PROJECT 2

EXCHANGE SERVER DEPLOYMENT AND CONFIGURATION

2025

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Submitted To
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Contents

CHAPTER 1

PROJECT SUMMARY

This project involved the full deployment and configuration of a Microsoft Exchange Server 2019 environment for a simulated organization using the domain yourname.com (here *rajeev.forest*). The Exchange Server was installed on a Windows Server 2025 virtual machine configured as a domain controller and global catalog, with the highest forest and domain functional levels. The mailbox role was successfully installed, and the default mailbox database and logs were relocated to $C : \backslash SAN \backslash FirstMailboxDB$. Four additional mailbox databases—Marketing, Accounting, Engineering A, and Engineering B—were created to support departmental email management and data organization.

Mail-enabled security groups for marketing, accounting, and engineering were established, along with customized email address policies to standardize addresses for internal and external users. Departmental address lists were implemented, and Lois Lane was configured to receive HR-related emails. A mail-enabled public folder structure, including a Forum folder with project-specific subfolders, was created with appropriate permission assignments for administrators and departmental users.

Advanced Exchange features were configured to support secure remote access via Outlook Anywhere, OWA, and ActiveSync for designated users, with password change restrictions for engineering staff. A dynamic distribution group for team leads was created based on custom attributes, and archive mailboxes with retention policies were deployed for accounting users to ensure compliance and efficient data management.

Additional configurations included email monitoring and litigation hold for Mathew Perry's mailbox, custom mailbox size limits by department, and transport rules restricting outbound mail for engineers while applying a legal disclaimer to accounting department emails. The result is a robust, secure, and well-organized Exchange 2019 messaging infrastructure aligned with enterprise communication, compliance, and governance requirements. For this project, I would be using the following :

- UTM Virtualisation (*since I am using a MAC host)*
- Windows Server 2025 as Operating System
- Exchange 2019

Figure 1.1: Working environment for this project (Exchange 2019- Windows Server 2025 and UTM VM combo)

CHAPTER 2

INSTALLATION (Steps 1-3)

2.1 Installation of Microsoft Exchange Server 2019

Step #1 : Create a new VM called **exch01** that has Windows Server 2019 installed and an IP address on the external virtual switch.

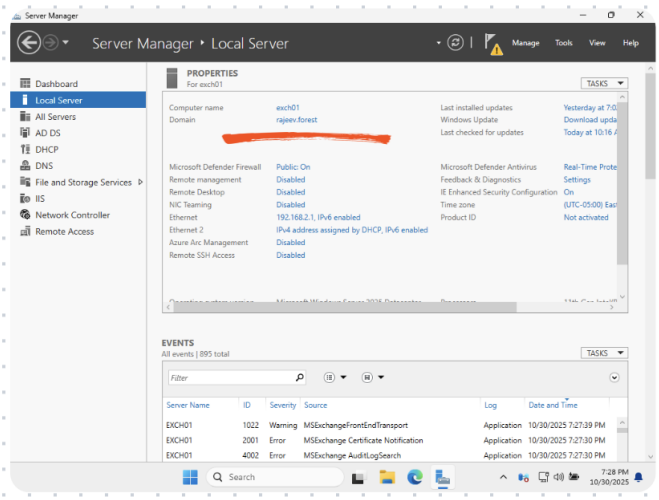

Figure 2.1: VM exch01 and domain rajeev.forest

2.2 Configure exch01 as a domain controller

Step #2.3 : Ensure that your computer is a global catalog and uses the highest domain and forest functional levels. **Step #2** : Install a default instance of SQL Server 2019/22. 1 mark

2.3 Installing Exchange 2019

Step #3 : Install Microsoft Exchange 2019 (mailbox role) on your exch01 virtual machine.

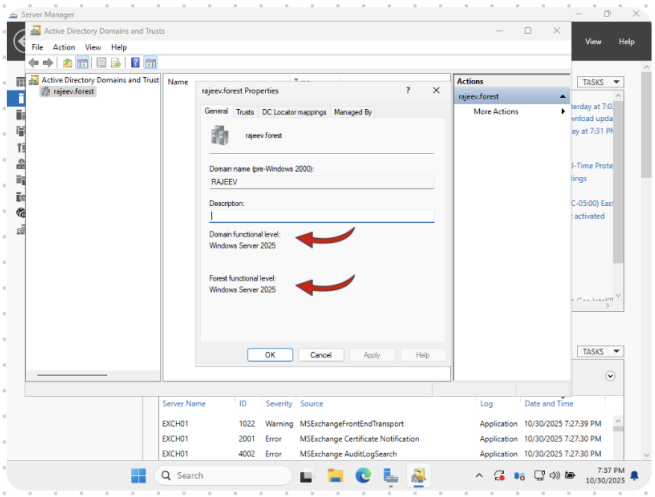

Figure 2.2: exch01 as domain controller

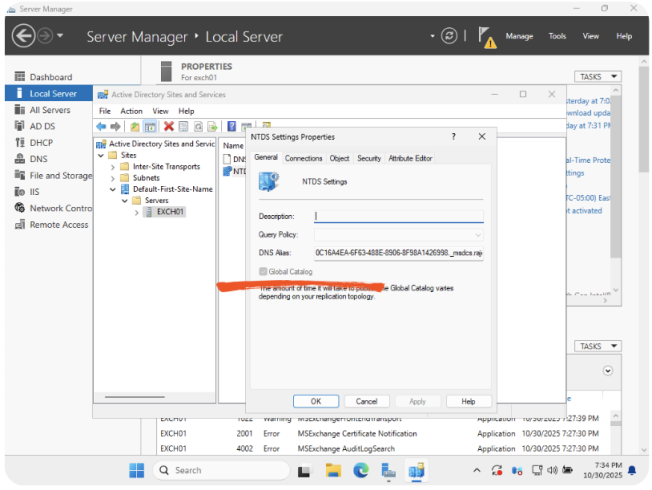

Figure 2.3: exch01 as global catalog

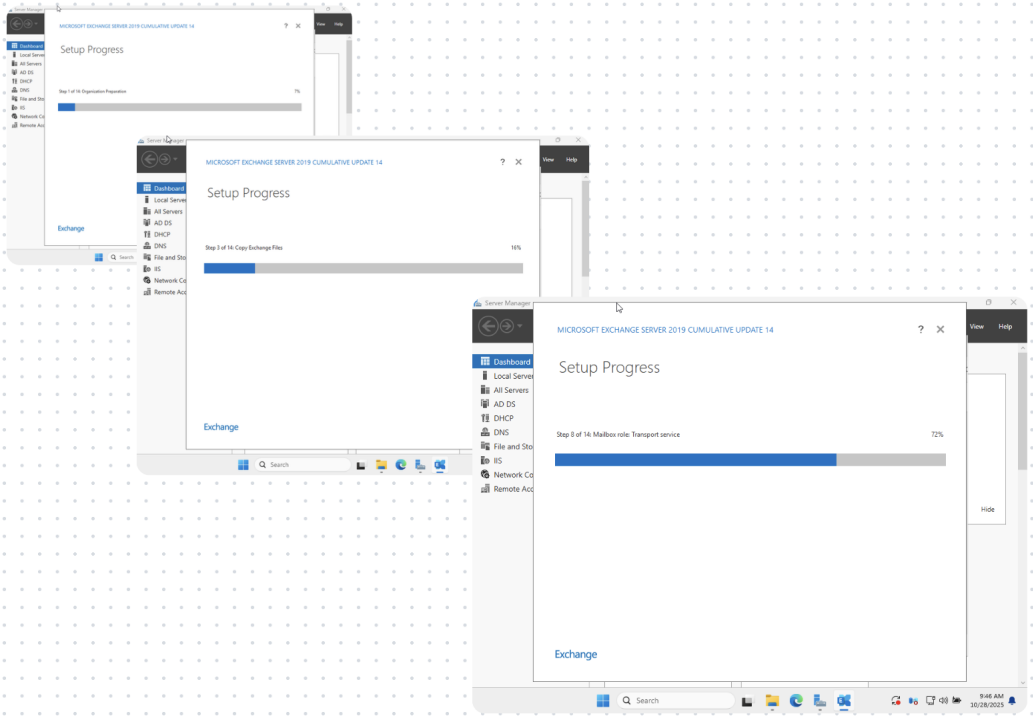

Figure 2.4: Installation of MS Exchange 2019- 1

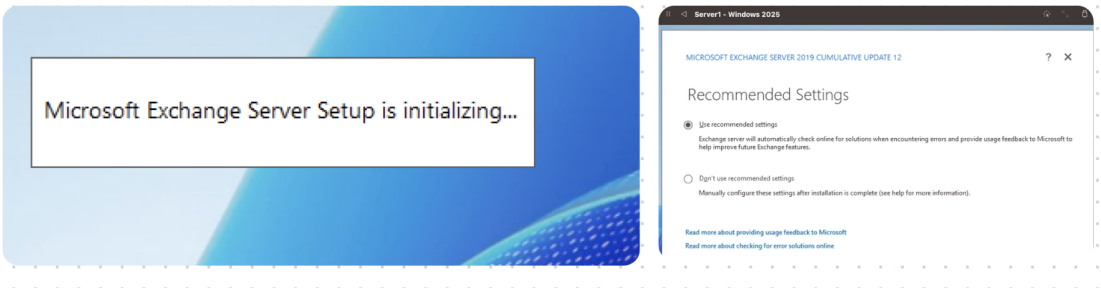

Figure 2.5: Installation of MS Exchange 2019- 2

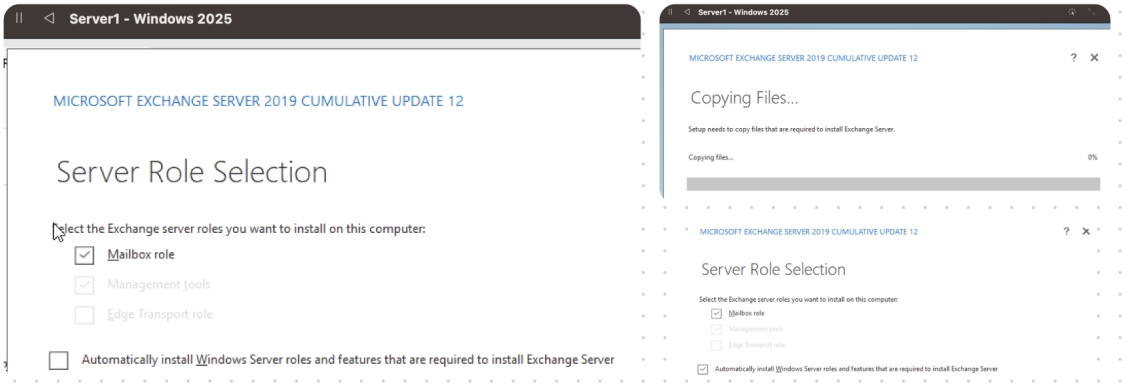

Figure 2.6: Installation of MS Exchange 2019- 3

CHAPTER 3

CONFIGURATION OF MAILBOX (steps 4-5)

