Dell Precision Appliance for Wyse
User's Guide

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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Overview

The **Dell Precision Appliance for Wyse** is a 2 Rack Unit (2U) pre-configured appliance, which is configured on the **Dell Precision Rack 7910**. The **Dell Precision Appliance for Wyse** is an Independent Software Vendor (ISV) certified solution that offers flexible deployment, scalability, and management of a high-performance virtual workstation environment. Using this solution, you can achieve mobile, need-based access to graphics-intensive applications and data along with security.

The **Dell Precision Appliance for Wyse** currently supports two different graphics configuration options:

- Dedicated (vDGA) — Uses the *NVIDIA Quadro* graphics cards and *Teradici Host cards*.
- Shared (NVIDIA vGPU) — Uses the *NVIDIA GRID K2A* graphics cards

The choice of the graphics option will be dependent on your computing environment, software and business requirements, and use cases.

After installing the **Dell Precision Appliance for Wyse**, you can start up the system, Connect the system to the network, configure virtual machines (VMs) and connect remotely from your user endpoint.

Solution overview

The **Dell Precision Appliance for Wyse** comprises two hardware configuration options:

- **Dedicated GPU (NVIDIA Quadro Graphics)** — Up to 3 Virtual Machines (VMs) per appliance in this mode.
- **Shared GPU (NVIDIA GRID K2A Graphics)** — Up to 4 or 8 VMs per appliance in this mode.

The hardware configurations for these two options are similar and they differ mainly in the graphics options. To configure the virtual machines for your solution, you can configure the VMs using the **Quick Start Tool**. For more information on the **Quick Start Tool**, see Using the Quick Start Tool.

Hardware components

Figure 1 shows the hardware components for the **Dell Precision Rack 7910**'s dedicated GPU option:

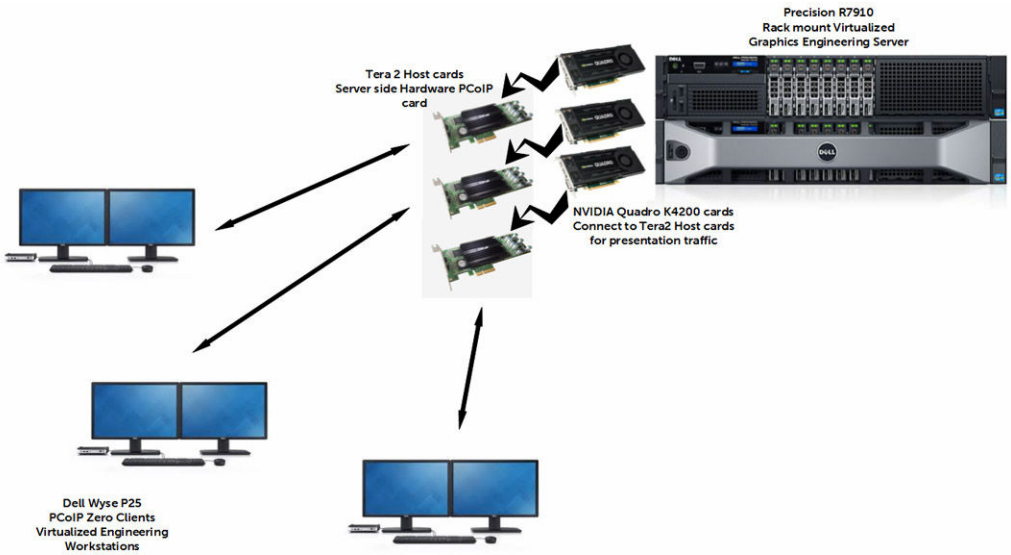


Figure 1. Dedicated GPU solution

Figure 2 shows the hardware components for the **Dell Precision Rack 7910**'s shared GPU option.

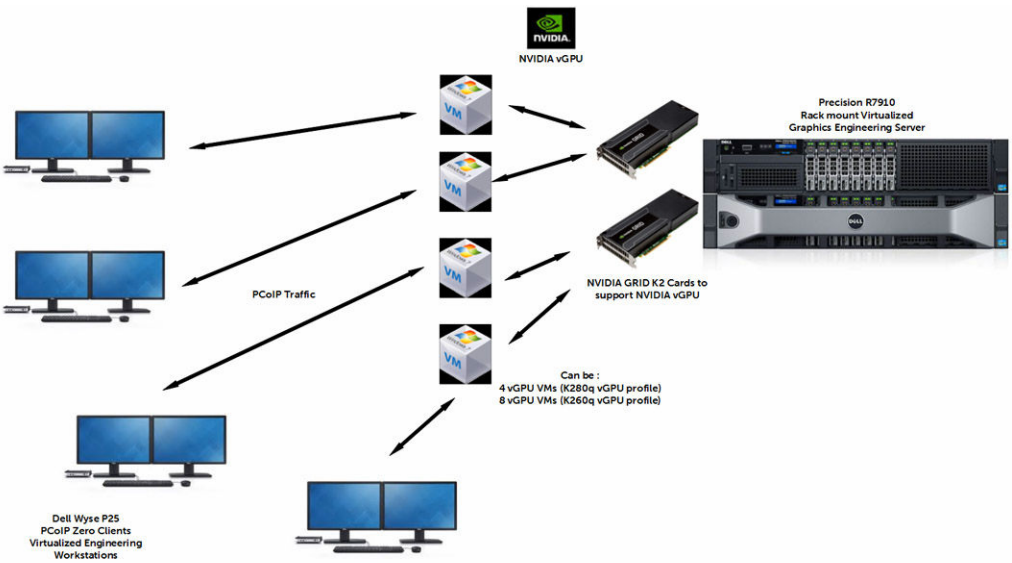


Figure 2. Shared GPU solution

Software components

Table 1 describes the driver/firmware/software versions that are required for successful installation and configuration of a GPU enabled virtual desktop; either in the dedicated GPU or in the shared GPU configurations. The software versions listed in the table are available at the **Dell.com/support** for **Dell Precision Rack 7910**.

