



Tutorials

Virtual Desktop Managed Service

NetApp
July 30, 2021

This PDF was generated from <https://docs.netapp.com/us-en/virtual-desktop-managed-service/applications.installapplications.html> on July 30, 2021. Always check docs.netapp.com for the latest.

Table of Contents

- Tutorials 1
 - Installing applications on the session host virtual machine(s) 1
 - Update and Deploy VM Images 2
 - Assigning Users to App Groups 5
 - Generate Domain Admin Credentials in VDMS 6
 - Adding User Access 8
 - Removing User Access 13
 - Adding and Removing Admins in VDMS 15

Tutorials

Installing applications on the session host virtual machine(s)

Application Delivery Methodology

Users can access any applications that are installed the session host virtual machine (SHVM) where their user session is running.

Users are assigned to a pool of SHVMs ("host pool") based on their membership in a user group. Every SHVM in that host pool is based on the same VM Image, has the same applications and runs on the same VM resources. Each time a user connects, they are assigned to SHVM in their host pool with the fewest current user sessions.

By adding or removing applications from each SHVM in the host pool the VDMS administrator can control which applications VDMS users can access.

Adding (or removing) applications from each SHVM can be performed directly on each SHVM or to a single VM Image which in turn can be deployed to all SHVMs in the host pool.

This article covers directly installing applications on the SHVMs. VM Image management is covered in [this article](#).

Manual Access

The VDMS management portal provides direct access to each VM via a just-in-time local admin account for all SHVMs and business servers. This access can be used to manually connect to each VM to manually install applications and make other configuration changes.

This functionality is found in Workspace > Servers > Actions > Connect

Virtual Desktop Service
Version: 6.0
Environment: production

- Home
- Organizations
- Deployments
- Workspaces
- Service Board
- Scripted Events
- Admins
- Reports
- Applications
- Cost Estimator
- SaaS Backup

Customer

[Home](#) > [Workspaces](#) > [NetApp VDMS](#) > [Servers](#)

NetApp VDMS

Workspace

Overview

Users & Groups

Workload Schedule

WVD

Servers

Filter By

Export

Refresh

Name	Type	Machine Size	RAM	CPU	Online	Status	Actions
JZSXTSD1	TSData	Standard_B2s	4 RAM	2 CPU	Online	Available	⋮
JZSXTS1	TS	Standard_D2s_v4	8 RAM	2 CPU	Online	Available	<div> <div>Backup</div> <div>Reboot</div> <div>Connect</div> <div>Stop</div> </div>
JZSXTS2	TS	Standard_D2s_v4	8 RAM	2 CPU	Online	Available	

Previous

Page 1 of 1

Next

If domain admin credentials are required, VDMS privileged access management (PAM) functionality to generate domain admin credentials. Details can be [found here](#).

VDMS Automation

With the VDMS portal, the "Scripted Events" section includes functionality to remotely run code.

Within Scripted Events, the Repository tab contains "global" scripts that are published by NetApp. Custom scripts can be added using the "+ Add Script" button.

Within Scripted Events, the Activities tab contains the trigger that causes a script to run against a set of VMs. For VDMS, the "Manual" and "Scheduled" event types are best to push a script across the appropriate virtual machines.

Activities have many available triggers called "Event Types". For VDMS, the "Application Install" and "Application Uninstall" types do not apply. These are RDS-specific triggers and should not be used for VDMS since VDMS is a WVD-based service, and does to follow the design architecture of RDS.

Other Automation Tools

Virtual machines in VDMS can be managed with 3rd party management tools. Application changes and other VM configuration changes can be applied via any compatible tools.

Update and Deploy VM Images

Application Delivery Methodology

Users can access any applications that are installed the session host virtual machine (SHVM) where their user session is running.

Users are assigned to a pool of SHVMs ("host pool") based on their membership in a user group. Every SHVM in that host pool is based on the same VM Image, has the same applications and runs on the same VM resources. Each time a user connects, they are assigned to SHVM in their host pool with the fewest current user sessions.

