



FermiMail Migration to Microsoft Office 365 Exchange Online

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Email and Calendar Systems Consolidation

In 2012, Fermilab consolidated all email and calendaring systems into a single system based on Microsoft Exchange 2010.

These various systems included:

- IMAP4 Systems
 - Exchange 2007
 - Lotus Notes
 - Meeting Maker
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- Introduction to the lab of an integrated email and calendaring system.

The Need to Upgrade

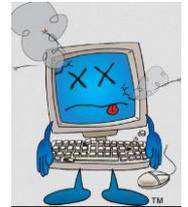
In 2014, Fermilab began evaluating the cost to upgrade the existing Exchange 2010 system

Primary Drivers for the upgrade



MS Forefront Protection - discontinued 12/31/2015
Various replacement products proved costly or insufficient

Extended server hardware support ending



Storage hardware was nearing EOL

Out with the Old, In with the New

In 2015, Fermilab elected to use Office 365 Exchange Online to replace the on-premise mail system.

Why?

- Cost 
 - Leveraging existing O365 E3 licenses reduced license costs.
 - Eliminated *nearly* all hardware costs
 - Exchange Online included Exchange Online Protection – the successor to Forefront for exchange.
- Service Improvements
 - Much larger User Quotas
 - Unlimited Archiving



From Planning to Implementation

1. Understand your email environment
 - Who shares what calendar/mailbox with whom?
 - How is it shared? Read-only? Full delegation?
 - Mail volume (sent/received) per email address.
 - Max number of recipients in an email.
2. Understand who are your VIPs and if they have special needs
3. Understand what high-profile calendars are published on the web
4. Understand how mail flows within your laboratory

Answers to these questions helps develop a migration strategy.

Crawl, Walk, Run...2 Pilot deployments

Initial plan was to migrate users in small batches over a long migration timeline, grouping together people with fully delegated shared- resources (*best practice*).

Pilot 1 (crawl): Small group (~20) providing cross-section of lab.

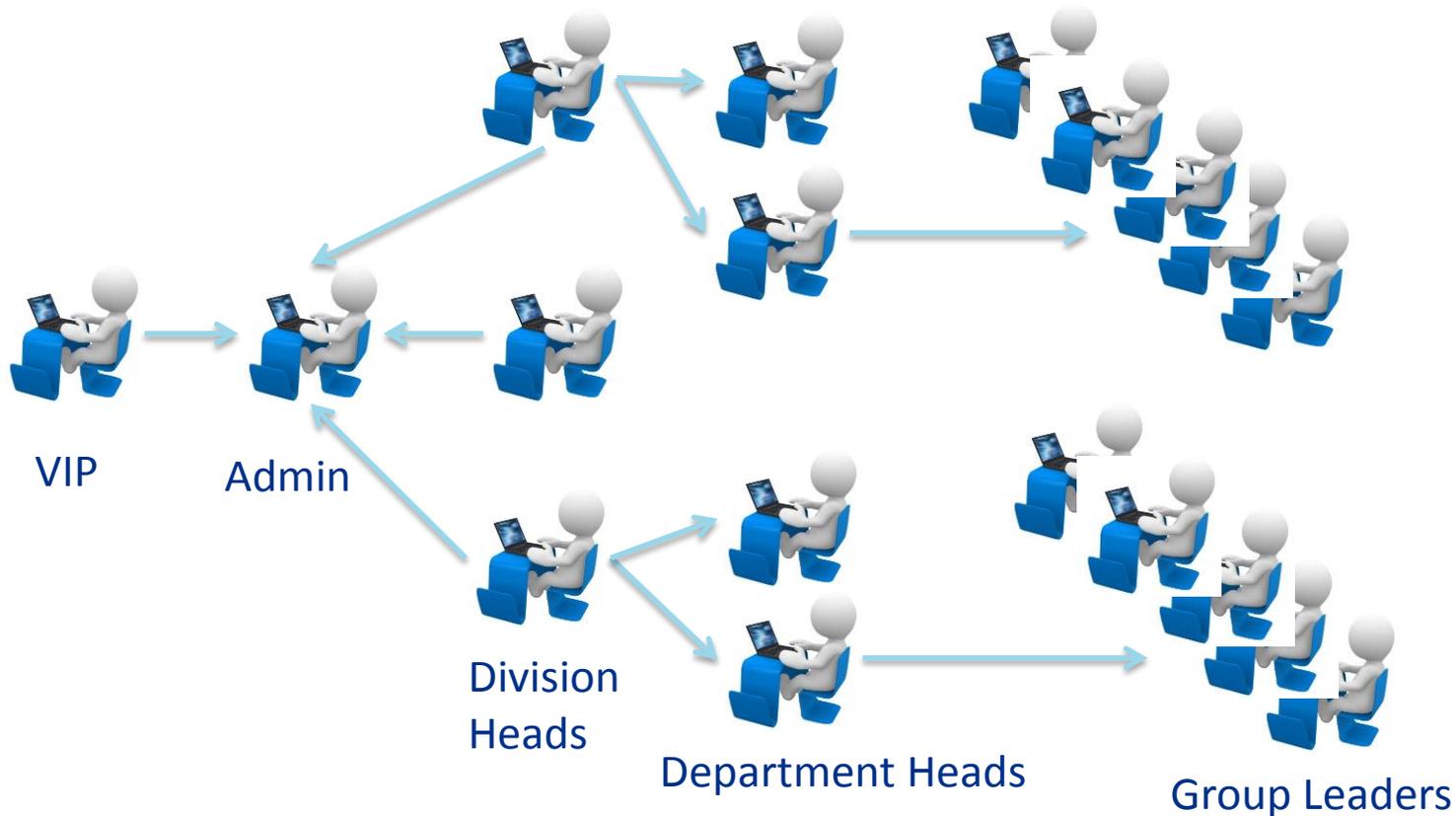
- Very patient VIPs (but not their admins)
- Project team
 - Support personnel representing various OS & client configurations

