

Microsoft Exchange Server 2010 Architecture

Management and Monitoring

Remote PowerShell

Remote PowerShell extends PowerShell from servers to client computers so commands can be executed remotely.

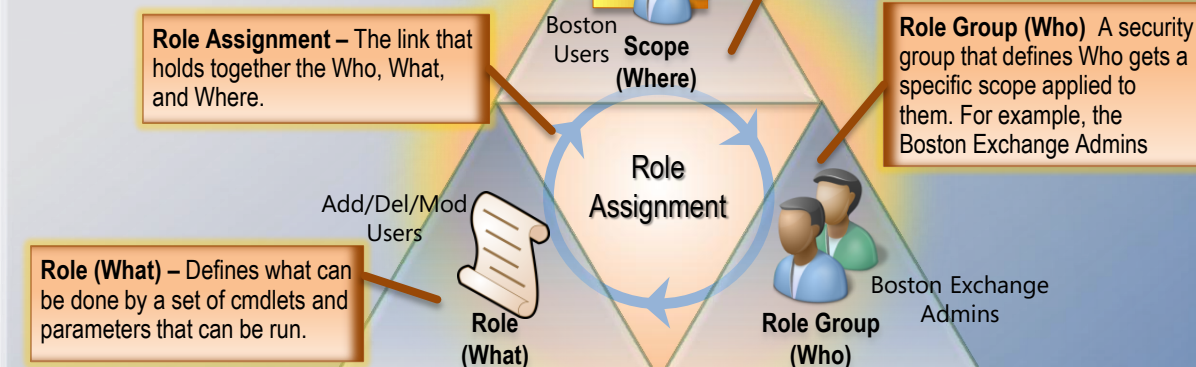
- Exchange Server 2010 takes advantage of new PowerShell v2.0 and Windows Remote Management
- All Exchange management tools are built on Remote PowerShell.
- Remote PowerShell enables administrators to run Exchange cmdlets on computers without the need to install Exchange management tools.

Exchange Control Panel

Management Tools now include the Exchange Control Panel (ECP). A web-based management console accessed from browsers that have no Exchange client-side software installed. ECP gives users the power to manage distribution lists, track messages, and edit personal information.

Administrators	Specialty Users	Users
Recipient management	Perform multi-mailbox searches	View account information and manage settings
Manage role groups and role assignment policies	Manage common settings for other users	Manage group ownership and membership

Role Based Access Control (RBAC)



Role Based Access Control (RBAC) enables you to control, at both broad and precise levels, what administrators and users can do. RBAC also enables you to more closely align roles you assign users and administrators with the actual roles they hold within your organization.

- Three ways of assigning permissions:
 - Management Role Groups
 - Management Role Assignment Policies
 - Direct User Role Assignment
- Configuration done using Exchange Control Panel
- Dozens of default roles pre-configured and easily customizable
- RBAC is built into all management tools

Monitoring

Monitoring Exchange components is important to understand the health state of servers and server roles.

- Out of the box synthetic transactions via Remote PowerShell (test-*)
- Complete management pack for System Center Operations Manager



Unified Messaging Server Role

Call Answering Rules

New in Exchange Server 2010 Unified Messaging (UM), users can configure how incoming phone calls are handled with custom rules configured in the Exchange Control Panel.

Each Call Answering Rule has two parts:

- Conditions** – what criteria must be met before the rule will be applied to an inbound call.

- If the caller is...
- If during this period...
- If my schedule shows that my status is...
- If automatic replies are turned on...

