Exchange Server 2016: Novinky

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Agenda

- Novinky
- Správný návrh
- Migrace

Téma č.1
Novinky

Exchange Server 2016 Vision

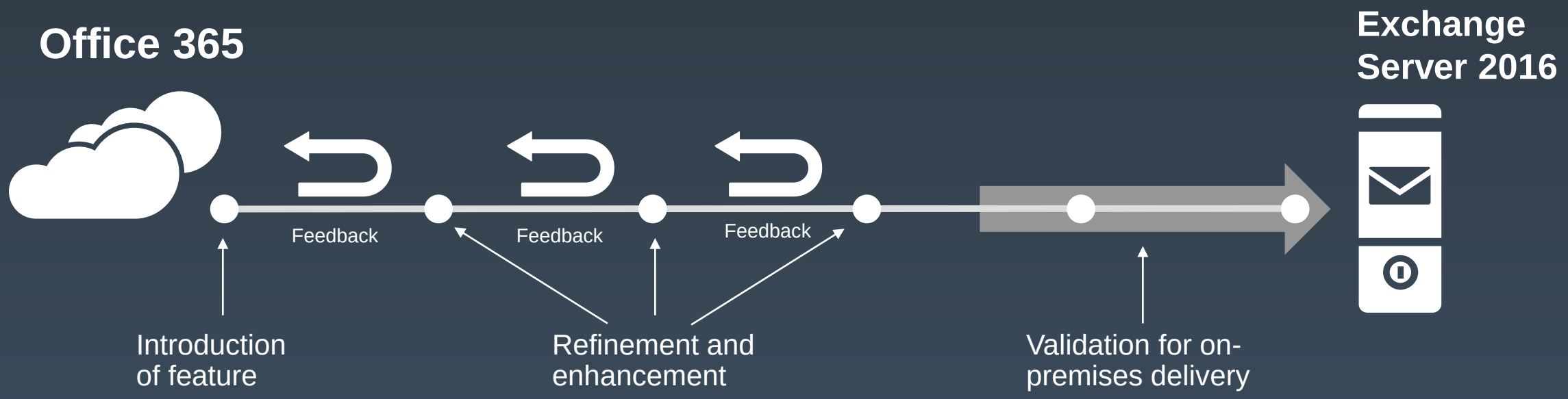
Superior performance and reliability

Robust, proven architecture

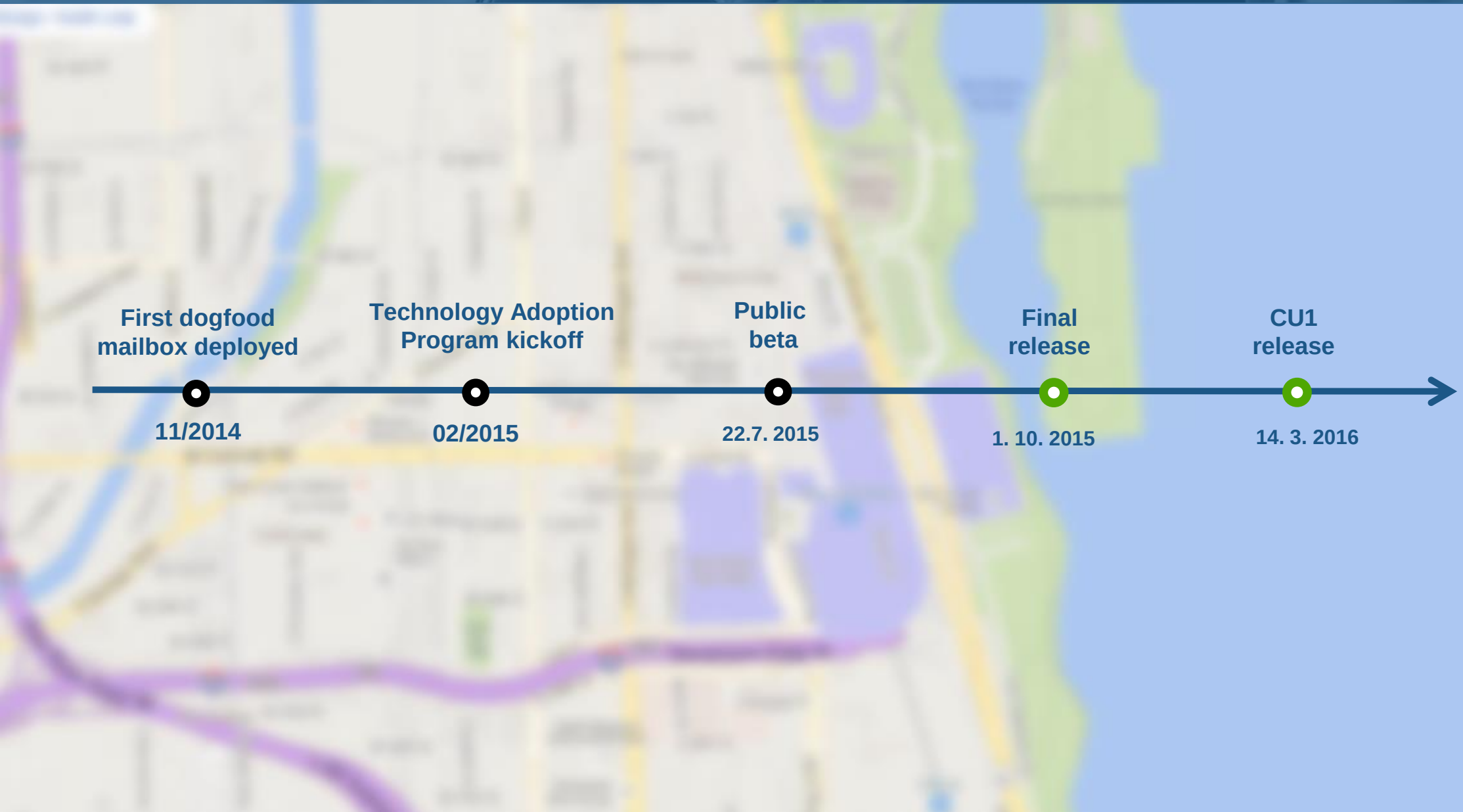
Flexible, future-ready foundation

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

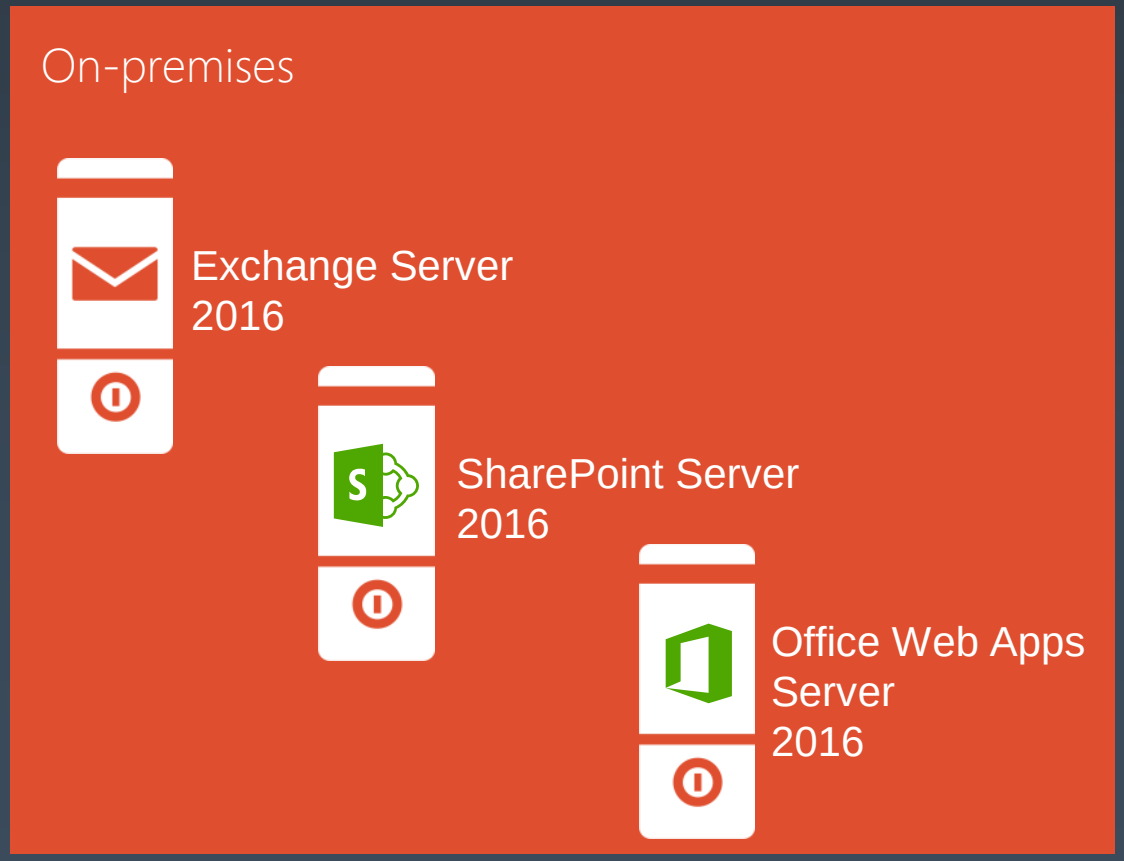
Exchange integration with Outlook and SharePoint helps solve one of email's oldest pain points: working with attachments

Receiving and editing documents

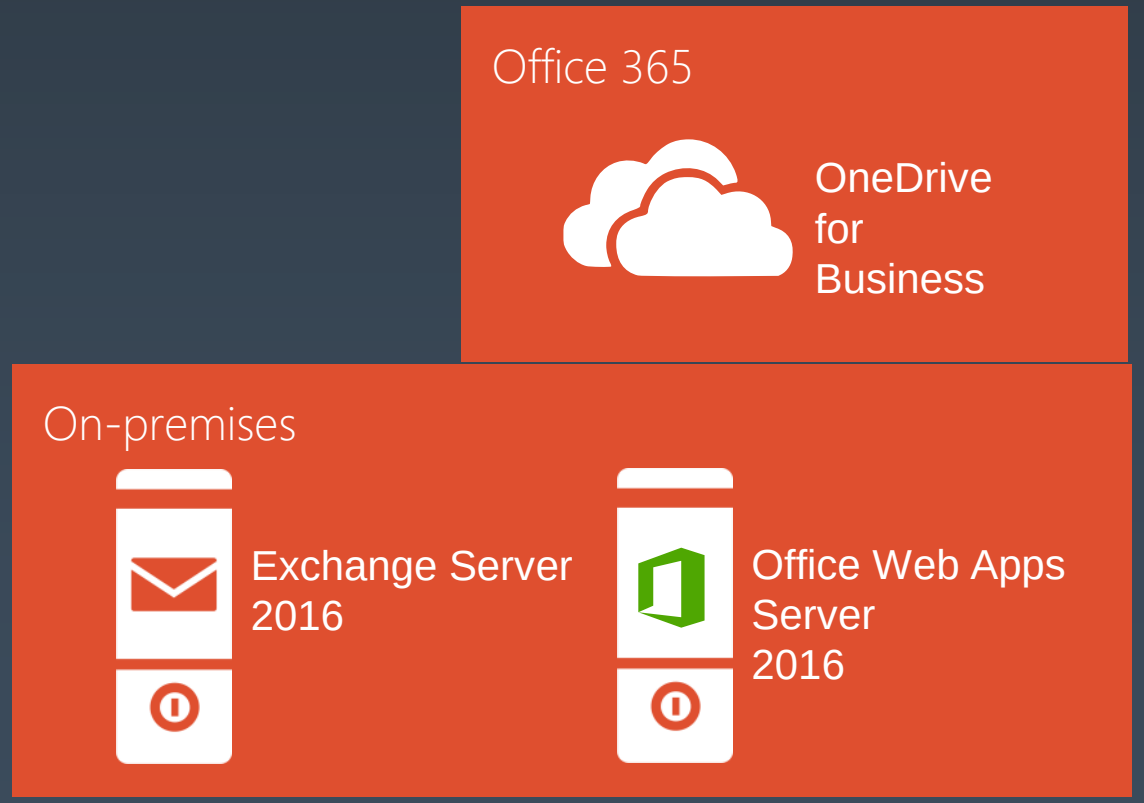
Sharing documents

Infrastructure options for document collaboration

Fully on-premises
(documents stored in SharePoint 2016)



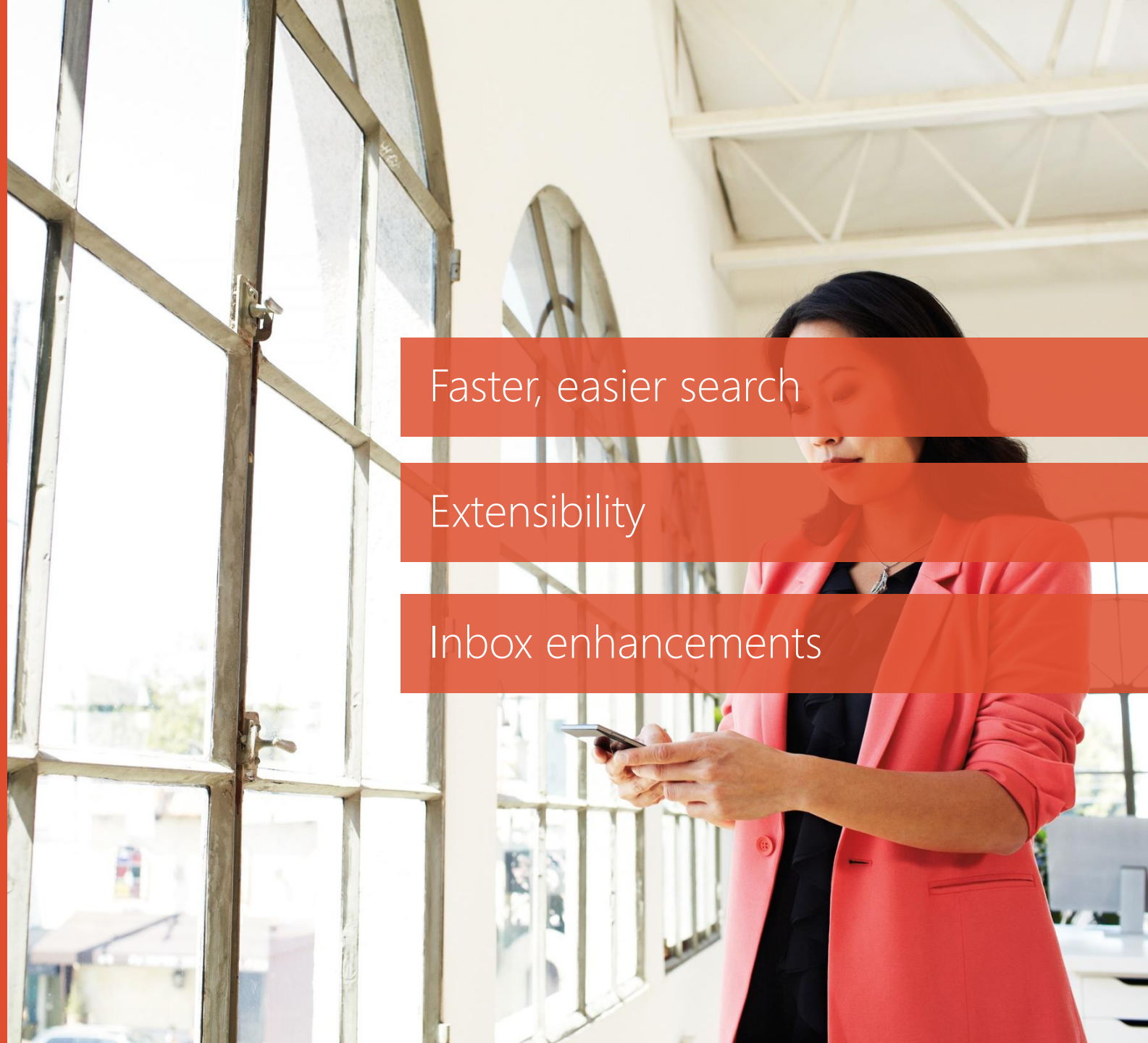
Hybrid
(documents stored in Office 365)



Smarter inbox

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

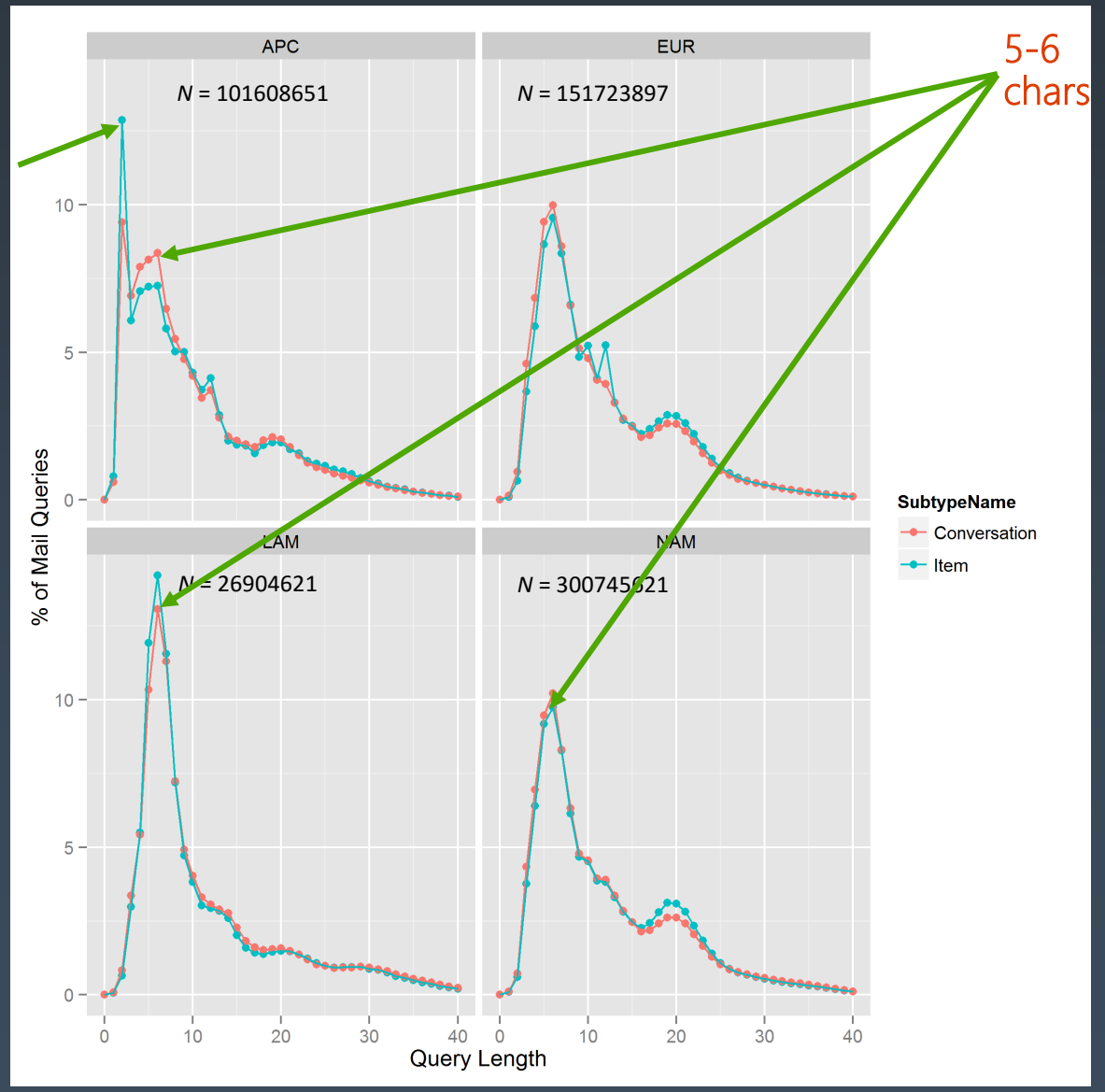
User patterns and query

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

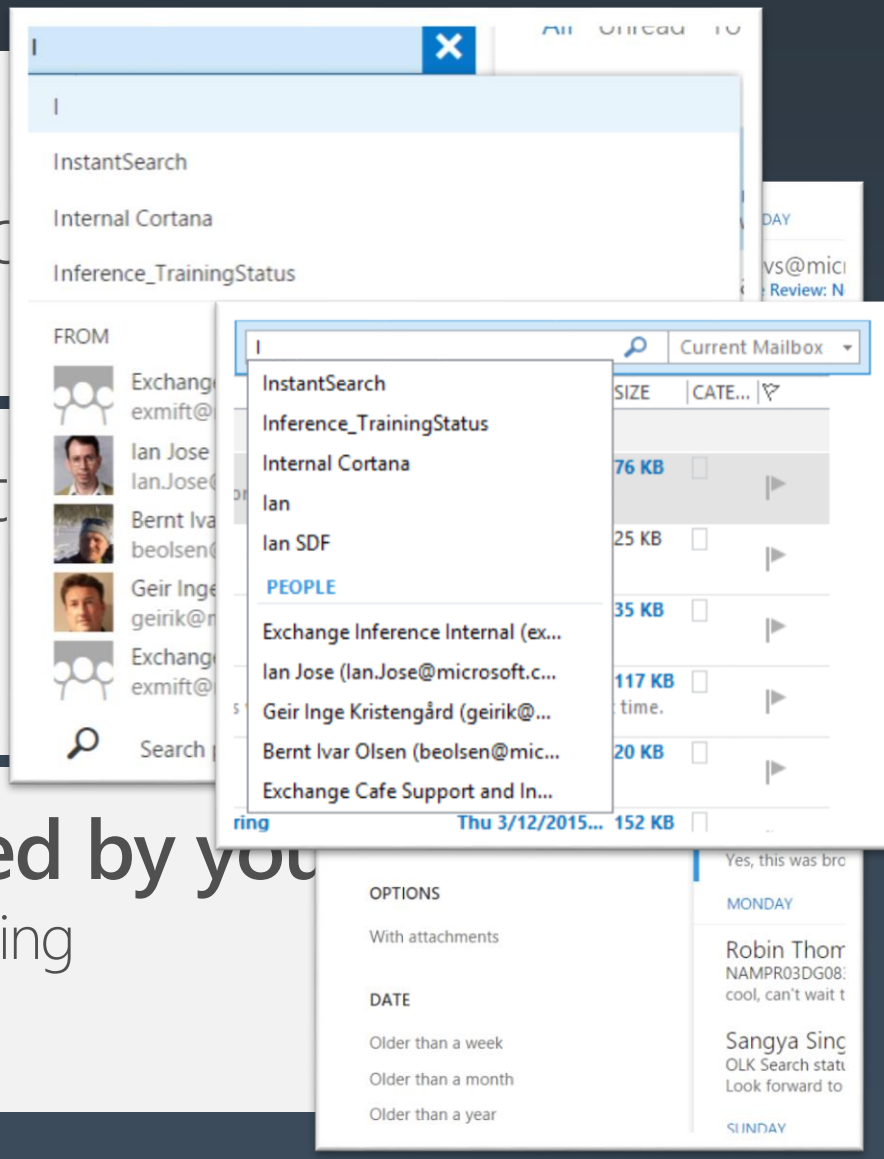
Nail the fundamentals:
Significantly faster search perfo

