles** and **features**.



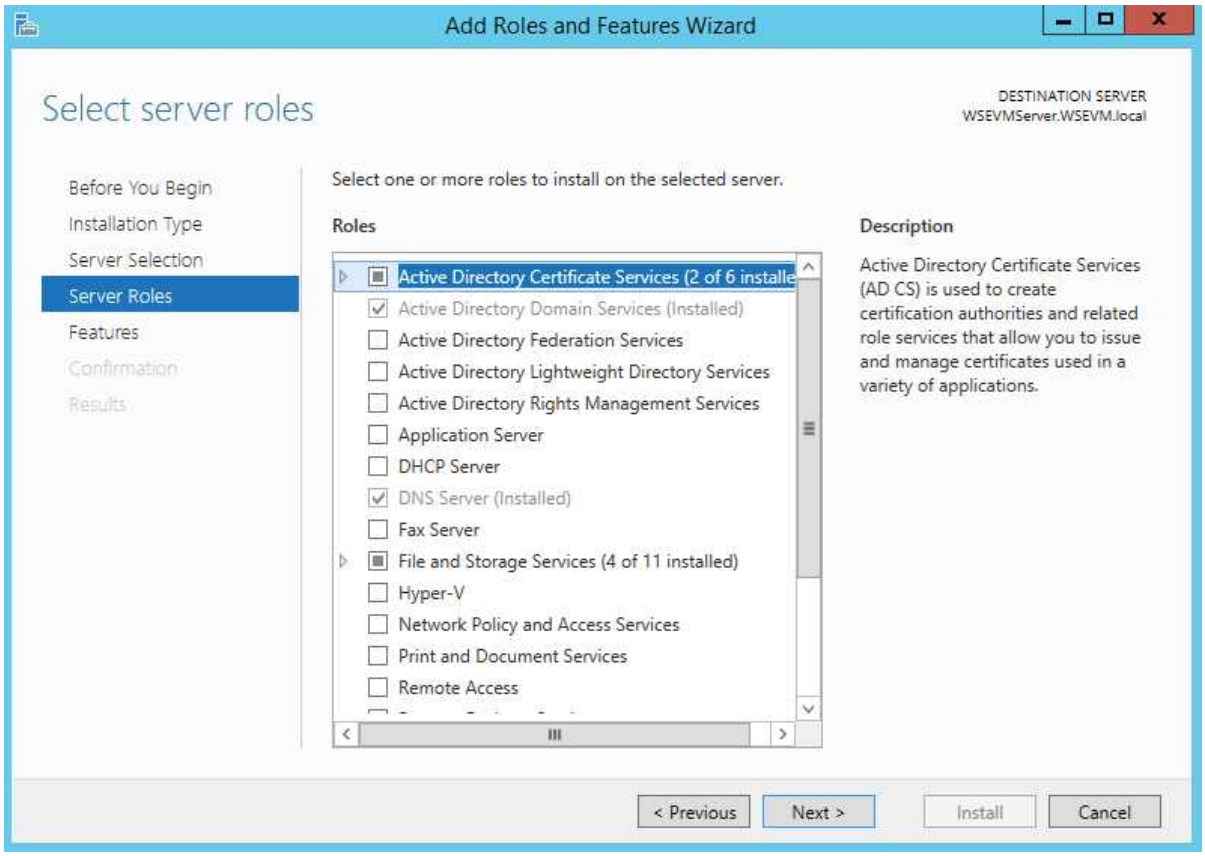
The Server Manager.

You and I (most likely) have a simple, local single-server network, so many of the above options are not needed. To understand roles, we need to access the **Add roles and features** option. After clicking through a few introductory screens, we come to the following window which outlines what roles and features you have installed on your server and what you can add.



The Add Roles and Features wizard.

Many of the roles we mentioned earlier are installed by the default server installation process. Of the roles not installed, you may find yourself interested in some of these at some point.



The list of roles available for installation.

Of particular note:

DHCP Server

Typically a router is setup to distribute IP addresses to the clients in a Local Area Network using Dynamic Host Configuration Protocol (DHCP). Depending upon the size and complexity of a particular organization, one might want to transfer management of this function to the server, which is the purpose of this role. Allowing the server to manage DHCP is a common scenario in larger businesses where it makes more sense to allocate Fixed IP addresses across the network.

Print and Document Services

If you wish to configure your printers and print queues for all of your clients from one location (your server), this where you would set up this role.

Volume Activation Services

If you have volume licensing software rights for your Windows licenses, you need to turn this role

on.

