

# **FC and Unified Series Quick Start Guide**

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**LOAD  
DYNAMIX**

**FC Series Model 6202, 6204, 6208,  
FCoE Series Model 6202E, 6204E  
and Unified Series Model U1022, U1044, U1122,  
U1144 Appliance**

## **Quick Start Guide**

### **Support**

Open support cases by sending an email to: [support@loaddynamix.com](mailto:support@loaddynamix.com)

# Load DynamiX product contents

- Appliance (one of the below)
  - FC Series
    - Model 6202 with two 16Gbps Fibre Channel Load Generation Test Ports
    - Model 6204 with four 16Gbps Fibre Channel Load Generation Test Ports
    - Model 6208 with eight 16Gbps Fibre Channel Load Generation Test Ports
  - FCoE Series
    - Model 6202E with two 10Gbps Fibre Channel over Ethernet Load Generation Test Ports
    - Model 6204E with four 10Gbps Fibre Channel over Ethernet Load Generation Test Ports
  - Unified Series
    - Model U1022 two 10GbE and two 16Gbps Fibre Channel Load Generation Test Ports
    - Model U1044 four 10GbE and four 16Gbps Fibre Channel Load Generation Test Ports
    - Model U1122 two Fibre Channel over Ethernet and two 16Gbps Fibre Channel Load Generation Test Ports
    - Model U1144 four Fibre Channel over Ethernet and four 16Gbps Fibre Channel Load Generation Test Ports
- Load DynamiX software USB thumb drive (including a PDF version of this document)
- Hard copy of this document
- Rack mounting hardware (rails, etc.)

# Hardware Installation

**Dimensions:** Height 3.5" (2RU), Width 17.2", Depth 25.5"

## Installation into a Rack

The Load DynamiX 6202, 6202E, 6204, 6208, U1022 or U1044 Appliance shipping carton includes two sets of rail assemblies, two rail mounting brackets and the mounting screws required to install the system into a rack.

**Temperature Considerations:** Airflow on the Load DynamiX 6202, 6202E, 6204, 6208, U1022 or U1044 Appliances is from front to back. The front of the Appliance has the Reset and Power buttons, and the Admin and Test Ports. The Front of the Load DynamiX Appliance must be installed on the cool side of the rack in which it is located. Installing the Load DynamiX Appliance with the back of the Appliance on the cool side of the rack can result in chassis overheating and product failure.

**Optional:** The shipping carton also includes two extension rails that can be attached to the Load DynamiX 6202, 6202E, 6204, 6208, U1022 or U1044 Appliance to allow it to be serviced without removing it entirely from the rack. These extension rails are not necessary for normal function of the device.

## Providing Power

Plug the 2 power cords from the power supply units into a high-quality power source that provides protection from electrical noise and power surges. An uninterruptible power supply (UPS) is recommended. Dual drop circuits for the power supplies are also recommended. Both power supplies must be plugged in for proper function.

## Admin Port Network Cabling

The 1GbE Admin Ports on the Load DynamiX 6202, 6204, 6208, U1022 or U1044 Appliances support standard 1000BASE-T Ethernet cables with RJ45 connectors.

## Test Port Network Cabling

The 16Gbps Fibre Channel Test Ports on the Load DynamiX 6202, 6204, 6208, U1022 or U1044 Appliances use modular SFP+ transceivers.

The 10Gbps Fibre Channel over Ethernet Test Ports on the Load DynamiX 6202E, 6204E, U1122 and U1144 Appliances use modular SFP+ transceivers.

The 10GbE Test Ports on the Load DynamiX U1022 or U1044 Appliances use modular SFP+ transceivers.

SFP+ transceivers use an 850nm laser that requires a Multi-Mode Fiber cable with an LC connector.