Outlook and Exchange consist

- 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

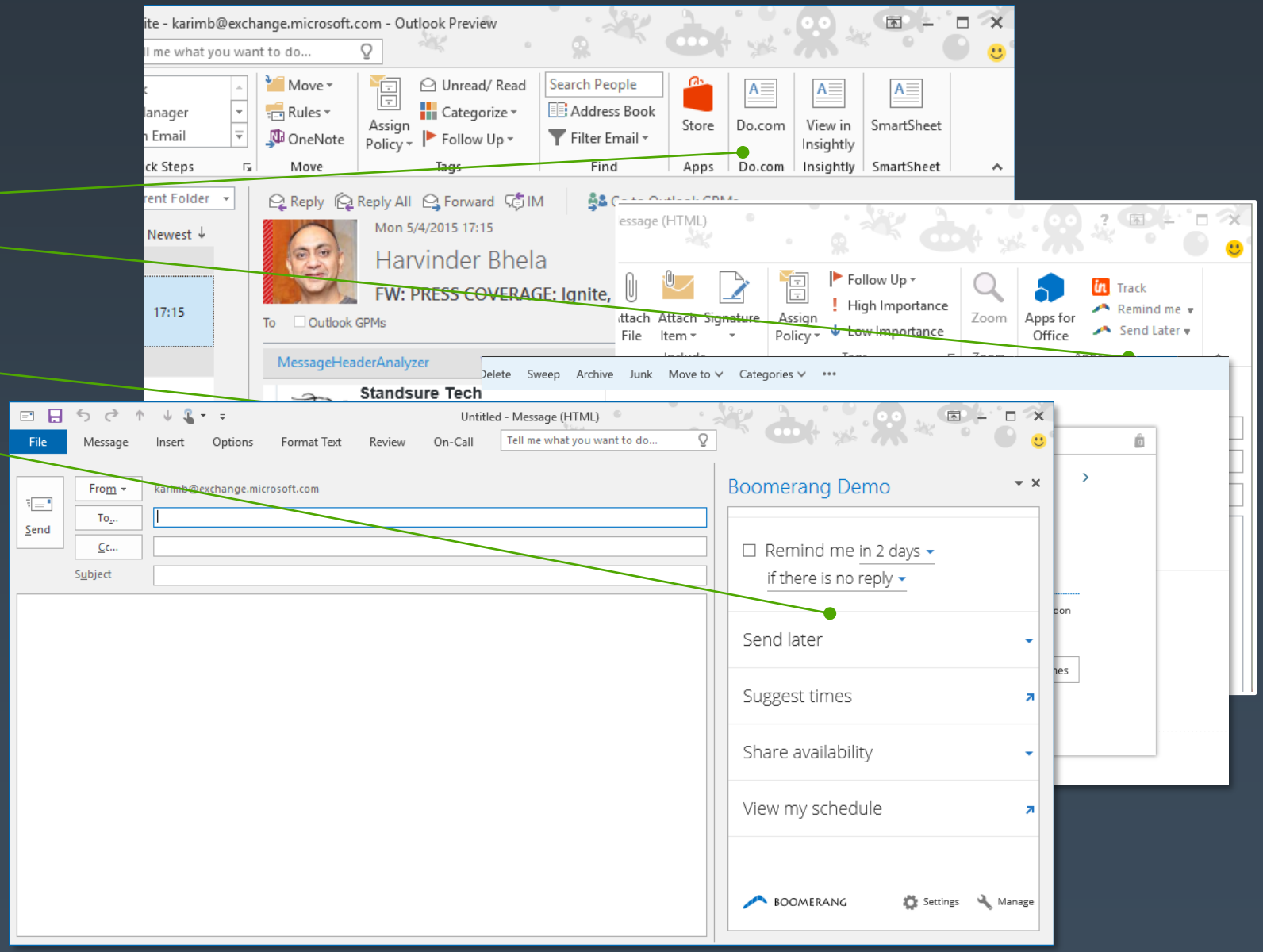
Multiple integration points:

- Ribbon
- Command Bar
- Context menus (right-click),
- Body text (hover)
- Task pane

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

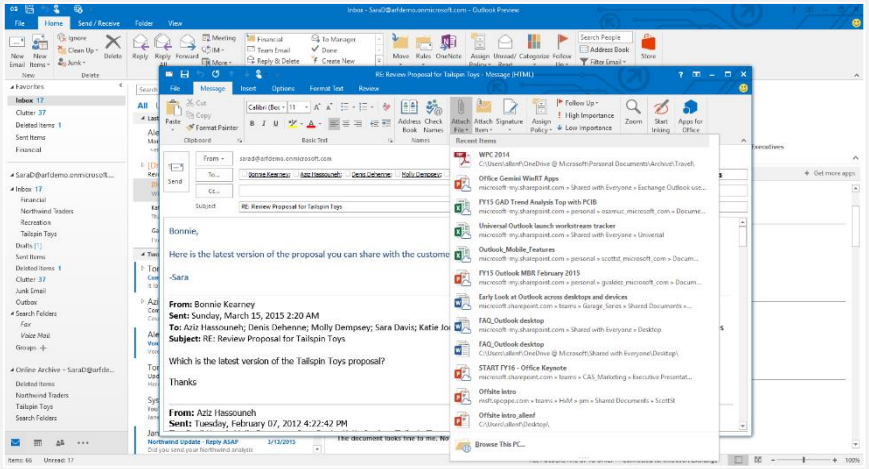
Strong admin control

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



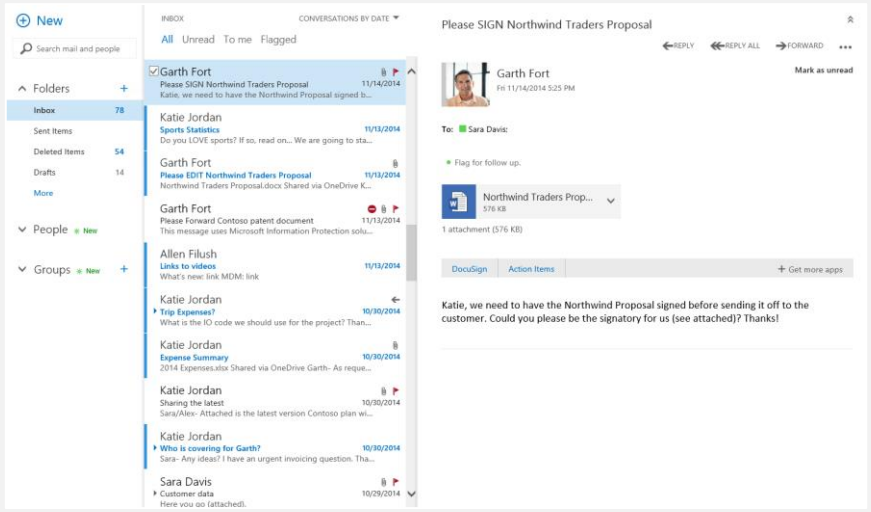
Inbox Enhancements

General enhancements



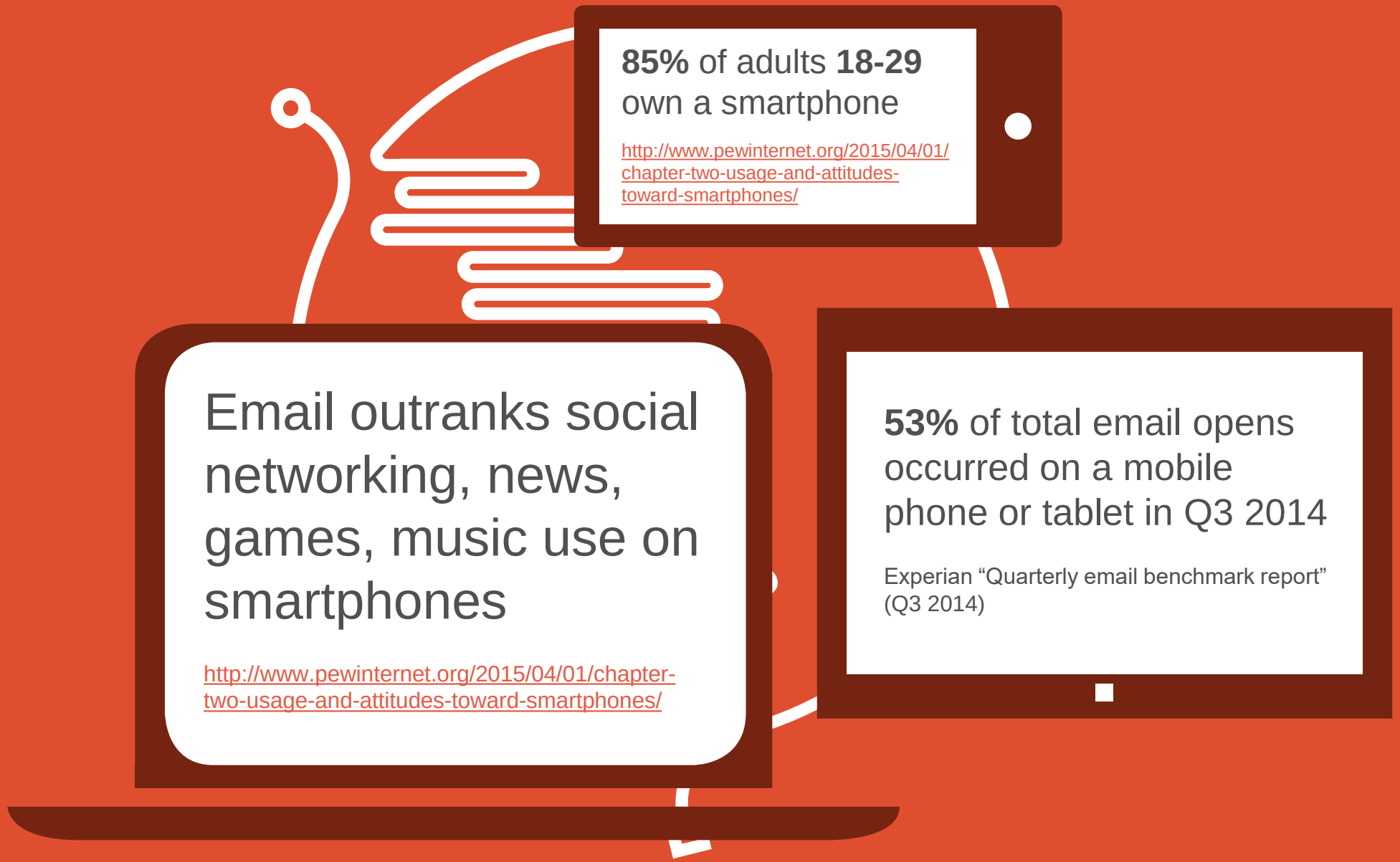
- Inline previews for URLs
- Inline video player
- Intelligent recipient selection and people search
- “Tell me what you want to do” box in Outlook

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

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

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

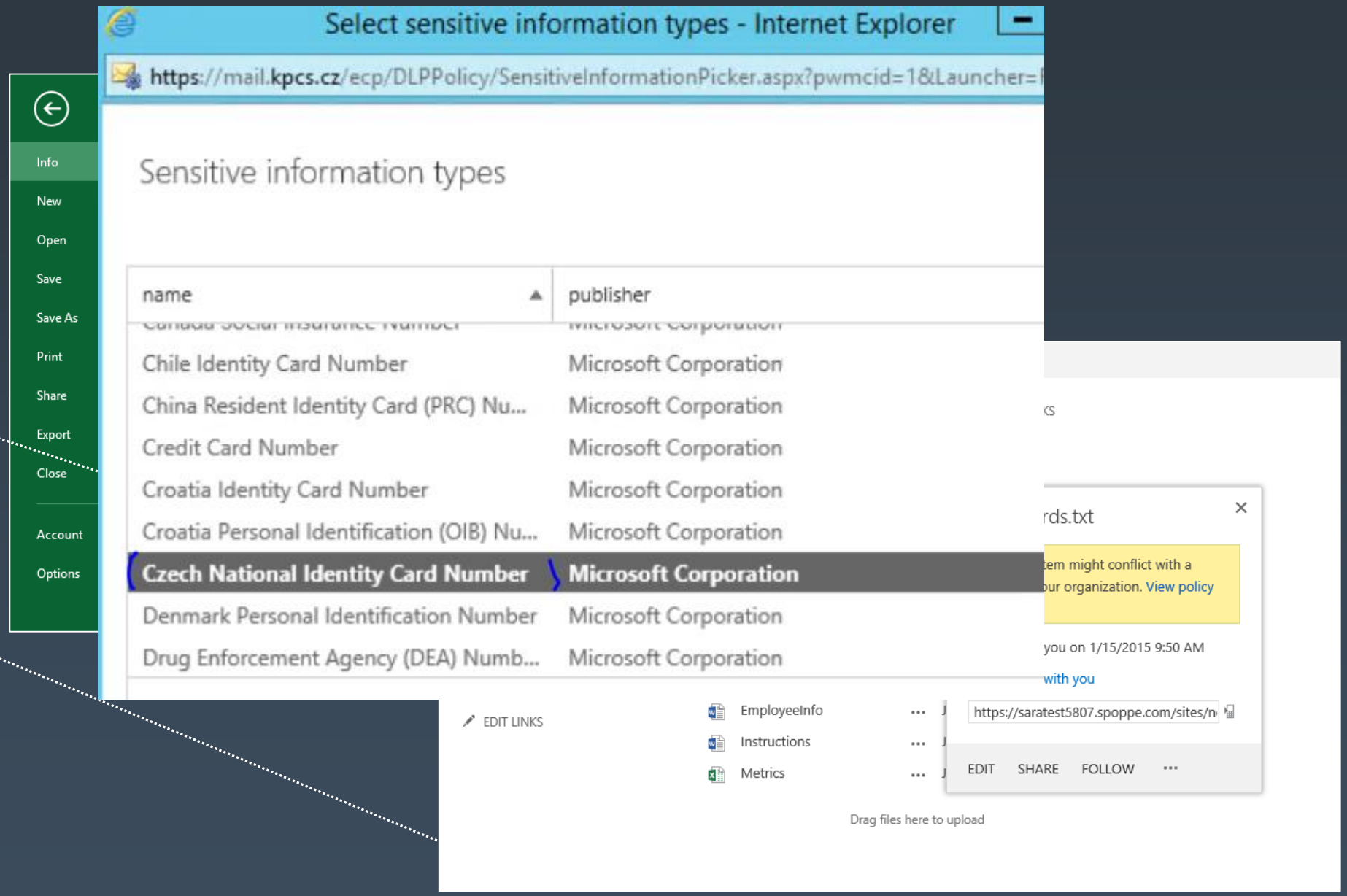
- Data loss prevention
- Auditing
- eDiscovery and archiving

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



Auditing

New auditing architecture and schema

Same as Office 365 audit log structure; makes hybrid scenarios and integration with 3rd party products easier

Improved search and filtering for audit data across the organization

```
RunspaceId   : d3fd70aa-9534-4794-bf73-7dbaf66938d2
RecordType   : ExchangeAdmin
CreationDate : 4/7/2015 4:36:36 PM
UserIds      : Administrator@EXADV-0844dom.extest.microsoft.com
Operations   : Set-Mailbox
AuditData    : {"CreationTime":"2015-04-07T16:36:36","Id":"26bc2938-8bd8-4d8e-d8af-
08d23fa2d2cc","Operation":"Set-Mailbox","OrganizationId":"00000000-0000-0000-0000-
000000000000","RecordType":1,"ResultStatus":"True","UserKey":"EXADV-0844dom.extest.microsoft.com
\/Users\/Administrator","UserType":3,"Workload":"Exchange","ObjectId":"EXADV-
0844dom.extest.microsoft.com\/Users\/Administrator","UserId":"Administrator@EXADV-
0844dom.extest.microsoft.com","ExternalAccess":false,"OrganizationName":"First
Org","OriginatingServer":"EXADV-0844 (15.01.0152.000)","Parameters":
[{"Name":"Identity","Value":"administrator"},{"Name":"LitigationHoldEnabled","Value":"False"}]}
Identity     : 26bc2938-8bd8-4d8e-d8af-08d23fa2d2cc
IsValid      : True
ObjectState  : Unchanged
```

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

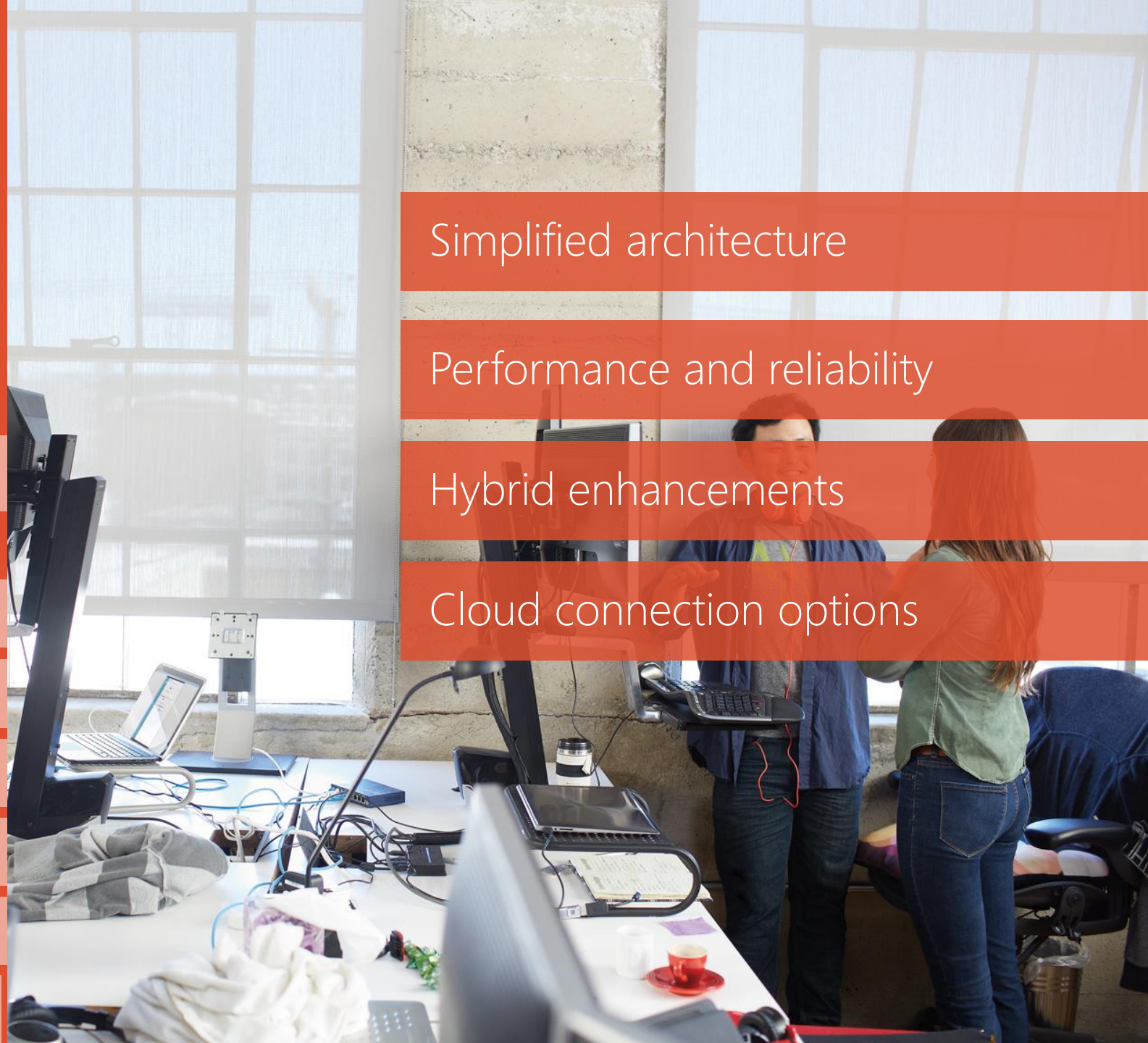
100's of server failures

>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

Lagged copy enhancements (released in CU1)

When ReplayLagManager is enabled, lagged copies play down under the following condition:

Copy health

Lagged
conditi

Capacity con

Physical corr

In Exch
disk (IO

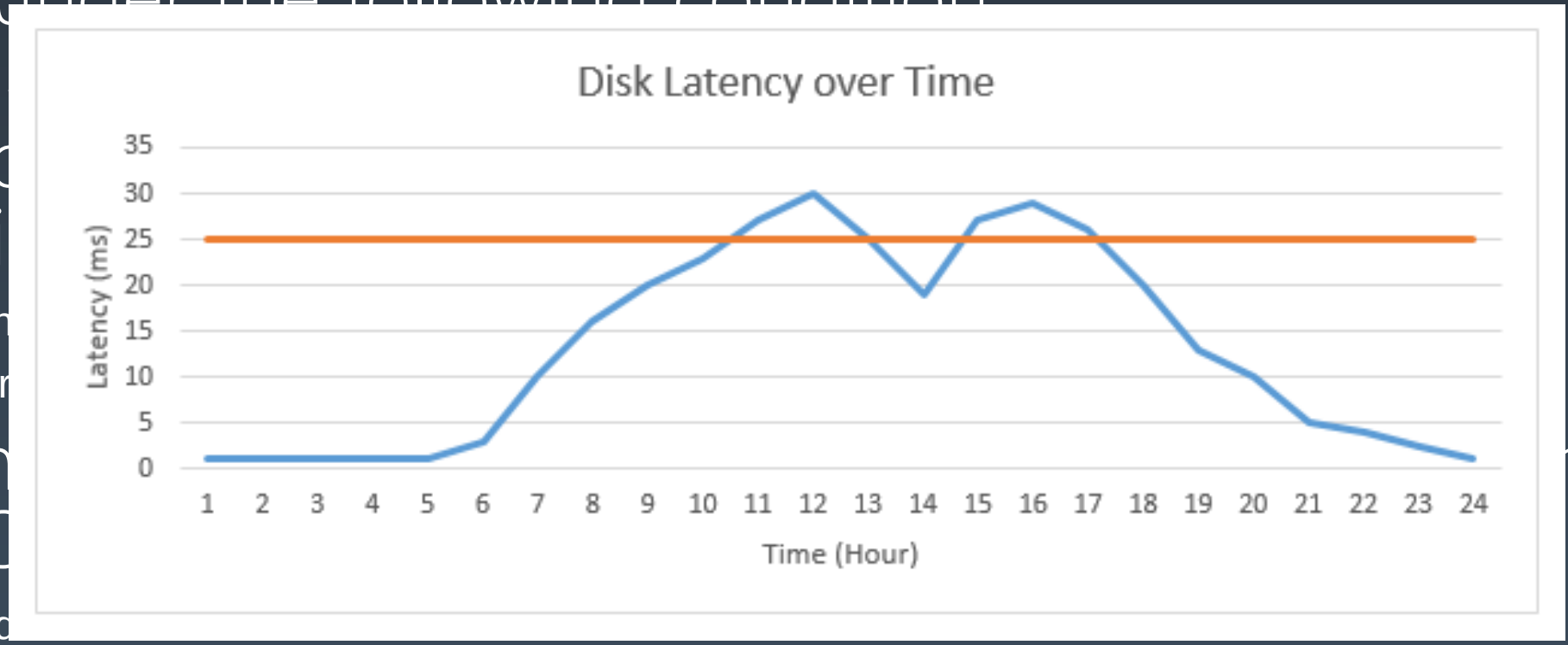
n of the

Enabled by d

Ensures active copies on the same disk are not impacted by play down

Delay is enacted if latency is above 25ms

Delay is deactivated when latency is 25ms or less, or if capacity is a concern



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**
  (scheduled for a future CU)
- Get data-at-rest protection with BitLocker
- Supports bigger disks
  - 8 TB, 7200 RPM JBOD
  - Delayed lag play-down

Extensibility: REST API (scheduled for a future CU)

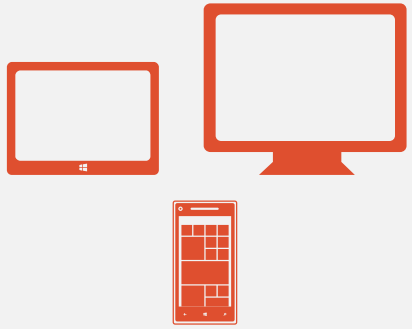
Set of easy-to-use APIs simplifies programming against Exchange back end – and SharePoint

Mail

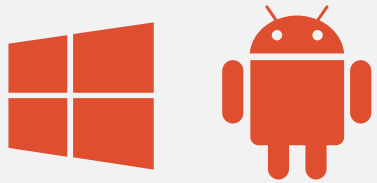
Calendar

People

REST syntax makes them familiar to web developers and easy to connect from any platform



Great for web or mobile development



iOS

Works with Office 365 and Exchange on-premises

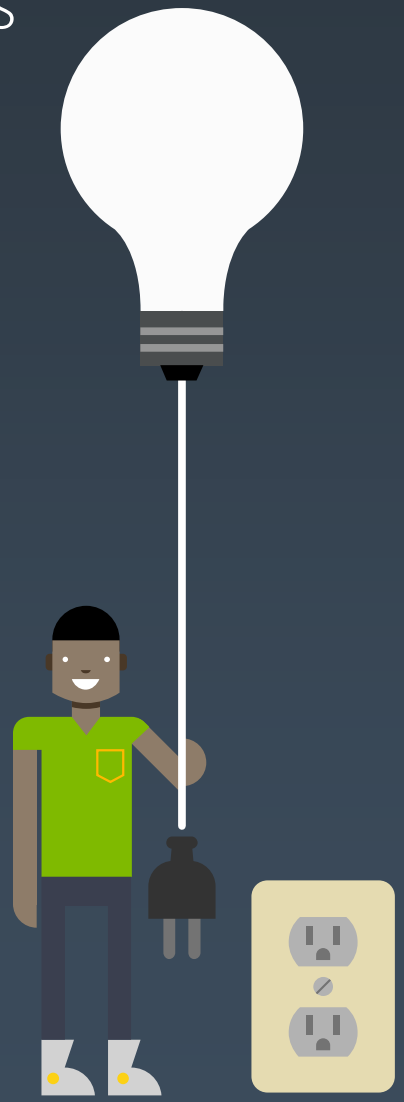
Where art thou, MAPI/CDO?

