



# Exchange Server 2016: Novinky

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# Agenda

- Novinky
- Správný návrh
- Migrace

# Téma č.1

## Novinky

# Exchange Server 2016 Vision

Superior  
performance  
and reliability



Robust,  
proven  
architecture



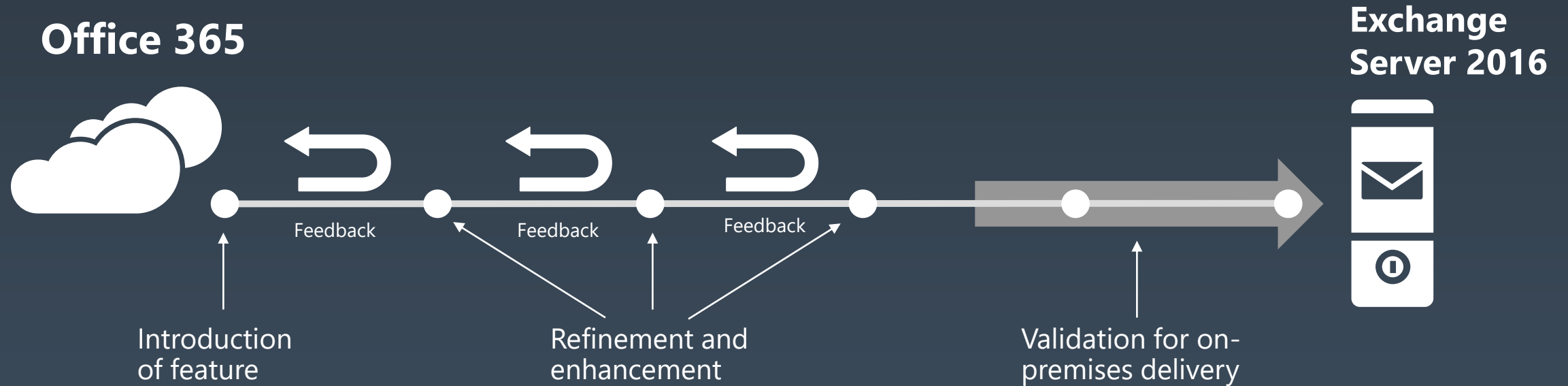
Flexible,  
future-ready  
foundation



Deeply  
integrated  
with other  
products



# Delivering Innovation



# Release Timeline



# Exchange Server 2016

Better  
collaboration



Smarter  
inbox



Mobile  
productivity



Security and  
compliance



Modern  
datacenter



# Better collaboration

Exchange integration with Outlook and SharePoint helps solve one of email's oldest pain points: working with attachments



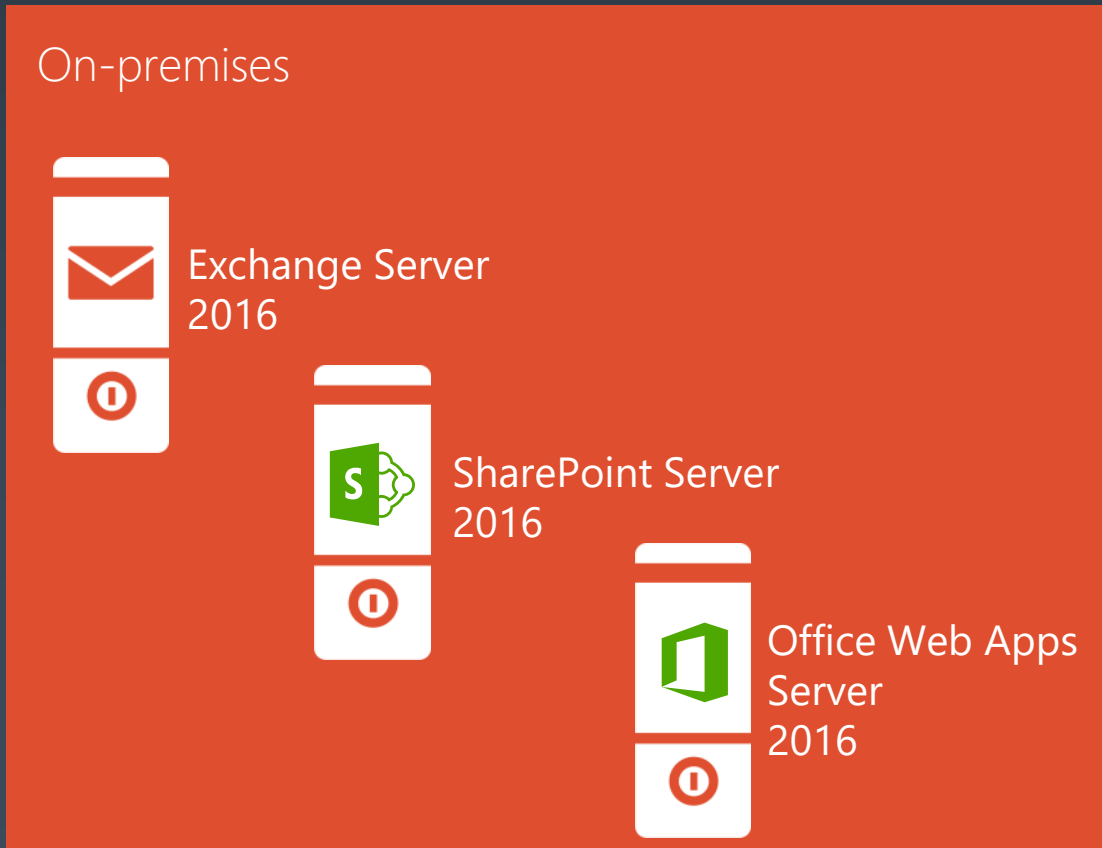
Receiving and editing documents

Sharing documents

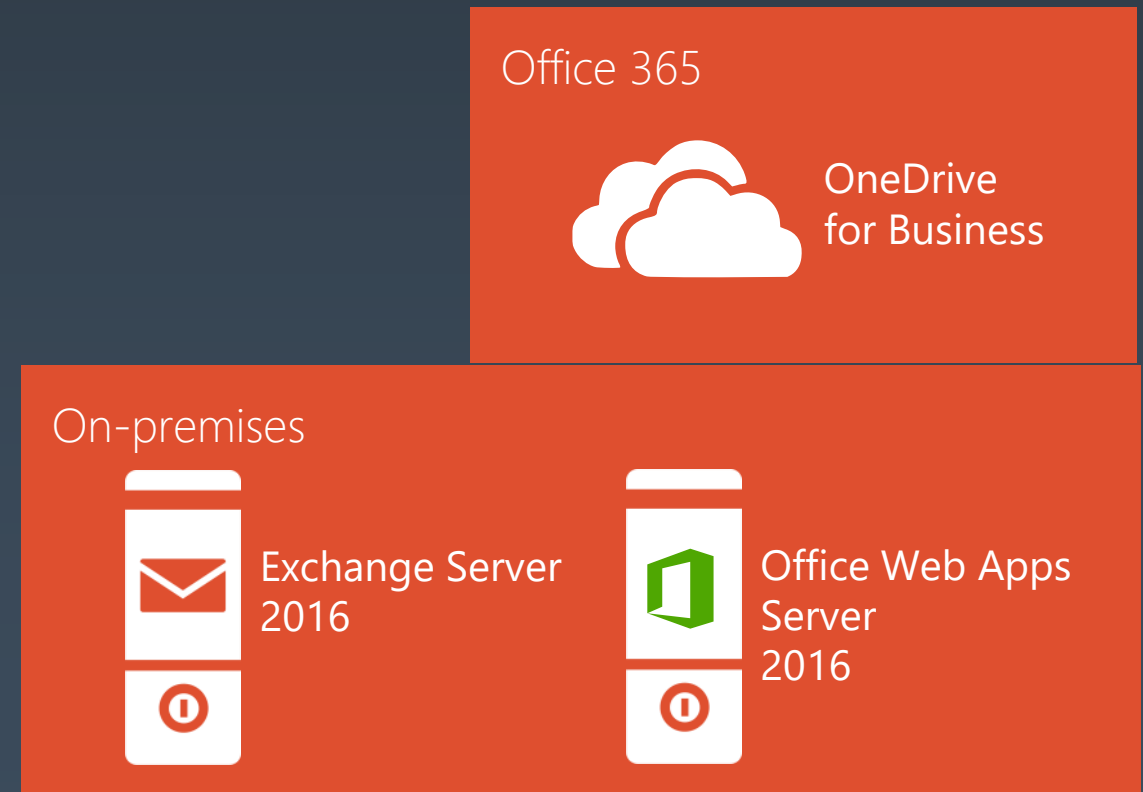


# Infrastructure options for document collaboration

Fully on-premises  
(documents stored in SharePoint 2016)



Hybrid  
(documents stored in Office 365)



Smarter  
inbox



Ir  
2



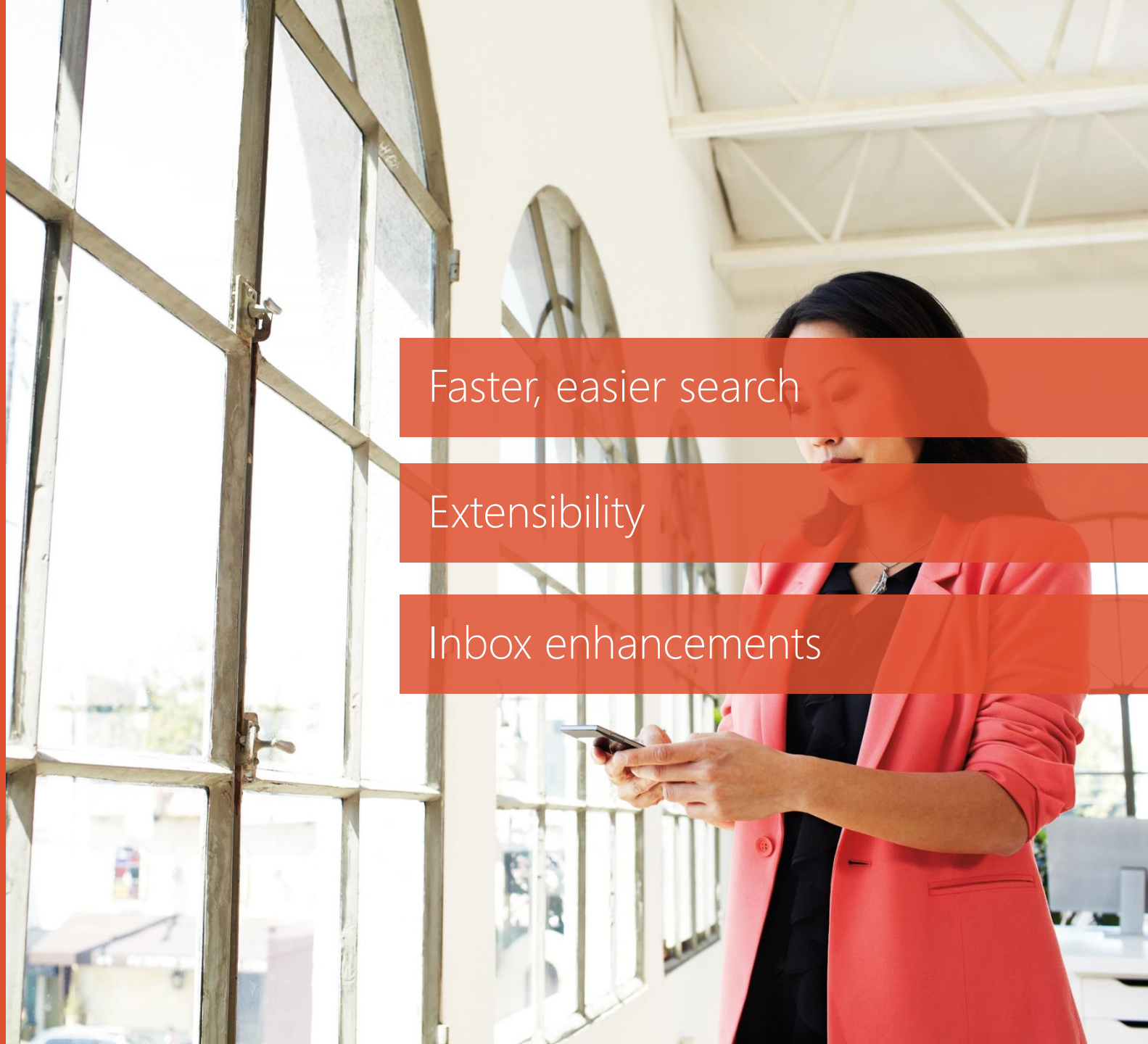
# Smart Inbox

Manage your email with tools that help you focus on what's important and work more efficiently

Faster, easier search

Extensibility

Inbox enhancements





# Learning from Exchange Online usage

## User patterns and query

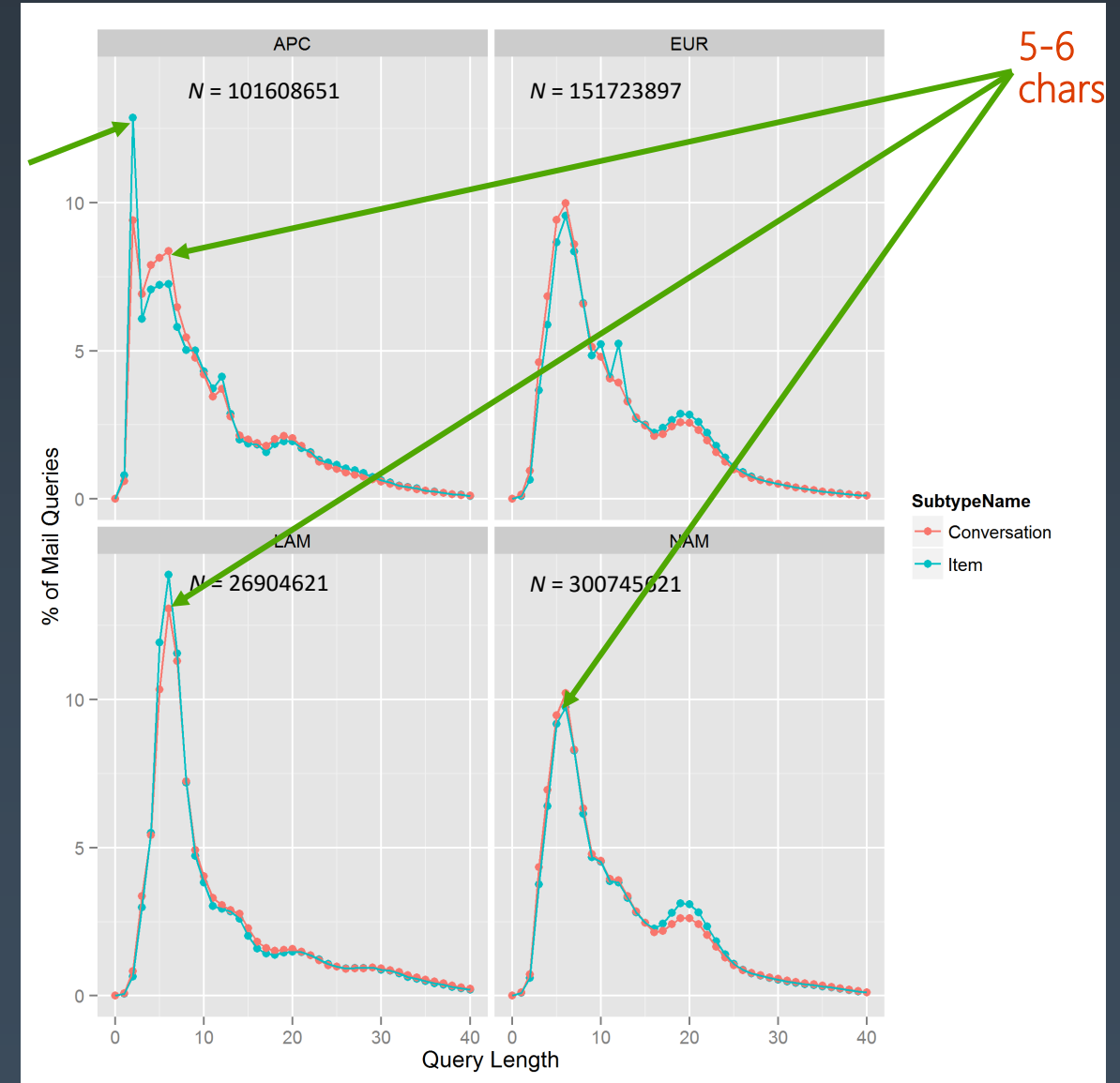
*How do users start to search?*

*Do patterns exist based on language or region?*

Most search for just one word.  
Everywhere.

The most frequently observed length for mail queries is 5 or 6 characters in North America, Europe and Latin America. In Asia, there are two main peaks, one at 2 characters and the other (lower) at 5-6 characters.

2 chars  
in Asia



# More Search studies

There is huge variance in the number of queries people do a day

The number of queries people do increases proportionally with mailbox size

Most queries result in 30-40 results and people seldom invoke "Get more..."