On Appliances with SFP+ optical 10GbE interfaces (U1022 or U1044), to verify that an optical SFP+ cable other than that which is shipped with the Load DynamiX U1022 or U1044 Appliance, connect two Load DynamiX 10GbE Test Ports in a back to back configuration with the transceiver/cable combination and run one of the Load DynamiX back-to-back Sample Projects such as CIFS-SMB Full Duplex Payload. If the Project runs successfully then the optical SFP+ transceiver or DA SFP+ cable is compatible with the Load DynamiX 10GbE Ethernet Ports.

For this transceiver/cable combination to work with a DUT or a 10GbE switch, the transceiver/cable must also be compatible with the target connection (DUT or switch). If the back-to-back Test is successful but a test using a connection to a DUT or switch is not, it is possible that the transceiver/cable combination is not

compatible with the target. You can verify link status using the TDE Ports & Appliances > Appliances tab entry for the Load DynamiX Appliance but link status does not guarantee that traffic can be sent over this connection. When running a test to verify a working connection, include a Tracing Resource in the project. If the PCAP file that results from the Tracing Resource contains only ARP packets then the transceiver/cable combination is incompatible with the target even if the Link Status appears OK.

For Fibre Channel or Fibre Channel over Ethernet SFP+ optical interfaces, back-to-back tests are not available. To test for compatibility on a Fibre Channel Appliance, connect the cable to the Appliance and FC switch and execute a sample Fibre Channel Project. If the Project succeeds then the cable is compatible with the Appliance.

For additional debugging purposes, the Appliance Link Status messages (from Ports & Appliances > Appliances > Link Status) for incompatible SFP+ transceiver/cable combinations may produce different kinds of messages. Messages written to the TDE Output Window during Project execution and in the Results Explorer > Client Log File after Project execution, may provide more detailed information regarding SFP+ transceiver compatibility. See the TDE online Help Product Installation chapter for more information.

### **Admin and Test Port Communications Considerations**

The Load DynamiX Appliance and TDE together create a test development and execution environment for performance, capacity and stress oriented networked storage validation. It is advisable to have high speed, low latency communications between the TDE and the Appliance to facilitate test development and results gathering and between the Appliance and the device being tested to facilitate test execution.

If the network link (Admin Port) between the TDE and Appliance is not high speed or has high latency, it is suggested that the TDE be installed on a Windows VM near the Appliance and the TDE be accessed via Remote Desktop or some other remote access solution. To optimize Appliance to Device Under Test (DUT) communications (Test Port), it is recommended that as little network infrastructure as possible be between the Appliance's Test Ports and the DUT. Network infrastructure can add unexpected delay and complexity during Test execution.

# Admin Network, Time and Date Configuration

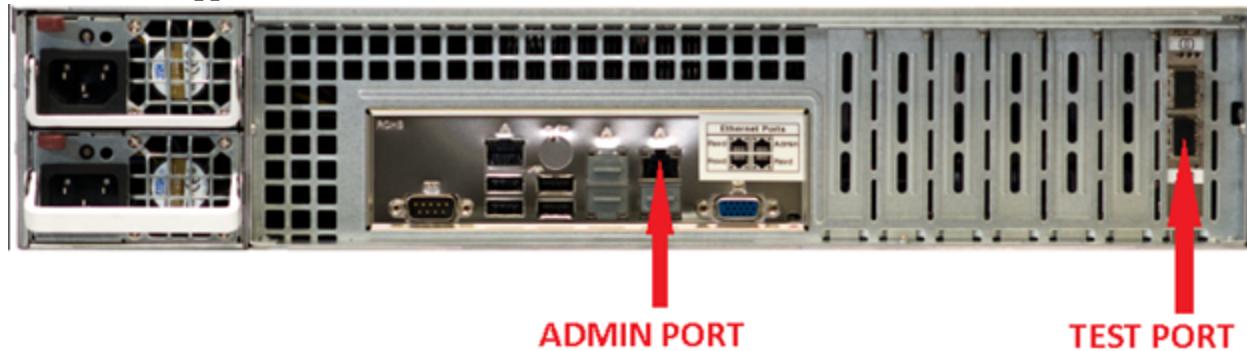


The Load DynamiX FC Series Model 6202, 6204, 6208, FCoE Series 6202E, 6204E or Unified Series U1022, U1044, U1122 U1144 Appliances have two types of Ports - Admin (1000BASE-T Ethernet) and Test Ports (16Gbps Fibre Channel, 10Gbps FCoE and 10GbE). The Test Ports are configured from the Load DynamiX TDE (the GUI), Automation (command line), Load DynamiX Enterprise and API (scripting).