3.1 Mailbox databases

Step #4. 4. Move the default mailbox database (and associated logs) to the $C:\backslash SAN\backslash FirstMailboxDB$ folder. The default mailbox database will be used to host the mailboxes for the IT department as well as any public folders. Next, create 4 additional mailbox databases:

- Marketing Mailbox Database (in $C:\backslash SAN\backslash SecondMailboxDB$)
- Accounting Mailbox Database (in $C:\backslash SAN\backslash ThirdMailboxDB$)
- Engineering Mailbox Database A (in $C:\backslash SAN\backslash FourthMailboxDB$)
- Engineering Mailbox Database B (in $C:\backslash SAN\backslash FifthMailboxDB$)

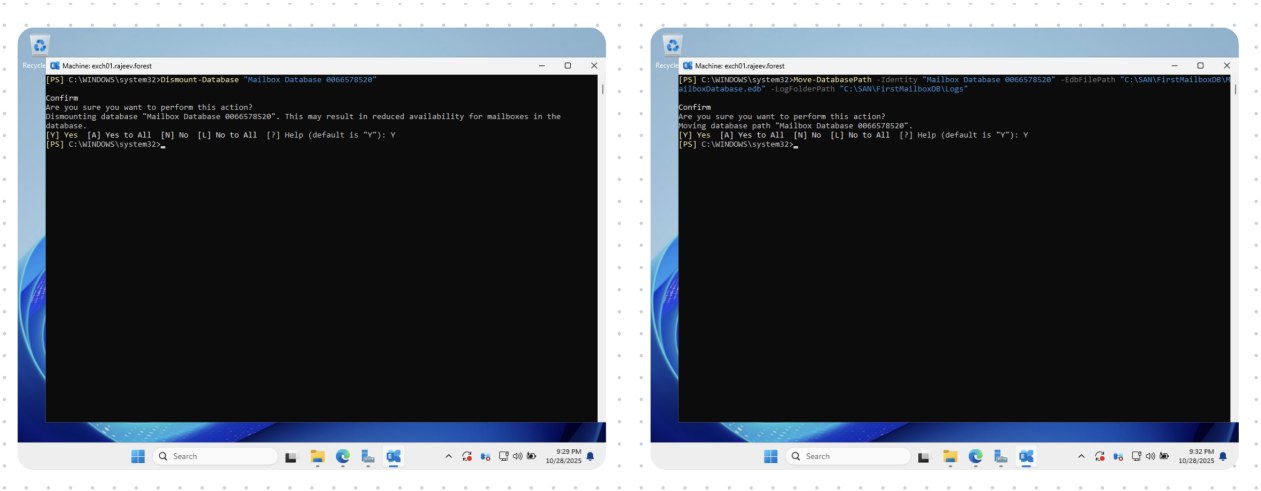

Figure 3.1: Mounting default mailbox

3.2 Outlook Anywhere, OWA, and ActiveSync

Step #5. Ensure that email can be forwarded to the internet on your Exchange server. Also ensure that external Outlook Anywhere, OWA, and ActiveSync clients can access the server.