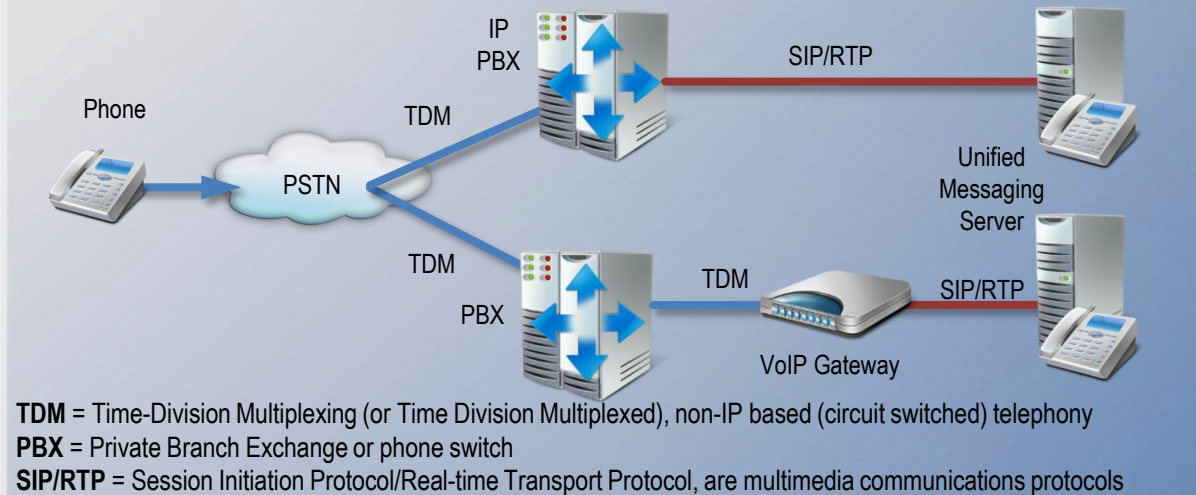
- Actions** – what actions will be presented to the caller when all the conditions are met. The caller will hear the options and select using the phone pad.

- Find me
- Transfer the caller
- Leave a voicemail

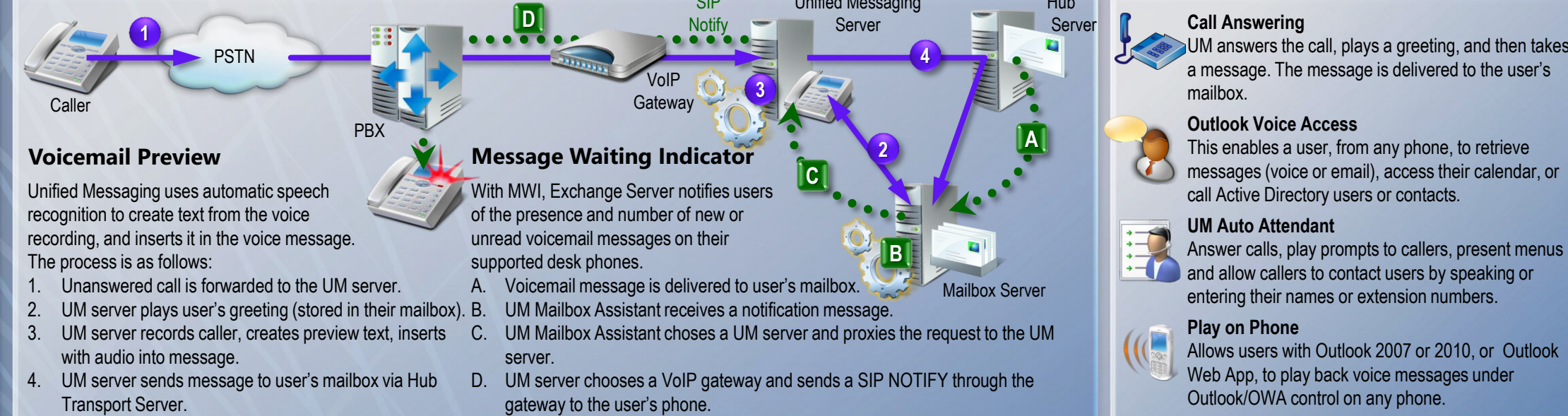
Integrating Voice with Exchange

There are two main types of integration between a PBX and Unified Messaging.

- For IP enabled PBX, it may be possible for the PBX to communicate directly with the Unified Messaging server.
- For a legacy PBX, Unified Messaging requires a VoIP gateway to convert TDM-based voice traffic to VoIP.