Table 1. Required software and versions

Software	Description	Version
Server OS – Dedicated Graphics version	VMware vSphere ESXi	Dell Custom Image: 6.0 Update 1 – Build 3029758; A00
Server OS – vGPU, or Shared Graphics version	VMware vSphere ESXi	Dell Custom Image: 6.0 – Build 2494585; A00
R7910 BIOS	BIOS for the Appliance	1.4.3
R7910 Firmware	Firmware for the Appliance	2.21.21.21
iDRAC with Lifecycle Controller	Server Out of Band Management and Configuration	2.21.21.21; A00
Virtual Desktop OS	Microsoft Windows	• Windows 7 x64 • Windows 8.1 x64
Virtual Desktop OS	Red Hat Enterprise Linux	7
VMware VM HW Version – Dedicated Graphics version	Hardware version for the virtual machine	11
VMware HW Version – vGPU, or Shared Graphics version	Hardware version for the virtual machine	11
VMware VM Boot Options – Dedicated Graphics version	Boot Firmware for the virtual machine	EFI
NVIDIA GPU Driver – vGPU, or Shared Graphics version. NOTE: The Quick Start Tool provisions the VIB to the ESXi host.	NVIDIA GRID vGPU Host driver for VMware vSphere ESXi 6.0, and Client Drivers for Win7 and Win8.1	Host_Driver_346.42-1OEM.600.0.0.2159203; A00
NVIDIA GPU Driver – Dedicated Graphics version	NVIDIA GPU Client Drivers for Win 7 and Win8.1	Video_Driver_H3KDT_WN_9.18.13.4066; A00
Teradici PCoIP Firmware (embedded on card) – Dedicated Graphics version	Tera2 host card firmware	4.7.0; A00
Client Software – Dedicated Graphics version	Teradici PCoIP Software Client	4.2.2; A00

Dedicated GPU appliance

The dedicated GPU version of the appliance is equipped with three **Quadro K4200 GPUs** and three **Teradici host cards**. This version of the appliance provides high-performance encoding of the PCoIP display protocol. As a user of this appliance, you will receive a dedicated GPU, a host card, and a portion of the R7910 CPU, Memory, and disk space. The Quick Start Tool enables the administrator to setup and configure the appliance, and the end user virtual machine resources, such as dedicated GPU, host card, and the guest OS virtualized resources (CPU, memory, network, and disk space).

Prerequisites for the GPU appliance

Before configuring the dedicated GPU version of the appliance, you must be aware of:

- Hypervisor User name and Password
- Hypervisor Host License (optional)

NOTE: The prerequisites required are available in the Using the Quick Start Tool section.

NVIDIA GPU driver

The installation of the **NVIDIA graphics driver** is required on each virtual machine. You can download the GPU driver available at **Dell.com/support** for **Dell Precision Rack 7910**.

Installing the Teradici host card PCoIP software

The installation of the **Teradici PCoIP Host software** is required on each virtual machine for the dedicated GPU appliance. You can download the **Teradici PCoIP Host software** at the **Dell.com/support** for **Dell Precision Rack 7910**.

VMware Horizon View bits (optional)

The virtual machines configured for the **Dell Precision Rack 7910** can be integrated into a VMware Horizon View environment. The primary purposes for integrating the virtual machines into the VMware Horizontal View environment are:

- **Remote accessibility** — Enables you to get connected remotely with the target system's memory, CPU, and disk space and allows you to get access to the other remote users' data.
- **Brokering services** — Enables you to provide the brokering services to the target system's virtual machines.

For more information on integrating the virtual machine into a VMware Horizon View environment, see VMware Documentation.

NOTE: The VMware documentation has information about the PCoIP Host Cards. You can ignore the information that are not relevant to the PCoIP Host Cards.

Shared GPU appliance

The shared GPU version of the appliance is equipped with dual **NVIDIA GRID K2A GPUs**. The GPUs are virtualized using VMware and vGPU technology. A total of 4 or 8 Virtual Machines (VMs) can receive a virtual GPU with a K280Q or K260Q profile respectively. The CPU, memory, and disk space are evenly divided between the 4 or 8 VMs. The Quick Start Tool enables the administrator to setup and configure the appliance, and the end user virtual machine resources, such as dedicated GPU, host card, and the guest OS virtualized resources (CPU, memory, network, and disk space).

Prerequisites for the shared GPU appliance

Before configuring the shared GPU version of the appliance, must be aware of:

- vSphere hypervisor User name and Password

- vSphere hypervisor Host License (optional)

NOTE: The prerequisites required are available in the Using the Quick Start Tool section.

NVIDIA GPU driver

The installation of the **NVIDIA graphics driver** is required on each virtual machine. You can download the GPU driver available at **Dell.com/support** for **Dell Precision Rack 7910**.

VMware Horizon View bits (optional)

The virtual machines configured for the **Dell Precision Rack 7910** can be integrated into a VMware Horizon View environment. The primary purposes for integrating the virtual machines into the VMware Horizontal View environment are:

- **Remote accessibility** — Enables you to get connected remotely with the target system's memory, CPU, and disk space and allows you to get access to the other remote users' data.
- **Brokering services** — Enables you to provide the brokering services to the target system's virtual machines.

For more information on creating the Manual Desktop Pool, see VMware Documentation.