They often (>30%) repeat queries for mail content and people

Then, they can spend minutes iterating on queries to find the right answers

And yet... 1 in 8 queries doesn't produce results

**How do we use this information? What does it all mean?**

# Search enhancements



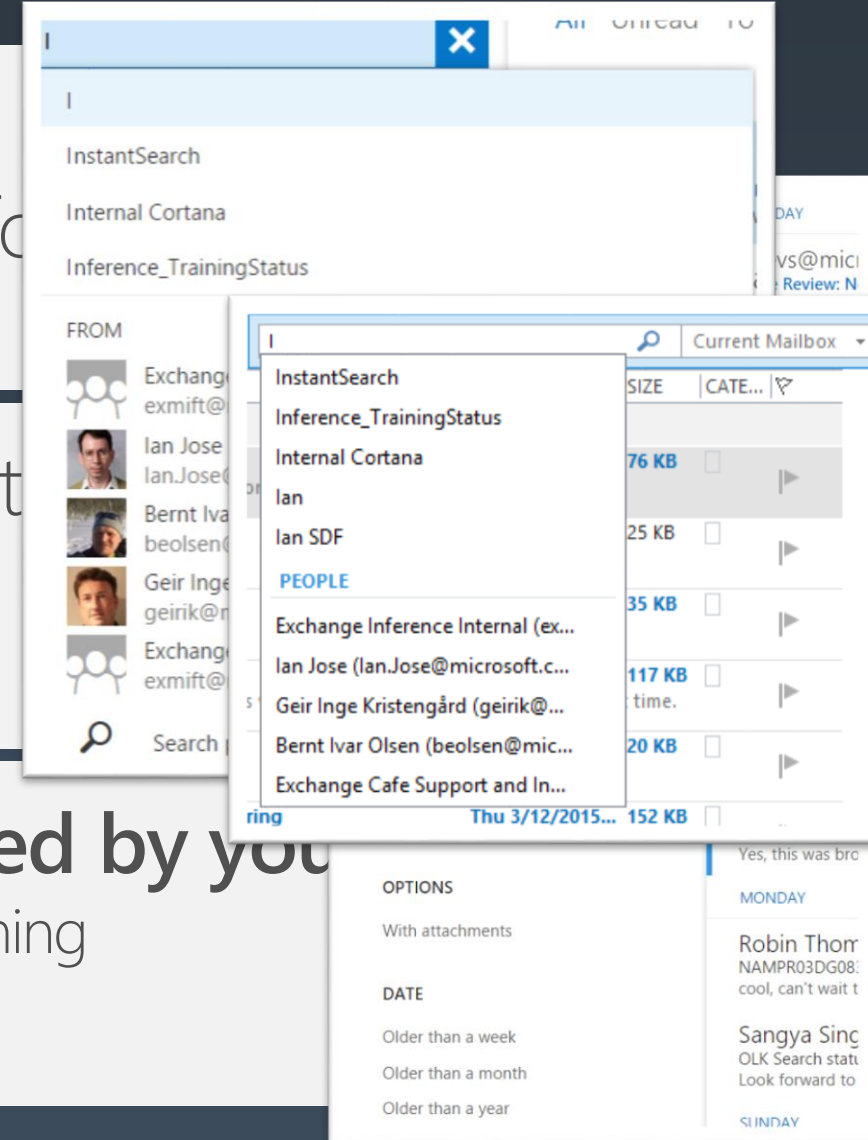
Nail the fundamentals:  
Significantly faster search performance



Outlook and Exchange consistent  
More accurate results  
More complete results



Get valuable results – **informed by you**  
Search suggestions with fuzzy matching  
Search refiners



# Extensibility: Outlook Add Ins

Integrate apps to the Outlook UI to enable engaging experiences

Multiple integration points:

Ribbon

Command Bar

Context menus (right-click),

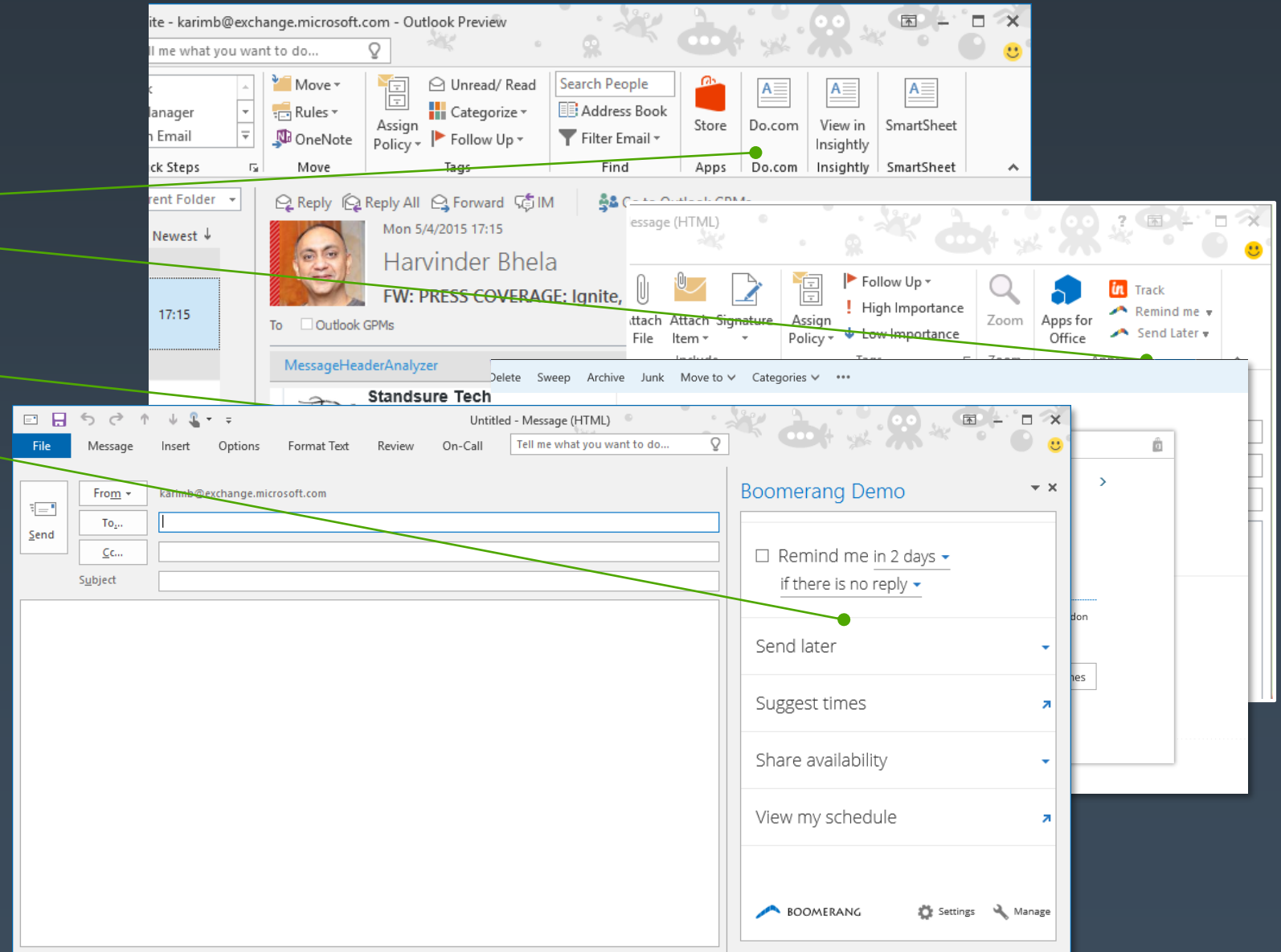
Body text (hover)

Task pane

Side-loading – easy peer deployment of line-of-business apps

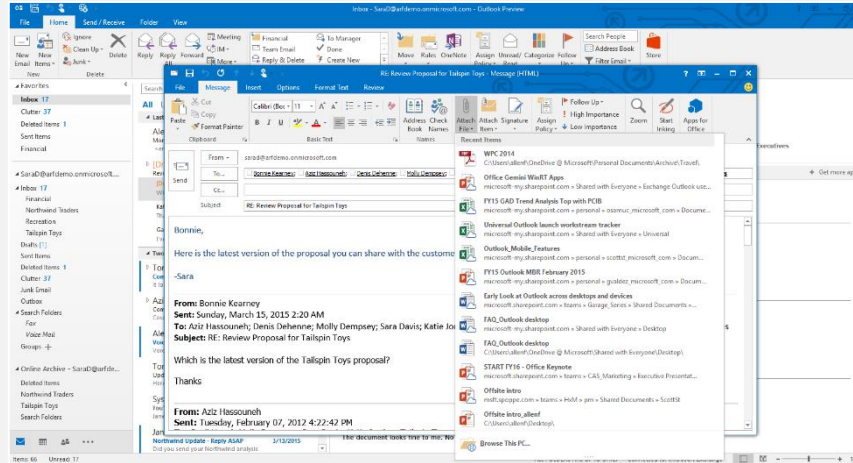
Strong admin control

New add-ins developed by 3<sup>rd</sup> parties: DocuSign, Salesforce, Uber, Boomerang, Do.com, and more



# Inbox Enhancements

## General enhancements



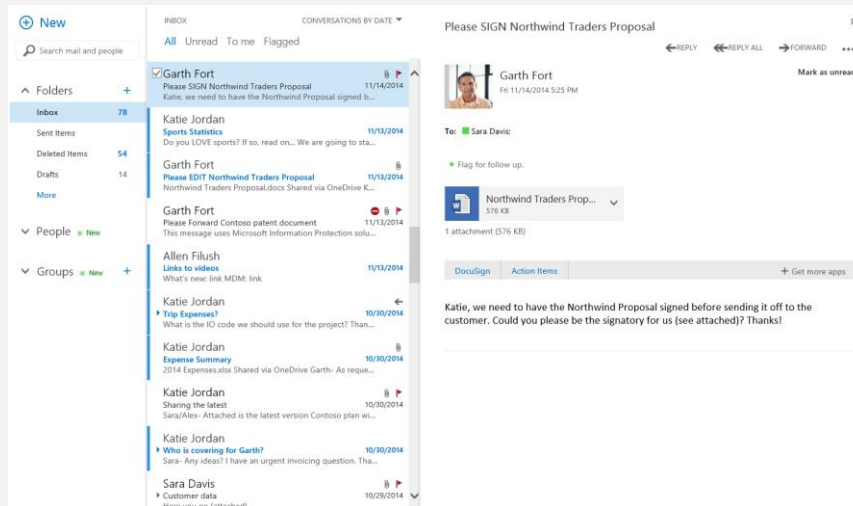
Inline previews for URLs

Inline video player

Intelligent recipient selection and people search

“Tell me what you want to do” box in Outlook

## OWA-specific enhancements



Improved HTML rendering

One-click archive

Common typos/suggestions

Contact linking improvements

Import contacts from csv

Better format controls

Smarter actions button

Better attachment view

Pin

Undo

Sweep

Weather view

Emojis

Single line view

Inline reply

Insert images



## Mobile productivity



**85%** of adults **18-29**  
own a smartphone

<http://www.pewinternet.org/2015/04/01/chapter-two-usage-and-attitudes-toward-smartphones/>

Email outranks social  
networking, news,  
games, music use on  
smartphones

<http://www.pewinternet.org/2015/04/01/chapter-two-usage-and-attitudes-toward-smartphones/>

**53%** of total email opens  
occurred on a mobile  
phone or tablet in Q3 2014

Experian "Quarterly email benchmark report"  
(Q3 2014)

# Mobile productivity

Accomplish more on the go, with rich Outlook experiences on phones, tablets, desktop, and the Web

A man and a woman are sitting on a bench in an office, looking at a tablet together. The woman is wearing an orange jacket and the man is wearing a grey suit with a blue and green striped tie. They are both smiling and looking at the screen. The background is a large window with a view of a city.

Outlook for Windows 10

Outlook for iOS and Android

# Outlook on the Web

It will support Microsoft Edge, Internet Explorer 11 and most recent version of Mozilla Firefox, Google Chrome and Safari Browsers.

**New themes:** 13 new themes with graphic designs.

**Options** for individual mailboxes have been renewed.

**Pins and Flags**

**Performance improvements**

**Platform-specific experiences for phones** for Android and IOS phones.

**Premium Android experience**

**Email improvements:** A new single-line view of the Inbox is coming in Exchange 2016 with an optimized reading pane, emojis, archiving and the ability to undo mailbox actions like moving a message or deleting a message.

**Contact linking:** Users can to add contacts from their LinkedIn accounts in outlook on the Web.

**Calendar:** New look and new features, including email reminders for Calendar events, ability to propose a new time in meeting invitations, birthday calendars and improved search. This is going to be used for all of us for sure.

**Search suggestions and refiners** for an improved faster search. Search suggestions. Search refiners will help a user more easily find the information they're looking for by providing contextually-aware filters. Filters might include date ranges, related senders, and so on.

## Security and compliance



It is estimated over **904 million records** were exposed in the first nine months of 2014, including credit card numbers, email addresses, log in credentials, and social security numbers.

[https://otalliance.org/system/files/files/resource/documents/dpd\\_2015\\_guide.pdf](https://otalliance.org/system/files/files/resource/documents/dpd_2015_guide.pdf)

**92%** of corporations surveyed had lawsuits filed against them in the preceding **12 months**.

Norton Rose Fulbright Annual Litigation Trends Survey, April 15, 2014



# Security and compliance

Protect your organization's data and comply with legal requirements using tools that are integrated and easy to use

Data loss prevention

Auditing

eDiscovery and archiving



# Data loss prevention

New DLP sensitive information types added to Exchange

PolicyTips added to Excel and other Office applications

Extension of DLP capabilities to SharePoint

Select sensitive information types - Internet Explorer

https://mail.kpcs.cz/ecp/DLPPolicy/SensitiveInformationPicker.aspx?pwmcid=1&Launcher=

### Sensitive information types

name	publisher
Canada Social Insurance Number	Microsoft Corporation
Chile Identity Card Number	Microsoft Corporation
China Resident Identity Card (PRC) Nu...	Microsoft Corporation
Credit Card Number	Microsoft Corporation
Croatia Identity Card Number	Microsoft Corporation
Croatia Personal Identification (OIB) Nu...	Microsoft Corporation
<b>Czech National Identity Card Number</b>	<b>Microsoft Corporation</b>
Denmark Personal Identification Number	Microsoft Corporation
Drug Enforcement Agency (DEA) Numb...	Microsoft Corporation

Info  
New  
Open  
Save  
Save As  
Print  
Share  
Export  
Close  
Account  
Options

ends.txt

tem might conflict with a  
our organization. [View policy](#)

you on 1/15/2015 9:50 AM

with you

<https://saratest5807.spoppe.com/sites/n>

EDIT SHARE FOLLOW ...

EDIT LINKS

EmployeeInfo ...  
Instructions ...  
Metrics ...

Drag files here to upload



# Modern datacenter

A robust on-premises architecture that is cloud-inspired and proven

>50,000 servers, 1.2M DB copies

Every month:

3.5M database failovers

100's of server failures

>1000 site resilience operations

Many upgrades & patches

+1000's new servers

All with >99.95% availability

Simplified architecture

Performance and reliability

Hybrid enhancements

Cloud connection options



# Simplified architecture

- Setup formalizes the Preferred Architecture
- Building block model with combined Mailbox and Client Access Server role
- Based on Office 365 model
- Simplified coexistence with Exchange 2013; easier namespace planning



# Bringing cloud reliability & performance to on-prem



## Automated Repair

- Find database corruptions via DB divergence detection
- Loose Truncation – long-term outages out-of-space won't dismount DB
- ReFS Support – Decrease FS corruption, reseeds and rebuilds



## Faster Recovery (now even more HA)

- Faster database \*overs (95%ile @ 18s) (scheduled for a future CU)
- Faster site resilience: Database copy activation suspended and Move Now
- DAG Management Service – reducing failure domains
- Replay Lag Manager on by default – auto-play down when insufficient avail copies



# Bringing cloud simplicity and power to on-prem

- Simpler deployments
  - DAGs without cluster administrative access points
  - Max Preferred Actives – soft limit for better balancing
  - Azure file share witness
  - Get-MailboxServerRedundancy, a way to prioritize hardware repairs and make upgrades easier
- Reduced WAN costs - Search index **using passive copy** (released in CU3)
  - Allows Content Indexes to be built from local passive copy
  - Previously required traversing network to read from active copy to create Content Index
  - Significant potential bandwidth savings
    - Content Indexing can generate as much network traffic as replication log shipping!
- Get data-at-rest protection with BitLocker
- Supports bigger disks
  - 8 TB, 7200 RPM JBOD



# Potential savings

- Example: If DB1 generates 5GB of transaction logs a day and has 4 copies (1 Active/3 Passive), then how much data traverses the network per day for these copies?
  - 3 Replication streams
  - $3 * 5\text{GB} = 15\text{GB}$
- Now what about Content Indexing bandwidth?
- In the above scenario (before CU3):
  - Replication Traffic=15GB
  - Content Index Traffic=15GB (CI Traffic=1X Uncompressed Replication Traffic)
  - Total Traffic=30GB
- With CU3 and Read from Passive:
  - Replication Traffic=15GB
  - Content Index Traffic=0
  - Total Traffic=15GB
- Note: For Lagged Copies, CI traffic must still connect to Active Copy and therefore traverse network

# Read from Passive: As seen in calculator

## Exchange 2013

Peak Log & Content Index Replication Throughput Requirements	
Peak Log & Content Index Throughput Required / Database	1.33 Mbps
Peak Log & Content Index Throughput Required Between Datacenters / DAG	335.81 Mbps
Total Peak Log & Content Index Replication Throughput Required / Environment	3358.12 Mbps

## Exchange 2016 with CU3 (30% Reduction)

Peak Log & Content Index Replication Throughput Requirements	
Peak Log & Content Index Throughput Required / HA Database Copy	.55 Mbps
Peak Log & Content Index Throughput Required / Lagged Database Copy	1.33 Mbps
Peak Log & Content Index Throughput Required Between Datacenters / DAG	237.04 Mbps
Total Peak Log & Content Index Replication Throughput Required Between Datacenters	2370.44 Mbps

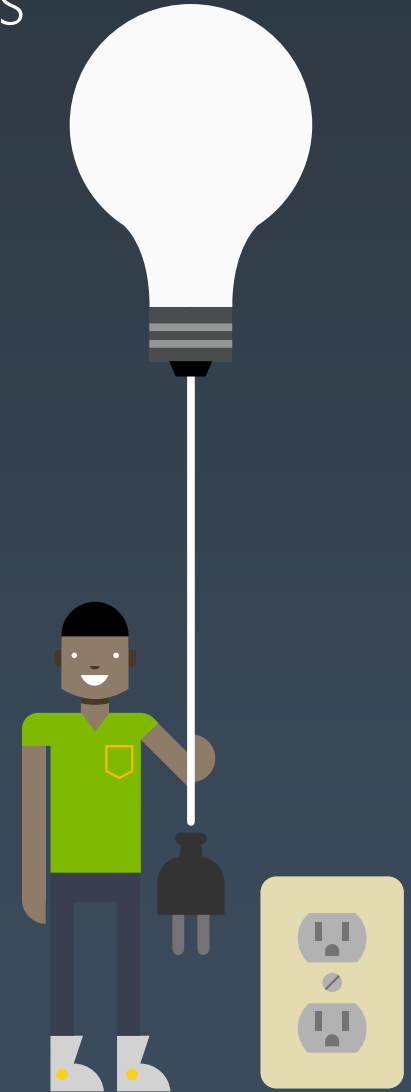
# Where art thou, MAPI/CDO?

