Tutorial 8: Add-On - Upgrading to Teradici for Desktop Streaming

Estimated Time to Complete: 40 minutes

Review of Studio in the Cloud

If you've reached this tutorial, you're most likely have already completed our previous Studio in the Cloud tutorials in which we provided step-by-step instructions for setting up virtual workstations, cloud storage and cloud rendering. By the end of the 7 part series, you have a fully cloud-based studio that leverages the scale, power, and convenience of AWS.

Those tutorials are meant to provide you with the basic infrastructure for a cloud studio with the most straightforward implementation possible. However, it is by no means a stopping point. There are many additional ways to build onto and customize your studio.

Overview of this Tutorial

The purpose of this tutorial is to show you how to add the power of Teradici to your Studio in the Cloud. Teradici Cloud Access Software is a powerful solution for connecting to and streaming the desktops of your virtual workstations that is an alternative to Remote Desktop.

We'll walk you through the steps of adding Teradici as a desktop streaming solution to your existing Studio in the Cloud setup.

Prerequisites

Complete the Previous Tutorials

This add-on tutorial assumes that you've already completed at least Tutorials 1-5 in our previous Studio in the Cloud tutorial series. If you are new to Studio in the Cloud, you can find the first tutorial here: Tutorial 1: Getting Started with AWS Virtual Workstations

If you have already completed the Studio in the Cloud tutorials, then you're all set to continue with the steps below.

Obtain a Teradici License

If you are already a Teradici customer and have a Cloud Access Plus license or registration code, all you need to do is locate it so that you can enter it during setup later.
If you’re not a Teradici customer, you have a few options:

- Use the [Teradici Windows AMI from the AWS Marketplace](https://aws.amazon.com/marketplace/pp/pt30035439000161552)
  
  o This AMI already has Teradici installed. Instead of requiring a license, the cost is built into the hourly pricing for the AMI. You pay an extra $0.50/hour on top of the normal hourly price for your instance. However, starting with the Teradici AMI would also require you to re-install all the software from the previous Studio in the Cloud tutorials. For that reason, we won’t be covering this option in this tutorial. Instead we’ll walk you through installing Teradici yourself, which requires you to obtain a license using one of the methods below.

- Purchase a Teradici Subscription
  
  o If you are ready to purchase Teradici, you can follow this link to their [Cloud Access Plus page](https://aws.amazon.com/marketplace/pp/pt30035439000161552). At the bottom of the page are links to either contact Teradici sales or purchase with a credit card. If purchasing, make sure to choose the Cloud License Server option. Once your purchase is complete and you receive your registration code, keep it handy for later.

- Request a trial license
  
  o You can request a trial license by contacting Teradici sales using this form: [https://connect.teradici.com/cas-demo](https://connect.teradici.com/cas-demo). When filling out the form, make sure to mention that you are interested in the Graphics edition, which is required for the GPU-enabled instances you use for your workstations. After you have been contacted by Teradici sales and arrange to get a trial license, you will receive a registration code via email.

Once you have your Teradici registration code, you can move onto the steps below.

### Startup Notes

We’re going to add Teradici Cloud Access Software to your existing Windows workstation. As a starting point, we’ll need to launch a fresh, new instance using your Windows Workstation launch template. Note: you may have named this “My-Studio-Workstation-LT” if you followed the naming convention in our previous tutorials.
Launch a New Instance from Your Windows Workstation Launch Template

- In the EC2 Dashboard navigate to your Launch Templates
- Select your Windows Workstation Launch Template (e.g., My-Studio-Workstation-LT), click on the Actions menu and select Launch instance from template
- Select the most recent version in Source template version
- Leave number of instances at 1
- In Instance Tags, change the Name value to Workstation_Win_Teradici and click the check boxes to tag the volumes as well.
- You can leave the rest of the launch template at its defaults and click Launch instance from template

Create a Teradici Security Group

While your fresh Windows workstation is starting up, you can create a new security group to allow the type of traffic needed by Teradici.