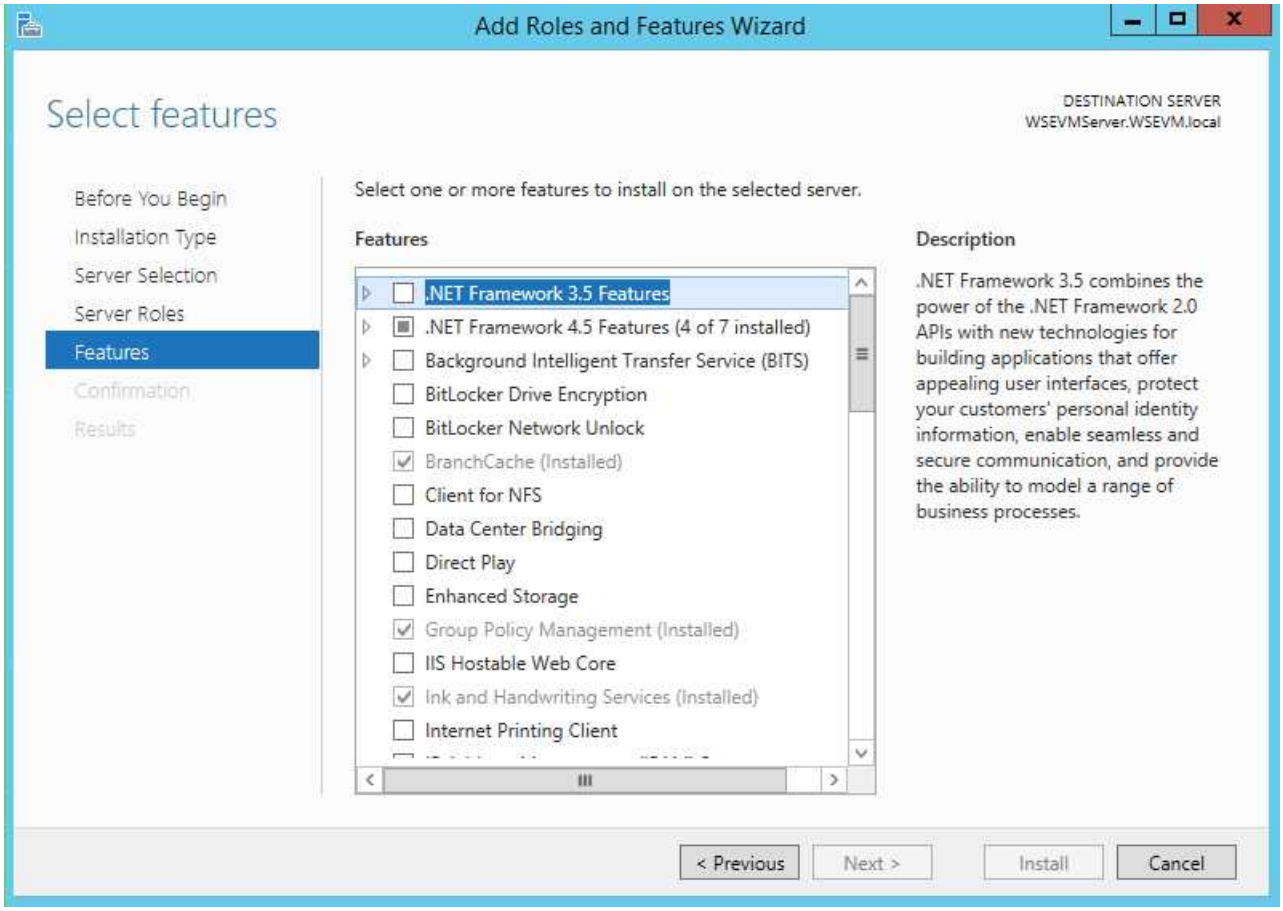
Windows Deployment Services

With this role enabled you can remotely deploy Windows operating system installations over the network.

Windows Server Update Services (WSUS).

This role allows the server to manage and deploy updates to Microsoft products from the Essentials server. This ensures that updates are accomplished in a timely manner and reduces the bandwidth required to download updates on multiple computers.