2

Setting up the dedicated GPU appliance

This solution is equipped with three host cards and three GPUs on the **Dell Precision Rack 7910**. Figure 3 shows the setup process on how to connect the GPUs to the host cards:

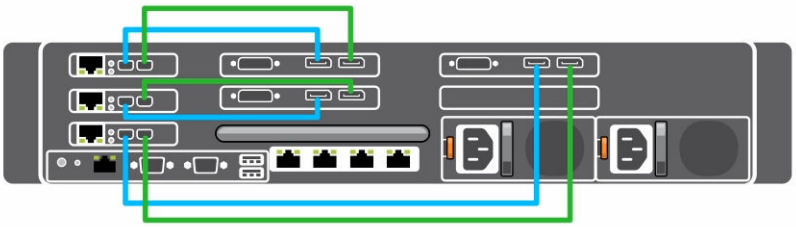


Figure 3. Dedicated GPU appliance

Table 2. Cable description

Cables	Description
	Primary DisplayPort cables
	Secondary DisplayPort cables

BIOS settings

It is recommended to have the required BIOS setting and version in the **Dell Precision Rack 7910**, for effectively configuring the dedicated GPU or shared GPU appliances.

Configuring the BIOS

The recommended BIOS version for **Dell Precision Rack 7910** is version 1.4.3. If the BIOS is of an earlier version, it is recommended to update the version to 1.4.3. This BIOS version is available for download at **Dell.com/support**. BIOS setting required:

- USB 3.0: Off
- System Profile = Performance/Custom
  - C States: On
  - C1E States: On
- Embedded Video: On
- Above 4 GB MMIO: On

Updating the BIOS

If the BIOS requires an update, you can use the BIOS Update Utility that is accessible from the Boot Manager. For more information, see the *Updating the BIOS version* topic in the **Dell Precision Rack 7910** *Owner's Manual*.

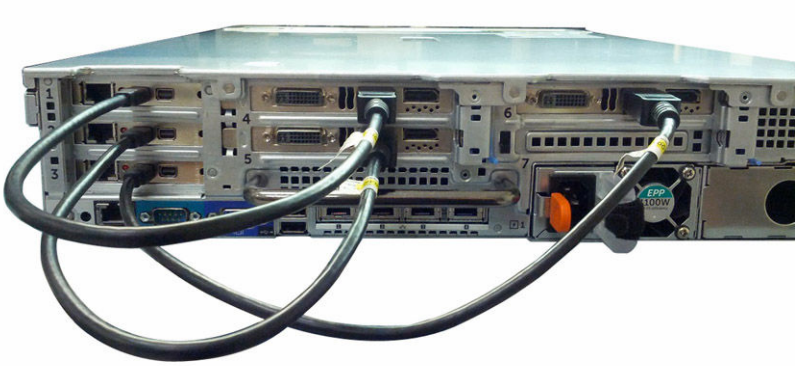
Connecting the GPUs to the host cards

The cabling needs to be done on the **Dell Precision Rack 7910** in the following order:

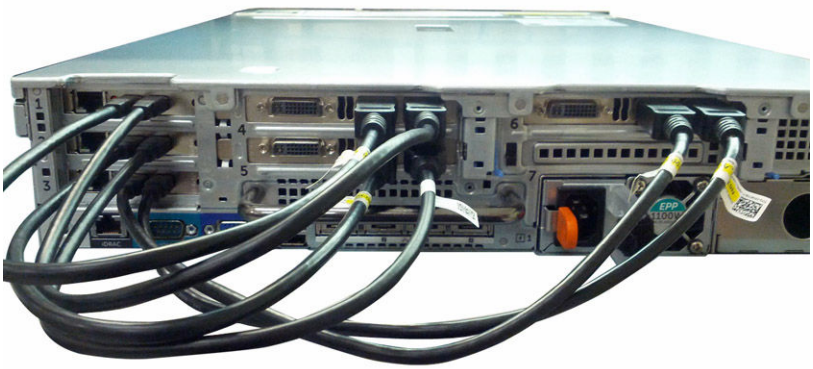
Table 3. GPU to host card

Host cards		GPUs
PCI Slot 1	<—>	PCI Slot 4
PCI Slot 2	<—>	PCI Slot 5
PCI Slot 3	<—>	PCI Slot 6

1. Connect the mini DisplayPort to DisplayPort cables from port 2 on the GPUs to port 1 on the host cards.



2. Connect the mini DisplayPort to DisplayPort cables from port 3 on the GPUs to port 2 on the host cards.



3. Ensure all the cables are firmly plugged in.

The system is now ready for setup and configuration.

Configuring the host cards for use with or without VMware Horizon View

NOTE: This section applies only if you have purchased the **Dell Precision Rack 7910** with host cards and GPUs solution. This section may also be beneficial if you are not using **VMware Horizon View**.

You should perform these steps before using the **Dell Precision Rack 7910**'s Quick Start Tool. These steps will configure the host cards to successfully integrate into a VMware Horizon View environment. Additionally, there are some benefits in following these steps when not integrating into a VMware Horizon View environment. Enabling the Host Driver Function will allow you or the administrator to log into one of the virtual machines and access the associated **Teradici Host Card** information, such as IP addresses and PCoIP session information.

Prerequisites

- IP addresses should be assigned to each **Teradici host card** using either DHCP or statically set.
- Before using the Quick Start Tool, follow the procedures at Enabling the Host Driver Function and Installing the PCoIP Host Driver Software on a Host PC.

Enabling the audio

For each **Teradici host card**, you need to enable the audio through the web interface of the host card.

1. Log into the administrative web interface of the host card.
2. From the menu, select **Configuration** > **Audio** menu and select the **Enable Audio** check box.
3. Restart the **Dell Precision Appliance for Wyse**.

   NOTE: The restart will be delayed until the host driver function is enabled.

Enabling the host driver function

For each **Teradici host card**, you need to enable the host driver function through the web interface of the host card.

1. Log into the administrative web interface for the host card.
2. From the menu, select **Configuration > Host Driver Function** menu, enable the **Host Driver Function**.
3. Restart the **Dell Precision Appliance for Wyse**.

3

Using the Quick Start Tool

NOTE:

- The prerequisite to install the Quick Start Tool is to install the *Microsoft .Net* version 4.0 or later.
- If you are using an older version (1.0) of the Quick Start Tool, it is recommended to download and install the latest version (1.1) of the **Quick Start Tool** from the **Drivers and Downloads** section available at **Dell.com/support** page for **Dell Precision Rack 7910**.

