System Administration

Virtual Desktop Service

NetApp
December 10, 2020

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Table of Contents

System Administration 1
- Create a Domain Admin ("Level 3") Account 1
- Providing Temporary Access to 3rd Parties 3
- Configure Backup Schedule 4
- Cloning Virtual Machines 8
- Auto-increase Disk Space Feature 12
- Accessing VDS credentials in Azure Key Vault 13
- Apply Monitoring and Antivirus 15
- Adding and Moving Mapped Drives 16

System Administration

Create a Domain Admin ("Level 3") Account

Overview

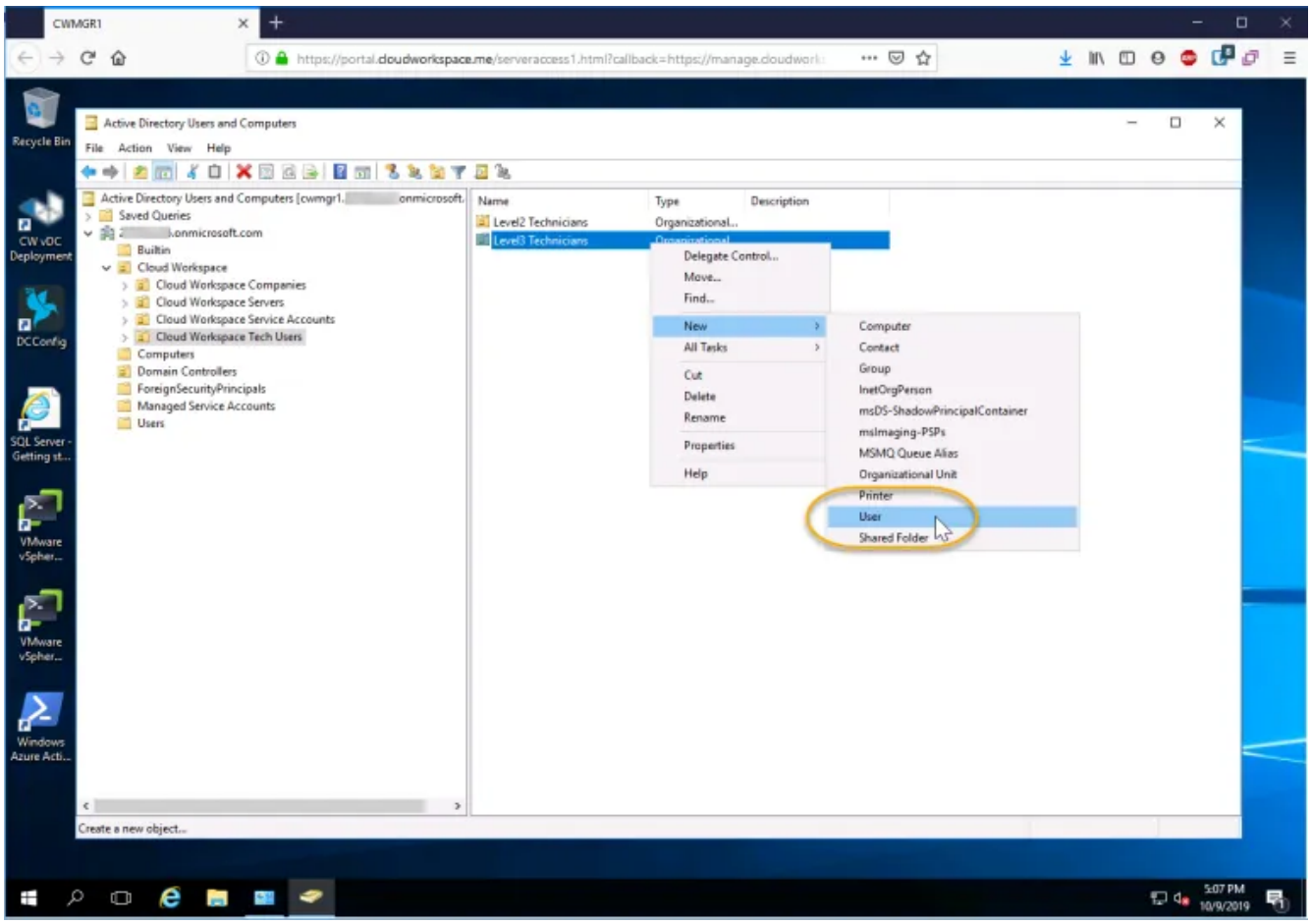
Occasionally VDS administrators will need domain-level credentials to manage the environment. In VDS these are called "Level 3" or ".tech" account.

These instructions show how these accounts can be created with the appropriate permissions.

Traditional domain controller

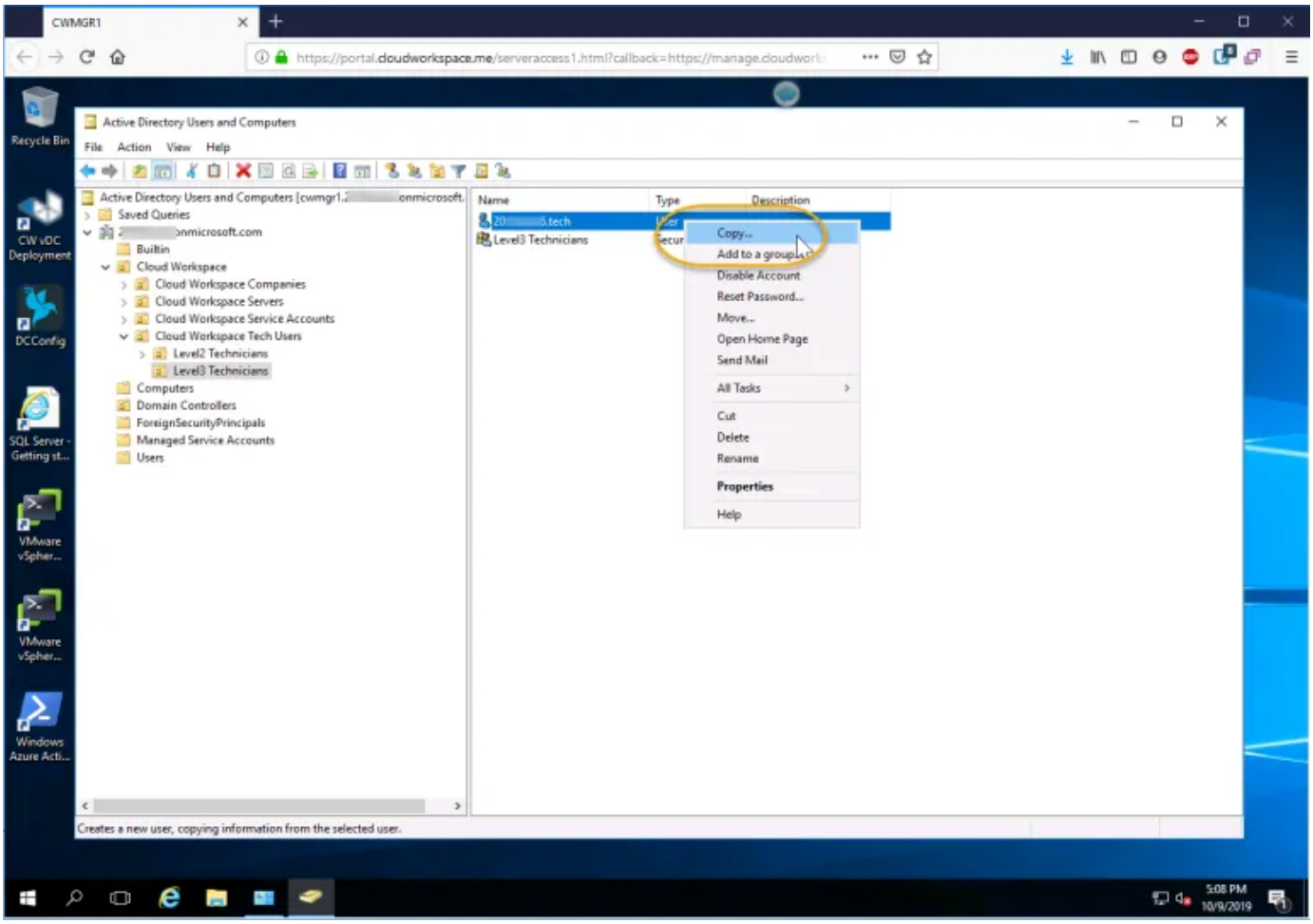
When running an internally hosted Domain Controller (or a local DC linked to Azure via a VPN/Express Route) managing .tech accounts can be done directly in Active Directory Manager.