By adding or removing applications from each SHVM in the host pool the VDMS administrator can control which applications VDMS users can access.

Adding (or removing) applications from each SHVM can be performed directly on each SHVM or to a single VM Image which in turn can be deployed to all SHVMs in the host pool.

This article covers VM Image management. Directly installing applications on the SHVMs is covered in [this article](#).

Updating the VM Image

The recommended method for adding (or removing) applications to SHVM(s) is by editing the VM Image assigned to the host pool. Once the VM Image is customized and validated, the VDMS support team can deploy it to all SHVMs in the host pool upon request.

How to edit the VM image




1. Navigate "Provisioning Collections" within the deployment in the VDS portal
2. Click on the provisioning collection associated with the host pool you wish to update.

Name	Type	Operating System Servers	Apps	Min. Cache	Current Cache	Status	Actions
Shared users	VDI	1	0	0	0	Available	edit
VDI Users	VDI	1	0	0	0	Pending	

- a. Make note of the "VM Template" name in the "Servers" section.

Name	Role	VM Template	Storage Type	Actions
TS		sharedusers4044ver3	Standard_LRS	edit

Servers

Template	Storage Type	Actions
sharedusers4044ver3	Standard_LRS	<div><div></div><div> Edit</div><div> Delete</div></div>
Previous Page 1 of 1 Next		

3. Edit the Server template ensuring that the source template is the VM Template noted in step 2.a. above. Click "Continue"

Edit Server

VM Template **Required**

Sharedusers4044ver3

×

Storage Type **Required**

Standard_LRS

×

☐ Data Drive

Cancel

Continue



Don't edit these settings:

1. Type = VDI
2. Share Drive = empty
3. Minimum Cache = 0
4. Data Drive = Unchecked
5. Storage Type = Standard_LRS

1. The VDMS automation will now build a temporary VM in Azure, the machine name will be CWT#. Building this VM may take 25 minutes. Once the process completes the status will change to "Pending"
 - a. Note, this VM will run until the customization process is complete so it is important to build, customize and validate the VM within a day or two.
2. Once the temporary VM is ready, you can log on to the VM by editing the Provisioning Collection and then clicking "Connect" on the server.
 - a. When prompted for credentials, domain admin credentials can be generated by any VDMS admin with "PAM Approver" rights.

How to deploy an updated VM image

1. Once the VM image is validated, contact the VDMS support team to schedule an image refresh.
2. The team will build new session hosts based on the new image.
 - a. If required, please coordinate time to test the new hosts before we redirect new users to the new hosts.
3. Once ready, the support team will redirect all new user sessions to the new hosts. We'll shut down the old hosts once no users are connected. These old VMs will remain in a deallocated state for warm failover but these VMs will be automatically purged after 7 days.

Changing the SHVM(s) directly

Changes can be made directly on the SHVM(s) manually or via any available automation tools. More information on this is found in [this article](#).

When making changes directly to the SHVMs in a host pool it is critical that each SHVM remain configured in the same way or users may have inconsistent experiences as they connect to different SHVMs.



By default, individual SHVMs are not backed up because they typically don't have unique data and are based on a standardized VM image. If you're making customizations directly to the SHVMs, please contact support to get a backup policy applied to one of the SHVMs in the host pool.

Sysprep Troubleshooting

The VDMS image "Validate" function uses Microsoft's Sysprep utility. When validation fails, the most common culprit is a Sysprep failure. To troubleshoot failures, start in the Sysprep log file located on the CWT# VM in the path: C:\windows\system32\Sysprep\panther\setupact.log

Assigning Users to App Groups

User Assignment Methodology

Users are assigned to a session host virtual machine (SHVM) through AD security groups.

For each host pool, there is a linked user group on the "Users & Groups" tab within the workspace.

User groups are named with the workspace ID (a unique 3-4 digit code for each workspace), followed by the name of the host pool.

For example, the group "jzsj Shared Users" is linked to the Shared Users host pool in VDMS. All users added to "jzsj Shared Users" will be assigned access to the session hosts in the "Shared Users" host pool.