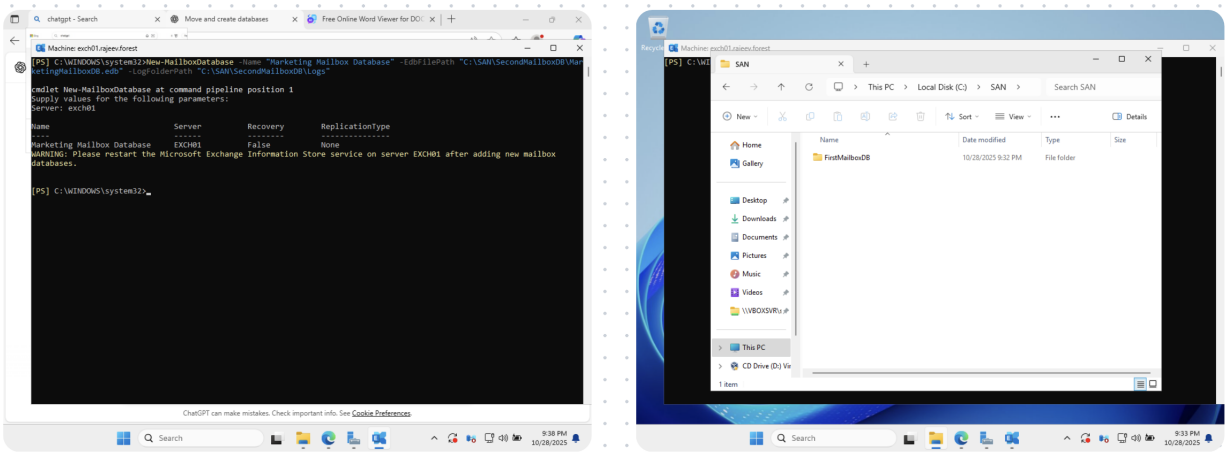

Figure 3.2: Mounting Marketing mailbox

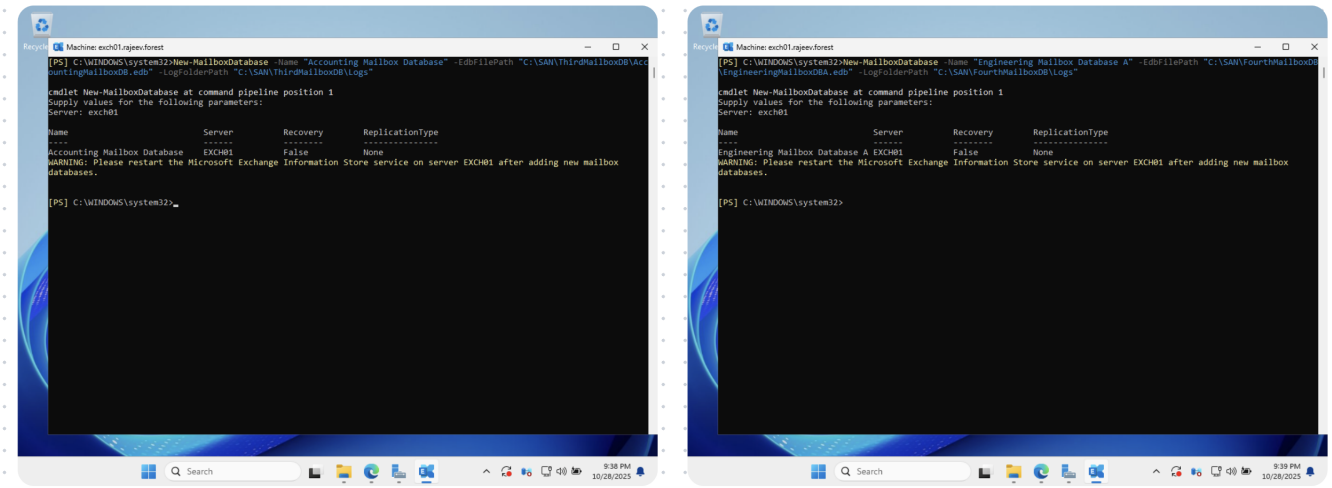

Figure 3.3: Mounting Accounting and Engineering mailbox

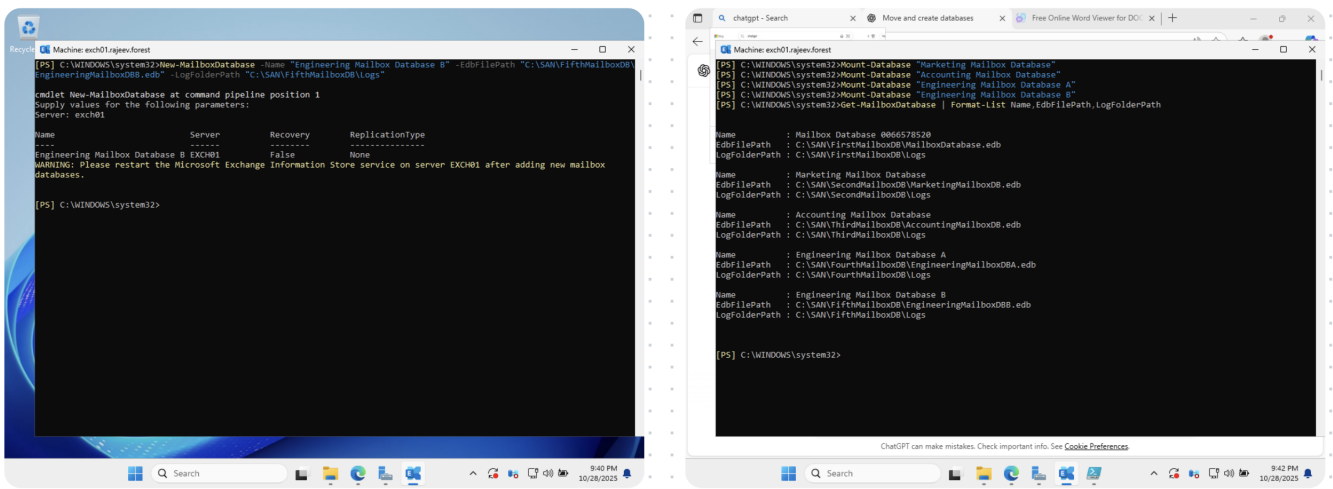

Figure 3.4: Listing all mailboxes

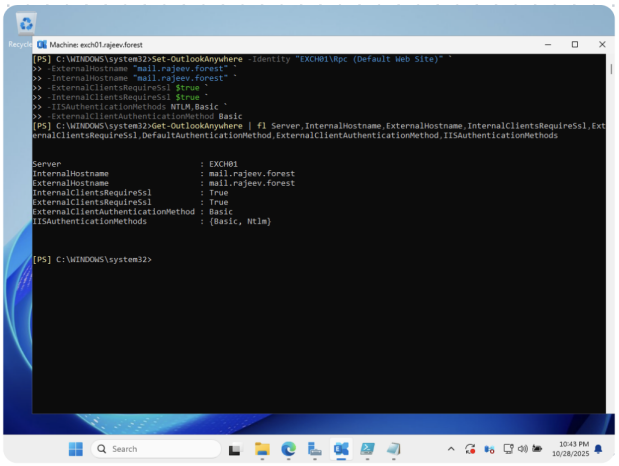

Figure 3.5: Outlook Anywhere

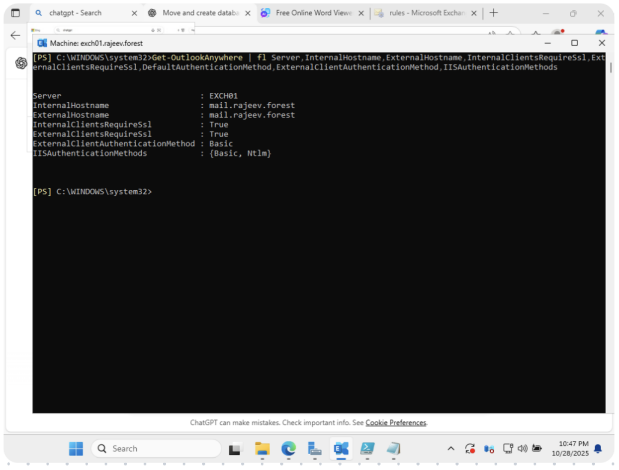

Figure 3.6: OWA

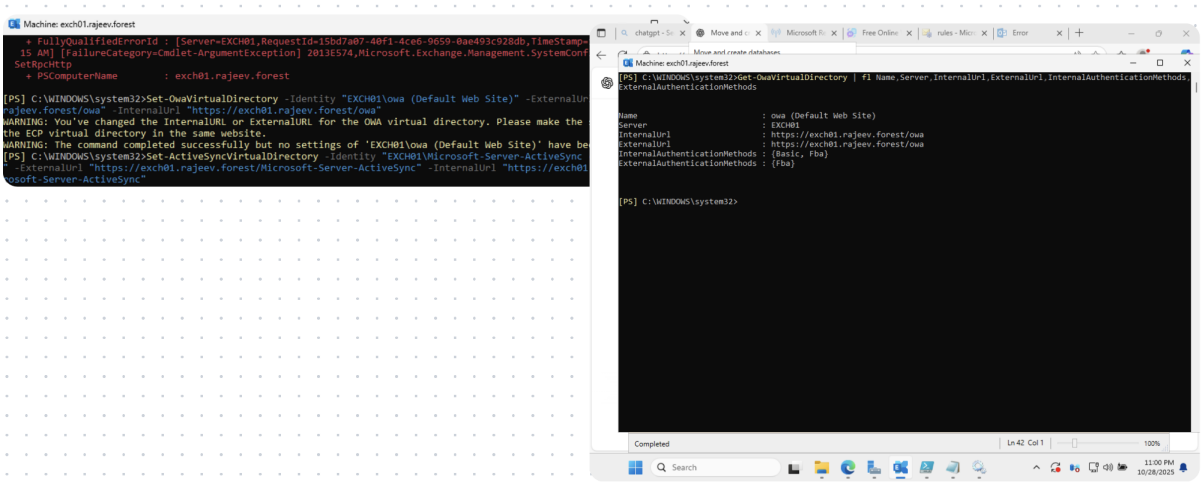

Figure 3.7: ActiveSync

CHAPTER 4

MANAGING MAILBOX-ENABLED & MAIL-ENABLED USERS (Steps 6-9)

4.1 Security groups

Step #6. Create the following mail-enabled security groups in Active Directory: marketing, accounting, and engineering.

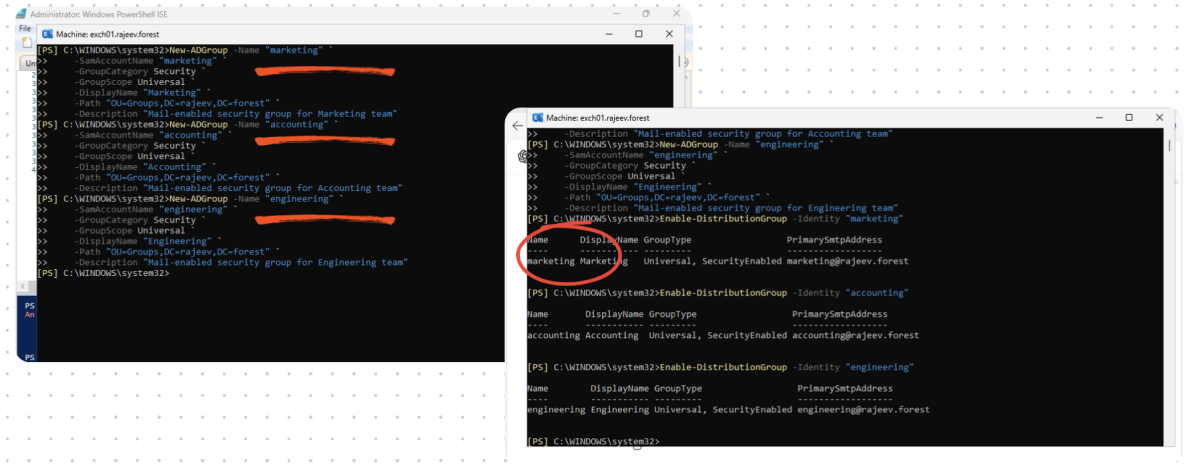

Figure 4.1: Mail-enabled security groups : marketing, accounting, and engineering

4.2 Email address policies

Step #7. Create the appropriate email address policies to ensure that:

1. All mailbox-enabled users receive an email address in the format: firstname.lastname@yourname.com
2. All mail-enabled users and mail-enabled contacts receive an email address in the format: firstname.lastname-ext@yourname.com

4.3 Creating mailboxes and users

Step #8. Create the following recipient objects with the appropriate information and ensure that they are in the appropriate groups. The logon name and alias should be in the form firstname.lastname@yourname.com. Ensure that all marketing user mailboxes are in the Marketing Mailbox Database, all sales user mailboxes are in the Accounting Mailbox Database, and that engineering user mailboxes are evenly distributed between the two Engineering databases.

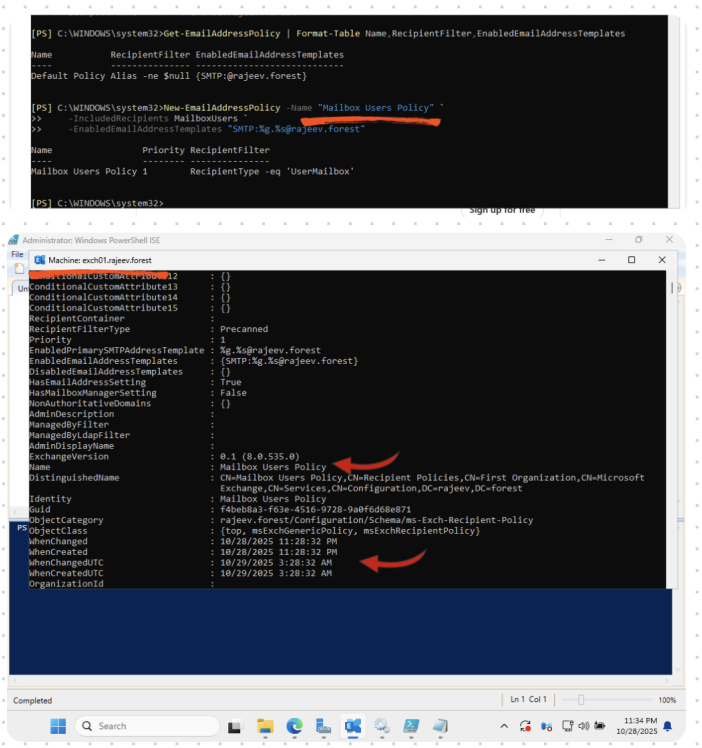

Figure 4.2: Mailbox users policy

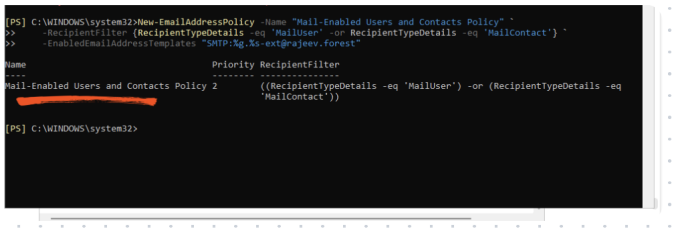

Figure 4.3: Mail-Enabled users policy

4.4 Address lists

Step #9. Create address lists for the marketing, accounting, and engineering departments.