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



What is the Office Online Server role?

Exchange server now leverages the Office online server

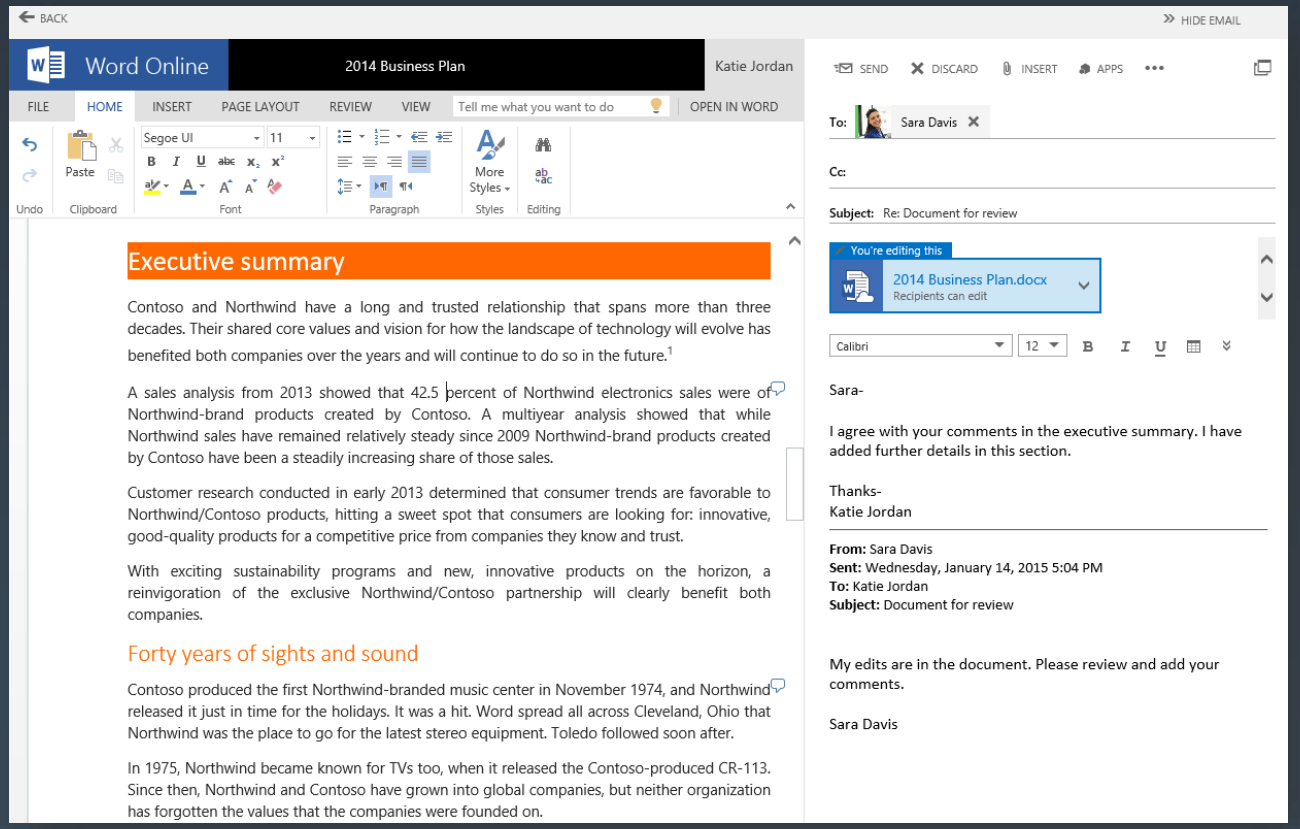
Users get rich browser based viewing in Word, Excel, PowerPoint, and OneNote web apps

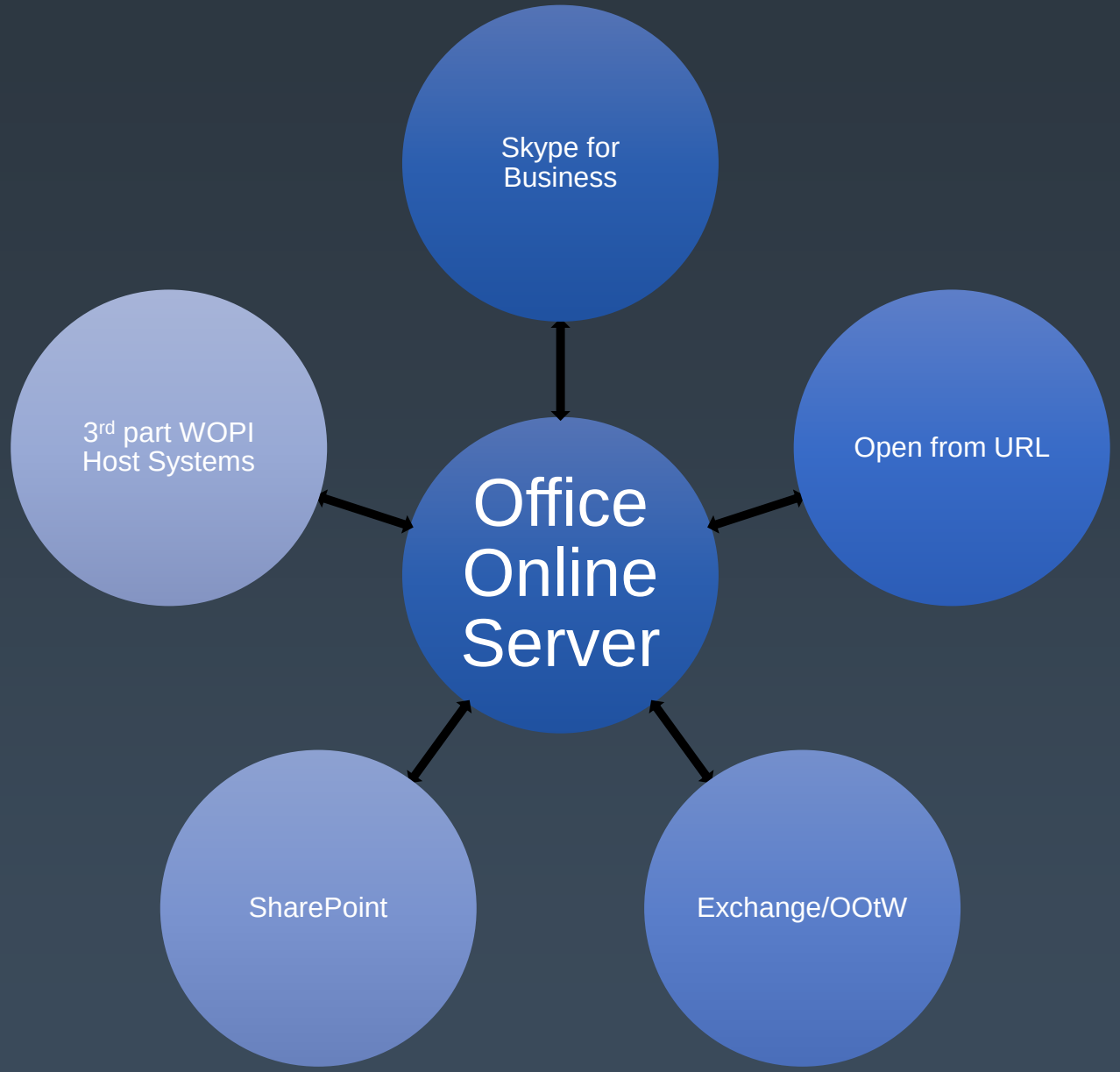
Delivered via Office Online Servers infrastructure

Cannot coexist on Exchange servers

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

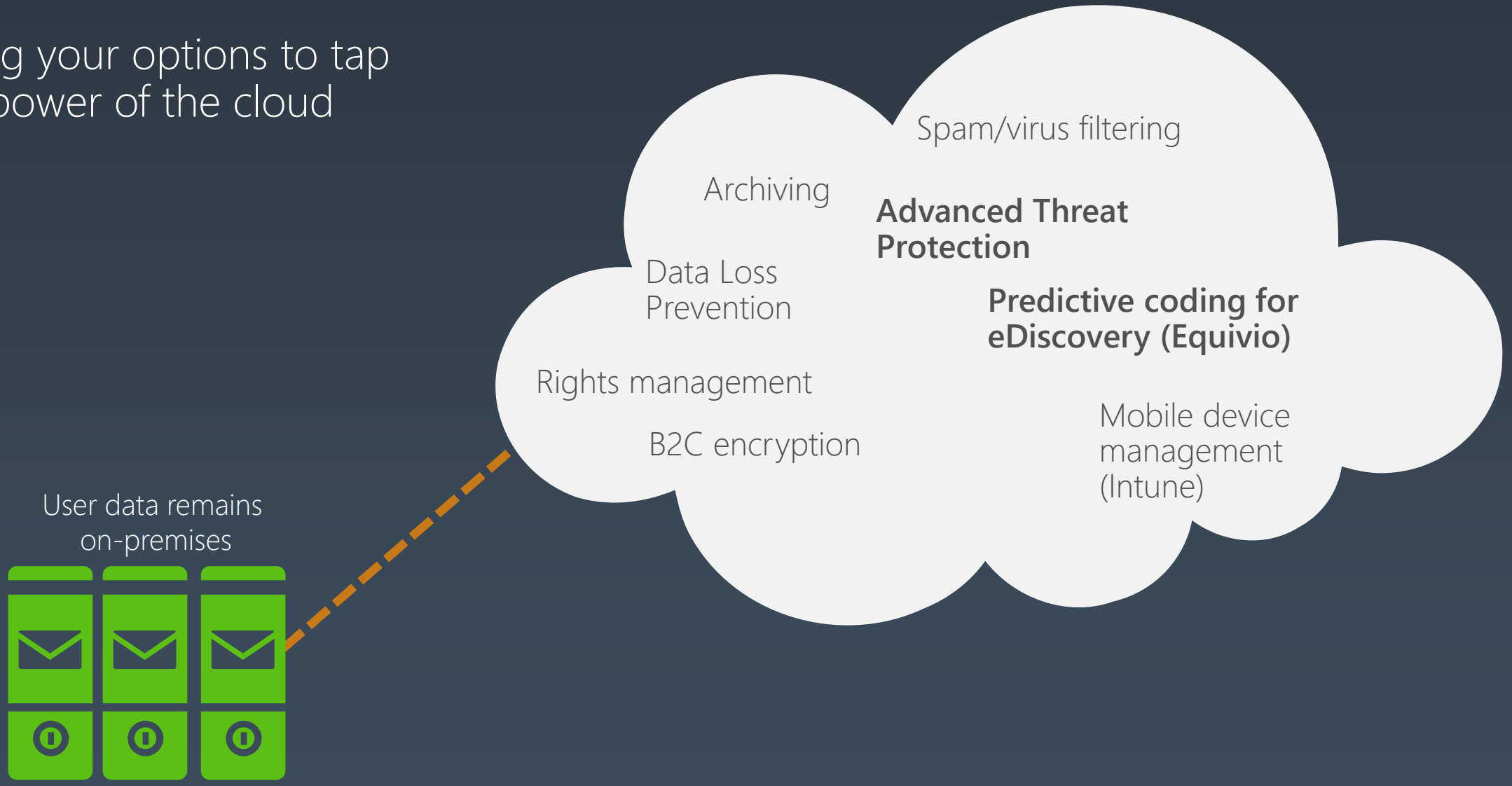
Access to the document is authorized by Exchange via an OAuth token



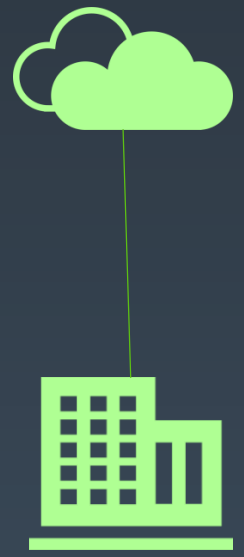

Skype for Business
3rd part WOPI Host Systems
Office Online Server
Open from URL
SharePoint
Exchange/OOtW

Cloud connection options

Expanding your options to tap into the power of the cloud



Hybrid enhancements



Builds on hybrid capabilities introduced in previous Exchange versions

Secure mail routing

Unified address list

Free/busy calendar sharing

Single OWA URL

Mailbox moves to/from cloud

Centralized management via EAC

Unified message tracking

Cross-org MailTips, multi-mailbox search

Hybrid Configuration Wizard now cloud-deployed

- Works with Exchange 2013 and 2016, independent of CU
- Multi-forest support with AADSync, OAuth enhancements for MFA and more

Exchange Server 2016

Better collaboration

Smarter inbox

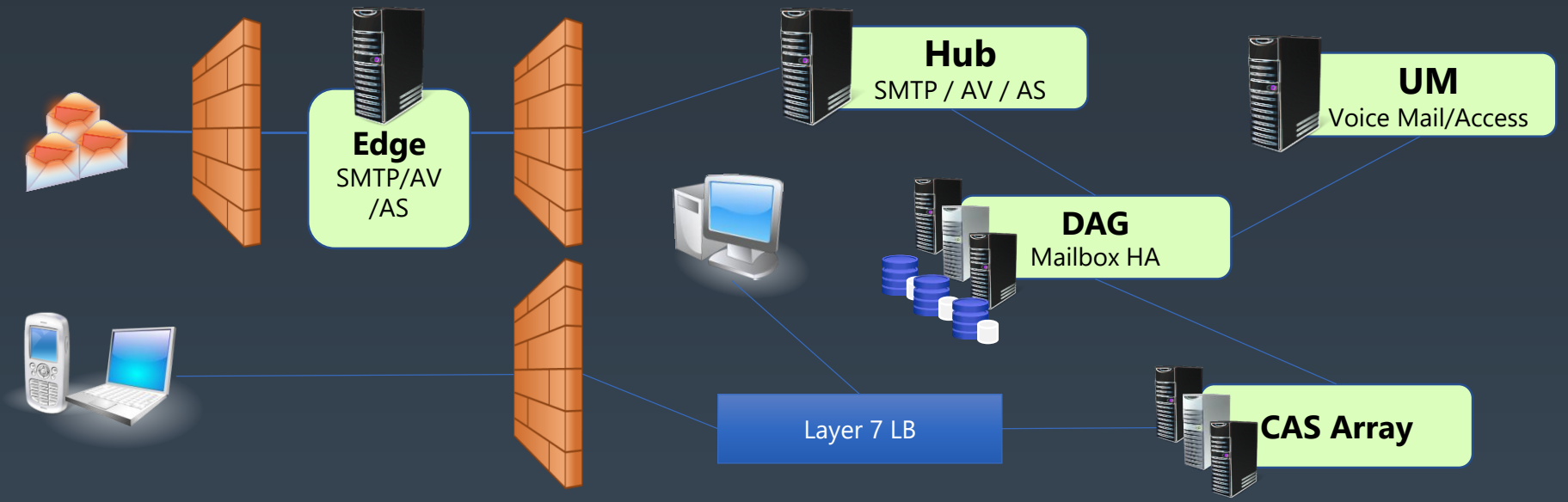
Mobile productivity

Security and compliance

Modern datacenter

Téma č.2
Preferovaná architektura

History: 2007/2010



- Separate Roles
- Complex site Failover
- Certificate issues

Setup

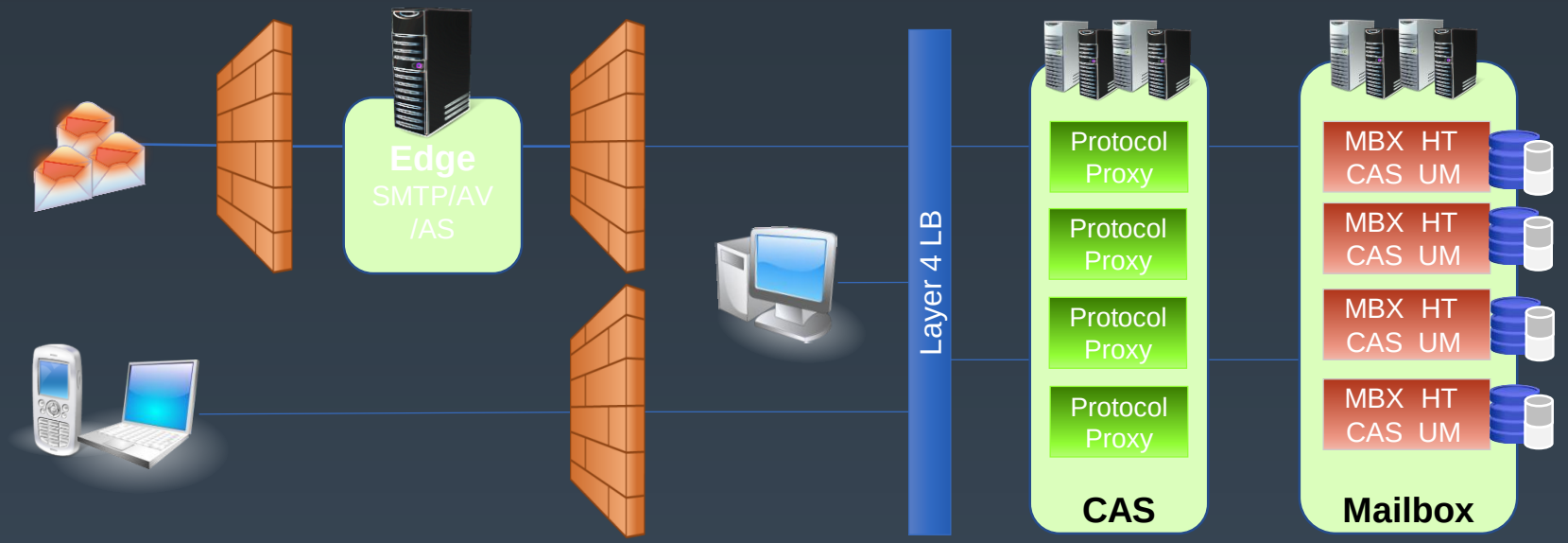
- Cheaper Disks
- Hardware L7 Load Balancer