The MAPI/CDO library has enjoyed a long life, but all good things must come to an end

Exchange 2016 does not support connectivity via the MAPI/CDO library

App development should utilize either:

- REST APIs
- Exchange Web Services



# Deprecation of SmartScreen

- SmartScreen spam filters in Outlook and Exchange are obsolete and have been replaced by Exchange Online Protection (EOP), a more effective, cloud-based email filtering service
- On November 1, 2016, Microsoft stopped generating updates for the SmartScreen spam filters for
  - Exchange Server 2016 and earlier (2013, 2010, 2007)
  - Outlook 2016 for Windows and earlier (2013, 2010, 2007)
  - Outlook 2011 for Mac
- SmartScreen spam filter will be removed from future versions of Exchange Server and Outlook for Windows
- No changes to the SmartScreen Filter online protection features built into Windows, Microsoft Edge and Internet Explorer

# What is the Office Online Server role?

Exchange server now leverages the Office online server

Users get rich browser based viewing in Word, Excel, PowerPoint, and OneNote web apps

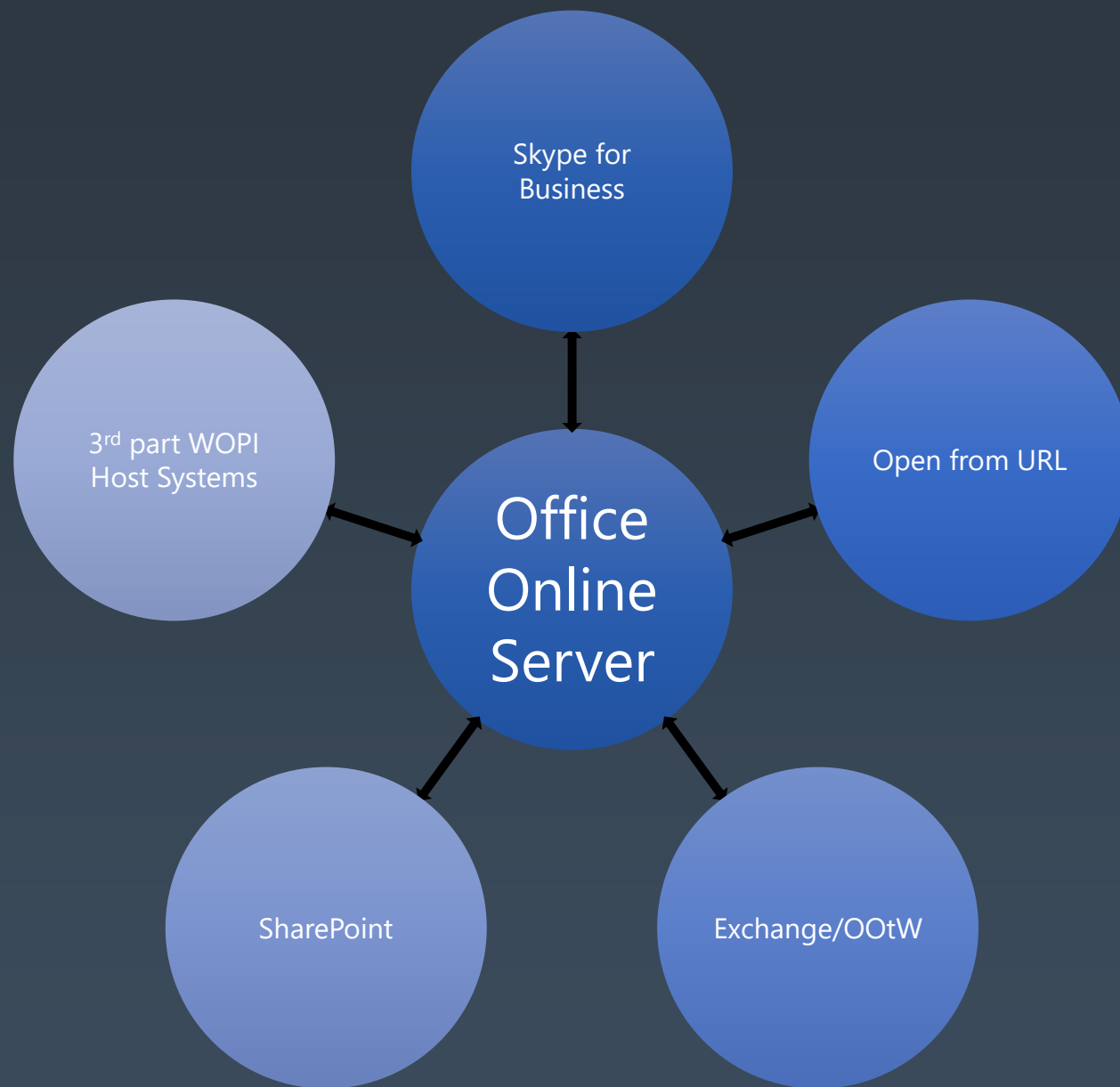
Delivered via Office Online Servers infrastructure

Cannot coexist on Exchange servers

Enables side-by-side viewing and edit & reply capabilities for OWA

Access to the document is authorized by Exchange via an OAuth token

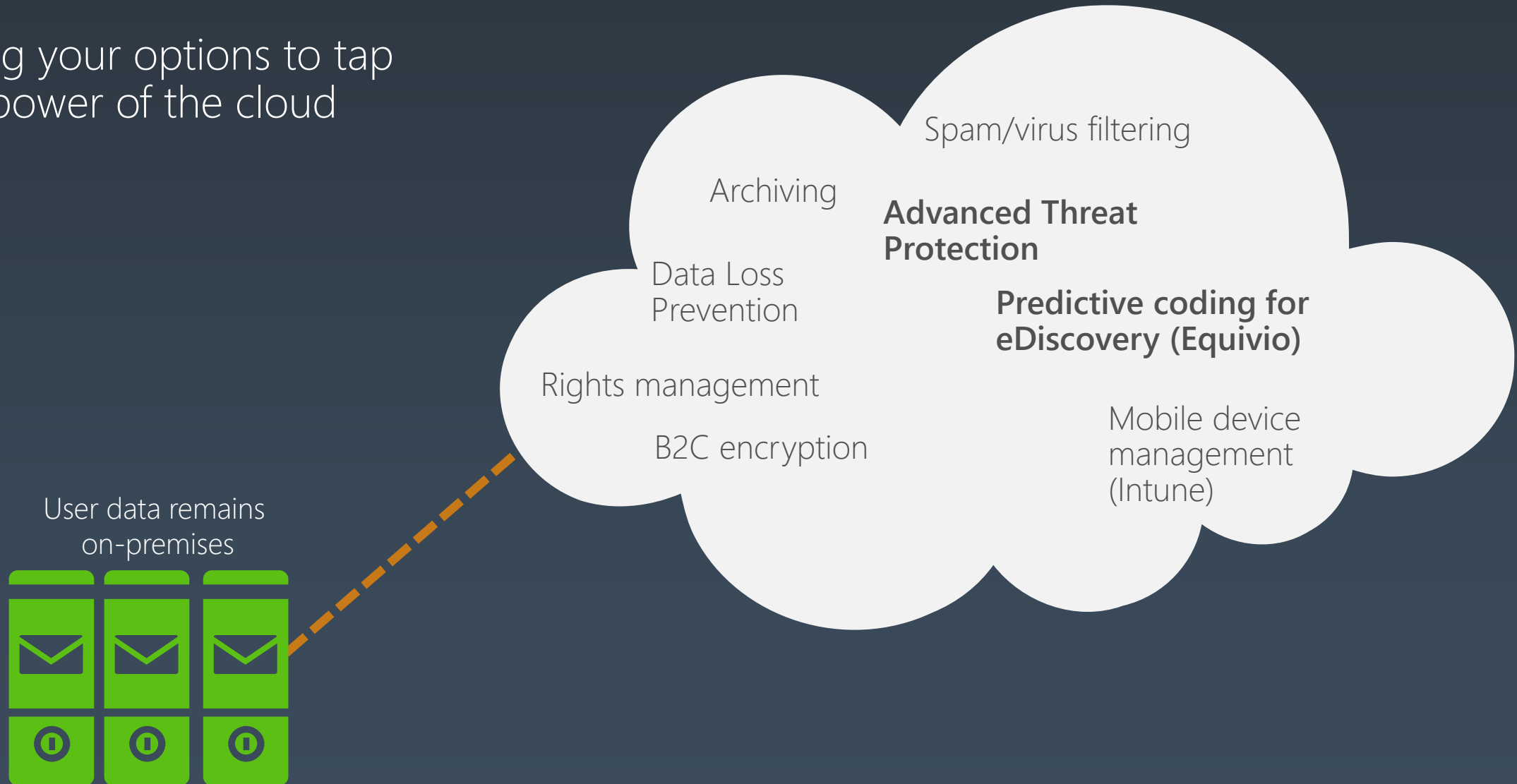
The screenshot displays the Microsoft Word Online interface. The top ribbon shows tabs for FILE, HOME, INSERT, PAGE LAYOUT, REVIEW, and VIEW. The document title is '2014 Business Plan' and the user is 'Katie Jordan'. The main content area shows an 'Executive summary' section with text about Contoso and Northwind. Below this, there is a section titled 'Forty years of sights and sound' with more text. On the right side, there is an email thread interface with a 'SEND' button, a 'DISCARD' button, and an 'INSERT' button. The email is from 'Sara Davis' to 'Katie Jordan' with the subject 'Re: Document for review'. The email body contains a reply from Katie Jordan, stating 'I agree with your comments in the executive summary. I have added further details in this section.' and 'Thanks- Katie Jordan'. The email was sent on Wednesday, January 14, 2015 at 5:04 PM.





# Cloud connection options

Expanding your options to tap into the power of the cloud

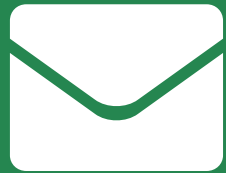


# Exchange Server 2016

Better  
collaboration



Smarter  
inbox



Mobile  
productivity



Security and  
compliance



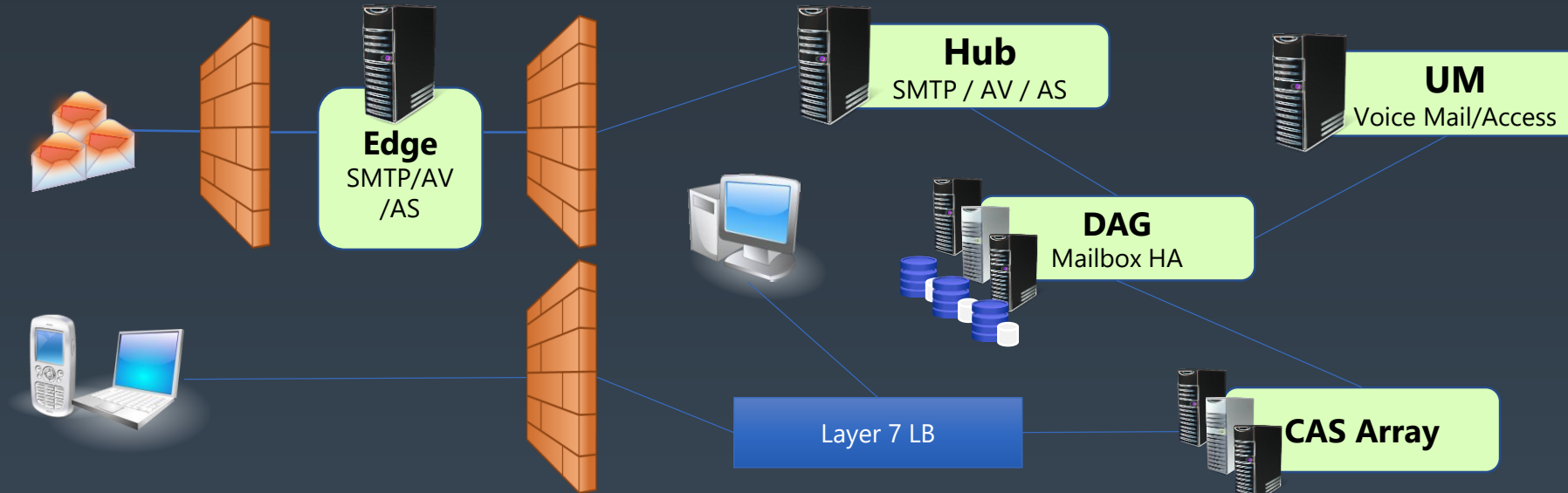
Modern  
datacenter



Téma č.2

Preferovaná architektura

# History: 2007/2010



- Separate Roles
- Complex site Failover
- Certificate issues

Setup

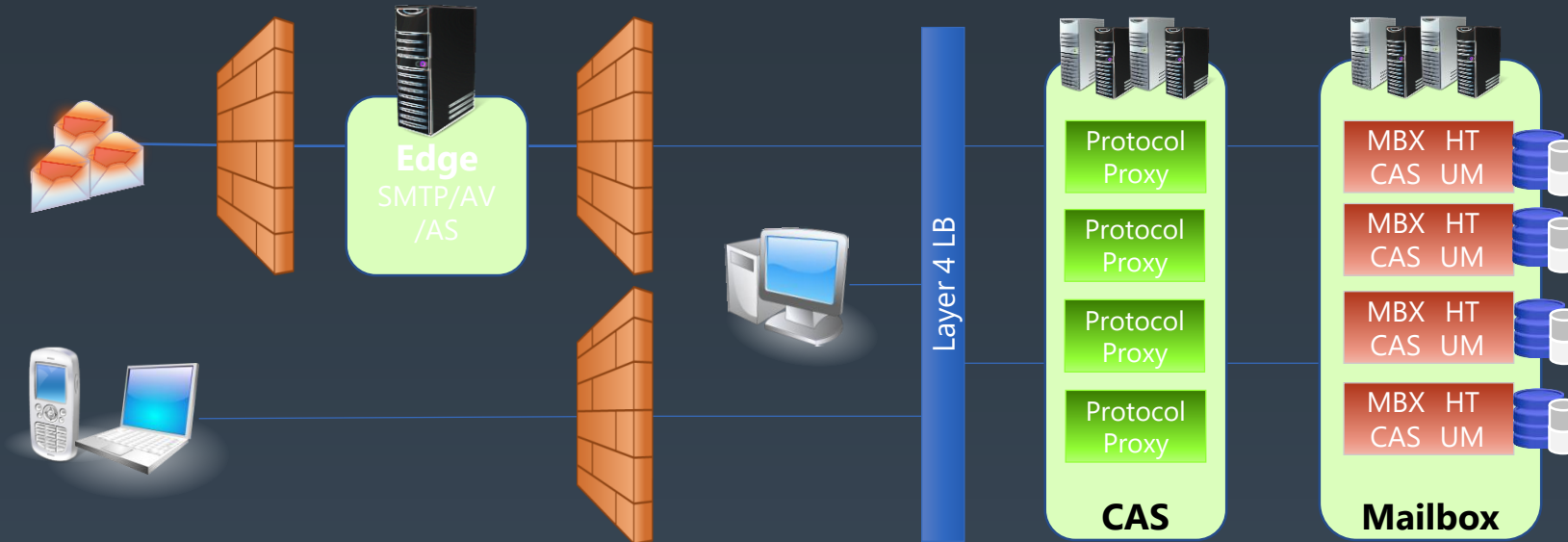
- Cheaper Disks
- Hardware L7 Load Balancer

Cost

- In Box HA
  - CCR
  - DAG

Reliability

# Exchange 2013



- Fewer Roles
- Simpler Name Spaces
- Easier Inter-op

Setup

- Better Hardware Utilization
- Lower Cost Networking

Cost

- All Role HA
- Failure Isolation

Reliability

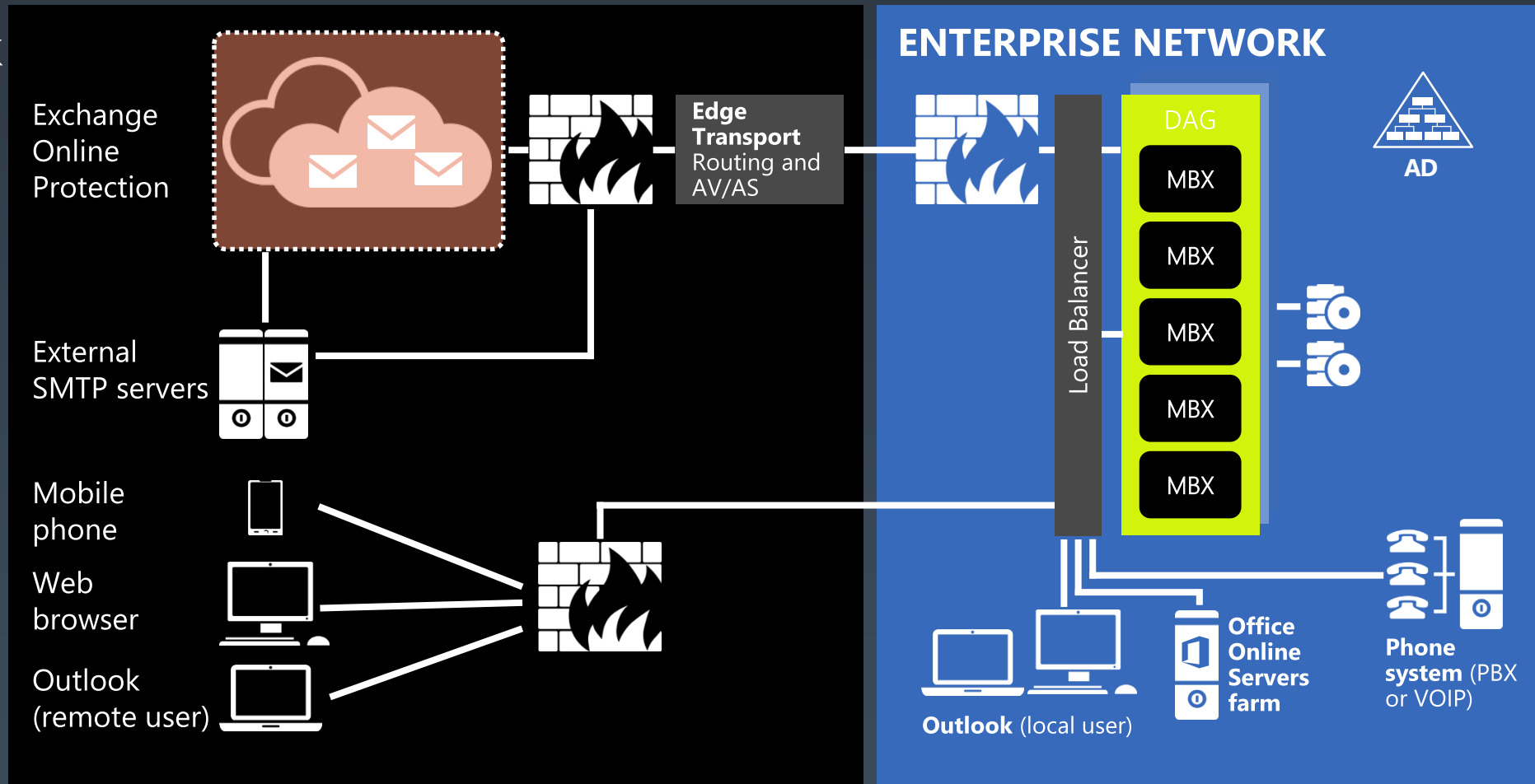
# Exchange 2016 server role architecture

## Single building block

Client access proxy components  
Includes core server protocols  
Database availability group

## Loosely coupled

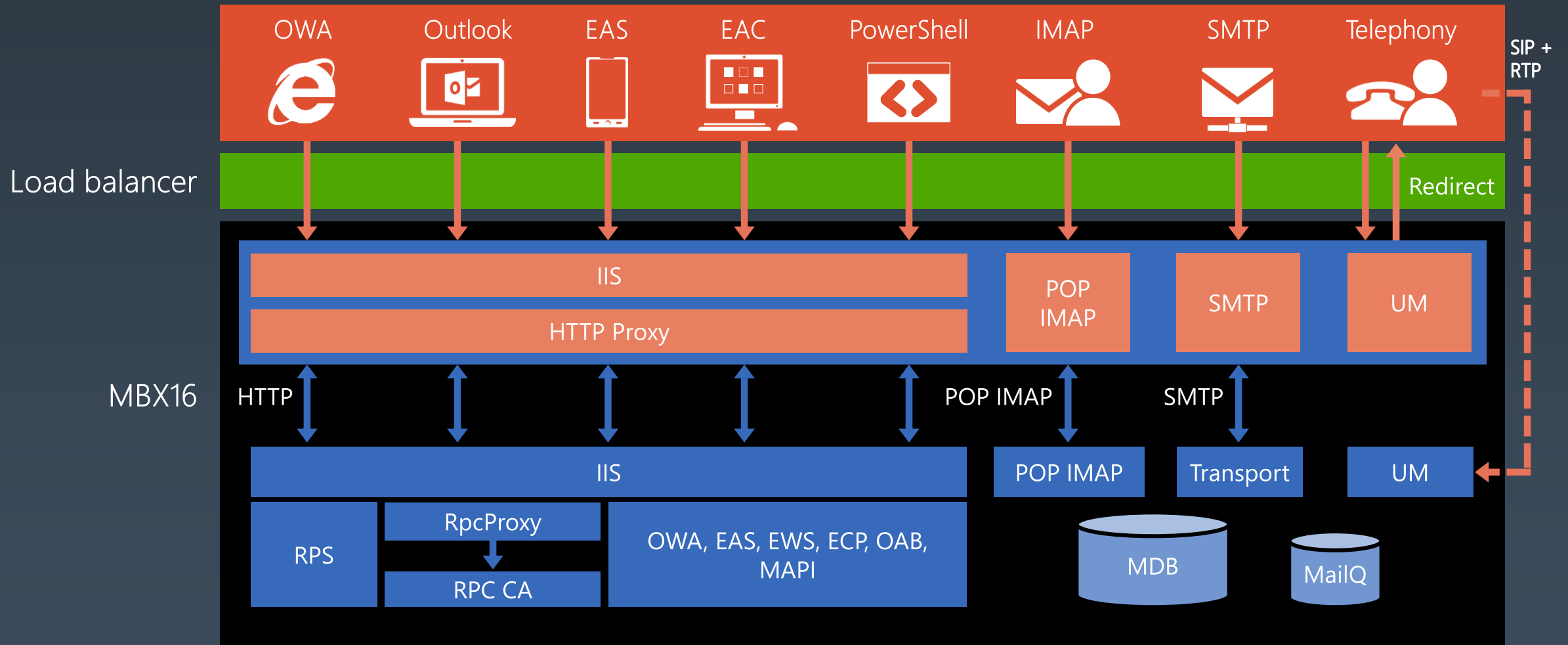
Functionality  
Versioning  
User partitioning  
Geo affinity