The setup procedure for Date/Time and IP Address for all five Appliances follows.

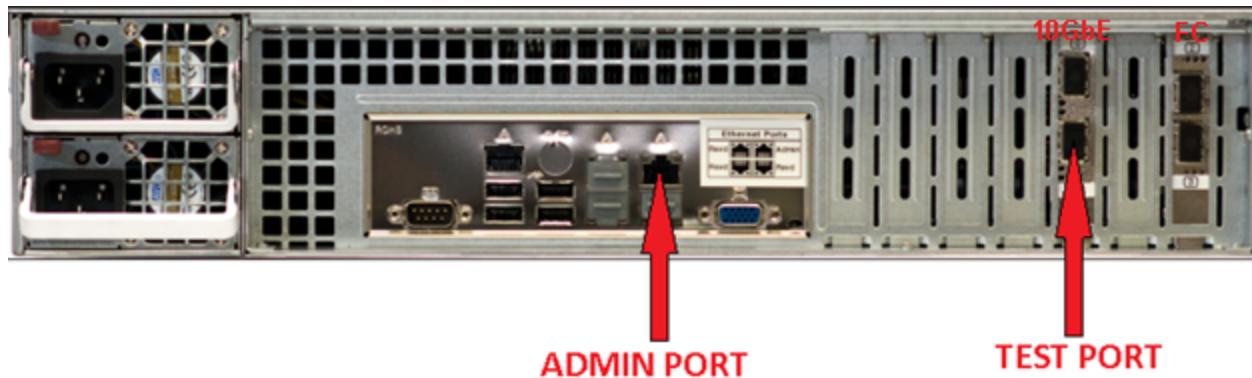
## Load DynamiX FC Series Model 6202, 6202E, 6204, 6208 and Unified Series U1022 and U1044 Appliances

### 6202/6202E Appliances



### 6204/6204E Appliance



**6208 Appliance****U1022/U1122****U1044/U1144**

1. Connect a 1000BASE-T cable to the Admin Port on the front of the Appliance. Connect that cable to a network accessible by the computer on which the Load DynamiX TDE is to be installed (the Management Workstation). This is the ADMIN NETWORK.
2. Connect an 850nm Multi-mode Fiber cable with LC connector to an FC Test Port (see Section B above for cable requirements) to a Fibre Channel switch or DUT. Make sure that the Load DynamiX FC Initiator has been given permission to access the desired target. The WWPN of the Load DynamiX Appliance FC Initiator can be found in the Ports & Appliances window, Appliances Tab. The Target devices that are accessible by this Port are shown at the lower right hand part of this window under Targets. Connect an 850nm Multi-mode Fiber cable with LC connector to both of the 10GbE Test Ports ("back-to-back" configuration).
3. If the Admin Port IP address (Management IP address), subnet mask and default gateway have been pre-configured for you by Load DynamiX, go to Step 9.
4. Connect a keyboard to a USB port or keyboard port and a monitor to the DB15 video port.

5. Log in to the admin interface on the Appliance (see section J) Appliance Admin User Interface below for the details of the Appliance Admin User Interface):

User Name: config

Password: config

6. Change the network configuration to be on a network accessible by the Management Workstation. Select **1 Network settings** and follow the configuration prompts to change the IP address, netmask, and default gateway address. This process sets the Management IP address which will be used by the Load DynamiX TDE to interact with this Appliance. The Appliance admin interface and port do support DHCP. Unless specified by the customer, DHCP is the default for the IP address setting. However, unless the DHCP server is configured to give the Appliance a static IP address, it is not recommended that DHCP be used. See section J) below for details of the user interface for setting the Network settings.