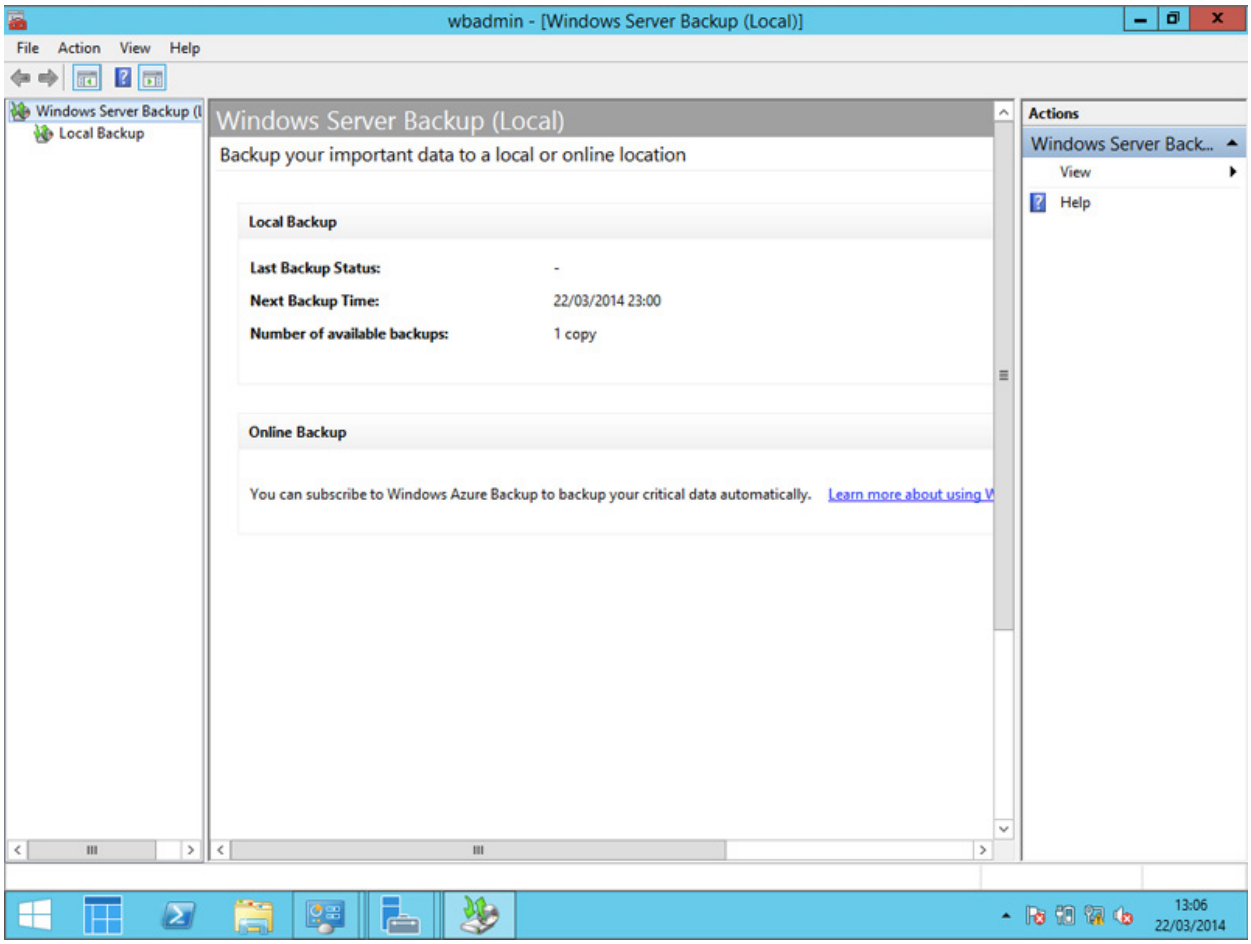
In addition to roles, the Server Manager is the place you can install various server **features**. There is a long list of features one can install, the use of which depends upon the specific needs of an organization.



The features list.

Windows Server Backup

This section is the brains behind the Dashboard Server Backup task. The Administrative Tools lay-out:



Windows Server Backup in Administrative Tools.

You may ascertain that there is minimal need to access the Windows Server Backup feature from the Administrative Tools list. It is simply managed quite nicely from the Dashboard.

That finally takes us through the list of server-specific administrative tasks you can perform. You really need to learn more about many of these features if you have no training, or minimal training, in server management. If you do not know what you are doing, it is quite easy to get yourself in trouble. If you break your server, getting it up and running again can get quite expensive in wasted resources. It is (almost) always a good idea to experiment using a test server before implementing it in a production environment. It is ALWAYS a good idea to have a server backup if all else fails!

What Happens Next?

Sad to say, we're now at the end of the book. We've walked through installation, configuration and management of your new Windows Server 2012 R2 Essentials server. The obvious question is, "What Next?"

For some, the answer might be "nothing". You may be done except for whatever server maintenance tasks you need to perform from time to time. Maintenance in the form of User management, Device management, possible hardware updates/upgrades in both the server and clients. Once that server is set up properly, however, you can hopefully walk away from it, and spend a minute or two each day checking out any health alerts.