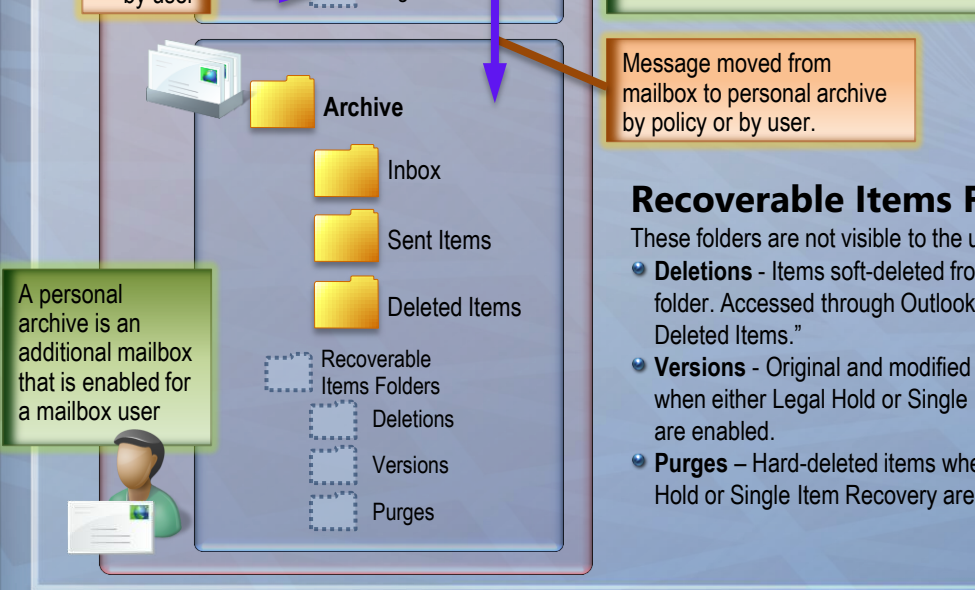
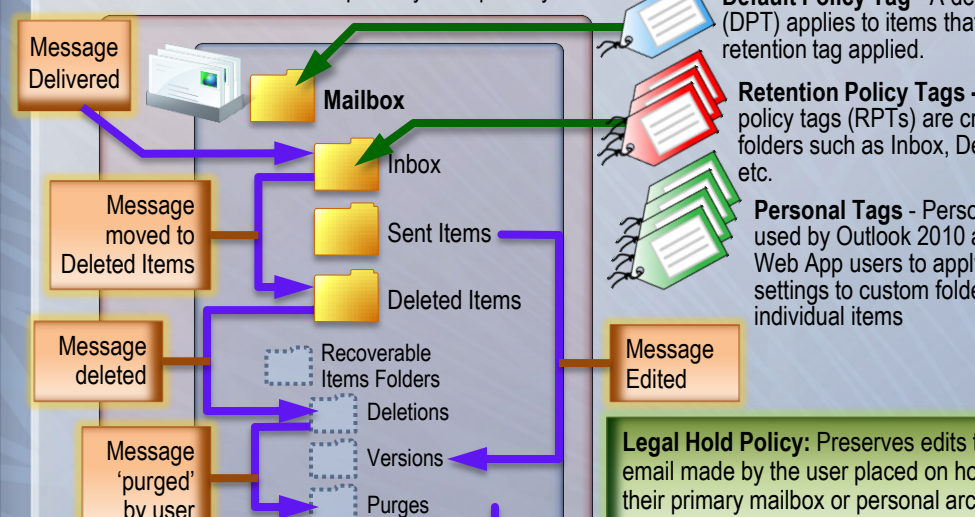
TDM = Time-Division Multiplexing (or Time Division Multiplexed), non-IP based (circuit switched) telephony
PBX = Private Branch Exchange or phone switch
SIP/RTP = Session Initiation Protocol/Real-time Transport Protocol, are multimedia communications protocols