Preferred Architecture

Client connectivity

# Client protocol architecture





# MAPI/HTTP *baby!*

The default connectivity mechanism

No longer uses intermediary RPC components  
(on client or server)

ROPs are still used, just sent to Exchange directly over HTTP

Standard HTTP pattern instead of two long-lived  
HTTP connections

Advertised via Autodiscover

Client advertises support and server returns  
configuration settings

Enabled by default (E2016)

Per-user settings control

Requires

Exchange 2013/2016 mailbox

Supported Outlook version

Client restart (delayed)

Provides more reliable connection

80% of users connect in 5s or less

Removes RPC stack dependency

Better diagnostics

Header information

Common authentication scheme  
across protocol stack

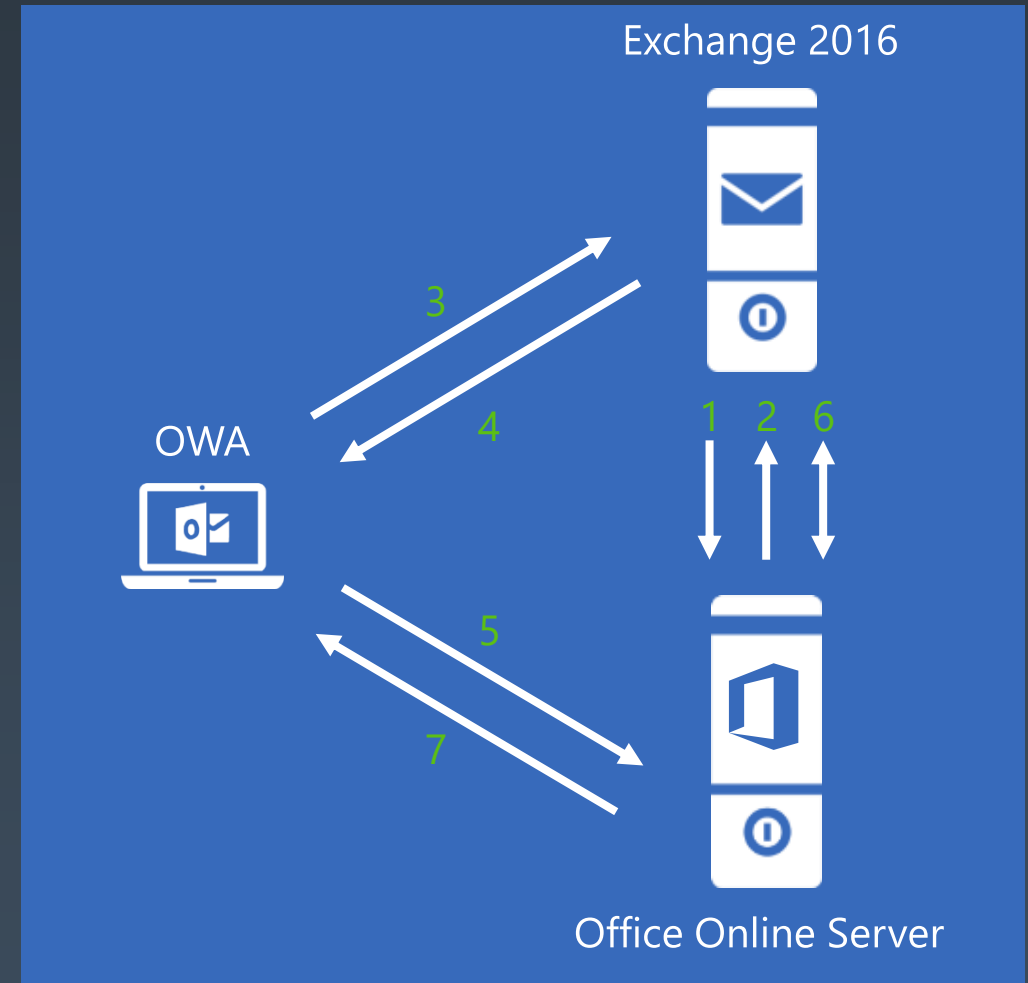
# MAPI/HTTP ... to enable or not to enable.

We are considering enabling MAPI/HTTP when the first 2016 server is introduced to the organization.

We *\*want\** all customers moving to MAPI/HTTP.

# Office Online Server connectivity flow

1. Exchange uses discovery URL to ask OOS which file types it can view and edit
2. OOS returns table of supported file types
3. User opens mail with attachment that matches one of the file types OOS supports and OWA requests document URLs for supported types
4. Exchange builds URL with Auth token, app URL, and Attachment ID and returns it to OWA
5. User clicks attachment within OWA and spawns an iFrame on client to load the URL returned by Exchange
6. OOS retrieves document content from Exchange
7. OOS renders content in OOS client (e.g., Word Web App)



# Preferred Architecture

## Namespace planning principles

# Exchange namespace planning

Exchange 2016 no longer needs all the namespaces that Exchange 2010 required

Two namespace models you can deploy

- Bound model
- Unbound model

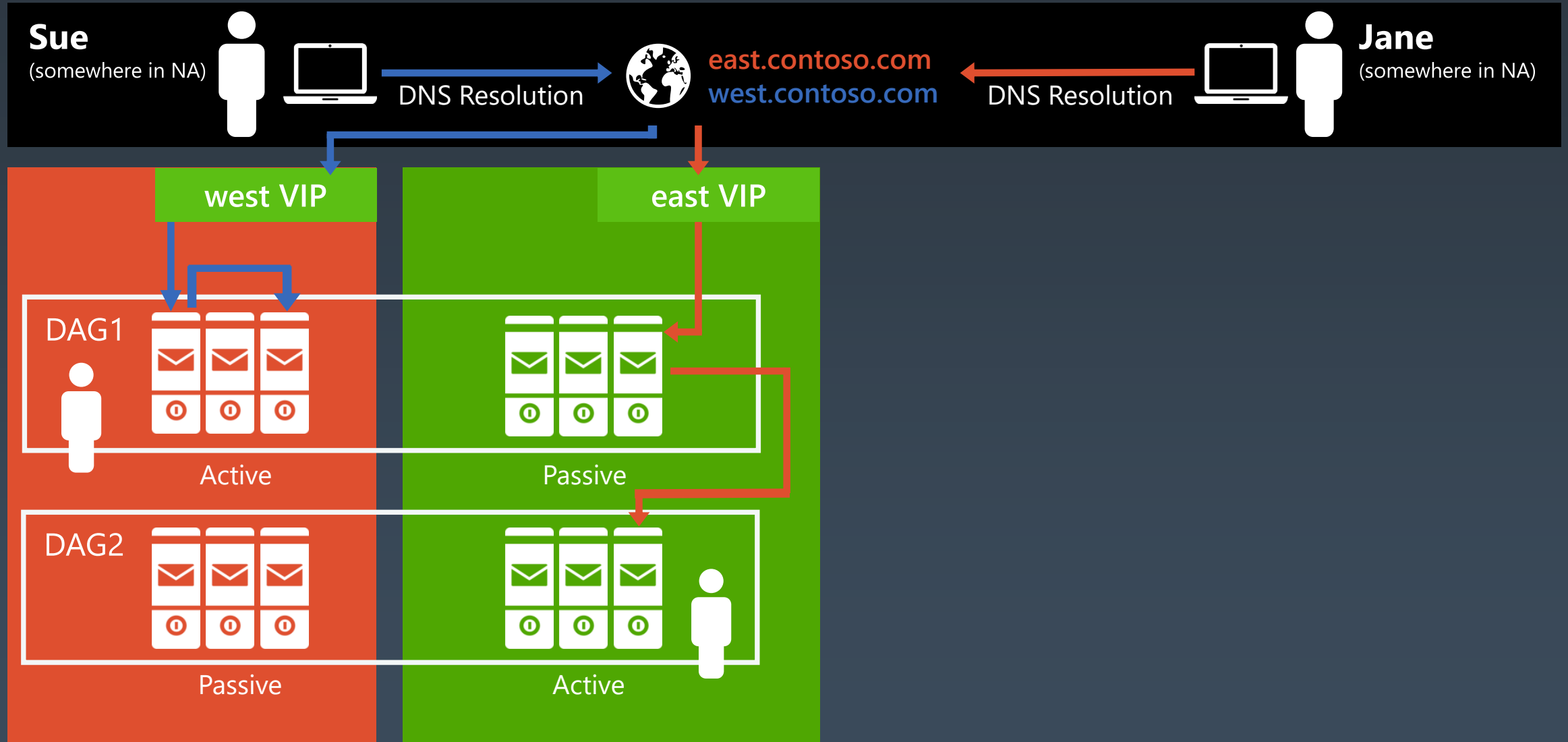
Can still deploy regional namespaces to control traffic

Can still have specific namespaces for protocols

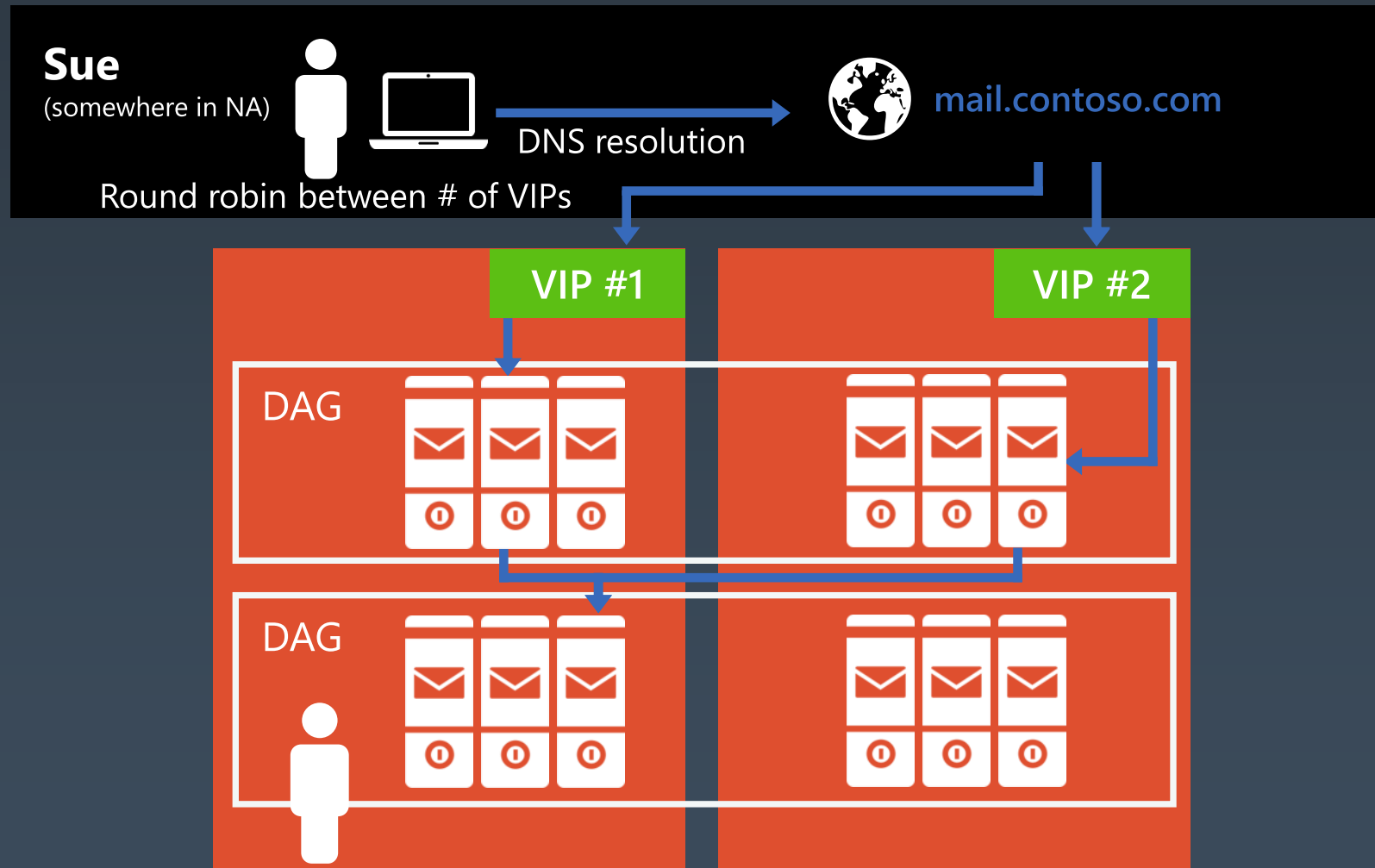
Leverage split-DNS to minimize namespaces and control connectivity

- Deploy separate namespaces for internal and external Outlook (OA, MAPI/HTTP) host names

# Bound model



# Unbound model



# Load balancing Exchange

## Load Balancing options

- NLB is not supported anymore
- DNS Round Robin is an option but not recommended
- Using Load Balancer is the best option

Like 2013, Exchange 2016 does not require session affinity at the load balancing layer

For a given protocol session, MBX now maintains a 1:1 relationship with the server hosting the user's data

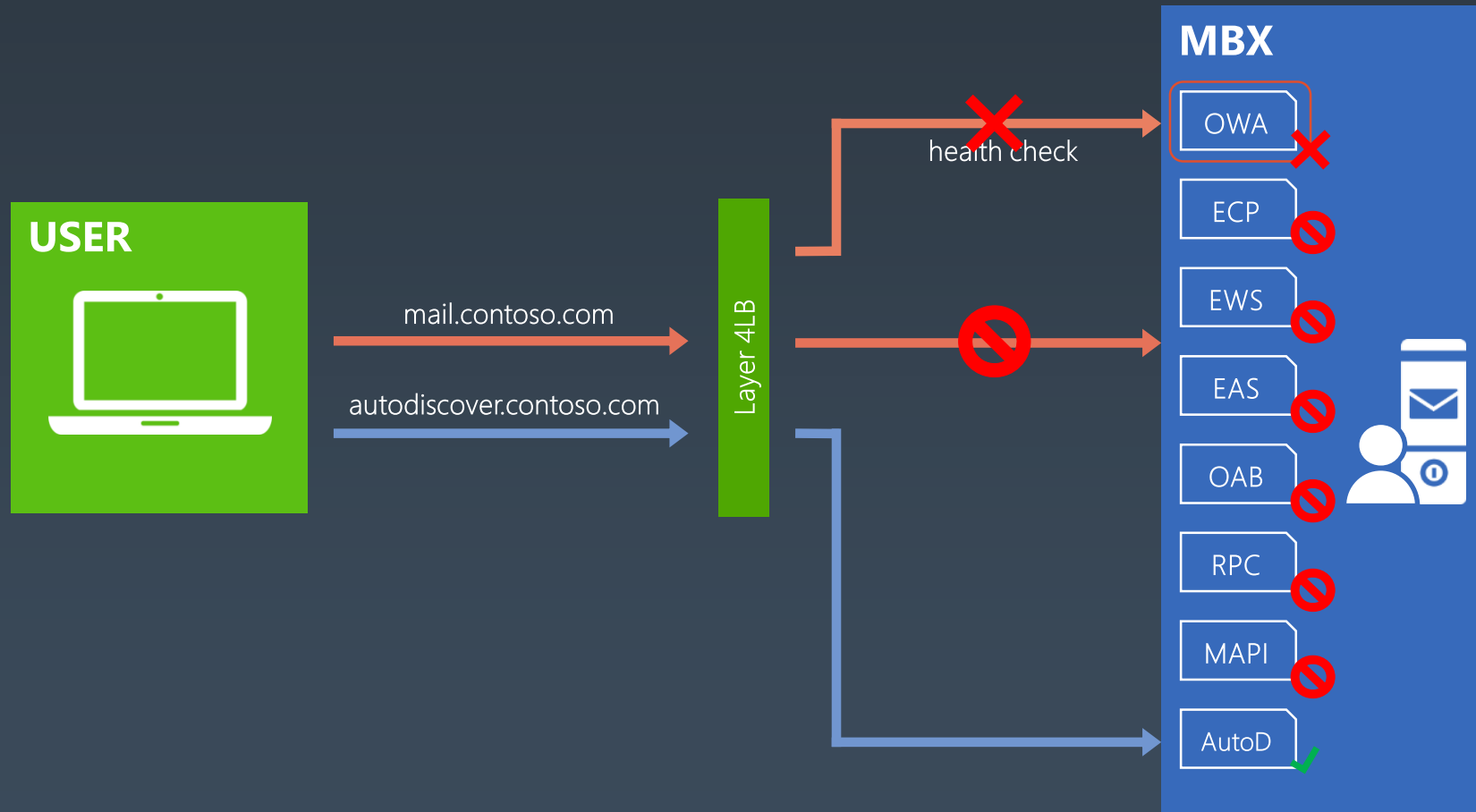
Remember to configure health probes to monitor healthcheck.htm, otherwise LB and MA will be out of sync

Load balancer configuration and health probes will factor into namespace design

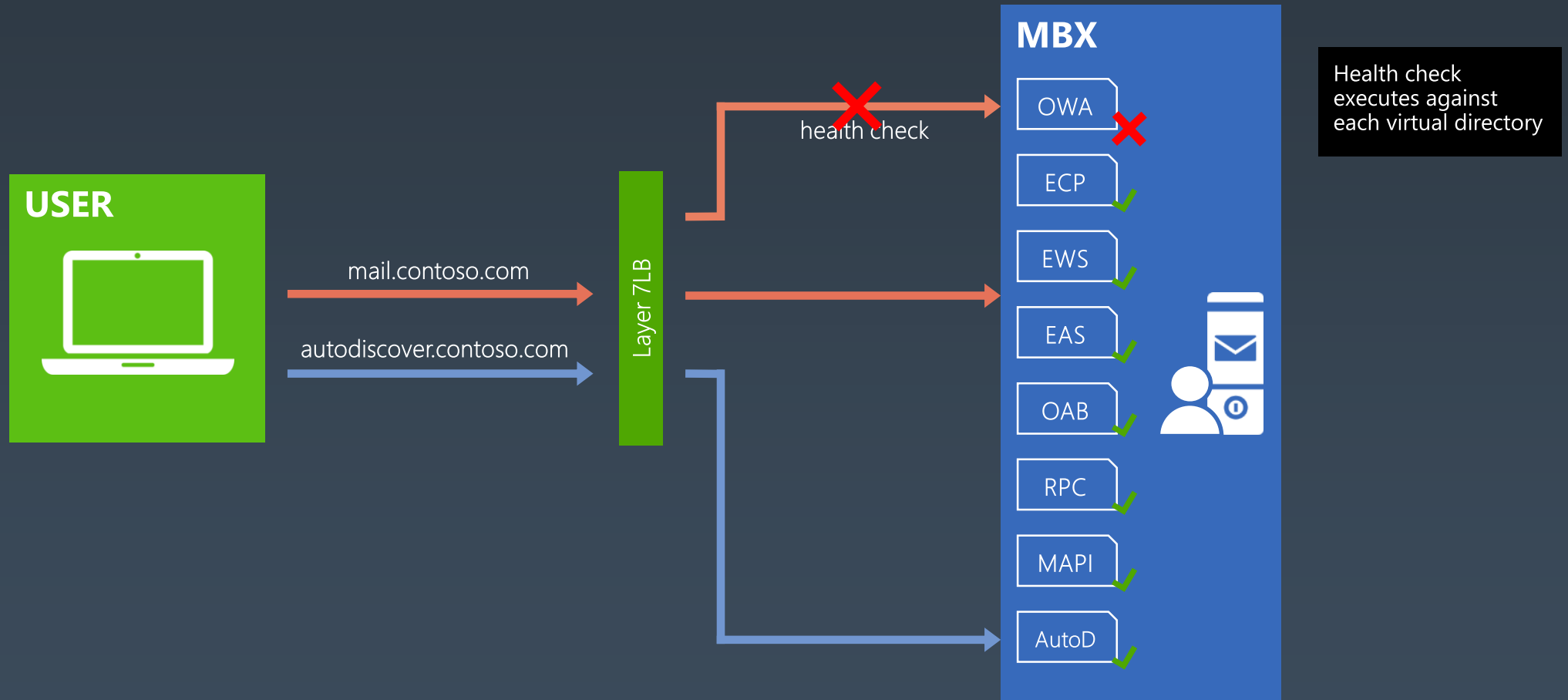
Single Namespace / Layer 7 (No Session Affinity) is the preferred approach