- Go to Services→ EC2
- Select Security Groups in the left side panel under Network & Security
- Click the Create Security Group button
- Choose a name for your security group (e.g., My-Studio-Teradici-SG)
- Set the Description to Allows for Teradici Connection
- Set the VPC to the VPC you created in the earlier Studio in the Cloud tutorials (e.g. My-Studio-VPC). You can also find this information on the Important Information Cheat Sheet that you filled out while completing the previous Studio in the Cloud tutorials.
- Make sure the Inbound tab is selected and then add the following rules:
⚠ Note: As in earlier tutorials, we are initially opening up this security group to inbound traffic from any IP address. However, if you limited your source IP addresses during your Studio in the Cloud setup, you'll want to do the same here.

If you will be accessing your instances over the public Internet, then after initial testing we recommend that you look into an AWS Direct Connect connection and/or VPN so that your connection will be private and secure. You may use third party VPN software, but AWS also provides a robust set of VPN solutions called AWS VPN. More information about how to connect to your VPC using VPN can be found here.

- Click the Create button.

Add a Tag to Your Security Group

Just as we did for the other security groups in the tutorials, we should add "Studio" and "Name" tags to this new Teradici security group as well.

- Select your Teradici Security Group from the list. Because we haven't set a name tag yet, look under the Security group name column to identify the correct one.
- On the Tags tab in the bottom panel, click on the Add/Edit Tags button
- In the Add/Edit Tags popup window, click the Create Tag button
- For Key enter Studio
• For **Value** enter the name you picked for your studio (e.g., My-Studio) *You can find your studio name on the cheat sheet.*

• Next, you’ll add a **Name** for your security group. Click **Create Tag** again.

• For **Key** enter **Name**

• For **Value** enter a name for the security group (e.g., My-Studio-Teradici-SG)

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**Add/Edit Tags**

Apply tags to your resources to help organize and identify them.

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. [Learn more](#) about tagging your Amazon EC2 resources.

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studio</td>
<td>My-Studio</td>
</tr>
<tr>
<td>Name</td>
<td>My-Studio-Teradici-SG</td>
</tr>
</tbody>
</table>

[Create Tag] [Cancel] [Save]

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• When you’re done, click the **Save** button

• *Enter the name and Group ID of your Teradici security group on the Important Information Cheat Sheet.* Because not everyone will be adding Teradici, there’s not an existing section on the sheet to enter this information, but you can use the Notes section at the bottom to enter it on your own.

**Assign New Security Group to Your Instance**

• Click on **Instances** in the left hand panel

• Select your **Workstation_Win_Teradici** instance

• Right-click and go to **Networking → Change Security Groups**

• Click the checkbox next to **My-Studio-Teradici-SG**

• Click the **Assign Security Groups** button
Log in to Your Workstation Instance

Just as we did in Tutorial 5 when we originally set up your Windows workstation, in order to install Teradici Cloud Access Software on your instance, you’ll need to log in as Administrator.

- Once your new instance has initialized and passed 2/2 checks, log into it as Administrator:
  - Select your Workstation_Win_Teradici instance and click Connect
  - Click Download the Remote Desktop File
  - Open Remote Desktop
  - The username should already be set to Administrator. In Tutorial 3, we manually set the Administrator password to match your Active Directory Admin password, so you can just enter that here without having to click the Get Password button. You can also find your Active Directory Admin password under the Tutorial 2 section of the cheat sheet.
  - Note: Sometimes it takes an extra few minutes after 2/2 checks are passed for the instance to be fully ready to login. If your first login attempt fails, please wait a few minutes and try again.

Install Teradici on the Workstation Instance

You’ll need to download the latest version of the Teradici Cloud Access Software from their website to your new workstation instance. Note: At the time of writing, the latest version was 20.01, but the version you see may be higher.
• Open Firefox on your instance and navigate to the Teradici Cloud Access Software webpage.
• In the PCoIP Hosts section, click on Graphics Agent for Windows.

![PCoIP Hosts and Graphics Agents]

• In the popup window, click Download.
• Scroll through (and read) the end user license agreement and click Agree and download.
• Save the installer and then run it when the download is complete.
  o Choose your language and click OK.
  o Click Next and then click I Agree to accept the end user license agreement.
  o Leave the destination folder at the default and click Install.
  o Enter your Registration code and click Next.
If you recently purchased a subscription or were given a trial license, you should have gotten an email with your registration code. If you are an existing Teradici customer, whoever manages your account should be able to provide you with your code.