Table 4.1: User Mailbox and Department Information

Name	Type	Department
Sophia Loren	Mailbox-enabled	Marketing
Mel Gibson	Mail-enabled (smelly@rogers.com)	Marketing
Celine Dion	Mailbox-enabled	Marketing
Mike Weir	Mail-enabled (mikey@sympatico.ca)	Marketing
Mark Spitz	Mail-enabled (markeymark@itworld.com)	Marketing
Tiger Woods	Contact (twoods@ibm.com)	Marketing
Meg Ryan	Mailbox-enabled	Accounting
Jacques Villeneuve	Contact (jacques@itworld.com)	Accounting
Juan Montoya	Mailbox-enabled	Accounting
Sarah Parker	Mailbox-enabled	Accounting
Lois Lane	Mailbox-enabled	Engineering
Jessica Rabbit	Mailbox-enabled	Engineering
Tom Hanks	Mail-enabled (tom.hanks@jojo.net)	Engineering
Bernadette Peters	Mailbox-enabled	Engineering
Jennifer Anniston	Mailbox-enabled	Engineering
Courtney Cox	Mailbox-enabled	Engineering
Lisa Kudrow	Mail-enabled (lisa.k@sympatico.ca)	Engineering
Mathew Perry	Mailbox-enabled	Engineering
Matt LeBlanc	Contact (matt.leblanc@itcleanup.com)	Engineering
David Swimmer	Mailbox-enabled	Engineering

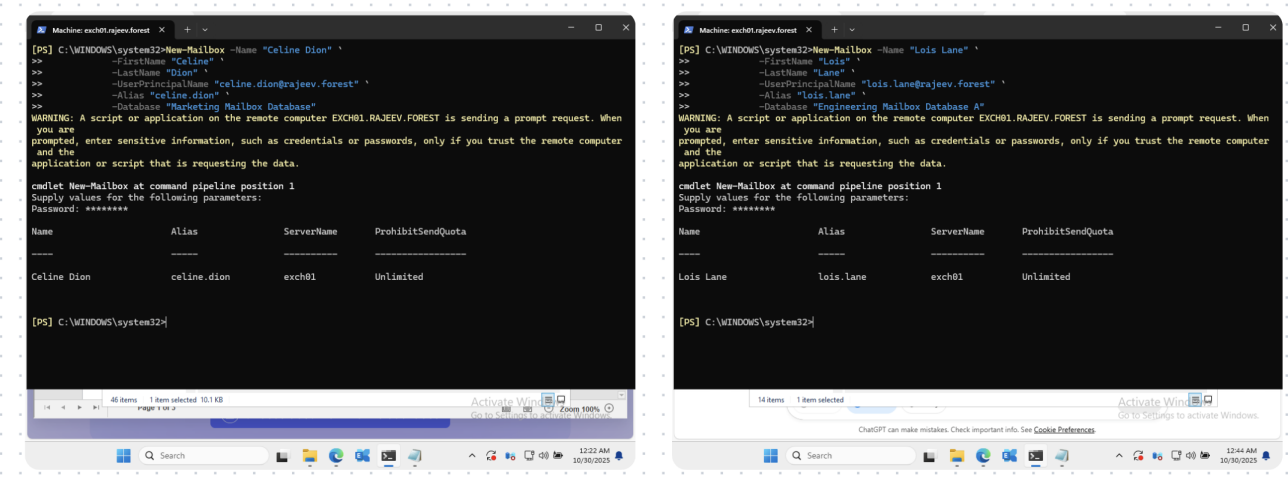

Figure 4.4: Creating address lists for mailbox-enabled users

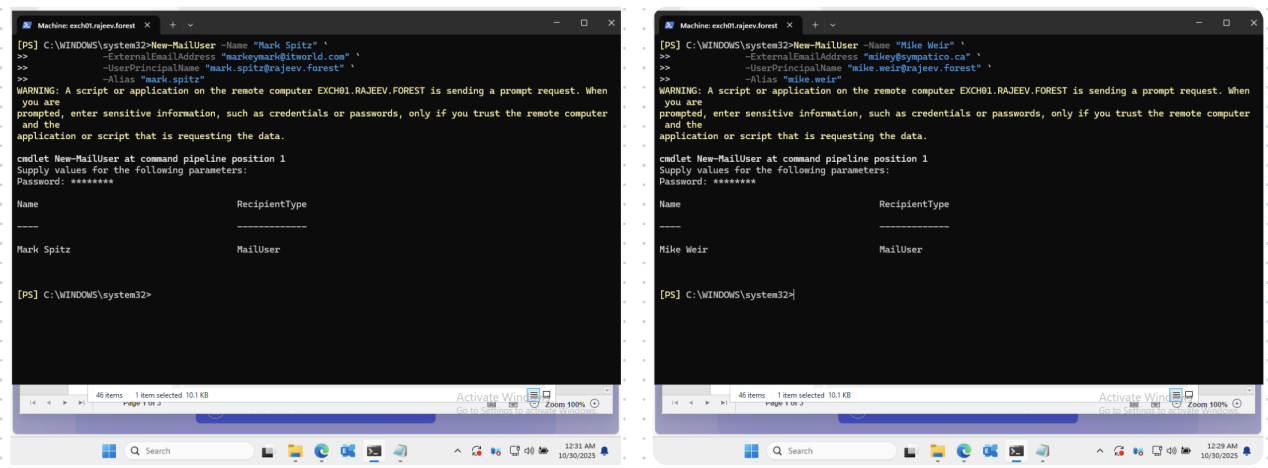

Figure 4.5: Creating address lists for mail-enabled users

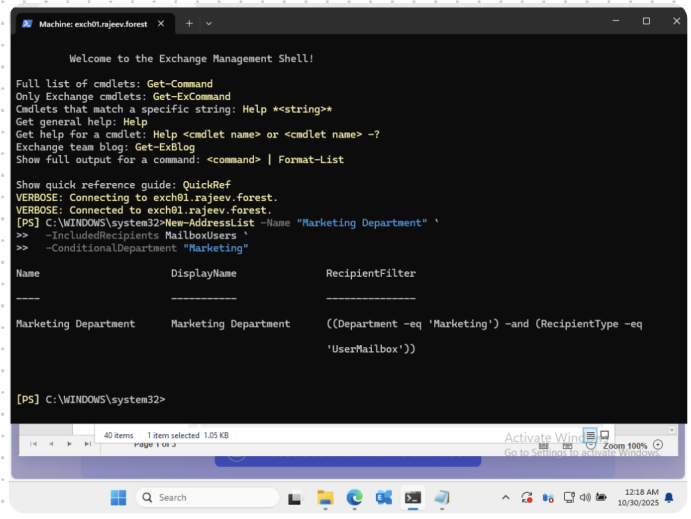

Figure 4.6: Creating address lists for marketing

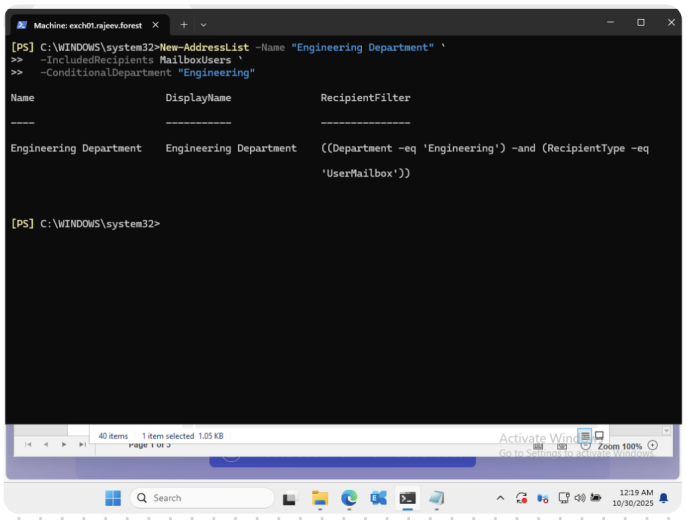

Figure 4.7: Creating address lists for accounting

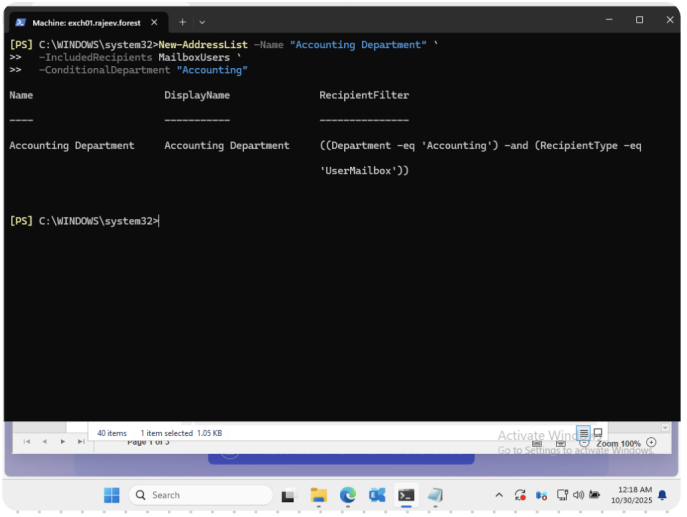

Figure 4.8: Creating address lists for engineering

CHAPTER 5

MANAGING PUBLIC FOLDERS & ACCESS (Steps 10-13)

5.1 User Access

Step #10. Ensure that Lois Lane also receives any email sent to the following email address: HR@yourname.com (here it is **@rajeev.forest**).