Lessons Learned:

- Admin access to VIP calendars broke (*but not consistently*)
- If non-pilot users had access to a pilot user's calendar, they were constantly prompted for username/password until they unmounted that calendar in outlook.
- Some performance issues with IMAP clients (not supported @ Fermilab)

Crawl, Walk, Run...2 Pilot deployments

Concerns after Pilot 1: Shared resource matrix is complex.



(Don't forget about shared resources: conference rooms, etc.)

Long-migration timeline not acceptable. Need to migrate faster.

Crawl, Walk, Run...Pilot 2

New deployment strategy: “Big Bang” deployment. But how long will it take?

Pilot 2 (Walk): Large Group ~140 people

- Provide timing for “big bang” deployment
- Understand new support requirements

Lessons Learned:

Clear, simple, communications to end-user is essential

Need hard-copy of instructions for users

Migration of mobile devices not quite so straight forward

Migrate all accounts to 95% prior to actual cut-over.

Final cut-over estimate: ~21 hours to migrate ~3000 mailboxes



Deployment Schedule



Pre-migration completes to 95% and is non-disruptive. This will complete before Sunday, 12/13.

Final migration started. Final 5% of mailbox is moved. Access to other people's calendar may be disrupted during this period.

Once migration completes (100%), access to your email will no longer work until you reconfigure your client.

Crawl, Walk, Run...Deployment

Final Deployment (Run)

- Sunday thru Monday – Actual migration
 - Accounts synced to 95% mark prior to actual migration
- Communications campaign to notify users what is happening
 - All-hands, News Portal, Posters, Announcements...
 - Hard-copy flyers in users' physical mail boxes
 - Special web-site to update users, provide documentation
- Minimize disruption to users!
 - 3 migration groups - 1 for most of lab, 2 groups for VIPs to accommodate travel schedules.

Final Deployment

- Support, support, support!
 - Local support groups placed in high population areas
 - Actively seeking to assist user migration
 - Support continued until majority of area completed migration
 - Extended service support hours to cover workers on flex-time.
 - 3rd party contractor to provide additional support (on-site and remotely)
 - Command center created to coordinate efforts



Lessons Learned from Final Deployment

- Local support groups well received and made process more tolerable to end-users.
- Inventory individual folders of users with large mailboxes PRIOR to migration
 - They may not even know those folders exist
 - Can negatively impact migration
- Identify local server settings which may need to be transferred to cloud tenant settings
 - TNEF encoding may need to be explicitly set
 - *We used recommended settings initially but needed to change it.*

Lessons Learned from Final Deployment cont'd

- Have a process for issuing and recovering O365 subscriptions early, to avoid unnecessary disruptions to users
- Understand Active Directory replication propagation delays and how it affects your service
- Understand data retention, especially when an account expires.
- Trade-off: Operational cost savings but less control over mail service

Ongoing Challenges – Email Clients

- Microsoft does not strictly adhere to every email RFC, and they are not going to.
- The same client software on different platforms isn't the same.
- Not every email client software application is supported by Fermilab or is capable of accessing all Office 365 Exchange Online features.
 - Supported email clients: Outlook on Windows and Mac, Outlook on the Web (formerly Outlook Web Access).
 - Unsupported email clients in use: Mac Mail, Thunderbird, SeaMonkey, Pine/Alpine, Mutt
 - Users with unsupported email clients still generate Service tickets.
 - IMAP continues to have performance problems.

Ongoing Challenges – User/Client Interactions

- Extensive use of shared and/or delegated mailboxes and calendars result in event or message changes that “no one” made.
- Cross-platform compatibility issues result in unexpected message or calendar changes, especially on shared or delegated mailboxes and calendars.
 - This is true even when all the clients on all the platforms are called “Outlook”.
 - This is especially true with mobile device clients.

Ongoing Challenges – Cloud Services

- Active Directory synchronization is not “real-time”. It can take an hour or more after directory synchronization for an account to appear in Office 365 as an active account.
- Office 365 and Exchange Online are two different cloud systems. It can take an hour or more for an account to appear in Exchange Online after it appears in Office 365.
- Office 365 and Exchange Online have limited customization available compared to on premise servers. Some settings available on local servers are not available on shared “cloud” servers.
- Cloud servers have limited logging capability for detailed debugging and forensic activities as compared to on premise servers.

Ongoing Challenges – Cloud Services

- Global features/auto-updates going-live
 - No global setting to shut these features off
 - Web link preview
 - Clutter
- Archiving
 - Client dependent (Outlook 2013/2016 only)
- Exemptions from cloud imposed send/receive limits
 - Requires long lead time and justification to vendor

A Team Effort

Do not underestimate the effort required for cloud migration!

- Senior Management
- Project Team
- Communications Team
- SWC (Consulting Company and MS Partner)
- Desktop Support
- Desktop Engineering
- Linux Server Support
- Windows Server Support
- Service Desk
- Experiment Liaisons and Business Analysts



In the end, we believe it is worth it.

Credits and Q&A

Thanks to Dave Coder and Ray Pasetes for their contributions to this presentation.