It is highly recommended to use the latest version of the Quick Start Tool for configuring the **Dell Precision Appliance for Wyse**. The Quick Start Tool:

- Ensures that the host and resulting virtual machines are configured correctly and consistently.
- Automates a difficult and complex setup procedure and turns this into just a few button clicks.

After configuring the Virtual Machines (VMs) (either with dedicated GPUs or with shared GPUs) using the Quick Start Tool, each VM requires:

- The VM hardware version to be 11.
- The VM Boot Option to be set to EFI. For more information about the EFI Boot Option, see the VMware documentation - 28494.
- The GK104 Audio controller to be added as a PCI device.
- The `pciPassthru6.msiEnabled=FALSE` to be added to the vmx file.
- The `pciPassthru.use64bitMMIO=TRUE` to be added to the vmx file. For more information about this parameter, see the VMware documentation - KB 2139299.

NOTE:

- All these prerequisites are mandatory only if you are using an older version of the Quick Start Tool.
- The latest version of the Quick Start Tool is automated with all these prerequisites to the VMs, during configuration.
- For more details about each prerequisite, see the Troubleshooting section.

The Quick Start Tool enables you to setup and configure the virtual machines for the **Dell Precision Rack 7910** that has already been racked, cabled, and turned on.

Installing the Quick Start Tool

After you download the Quick Start Tool from the **Dell.com/support** page for **Dell Precision Rack 7910**, double-click the executable and follow the instructions on the screen to complete the installation process.

NOTE: For any issues, see the Troubleshooting section for possible cause and workaround. All the troubleshooting instructions might not be applicable for an older version of the Quick Start Tool.

Prerequisites for using the Quick Start Tool

Before you configure the virtual machine for your **Dell Precision Rack 7910**, your system should be racked, cabled, connected to the network, and turned on. Additionally, it is recommended to get the following:

- Management IP address of the **Dell Precision Rack 7910**
- User name and password of the **Dell Precision Rack 7910**
- IP addresses for up to two NTP servers (optional)
- Host License (optional)
- Host names for the virtual machines
- Operating System choices for the virtual machines. The operating system can be:
  - Windows 7
  - Windows 8.1
  - Red Hat Enterprise Linux 7
- Operating system installation media

Using the Quick Start Tool to configure virtual machines with dedicated GPUs

NOTE: Before you use the Quick Start Tool, make sure you have the target system connected to network, cabled, and turned on.

To create virtual machines using the Quick Start Tool:

1. Launch the **Quick Start Tool**.
   The **Welcome** screen is displayed.
2. Click **Next**.
   The **Host Connection** screen is displayed.
3. Under **Host Connection**:
   a. Enter the **Management IP**. For example: **10.10.1.11**
   b. Enter the **Username**.
   c. Enter the **Password**.

      NOTE: The default Username is `root` and no password required.

   d. Click **Test Connection** to check if the credentials that you entered are valid.
4. After the connection is successful, click **Next**.
   The **Host Graphics Configuration** screen is displayed and shows the number of GPUs installed on your workstation.
5. Click **Next**.
   The **Host Configuration** screen is displayed.
6. Under **Host Options**:
   a. Enter the **VMware vSphere license**.
   b. Enter the **Primary NTP Server** IP address.

c. Enter the **Secondary NTP Server** IP address.

NOTE: The information under **Host Options** are optional. You can skip these options, if desired. If you skip the **VMware vSphere license** option, your workstation will run for a 60-day trial period.

7. Click **Next**.

   The **Virtual Machine Configuration** screen is displayed.

8. Under **Virtual Machine Configuration**:
   a. Enter a name for your virtual machines of your choice. For example: **VM1**
   b. Select the operating system for your virtual machines. For example: **Windows 7, Windows 8.1**
9. Click **Next**.

   The **Review** screen is displayed.

10. Review all the data that you have entered are valid. You can edit the information, by selecting **Back** option.
11. Click **Finish**.

    The Quick Start Tool will start to create the virtual machines. After the tool completes the virtual machine configuration process, you can see the configured virtual machines, under **Launch Virtual Machines**. To launch the virtual machines, click on the configured virtual machines.

12. Click **Done**.

Using the Quick Start Tool to configure virtual machines with shared GPUs

NOTE: Before you use the Quick Start Tool, make sure you have your target system configured, connected to network, cabled, and turned on.

To create virtual machines using the Quick Start Tool:

1. Launch the **Quick Start Tool**.

   The **Welcome** screen is displayed.

2. Click **Next**.

   The **Host Connection** screen is displayed.

3. Under **Host Connection**:
   a. Enter the **Management IP**. For example: **10.10.1.11**
   b. Enter the **Username**.
   c. Enter the **Password**.

      NOTE: The default Username is `root` and no password required.

   d. Click **Test Connection** to check if the credentials that you entered are valid.
4. After the connection is successful, click **Next**.

   The **Host Graphics Configuration** screen is displayed and shows the number of GPUs installed on your workstation.

5. Click **Next**.

   The **Host Configuration** screen is displayed.

6. Under **Host Options**:
   a. Enter the **VMware vSphere license**.
   b. Enter the **Primary NTP Server** IP address.
   c. Enter the **Secondary NTP Server** IP address.

NOTE: The information under **Host Options** are optional. You can skip these options, if desired. If you skip the **VMware vSphere license** option, your workstation will run for a 60-day trial period.

7. Click **Next**.

   The **Virtual Machine Configuration** screen is displayed.

8. Under **Virtual Machine Configuration**, select the number of virtual machines that you want to configure. The default option is **4 Virtual Machines**.
   a. Enter a name for your virtual machines of your choice. For example: **VM1**
   b. Select the operating system for your virtual machines. For example: **Windows 7, Windows 8.1**

   NOTE: You can also clear the *Do you want to create VMs* and proceed. The Quick Start Tool, by default, will configure 4 Virtual Machines with default options for virtual machines names and operating systems.

