Ni veristand tutorial pdf

The first step is to install NI VeriStand software and related driver software on your Windows computer. Then install NI VeriStand Engine software for all the real-time targets you're deploying to. Host PC Installation Software Install NI VeriStand using NI VeriStand DVD or download NI VeriStand on ni.com/veristand/download. When you start installing, you have the ability to select the components you need for the app. LabVIEW support adds the NI VeriStand palette to LabVIEW for LabVIEW's NI VeriStand automatic control. THE NI VeriStand Model Framework adds support for third-party modeling models such as MathWorks, Inc. Simulink® modeling software and ANSI C. With NI VeriStand LabVIEW support, you can transform LabVIEW VI into a modeling model that can be used in NI VeriStand. Note: The NI VeriStand Framework can be installed independently and is licensed free of charge. For machines that don't need a NI VeriStand environment, select only the NI VeriStand Framework model to install. Once you've installed the ni VeriStand Model Framework, you can license it for free using the NI VeriStand generation activation tool found here: . Once the necessary components of ni VeriStand software have been installed, install NI Device Drivers either from DVD Device Drivers or ni.com/drivers. Install the following drivers: NI-DA'mx NI-VISA Extras: NI-RIO (for CompactRIO or FPGA functionality) Optional: NI-XNET (for CAN, LIN, or FlexRay functionality) Optional: NI-industrial communications for EtherCAT (for CompactRIO Scan Engine and EtherCAT functionality) Once all installations are completed on the host PC, Open NI Installation software on target in real time Once you have all the necessary software on your receiving computer, you need to install the software on the target computer in real time, following the steps below. In The Researcher's Measuring and Automation program, select the NI VeriStand goal in real time under the remote system tree element. Select a software item for your target in real time and select Add/ Delete software. CompactRIO only: Choose the custom software installation option. Select the NI VeriStand engine installation. This installs the NI VeriStand engine as well as the software components needed to run it. Optional: If you want to implement a distributed test system in real time that uses GE reflective memory interfaces, select providing GE's reflective memory for installation. Optional: If you're using a CompactRIO device and want to install a Scan Engine custom device, choose NI-Industrial Communications Communications EtherCAT and I/O variable remote web service configuration to install as well. Complete the process of installing the software and restart the target in real time. You can see the list of currently installed software on your target by looking under remote systems in real time TargetSoftware item in the structure of the MAX tree, as shown above. Back to the Top 2. NI VeriStand Project Setting Open NI VeriStand (Start Programs National Instruments NI VeriStand) and create a new NI VeriStand project. Choose the name of the project and the way the catalog is from the window that appears. Note: National Instruments recommends keeping all project dependencies about the location of the project file and placing it in the same folder or subfoder. This includes elements such as Workspace (.nivsscren), system definition files (.nivssdf), Stimulus profile files (.nivsstimprof), real-time sequence files (.nivsseq), FPGA models and beatphiles, or configuration files. In the NI VeriStand Project Explorer window, expand the element of the system definition file tree and open the no.nivssdf file found there by clicking the right button on the file and selecting Launch System Explorer. Select deployment targets: NI will eliminate support for Phar Lap for cRIO in the release of NI 2020 software and for PXI in the release of NI 2022 software. For more information, please see Phar Lap RT OS EOL Road Map. PXI real-time and cRIO-908x Goals set the PXI target by highlighting the controller in the tree by selecting Phar Lap for the OS, and using the same IP address displayed for the PXI system in MAX. Rename the name of the controller to the unique name of your choice. All other CompactRIO targets set up the CompactRIO target in real time by highlighting the controller on the tree, selecting VxWorks for the OS and using the same IP address displayed for the CompactRIO system in MAX. Rename the controller's name to the unique name of your choice. Note: The fall operating system has choices for Phar Lape, VxWorks, Linux_32_ARM, and Linux_x64 on veriStand 2014. The veriStand selection will be matched by real-time controllers and RTOS compatibility documentation. Note: The cRIO 904x controller is not currently supported in NI VeriStand. Running NI VeriStand Engine on your local Windows computer sets the Windows target by highlighting the controller on the tree and selecting Windows for OS. Note localhost is an automatic choice for an IP address that indicates that the definition of the system works on the host PC. Rename the name of the controller to the unique name of your choice. Setting up ni VeriStand Engine using a system researcher in the Controller section, setting the target speed under the Time Source Settings section sets the speed of the main loop on your goal. The main control loop controls the time for the NI VeriStand engine and retains the updated channel channel For more information on the Primary Control Loop and other individual loops running on NI VeriStand Engine, visit NI VeriStand Engine Architecture. Expand the controller on the tree and pay attention to the various elements that you can add to the definition of the system. Equipment: Expand the equipment and then chassis. Here you identify your NI-D'A, data sharing (reflecting memory), NI-FPGA, NI-XNET, or timing and synchronization devices. You can also add a few chassis. Custom Devices: Set up and expand the out-of-the-box functionality of NI VeriStand into a device that can be added to the system definition file and deploy real-time targets. NI VeriStand includes three custom devices that you can add here, as well as any custom devices that you have created yourself. Check out the NI VeriStand Add-Ons Community to see other existing custom devices and create custom devices when considering building your own custom device. Model models: Expand modeling models. Add collected models from one of the supported modeling environments listed in the document using NI VeriStand simulation models. If you have multiple models, you can also establish the order in which the models are performed on the NI VeriStand Engine. User Channels: User channels store one value and can function as variables that will be used in other areas of the system definition. Calculated channels: Calculated channels are created to perform calculations on other channels of the system. You can create your own formula or perform built-in operations such as Lowpass, Medium, or Peak and Valley. Incentive: View and set up incentive generators in the Legacy Stimulus profile editor that simulate real signals to run tests in the system. If you're starting a new project without any outdated NI VeriStand dependencies, ignore this section. Alarms: Set up an alarm to alert the user that the channel value has gone beyond a certain range of values. The alarm can also trigger a procedure to perform. Procedure: Set up a procedure to perform a set of actions on the NI VeriStand engine. The procedure can be a signal to start when starting or trigger an alarm or other procedure. NI-XNET databases: Add any NI-XNET database to your system. Databases can be CANdb (.dbc), NI-CAN (.ncd), LDF (.ldf) or FIBEX (.xml) files. System channels: Expand system channels to view channels by tracking the state or condition of different elements of the system. They are often used to troubleshooting system behavior. System Mappings: This section shows everything system maps that are connections between the source and the destination channels. They are configured in the System Configuration Mappings window, which is covered in the next section. Network Of Communication: Add and customize a reflective memory network. To learn more about using reflective memory with NI VeriStand, go to create a distributed system with NI NI Initialization System: If you have multiple goals, you can use this section to establish the order that the deployment targets toward each other and determine the target of the restart action. Aliases: Set up a pseudonym to give a channel or group of channels a unique name in your definition of the system. Click the right button on Alias and select Add Alias. Bring the name and description you want, and then click the View button next to the channel to select the channel to rename. This opens the viewing window to select a channel from the wood explorer system. Aliases are useful for many reasons, including sharing a single workspace with multiple system definitions and displaying Workspace objects with these aliases. Because of this, you can rename the system definition channels into a pseudonym without losing your workspace. Mapping channels you can easily connect channels to each other in NI VeriStand using a mapping tool. This tool will help you quickly connect simulation models to the physical vi-vo, as well as to any other channel in your system. To customize the display for your NI VeriStand system, select Tools'Edit Mappings or click on the Configure Mappings button shown below to connect channels to each other, such as the model's access to a physical channel or a calculated alias channel. Select a channel on a tree under the Sources in System Configuration window that has just opened. Select the channel under the directions, and then click Connect to map the channels. Please note that The Source and Destination channels are now displayed under the maps. System channels can be exported and stored for the file. You can then import this file to automate the process of displaying the system later. Deploy ni VeriStand Projects After setting up the definition of the system, save and close the system explorer. There are two options for launching NI VeriStand projects. Running: Runs a workspace window. If you've set up a system to work on your PC, clicking starts the project. If you've set up a system to work with RT, pressing the Run button deploys the system definition file if it's not yet up. If the system definition file is already working for RT, clicking the Run button connects to the target and starts the Workspace window without re-deploying the system definition file. Deployment: Pressing a button deploys the definition of the system to the target specified in System Explorer. However, it does not open the window of the workspace. If the system definition file is already working for RT, deploying a new system definition will replace the definition of the system that is currently working. Back to the Top 3. Create simulation models to use with NI You can use NI VeriStand with a wide range of modeling environments and programming languages. Model subsystems can be built independently and in the NI VeriStand environment, so you can easily replace simulated components with real components as they become available. Creating models from MathWorks, Inc. Simulink® Simulation Software If you're using NI's real-time target and you don't know which OS is working on target, view what operating system my real-time controller is working for and why? For more modeling environments, for more information on how to interact with models from other modeling environments and programming languages in NI VeriStand, go to ni VeriStand modeling models. This document contains a complete list of supported modeling environments that have been tested and tested as capable of creating a compiled model that can be imported into NI VeriStand. Back to the Top 4. Using EtherCAT and Scan Engine Add-On for NI VeriStand with a custom Scan Engine and EtherCAT device, you can easily read the scanned i/O from the C Series modules located in the CompactRIO or NI 9144 EtherCAT chassis. The add-on also supports the use of custom FPGA personalities with the NI 9144 chassis. Note: The EtherCAT and NI Scan Engine add-on to ni VeriStand is compatible with CompactRIO and EtherCAT expansion chassis. Download Veristand 2018 Scan Engine and EtherCAT Add-On and follow installation instructions. To add scan Engine and EtherCAT Add-On to NI VeriStand, follow these steps: Open NI VeriStand and System Definition. Click the right button on custom devices and select Scan Engine and EtherCAT. Select auto detection modules or the right click and select Add a local chassis to use the CompactRIO chassis and manually select the right module for each slot and the right settings for each module. Back in the top five. The additional resources of the NI VeriStand NI VeriStand environment have many features that can be used out of the box without programming. To see video demonstrations of some of these features, visit ni.com/veristand/demos. For an in-depth step-by-step guide to the NI VeriStand environment, download the NI VeriStand tutorial. To learn more about creating add-ons for NI VeriStand, watch the NI VeriStand Add-Ons webcast. For NI VeriStand, we will teach the basics of NI VeriStand. - NI will eliminate support for Phar Lap for cRIO in the release of NI 2020 software and for PXI in the release of NI 2022 software. For more information, please see Phar Lap RT OS EOL Road Map. MATLAB® and Simulink® are registered trademarks of MathWorks, Inc. Owners. ni veristand tutorial pdf

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