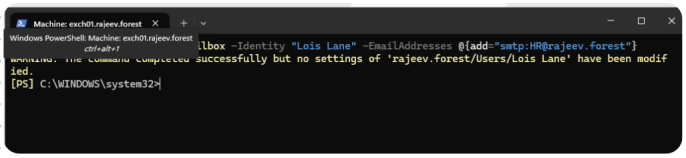

Figure 5.1: User access : Lois Lane

5.2 Managing mail-enabled public folder

Step #11. Create a new mail-enabled public folder that can be managed only by Courtney Cox (and Administrator for testing). The public folder should be accessed using the following email addresses:

- feedback@yourname.com
- productA@yourname.com
- productB@yourname.com
- productC@yourname.com

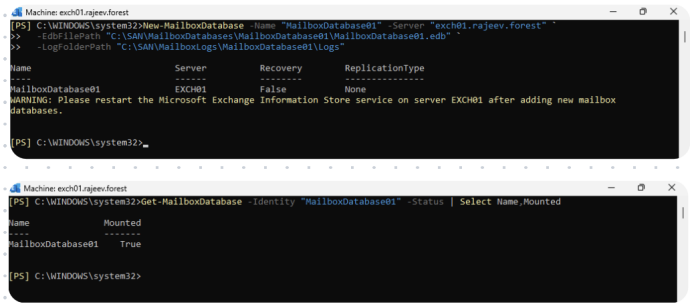

Figure 5.2: Mail-enabled public folder : MailboxDatabase01

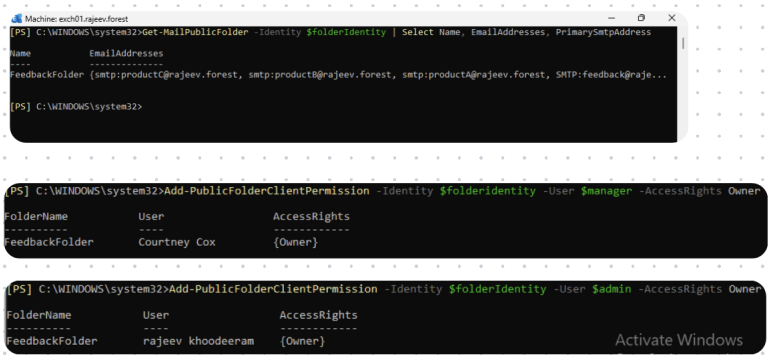

Figure 5.3: Feedback folder configuration

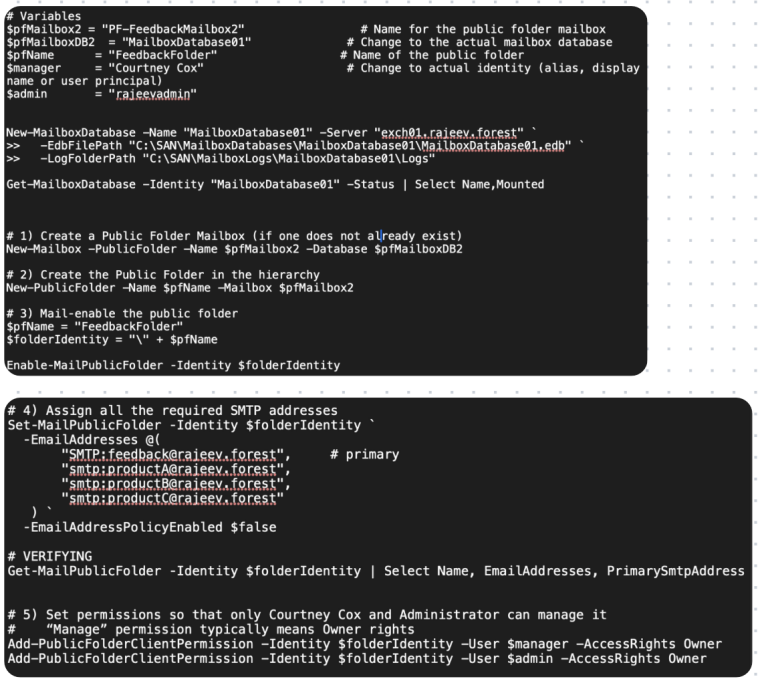

Figure 5.4: Assigning SMTP addresses

5.3 Managing public folders and subfolders

Step #12. Create a new public folder called Forum (*or Forum2*). Forum should contain the following subfolders. Ensure that Administrator has full control over all of these folders. Also ensure that Lois Lane and Jessica Rabbit have full control over these folders; all engineers should be able to post and reply to posts, but not have the ability to remove items.

- projectA
- projectB
- projectC

```
# Variables
$pfMailbox2        = "PFMailbox_Forum2"          # Public Folder Mailbox name (adjust to your environment)
$pfHierarchyRoot = "\"                          # Top level public folder path
$parentFolder    = "Forum2"
$subFolders      = @("projectA","projectB","projectC")

# Users
$adminUser         = "rajeevadmin"
$courtneyCox       = "Courtney Cox"
$loisLane          = "Lois Lane"
$jessicaRabbit     = "Jessica Rabbit"
$engineersGroup    = "Engineering"              # A group containing all engineers

# 1) Create the parent public folder "Forum2"
New-PublicFolder -Name $parentFolder -Path $pfHierarchyRoot -Mailbox $pfMailbox2

# 2) Create the sub-folders under Forum
foreach ($sf in $subFolders) {
    New-PublicFolder -Name $sf -Path ("$pfHierarchyRoot\$parentFolder") -Mailbox $pfMailbox2
}

# 3) Assign permissions: Administrator + Courtney Cox (full control = Owner) on all folders
#    Lois Lane + Jessica Rabbit also full control
foreach ($user in $users) {
     # Check if user already has a permission entry
     $existing = Get-PublicFolderClientPermission -Identity $folder -User $user -ErrorAction SilentlyContinue
     Remove-PublicFolderClientPermission -Identity $folder -User $user -Confirm:$false
     Add-PublicFolderClientPermission -Identity $folder -User $user -AccessRights Owner
 }
```

```
# 4) Assign engineers group permissions: allow posting and replying, but not delete items
#    According to permission roles: e.g., "PublishingAuthor" allows create & read & edit own & delete own; we want create/
post & reply but **not remove items**.
#    So we might use "Author" or "NonEditingAuthor" depending. Let's pick Author (allows create and read, edit own) but
remove delete privileges.


foreach ($folder in @($parentFolder) + $subFolders) {
     $identity = "$pfHierarchyRoot\$folder"

    Write-Host "Applying Author permissions for $engineersGroup on folder $identity"

     Add-PublicFolderClientPermission -Identity $identity -User $engineersGroup -AccessRights Author
 }

Then check :

Get-PublicFolder -Recurse | Get-PublicFolderClientPermission | Select Identity, User, AccessRights
```

Figure 5.5: Public folders

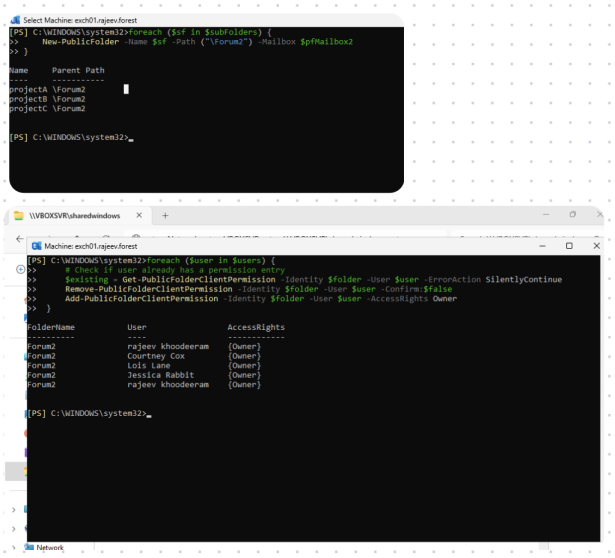

Figure 5.6: Access to public folders

5.4 Outlook Anywhere and OWA permissions

Step #13 (a). Ensure that engineering users can access their email from home using Outlook Anywhere and OWA only.