9. Click **Next**.

   The **Review** screen is displayed.

10. Review all the data that you have entered are valid. You can edit the information, by selecting **Back** option.
11. Click **Finish**.

    The Quick Start Tool will start to create the virtual machines. After the tool completes the virtual machine configuration process, you can see the configured virtual machines, under **Launch Virtual Machines**. To launch the virtual machines, click on the configured virtual machines.

12. Click **Done**.

Using the Quick Start Tool in command line interface

You can configure the virtual machines using the command line interface. The command that you need to enter in the command prompt mode is:

```
DellWyseQST.exe -ip=<ip> -username=<username> -password=<pwd> [-
license=<license>] [-ntp1=<ntp1>] [-ntp2=<ntp2>] [-vmname=<vm>] [-
osType=<0,1,2>] [-numVGPU=<numberofVGPUs>]
```

Table 4. CLI description

Command	Description
IP	IP address of the target Dell Server. For example: **10.10.11.21**
username	Username of the root account that has administrator rights on the target server.
password	Password of the root account.
license	VMware vSphere license (optional).
ntp1	Primary and secondary NTP server IP values. For example: **10.10.11.11** OR **test.abc.com**. (optional)
ntp2	Primary and secondary NTP server IP values. For example: **10.10.11.11** OR **test.abc.com**. (optional)
vmname	Name of the virtual machine that gets created (optional). The default virtual machine name is `VM<n>`. You can provide the custom virtual machine name using a comma separated list. For example: `vmname=TESTVM1,TESTVM2,TESTVM3`, and so on.

Command	Description
numVGPU	Number of virtual machines to create (optional). Valid values are 0,4 and 8. The Default `numVGPU` is 4, if not specified. This value is only applicable if the system is equipped with the shared vGPU graphics option.
osType	Operating System of virtual machine that gets created (optional). `OsType` values should be separated by a comma. The default `OsType` is Windows 7 x64 for all VMs created. The total number of `OsTypes` should match with numVGPU values. `OsType` values should be either 0, 1 or 2. • `osType 0=Windows 7 x64` • `osType 1=Windows 8.1 x64` • `osType 2=RHEL x64`

After you type the command, press **Enter** to configure the virtual machines. You will get a notification if there is any error in the command.

To verify if the virtual machine is configured, launch the **VMware vSphere client**, type the **IP address** that you used during the configuration, and click **Connect**.

4

Installing the VM guest operating system

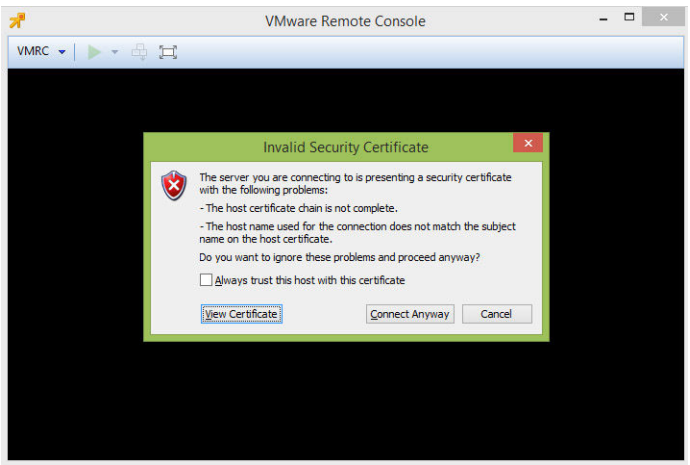
Installing Microsoft Windows 7

NOTE:

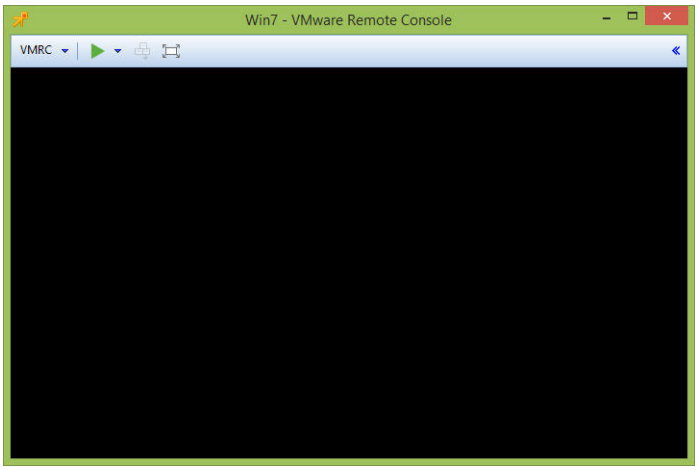
- If the VMs are configured using an older version of the Quick Start Tool, see the prerequisites for the VMs in Using the Quick Start Tool topic.
- Before you install the Microsoft Windows 8.1 operating system, make sure that you have the:
  - Microsoft Windows 8.1 Disk Image File (ISO), CD, USB, or network install.
  - VM Boot Option set to **EFI**. For more information about the EFI Boot Option, see the VMware documentation - 28494.
- The mouse cursor may not be responsive until you install the VMware Tools. You may have to use the keyboard for performing the following steps. See the Installing the VMware Tools topic to install the VMware Tools for your operating system.

1. Launch the **Quick Start Tool**.
2. Click the **Finish** tab.
3. Under Virtual Machine Configuration, click the configured VM.

   The VMware Remote Console opens and the Invalid Security Certificate dialog box is displayed.
4. Click **Connect Anyway**.