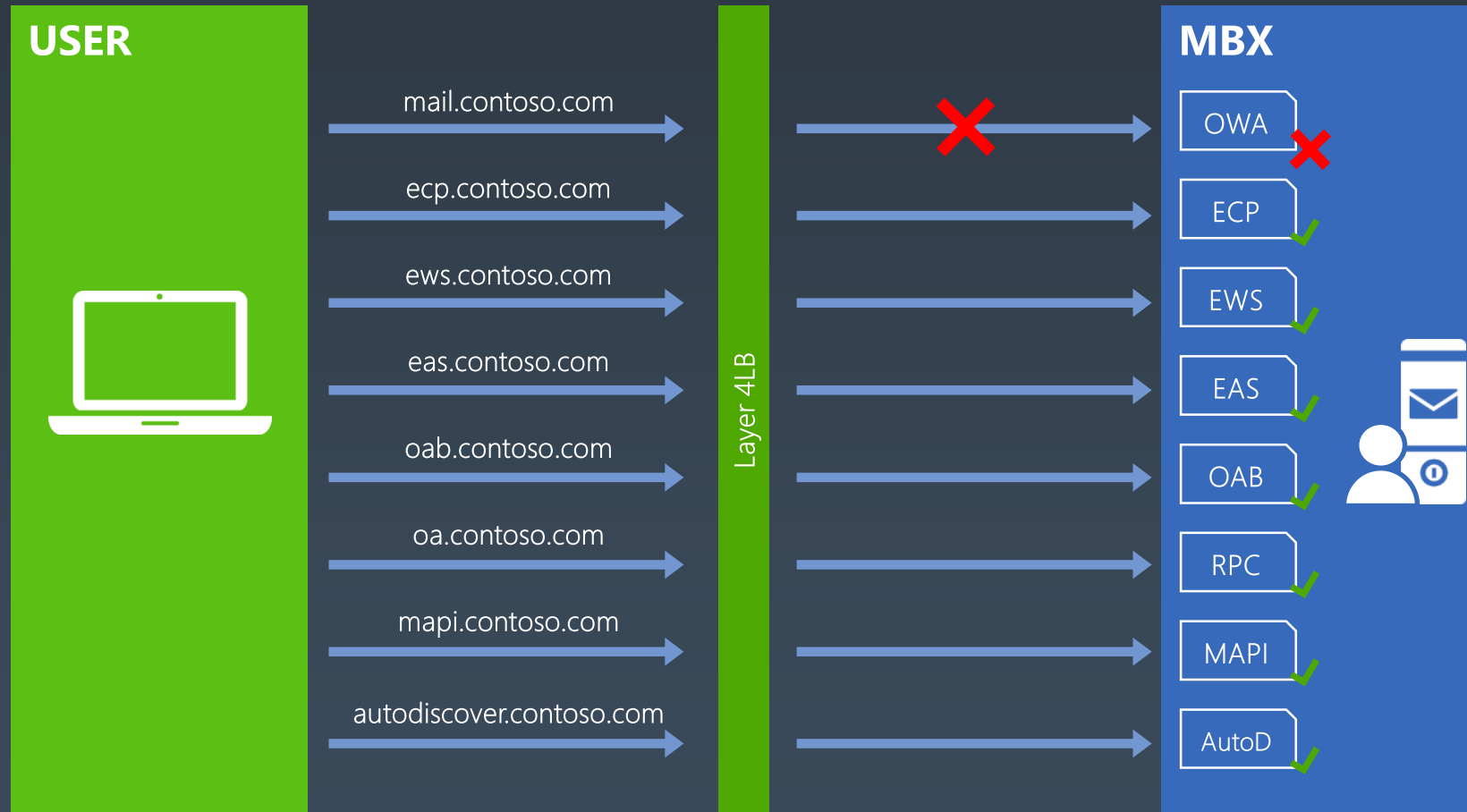
# Single namespace/layer 4



# Single namespace/layer 7 (no session affinity)



# Multiple namespaces/layer 4



# OOS namespace planning and load balancing

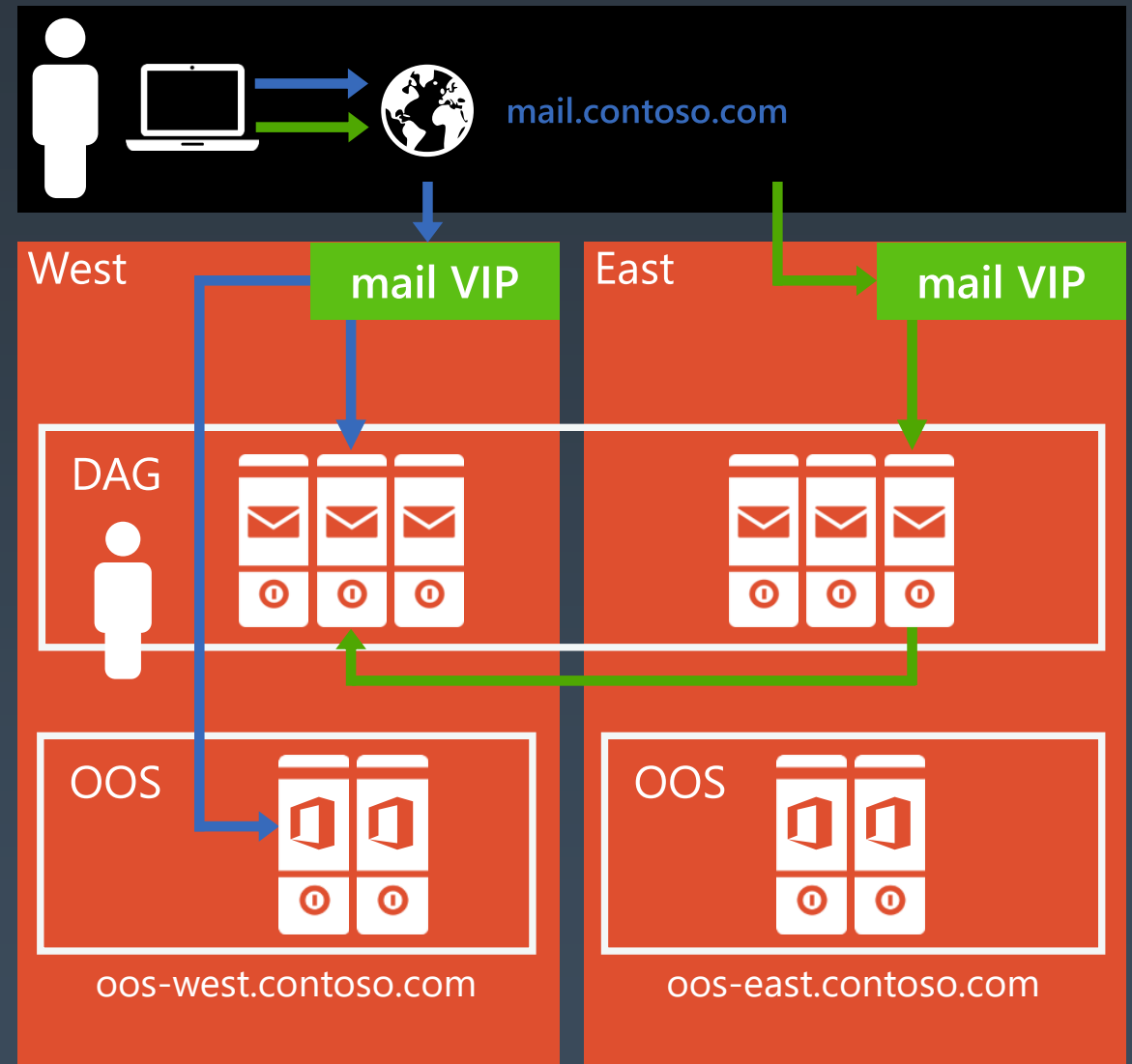
Always deploy a separate namespace for OOS

For site resilience, follow a bound namespace model for OOS

Even when Exchange leverages an unbound namespace

Namespace manipulation during datacenter activation is not required

Requires persistence at the load balancer



# Preferred Architecture

## Summary

# Preferred architecture

## Namespace design

For a site resilient datacenter pair, a single namespace / protocol is deployed across both datacenters

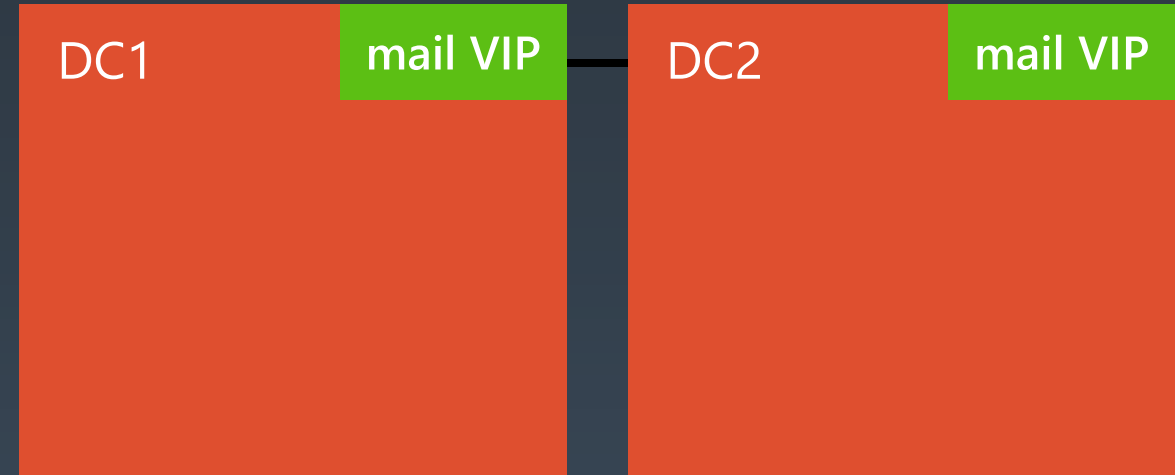
- autodiscover.contoso.com
- HTTP: mail.contoso.com
- HTTP: outlook-int.contoso.com (OA, MAPI – internally)
- IMAP: imap.contoso.com
- SMTP: smtp.contoso.com

For Outlook Web Apps Server, a namespace is deployed per datacenter

Load balancer configuration

- For Exchange VIPs: no session affinity, one VIP/datacenter, per-protocol health checking
- For OWAS VIPs: session affinity

Round robin, geo-DNS, or other solutions are used to distribute Exchange traffic equally across both datacenters



# Preferred architecture

## DAG design

Each datacenter should be its own Active Directory site

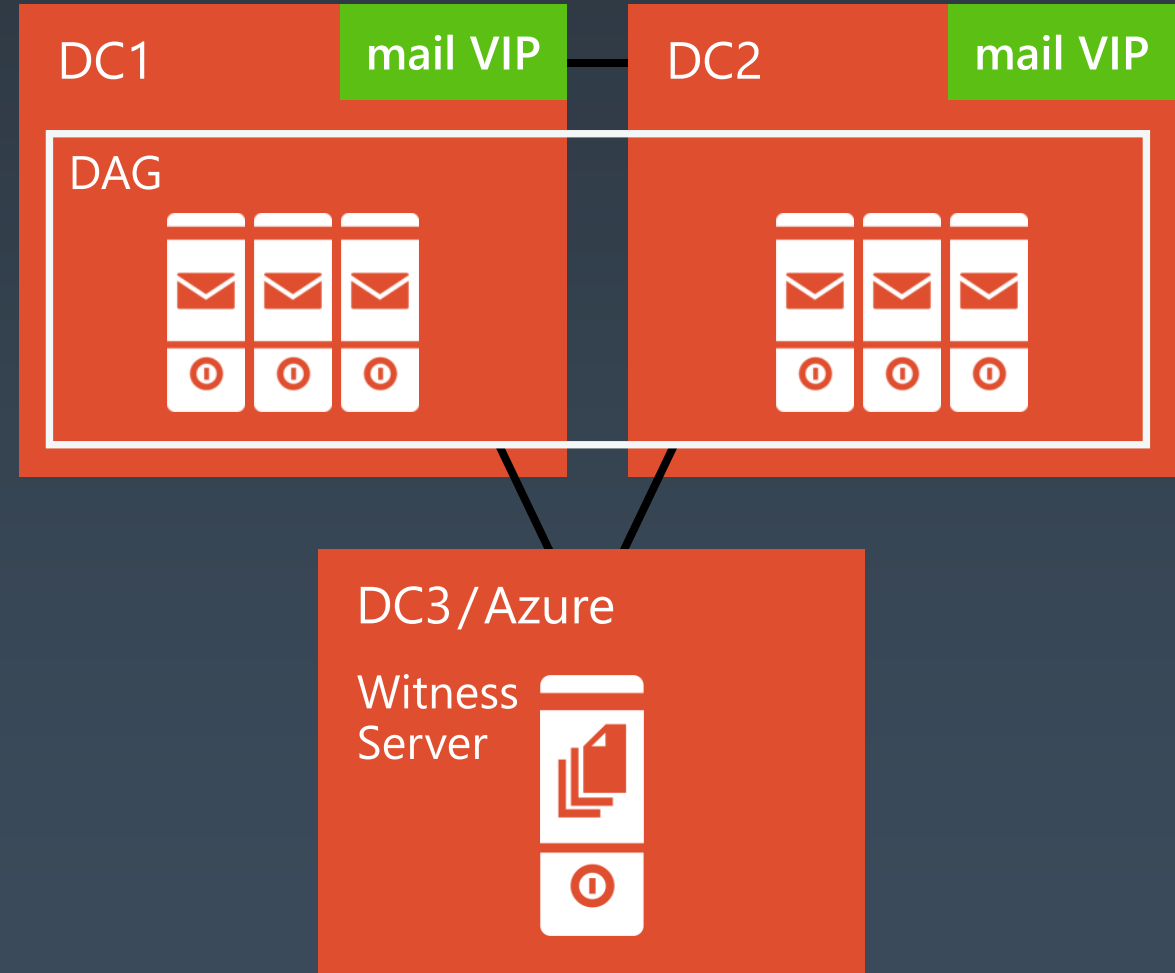
Increase DAG size density before creating new DAGs

### DAG configuration

- Unbound, symmetrical DAG model spanning across datacenters
- No administrative access point
- Single network for replication and client traffic
- Utilize a third datacenter or Azure for Witness server placement, if possible

### Database configuration

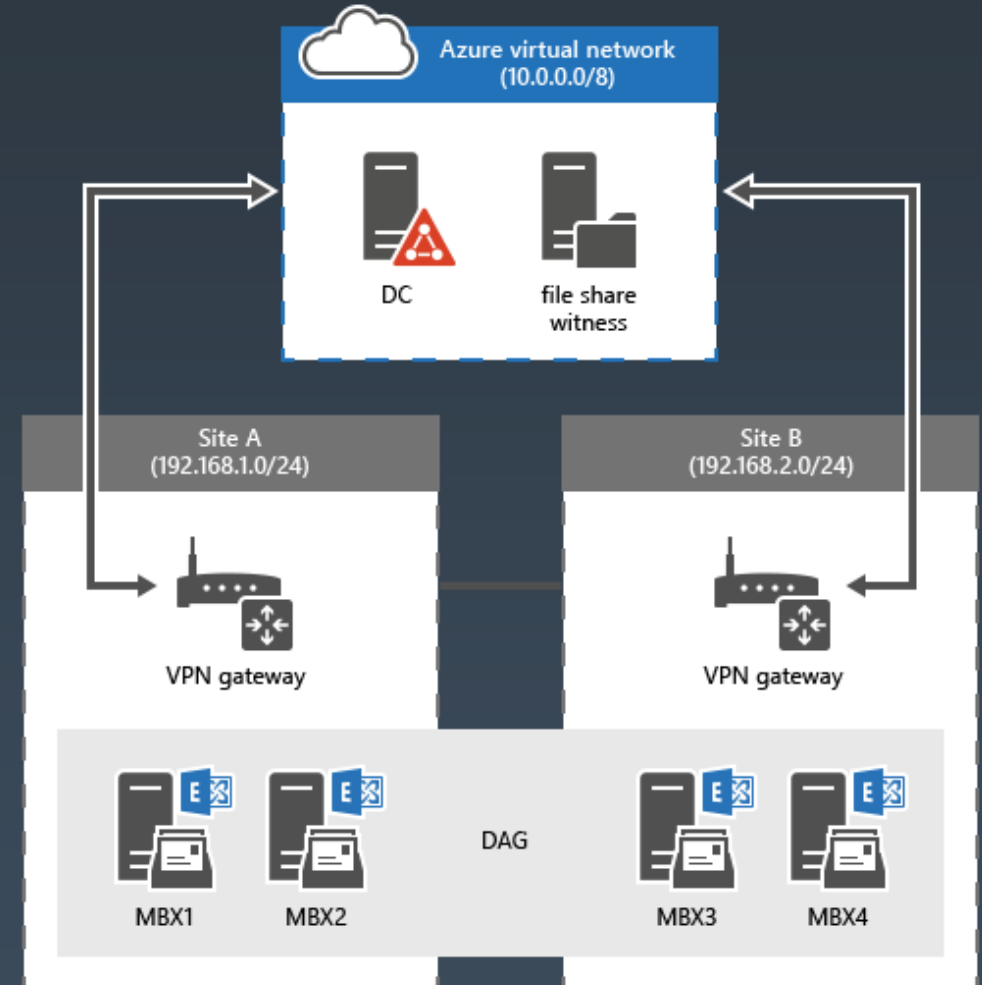
- Deploy four copies, two copies in each datacenter
- Distribute active copies across all servers in the DAG
- One copy is a lagged copy (seven days) with automatic play down enabled
- Native Data Protection is utilized





# Azure-hosted Witness Server

- Domain controllers replicated from on-premises must be deployed in Azure
- Domain name resolution configured between Windows Azure and on-premises
  - Typically provided by domain controllers deployed in Windows Azure