1. Connect to the Domain Controller (CWMGR1, DC01 or the existing VM) with a domain admin (.tech) account.
2. Open Active Directory Users and Computers, Navigate to Cloud Workspace > Cloud Workspace Tech Users. Right click on the Level3 Technicians entry and select New > User.



3. Alternatively you can select an existing .tech account inside of the Level3 Technician directory and copy it to create a new user.

> Adding ".tech" to the end of the username is a recommended best practice to help delineate admin accounts from end user accounts.



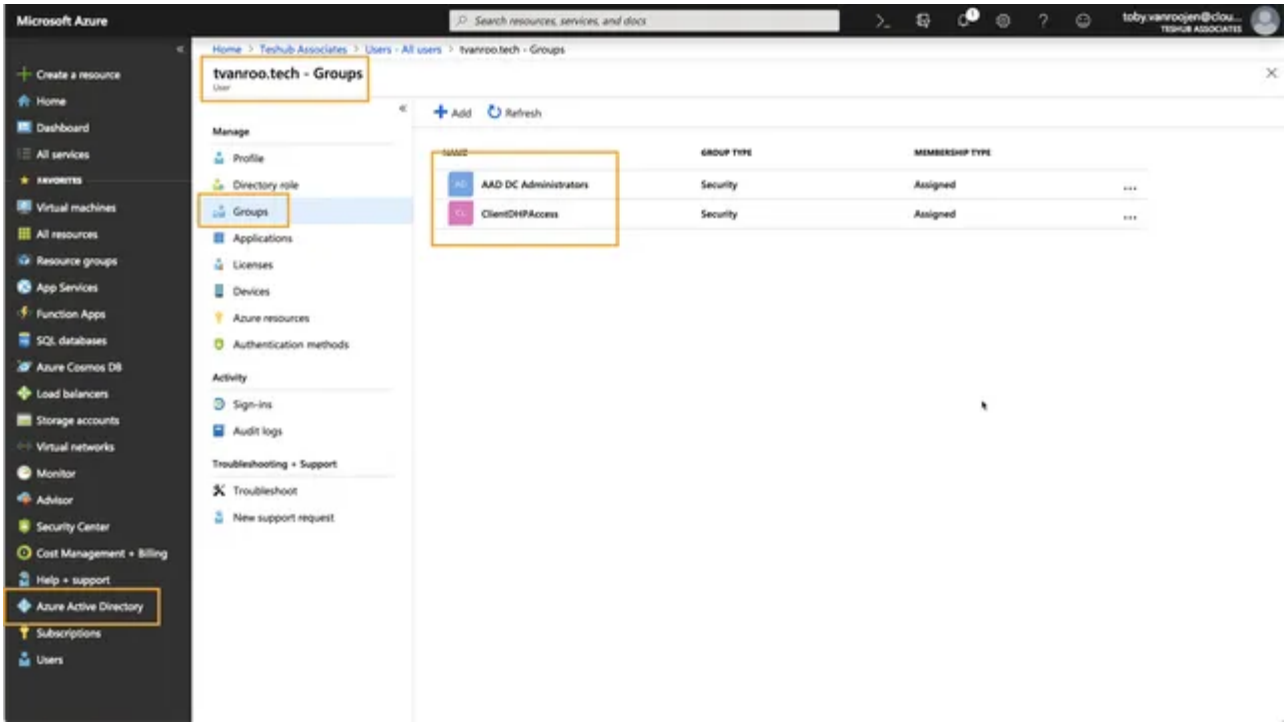
Azure AD Domain Services

If running in Azure AD Domain Services or managing user in Azure AD, these accounts can be managed (i.e. password change) in the Azure Management Portal as a normal Azure AD user.

New accounts can be created, adding them to these roles should give them the permissions required:

1. AAD DC Administrators
2. ClientDHPAccess
3. Global Admin in the directory.

> Adding ".tech" to the end of the username is a recommended best practice to help delineate admin accounts from end user accounts.



Providing Temporary Access to 3rd Parties

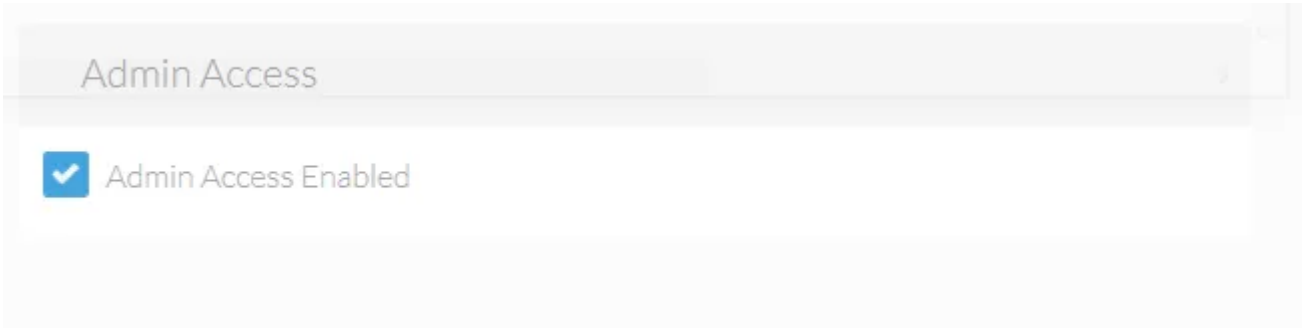
Overview

Providing access to 3rd parties is a common practice when migrating to any cloud solution.

VDS Admins often elect to not give these 3rd parties the same level of access that they have, to follow a “least required” security access policy.