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

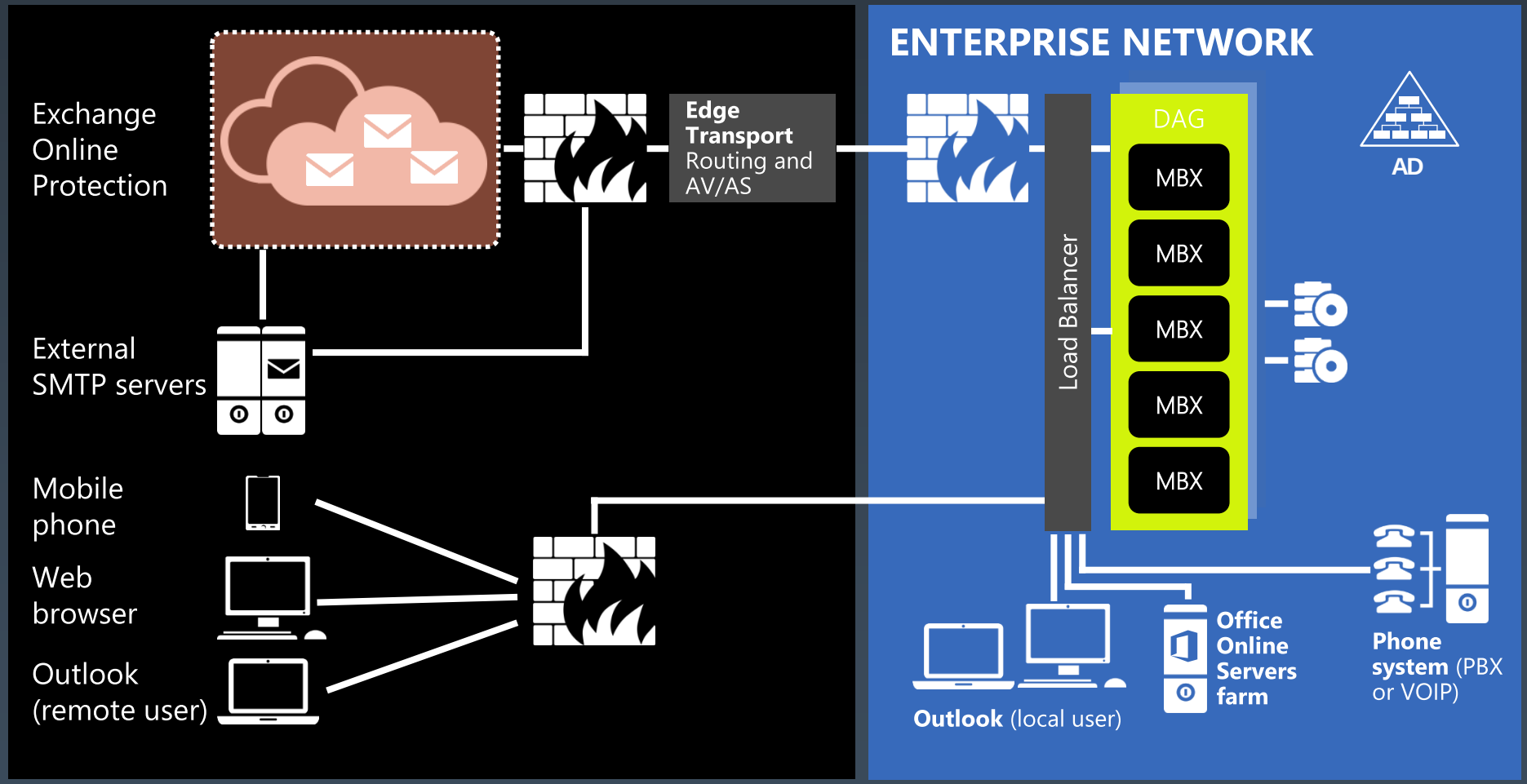
Loosely coupled

Functionality

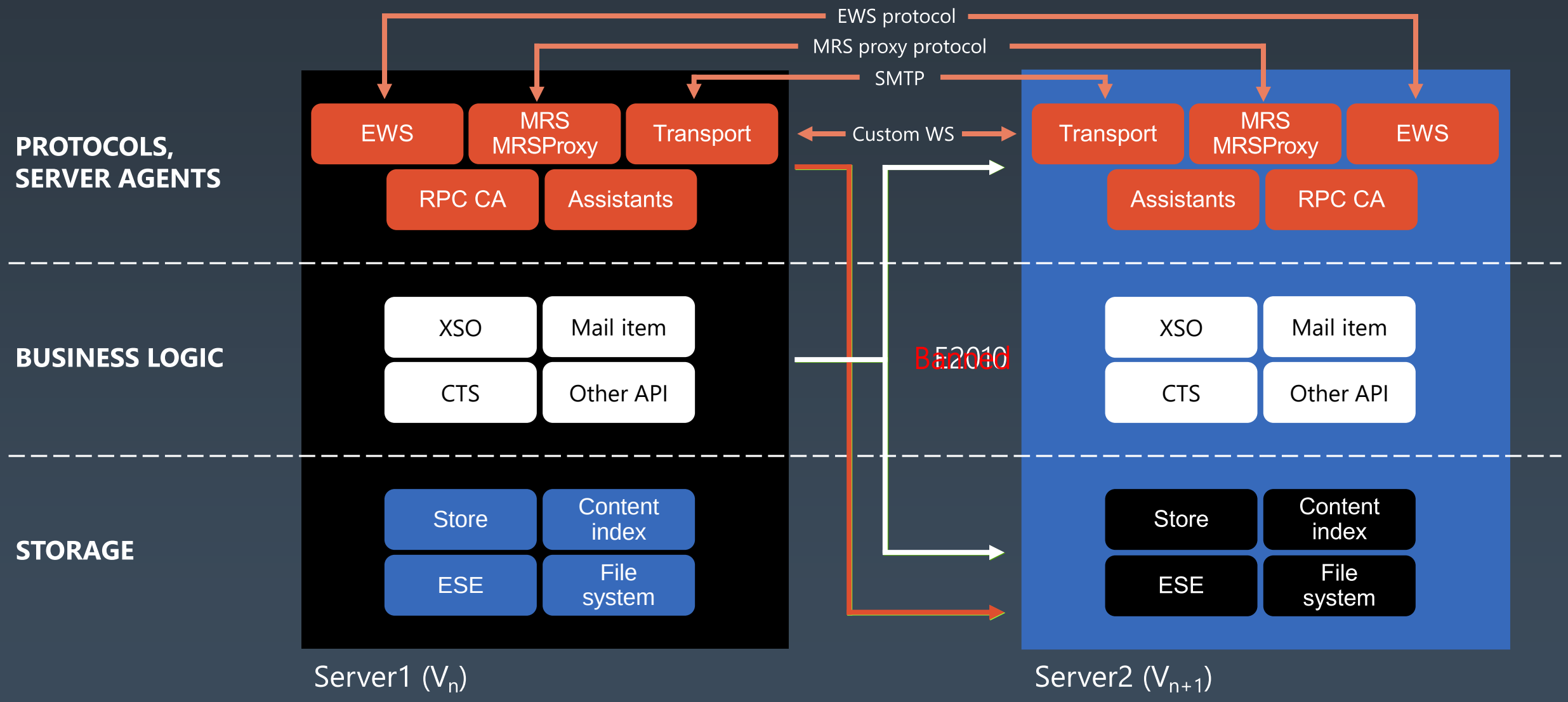
Versioning

User partitioning

Geo affinity



Every server is an island

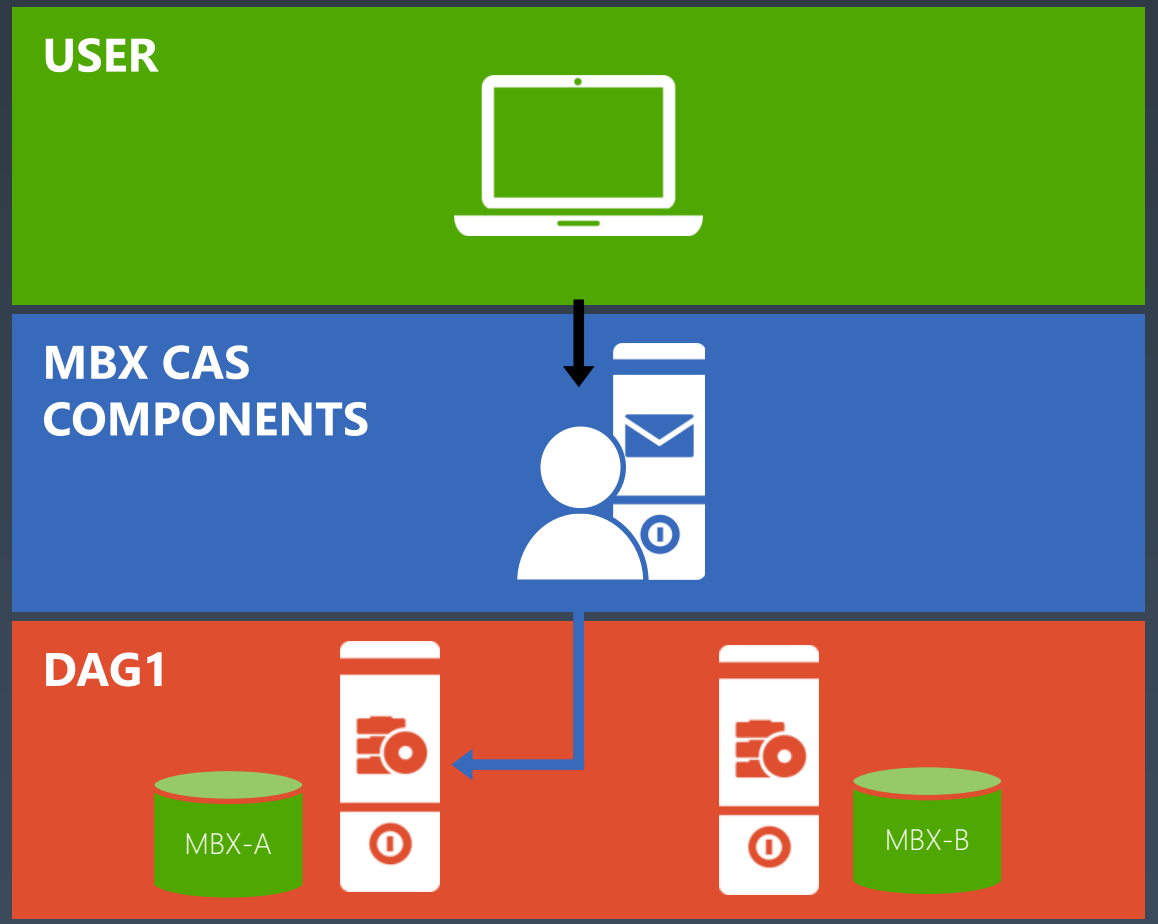


The key to enlightenment…

For a given mailbox's connectivity, the protocol being used is *always* served by the protocol instance that is local to the active database copy

Each MBX determines the right end point for the traffic, and so all sessions—regardless of where they started—end up in the same place

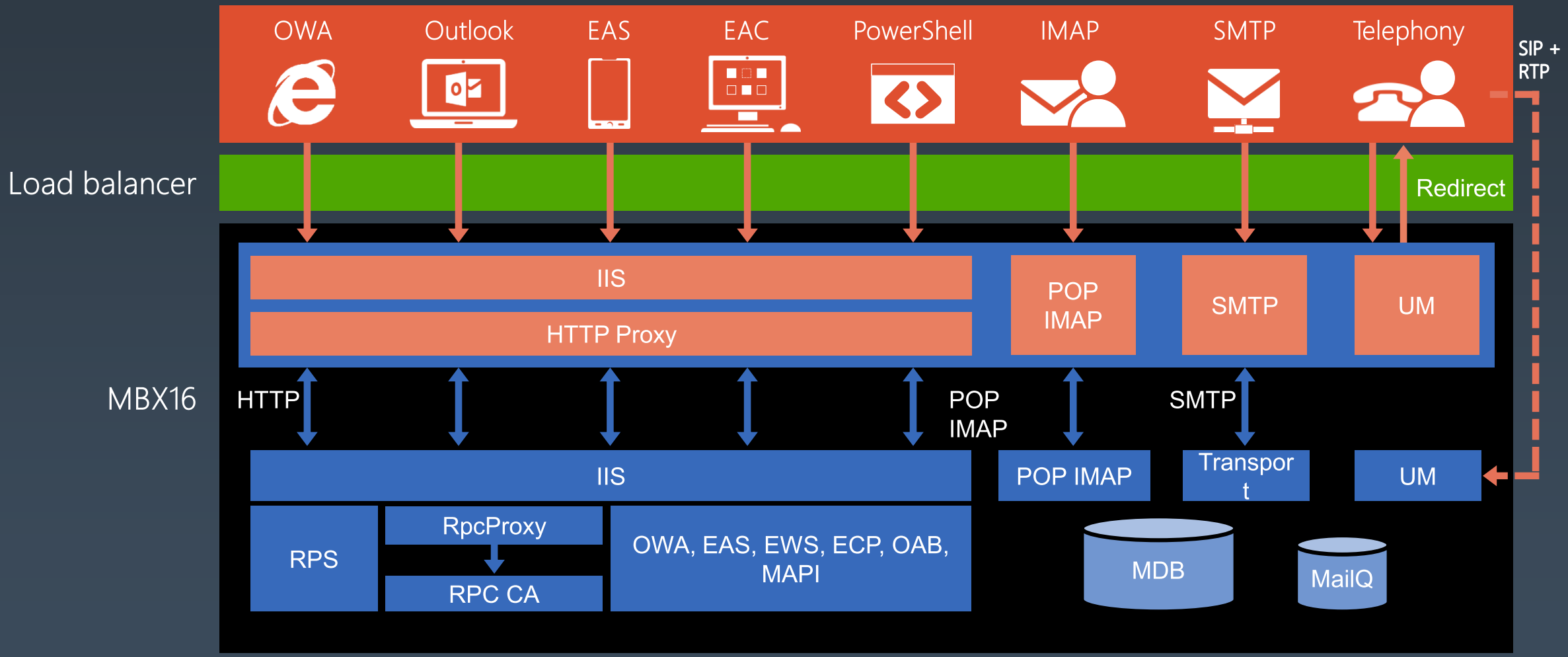
This means that the rendering for clients like OWA occurs on the mailbox server, transport transcoding is occurring on the mailbox server, etc.



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

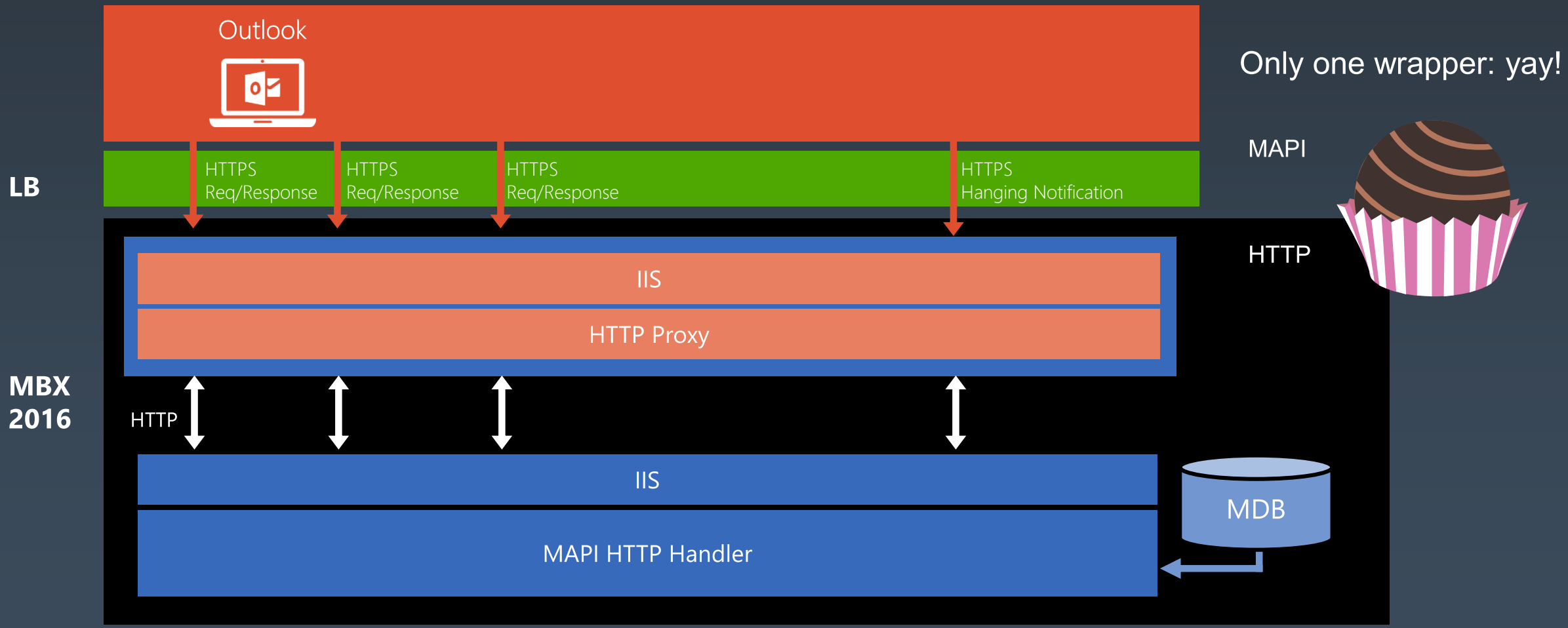
Common authentication scheme across protocol stack

MAPI/HTTP … to enable or not to enable.

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

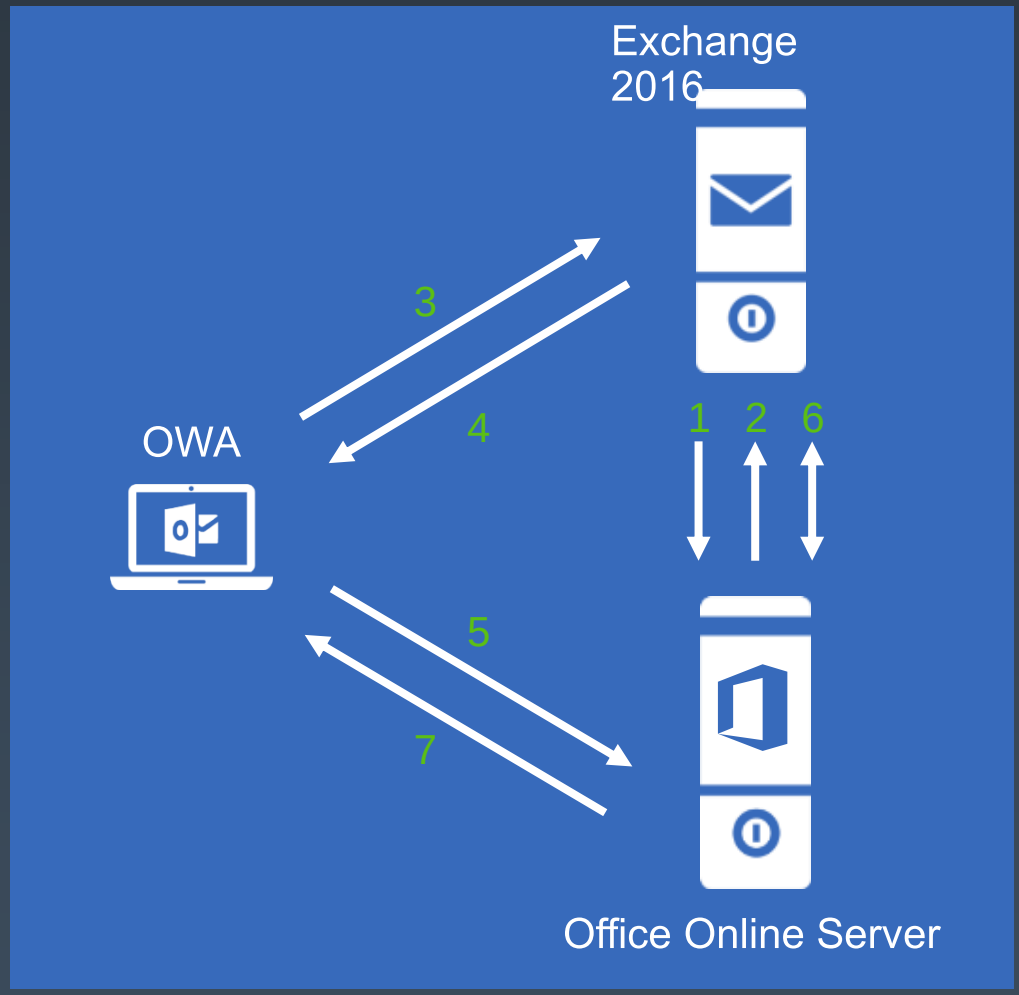
We *want* all customers moving to MAPI/HTTP.

Outlook MAPI/HTTP connections



Office Online Server connectivity flow

1. Exchange uses discovery URL to ask OOS which files 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

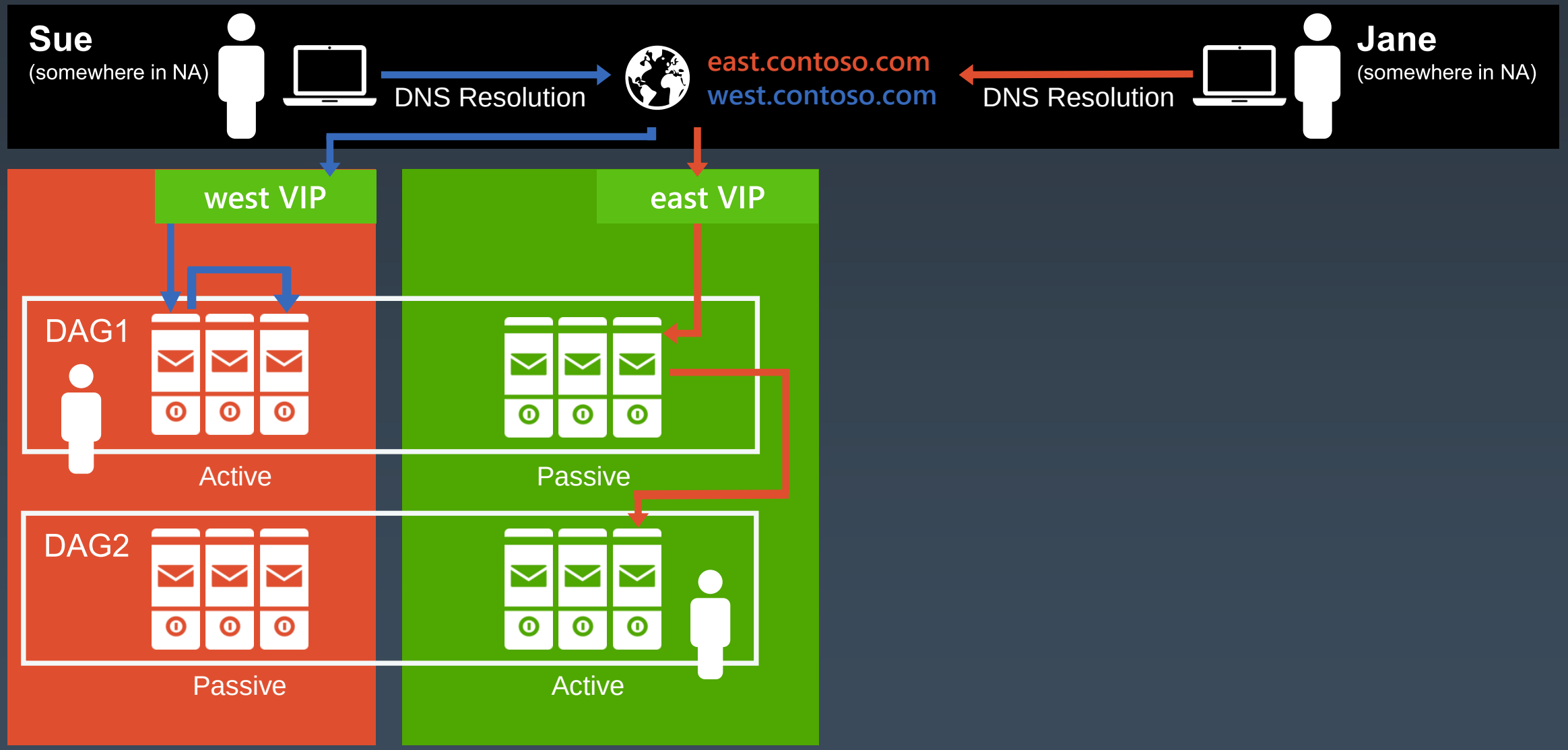
Can still deploy regional namespaces to control traffic