# Storage Design Options / Challenges

Many designs are supported; there are three storage design dimensions

## SAN $\leftrightarrow$ DAS

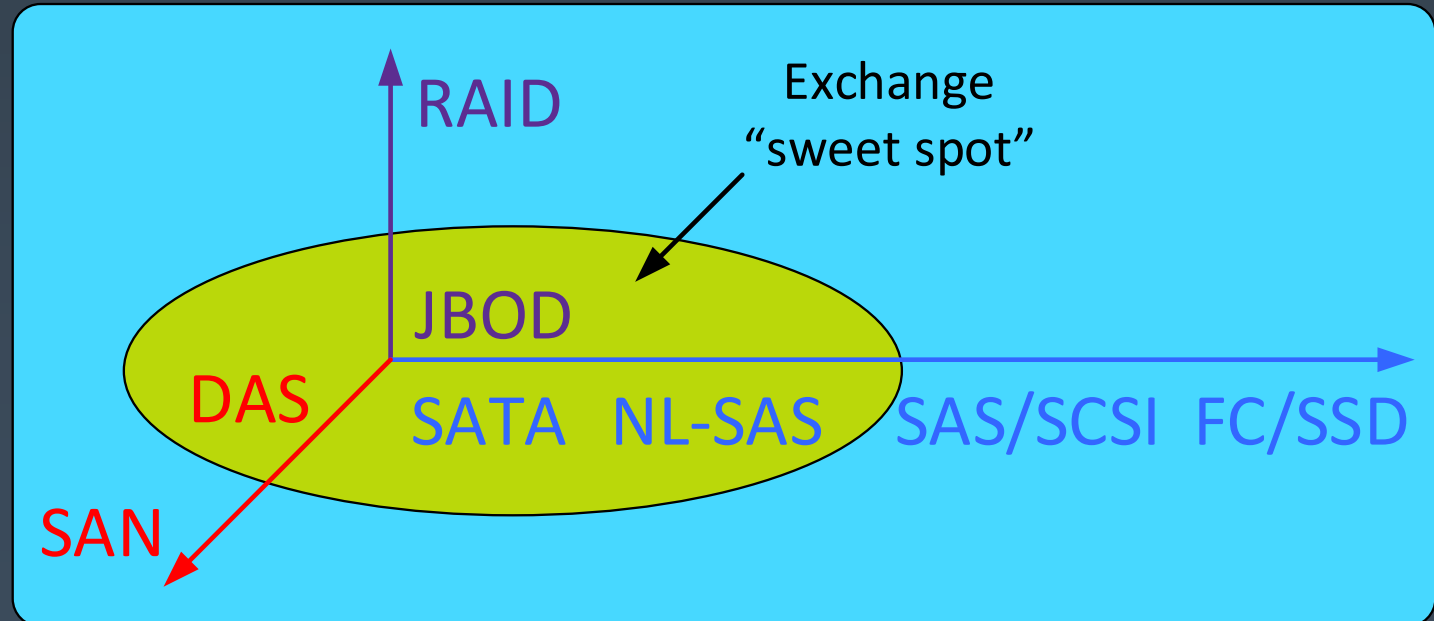
- SAN is NOT faster than DAS
- Reduce complexity
- No need in expensive redundant high performing intermediate SAN components
- SAN concept follows shared infrastructure model, not building block

## RAID $\leftrightarrow$ JBOD (RBOD)

- No need for disk redundancy: data redundancy is moved to application level
- Think of Ex2016 servers as software RAID
- RAID is supported but doubles disk count (assuming RAID-10) and cost
- Enable controller caching: 75/25 write/read

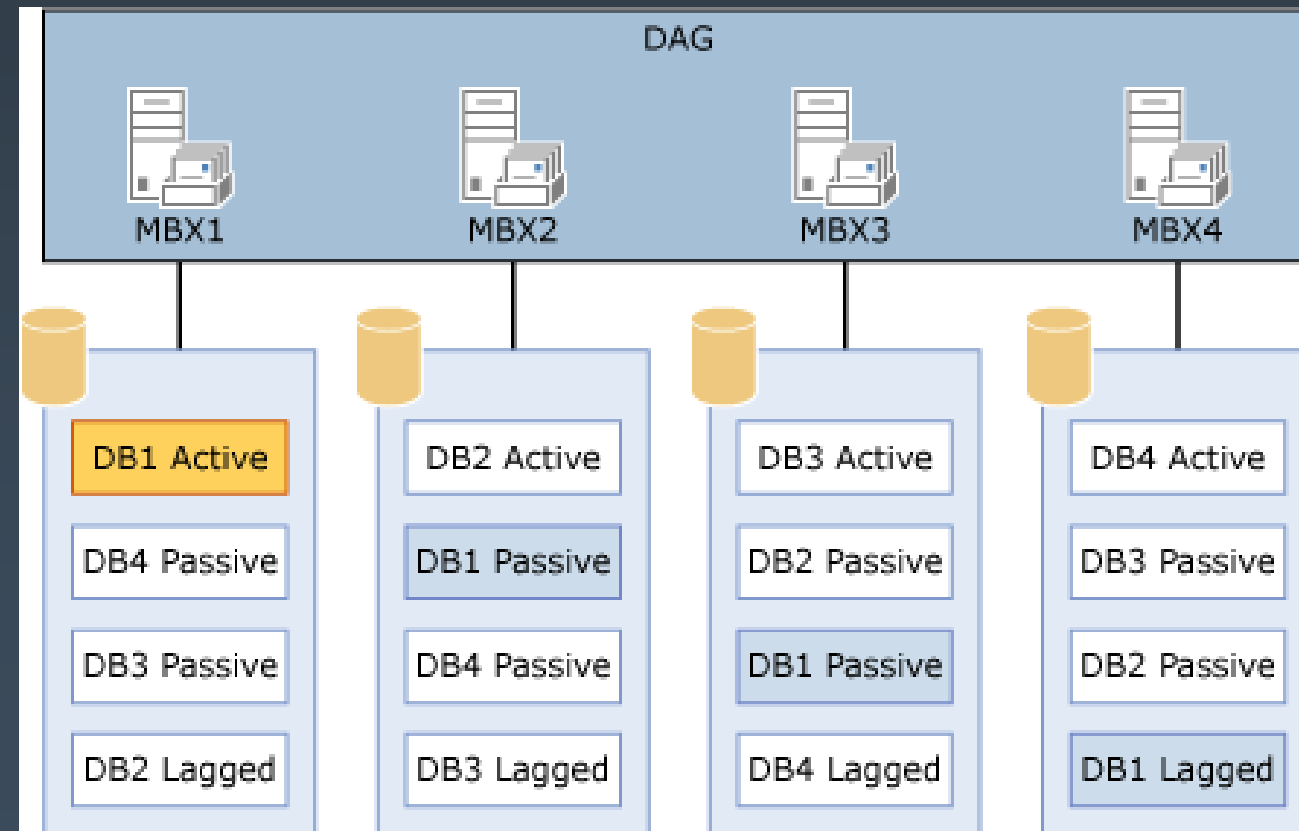
## FC $\leftarrow$ SAS $\rightarrow$ SATA

- Need large disks to provide large mailboxes
- In Ex2016 IOPS requirements reduced ~93% from Ex2003!
- Typical Ex2013 database requires ~10 IOPS  
7200 rpm LFF (3.5") SATA/NL-SAS disk provides ~60 IOPS  
15K rpm SFF (2.5") SAS/FC disk provides ~230 IOPS
- No need for fast but small and expensive high performing disks



# Multiple Databases Per Volume

- What's the benefit?
- Better use of large capacity drives (8TB)
- Max recommended database size is still 2TB
- Faster reseed times with AutoReseed
- Seeding 4 1.5TB databases is faster than 1 6TB DB
- No longer source constrained



# Exchange For ReFS - New Generation File System!

## Resilient File System (ReFS) - Introduced in Windows Server 2012

### More Resilient Against File System Corruption

Decrease in overall file system corruption incidents  
Decrease in database reseeds and machine rebuilds

### Early Detection of Data Corruption

Metadata checksums enable detection of file system corruption sooner and more deterministically

Eliminate grey failures before they occur on data volumes

### Better Availability

ReFS constrains corruptions to sub-portions of the volume

Databases on the same volume not affected by corruption remains healthy

### Scalability

Designed to work well with extremely large data sets - petabytes and larger.

### Compatible with Exchange Features

Continued support for BitLocker encryption

# Use REFS

- ReFS is recommended for volumes containing Exchange database files, log files, and content index files
- ReFS data integrity features are recommended to be disabled
  - Format-Volume -FileSystem REFS -NewFileSystemLabel ExchLUN01 -SetIntegrityStreams \$false
- Autoreseed the disk reclaimer needs to know which file system to use when formatting spare disks
  - Set-DatabaseAvailabilityGroup DAG01 -FileSystem ReFS
- Be aware of compatibility

DPM overview			On-premises Hyper-V virtual machine	From DPM 2012 R2 Update Rollup 9 onwards  Only supported if the Exchange database is on NTFS. REFS isn't currently supported.
What's new in DPM				
System requirements				
DPM protection support matrix			VMware Windows VM	

# Preferred architecture

## Server design

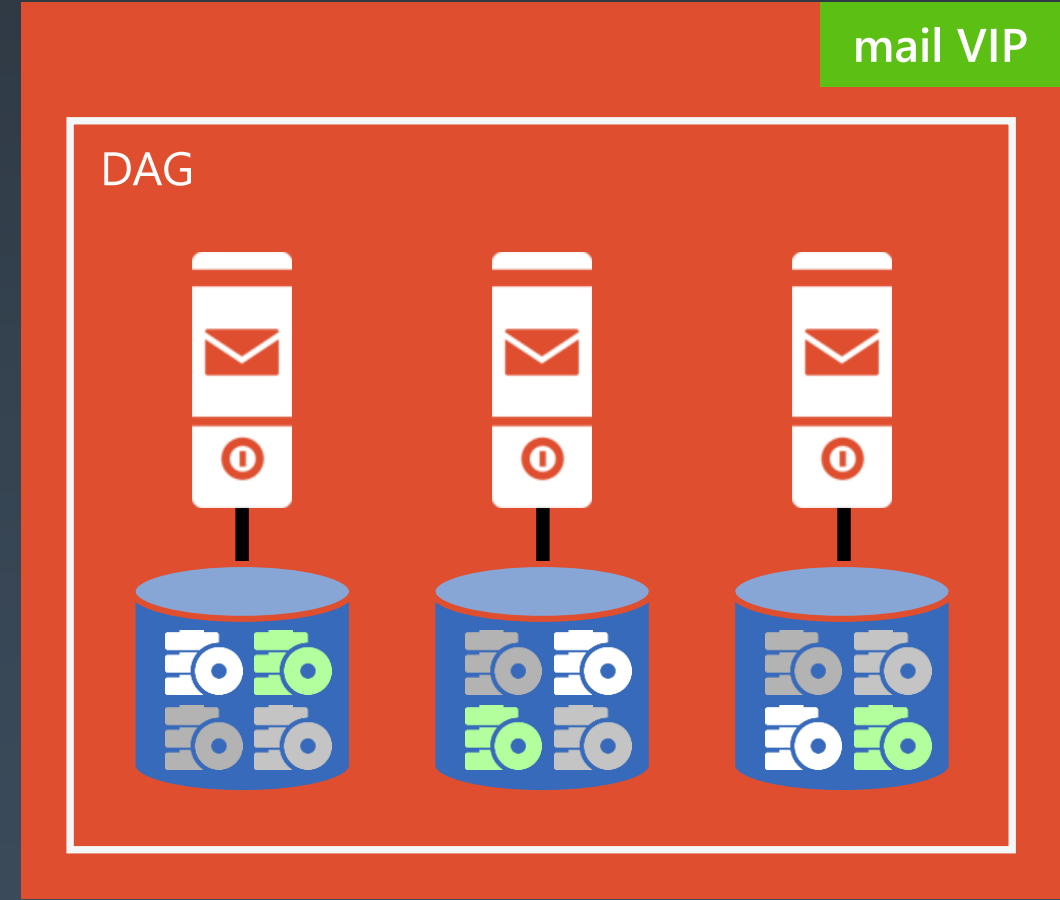
Servers are deployed on commodity hardware

- Dual-socket systems only (20-24 cores total, mid-range processors)
- Up to 96GB of memory

All servers handle both client connectivity and mailbox data

JBOD storage

- Large capacity 7.2k SAS disks
- Battery-backed cache controller (75/25)
- Multiple databases/volume
- AutoReseed with hot spare
- Data volumes are formatted with ReFS
- Data volumes are encrypted with BitLocker



# Virtualization vs. Role Consolidation

Introduces additional critical solution component and associated performance and maintenance overhead

Reduces availability and introduces extra complexity

Could make sense for small deployments helping consolidate workloads – but this introduces shared infrastructure

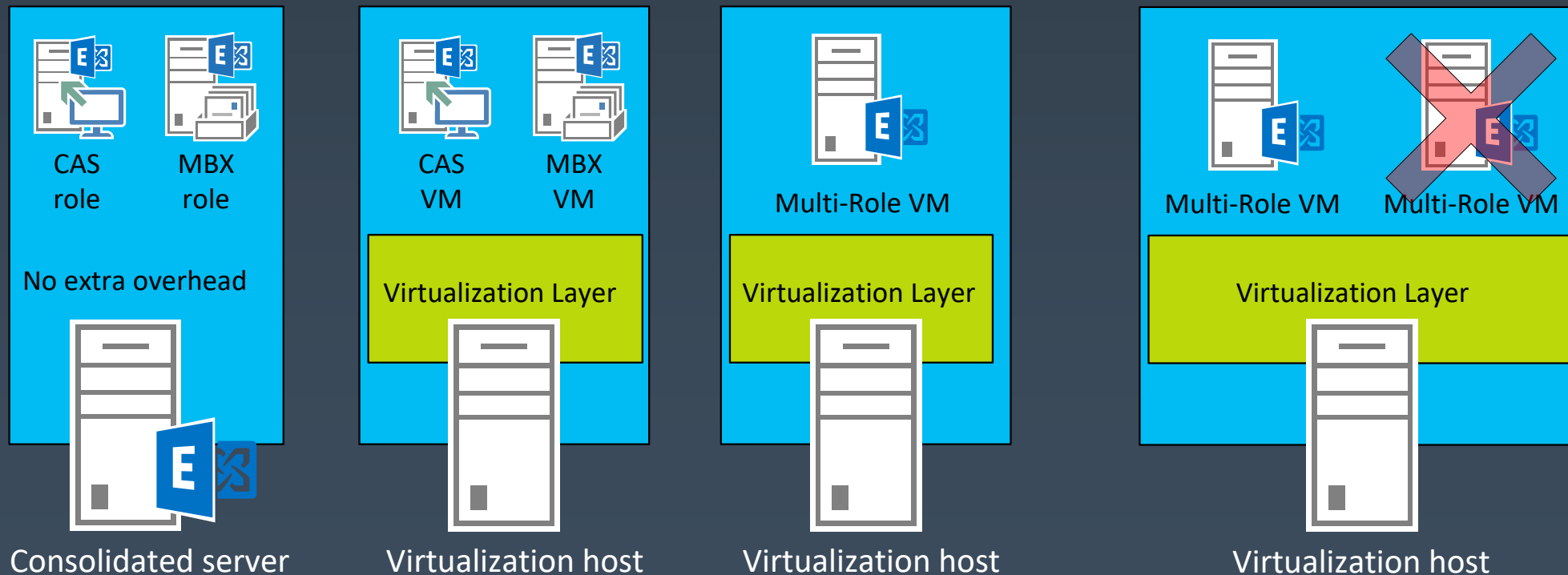
Consolidated roles is a guidance since Exchange 2010 – and now there is only a single role in Exchange 2016!

Deploying multiple Exchange servers on the same host would create failure domain

Hypervisor powered high availability is not needed with proper Exchange DAG designs

**No real benefits from Virtualization as Exchange provides equivalent benefits natively at the application level**

Failure domain!





# Large mailboxes for the win!

## Large mailbox size 100 GB+

Aggregate mailbox = primary mailbox + archive mailbox + recoverable items

1-2 years of mail (minimum)

1 million items/folder

# Increased knowledge worker productivity

## Eliminate or reduce PST reliance

## Eliminate or reduce third-party archive solutions

# Outlook 2013+ allows you to control OST size!

Gives more options around mailbox deployments

TIME	ITEMS	MAILBOX SIZE
1 day	150	11 MB
1 month	3300	242 MB
1 year	39000	2.8 GB
2 years	78000	5.6 GB
4 years	156000	11.2 GB

Change Account

Server Settings

Enter the Microsoft Exchange Server settings for your account.

Server:

MoMT.exchange.corp.microsoft.com

User Name:

Ross.Smith@microsoft.com

Check Name

Offline Settings

☒ Use Cached Exchange Mode

Mail to keep offline:

12 months

# Téma č.3

## Migrace

# Preparing for Exchange 2016



# Environment requirements

Exchange 2016 supports coexistence with

Exchange 2010 SP3 RU11 and later

Exchange 2013 CU10 and later

Exchange 2016 requires

Windows Server 2008 FFL and later

Windows Server 2008 and later AD Global Catalog servers in each Exchange site

## Outlook client requirements

Outlook 2010 SP2 (with KB2956191 and KB2965295)\* or later

Outlook 2013 SP1 (with KB3020812)\* or later

Outlook 2016

Outlook for Mac 2011 or later

## No longer supported

Outlook 2007, Outlook for Mac 2008 EWS Edition

MAPI/CDO Package

# Backup software compatibility common showstopper

# Server requirements

- Exchange 2016 is supported on full GUI installs of
  - Windows Server 2012
  - Windows Server 2012 R2
  - Windows Server 2016 (RTM only, no pre-release builds. Requires CU3 or later.)
- Exchange 2016 requires
  - .NET Framework 4.5.2 or 4.6.x (More on that later!)
  - Windows Management Framework 4.0 (More on that later!)
  - Unified Communications Managed API (UCMA) 4.0

# Exchange and Windows Server 2016

- You cannot upgrade OS on a server with Exchange installed
- You cannot use /RecoverServer to change the OS on a server with Exchange installed
- New installs are the only way to take advantage of Windows Server 2016
- Windows Defender is on by default in Windows Server 2016
  - We recommend the Exchange installation and setup log folders be excluded from scanning in Windows Defender
  - We also recommend excluding noderunner.exe processes from scanning

# Server 2016 High Availability Enhancements

## ■ Storage Replica

- Similar to Hyper-V Replica, unsupported at this time
- Block-based replication may not always align with Exchange transaction-based databases

## ■ VM Storage Resiliency

- No official support statement yet
- Recommend disabling it for Exchange virtualized DAGs (let Exchange determine when to failover)

## ■ Production Checkpoints

- Same story as before, not supported at this time
- Exchange config shared between AD & Exchange Server, Checkpoints problematic in production



# .NET 4.6.1 and 4.6.2 (For Exchange 2013 CU13/Exchange 2016 CU2 or later)

## ■ .NET 4.6.1 supported if the following hotfixes are installed

- Windows Server 2008 / 2008 R2

<https://support.microsoft.com/kb/3146716>

- Windows Server 2012

<https://support.microsoft.com/kb/3146714>

- Windows Server 2012 R2

<https://support.microsoft.com/kb/3146715>

## ■ .NET 4.6.2 to become supported with 2013 CU15 and 2016 CU4.

- No additional hotfixes required with 4.6.2

## ■ .NET 4.6.2 to become mandatory with 2013 CU16 and 2016 CU5.

- Setup will block installation if 4.6.2 is not detected

# Windows Management Framework

- What should we expect to see?

- Did the OS ship with it? It is supported.

- *e.g. Windows Server 2016 ships with WMF5, therefore Exchange 2016 CU3 or later can use WMF5 if installed on Windows Server 2016, but not if installed on Windows Server 2012 R2 as that OS did not ship with WMF5.*

- Do you have to install it to use it? Then it is not supported.