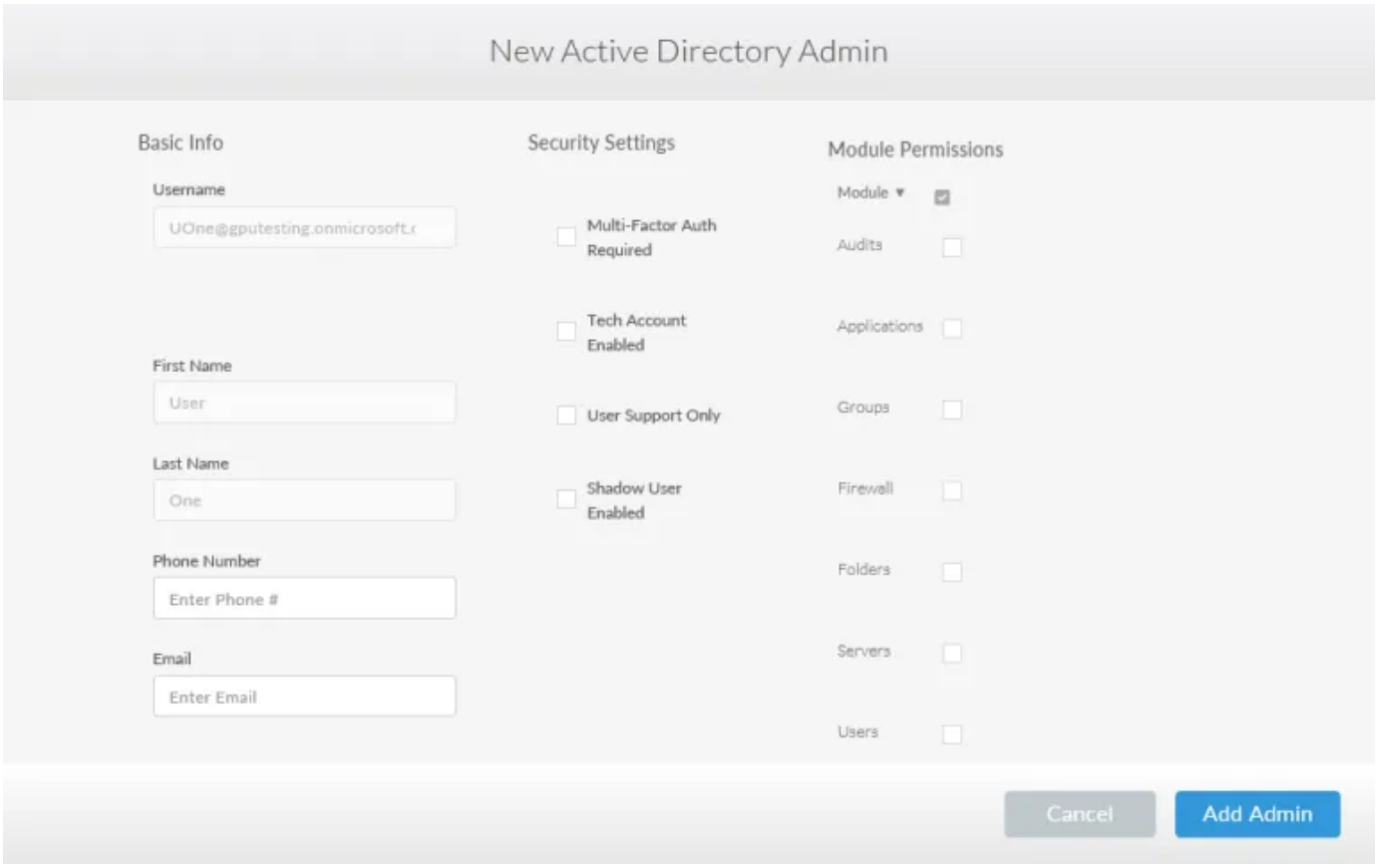
To set up admin access for 3rd parties, log into VDS and navigate to the Organizations module, click into the organization and click Users & Groups.

Next, create a new User account for the 3rd party and scroll down until you see the Admin Access section and check the box to enable admin rights.



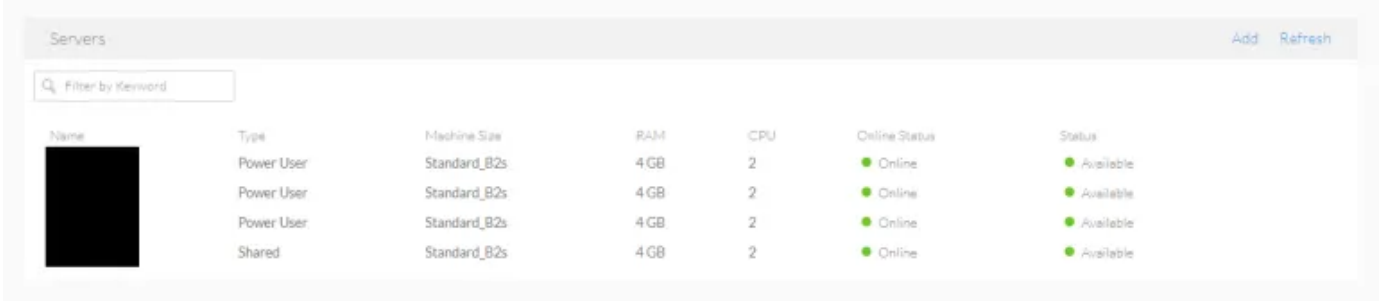
The VDS Admin is then presented with the Admin Access setup screen. There is no need to change user’s name, login or password – just add phone number and/or email if you want to enforce Multi-Factor Authentication and select the level of access to grant.

For database administrators like a VAR or ISV, *Servers* is commonly the only access module required.



Once saved, the End User gains access to self-management functions by logging into VDS with their standard Virtual Desktop user credentials.

When the newly created User logs in, they will only see the modules you have assigned to them. They can select the organization, scroll down to the Servers section and connect to the server name you tell them to (say, <XYZ>D1, where XYZ is your company code and D1 designates that the server is a Data server. In the example below, we would tell them to connect to the TSD1 server to perform their assignments.



Configure Backup Schedule

Overview

VDS has the ability to configure and manage native backup services in some infrastructure providers including Azure.

Azure

In Azure, VDS can automatically configure backups using native Azure Cloud Backup with locally redundant storage (LRS). Geo-redundant storage (GRS) can be configured in the Azure Management Portal if needed.

- Individual backup policies can be defined for each Server Type (with default recommendations). Additionally, individual machines can be assigned a schedule independent (from their server type) from within the VDS UI, this setting can be applied by navigating to the Server Detail View by clicking on the Server name on the Workspace page (See Video Below: Setting Individual Backup Policies)
    - Data
        - Backup with 7 daily, 5 weekly & 2 monthly backups. Increase retention periods based on business requirements.
        - This is true for both a dedicated Data server and for add-on VPS VMs for Apps and Databases.
    - Infrastructure
        - CWMGR1 – Backup Daily and keep 7 daily, 5 weekly, 2 monthly.
        - RDS Gateway – Backup weekly and keep 4 weekly.
        - HTML5 Gateway – Backup weekly and keep 4 weekly.
    - PowerUser (aka VDI User)
        - Don’t backup the VM as data should be stored on a D1 or TSD1 server.
        - Be aware that some applications do store data locally and special considerations should be taken if this is the case.
        - In the event of a VM failure, a new VM can be built via Cloning another. In the event there is only one VDI VM (or one unique VM build) it it advisable to back it up so that a complete rebuild of that VM is not required.
        - If needed, rather than backing up all VDI servers, costs can be minimized by manually configuring a single VM to backup directly in the Azure Management portal.
    - TS
        - Don’t backup the VM as data should be stored on a D1 or TSD1 server.
        - Be aware that some applications do store data locally and special considerations should be taken if this is the case.
        - In the event of a VM failure, a new VM can be built via Cloning another. In the event there is

only one TS VM it it advisable to back it up so that a complete rebuild of that VM is not required.