Can still have specific namespaces for protocols

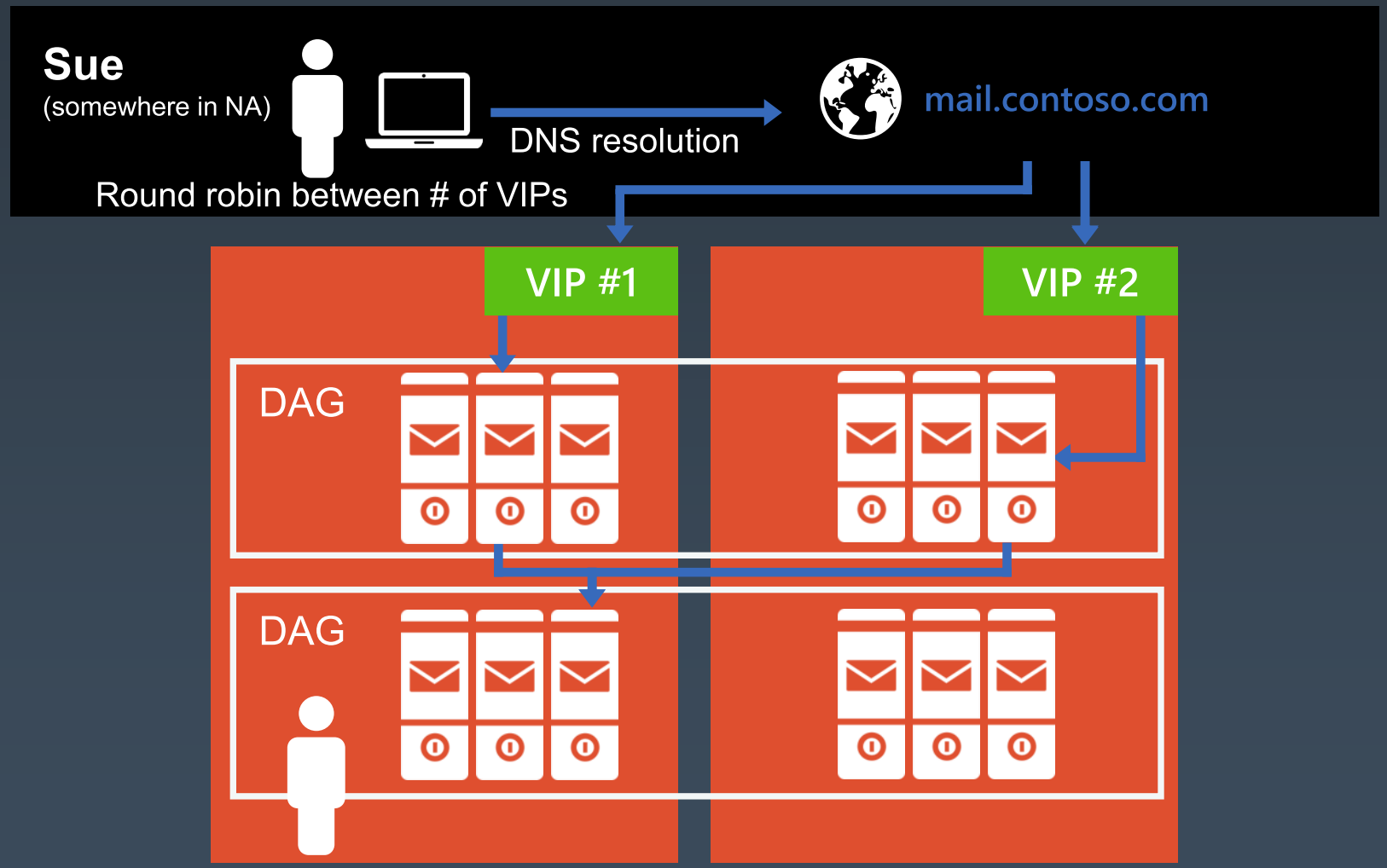
Leverage split-DNS to minimize namespaces and control connectivity

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

Bound model


Sue
(somewhere in NA)
DNS Resolution
east.contoso.com
west.contoso.com
DNS Resolution
Jane
(somewhere in NA)
west VIP
east VIP
DAG1
Active
Passive
DAG2
Passive
Active

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

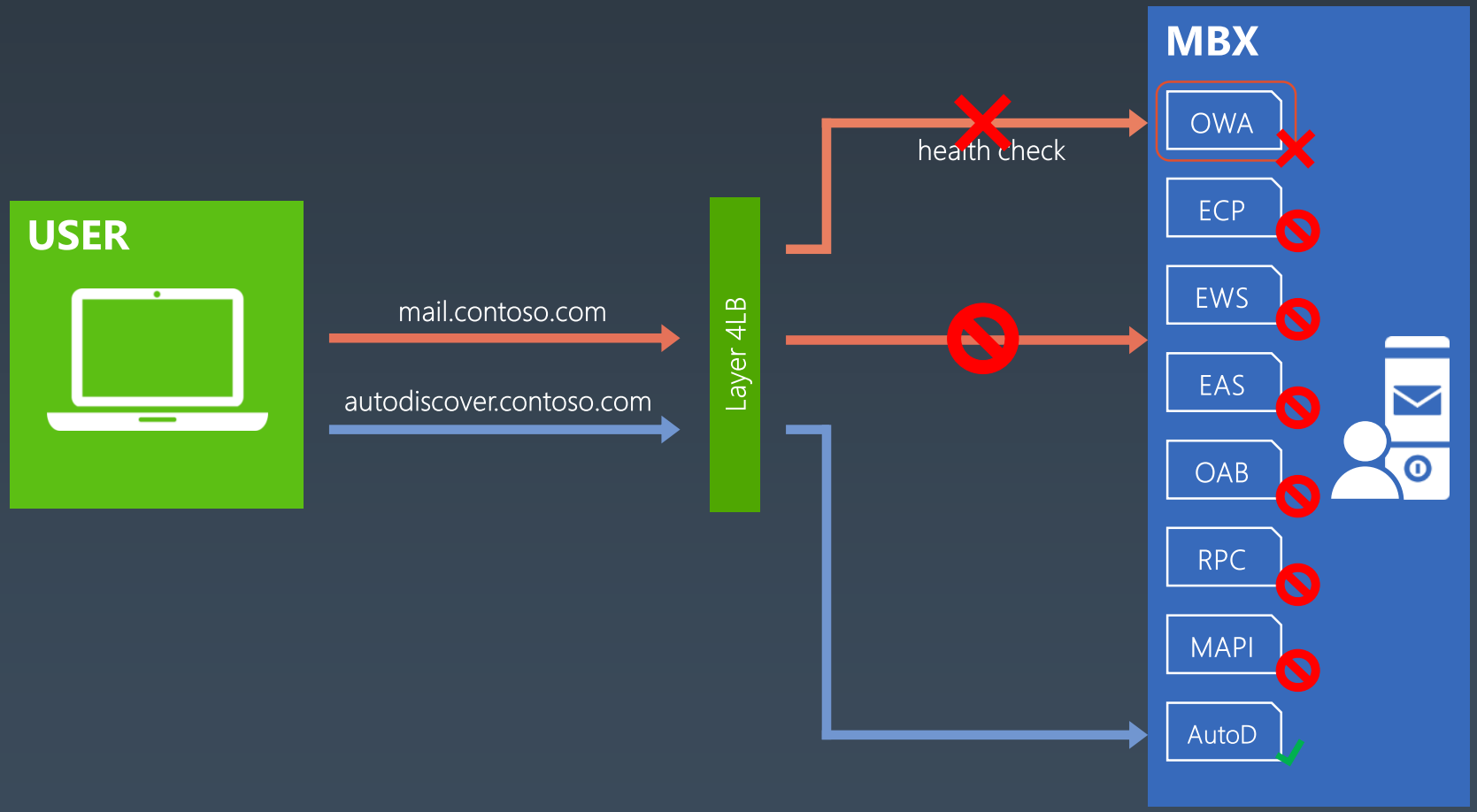
For a given protocol session, MBX now maintains a 1:1 relationship with the server hosting the user's data

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

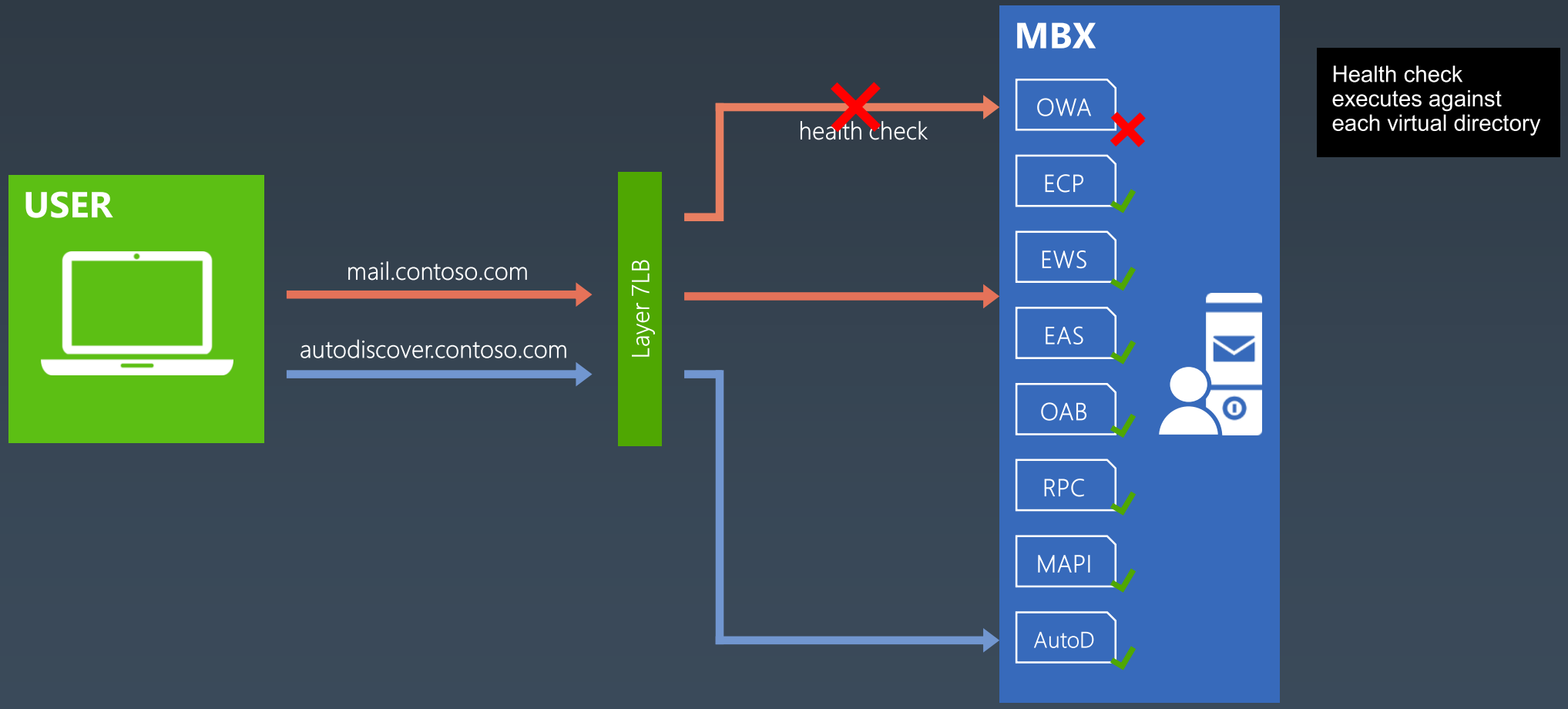
Load balancer configuration and health probes will factor into namespace design

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

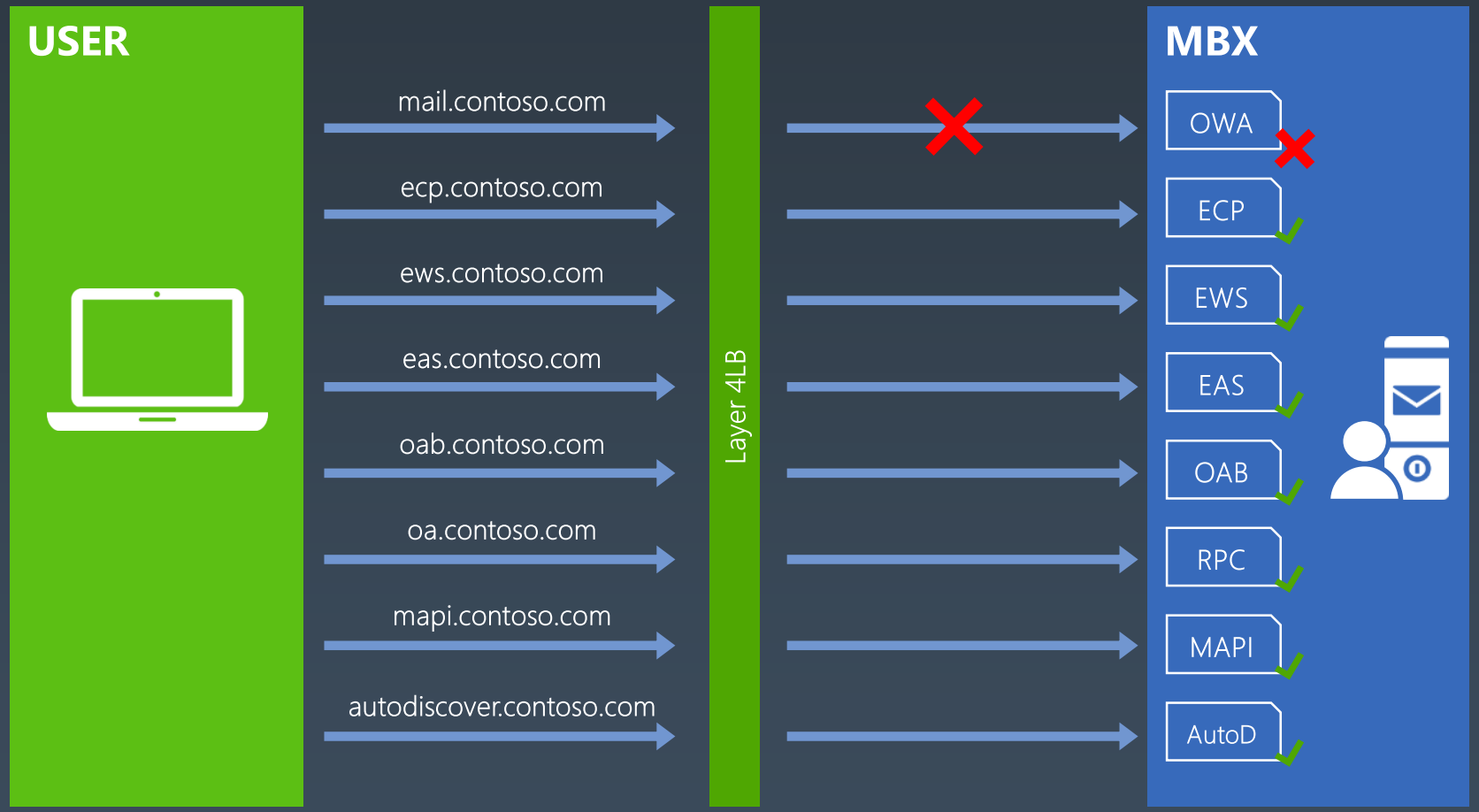
Single namespace/layer 4



Single namespace/layer 7 (no session affinity)



Multiple namespaces/layer 4



Exchange load balancing options

WHO'S IT FOR?	Generalist IT admin	Those with increased network flexibility	Those who want to maximize server availability
TRADE-OFFS	Plus(es): + Simple, fast, no affinity LB + Single, unified namespace + Minimal networking skillset Minus(es): – Per server availability	Plus(es): + Simple, fast, no affinity LB + Per protocol availability Minus(es): – One namespace per app protocol – One VIP per protocol	Plus(es): + Per protocol availability + Single, unified namespace Minus(es): – SSL termination at LB – Requires increase networking skillset

Exchange connection management

Recommendation is to use one of two types

- Round robin
- Least connections

Least connections has fast convergence time

Least connections can lead to server instability if "least" server in the pool is inundated with requests

Use "slow start" feature to mitigate this

Round robin has slow convergence time with long-lived connections (RPC/HTTP)

MAPI/HTTP is not affected

OOS namespace planning and load balancing

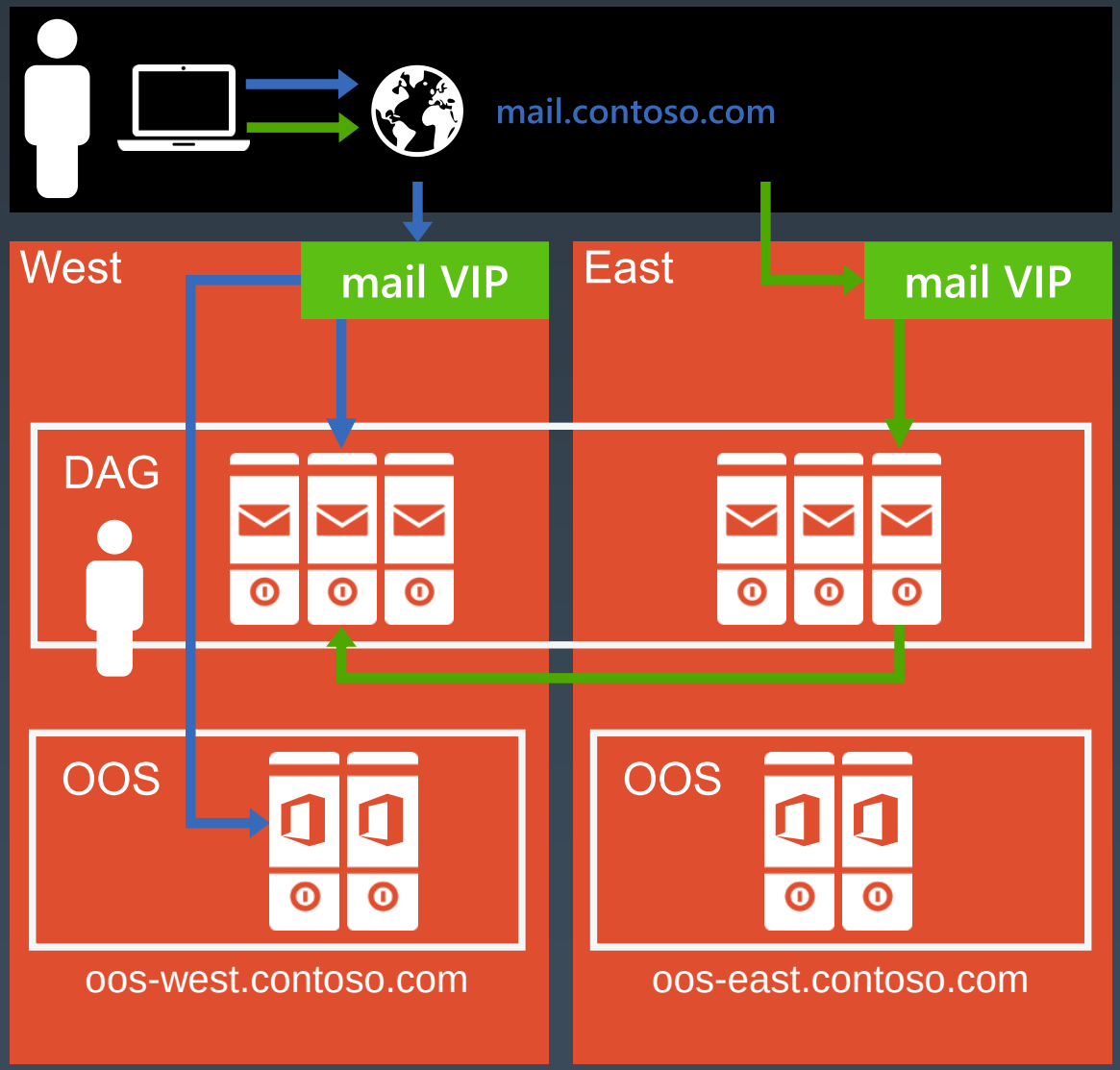
Always deploy a separate namespace for OOS

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

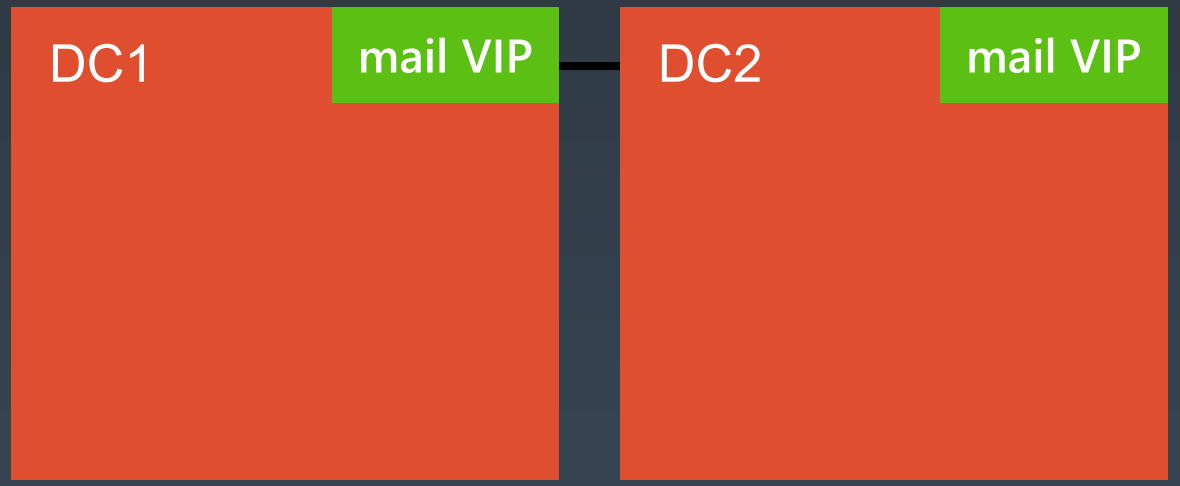
- autodiscover.contoso.com
- HTTP: mail.contoso.com
- HTTP: outlook-int.contoso.com (OA, MAPI – internally)
- IMAP: imap.contoso.com
- SMTP: smtp.contoso.com

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

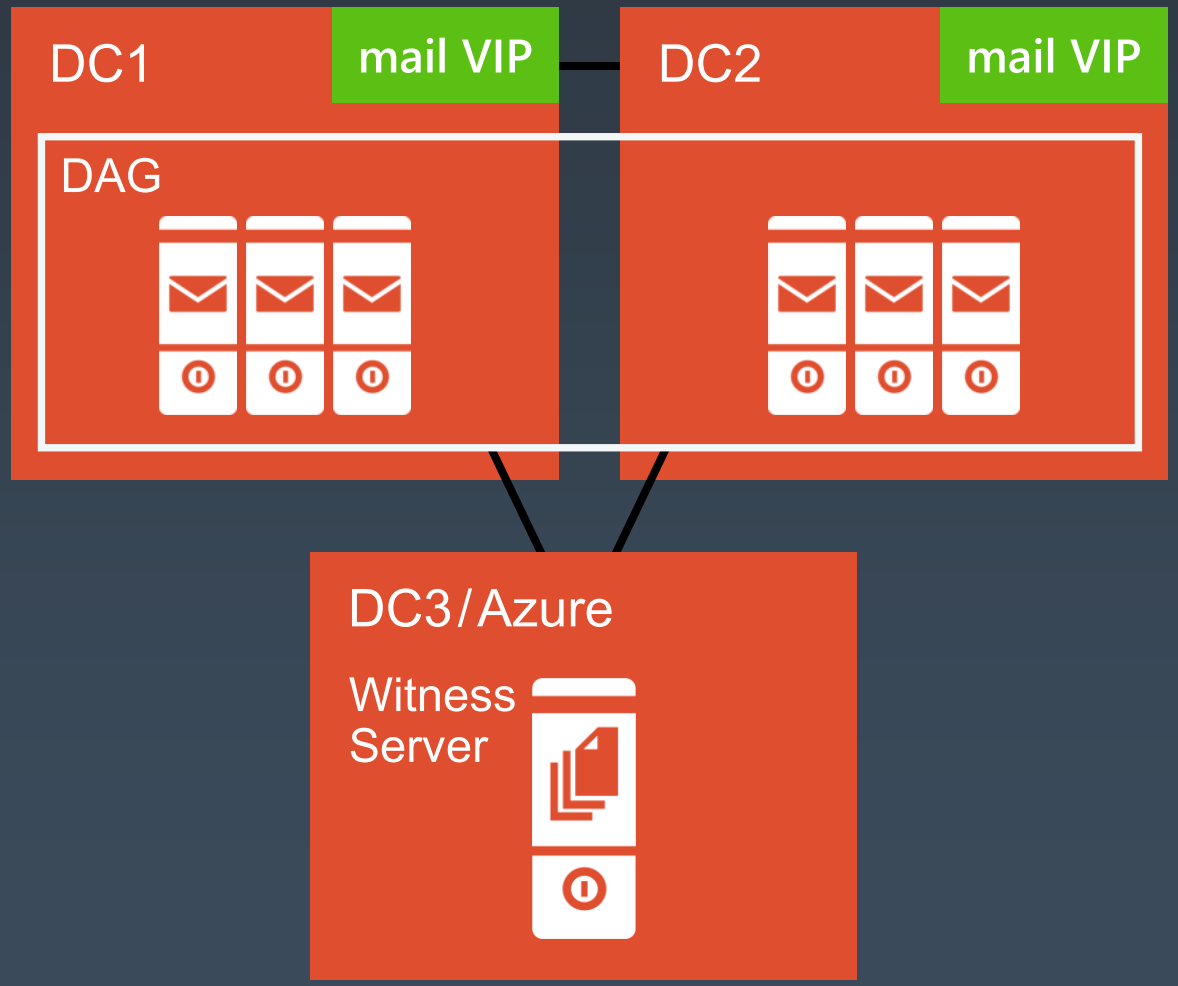
Increase DAG size density before creating new DAGs