For a home user, you may be thinking about how to make additional use of, or extend, the multimedia feature set of your Essentials server. Perhaps you wish to set-up and maintain a personal blog and forum on your server? Now that your server platform is built and working, there's a whole lot more to explore - we'll meet again, I hope, to talk about some exciting server projects!

For a small business user, you may be thinking how to set up and deploy applications like QuickBooks for use with your server. You may want to integrate email on your server through the use of an on-premise or hosted email server. Perhaps you wish to setup and maintain a website on your server.

For a SOHO user, perhaps you want to do a little of both.

Just remember the Golden Rule for any computer: before you try, back it up! For a server, there is Golden Rule #2: before you try it on your production server, try it on test server first! If you run into a problem, check out the online resources that were mentioned earlier on in this book.

Whatever you do next, congratulations on getting your server up and running and I wish you many happy and productive years with Windows Server 2012 R2 Essentials!

Glossary

Active Directory

Active Directory is a directory service that provides a central location for network administration and security.

Administrator

A user who has the rights to administrate and manage a server or a client computer

Add-in

An application that integrates into the Windows Server 2012 R2 Essentials Dashboard.

Anywhere Access

Anywhere Access consists of Remote Web Access, virtual private network, and DirectAccess features in Windows Server 2012 R2 Essentials.

BIOS

Basic Input/Output System is the firmware that is the interface between the operating system and the hardware of a computer. The BIOS initializes and tests the system hardware components, locates and loads an operating system.

BMR/Bare Metal Restore

Bare Metal Restore is a computer restoration method where all the information from a hard drives or drives is available in a form which allows one to restore a computer system from "bare metal" without the need of a previously installed operating system.

BPA/Best Practices Analyzer

Best Practices Analyzer is a server management tools that scans your server configuration and recommends changes to optimise its performance

CD/Compact Disc

Compact Disc is an optical disc format originally conceived as a replacement for vinyl albums, and eventually replaced floppy discs as the media by which programs were installed from and data was written to for archiving purposes.

Client

The physical devices connected to the server network - they could be PCs, Macs, Printers, Mobile Devices or other hardware.

Cloud

Cloud, or Cloud computing, is a general term that relates to products, services and data that are available from or delivered over a network, typically the Internet.

Connect

Microsoft Connect is a customer portal owned by Microsoft from which one can:

- Find Microsoft products that are currently accepting feedback from the community
- Participate in feedback programs managed by Microsoft product teams
- Download and test beta products
- Submit bugs and suggestions for future releases of Microsoft Products
- Vote, comment, and validate other people's feedback

CPU

The Central Processing Unit is the device in a computer that carries out the instructions of a computer program by performing the basic arithmetical, logical, and input/output operations of the system.

Dashboard

The Windows Server 2012 R2 Essentials administrative application which simplifies the tasks that are needed to manage a Windows Server 2012 R2 Essentials network and server.

Data Redundancy

Data redundancy is a general term that can be given to various methods or technologies that provide replication of data on two or more hard drives.

DHCP

Dynamic Host Configuration Protocol is a feature available on routers and servers which distributes and manages IP addressing on clients across the network.

DirectAccess

DirectAccess, also known as Unified Remote Access, is a VPN-like technology that provides Intranet connectivity to client computers when they are connected to the Internet.

DVD

An optical disc storage format that offers higher storage capacity than Compact Discs while having the same dimensions.

Essentials or Server 2012 R2 Essentials

Shortened version for Microsoft's Windows Server 2012 R2 Essentials product.

eSATA

External Serial Advanced Technology Attachment is an external storage device interface for SATA technologies. It can be used to connect one or many hard drives to a device.

Ethernet

A wired computer networking technology for local area networks (LANs).

File History

File History is a Continuous data protection component of Windows Server 2012 R2 Essentials. File History automatically creates incremental backups of files stored in Libraries and user-specified folders on a client computer to the File History Backups folder on the server. Users can then track and restore specific revisions of files using the "History" functions in File Explorer. File History utilizes the USN Journal to track changes, and simply copies new versions of files to the backup location.

Folder Redirection

Folder Redirection refers to the process of rerouting I/O to and from standard folders to storage elsewhere on a network. Clients using folder redirection will work in a similar way as if they folders were stored locally.

FTP

File Transfer Protocol - a technology for transferring files and folders across local and remote networks.

FTPS

File Transfer Protocol Secure - a securely encrypted implementation of FTP.

GB

A Gigabyte refers to 1 billion bytes.

GHz

Refers to frequencies in the billions of cycles per second.