        - If needed, rather than backing up all TS servers, costs can be minimized by manually configuring a single VM to backup directly in the Azure Management portal.

    - TSData

        - Backup with 7 daily, 5 weekly & 2 monthly backups. Increase retention periods based on business requirements.

- Policies can be set to take backups daily or weekly, Azure does not support more frequent schedules.
- For daily schedules, enter the preferred time to take the backup. For weekly schedules, enter the preferred day and time to take the backup. Note: Setting the time to exactly 12:00 am can cause issues in Azure Backup so 12:01 am is recommended.
- Define how many daily, weekly, monthly and yearly backups should be retained.

Setting deployment defaults

In order to setup Azure backup for the entire deployment, follow these steps:

1. Navigate to the Deployments detail page, select Backup Defaults
2. Select a server type from the drop-down menu. The server types are:

```
Data: these are for LOB/database server types
Infrastructure: these are platform servers
Power User: these are for Users with a TS server dedicated solely to them
TS: these are terminal servers that Users launch sessions on
TSData: these are servers doubling as terminal and data servers.
```

    - This will define the overarching backup settings for the entire Deployment. These can be overridden and set at a server-specific level later if desired.

3. Click the settings wheel, then the Edit popup that appears.
4. Select the following backup settings:

```
On or off
Daily or weekly
What time of day backups take place
How long each backup type (daily, weekly, etc.) should be retained
```

5. Finally, click Create (or Edit) Schedule to put these settings in place.

Setting individual backup policies

To apply server-specific integrated backup settings, navigate to a Workspace detail page.

1. Scroll down to the Servers section and click on a server's name
2. Click Add Schedule
3. Apply backup settings as desired and click Create Schedule

Restoring from backup

To restore backups of a given VM, begin by navigating to that Workspace detail page.

1. Scroll down to the Servers section and click on a server's name
2. Scroll down to the Backups section and click the wheel to expand your options, then select either
3. Restore to Server or Restore to Disk (attach a drive from the backup so that you can copy data from the backup to the existing version of the VM).
4. Proceed with your restore from this point on as you would in any other restore scenario.

Costs depend on what schedule you want to maintain and is entirely driven by the Azure backup cost. Backup pricing for VMs is found on the Azure Cost Calculator: https://azure.microsoft.com/en-us/pricing/calculator/

Cloning Virtual Machines

Overview

Virtual Desktop Service (VDS) provides the ability to clone an existing virtual machine (VM). This functionality designed to automatically increase server unit count availability as defined user count grows OR additional servers to available resource pools.

Admins use cloning in VDS in two ways:

1. On demand automated creation of new server from an existing client server
2. Proactive automated creation of new client server(s) for auto-scaling of resources based-on rules defined and controlled by partners

Cloning to add additional shared servers

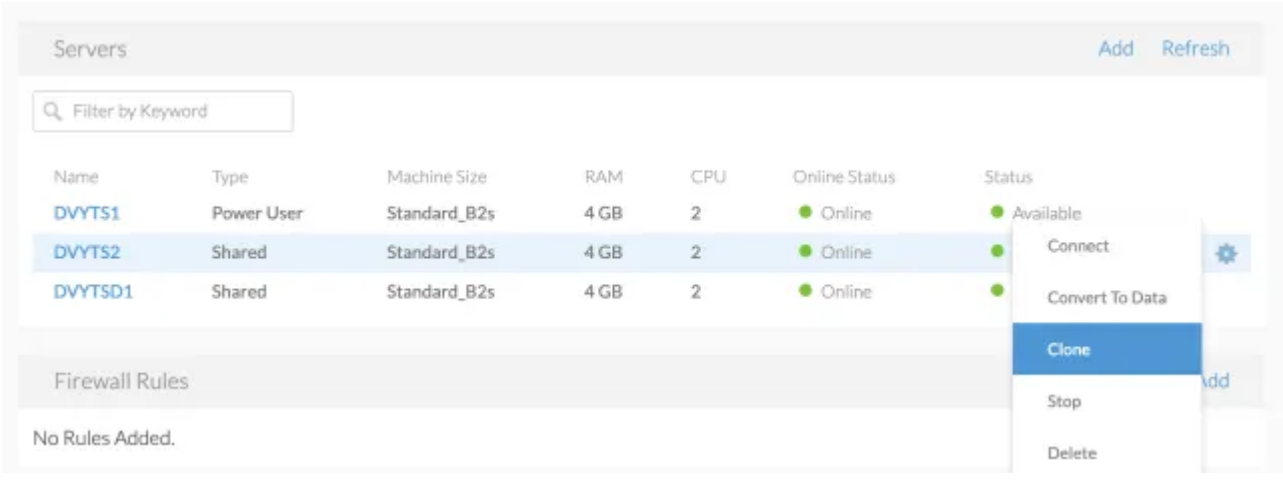
A clone is a copy of an existing virtual machine. Cloning functionality saves time and helps admins scale because Installing a guest operating system and applications can be time consuming. With clones, you can make many copies of a virtual machine from a single installation and configuration process. This typically looks like:

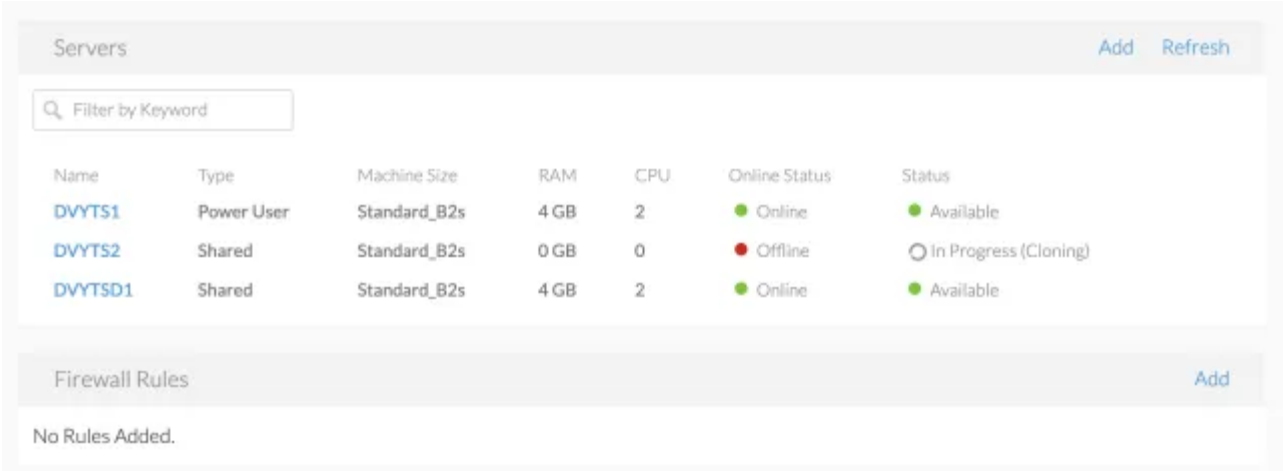
1. Install all desired applications and settings onto a TS or TSD server
2. Navigate to: Workspaces > Servers Section > Gear Icon for the Source Server > Click Clone
3. Allow the clone process to run (typically 45-90 minutes)
4. The final step activate the cloned server, putting it into the RDS pool to accept new connections. Cloned servers may require individual configuration after being cloned so VDS waits for the Administrator to manually put the server into rotation.