Mailbox Server Role

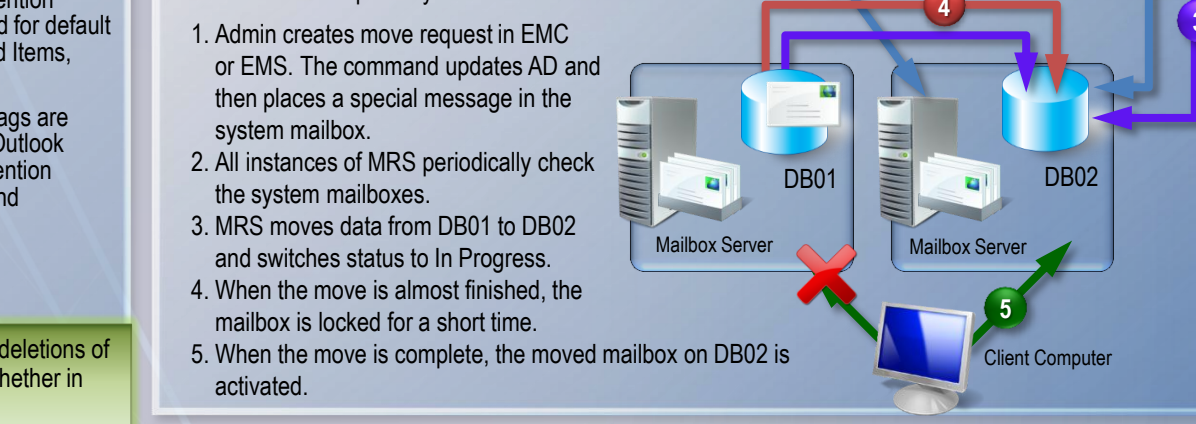
Personal Archive and Retention Policies

- Personal Archive**
 - Provides users with an alternate storage location to store historical messaging data.
 - Messages can be moved to the personal archive manually or automatically using retention policies.
 - Retention Tag actions can include Move to Archive, Delete and Allow Recovery, and Permanently Delete.
 - Appears alongside the user's primary mailbox in Outlook or Outlook Web App.
 - Archive Quota can be set separately from primary mailbox.



Retention Policies and Tags

- Retention Policies and Tags**
 - A Retention Policy is a group of retention policy tags that can be applied to a mailbox.
 - Messages can be moved to the personal archive manually or automatically using retention policies.
 - Retention Tag actions can include Move to Archive, Delete and Allow Recovery, and Permanently Delete.
- Default Policy Tag** – A default policy tag (DPT) applies to items that do not have a retention tag applied.
- Retention Policy Tags** – Retention policy tags (RPTs) are created for default folders such as Inbox, Deleted Items, etc.
- Personal Tags** – Personal tags are used by Outlook 2010 and Outlook Web App users to apply retention settings to custom folders and individual items.
- Legal Hold Policy** – Preserves edits to or deletions of email made by the user placed on hold, whether in their primary mailbox or personal archive.
- Message moved from mailbox to personal archive by policy or by user.**