If you did not previously purchase a subscription and want to do so now, click the "Purchase Now" button and select "Cloud Access +"

- If you use a proxy server for Internet access, enter its address and port number. Otherwise, just click Next.
- Leave Reboot now selected and click Finish

Your Remote Desktop session will disconnect and your instance will start rebooting.

Download Client to Your Local Machine

In order to connect to your instance, you'll need to download and install the Teradici client software to your local computer.

- On your local computer, go back to the Teradici Cloud Access Software webpage.
- In the PCoIP Clients section, download the version of the Software Client for the OS of your local machine.
As before, in the popup window, click **Download**, accept the end use license agreement and click **Agree and download**

- **Save** the installer to your local machine and then run it when the download is complete
  - Proceed through the installation prompts as you did for the Graphics Agent. If you would like a desktop shortcut, make sure to check the box next to that option at the end of the install process.

### Connect Using Teradici

Now that you have the graphics agent installed on your instance and the software client installed locally, you’re all ready to connect to your workstation instance!

- Run the client software on your local computer by double-clicking the **desktop shortcut** or by going to **Start→Teradici→PCoIP Client (Windows)**

  ![PCoIP Client](image)

- In the **Host Address or Code** field, enter the **Public IP address** of your Workstation instance.
  - You can locate the public IP address of your instance by going to the list of running instances in the AWS Console, selecting the instance and looking in the Description tab.
• In **Connection Name**, enter a name for this connection (e.g., Workstation-Win)
• Click **Next**
• If you get a popup that says “Cannot verify your connection”, click **Connect Insecurely** to continue
  o **Note**: Windows sees the connection as insecure, but because the PCoIP protocol used by Teradici is inherently secure, your connection is still completely safe. From a [Teradici support page](#):

  ![Note: About insecure connections](image)

  o For links to more information about Teradici security, please see the [Appendix](#).
• Enter the **Username** and **Password**
  o Try logging in as a user (e.g., jason). Your Active Directory DNS name (e.g., mystudio.com) should already be selected in the drop down on the left, so there is no need to enter it before the username.
  o **Note**: Sometimes it takes an extra moment after rebooting for your instance to reconnect to Active Directory. If you don’t see your Active Directory DNS name in the drop down on the left, exit the Teradici client, wait a minute then try again.
Click **Login** to connect to your instance.

Once connected, Teradici works much like Remote Desktop. A new window will open that shows the desktop of your instance.

- One difference from Remote Desktop is how to disconnect your session. **For now, please keep your Teradici session open** so that you can start creating a Teradici AMI in the next section.
- In the future, when you want to end your Teradici session, you will select **Connection** in the Teradici window's menu bar, then select **Disconnect**.
Create a Teradici AMI and Launch Template

Since you now have Teradici working on one Windows workstation instance, we’re going to create a new AMI and launch template to make it really easy to launch new workstations that will already be set up and ready to go.

Preparing Your Instance

- Disconnect from your FSx Drive (Z:)
  - Open the File Explorer
  - Under This PC on the left, click on the Z: drive with the Right Mouse Button and choose Disconnect
• Go to the **Start Menu** and launch **Ec2LaunchSettings**

• You may be prompted to enter the Admin user (e.g., Admin) and password for your domain

• After the Ec2 Launches Settings window opens (it may take a minute), check the following:
  
  o Make sure **Set Computer Name** is selected
  
  o Check that **Administrator Password** is set to **Specify** and input the Administrator Password for your Active Directory (e.g., password for mystudio\Admin)

• Select **Run EC2Launch on every boot**

• Click **Shutdown with Sysprep**
• Click Yes
• This will shutdown your instance after a few processes run. Note: It can take a few minutes for Sysprep to run and shut down the instance. Don’t worry if it looks like nothing is happening, it will eventually finish and shut down on its own.

Create Teradici Workstation AMI
• Navigate back to the EC2 Dashboard and find the Workstation_Win_Teradici instance that has just been shut down. Note: If the instance state is still listed as running, refresh the page in your browser to see the updated status. Wait until the status is listed as stopped before continuing to the next step.