# Don't Sink Your Battleship

Earlier versions of Exchange cannot be reintroduced

Don't run setup /preparead until you're certain  
Be aware the GUI will run this as well

```
D:\>setup /prepareschema /iaacceptexchangeserverlicenseterms

Welcome to Microsoft Exchange Server 2016 Unattended Setup
Copying Files...
File copy complete. Setup will now collect additional information needed for
installation.

Performing Microsoft Exchange Server Prerequisite Check

    Prerequisite Analysis                                COMPLETED

Configuring Microsoft Exchange Server

    Extending Active Directory schema                    COMPLETED

The Exchange Server setup operation completed successfully.

D:\>setup /preparead /iaacceptexchangeserverlicenseterms

Welcome to Microsoft Exchange Server 2016 Unattended Setup
Copying Files...
File copy complete. Setup will now collect additional information needed for
installation.

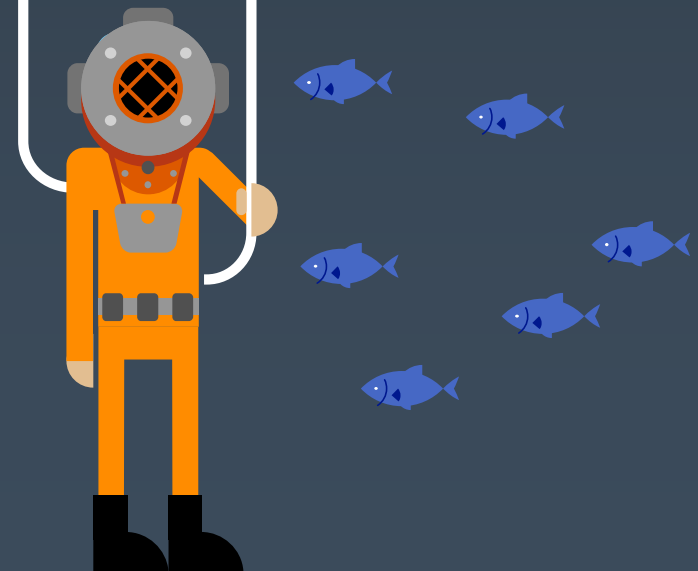
Performing Microsoft Exchange Server Prerequisite Check

    Prerequisite Analysis                                COMPLETED

Configuring Microsoft Exchange Server

    Organization Preparation                            COMPLETED

The Exchange Server setup operation completed successfully.
D:\>
```



# Avoid The OAB Avalanche

Exchange 2016 and 2013 create a new default OAB for the organization

```
[PS] C:\>Get-OfflineAddressBook | FT Name,IsDefault,ExchangeVersion
```

Name	IsDefault	ExchangeVersion
Default Offline Address Book	False	0.1 (8.0.535.0)
Default Offline Address Book (Ex2013)	True	0.20 (15.0.0.0)



Specifying the existing OAB on all legacy DBs prior to installing 2016 (or 2013)

```
[PS] C:\Windows\system32>Get-MailboxDatabase | FT NAME,*offline*,exchangeversion -AutoSize
```

Name	OfflineAddressBook	ExchangeVersion
Mailbox Database 2128912305	\Default Offline Address Book	0.10 (14.0.100.0)

# Installing Exchange 2016



# What is the Easiest Way to Install?

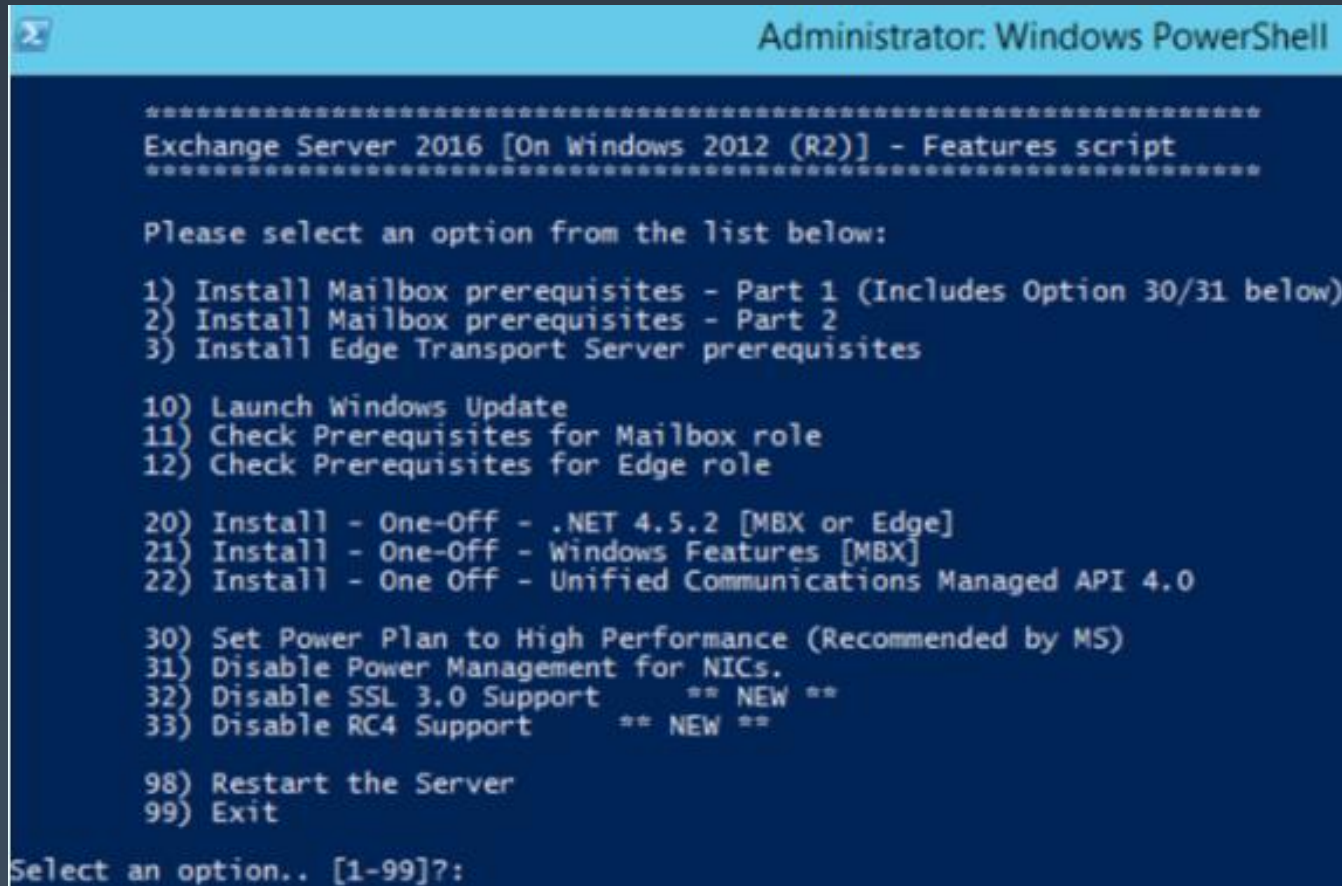


1. Install new server into a deployment AD site
2. Install Desktop-Experience & RSAT-ADDS, reboot
3. Install UCMA 4.0, reboot
4. Install Exchange 2016 and allow setup to install required Windows components
5. Reboot for system settings to take effect
6. Configure and move into production AD site
7. Add the new server to the load balancing pool

# Install Exchange 2016 Pre-requisites.ps1

## ■ Tip: a few useful PowerShell scripts for Exchange and Office 365 Admins

■ <https://blogs.technet.microsoft.com/exchange/2016/10/06/tip-a-few-useful-powershell-scripts-for-exchange-and-office-365-admins/>



```
Administrator: Windows PowerShell

*****
Exchange Server 2016 [On Windows 2012 (R2)] - Features script
*****

Please select an option from the list below:

1) Install Mailbox prerequisites - Part 1 (Includes Option 30/31 below)
2) Install Mailbox prerequisites - Part 2
3) Install Edge Transport Server prerequisites

10) Launch Windows Update
11) Check Prerequisites for Mailbox role
12) Check Prerequisites for Edge role

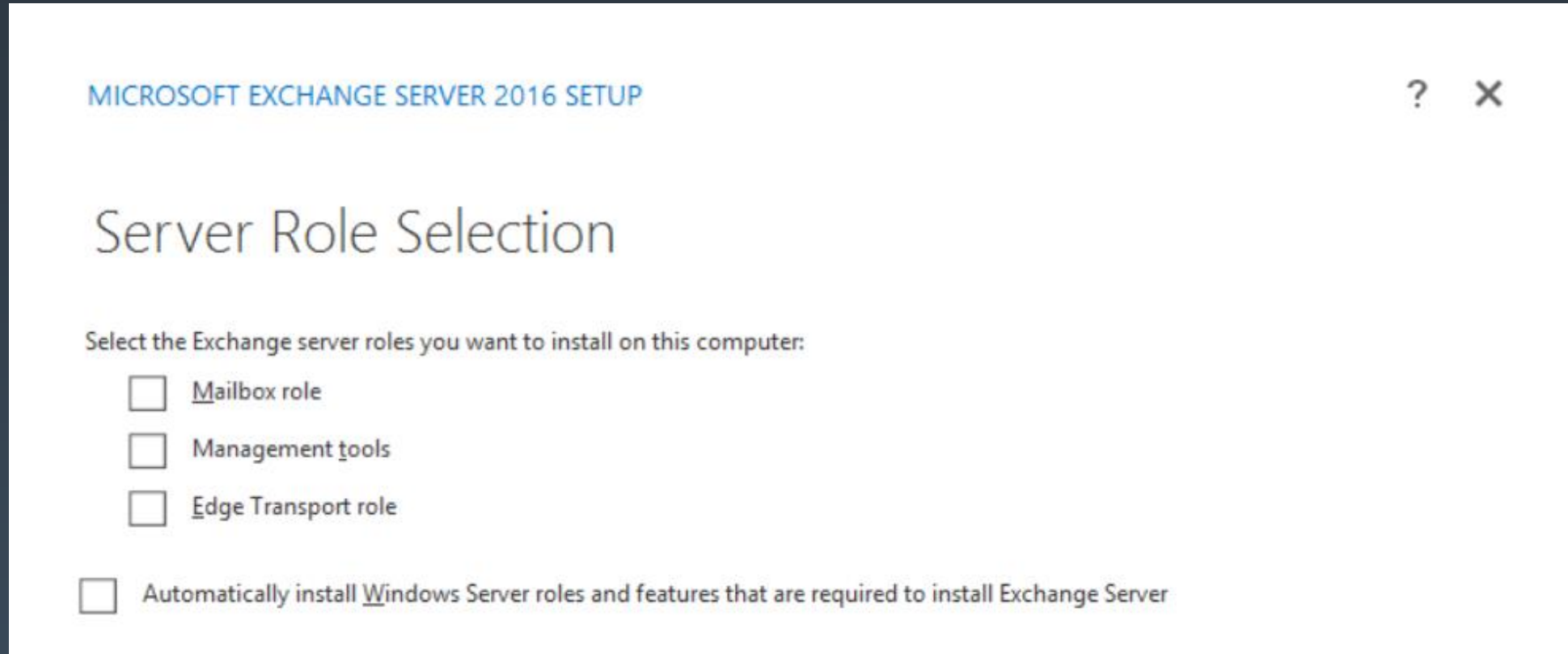
20) Install - One-Off - .NET 4.5.2 [MBX or Edge]
21) Install - One-Off - Windows Features [MBX]
22) Install - One Off - Unified Communications Managed API 4.0

30) Set Power Plan to High Performance (Recommended by MS)
31) Disable Power Management for NICs.
32) Disable SSL 3.0 Support          ** NEW **
33) Disable RC4 Support             ** NEW **

98) Restart the Server
99) Exit

Select an option.. [1-99]?:
```

# We removed another checkbox.



The “mailbox” role in unattended setup has been updated as well.

```
D:\>setup /mode:install /roles:mailbox /iacceptexchangeserverlicenseterms
```



# Knowledge Nuggets Worth Repeating

...and repeating... and repeating... and repeating...

Use "High Performance" Power Plan in Windows

Disable Hyperthreading in Physical Deployments

Storage Controller Cache (BBWC or FBWC) allocated 75% Write, 25% Read

Using RAID? Use a stripe (per disk chunk) of 256KB or larger in multiples of 256KB



# Knowledge Nuggets Worth Repeating

Use GPT Partitions

Exchange Binaries Volume formatted as NTFS w/64KB AUS

Allocation Unit Size, not 64k Australians. That would be a lot of Aussies in one volume!

Data Volumes formatted as ReFS w/Data Integrity Features Disabled

Utilize BitLocker for disk encryption to protect against spindle theft.

Jetstress with BitLocker & Virus scanning active if you plan to use it



# Knowledge Nuggets Worth Repeating

Do not disable the entire IPv6 stack

Do not disable the <pick a random name> service post-install.

Do not restrict the dynamic TCP port range.

Do not “set and forget” the server; keep things up to date.

Do not forget your clients. Keeping them up to date is just as important!



# System Mailbox Movement Post Install

Move this system mailbox from 2010/2013 to 2016.

SystemMailbox{e0dc1c29-89c3-4034-b678-e6c29d823ed9}

Can't save admin tasks to the admin audit log

Can't export admin audit log

Can't start eDiscovery searches

Can't use new 2016 functionality

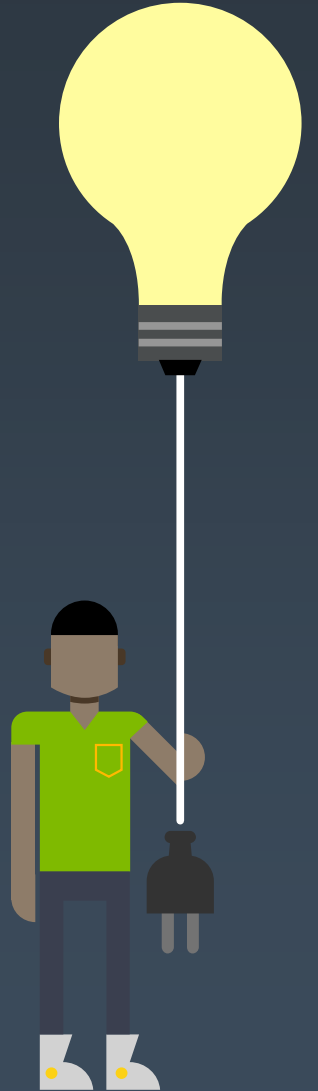
# Exchange 2016 Coexistence

"Coexistence is not easy to plan..."

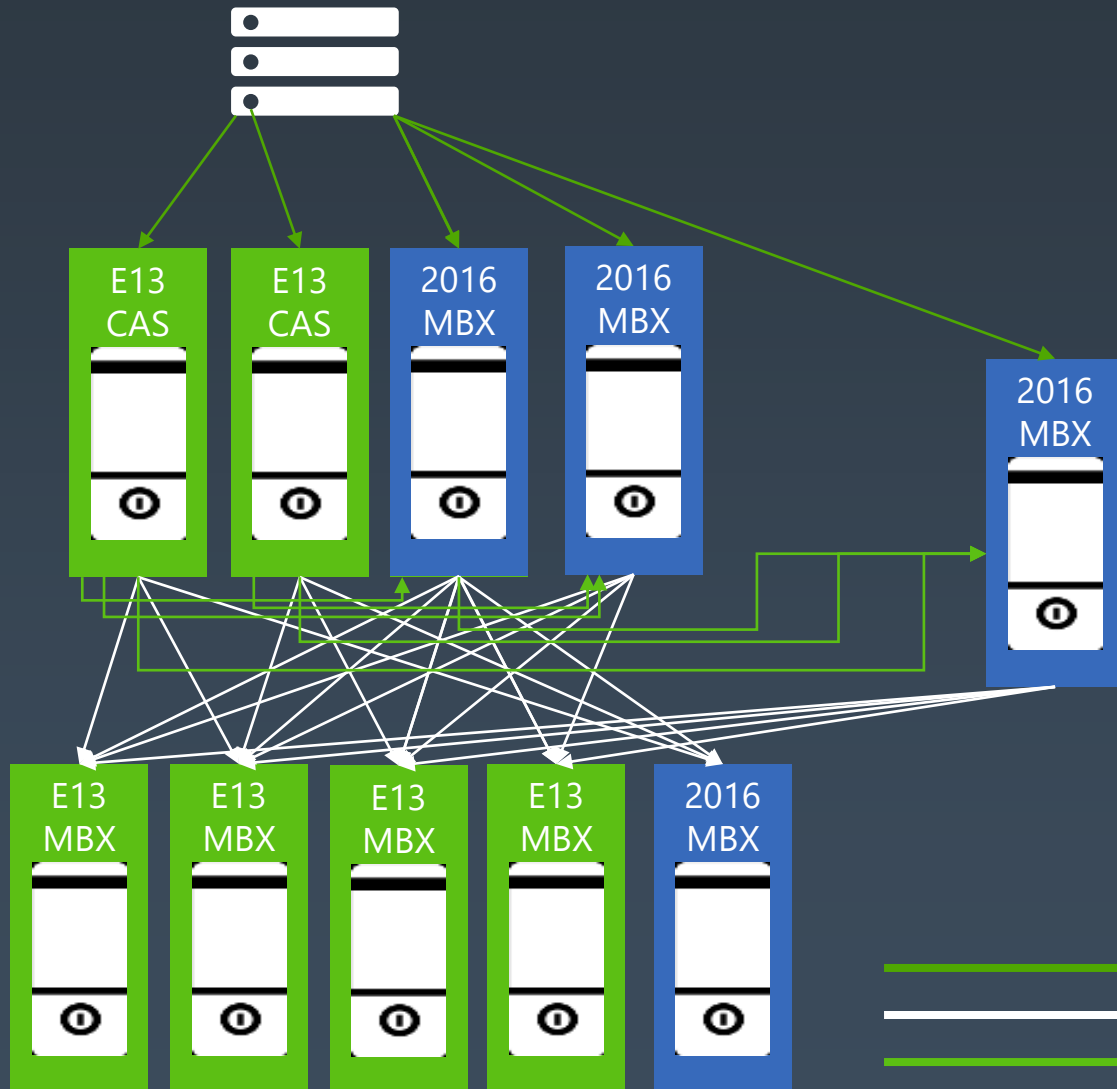
"Coexistence is hard to execute smoothly..."

"75 minutes of slides and I'm still confused. How does this work?"

"Should I update my resumé before I install this server?"