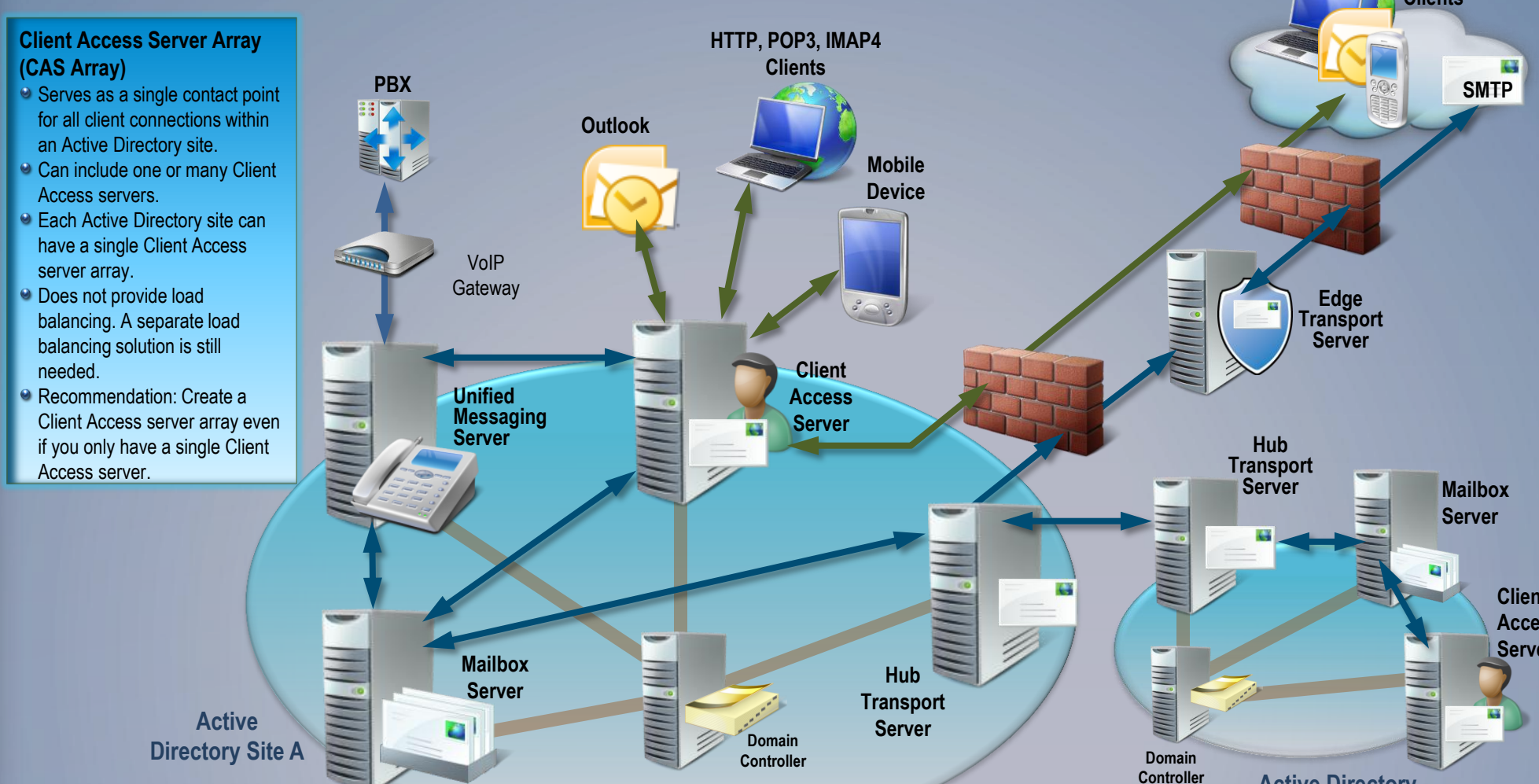
Multi-mailbox Search and How It Works

- Create a discovery search using the Exchange Control Panel or Exchange Management Shell.
- Uses the content indexes created by Exchange Search.
- Results are stored in a special mailbox type known as a "discovery mailbox."
- Members of the Discovery Management role group can perform discovery searches.
- Allows search of messages stored in mailboxes across one or more Exchange Server 2010 servers.
- Primary and Archive mailboxes can be searched including items in the recoverable items folder.

Types of Databases

- Mailbox databases**
 - Hold data that is private to an individual user and contains mailbox and archive folders that are generated when a new mailbox or personal archive is created for that user.
- Public folder databases**
 - Holds public folder information. Only one public folder database per server.
- Recovery database (RDB)**
 - Special kind of mailbox database that allows you to mount a restored mailbox database and extract data as part of a recovery operation. Only one RDB can be mounted at any time on a Mailbox server.

Exchange Server 2010 High-Level Architecture



Exchange Server 2010 includes the following server roles:

- Mailbox Server** – Back-end server that can host mailboxes and public folders.
- Client Access Server** – Middle-tier server that supports all Messaging clients, including Outlook, OWA and Exchange Web Services.
- Unified Messaging Server** – Middle-tier server that connects a PBX system to Exchange and combines voice messaging and email messaging into a single messaging infrastructure.
- Hub Transport Server** – Email routing server that routes email within the Exchange organization.
- Edge Transport Server** – Email routing server that typically sits at the perimeter of the topology and routes email in to and out of the Exchange organization.

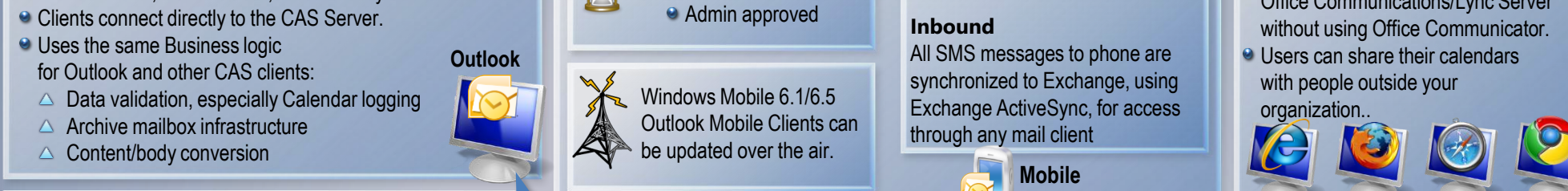
Note: All Exchange server roles can be deployed on the same server except the Edge server role.