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



Storage Design Options / Challenges

Many designs are supported; there are three storage design dimensions

SAN ←→ DAS

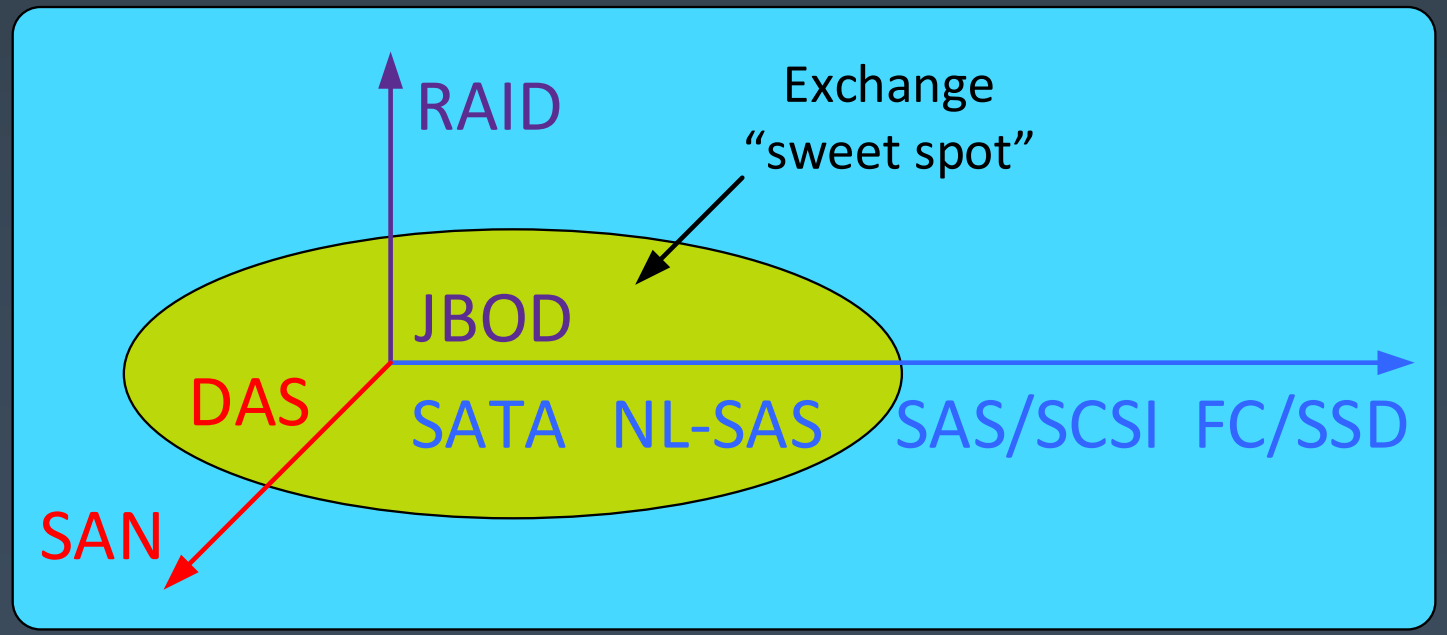
- SAN is NOT faster than DAS
- Reduce complexity
- No need in expensive redundant high performing intermediate SAN components
- SAN concept follows shared infrastructure model, not building block

FC ← SAS → 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

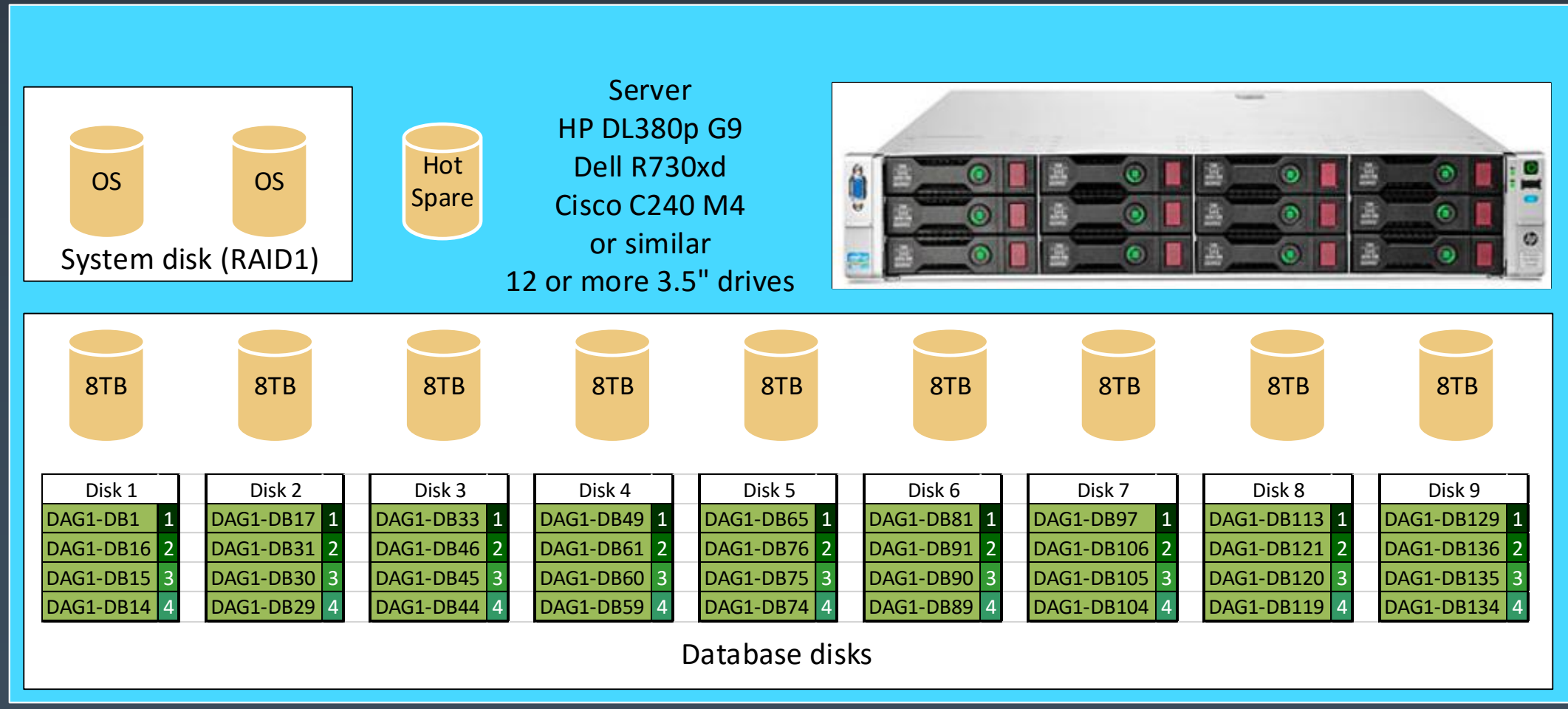
RAID ←→ JBOD (RBOD)

- 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



Typical Exchange Disk Layout

Two mirrored (RAID1) disks for system partition (OS; Exchange binaries, transport queues, logs)
One hot spare disk
Nine or more RBOD disks (single disk RAID-0) for Exchange databases with collocated transaction logs
Four database copies collocated per disk, not to exceed 2TB database size



Database Copy Layout Principles

Goal: Provide symmetric database copy layout to ensure even load distribution

http://blogs.technet.com/b/exchange/archive/2010/09/10/3410995.aspx

10	60	Assigned	40	40	40	40	40	40
		Active	10	10	10	10	10	10
	Database Name	Active Server	Server1	Server2	Server3	Server4	Server5	Server6
Disk 1	DB01	Server1	1	2	3	4		
	DB02	Server2		1	2	3	4	
	DB03	Server3			1	2	3	4
	DB04	Server4	4			1	2	3
	DB05	Server5	3	4			1	2
	DB06	Server6	2	3	4			1
Disk 2	DB07	Server1	1		2	3	4	
	DB08	Server2		1		2	3	4
	DB09	Server3	4		1		2	3
	DB10	Server4	3	4		1		2
	DB11	Server5	2	3	4		1	
	DB12	Server6		2	3	4		1
Disk 3	DB13	Server1	1			2	3	4
	DB14	Server2	4	1			2	3
	DB15	Server3	3	4	1			2
	DB16	Server4	2	3	4	1		
	DB17	Server5		2	3	4	1	
	DB18	Server6			2	3	4	1

Server3 Failure →

10	60	Assigned	40	40	40	40	40	40
		Active	12	12	0	12	12	12
	Database Name	Active Server	Server1	Server2	Server3	Server4	Server5	Server6
Disk 1	DB01	Server1	1	2	3	4		
	DB02	Server2		1	2	3	4	
	DB03	Server4			1	2	3	4
	DB04	Server4	4			1	2	3
	DB05	Server5	3	4			1	2
	DB06	Server6	2	3	4			1
Disk 2	DB07	Server1	1		2	3	4	
	DB08	Server2		1		2	3	4
	DB09	Server5	4		1		2	3
	DB10	Server4	3	4		1		2
	DB11	Server5	2	3	4		1	
	DB12	Server6		2	3	4		1
Disk 3	DB13	Server1	1			2	3	4
	DB14	Server2	4	1			2	3
	DB15	Server6	3	4	1			2
	DB16	Server4	2	3	4	1		
	DB17	Server5		2	3	4	1	
	DB18	Server6			2	3	4	1

Server6 Failure →

10	60	Assigned	40	40	40	40	40	40
		Active	15	15	0	15	15	0
	Database Name	Active Server	Server1	Server2	Server3	Server4	Server5	Server6
Disk 1	DB01	Server1	1	2	3	4		
	DB02	Server2		1	2	3	4	
	DB03	Server4			1	2	3	4
	DB04	Server4	4			1	2	3
	DB05	Server5	3	4			1	2
	DB06	Server1	2	3	4			1
Disk 2	DB07	Server1	1		2	3	4	
	DB08	Server2		1		2	3	4
	DB09	Server5	4		1		2	3
	DB10	Server4	3	4		1		2
	DB11	Server5	2	3	4		1	
	DB12	Server2		2	3	4		1
Disk 3	DB13	Server1	1			2	3	4
	DB14	Server2	4	1			2	3
	DB15	Server1	3	4	1			2
	DB16	Server4	2	3	4	1		
	DB17	Server5		2	3	4	1	
	DB18	Server4			2	3	4	1

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

Resilient File System (ReFS) - Best Practices

Enable ReFS On Data Volumes Only

Windows only boots from NTFS

Disable Integrity Stream

Integrity Stream uses copy on write for all file write operations – will cause increase in IOPS for ESE

DiskReclaimer Supports ReFS

Formatting newly "reclaimed" disks to ReFS

Hot Fixes

Required for Windows Server 2012 (Already included in Windows 2012 R2)

http://support.microsoft.com/kb/2894875

http://support.microsoft.com/kb/2884597

http://support.microsoft.com/kb/2822241

Preferred architecture
Server design

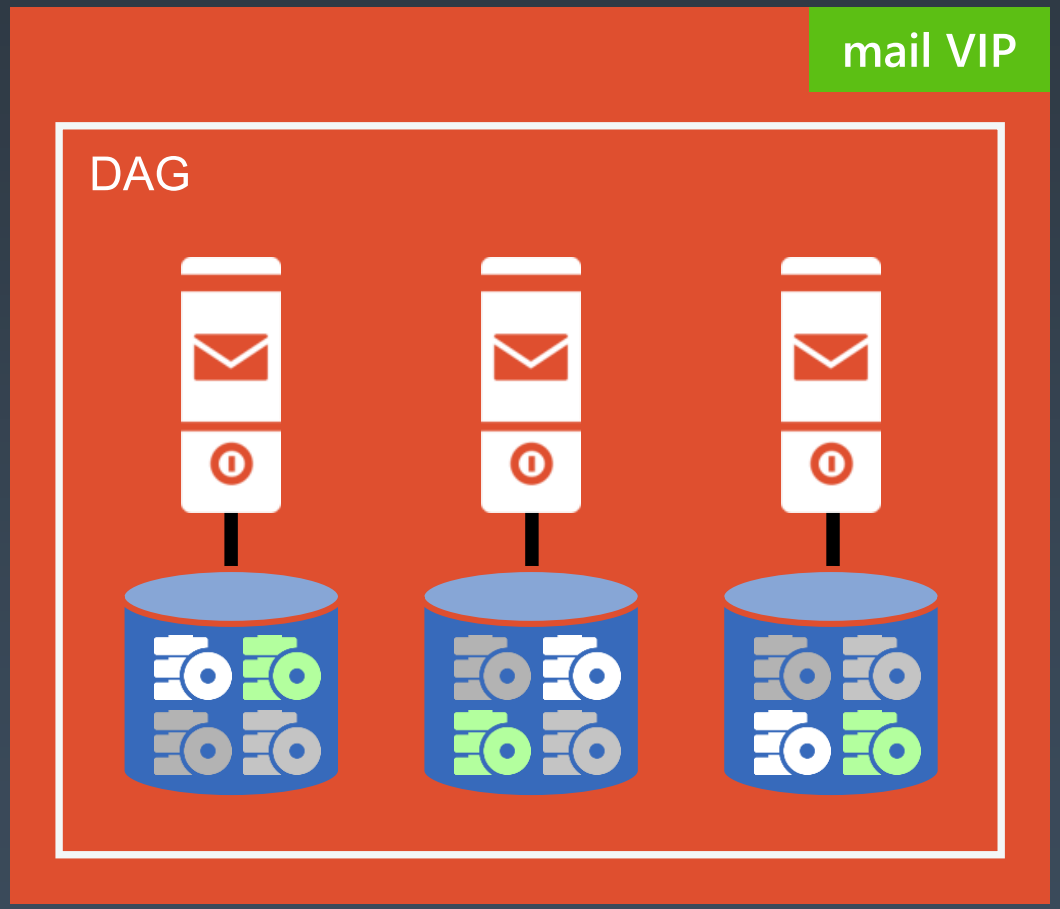
Servers are deployed on commodity hardware

- 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

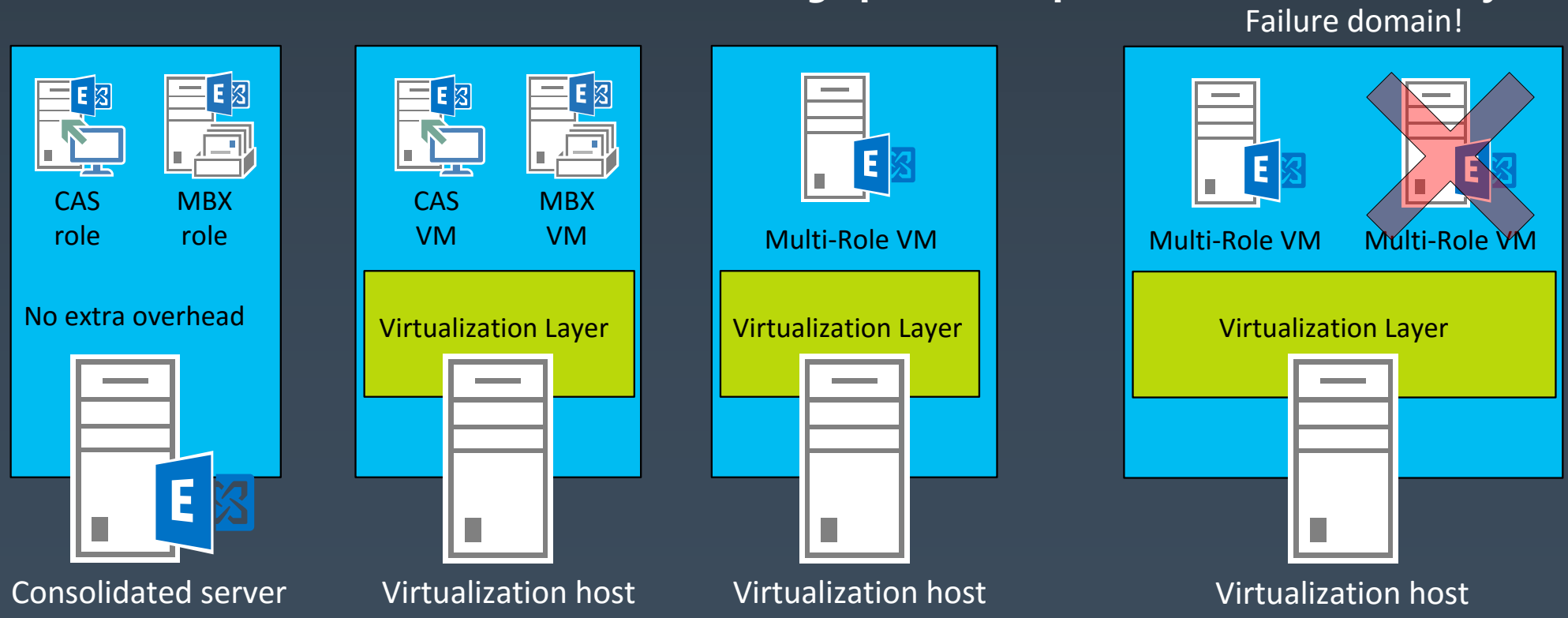
Could make sense for small deployments helping consolidate workloads – but this introduces shared infrastructure

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



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

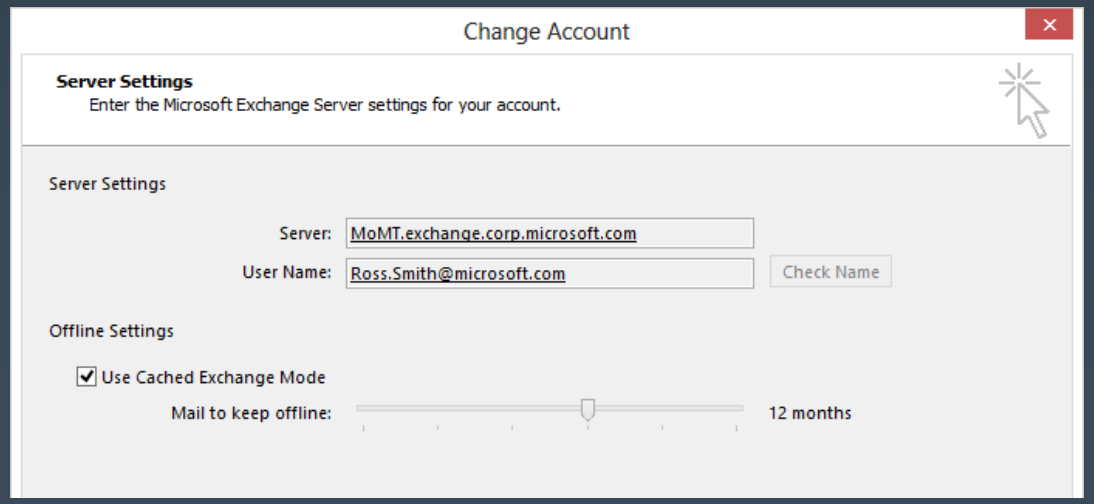
Eliminate or reduce PST reliance

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



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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

Exchange 2016 requires

.NET Framework 4.5.2 or later (.Net 4.6.1 not supported yet!)

Windows Management Framework 4.0 (WMF 5.0 not supported yet!)

Unified Communications Managed API (UCMA) 4.0

Don’t Forget Edge (Not our fancy new browser, we were here first! ☺)

All legacy Exchange server versions must meet requisite levels.

Edge Transport servers may require Edge Subscriptions to be re-run before 2016 setup will operate.

