

Using Desktop PCs as RT Targets with the LabVIEW™ Real-Time Module for ETS Targets

The LabVIEW Real-Time Module can execute VIs on RT targets running the real-time operating system of Venturcom Phar Lap Embedded ToolSuite (ETS). This document contains important information about configuring a desktop PC as an RT target and information about installing software to the desktop PC.

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Desktop PC System Requirements

- Pentium-based desktop PC—Refer to the National Instruments Web site at ni.com/info and enter the info code `etspc` for information about the desktop PC models that National Instruments recommends.
- Supported Ethernet card—Refer to the NI Web site at ni.com/info and enter the info code `etspc` for information about the Ethernet cards that National Instruments recommends.
- FAT32 file system on the hard drive of the desktop PC
- 3.5 inch floppy drive on the desktop PC

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- A boot or format disk—National Instruments recommends that you create a PXI Boot disk or Format Hard Drive disk using Measurement & Automation Explorer (MAX) for hardware that uses the 10/100 Ethernet driver. Select **Tools»RT PXI Disk Utilities»Create PXI Boot Disk** in MAX to create the PXI Boot disk. Select **Tools»RT PXI Disk Utilities»Create Format Hard Drive Disk** in MAX to create the Format Hard Drive disk.

Use the PC Boot disk or PC Format disk provided with the LabVIEW Real-Time Deployment Licence for Standard PCs for hardware that uses the Gigabit Ethernet driver.

Configuring a Desktop PC Using a Boot Disk

Complete the following steps to configure a desktop PC using a boot disk.

1. Install the Ethernet card in an available PCI slot of the desktop PC.



Note National Instruments recommends that you remove from the desktop PC any PCI boards not supported by the LabVIEW Real-Time Module. For example, remove sound cards, SCSI adapters, and modems from the desktop PC.

2. Turn on the desktop PC and access the BIOS configuration utility.



Note BIOS configurations and configuration interfaces for desktop PCs vary among different manufacturers and system models. Consult the motherboard or system manual for information about accessing and configuring the BIOS settings of the desktop PC.

3. Set the boot configuration to use the floppy drive as the first boot device.
4. Disable USB support.
5. Optionally, disable any unnecessary integrated peripherals that use an interrupt request line (IRQ). For example, disable unused serial or parallel ports on the desktop PC.
6. Save the configuration changes and exit the BIOS configuration utility.
7. Insert the boot disk in the floppy drive and reboot the desktop PC to boot into the real-time operating system.

Refer to the [Installing Software](#) section for information about installing software on the desktop PC.

Configuring the Desktop PC Using a Format Disk

You can use a format disk to permanently install the RT Engine on the hard drive of the desktop PC. A format disk formats a previously partitioned hard drive and installs files to allow the desktop PC to boot without a boot disk.



Caution A format disk formats the hard drive and overwrites the hard drive boot sector and master boot record, erasing all data on the drive. If you have a dual-boot configuration, the changes to the master boot record remove the ability to boot into the secondary operating system.

Complete the following steps to configure a desktop PC using a format disk.

1. Install the Ethernet card in an available PCI slot of the desktop PC.
2. Connect a monitor and keyboard to the desktop PC to display and respond to the format prompts.
3. Insert the format disk in the floppy drive and reboot the desktop PC.
4. Follow the directions that appear on the screen.
5. Remove the format disk from the floppy drive and reboot the desktop PC to boot into the real-time operating system.

Refer to the *Installing Software* section for information about installing software on the desktop PC.

Installing Software

Complete the following steps to install software on the desktop PC.

1. Boot the desktop PC into the real-time operating system. The desktop PC loads with the basic real-time operating system and a null IP address of 0.0.0.0.



Tip You can connect a monitor to the desktop PC to display startup messages.

2. Open MAX on another computer in the same subnet and expand the **Remote Systems** category. MAX lists the desktop PC as 0.0.0.0 in the **Remote Systems** category.
3. Click on the 0.0.0.0 entry to access the **Network Settings** tab.
4. Enter a name for the RT target in the **Name** text box.
5. Set the network configuration options of the RT target in the **IP Settings** section and click the **Apply** button. MAX prompts you to reboot the RT target to allow the changes to take effect.

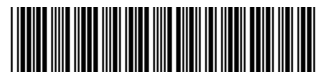
6. Reboot the RT target. The RT target appears in the **Remote Systems** category with the assigned name.
7. Expand the RT target in the **Remote Systems** category and select the **Software** category.
8. Click the **Install Software** button in the toolbar to launch the LabVIEW Real-Time Install Software Wizard.
9. Install the software you need on the RT target. A desktop PC configured as an RT target supports the following software—LabVIEW Real-Time, NI-RIO RT, NI-DAQmx, NI-CAN RT, NI-488.2 RT, and NI-IMAQ RT. Refer to the NI Web site at ni.com/info and enter the info code `et_spc` for the latest information about supported software.
10. Use an FTP client to transfer `lvalarms.dll` from the `RT Images\LabVIEW\7063` directory on the host computer to the `ni-rt\system` directory on the RT target and then reboot the RT target.

Known Issues

- A desktop PC configured as an RT target behaves like a PXI controller and displays as a PXI controller in MAX. Configure the desktop PC in MAX as you configure a PXI controller. Refer to the *MAX Help* for information about configuring remote systems.
- National Instruments encourages you to use NI-DAQmx with supported devices rather than Traditional NI-DAQ. Other devices not supported by NI-DAQmx might work using Traditional NI-DAQ, but Traditional NI-DAQ and the devices have not been verified.
- A desktop PC configured as an RT target does not support displaying images to the local display using NI-IMAQ. You cannot display captured images with the monitor connected to the RT target.
- A desktop PC configured as an RT target does not support the NI-Watchdog VIs, RT Read Switch VI, and the RT LEDs VI.
- A desktop PC configured as an RT target does not support access to a CD-ROM drive installed on the desktop PC.

Resources

Refer to the *LabVIEW Real-Time Module User Manual* for information about creating deterministic applications using LabVIEW and the LabVIEW Real-Time Module. Refer to the NI Web site at ni.com/info and enter the info code `et_spc` for the latest information about using desktop PCs as RT targets.



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