<table>
<thead>
<tr>
<th>Instance</th>
<th>m5.2xlarge</th>
<th>stopped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workstation_Win</td>
<td>g3.4xlarge</td>
<td>stopped</td>
</tr>
<tr>
<td>Workstation_Win_Teradici</td>
<td>g4dn.4xlarge</td>
<td>stopped</td>
</tr>
</tbody>
</table>

• Right-click on the instance and choose Image → Create Image
• Give it an appropriate name (e.g., My-Studio-Teradici-Workstation-AMI)
• Give your workstation AMI a description if you want.

• Click Create Image, then click the Close button
• In the green confirmation message, click the View pending image link
• The AMI will take 5-10 minutes to become available. While you’re waiting, please do the following:
  o Create a Studio tag (e.g., My-Studio) and Name tag (e.g., My-Studio-Teradici-Workstation-AMI) for your AMI.
Create a new secret for your Teradici registration code, see instructions below.

Create a New Secret for Your Registration Code

Each new instance you launch needs to be registered as a host before Teradici will work. Instead of requiring you to re-enter the registration code each time you launch an instance, we’re going to create a secret in Secrets Manager to securely store it. Then we’ll add some lines to the user data of the launch template to automatically retrieve that code and register the new instance as a host.

- Go to Services → Security, Identity, & Compliance→Secrets Manager
- Click the Store a new secret button
- Under Select secret type, select Other type of secrets
- Under Specify the key/value pairs to be stored in this secret enter a key/value pair for your Teradici registration code
  - In the first field, enter a key name of TeradiciRegistrationCode
  - In the field to the right of that, enter the Teradici registration code that you used when installing Teradici on your workstation instance
  - At the bottom of the page, under Select the encryption key, check that DefaultEncryptionKey is selected.
Click the Next button.

Under Secret name, enter **Teradici/RegistrationCode**

Enter an optional description

Under Tags - optional, enter Key: **Studio** and Value: `<name of your studio>` (e.g., **My-Studio**)
• Click the Next button.
• Under Configure automatic rotation, check that Disable automatic rotation is selected.
• Click the Next button.
• Review the information for your secret and if all looks well, click the Store button at the bottom of the page.

Check that Your AMI Is Ready

Before creating a launch template, you need to make sure that the AMI you created above is ready.

• Go to Services → EC2
• Click on AMIs in the left panel
• Find your Teradici AMI in the list of AMIs. Once the status is listed as available, you’re good to go
Create Workstation Launch Template

Now that your secret has been stored and your AMI is ready, you can create a Teradici launch template.

- Click on Instances in the left panel
- Right mouse click on your Workstation_Win_Teradici instance and choose Create Template From Instance
- Name your launch template (e.g., My-Studio-Teradici-Workstation-LT).
- Give it a description if you want

![Launch template name and description](image)

- You will need to change the AMI ID to point to the one that you previously created
  - In the AMI dropdown, scroll down to the My AMIs section and then select the Teradici Workstation AMI (e.g., My-Studio-Teradici-Workstation-AMI) that you just made.

![Launch template contents](image)
• Under **Network interfaces**, set **Auto-assign public IP** to **Enable**, otherwise you will not be able to connect to the instances you launch.

• Also under **Network interfaces**, check **Security Group ID** field and make sure that ids for the following three security groups are listed:
  - your **Deadline Security Group** (e.g., My-Studio-Deadline-SG)
  - your **Remote Desktop Security Group** (e.g., My-Studio-Remote-Desktop-SG)
  - and your **Teradici Security Group** (e.g., My-Studio-Teradici-SG)
  - If any security group is missing, add it now, being careful to put a comma between security group IDs
  - **Note**: If you don’t anticipate needing to use Remote Desktop to connect to your instances anymore, then you may remove the Remote Desktop Security Group from the list of Security Group IDs for increased security.

![Network interfaces](image)

• Open **Advanced Details**
  - In **User data**, expand the size of the entry field to make it easier to read by clicking and dragging on the bottom right corner:
<shift>+click on the image below to open a new browser tab with the text that needs to be entered into the User data entry field:

```powershell
$secret_manager = Get-SCSecretValue -SecretId Admin/DomainJoin
$secret = $secret_manager.SecretString | ConvertFrom-Json
```

- <shift>+click on the image above to open the text file in a new tab.

- Cut and paste the text from the browser tab into the User data entry field, adding it after the “Add-LocalGroupMember” line, but before the “</powershell>” line.