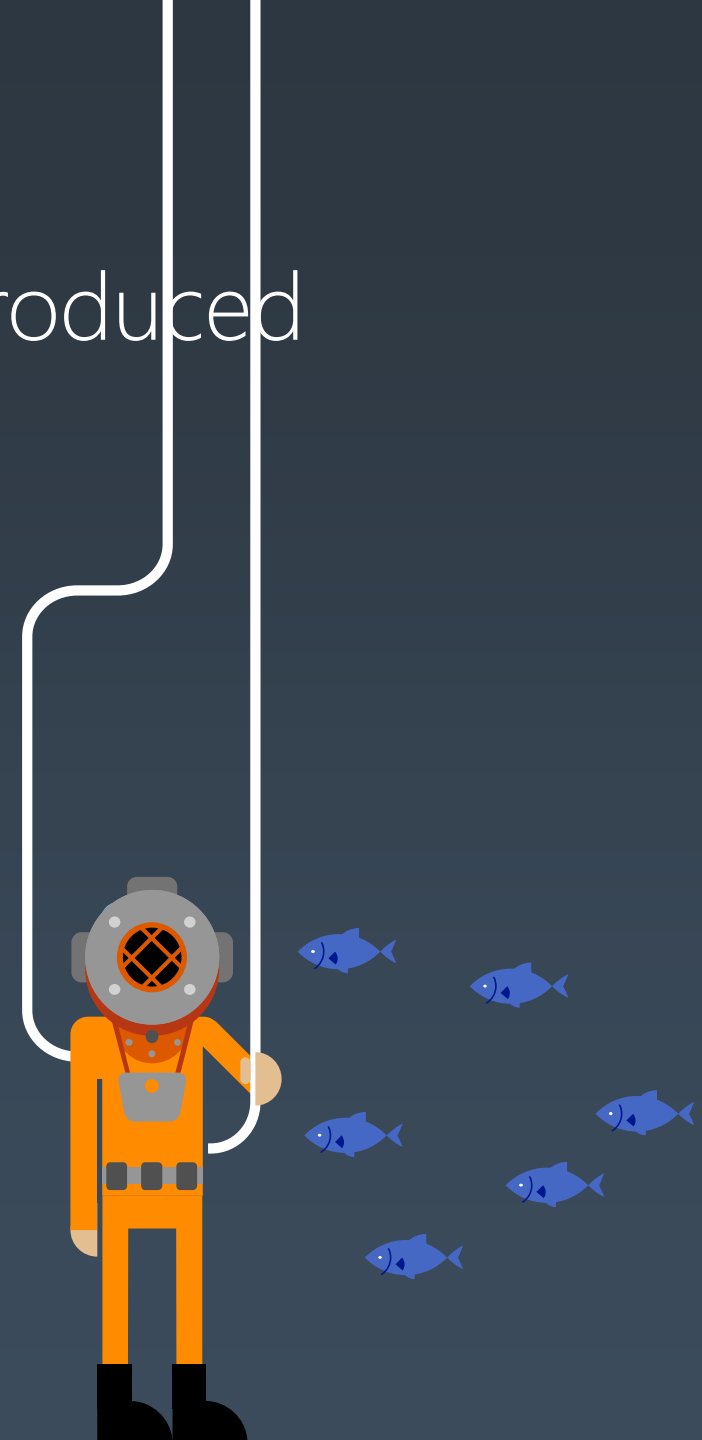
```
[PS] C:\>Get-ExchangeServer | FT Name,AdminDisplayVersion,ServerRole -AutoSize

Name             AdminDisplayVersion          ServerRole
----             -------------------          ----------
E2K10-EDG-001    Version 14.2 (Build 247.5)   EdgeTransport
E2K13-MLT-001    Version 15.0 (Bui  076.9)    Mailbox, ClientAccess
```

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 /iacceptexchangeserverlicenseterms

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

D:\>setup /preparead /iacceptexchangeserverlicenseterms

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)

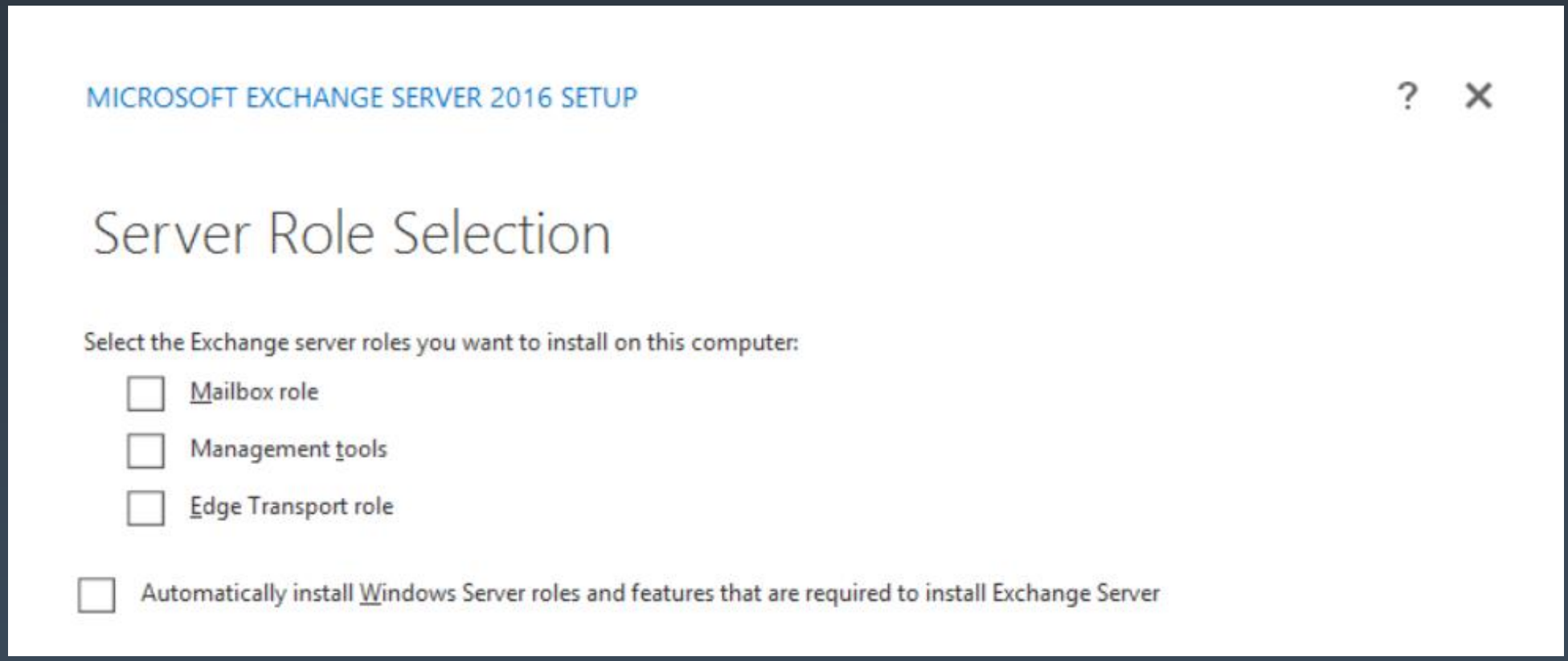
```
[PS] C:\Windows\system32>Get-MailboxDatabase | FT NAME,*offline*,exchangeversion -AutoSize

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

We removed another checkbox.



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

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

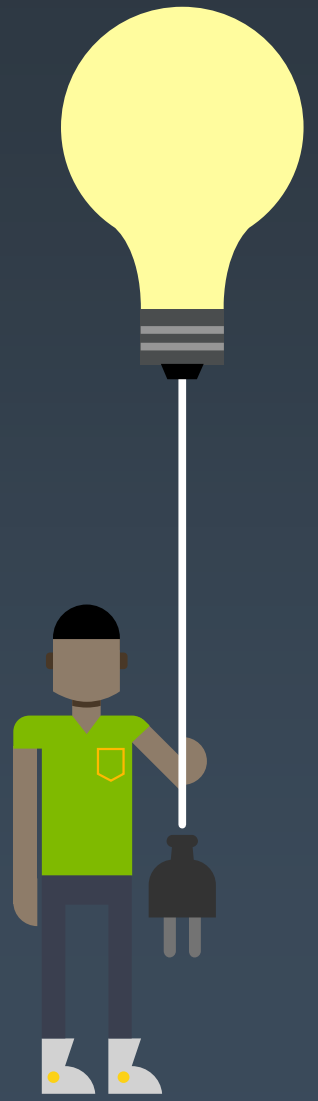
Exchange 2016 Coexistence

“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?”



Coexisting with Exchange 2013 + 2016

Option 1, let Exchange 2013 up-version proxy.

Condensed steps

- Prep your environment (server versions, SFL/FFL, schema, etc…)
- Install 2016
- Configure Exchange 2016 server URLs as you would have Exchange 2013
- Import the certificate(s) to 2016 server(s)
- Setup your DAG(s)
- Start moving mailboxes
- Repeat for all Internet facing sites and then repeat for non-Internet facing
- Move incoming mail flow to deliver to 2016 first once it makes sense (>50% moved)
- Swing the load balanced namespaces over from 2013 to 2016
  - Recommended: Gradually introduce 2016 servers into the existing LB pool.
  - Supported: Cutover to all 2016 servers at once

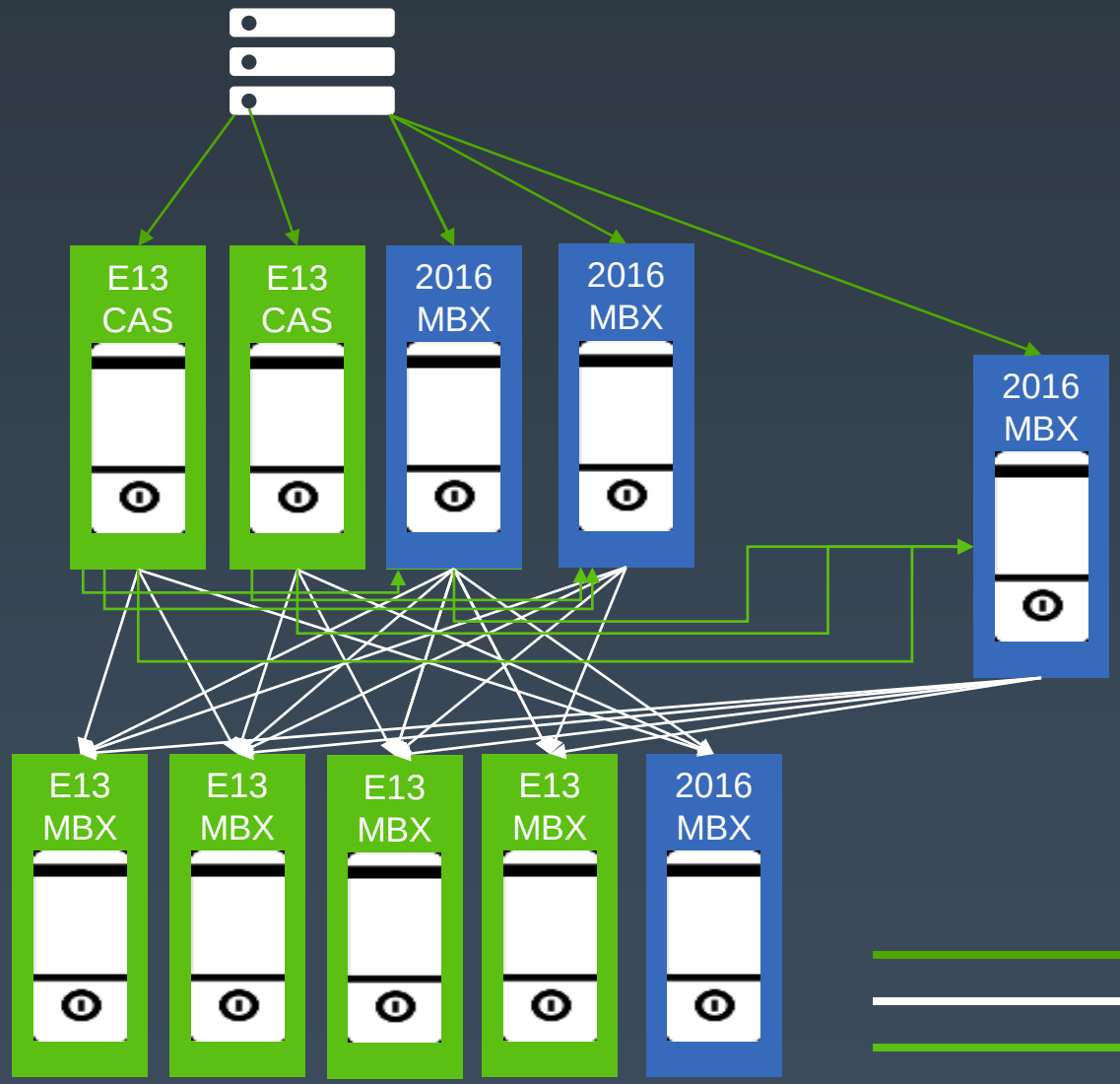
Coexisting with Exchange 2013 + 2016

Option 2, let Exchange 2016 down-version proxy.

Condensed steps

- Prep your environment (server versions, SFL/FFL, schema, etc…)
- Install 2016
- Configure Exchange 2016 server URLs as you would have Exchange 2013
- Import the certificate(s) to 2016 server(s)
- Swing the load balanced namespaces over from 2013 to 2016
- Setup your DAG(s)
- Start moving mailboxes
- Repeat for all Internet facing sites and then repeat for non-Internet facing
- Move incoming mail flow to deliver to 2016 first once it makes sense (>50% moved)

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 Coexistence

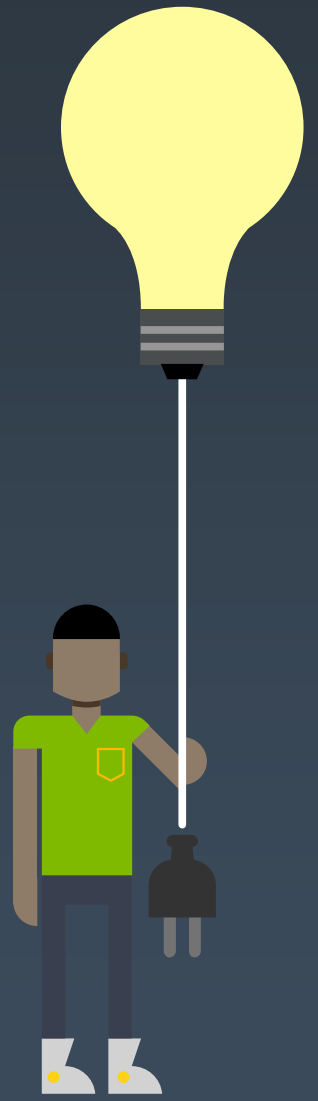
We heard you!

“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?”



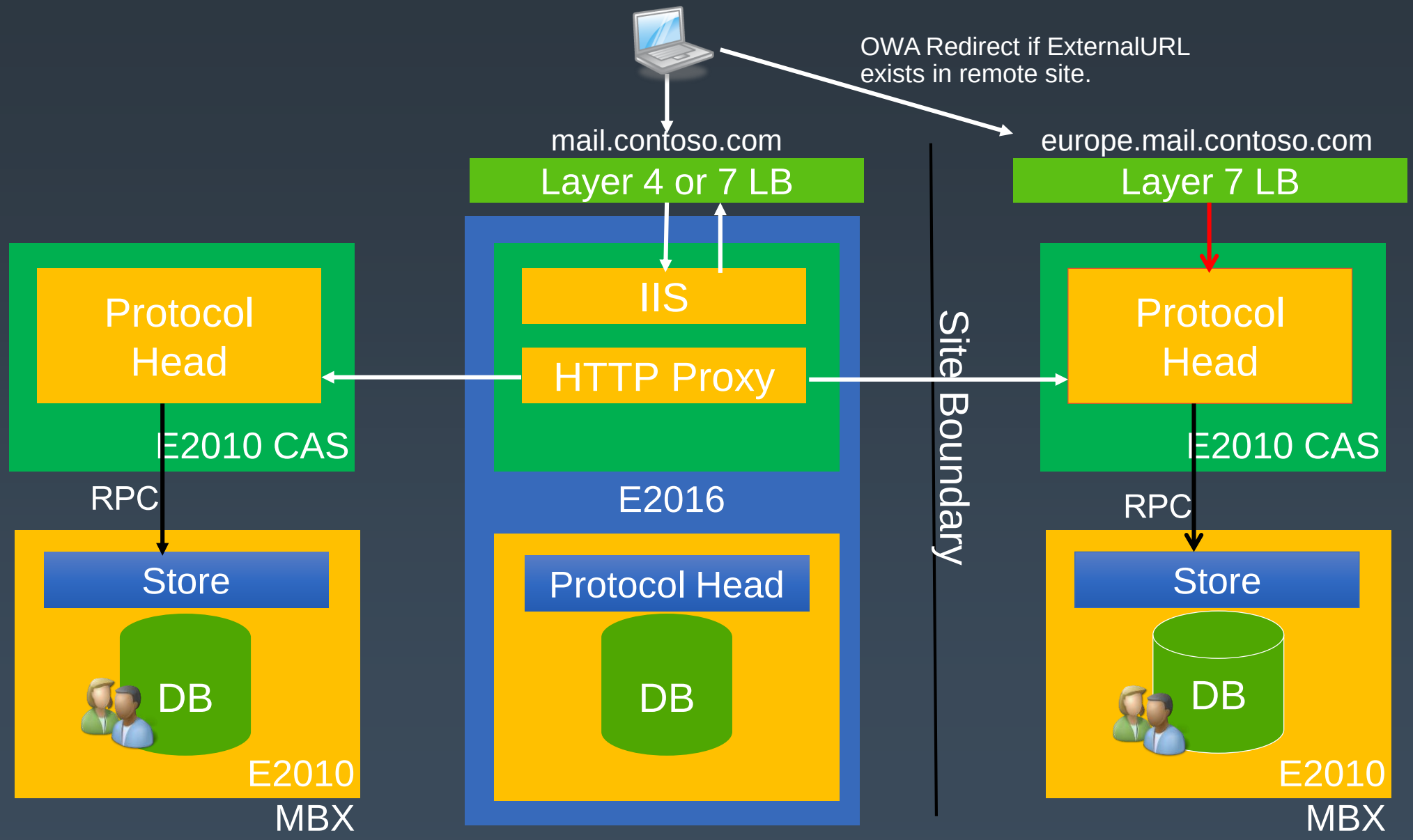
Coexisting with Exchange 2010 + 2016

The same experience as coexisting with Exchange 2013

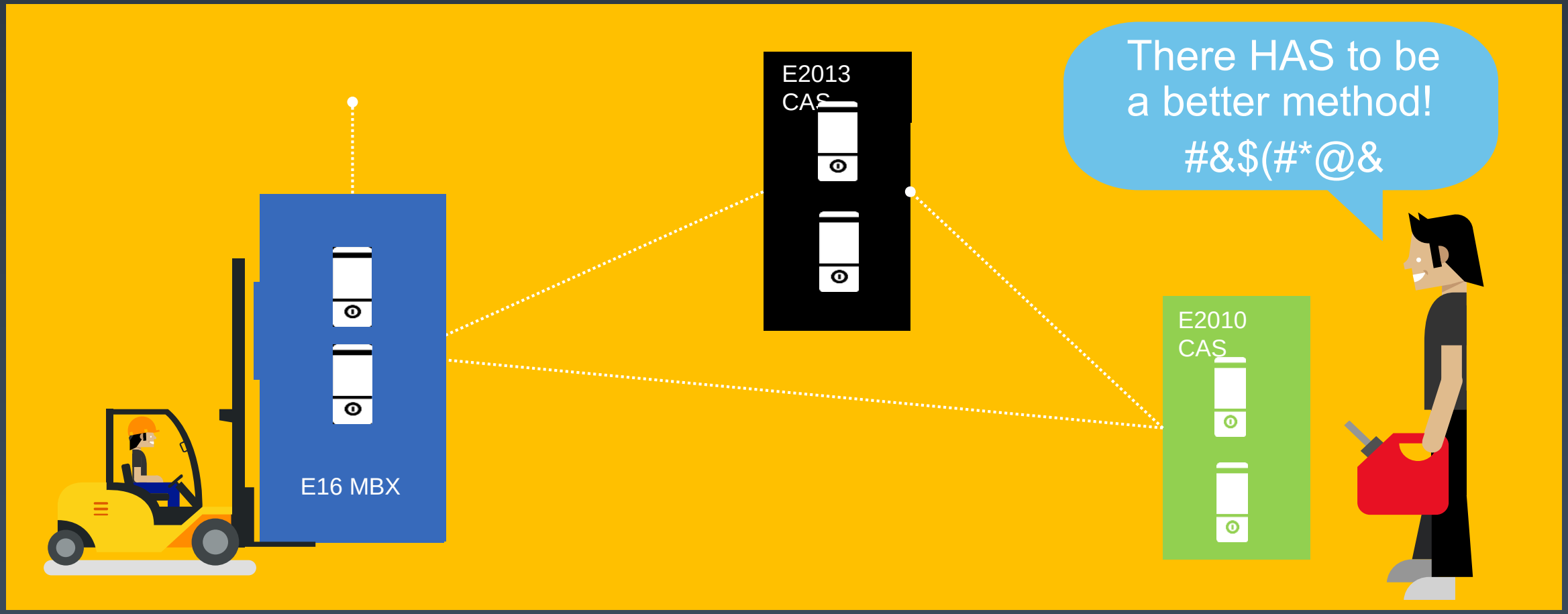
Condensed steps

- Prep your environment (server versions, SFL/FFL, schema, etc…)
- Install 2016
- Configure 2016 server URLs as you would have for Exchange 2013
- Import certificate(s) to 2016 server(s)
- Swing the load balanced namespaces over to 2016
- Setup your DAG(s)
- Start moving mailboxes
- Repeat for all Internet facing sites and then repeat for non-Internet facing
- Move incoming mail flow to land on 2016 first once it makes sense (>50% moved)

Exchange 2016/2010 Coexistence



Exchange Upgrades, the old way.



Coexisting with Exchange 2013 + 2016

Option 1, let Exchange 2013 up-version proxy.

Condensed steps

- Prep your environment (server versions, SFL/FFL, schema, etc…)
- Install 2016
- Configure Exchange 2016 server URLs as you would have Exchange 2013
- Import the certificate(s) to 2016 server(s)
- Setup your DAG(s)
- Start moving mailboxes
- Repeat for all Internet facing sites and then repeat for non-Internet facing
- Move incoming mail flow to deliver to 2016 first once it makes sense (>50% moved)
- Swing the load balanced namespaces over from 2013 to 2016
  - Recommended: Gradually introduce 2016 servers into the existing LB pool.
  - Supported: Cutover to all 2016 servers at once

Coexisting with Exchange 2013 + 2016

Option 2, let Exchange 2016 down-version proxy.

Condensed steps

- Prep your environment (server versions, SFL/FFL, schema, etc…)
- Install 2016
- Configure Exchange 2016 server URLs as you would have Exchange 2013
- Import the certificate(s) to 2016 server(s)
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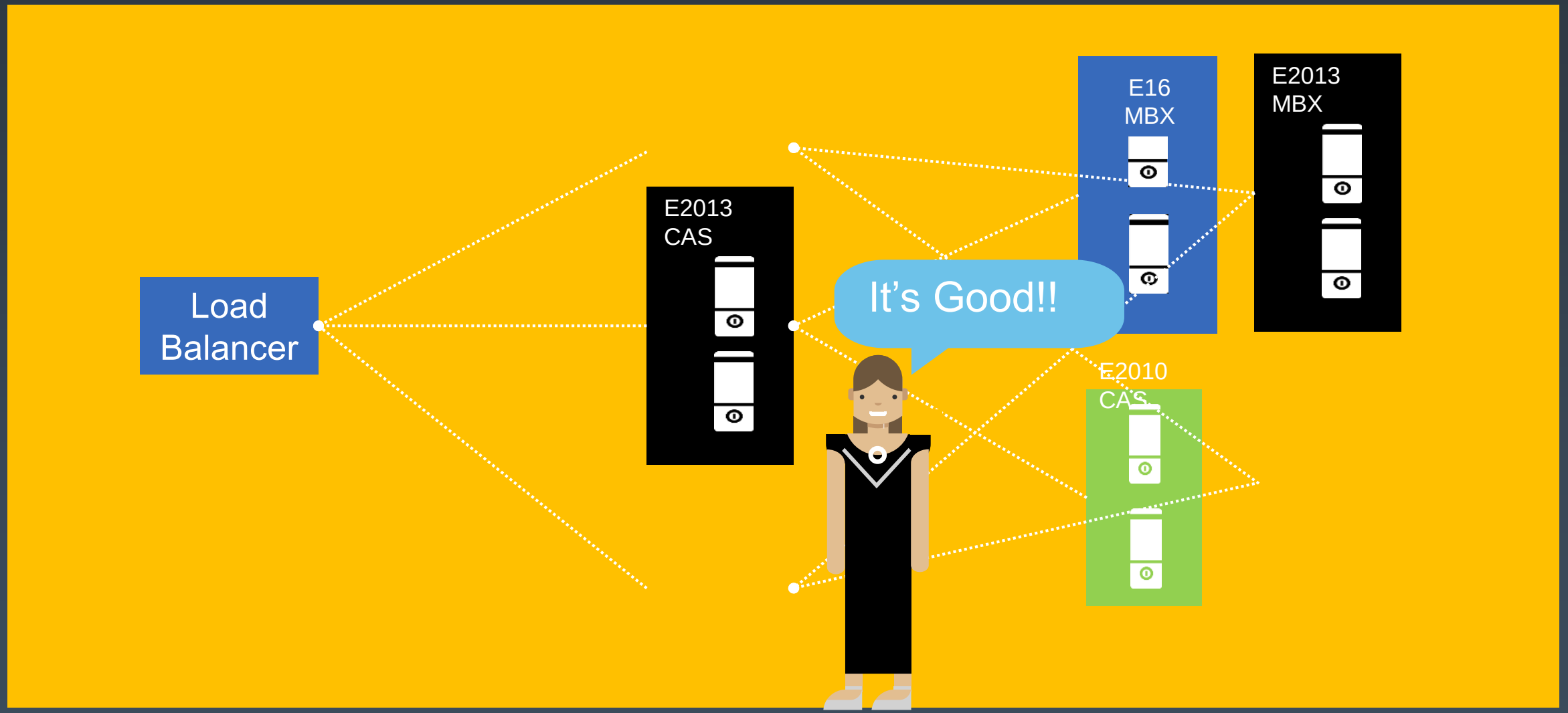
Exchange Upgrades, the new way.



Kerberos Authentication

Exchange 2010 + Exchange 2016

Follow the current Exchange 2010 / Exchange 2013 guidance

http://aka.ms/kerbcoexist20102013

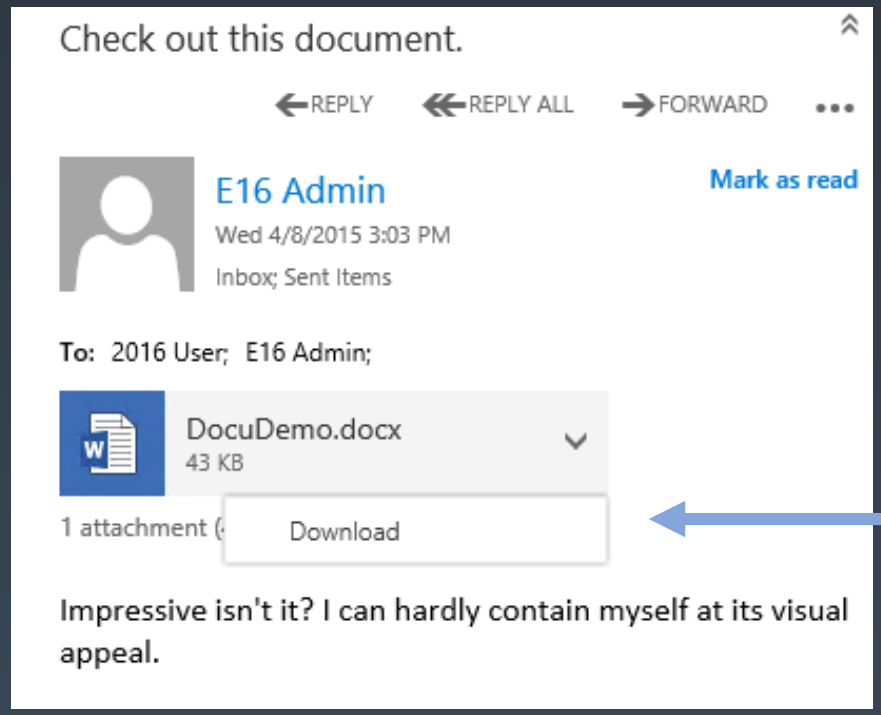
Exchange 2013+ Exchange 2016

A single ASA used for both 2013 and 2016 servers in the same environment.

Exchange 2010+ Exchange 2013+ Exchange 2016

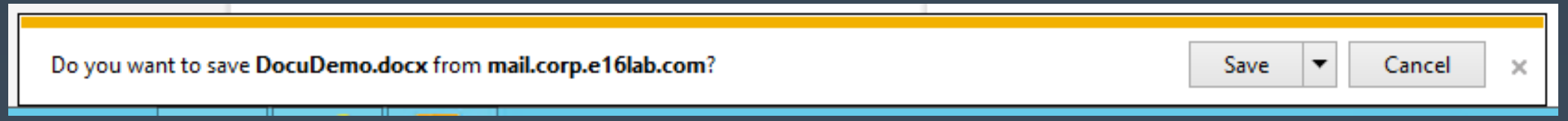
Two ASAs where one is 2010 and the other is shared with 2013 & 2016.

OWA Before Attachment Viewing is Configured

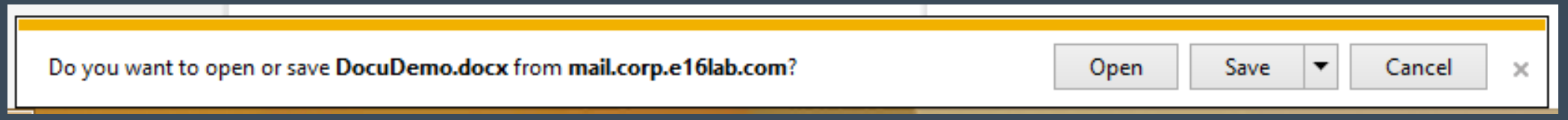


That's all folks!

No Native App Installed



Native App Installed



OWA Before Attachment Viewing is Configured

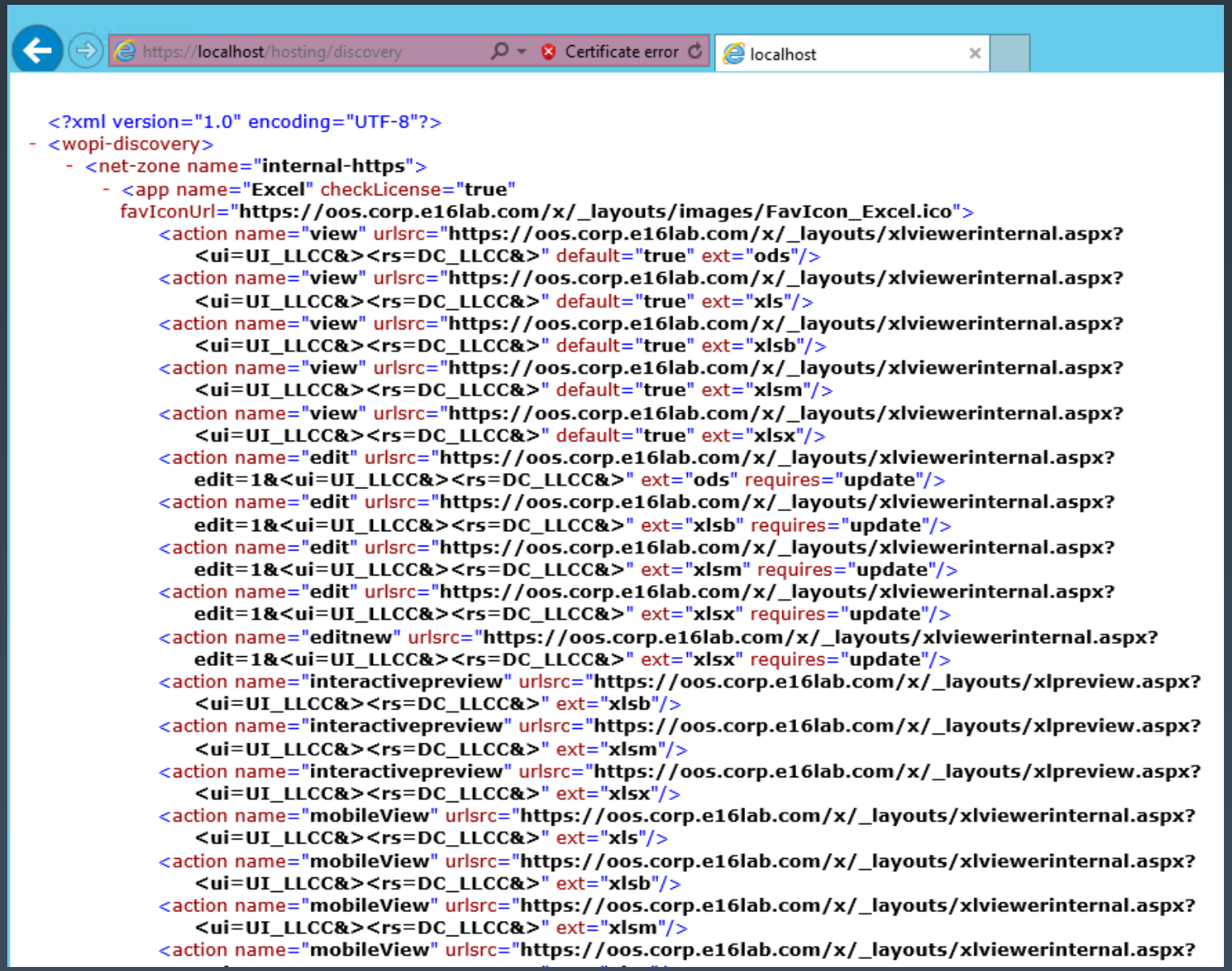
```
[PS] C:\>Get-OrganizationConfig | FL WACDiscovery*