To assign a user to their host pool

1. Navigate to "Users & Groups" within the workspace
2. Users can be added to the group by editing the user list within the group.
3. Automation will automatically sync the members of the user group such that the user will be granted access to the appropriate host pool, app group and applications.



Users should only be assigned to one (and only one) app group. The type of host pool (Shared, VDI or GPU) must match the licensed SKUs purchased for VDMS. Misalignment of users and/or assignment to multiple app groups will cause resource contention issues and potentially impact their colleagues working in the environment.

Generate Domain Admin Credentials in VDMS

Privileged Access Management

VDMS admins can be given the "PAM Approver" role which enables the admin to grant PAM requests.

PAM requests will generate a domain level admin account to be used to authenticate on VDMS VMs when the just-in-time local admin credentials are not sufficient.

Any VDMS admin can submit a PAM request but only admins with the PAM Approver role can approve the requests. A PAM Approver can both request and approve their own request.

Submit a PAM Request

To submit a PAM request

1. Navigate to your admin username in the upper right corner and click "Settings"
2. Select the "PAM Requests" tab
3. Click "+ Add"
 - a. Select a duration, after which these credentials will expire
 - b. Choose the deployment
 - c. Enter an email address that the credentials can be provided. This can be any email address, allowing 3rd parties (e.g. a vendor) to be granted domain credentials.
 - d. Enter a phone number that can receive text messages
 - e. Enter any notes for the logs and for the PAM Approver to review.
4. Click "Add Request"