Repeat as many times as necessary.

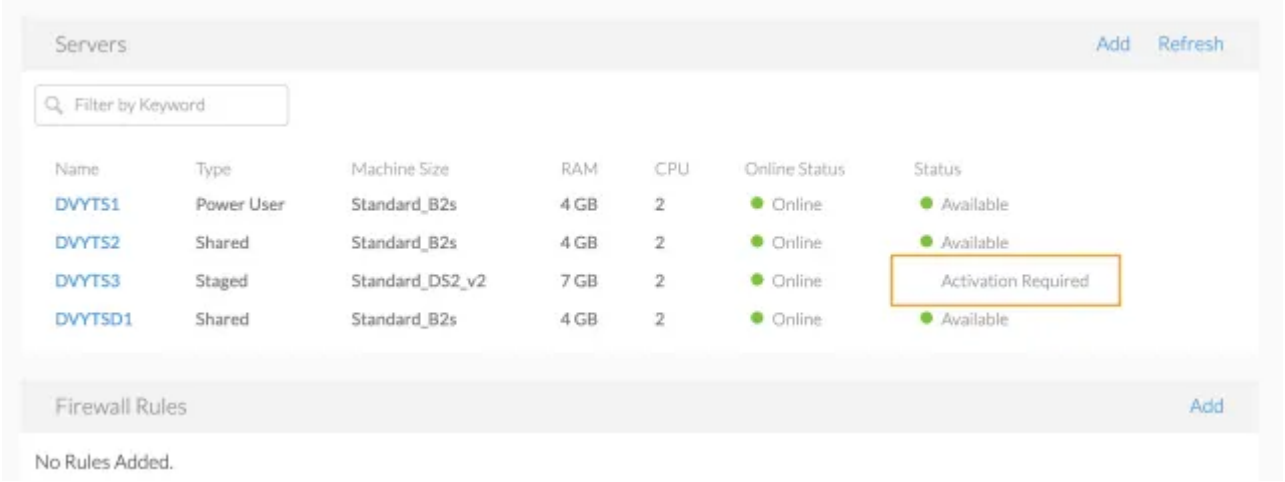
To increase the capacity for users in a shared session host environment, cloning a session host is an easy process requiring only a few steps.

1. Select a session host to clone, verify no users are currently logged in to the machine.
2. In VDS, navigate to the Workspace of the target client. Scroll to the Servers section, click the Gear Icon and select Clone. This process takes significant time and will take the source machine offline. Expect 30+ minutes to complete.

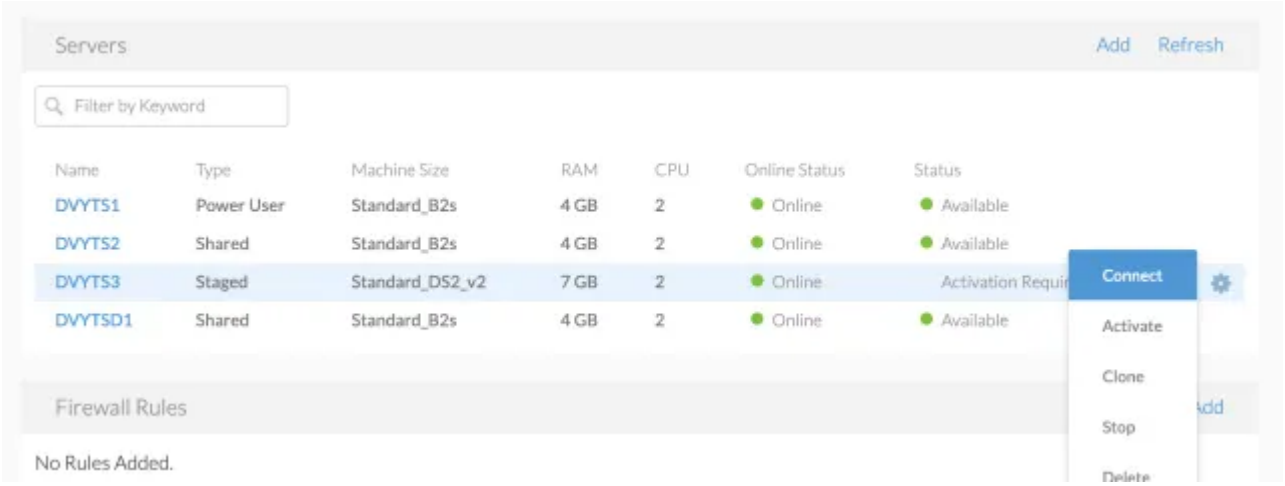




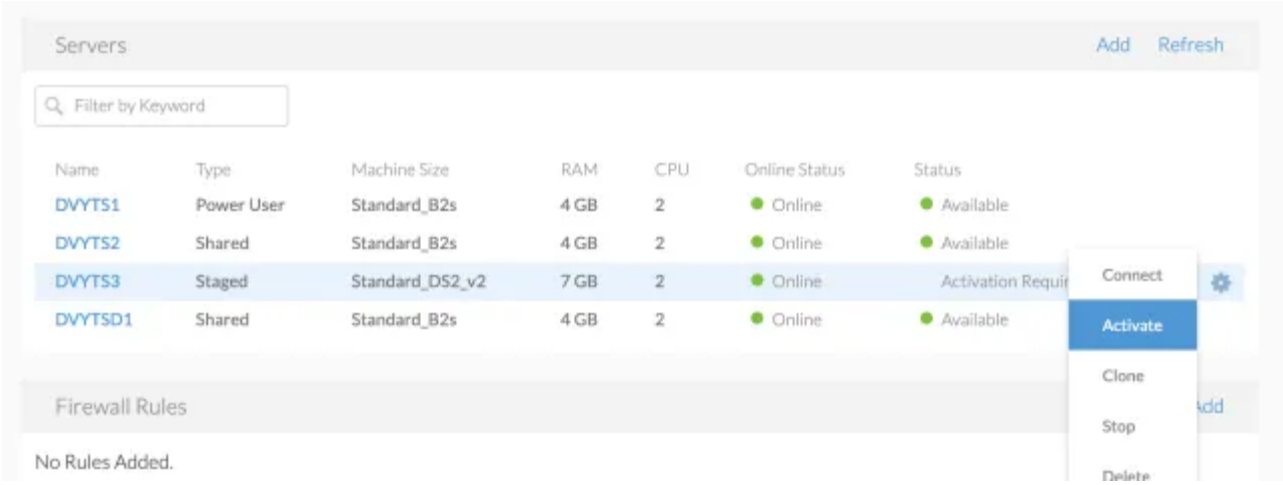
3. The process will shut down the server, clone the server to another image and SysPrep the image to the next TS# for the customer. The server shows as *Type=staged* and *Status=Activation Required* in the Servers list.