WACDiscoveryEndpoint :
```

What is WACDiscovery?

It tells you “stuff.”

Lots and lots of stuff.

Think of it like Office Web Apps Server’s version of Autodiscover.



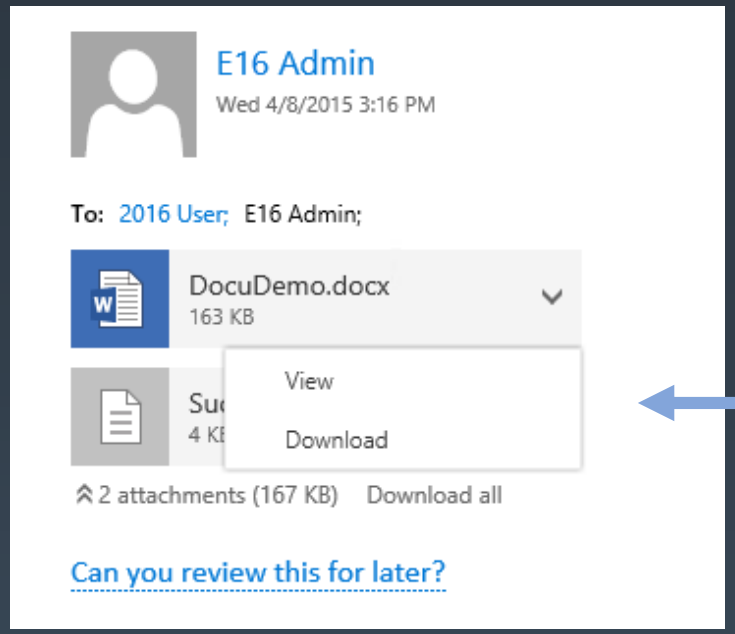
Configuring OWA Attachment Viewing

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
```

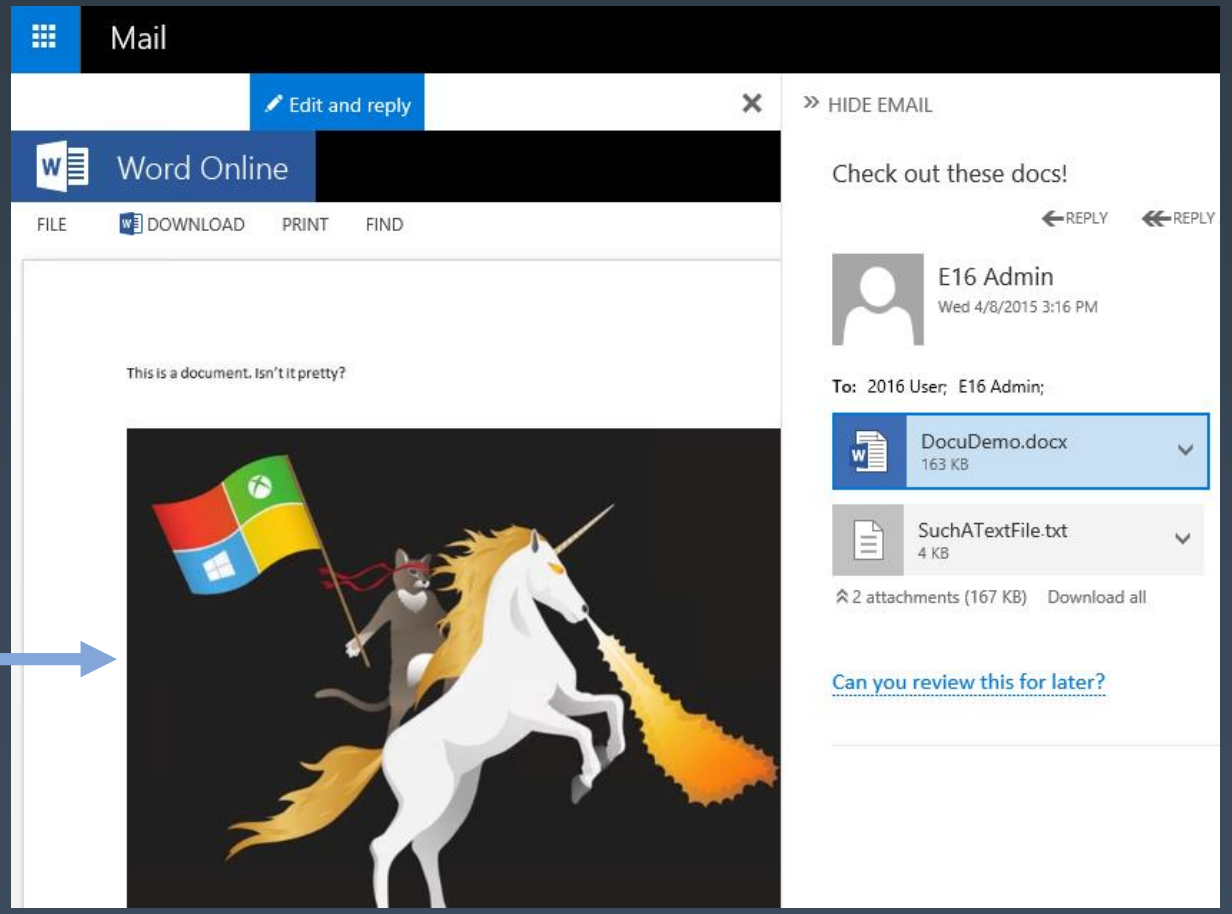
Restart MSExchangeOWAAppPool

OWA After Attachment Viewing is Configured



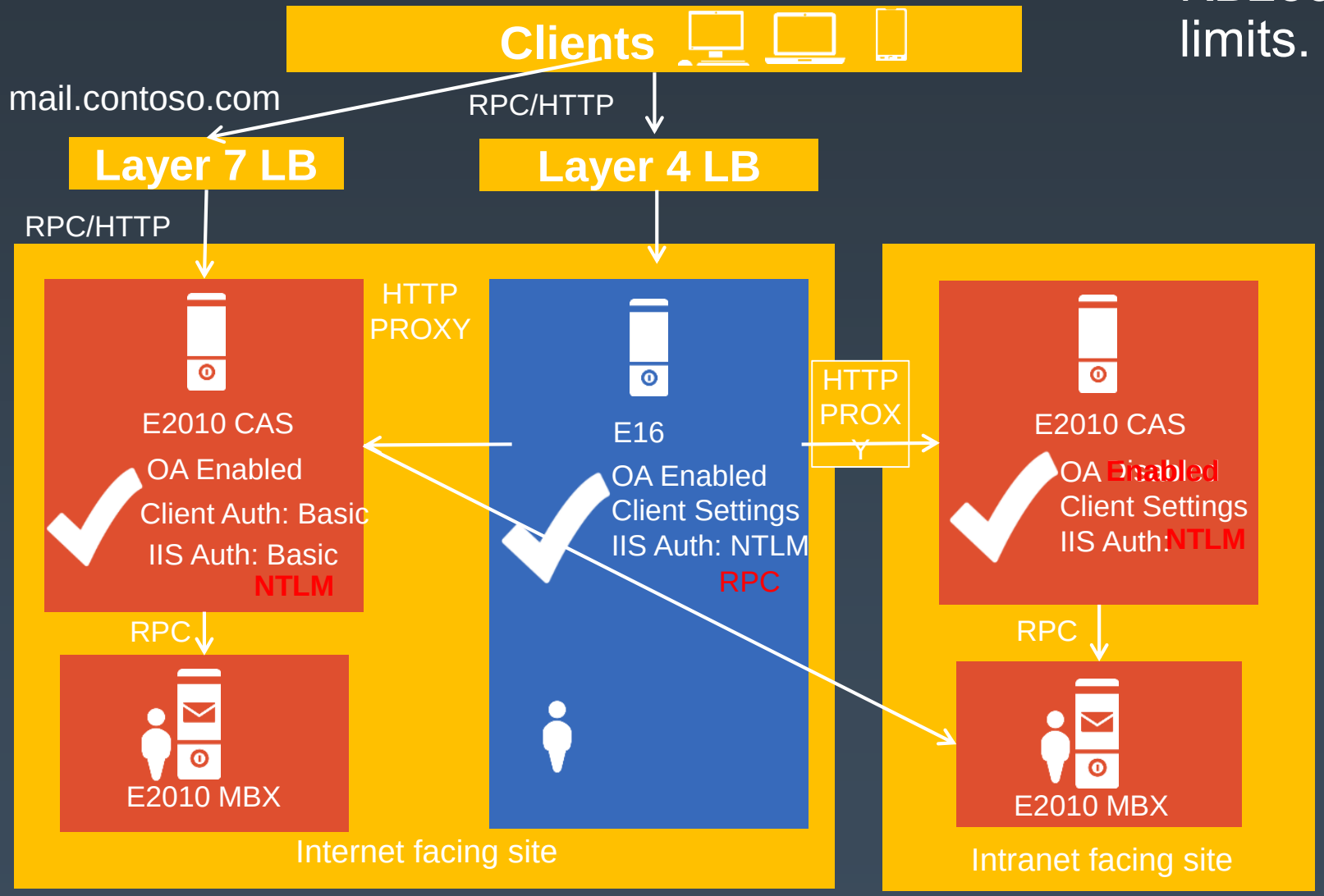
Look, Mom, two options now!

The new side-by-side (SxS) view



Moving Outlook Anywhere to 2016 from 2010

KB2832198: ASP.NET request limits.



1. **Enable Outlook Anywhere on <u>all</u> legacy CAS**
2. **IIS Authentication Methods**

   IIS Auth must have NTLM enabled on all legacy CAS (Basic + NTLM is ok!)
3. **Client Settings**

   Make legacy OA settings the same as 2016 CAS so all clients get the same proxy hostname
4. **DNS Cutover**

   A low TTL on the existing record the days prior to the cutover is a good idea.

A Quick Note on Object Management

- Exchange 2013 can manage 2016 objects, EAC+EMS.
- Exchange 2016 can manage 2013 objects, EAC+EMS.
- Exchange 2010 object management varies, best to use the version specific tools.

Legacy vs. Modern Public Folders

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

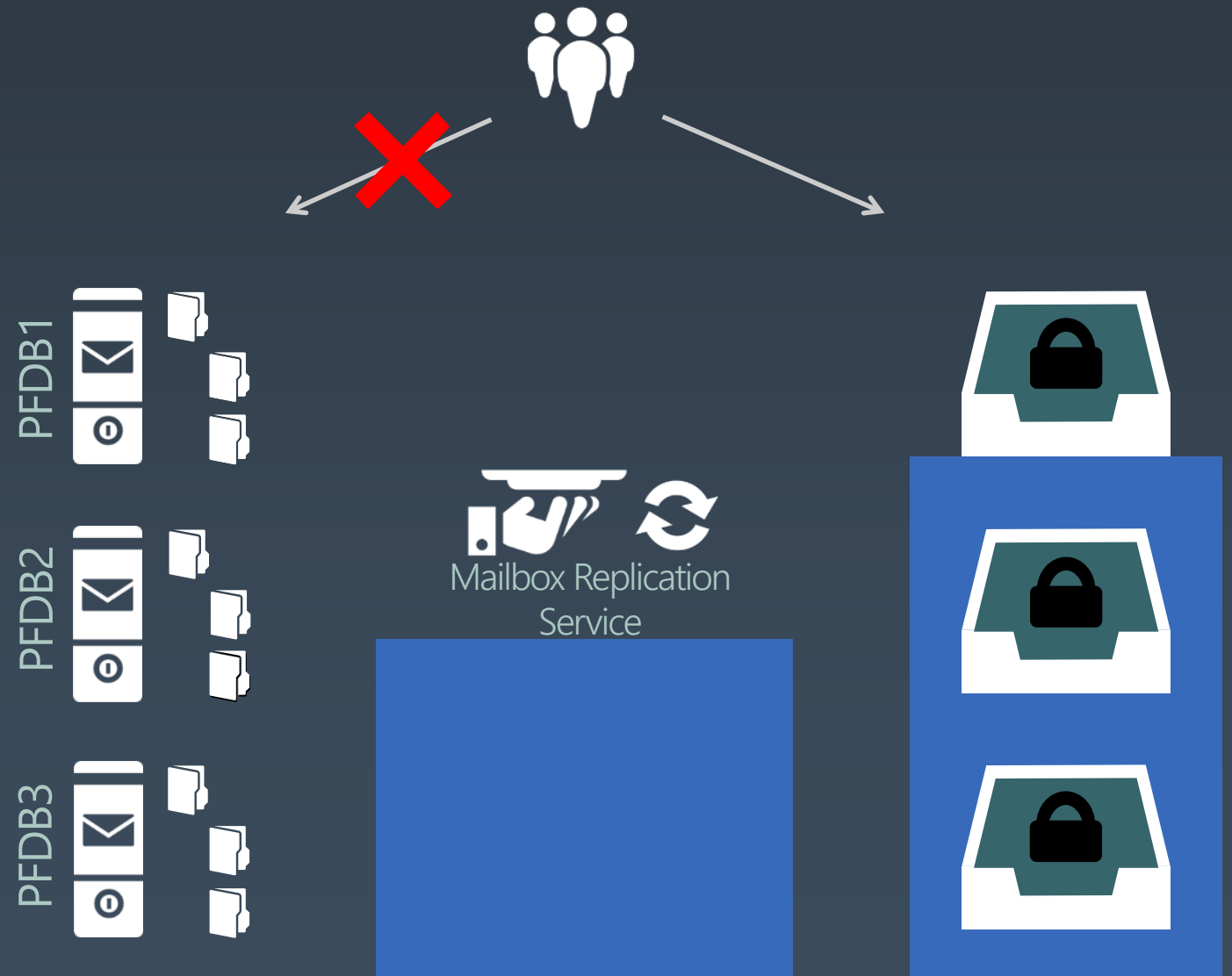
Public Folder coexistence

Configuring Coexistence 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

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

10% sleva pro účastníky této přednášky platná do konce roku 2016 pro kurzy:

- MOC 20345-1: Administrace Microsoft Exchange Server 2016
- MOC 20345-2: Exchange Server 2016 – nasazení a plánování

Slevový kód bude distribuován mailem společně s prosbou o hodnocení přednášky

KPCS je když se řekne Skype for Business

KPCS je když se řekne Power BI

KPCS je když se řekne Internet of Things

KPCS je když se řekne Exchange

KPCS je když se řekne Office 365

KPCS je když se řekne Enterprise Mobility Suite

KPCS je když se řekne Active Directory

KPCS je když se řekne Microsoft System Center

KPCS je když se řekne Efektivní zabezpečení dat

KPCS je když se řekne SharePoint

KPCS je když se řekne Microsoft Azure

KPCS je když se řekne Hybridní datová centra

Office 365
Azure
Hyper-V