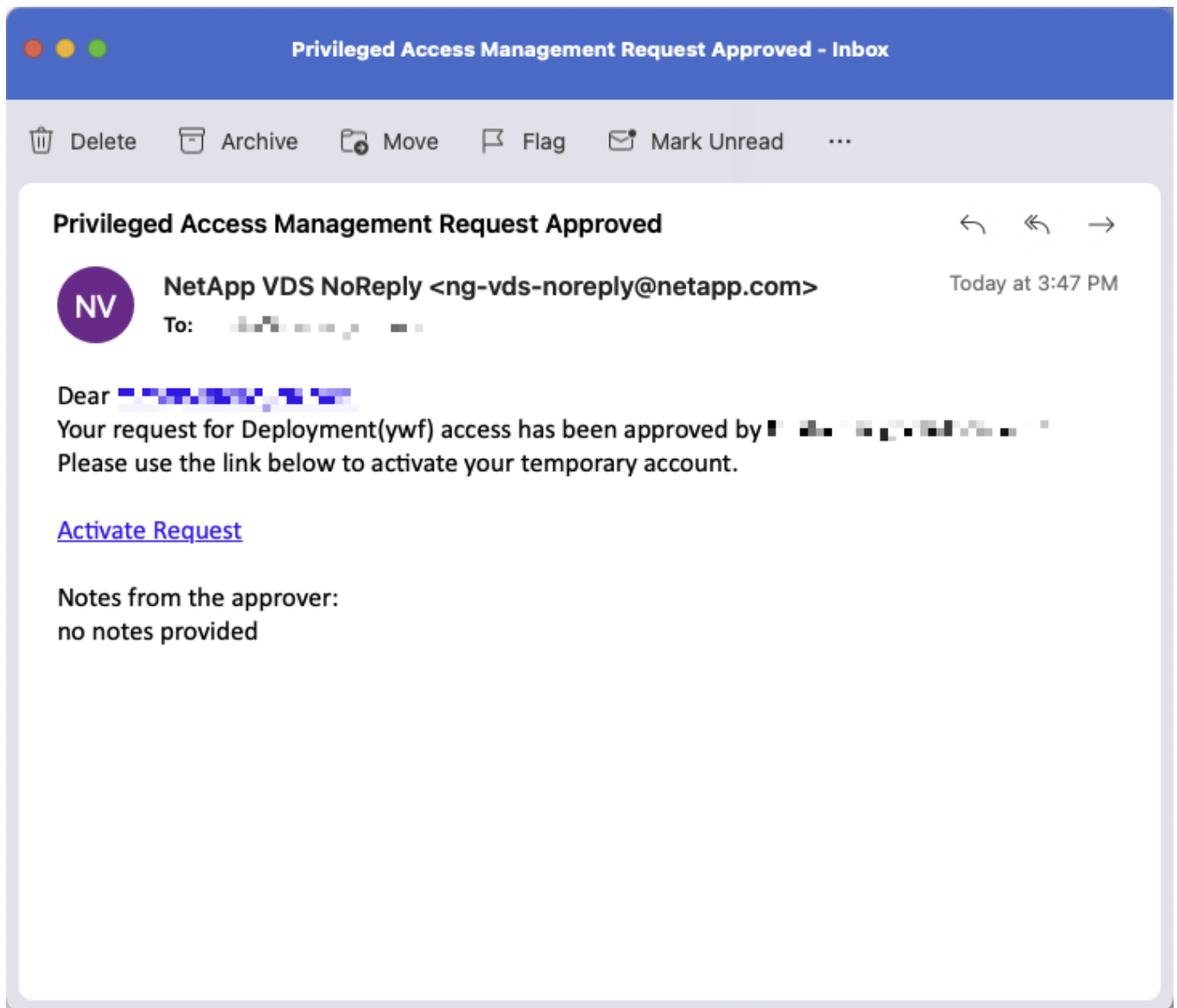
Approve a PAM Request

To review and approve/reject a PAM request

1. . Navigate to your admin username in the upper right corner and click "Settings"
2. Select the "PAM Requests" tab and click on the request
3. Review the request and click "Approve" or "Reject"
4. Enter any notes relevant to the approval/rejection decision

Using PAM Generated Credentials

Once approved, the provided email address is sent a confirmation email to activate their credentials:



Following the "Activate Request" link will bring the user to the following page and send them a confirmation code via SMS. They will also be asked to set a secure password.

Activate Your Account



Confirmation Code Sent

We have sent a confirmation code to [redacted] - please enter the code below and set a password to activate your account.

Access Level

Deployment

Confirmation Code

Required

[redacted]

Password

Required

.....



Confirm Password

Required

.....



Resend Code

Activate Account

Upon successfully validating the account, the user receives a confirmation with their username.

Activate Your Account



Successfully Activated Account

Successfully activated account. Your account's username is [redacted]

Username

[redacted]

Adding User Access

New User Creation

New Active Directory deployments (a new Active Directory domain was created for VDMS)

1. Create the user in VDS
 - a. Navigate to the workspace, select the "Users & Groups" tab, click "Add", and select "Add User"

CloudJumper Training PP
Virtual Desktop Service
Version 6.0
Enrollment production

Home > Workspaces > TrainingKrisG > Users & Groups

TrainingKrisG
Workspace

Overview **Users & Groups** Servers AVD More...

Users

Filter By
Q Keyword

Export Refresh **Add...** 3

Add User 4
Import from file

Username	Name	Connection	Status
Test1@TrainingKrisG.onmicrosoft.com	Tester 1	Not Connected	Available
test2@TrainingKrisG.onmicrosoft.com	Tester 2	Not Connected	Available

Previous Page 1 of 1 Next

Groups

Filter By
Q Keyword

Export **Add Group**

Name	Total Users	Actions
kift WVD Shared	2	
kift-all users	2	

Previous Page 1 of 1 Next

b. Fill in the user's information then click "Add User"

Add User

Username Required

Test3

First Name Required **Last Name** Required

Test User3

Email **Phone**

Test3@TrainingKrisG.onmicrosoft.com Phone...

☐ Multi-Factor Auth Enabled ☐ VDI User Enabled

☐ Wake On Demand Enabled ☒ Local Drive Access Enabled

☐ Force Password Reset at Next Login

Cancel
Add User

2. Notify NetApp of the additional user using one of the methods below

- a. Email support: VDSsupport@netapp.com
- b. Phone Support: 844.645.6789
- c. [VDMS Support Portal](#)

3. Assign the user to their host pool

- a. On the users and groups tab, click on the user group linked to the host pool. For example, the group "kift WVD Shared" is linked to the WVD Shared host pool in VDMS. All users added to "kift WVD Shared" will be assigned access to the session hosts in the "WVD Shared" host pool.