- After adding those lines, your user data will look similar to this:
The new lines that we’ve added with retrieve your Teradici registration code from Secrets Manager and run a command to register this new instance as a Teradici host.

- Click Create launch template

You can use your new launch template to launch new Teradici-enabled Windows workstations whenever you need. They will be all ready to connect to with the Teradici client, no further set up needed.

Launch a New Teradici Workstation

- Go to Services → EC2 and click on Launch Templates in the left panel
- Select your Workstation launch template (e.g., My-Studio-Teradici-Workstation-LT). Refer to your cheat sheet, if needed.
- Choose Actions → Launch instance from template
- Select the version (if this is your first time running through the tutorial you’ll select version 1)
- Choose Launch instance from template
- Go back to Services → EC2 click on Running instances
- When the instance is done initializing and shows 2/2 checks passed, you can use the Teradici client to log into using the same procedure as before.
  - **Note**: As a reminder, sometimes it takes an extra few minutes after 2/2 checks are passed for the instance to be fully ready to login. If your first login attempt fails, please wait a few minutes and try again.

- Once you confirm that your new Workstation_Win_Teradici instance is running correctly, you can disconnect from it by selecting Connection in the Teradici windows’s menu bar, then Disconnect
Troubleshooting

If you ever get a license error when attempting to connect to an instance via the Teradici client, you can try re-registering it as a host to fix the problem.

![ERROR]

PCoIP Agent has no available licenses to launch the remote session. Please try again later. If this failure persists, please report this failure to your system administrator.

Close

Sometimes this can happen if you have only one Teradici demo license that was previously active on another virtual workstation and then try to activate it on a new workstation. Regardless of the exact situation, the instructions below should get things working again.

Re-register an Instance as a Teradici Host

- Connect to your instance using Remote Desktop
- Login as Administrator, using your Active Directory Admin password
- Launch PowerShell
- Navigate to the PCoIP Agent folder by running:

```bash
cd 'C:\Program Files\Teradici\PCoIP Agent'
```

- Then run this command, making sure to replace `xxxxxxxxxx@YYYY-YYYY-YYYY-YYYY` with your registration code:

```bash
."\pc opi-register-host.ps1 -RegistrationCode xxxxxxxxxx@YYYY-YYYY-YYYY-YYYY
```

- Restart your instance
- After the instance has restarted, reconnect using Teradici

Optimizing Teradici for Your Network

There are a number of settings for the Teradici Graphics Agent that you can use to optimize performance for your local network. More information on the different settings can be found on Teradici’s support page: Teradici Graphics Agent Configuration Guide.
Review

In this tutorial, you installed Teradici Cloud Access Software on a Windows workstation instance so that you can enjoy high performance desktop streaming. You also created a new AMI and launch template so that you can easily launch as many Teradici-enabled Windows workstations as you need.

Shut Down Notes

If you no longer need the Teradici workstation instance that you used to create the new AMI and launch template, you can terminate it at this time. Otherwise you can restart that instance and assign it to yourself or one of your artists.

Appendix

List of Studio in the Cloud Tutorials

Tutorial 1: Getting Started with AWS Virtual Workstations
Tutorial 2: Creating a VPC and Active Directory for Your Studio
Tutorial 3: Setting Up an FSx File System and User Accounts
Tutorial 4: Building a Render Scheduler with AWS Thinkbox Deadline
Tutorial 5: Installing Applications and Creating a Workstation AMI
Tutorial 6: Setting Up a Linux Farm Worker and Spot Fleet Request
Tutorial 7: Onboarding New Artists and Sample Workflow
Tutorial 8: Add-On - Upgrading to Teradici for Desktop Streaming - this page
Tutorial 9: Add-On – Using a Linux Instance for a Render Scheduler

Links to AWS Documentation

- AWS Direct Connect
- AWS VPN
- VPN Connections to AWS VPC

Downloads

- Important Information Cheat Sheet

Links to Other Resources

- Teradici Cloud Access Software
- Getting Started Guide - Connecting with a PCoIP Client
- What is PCoIP Technology?
- Cloud Access Software Security Features
- PCoIP Software Client Security Modes
• Installing Certificates on PCoIP Client for Windows
• Teradici Graphics Agent Configuration Guide