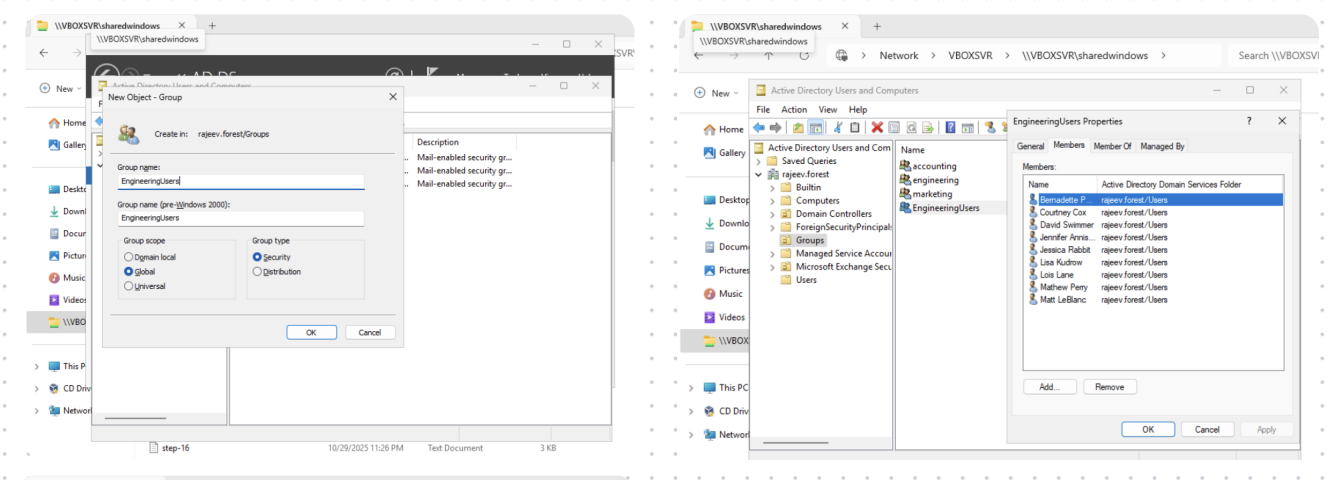

Figure 5.7: Creating Engineering users

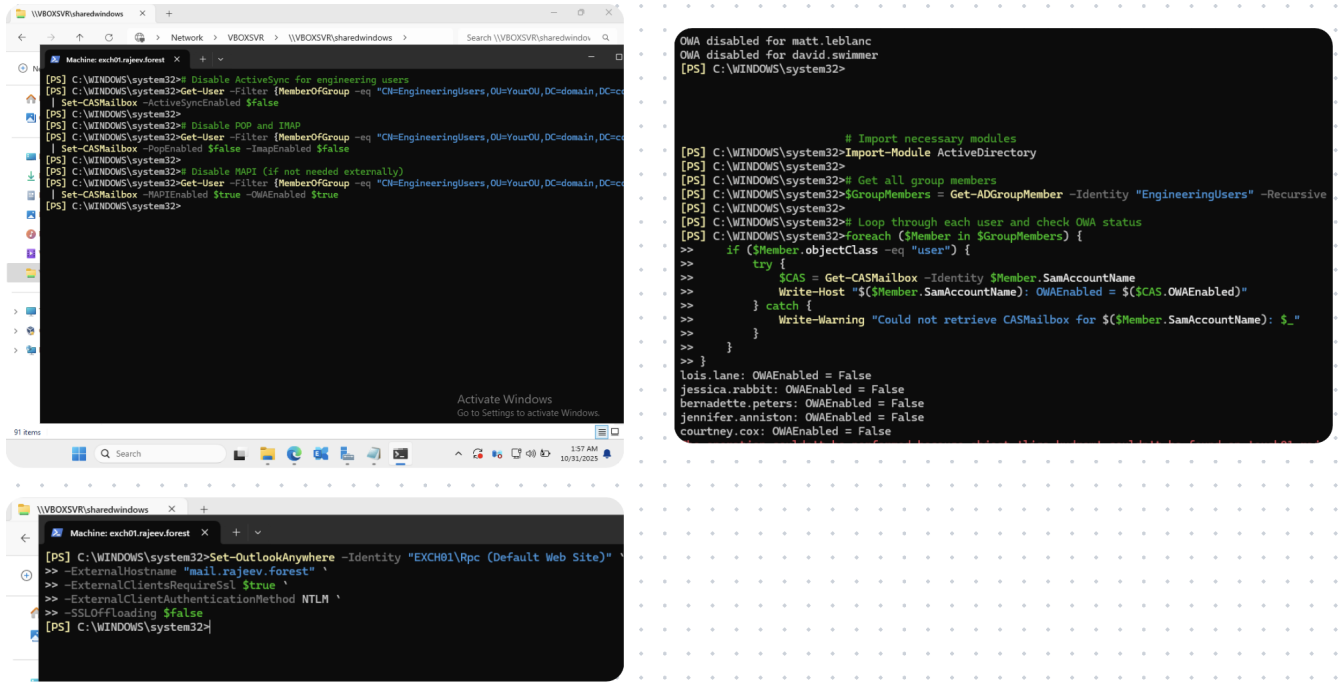

Figure 5.8: Outlook Anywhere and OWA access

Step #13 (b). Also ensure that engineering users are not allowed to change their password using OWA. We carry oit a 3 steps-procedure :

1. Create a custom OWA mailbox policy or modify an existing one.
   New-OWAMailboxPolicy -Name "EngineeringOWAPolicy"
2. Disable the option to change password.
   Set-OWAMailboxPolicy -Identity "EngineeringOWAPolicy" -ChangePasswordEnabled $*false*
3. Assign the Policy to Engineering Users
   Get-Mailbox -Filter MemberOfGroup -eq "EngineeringUsers" | Set-CASMailbox -OWAMailboxPolicy "EngineeringOWAPolicy"

```
Set-OutlookAnywhere -Identity "EXCH01\Rpc (Default Web Site)" `
-ExternalHostname "mail.rajeev.forest" `
-ExternalClientsRequireSsl $true `
-ExternalClientAuthenticationMethod NTLM `
-DefaultAuthenticationMethod NTLM `
-SSLOffloading $false
```

CHAPTER 6

DYNAMIC DISTRIBUTION GROUP & ARCHIVING (Steps 14 - 17)

6.1 Dynamic distribution group

Step #14 (a). Create a dynamic distribution group (teamleads@yourname.com) that includes anyone who has Custom Attribute 1 equal to the value "teamlead".

Use the New-DynamicDistributionGroup cmdlet to create the group with a filter on CustomAttribute1 = "teamlead".

```
New-DynamicDistributionGroup -Name "Team Leads" ‘
-Alias "teamleads" ‘
-DisplayName "Team Leads" ‘
-IncludedRecipients MailboxUsers ‘
-ConditionalCustomAttribute1 "teamlead" ‘
-PrimarySmtpAddress "teamleads@rajeev.forest"
```

The ConditionalCustomAttribute1 parameter is a supported "precanned" filter for CustomAttribute1. This means any user mailbox whose CustomAttribute1 is exactly "teamlead" will automatically be in this distribution list whenever a message is sent.
The IncludedRecipients MailboxUsers ensures the group covers user mailboxes.

Step #14 (b). Next, ensure that Lois Lane, Tom Hanks, and David Swimmer are team leads and receive email sent to this group.

1. Set the CustomAttribute1 value on the three users First ensure the three users have their CustomAttribute1 set to "teamlead". Example:

```
Set-Mailbox -Identity "Lois Lane"     -CustomAttribute1 "
    teamlead"
Set-Mailbox -Identity "Tom Hanks"     -CustomAttribute1 "
    teamlead"
Set-Mailbox -Identity "David Swimmer" -CustomAttribute1 "
    teamlead"
```

2. Step 3: (Optional) Verify membership from the filter

   Let us preview the list of matching recipients to make sure the filter is correct:

```
$ddg = Get-DynamicDistributionGroup -Identity "teamleads@rajeev.forest"
                Get-Recipient -RecipientPreviewFilter $ddg.RecipientFilter
                    -OrganizationalUnit $ddg.RecipientContainer


                # 1. Get the dynamic group
                $ddg = Get-DynamicDistributionGroup -Identity "Team Leads"

                # 2. Show its filter
```

```
Write-Host "Filter for group $($ddg.Name): $($ddg.
    RecipientFilter)"

# 3. Preview members
$members = Get-Recipient -ResultSize Unlimited -
    RecipientPreviewFilter $ddg.RecipientFilter |
Select Name,PrimarySmtpAddress,CustomAttribute1

# 4. Check for your specific users
$checkUsers = @("Lois Lane","Tom Hanks","David Swimmer")
$members | Where-\-Object { $checkUsers -contains $_.Name }
     |
Format-Table Name,PrimarySmtpAddress,CustomAttribute1

# 5. If they're missing, check their CustomAttribute1
foreach ($u in $checkUsers) {
        Get-Mailbox -Identity $u | Select Name,
            CustomAttribute1
}
```

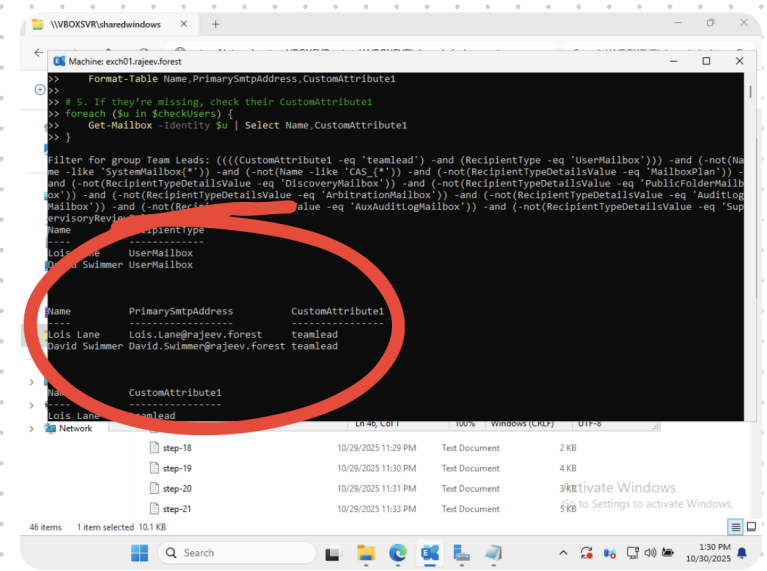

Figure 6.1: Checking members of TeamLeads

6.2 Archiving

Step #15 (a). Ensure that all accounting mailbox users have an archive mailbox, and that they are able to apply a retention tag to custom folders within their primary mailbox that forces Exchange to move items older than 5 years to a folder of the same name in their archive mailbox.

1. Assigning Accounting users

```
Set-User -Identity "meg.ryan" -Department "Accounting"
Set-User -Identity "jacques.villeneuve" -Department "
    Accounting"
Set-User -Identity "juan.montoya" -Department "Accounting"
Set-User -Identity "sarah.parker" -Department "Accounting"
```

2. Get accounting users

```
Get-User -RecipientTypeDetails UserMailbox |
Where-Object { $_.Department -eq "Accounting" } |
Select-Object DisplayName,PrimarySmtpAddress,Department
```

3. Enable archive for each

```
$acctUsers = Get-User -RecipientTypeDetails UserMailbox |
Where-Object { $_.Department -eq "Accounting" }


foreach ($user in $acctUsers) {

        # Get mailbox object
        $mailbox = Get-Mailbox -Identity $user.Identity

        # Enable archive if not already
        if (-not $mailbox.ArchiveStatus -or $mailbox.
            ArchiveStatus -eq "None") {
                Enable-Mailbox -Identity $user.Identity -
                    Archive
                Write-Host "Archive mailbox enabled for $(
                    $user.DisplayName)"
        } else {
                Write-Host "$($user.DisplayName) already
                    has an archive mailbox."
        }

        # Apply retention policy
        Set-Mailbox -Identity $user.Identity -
            RetentionPolicy "AccountingRetentionPolicy"
        Write-Host "Retention policy applied to $($user.
            DisplayName)"
}
```

4. Checking

```
    foreach ($user in $acctUsers) {
            Get-Mailbox -Identity $user.Identity |
    Select DisplayName, ArchiveDatabase, ArchiveGuid
}
```