CloudJumper Training PP

Virtual Desktop Service

Version 6.0

Environment: production

Home

Organizations

Deployments

Workspaces

App Services

Service Board

Scripted Events

Admins

Reports

Applications

Cost Estimator

SaaS Backup

Search

KG Kris

Home > Workspaces > TrainingKrisG > Users & Groups

TrainingKrisG

Workspace

Refresh

Edit

Delete

Overview

Users & Groups

Servers

AVD

More...

Users

Filter By

Keyword

Export

Refresh

Add...

Username	Name	Connection	Status	Actions
Test3@TrainingKrisG.onmicrosoft.com	Test User3	Not Connected	Available	
Test1@TrainingKrisG.onmicrosoft.com	Tester 1	Not Connected	Available	
test2@TrainingKrisG.onmicrosoft.com	Tester 2	Not Connected	Available	

Previous Page 1 of 1 Next

Groups

Filter By

Keyword

Export

Add Group

Name	Total Users	Actions
kift WVD Shared	2	
kift-all users	2	

Previous Page 1 of 1 Next

b. Click on the edit icon in the top right of the Users box then click "Add Users"

CloudJumper Training PP

Virtual Desktop Service

Version 6.0

Environment: production

Home

Organizations

Deployments

Workspaces

App Services

Service Board

Scripted Events

Admins

Reports

Applications

Cost Estimator

SaaS Backup

Search

KG Kris

Home > Workspaces > TrainingKrisG > Users & Groups > kift WVD Shared

kift WVD Shared

Group

Delete

Overview

Users

Filter By

Keyword

Add Users

Name	Local Drive Access	Actions
Test1@TrainingKrisG.onmicrosoft.com	<input checked="" type="checkbox"/>	
test2@TrainingKrisG.onmicrosoft.com	<input checked="" type="checkbox"/>	

Previous Page 1 of 1 Next

Cancel

Save

Applications

Filter By

Keyword

Name	Version	Enabled
Google Chrome	Latest	No

Previous Page 1 of 1 Next

c. Check the box next to the user(s) to be added then click "Continue"

Select Users

1 item(s) selected
Show Clear

Filter By

<input type="checkbox"/>	Name	Username	Company Name	Company Code
<input type="checkbox"/>	Tester 1	Test1@TrainingKrisG.onmicrosoft.com	TrainingKrisG	kift
<input type="checkbox"/>	Tester 2	test2@TrainingKrisG.onmicrosoft.com	TrainingKrisG	kift
<input checked="" type="checkbox"/>	Test User3	Test3@TrainingKrisG.onmicrosoft.com	TrainingKrisG	kift

Previous Page 1 of 1 Next

Cancel
Continue

d. More detailed instructions can be found [here](#)

Existing Active Directory deployments (VDMS is connecting to an existing Active Directory)

1. Create the user in Active Directory as you normally would
2. Add the user to the Active Directory Group that is listed on the deployment

CloudJumper Training PP
Virtual Desktop Service
Version: 6.0
Environment: production

- Home
- Organizations
- Deployments
- Workspaces
- App Services
- Service Board
- Scripted Events
- Admins
- Reports
- Applications
- Cost Estimator
- SaaS Backup

Deployment Details

Name	ID
TrainingKrisG.onmicrosoft.com	vrg
Version	Hypervisor
6.0	Azure
Resource Allocation Type	Domain
MachineSize	TrainingKrisG.onmicrosoft.com
h5 Gateway	RDP Gateway
vrg-h5gw.vrg.cloudworkspace.app	vrg-rds.vrg.cloudworkspace.app
FTP Server Address	Directory Type
None	ActiveDirectory
Most Recent Heartbeat	
Jul 2, 2021, 3:51 PM	