Microsoft Exchange Server 2010

Client Access Server Role

RPC Client Access Service

- Exchange Server 2010 moves most client processing to the Client Access Server to provide all data access through a single, common path. This change improves consistency for applying business logic to clients, and provides a better client experience when failover occurs.
- Provides a single point of data access using a common path for client connectivity including Web, MAPI, POP/IMAP, Address Book, AutoDiscover, and ActiveSync.
- Clients connect directly to the CAS Server.
- Uses the same business logic for Outlook and other CAS clients:
 - Data validation, especially Calendar logging
 - Archive mailbox infrastructure
 - Content/body conversion



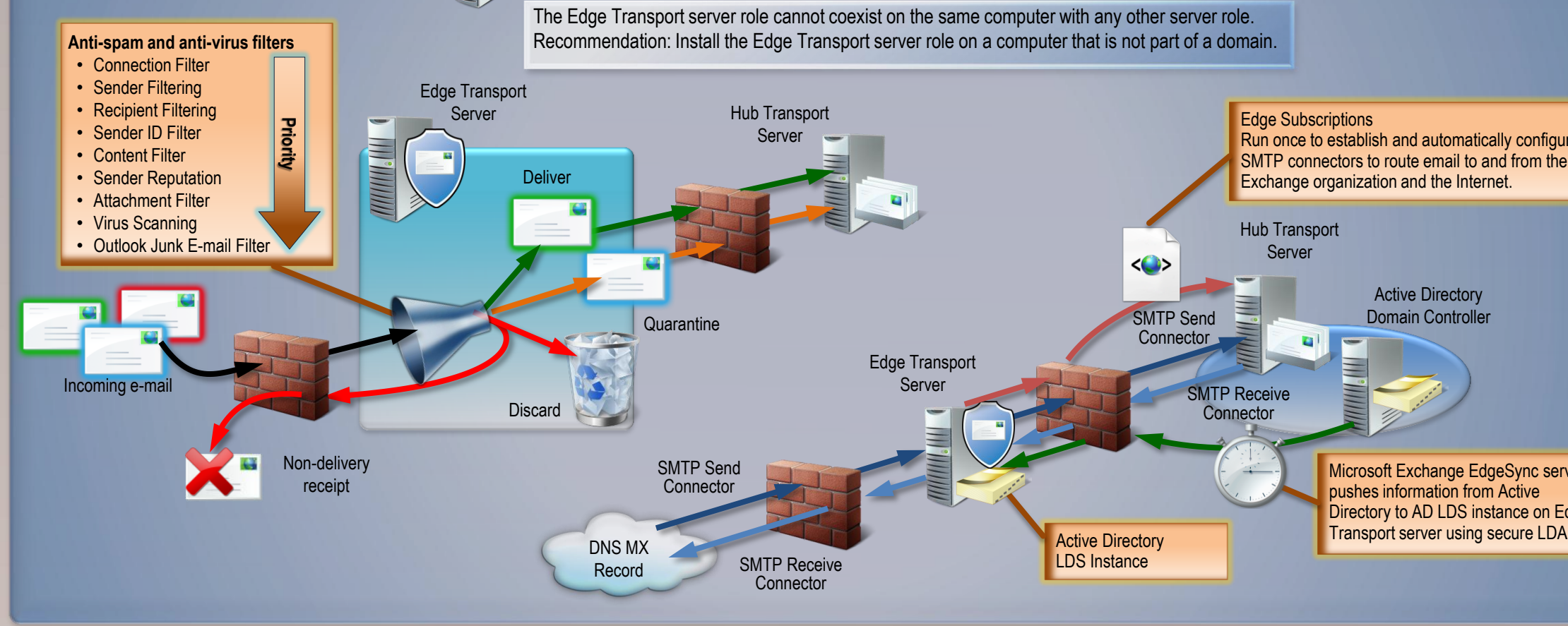
Exchange Web Services (EWS)

- EWS provides the functionality to implement client applications that access and manage Exchange store items.
- EWS provides programmatic access to the data stored within Exchange.
- EWS clients can integrate Exchange information into line-of-business (LOB) applications.
- SOAP provides the messaging framework for messages sent between the client application and Exchange Server.
- The Managed API provides an easy way to use the Microsoft.NET interface with EWS.