4. Logon to the server and verify that the server is ready for production.



5. When ready, click Activate to add the server into the session-host pool to start accepting user connections.



VDS cloning process definition

The step-by-step process is detailed in VDS > Deployment > Task History under any Clone Server operations. The process has 20+ steps, which start with accessing the hypervisor to start the clone process & ends with activating the cloned server. The cloning process includes key steps such as:

- Configure DNS & set server name
- Assign StaticIP
- Add to Domain
- Update Active Directory
- Update VDS DB (SQL instance on CWMGR1)
- Create Firewall rules for the clone

As well as Task History, the detail steps for any cloning process can be viewed in CwVmAutomationService log on CWMGR1 in each partner's Virtual Desktop Deployment. Reviewing these log files is documented here.

Automated creation of new server(s)

This VDS functionality designed to automatically increase server unit count availability as defined user count grows.

The partner defines and manages via VDS (https://manage.cloudworkspace.com) > Client > Overview – VM Resources > Auto-Scaling. Several controls are exposed to allow partners to Enable/Disable Auto Scaling as well as create custom rules for each client such as: number/users/server, additional RAM per user & number of users per CPU.

Above assumes automated cloning is enabled for the entire Virtual Desktop Deployment. For example, to stop all automated cloning, use DCConfig, in the Advanced window, uncheck the Server Creation→Automated Cloning Enabled.

When does the automated clone process run?

The automated clone process executes when the daily maintenance is configured to run. The default is midnight, but this can be edited. Part of the daily maintenance is to run the Change Resources thread for each resource pool. The Change Resources thread determines the number of shared servers required based-on the number of users the pool's configuration (customizable; can be 10, 21, 30, etc users per server).

"On demand" automated creation of new server

This VDS functionality allows automated "on demand" cloning of additional servers to available resource pools.

The VDS Admin logs into VDS and under the Organizations or Workspaces Modules, finds the specific Client & opens the Overview tab. The Servers Tile lists all servers (TSD1, TS1, D1, etc). To clone any individual server, simply click on the cog to far-right of server name & select Clone option.

Typically, the process should take about an hour. However, the duration depends on the size of VM and the available resources of the underlying hypervisor. Please note the server being cloned will need to be rebooted, so partners typically perform after hours or during a scheduled maintenance window.

When cloning a TSData server, one of the steps is deleting the c:\Home, c:\Data, and c:\Pro folders so they're aren't any duplicate files. In this case, the clone process failed there were problems deleting these files. This error is vague. Typically, this means the clone event failed because there was an open file or process. Next attempt, please disable any AV (because that might explain this error).

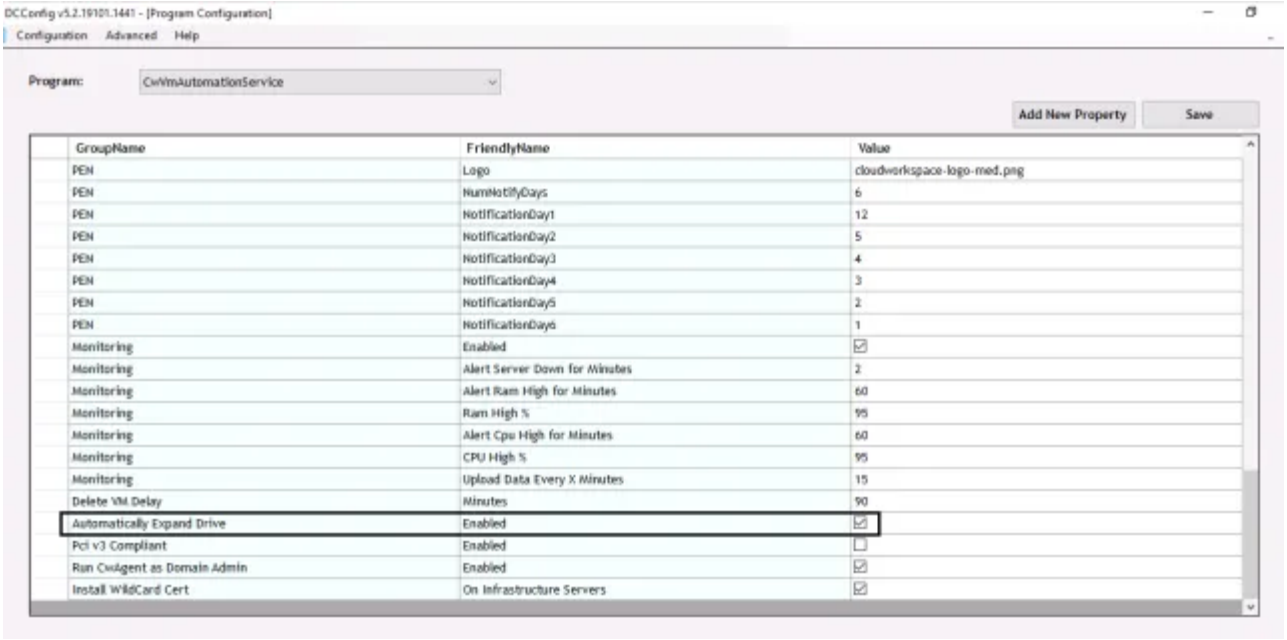
Auto-increase Disk Space Feature

Overview

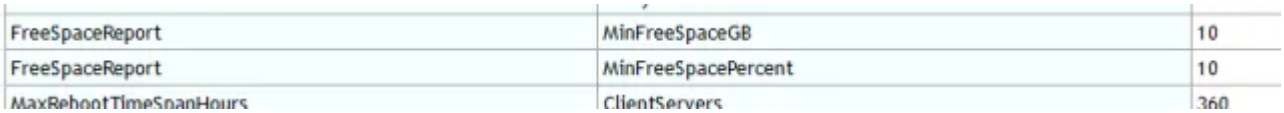
NetApp recognizes the need to give Administrators an easy way to make sure that users always have space to access and save documents. This also ensures that VMs have enough free space to complete backups successfully, enabling and empowering Administrators and their Disaster Recovery and Business Continuity plans. With this in mind, we built a feature that automatically expands the managed disk in use to the next tier when a drive is running short on space.

This is a setting that is applied by default on all new VDS deployments in Azure, ensuring that all deployments protect users and the tenant's backups by default.

Administrators can validate this is in place by navigating to the Deployments tab, then selecting a deployment and then connecting to their CWMGR1 server from there. Next, open the DCConfig shortcut on the desktop and click Advanced and scroll down to the bottom.



Administrators can change the amount of free space desired in either GB free or percent of the drive that should be free before moving to the next tier of managed disks in the same Advanced section of DCConfig.