Processes

Client	User
New ✓ Idle	New ✓ Idle
Update ✓ Idle	Update ✓ Idle
Delete ✓ Idle	Delete ✓ Idle

App Service	Other
New ✓ Idle	Server Cache ✓ Idle
Update ✓ Idle	
Delete ✓ Idle	

PAM Approval Details

✗ Require Client Approval for PAM Access Requests

Active Directory Group

Group Name
VDMS Access

3. Enable cloudworkspace
4. Notify NetApp of the additional user using one of the methods below
 - a. Email support: VDSsupport@netapp.com

b. Phone Support: 844.645.6789

c. [VDMS Support Portal](#)

5. Assign the user to their host pool

- a. On the users and groups tab, click on the user group linked to the host pool. For example, the group "kift WVD Shared" is linked to the WVD Shared host pool in VDMS. All users added to "kift WVD Shared" will be assigned access to the session hosts in the "WVD Shared" host pool.

CloudJumper Training PP
Virtual Desktop Service
Version 6.0
Environment: production

Home > Workspaces > TrainingKrisG > Users & Groups

TrainingKrisG Workspace

Overview **Users & Groups** Servers AVD More...

Users

Filter By: Keyword [Export] [Refresh] [+ Add...]

Username	Name	Connection	Status	Actions
Test3@TrainingKrisG.onmicrosoft.com	Test User3	Not Connected	Available	
Test1@TrainingKrisG.onmicrosoft.com	Tester 1	Not Connected	Available	
test2@TrainingKrisG.onmicrosoft.com	Tester 2	Not Connected	Available	

Previous Page 1 of 1 Next

Groups

Filter By: Keyword [Export] [+ Add Group]

Name	Total Users	Actions
kift WVD Shared	2	
kift-all users	2	

Previous Page 1 of 1 Next

- b. Click on the edit icon in the top right of the Users box then click "Add Users"

CloudJumper Training PP
Virtual Desktop Service
Version 6.0
Environment: production

Home > Workspaces > TrainingKrisG > Users & Groups > kift WVD Shared

kift WVD Shared Group

Overview **Applications**

Users

Filter By: Keyword [Add Users]

Name	Local Drive Access	Actions
Test1@TrainingKrisG.onmicrosoft.com	<input checked="" type="checkbox"/>	
test2@TrainingKrisG.onmicrosoft.com	<input checked="" type="checkbox"/>	

Previous Page 1 of 1 Next

Cancel Save

Applications

Filter By: Keyword

Name	Version	Enabled
Google Chrome	Latest	No

Previous Page 1 of 1 Next

- c. Check the box next to the user(s) to be added then click "Continue"

Select Users

i 1 item(s) selected
Show Clear

Filter By

Q

<input type="checkbox"/>	Name	Username	Company Name	Company Code
<input type="checkbox"/>	Tester 1	Test1@TrainingKrisG.onmicrosoft.com	TrainingKrisG	kift
<input type="checkbox"/>	Tester 2	test2@TrainingKrisG.onmicrosoft.com	TrainingKrisG	kift
<input checked="" type="checkbox"/>	Test User3	Test3@TrainingKrisG.onmicrosoft.com	TrainingKrisG	kift

Previous
Page 1 of 1
Next

Cancel
Continue

d. More detailed instructions can be found [here](#)

Removing User Access

Removing a User

New Active Directory deployments (a new Active Directory domain was created for VDMS)

1. Delete the user in VDMS
 - a. Navigate to the workspace, select the "Users & Groups" tab, click the action dots next to the user to be deleted, then click "Delete"

CloudJumper Training PP
Virtual Desktop Service
Version 6.0
Enrollment, production

- Home
- Organizations
- Deployments
- Workspaces 1**
- App Services
- Service Board
- Scripted Events
- Admins
- Reports
- Applications
- Cost Estimator
- SaaS Backup

Home > Workspaces > TrainingKrisG > Users & Groups

TrainingKrisG
Workspace

Overview

Users & Groups 2

Servers

AVD

More... v

Filter By

Q

Export
Refresh
+ Add...