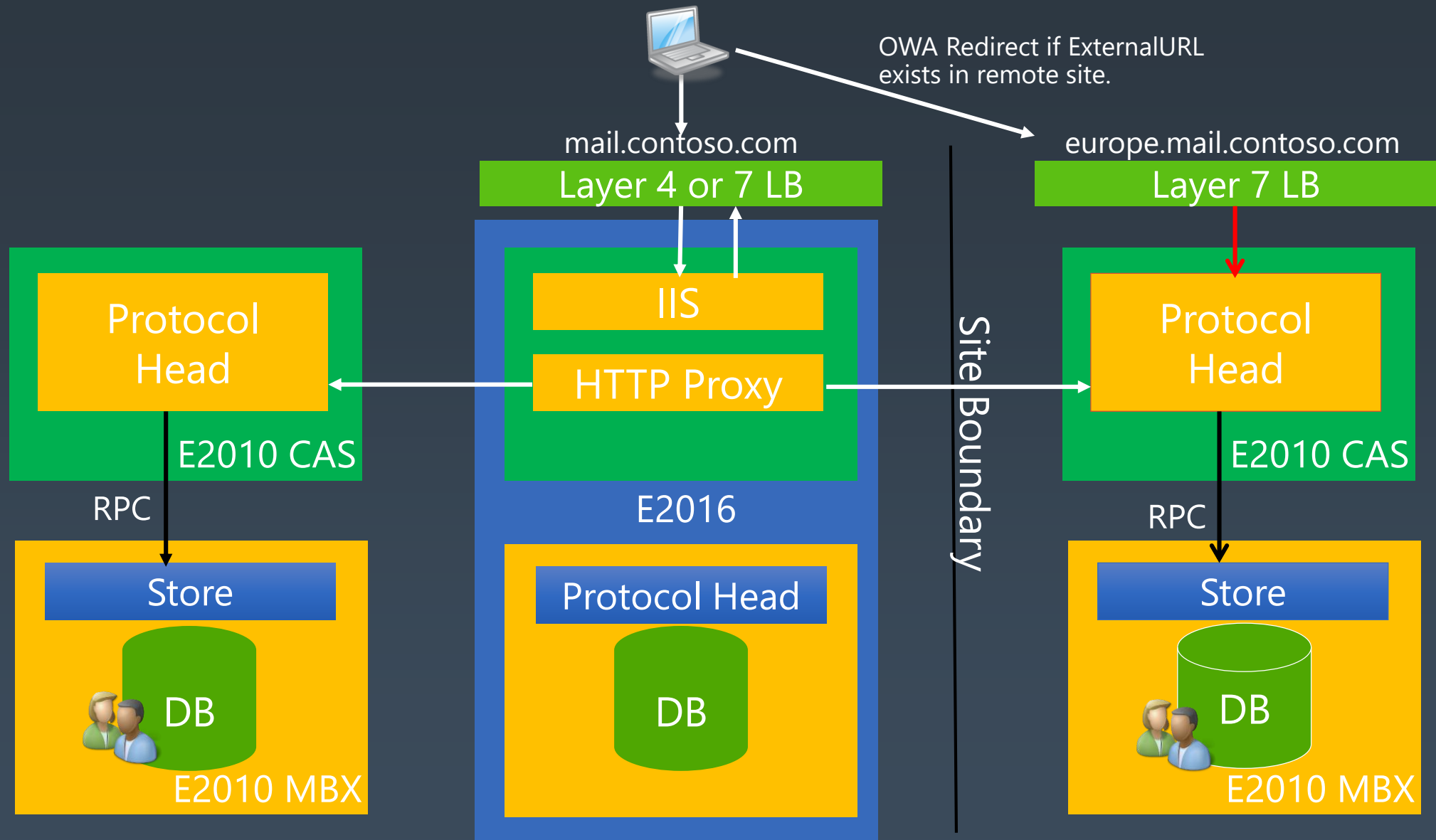
# How Does This Work Outside of a Lab?



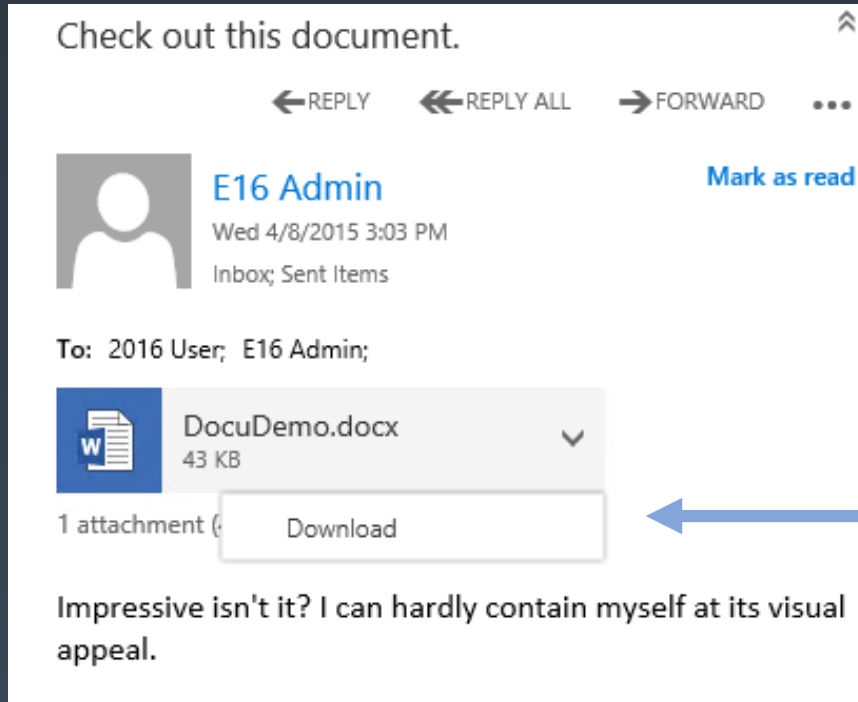
1. LB is sending traffic to 2013 CAS services
2. Exchange 2016 is introduced
3. Exchange 2016 CAS services added to LB pool
4. Exchange 2013 CAS services removed from LB pool
5. More Exchange 2016 introduced and added into LB pool
6. More 2013 CAS services removed from LB pool
7. More Exchange 2016 introduced and added to LB pool
8. Final 2013 CAS services removed from LB pool

— LB to Client Access Services  
— Client Access Services to Mailbox  
— 2013 Client Access to 2016 Mailbox  
Not Shown: Intra-2016 Server Traffic

# Exchange 2016/2010 Coexistence

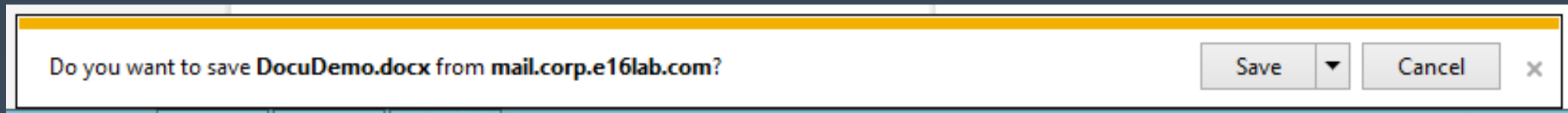


# OWA Before Attachment Viewing is Configured

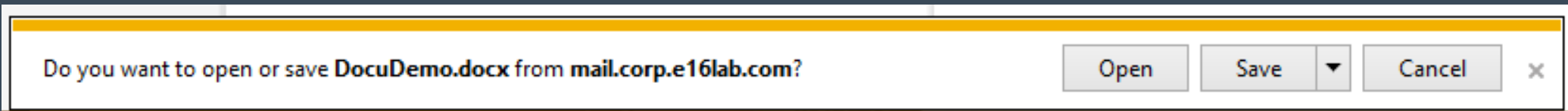


That's all folks!

No Native App  
Installed



Native App  
Installed





# Configuring OWA Attachment Viewing

## Configure the discovery URL

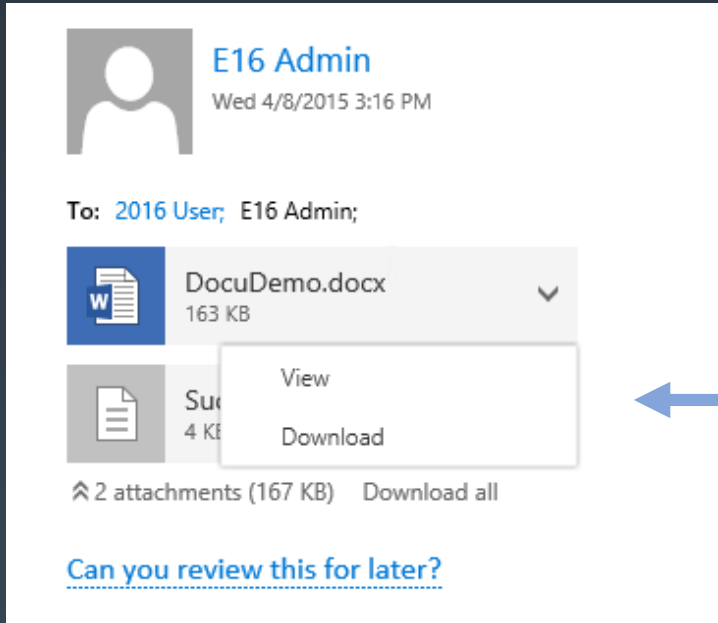
```
[PS] C:\>Set-OrganizationConfig -WACDiscoveryEndpoint https://oos.corp.e16lab.com/hosting/discovery
```

```
[PS] C:\>Get-OrganizationConfig | FL WACDiscovery*
```

```
WACDiscoveryEndpoint : https://oos.corp.e16lab.com/hosting/discovery
```

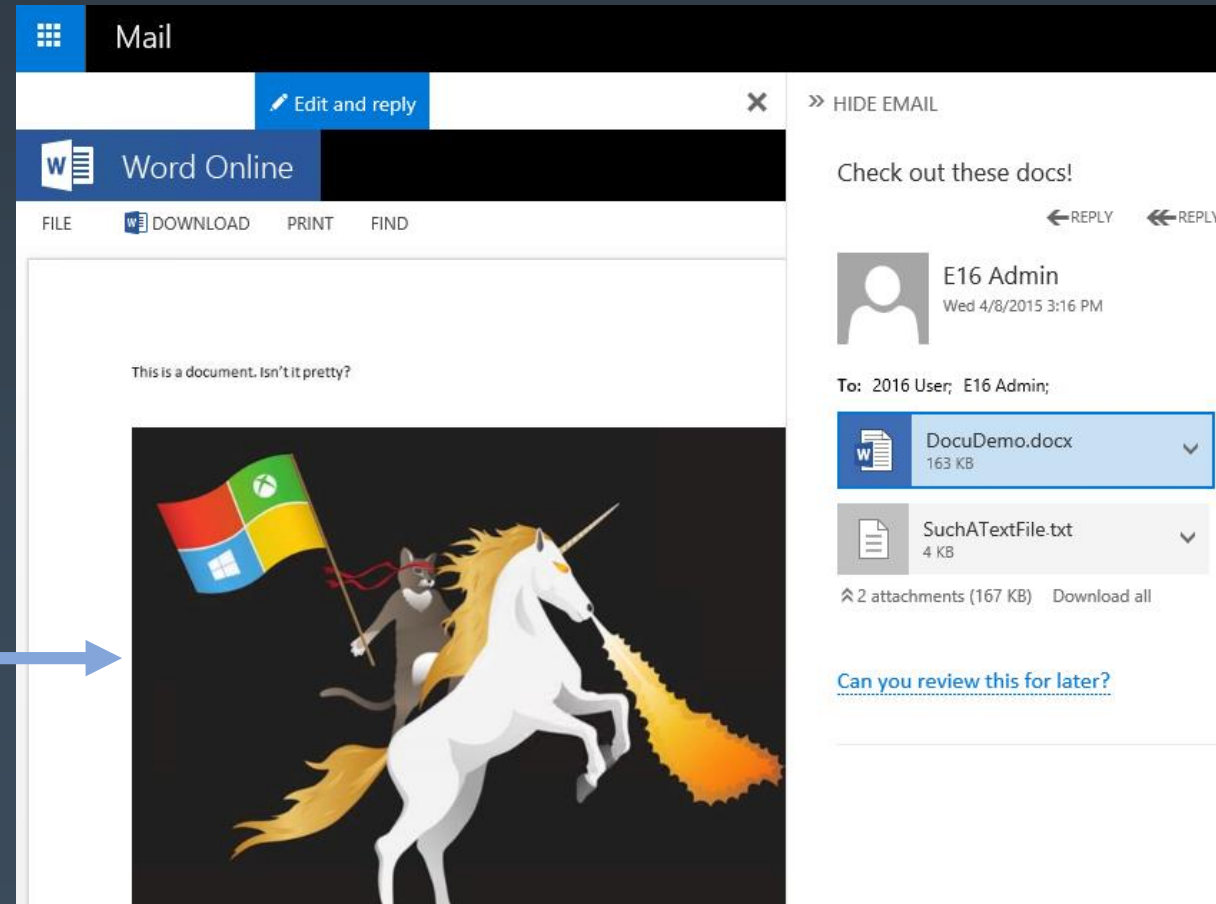
## Restart MSExchangeOWAAppPool

# OWA After Attachment Viewing is Configured



Look, Mom, two options now!

The new side-by-side (SxS) view



# Legacy vs. Modern Public Folders

	Legacy Public Folders	Modern Public Folders
Content storage	Public Folder database	<b>Public Folder mailbox</b>
Public Folder content replication	Can be replicated between databases	<b>No replication</b>
High availability	PF replication	<b>DAG</b>
PF Hierarchy storage	One per PF database, multi-master	<b>Per PF mailbox, one master only</b>
PF Hierarchy synchronization	Based on e-mail	<b>Direct mailbox sync</b>
Search	Items only	<b>Items and attachments (full-text)</b>
Public Folder Client permissions	Access Control Lists (ACLs)	<b>Access Control Lists (ACLs)</b>
Admin Platform	PF Management Console + EMS	<b>EAC + EMS</b>

# Public Folder coexistence

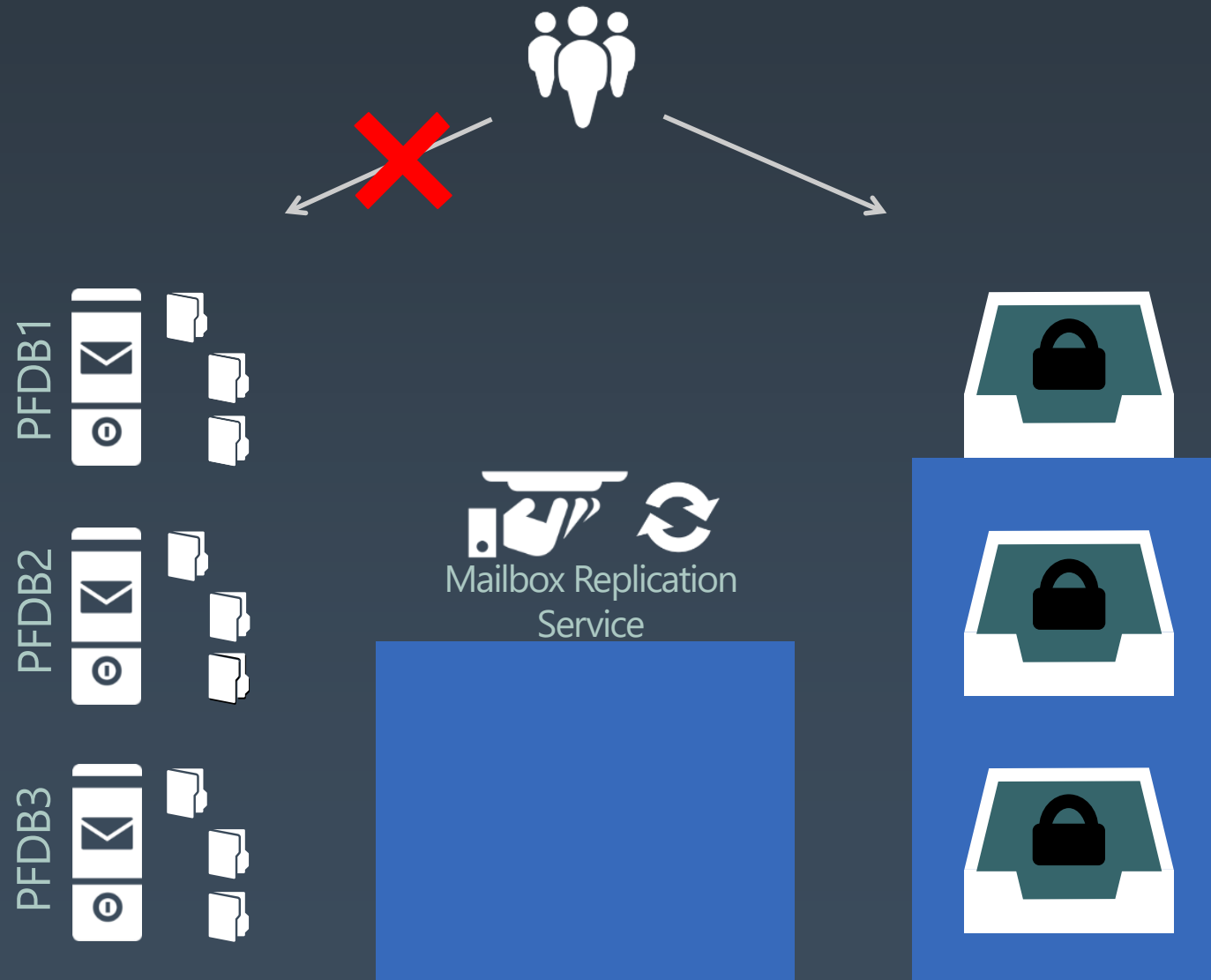
## ■ Configuring Coexistence [https://technet.microsoft.com/en-us/library/dn690134\(v=exchg.150\).aspx](https://technet.microsoft.com/en-us/library/dn690134(v=exchg.150).aspx)

1. CAS role required on Public Folder servers (*Exchange 2010 only*)
2. Create empty mailbox DB on Public Folder servers
3. Create proxy mailbox in empty DB
4. Set RPCClientAccessServer for each empty DB
5. Configure Exchange 2016 ORG to access legacy Public Folders:  
`Set-OrganizationConfig -PublicFoldersEnabled Remote -RemotePublicFolderMailboxes ProxyMbx1, ProxyMbx2...`

## • Migrate

- Start to migrate all mailboxes to Exchange 2013 first, your Public Folders stay where they are today
- Start Public Folder migration sync(s)
- When all Mailboxes are migrated, define a weekend or more to lock-down the existing Public Folder structure
- Do a final delta-sync
- Switch PF structure to Modern Public Folders

# Migration process



**Batch migration** [https://technet.microsoft.com/en-us/library/dn912663\(v=exchg.160\).aspx](https://technet.microsoft.com/en-us/library/dn912663(v=exchg.160).aspx)

## Analyze

- Export-PublicFolderStatistics.ps1
- PublicFolderToMailboxMapGenerator.ps1

## Provision public folder mailboxes

- .\Create-PublicFolderMailboxesForMigration.ps1 - FolderMappingCsv Mapping.csv - EstimatedNumberOfConcurrentUsers:<estimate>

## Begin migration

- New-MigrationBatch -Name PFMigration - SourcePublicFolderDatabase (Get-PublicFolderDatabase -Server <Source server name>) -CSVData (Get-Content <Folder to mailbox map path> -Encoding Byte)
- Start-MigrationBatch PFMigration

## Finalize Migration Request

- Lockout users: Set-OrganizationConfig -PublicFoldersLockedForMigration:\$true
- Set-OrganizationConfig -PublicFoldersEnabled Remote
- Complete-MigrationBatch PublicFolderMigration

## Validate and open up for all

- Set-Mailbox -DefaultPublicFolderMailbox *(optional)*
- Set-OrganizationConfig - PublicFolderMigrationComplete:\$true
- Set-OrganizationConfig -PublicFoldersEnabled Local

# Uninstall last legacy Exchange Server

- Remove old OAB
- Remove Client Access Array
- Remove Public Folders Database
- Remove Mailbox Databases
- Uninstall
- That's it. All done!



# DEMO

Popis Dema





je když



je když



je když



je když



se řečne



se řečne

Internet of Things

se řečne



se řečne



je když



je když



je když



je když



se řečne

Enterprise  
Mobility Suite

se řečne

Active Directory

se řečne



se řečne



je když



je když



je když



je když

Efektivní  
zabezpečení dat

se řečne



se řečne

Microsoft Azure

se řečne

Hybridní  
datová centra

Office 365  
Azure  
Hyper-V

se řečne