A few practical application examples:

- If you want to ensure that at least 50 GB is available on your drive, set MinFreeSpaceGB to 50
- If you want to ensure that at least 15% of your drive is free, set MinFreeSpacePercent from 10 to 15.

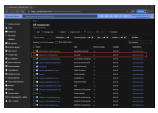
This action takes place at midnight on the server's time zone.

Accessing VDS credentials in Azure Key Vault

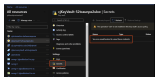
Overview

CWASetup 5.4 is a departure from previous Azure deployment methods. The configuration and validation process is streamlined to reduce the amount of information required to begin a deployment. Many of those removed prompts are for credentials or accounts such as Local VM Admin, SMTP account, Tech account, SQL SA, etc. These accounts are now automatically generated and stored in an Azure Key Vault. By default, accessing these automatically generated accounts requires an additional step, described below.

- Find the 'Key vault' resource and click into it:



- Under ‘Settings’, click ‘Secrets’. You’ll see a message stating that you are unauthorized to view:



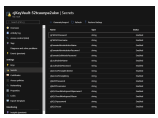
- Add an ‘Access Policy’ to grant an Azure AD account (like a Global Admin or System Administrator) access to these sensitive keys:

- A Global Admin is used in this example. After selecting the principal, click ‘Select’, then ‘Add’:

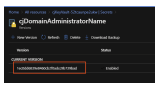
- Click ‘Save’:

- Access policy has been successfully added:

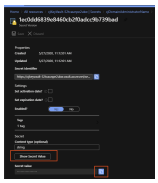
- Revisit the ‘Secrets’ to verify the account now has access to the deployment accounts:



- For example, if you required the Domain Administrator credential to login to CWMGR1 and update Group Policy, check the strings under cjDomainAdministratorName and cjDomainAdministratorPassword by clicking on each entry:



- Show or Copy the value:



Apply Monitoring and Antivirus

Overview

Virtual Desktop Service (VDS) Administrators are responsible for monitoring both their platform infrastructure (which will consist of CWMGR1 at minimum) and all other infrastructure and virtual machines (VMs). In most cases, Administrators arrange infrastructure (hypervisor/SAN) monitoring directly with their Data Center/IaaS provider. Administrators are responsible for monitoring terminal servers and data servers, typically by deploying their preferred Remote Management and Monitoring (RMM) solution.

Anti-Virus is the responsibility of the administrator (for both platform infrastructure and terminal/data server VMs). To streamline this process, VDS for Azure servers have Windows Defender applied by default.

When installing 3rd party solutions, be sure not to include Firewalls or any other components which might interfere with VDS automation.

More specifically, when very specific Anti-Virus policies are in place by default this can result in adverse effects when these Anti-Virus agents are installed on a server managed by Virtual Desktop Service.

Our overall guidance is that while VDS platform automation is generally not impacted by Anti-Virus or Anti-Malware products, it is a best practice to add exceptions/exclusions for the following processes on all platform servers (CWMGR1, RDGateways, HTML5Gateways, FTP, etc):

```
*\paexec.exe
*\paexec_1_25.exe
C:\Program Files\CloudWorkspace\CwAgent\CwAgent.exe
C:\Program Files\CloudWorkspace\CW Automation Service\cw.automation.service.exe
C:\Program Files\CloudWorkspace\CwVmAutomationService\CwVmAutomationService.exe
```

Additionally, we recommend white-listing the following processes on client servers:

```
C:\Program Files\CloudWorkspace\CwAgent\paexec.exe
C:\Program Files\CloudWorkspace\CwAgent\CwAgent.exe
C:\Program Files\CloudWorkspace\CwRemoteApps\cwra.exe
C:\Program Files\CloudWorkspace\Pen\Pen.exe
C:\Program Files\CloudWorkspace\MfaAgent\MFAAgent.exe
C:\Program Files\CloudWorkspace\MfaAgent\MFAAgentMonitor.exe
```

Adding and Moving Mapped Drives

Overview

By default there are three shared folders exposed to end user sessions. These folders are found on the defined storage layer. This could be on the file server (TSD1 or D1) or a storage service such as Azure Files, Azure NetApp Files, NetApp CVO and NetApp CVS.

To assist with clarity, this article will use an example customer with the company code “NECA.” This example assumes a single TDS1 server has been deployed, named NECATSD1. We’ll work through the process of moving a folder to another VM (Named “NECAD1”). This strategy can be used to move between partition on the same machine or to another machine as shown in the following example…

Folders Starting Location:

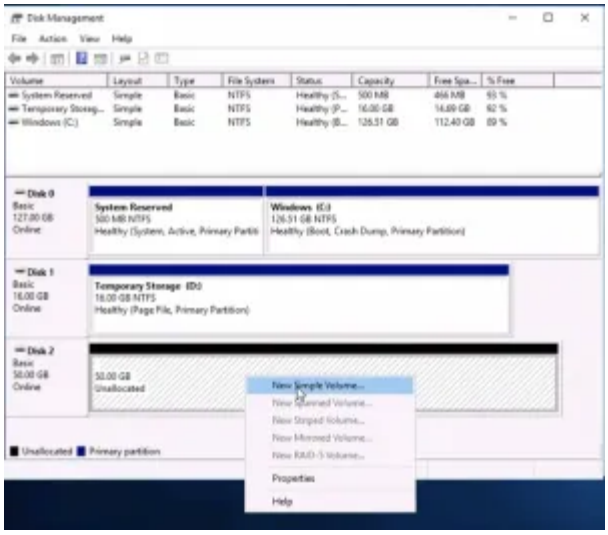
- Data: NECATSD1\C:\data\NECA\ (TSD1means it is the first Terminal Server and also functions as the Data Server)
- FTP: NECATSD1\C:\ftp\NECA\
- Home: NECATSD1\C:\home\NECA\

Folders Ending Location:

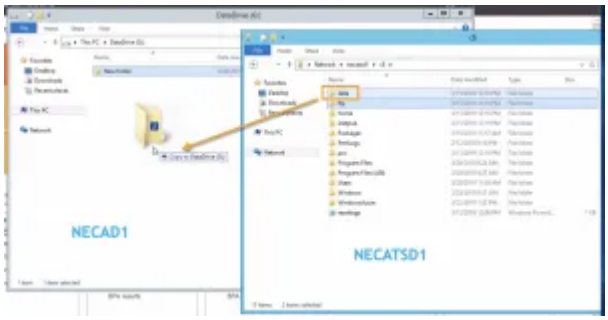
- Data: NECAD1\G:\data\NECA\ (the D1means it is the 1st Data Server)
- FTP: The same process applies, no need to describe it 3x
- Home: The same process applies, no need to describe it 3x

Add disk for G: on NECAD1

1. In order to put the shared folder on the E: drive we’ll need to add one via the hypervisor (e.g. Azure Management Portal), then initialize and format it

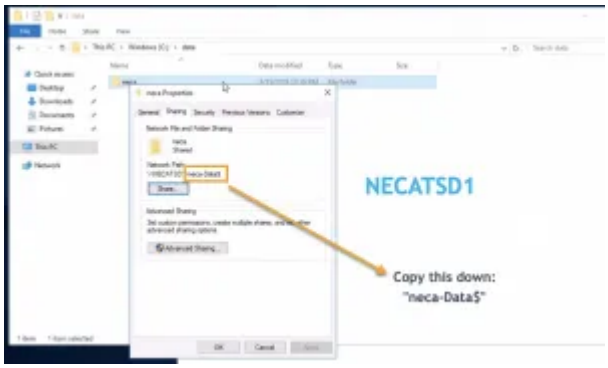


2. Copy the existing folder (on NECATSD1, C:\) path to the new location (on NECAD1, G:\)
3. Copy the folder(s) from the original location to the new location.