Username	Name	Connection	Status	Actions
Test3@TrainingKrisG.onmicrosoft.com	Test User3	Not Connected	● Available	<div style="font-size: 0.8em;"> Edit Delete Disable CloudWorkspace Reset Password </div>
Test1@TrainingKrisG.onmicrosoft.com	Tester 1	Not Connected	● Available	
test2@TrainingKrisG.onmicrosoft.com	Tester 2	Not Connected	● Available	

Previous
Page 1 of 1
Next

Groups

Filter By

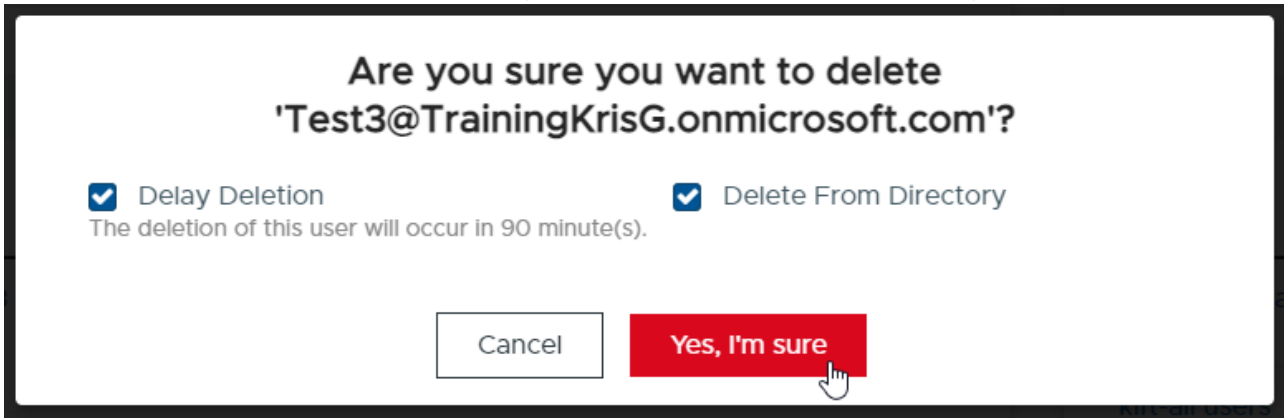
Q

Export
+ Add Group

Name	Total Users	Actions
kift WVD Shared	2	⋮
kift-all users	3	⋮

Previous
Page 1 of 1
Next

- b. A pop up will appear with options to Delay Deletion and Delete From Directory



- i. The Delay Deletion option will wait 90 minutes before deleting the user, which allows for the process to be cancelled. It is recommended to check this box.
- ii. The Delete From Directory option will delete the Active Directory user account. This box should be checked.

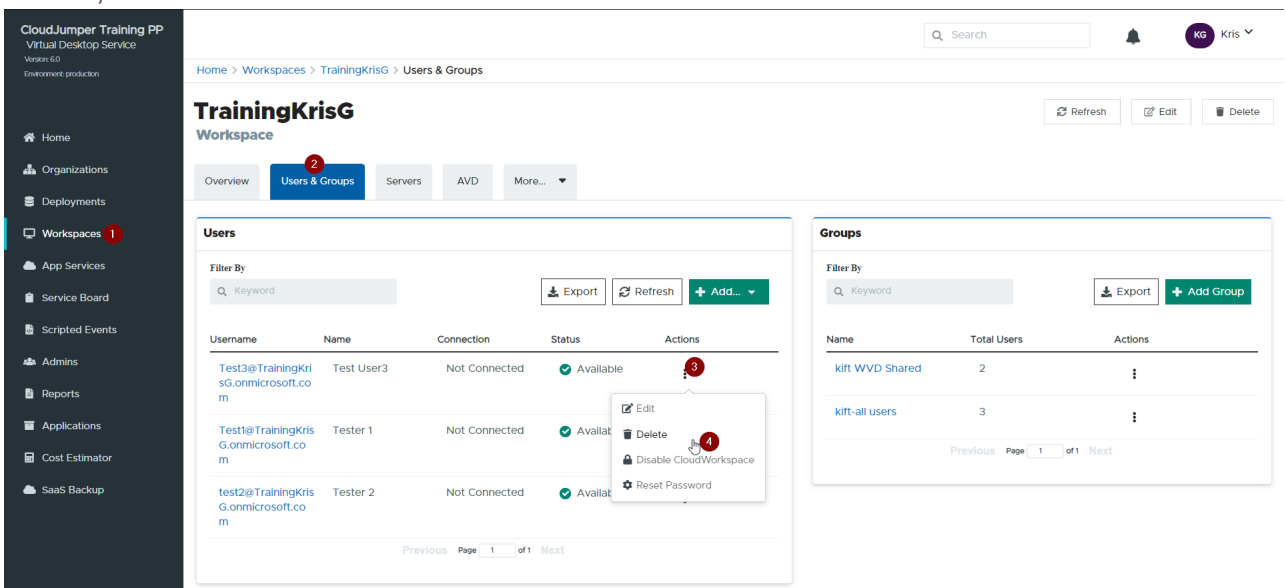
2. Notify NetApp of the user removal using one of the methods below