5. Click the green triangle to start the virtual machine.



6. Follow the instructions to install Microsoft Windows 7 at Microsoft Website.

Installing the graphics driver

Before you install the graphics driver, make sure you download the graphics driver available at **Dell.com/support** for **Dell Precision Rack 7910**, under **Drivers and Downloads**. After you download the graphics driver, perform the following steps:

1. Double-click the driver .exe file.
   The **User Account Control** dialog box is displayed.
2. Click **Yes**.
   The **Update Package** dialog box is displayed.
3. Click **INSTALL**.
   The **NVIDIA Installer** dialog box is displayed.
4. Click **AGREE AND CONTINUE**.
5. Select **Express (Recommended)** and click **NEXT**.

   NOTE: The default setting is **Express (Recommended)**.

   The graphics driver installation will begin.
6. When the installation is complete, click **RESTART NOW**.

   NOTE: After you restart, the default console will be the NVIDIA GPU. The VMware Remote Console (VMRC) will show a blank screen. To see the desktop, press Windows key + P + left arrow key, and then press **Enter**.

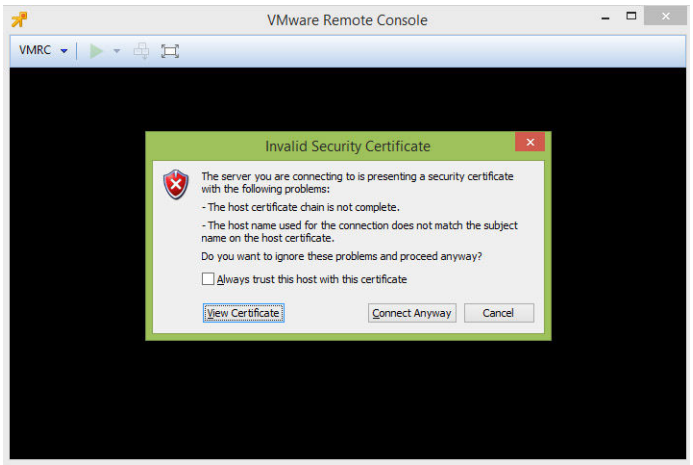
Installing Microsoft Windows 8.1

NOTE:

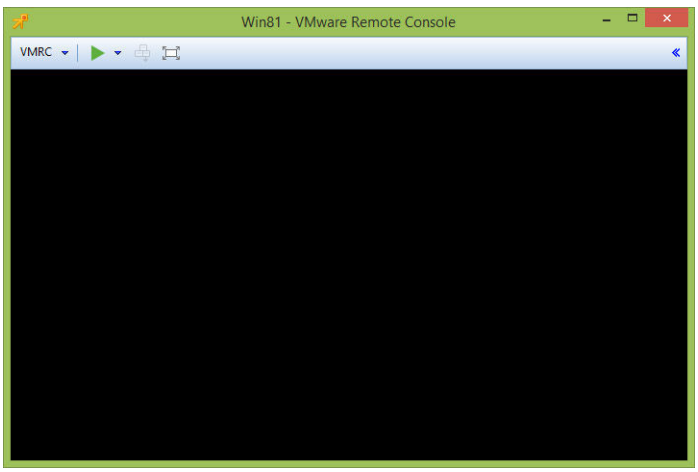
- If the VMs are configured using an older version of the Quick Start Tool, see the prerequisites for the VMs in Using the Quick Start Tool topic.
- Before you install the Microsoft Windows 8.1 operating system, make sure that you have the:
  - Microsoft Windows 8.1 Disk Image File (ISO), CD, USB, or network install.
  - VM Boot Option set to **EFI**. For more information about the EFI Boot Option, see the VMware documentation - 28494.
- The mouse cursor may not be responsive until you install the VMware Tools. You may have to use the keyboard for performing the following steps. See the Installing the VMware Tools topic to install the VMware Tools for your operating system.

1. Launch the **Quick Start Tool**.
2. Click the **Finish** tab.
3. Under Virtual Machine Configuration, click the configured VM.

   The VMware Remote Console opens and the Invalid Security Certificate dialog box is displayed.
4. Click **Connect Anyway**.



5. Click the green triangle to start the virtual machine.



6. Follow the instructions to install Microsoft Windows 8.1 at Microsoft Website.

Installing the graphics driver

Before you install the graphics driver, make sure you download the graphics driver available at **Dell.com/support** for **Dell Precision Rack 7910**, under **Drivers and Downloads**. After you download the graphics driver, perform the following steps:

1. Double-click the driver .exe file.

   The **User Account Control** dialog box is displayed.
2. Click **Yes**.

   The **Update Package** dialog box is displayed.
3. Click **INSTALL**.

   The **NVIDIA Installer** dialog box is displayed.
4. Click **AGREE AND CONTINUE**.
5. Select **Express (Recommended)** and click **NEXT**.

   NOTE: The default setting is **Express (Recommended)**.

   The graphics driver installation will begin.
6. When the installation is complete, click **CLOSE**.

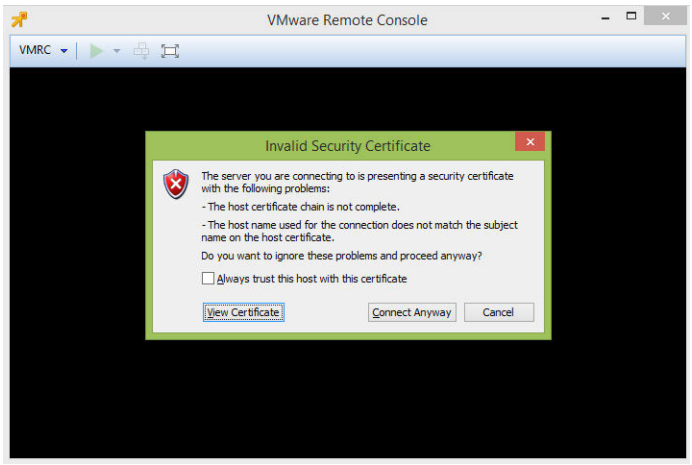
Installing RedHat Enterprise Linux 7

NOTE:

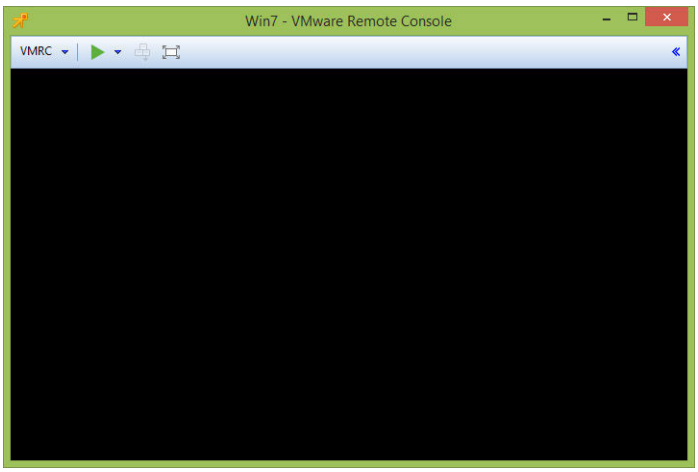
- If the VMs are configured using an older version of the Quick Start Tool, see the prerequisites for the VMs in Using the Quick Start Tool topic.
- Before you install the Red Hat Enterprise Linux 7 operating system, make sure that you have the Red Hat Enterprise Linux 7 Disk Image File (ISO), CD, USB, or network install.
- The mouse cursor may not be responsive until you install the VMware Tools. You may have to use the keyboard for performing the following steps. See the Installing the VMware Tools topic to install the VMware Tools for your operating system.

1. Launch the **Quick Start Tool**.
2. Click the **Finish** tab.
3. Under Virtual Machine Configuration, click the configured VM.

   The VMware Remote Console opens and the Invalid Security Certificate dialog box is displayed.
4. Click **Connect Anyway**.



5. Click the green triangle to start the virtual machine.



6. Follow the instructions to install Red Hat Enterprise Linux 7 at access.redhat.com/documentation/en-US/Red_Hat_Enterprise_Linux/7/html/Installation_Guide/

Installing the graphics driver

Before you install the graphics driver, make sure you download the latest version of the NVIDIA graphics driver available at **Dell.com/support** for **Dell Precision Rack 7910**. After you download the graphics driver, perform the following steps:

1. Log in to the VM as `root`.
2. Copy the Long Live x64 Linux driver to the /root folder using a file transfer method such as SCP.
3. Run **sh NVIDIA....sh**
4. Accept the license agreement.
5. Press **Enter** to select **OK**.
6. Select **Yes** and press **Enter**.
7. Press **Enter** to select **OK**.
8. Run **dracut -v -f**
9. Reboot the VM.

10. Log in to the VM as root.
11. Register **RHEL** with subscription and skip to **step 12**. Otherwise, install the following from the ISO following steps:
    a. **mkdir /media/cdrom**
    b. **mount /dev/cdrom /media/cdrom**
    c. **vi /etc/yum.repos.d/rhel7_cdrom.repo** and add the following:
    [RHEL_7_Disc]

    name=RHEL_7_x86_64_Disc

    baseurl="file:///media/cdrom/"

    gpgcheck=0
12. **yum update**
13. **yum install kernel-devel kernel-headers gcc make**
14. Run **sh NVIDIA....sh** again. Repeat the steps again.
    Kernel modules should build and install.
15. Install **32-bit compatibility libraries**.
16. Select **OK**.
17. Select **No** and press **Enter**.
18. Select **OK**.
19. Type `lspci | grep –I NVIDIA` and record the **PCI ID**.
20. Edit **/etc/X11/xorg.conf** using vi or nano.
21. Enter the following (replacing BusID with the actual Bus of the NVIDIA GPU):

```
Section “Device”

Identifier “NVIDIA0”

Driver “NVIDIA”

BusID “PCI:11:0:0”

EndSection
```

    NOTE: You can use “lspci” to get the PCI bus ID, but you will need to convert from hexadecimal to decimal. In other words, if lspci gives “0b:00.0”, you will use “PCI:11:0:0” as seen above. The format must always be “PCI:#:#:#”.
22. Type `systemctl set-default graphical.target`
23. Reboot
24. Log in from zero client.

Installing the VMware tools

It is necessary to install the VMware tools on your Windows operating system, for faster graphics performance. To install the VMware Tools on your Windows operating system:

1. Go to *kb.vmware.com*
2. Under **View by Article ID**, enter the **Article ID** and click **View**. To know the Article ID for your operating system, see the *Article ID Reference* table.

The VMware Tools installation instructions page is displayed.

Table 5. Article ID reference

Operating System	Article ID
Windows 7	1018377
Windows 8	1003417
Red Hat Enterprise Linux	1018392

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Post Operating System Installation Tasks

NOTE: The post operating system installation tasks apply only if you have purchased your workstation with ***Shared GPU*** option.

After you configure the virtual machine and after you install the operating system on the virtual machine, you need to install the *VMware View Agent* and *Direct Connect Agent*.

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Precision Appliance for Wyse - Clients

After you configure the virtual machines for your **Dell Precision Rack 7910** with the *Dedicated GPU (NVIDIA Quadro Graphics)* option or *Shared GPU (NVIDIA GRID K2A Graphics)* option, Dell recommends you to use *Dell Wyse 5020-P25* for getting connected to the remote system. As a remote user of the **Dell Precision Rack 7910**, you need to setup and configure your *Dell Wyse 5020-P25* to get connected remotely. To setup the *Dell Wyse 5020-P25*, see the Dell Wyse 5020-P25 Quick Start Guide.