Group Policy

Group Policy provides the centralized management and configuration of operating systems, applications, and users' settings in an Active Directory environment.

HTTP

Hypertext Transfer Protocol - the technology used to transfer website data across the Internet,

HTTPS

Hypertext Transfer Protocol Secure - a securely encrypted implementation of HTTP.

Internet Information Services

Internet Information Services, or IIS, is the web server software module that supports and manages HTTP, HTTPS, FTP, FTPS, SMTP and NNTP protocols.

IP

Internet Protocol - the technology which governs the rules of data transfer across and between networks.

IT

Information Technology refers to the use of computers and related equipment to store, retrieve, transmit and manipulate data.

LAN

Local Area Network - the network of computers arranged and connected in your local premises.

Launchpad

An application that is installed on a client computer. The Launchpad provides client users access to various features of the server, including computer backups, shared files and media, and Remote Web Access.

LOB

Line Of Business (in computing) refers to a set of computer applications perceived as vital to running a business.

Malware

Malware is a set of malicious software applications designed to disrupt, steal data, and/or gain access to a computer system for other reasons that are harmful to you.

MSDN

Microsoft Developer Network is the part of Microsoft that deals with the company's relationship with hardware/software developers and testers.

NAT

Network Address Translation is the process of modifying IP address information in IP packet headers while in transit across a traffic routing device.

OEM

Original Equipment Manufacturer refers to a company that originally manufactured a product that are subsequently purchased by another company and branded for retail under that company's brand name.

OS

Operating System, e.g. Windows

PC

Personal Computer refers to a general-purpose computer which is intended to be operated directly by an end-user. A PC typically refers to a computer powered by a Microsoft operating system.

PowerShell

Windows PowerShell is a task-based command-line shell and scripting language designed especially for system administration.

RAID

Redundant Array of Independent Disks is a storage technology that combines multiple disk drive components into a single logical unit. Data is distributed across these drives in one of several ways depending on the level of redundancy and performance required.

RDC

Remote Desktop Connection is the ability to access a computer in such a manner that is the equivalent of you sitting directly in front of that computer.

Remote Access

The ability to access a computer's resources from a remote location outside the Local Area Network.

RWA

Remote Web Access refers to the ability to open a web browser and access a Windows Server 2012 Essentials network from a remote location. You can:

- Access shared files and folders on the server.

- Play music and videos using a web-based Media Player.
- View pictures and play picture slideshows.
- Directly access your server and home computers, equivalent to a Remote Desktop Connection

SBS

Small Business Server refers to a line of operating system server products developed by Microsoft to handle the server needs for businesses typically up to 75 users. The SBS product line was replaced by Windows Server 2012 Essentials.

Shadow Copy

Shadow Copy is a method that allows taking backup snapshots of data on a specific hard drive at a specific point in time over regular intervals.

SMTP

Simple Mail Transfer Protocol is an Internet standard for e-mail transmission across Internet Protocol networks.

SOHO

Small Office/Home Office refers to a category of business that involves from 1 to 10 workers and are typically operated from a home.

Storage Spaces

Storage Spaces is a storage technology that allow hard drives of various sizes to organized into a single logical unit similar to RAID 0, RAID 1, or RAID 5 arrays.

TB

A Terabyte refers to 1 trillion bytes

Time Machine

Time Machine is a backup utility developed by Apple. Time Machine creates incremental backups of files that can be restored at a later date. It allows the user to restore the whole system or specific files from the Recovery HD.

TLER

Time Limited Error Recovery is a feature of hard drives which allow a system administrator to configure the amount of time a drive's firmware is allowed to spend recovering from a read or write error which allows for improved error handling in a RAID environment.

uPnP

Universal Plug and Play refers to a set of networking protocols that permits networked devices to automatically establish working configurations with other devices on that network.

User

Individuals who have a server account

USB

Universal Serial Bus is a standard that defines the cables, connectors and communications protocols used for connection, communication, and power between electronic devices.

VM

A Virtual Machine is a virtual simulation of a machine on a physical target machine. In the server world, one physical computer may run several virtual server machines.

WHS

Windows Home Server is a home server operating system from Microsoft. The original version of Windows Home Server was based on Windows Server 2003 R2 and was intended to be a solution for homes with multiple connected PCs to offer file sharing, automated backups, print server, and remote access. The Windows Home Server product line was replaced by Windows Server 2012 Essentials.

Wi-Fi

A technology that allows an electronic device to exchange data wirelessly over a Local Area Network.

Xbox 360/Xbox One

Entertainment consoles developed by and produced for Microsoft.