- a. Email support: VDSsupport@netapp.com
- b. Phone Support: 844.645.6789
- c. [VDMS Support Portal](#)

Existing Active Directory deployments (VDMS is connecting to an existing Active Directory)

1. Delete the user in VDMS

- a. Navigate to the workspace, select the "Users & Groups" tab, click the action dots next to the user to be deleted, then click "Delete"



- b. A pop up will appear with options to Delay Deletion and Delete From Directory

Are you sure you want to delete
'Test3@TrainingKrisG.onmicrosoft.com'?

☒ Delay Deletion
The deletion of this user will occur in 90 minute(s).

☐ Delete From Directory

Cancel

Yes, I'm sure

- i. The Delay Deletion option will wait 90 minutes before deleting the user, which allows for the process to be cancelled. It is recommended to check this box.
 - ii. The Delete From Directory option will delete the Active Directory user account. It is recommended this box is NOT checked, and your organizations user account deletion process be followed to delete the account from Active Directory.
2. Notify NetApp of the user removal using one of the methods below
- a. Email support: VDSsupport@netapp.com
 - b. Phone Support: 844.645.6789
 - c. [VDMS Support Portal](#)

Adding and Removing Admins in VDMS

Adding Admins in VDMS

- This process is handled by NetApp
- Contact NetApp VDMS support using one of the methods below:
 1. Email support: VDSsupport@netapp.com
 2. Phone Support: 844.645.6789
 3. [VDMS Support Portal](#)
- Please include the following for the new admin account:
 1. Partner code
 2. First and last name
 3. Email address
 4. If any permissions differ from the default set that are outlined in the [admin permissions](#)

Removing Admins in VDMS

- This process is handled by partners
 1. Navigate to the "Admins" tab
 2. Click the Action dots to the right of the admin you would like to remove
 3. Click "Delete"
 4. A confirmation box will appear; click on "Yes, I'm sure"

CloudJumper Training PP
Virtual Desktop Service
Version 6.0
Enrollment, production

Home

Organizations

Deployments

Workspaces

App Services

Service Board

Scripted Events

Admins

Reports

Applications

Cost Estimator

SaaS Backup

Search

KG Kris

Home > Admins

Admins

Filter By
Q TestAdmin

RefreshExportAdd Admin

Username	Name	Primary	Active Directory	MFA	Actions
TestAdmin@Training	Test Admin	✗	✗	✗	<div><div>Edit</div><div>Delete</div></div>

PreviousPage 1 of 1

- If you have any questions, contact NetApp VDMS support using one of the methods below:
 1. Email support: VDSsupport@netapp.com
 2. Phone Support: 844.645.6789
 3. [VDMS Support Portal](#)

Copyright Information

Copyright © 2021 NetApp, Inc. All rights reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means-graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system-without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

Trademark Information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.