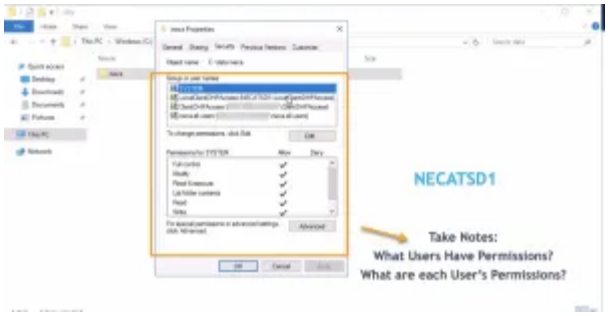


Gather Information From the Original Folder Share (NECATSD1, C:\data\NECA\)

1. Share the new folder using the exact same path as the folder in the original location.
2. Open the new NECAD1, G:\data\ folder and you'll see a folder named the company code, "NECA" in our example.



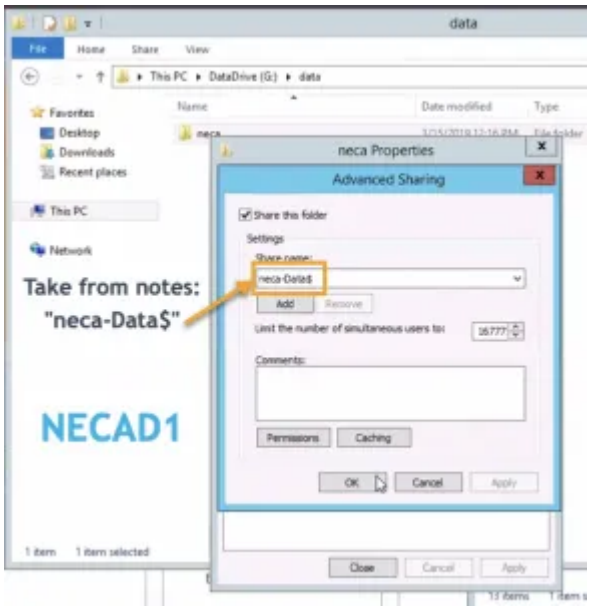
3. Note the security permissions of the original folder share:



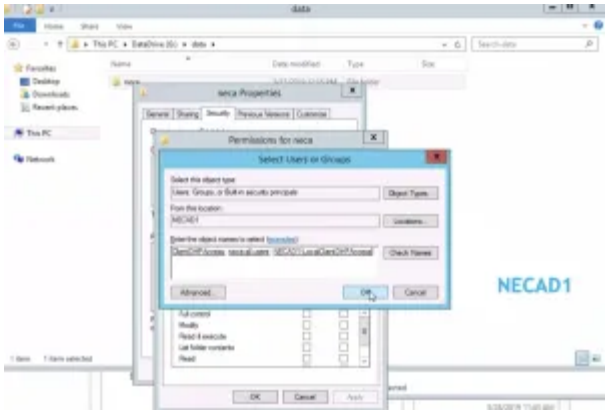
4. Here is the typical setup, however it is important to copy the original settings in case there are existing customizations we need to preserve. All other user/group permissions should be removed from the new folder share
    - SYSTEM:All permissions allowed
    - LocalClientDHPAccess (on the local machine):All permissions allowed
    - ClientDHPAccess (on the domain): All permissions allowed
    - NECA-all users (on the domain): All permissions except “Full Control” allowed

Replicate the Sharing Path and Security Permissions to the New Shared Folder

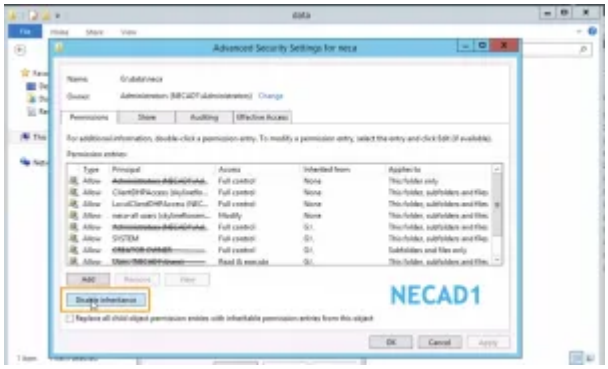
1. Go back to the new location (NECAD1, G:\data\NECA\ and share the NECA folder with the same network path (excluding the machine), in our example “neca-data$”



2. For user security add all the users, set their permissions to match.



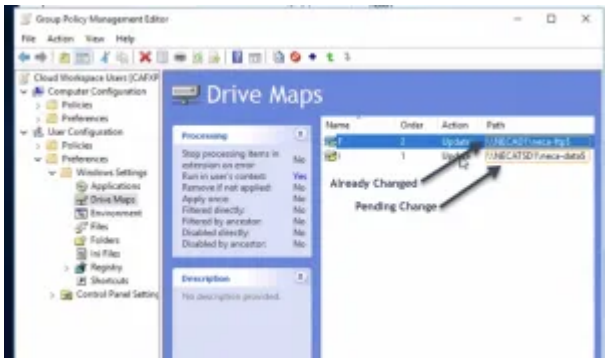
3. Remove any other user/group permissions that may already exist.



Edit Group Policy (Only if the folder moved to a new Machine)

1. Next you'll edit the Drive Maps in Group Policy Management Editor. For Azure AD Domain Services, the mapping is located in:

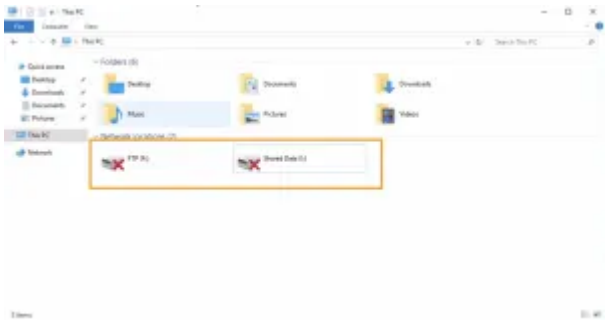
   ```
   "Cloud Workspace Users > User Configuration > Preferences > Windows Settings> Drive Maps"
   ```



2. Once Group Policy updates, the next time each user connects, they'll see the mapped drives which are pointed back to the new location.
3. At this point you can delete the original folders, on NECATSD1, C:\.

Troubleshooting

If the end user sees the mapped drives with a red X, right click the drive and select disconnect. Log out and back in the drive will be present correctly.



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