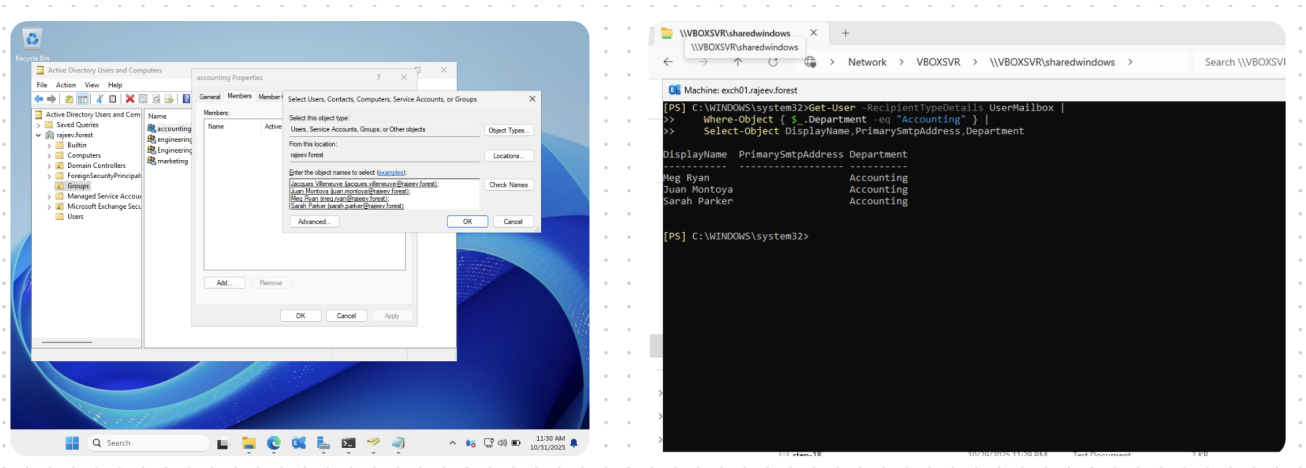

Figure 6.2: Adding users to the Accounting department

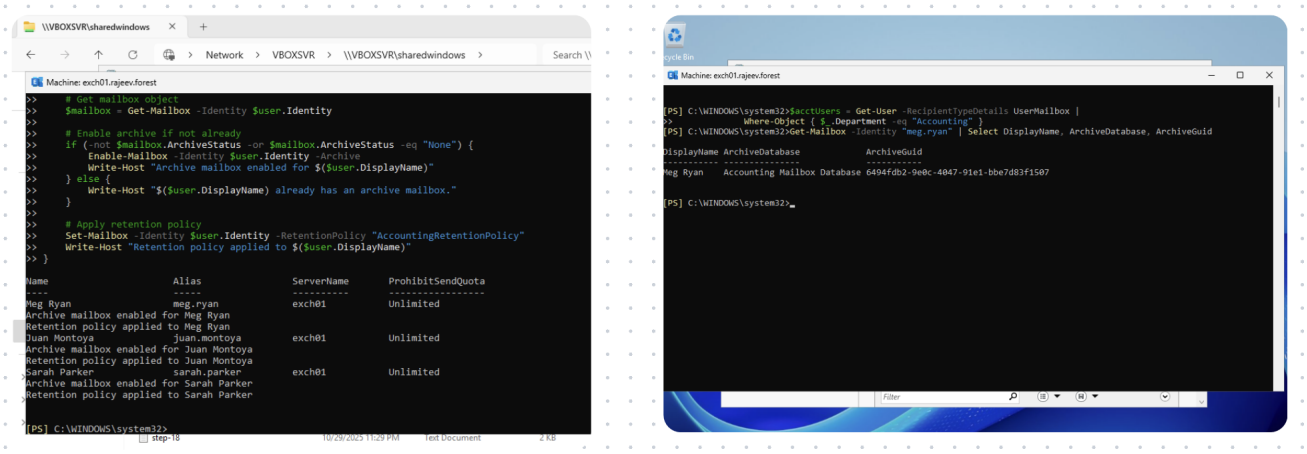

Figure 6.3: Checking archive database (1)

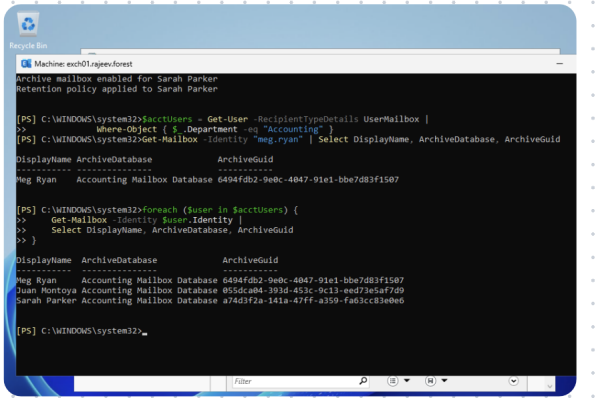

Figure 6.4: Checking archive database (2)

Step #15 (b). Checking the retention policy

```
#Testing
Get-RetentionPolicy -Identity "AccountingRetentionPolicy" | Select Name,
    RetentionPolicyTagLinks

For multiple users -  Check for multiple users (Accounting group)
foreach ($user in $acctUsers) {
        Get-Mailbox -Identity $user.Identity | Select DisplayName,
            RetentionPolicy
}
```

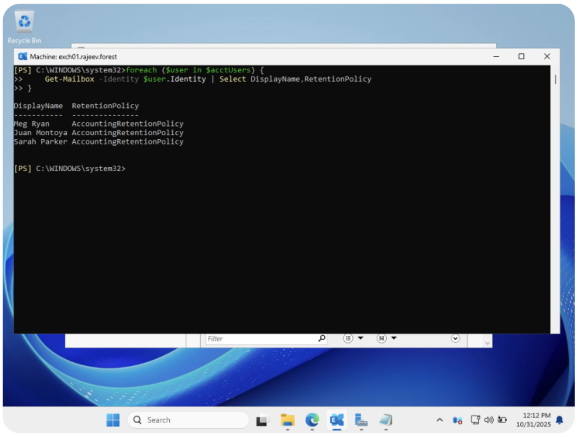

Figure 6.5: Checking the retention policy

6.3 Email Monitoring

Step #16. Monitor Mathew Perry's email by forwarding copies of his email to a test account of your choice. Also ensure that items in Mathew Perry's mailbox that are deleted or modified are kept in a hidden litigation hold folder within his mailbox.

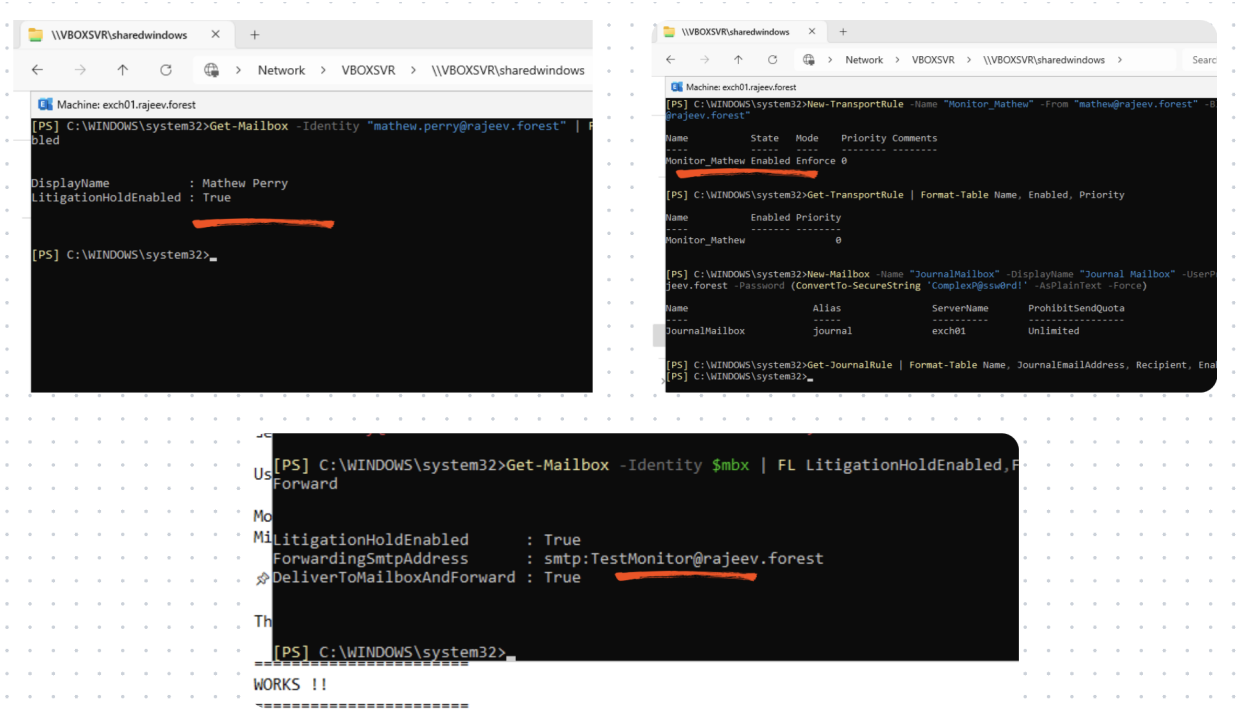

Figure 6.6: Monitoring Mathew Perry's email

6.4 Access right

Step #17. Give Administrator and Lois Lane full access to Mathew Perry's mailbox 1.

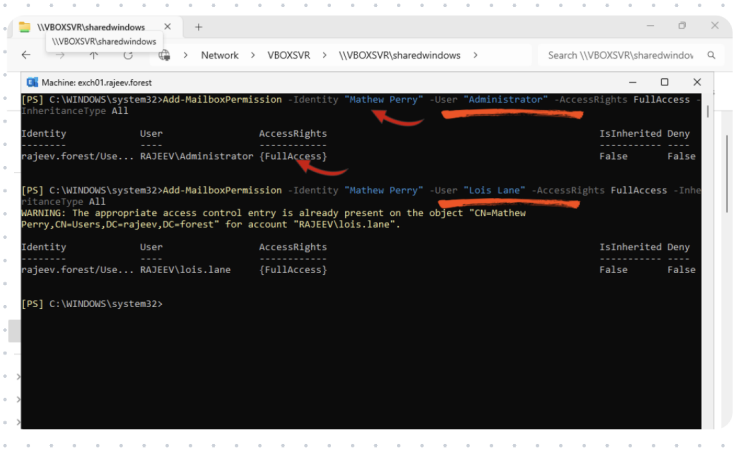

Figure 6.7: Access right on Mathew Perry's mailbox

CHAPTER 7

MAILBOX QUOTA LIMIT, ACCESS CONTROL & ANTI-SPAM AGENTS (Steps 18- 21)

7.1 Quota - Mailbox Limit

Step #18. Ensure that all IT and engineering mailboxes have a limit of 1GB. All other mailboxes should have a limit of 500MB. Sophia Loren must have a mailbox limit of 700MB.