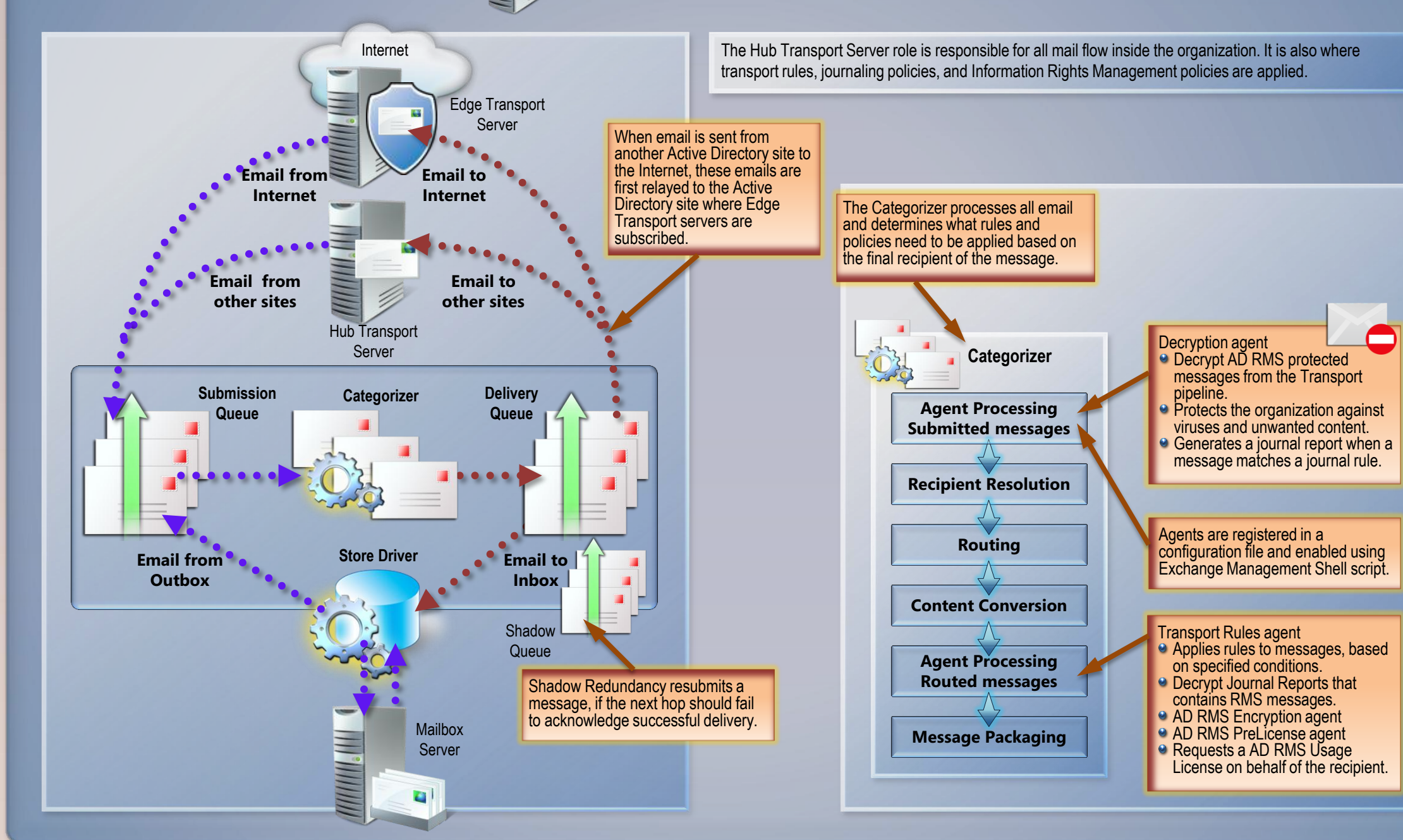
MailTips

- MailTips are informative messages displayed to users while they are composing a message. Microsoft Exchange Server 2010 analyzes the message, including the list of recipients to which it is addressed, and it notifies the user with MailTips prior to sending the message to prevent accidental delivery or policy violations.
- Outlook 2010/OWA**
 - The mail client queries the Web service on the Client Access Server for MailTips that apply to the recipients in the message. If the client is using OWA, CAS does the request on behalf of the user.
 - The Client Access Server queries its cache of Group Metrics data. (Group metrics are created overnight and distributed to CAS Servers.)
 - If the recipient is a mailbox that is located on a Mailbox server in the local site, the Client Access Server queries the Mailbox server to gather the Automatic Replies and Mailbox Full MailTips.
 - If the recipient's mailbox is in another site, the Client Access Server requests MailTips information from the Client Access Server in the remote site, which then queries the local Mailbox server for MailTip data.
 - The Client Access Server returns MailTip data back to the client (Outlook 2010 and OWA).
- How MailTips work:**
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 5. The Client Access Server returns MailTip data back to the client (Outlook 2010 and OWA).
- Outlook Anywhere**
 - Configure using the Enable Outlook Anywhere Wizard in the Exchange Management Console.

Edge Transport Server Role



Hub Transport Server Role



High Availability