Client and connect support matrix

Dell Wyse 5020-P25

Table 6. vDGA monitor support

Number of monitors	Maximum resolution (per monitor)	Display interface
1	2560x1600	1 – DisplayPort
2	1920x1200	1 – DisplayPort; 1 - DVI

Table 7. vGPU monitor support

Number of monitors	Maximum resolution (per monitor)	Display interface
1	2560x1600	1 – DisplayPort
2	1920x1200	1 – DisplayPort; 1 - DVI

Dell Wyse 7020-P45

Table 8. vDGA monitor support

Number of monitors	Maximum resolution (per monitor)	Display interface
1	2560x1600	1 – DisplayPort
2	1920x1200	2 - DisplayPort

Table 9. vGPU monitor support

Number of monitors	Maximum resolution (per monitor)	Display interface
1	2560x1600	1 – DisplayPort
2	2560x1600	2 - DisplayPort
3	2560x1600	3 - DisplayPort
4	2560x1600	4 - DisplayPort

Connecting a PCoIP Zero Client directly to a host card

This section provides a brief outline on how to connect a client to a Virtual Machine by utilizing a host card. By default, the Dell Wyse P25 and P45 zero clients may be configured to connect to a VMware Horizon infrastructure. The procedures will set to connect directly to the PCoIP Host Cards. Follow the procedures to connect the PCoIP zero client directly to a host card, available at VMware Documentation.

Connecting a PCoIP Zero Client to VMware View

This section provides a brief outline on how to connect a client virtual machine using the *VMware Horizon View Direct Connect Agent* or through a View Connection Server with or without a host card. By default, the *Dell Wyse 5020-P25* and *Dell Wyse 7020-P45* zero clients may be configured to connect to a VMware Horizon infrastructure. The procedures ensure that the setup is done correctly. Follow the procedures to connect the PCoIP zero client to the VMware View, available at VMware Documentation.

Connecting to the Direct Connect Agent

See the VMware Documentation for connecting to the direct connect agent.

Connecting to the View Connection Server

See the VMware Documentation for connecting to the view connection server.

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Troubleshooting

Table 10. Possible cause and workaround

Problem	Workaround
VMs randomly displays the Blue Screen Of Death (BSOD) and VMware ESXi have a purple screen of death.	• Ensure that each VM has `msi` interrupt vectors disabled: a. Edit the VM again and select the **Options** tab and click **General > Configuration Parameters**. b. Click **Add Row**. Create six rows. c. Add the following in the left column: – `pciPassthru0.msiEnabled` – `pciPassthru1.msiEnabled` – `pciPassthru2.msiEnabled` – `pciPassthru3.msiEnabled` – `pciPassthru4.msiEnabled` – `pciPassthru5.msiEnabled` – `pciPassthru6.msiEnabled` d. Enter `FALSE` in the right column, next to each entry. • Ensure that each VM has a guest operating system installed with the BIOS Boot Option set to **EFI**: a. Edit the VM again and select **Options** and click **Advanced** > **Boot Options** > **Specify the boot firmware**. b. Select **EFI**. • Ensure that 64-bit MMIO is enabled: a. Edit the VM again and select the **Options** tab and click **General > Configuration Parameters**. b. Click **Add Row**. c. Add the following in the left column: – `pciPassthru.use64bitMMIO` d. Enter `TRUE` in the right column.
You receive a blank or grey screen upon connection from a zero client or software client.	• Firmly re-seat the DisplayPort cables, connecting the GPU and Tera2 cards. • Press Windows key + P. The control panel will help set up the monitors and resolutions properly, if it is not auto-detected. • Make sure the cabling is correct.
No display or blank display shown.	Ensure that the DisplayPort cables are firmly plugged into the GPUs.

Problem	Workaround
The message “Source signal on other port” is displayed on the display.	This indicates that a video source connected to the Host does not correspond with the video port used on the zero client. This can be corrected by either swapping the video ports used on the Host or the zero client.
The following shows two host scenarios using VMware View virtual desktops or PCoIP Host Cards for remote workstation applications. **NOTE:** DVI marking varies on some PCoIP zero clients with some using the following: • DVI-0 (primary) and DVI-1 (secondary) • DVI-1 (primary) and DVI-2 (secondary) • No specific DVI marking	This is resolved in VMware View 5.0.1. This may be solved by connecting the DVI cable to the primary DVI port on the PCoIP zero client and reconnecting to the View 5.0 desktop.
Scenario 1: VMware View 5.0 Virtual Desktops with a single display. When using VMware View 5.0 virtual desktops and PCoIP zero clients with a single display attached to the secondary zero client DVI port, the overlay message "Signal on other port" can be seen on the screen and you cannot connect to the session. **Scenario 2:** Remote Workstation using PCoIP Host Cards. In a workstation environment, when connecting a Tera2 PCoIP zero client to a single display, the "Source signal on other port" overlay message appears. **Example**: If a single video source (GPU) is connected to a host card's primary port, and a single display is connected to a zero client's secondary port, then the message Source signal on other port appears on the display. **Cause** This error can be displayed when there is a mismatch with the cabling configuration between either of the following: • The host card and GPU. • The zero client and the monitor. • In a workstation environment, display ports are matched "remotely" during	Ensure the cables between the host card and GPU are connected to the same ports. Ensure the monitors in use are also connected to the zero client display ports in the order in which they are intended to be used. **Example**: The primary port on the host card connects to the primary port on the GPU and the primary monitor is connected to the primary zero client port. The same for the secondary ports and so on. NOTE: • A zero client’s primary port is the lowest numbered port on the zero client. • When connecting one monitor at 2560x1600 on a TERA2140 zero client (with four DVI ports), ports 1 and 3 must be teamed. For additional Teradici PcoIP related issues, see the KB article: support.teradici.com/ics/support/KBSplash.asp

Problem	Workaround
a session with video signals from the host card and GPU. The primary port of the host card must match both the primary port of the zero client and the primary port of the GPU. Similarly, the secondary port on the host card is matched to the secondary port on the GPU and zero client and so on (when more than one port is used).	

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Contacting Dell

NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Go to **Dell.com/support.**
2. Select your support category.
3. Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
4. Select the appropriate service or support link based on your need.