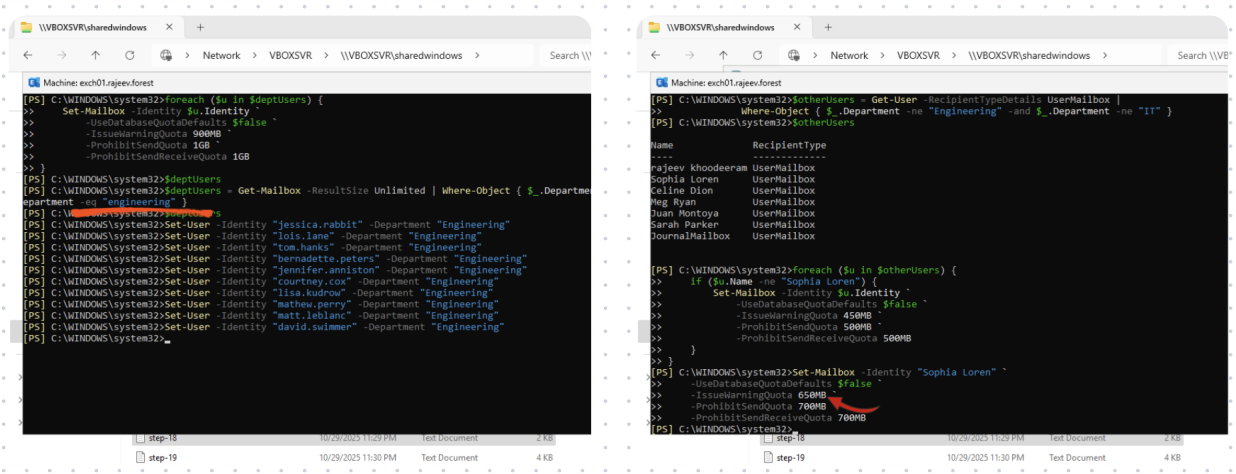

Figure 7.1: Setting quota on IT and Engineering mailboxes

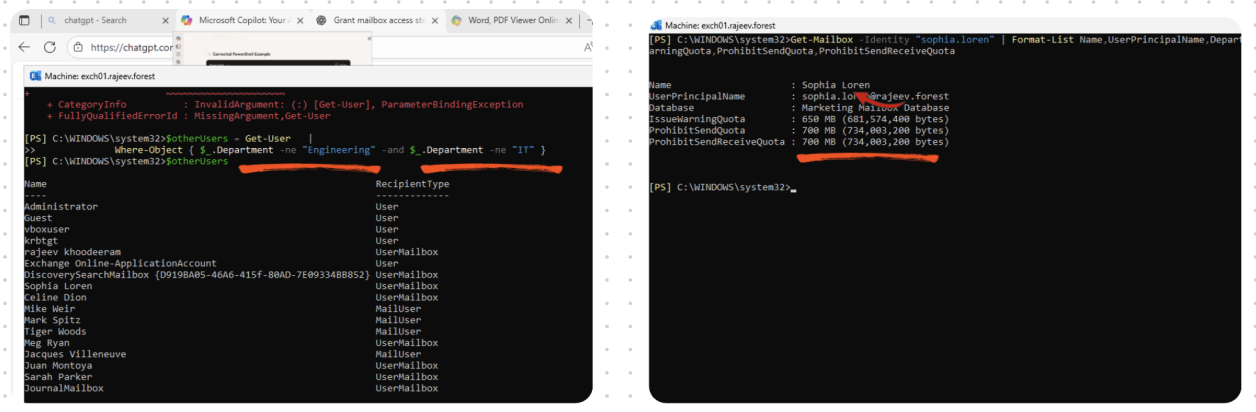

Figure 7.2: Sophia Loren's mailbox limit

7.2 Controlling access to domain

Step #19. Ensure that all engineers can only send email internally and to users in the arfappc.net domain (no other internet mail allowed). Any internet-bound messages from the accounting department should include a legal disclaimer of your choice.

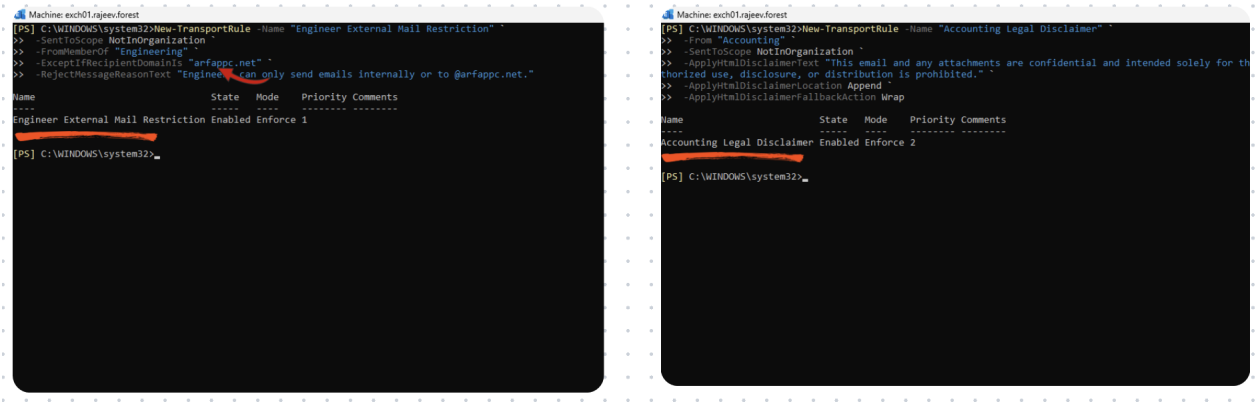

Figure 7.3: Email restriction in arfappc.net domain for engineers

7.3 Anti-Spam Agent

Step #20. Install the anti-spam agents on your mailbox server and ensure that the SCL threshold is set to 7. Add the xen.spamhaus.org RBL provider to your anti-spam configuration.

1. Install the anti-spam agents on the Mailbox server By default the anti-spam agents are not installed on the mailbox role in Exchange 2019.

```
& $env:ExchangeInstallPath\Scripts\Install-AntiSpamAgents.ps1
Restart-Service MSExchangeTransport
```

   After this, verify the transport agents are present:

   Get-TransportAgent | Format-Table Name,Enabled

2. Configure the Content Filter (SCL) threshold to 7

   Set the SCL thresholds for the content filter so that messages with SCL is greater than or equal to 7.

```
Set-ContentFilterConfig -Enabled $true ‘
-SCLRejectEnabled $true -SCLRejectThreshold 7 ‘
-SCLQuarantineEnabled $false ‘
-SCLDeleteEnabled $false
```

   You might instead use quarantine or delete according to your policy.

   Then verify:

```
Get-ContentFilterConfig | Format-List Enabled,
    SCLRejectThreshold,SCLQuarantineThreshold,
    SCLDeleteThreshold
```

3. Add Spamhaus as an IP Block List / RBL provider

   You can add Spamhaus (for example zen.spamhaus.org) as a block list provider using Add-IPBlockListProvider.

```
Add-IPBlockListProvider ‘
-Name "Spamhaus ZEN" ‘
-LookupDomain "zen.spamhaus.org" ‘
-Enabled $true ‘
-AnyMatch $false ‘
-RejectionResponse "Connection from IP address {0} blocked
    by Spamhaus ZEN. See https://www.spamhaus.org/query/bl?
    ip={0}"
```

Then verify:

```
Get-IPBlockListProvider | Format-Table Name,Enabled,
    LookupDomain
```

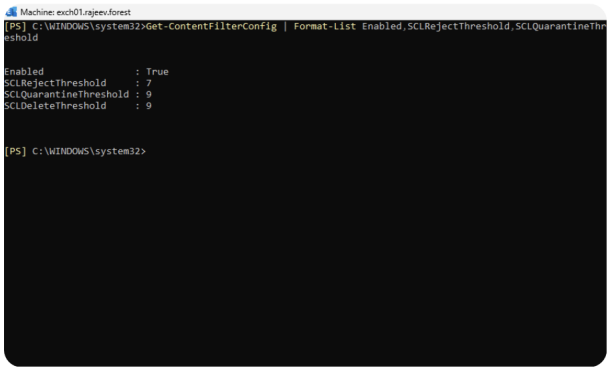

Figure 7.4: Anti-spam agents on mailbox server

7.4 Database backups

Step #21. Schedule full backups of all your databases and logs to Z: each day at 11:00p.m. Also ensure that your databases can be overwritten by a restore process. Create a new vhdx file that is attached to your virtual machine and mounted to Z:˙

Not implemented

CHAPTER 8

PROJECT MARKING SCRIPTS (GENERATED)

8.1 Generating ProjectScript

Step #22.Obtain a copy of the ExchangeProjectMarkingScript.ps1 file from your instructor and execute it on exch01. This will generate a $C:\projectscript$ folder on exch01 that contains several text files. Compress this folder, name the compressed file yourname.zip and submit it to your instructor for marks.

The following files are generated :

1. Setup.txt
2. Protocols.txt
3. GroupsPolicies.txt
4. Recipients.txt
5. Addresslists.txt
6. Publicfolders.txt
7. OwaDistRetentionPermission.txt
8. RulesSpamBackup.txt