7. Confirm the Date and Time configuration is set to the local timezone. Select **2 Date/Time settings** and follow the prompts to view the current the date and time settings to confirm that they are correct for the local timezone date and time. If the date and time are not correct for the local timezone date and time, set them according to local time. Alternatively an NTP server can be used to provide the Appliance with time, timezone and date settings automatically. See Appliance Admin User Interface chapter below for details of the user interface for setting the Timezone, Date and Time.

8. Log out from the console and disconnect the keyboard and monitor.

9. To check your setup, ping the Management IP address of the Load DynamiX Appliance from the Management WorkStation.

- a. Open a browser on the WorkStation and type the Appliance IP Address into the address bar and hit return. The text “Load DynamiX” should appear in the browser window.
- b. If a. fails, Ping the Load DynamiX Appliance Management IP address (C:\Windows\System32\ping <IP Address>).
- c. If the Ping is unsuccessful run the Trace Route command (C:\Windows\System32\tracert <IP Address>) to see where the routing process fails then go back to step 4 and verify the IP address, netmask and gateway address assigned to the Appliance. If these are correct, ensure that the Management Workstation is connected to a network that can access the network that the Admin Port is connected to.

# TDE Software Installation

## Management WorkStation Hardware Requirements

1. Windows PC, 2 Gigahertz processor clock speed or higher
2. 4 Gigabytes (GB) of RAM or higher
3. 4 Gigabyte (GB) of available hard disk space or higher

## Software Requirements

1. Windows 7, 8, 8.1 and 10 operating systems, Installation Folders:
  - a. Windows 7, 8, 8.1 and 10 plus .NET framework version 4.x
    - Program executables: C:\Program Files\LoadDynamix\{InstallationFolder}
    - ProgramData: C:\Program Data\LoadDynamix\{InstallationFolder}
    - Projects: C:\Users\{UserLoginName}\Documents\LoadDynamix\My Projects
    - Resources: C:\Users\{UserLoginName}\Documents\LoadDynamix\My Resources
    - User Guides and Documents: C:\Program Data\LoadDynamix\{InstallationFolder}\LoadDynamix Docs
    - Scripts: C:\Program Data\LoadDynamix\{InstallationFolder}\LoadDynamix Docs\scripts
    - Mono: C:\Program Data\LoadDynamix\{InstallationFolder}\Mono
2. Windows .NET version 4.x framework from Microsoft must be installed on the Management Workstation.

To verify that .NET v4.x is installed on the Management WorkStation, issue the following commands from a command window prompt:

- dir C:\WINDOWS\Microsoft.NET\Framework\v\*
- dir C:\WINDOWS\Microsoft.NET\Framework64\v\*

To install .NET Framework 4.x on a Management Workstation running Windows 7 or earlier:

- If the Management WorkStation has access to the Internet, download the .NET 4.x bootstrap loader at: <https://www.microsoft.com/en-us/download/confirmation.aspx?id=42643>
- If the Management WorkStation does not have Internet access, using a system that does, go to the URL displayed above, click Instructions, look for the phrase “Full Redistributable Package” follow the instructions to download the full .NET 4.x package, then install it on the Management Workstation.

## Management WorkStation to Appliance Communications

The Load Dynamix TDE and Automation tools communicate with Load Dynamix Appliances using the HTTP protocol. For the TDE to function properly, the TDE must be able to send and receive HTTP packets from the Appliance. To test communications between WorkStation and Appliance try the following:

1. From a browser on the WorkStation, type the Appliance <IP Address> into the address bar and the text “Load Dynamix” should appear in the browser window.
2. If #1, does not work: From a command prompt on the WorkStation, Ping the Appliance IP

- address (Windows command: ping <IP Address>)
3. If #2 does not work: From a command prompt on the WorkStation, run a trace route (Windows command: tracert <IP Address>)

If any of the above tests fail, the WorkStation and Appliance will not be able to communicate.

## **Management WorkStation HTTP Proxy Configuration**

If an HTTP proxy has been enabled for the computer running the TDE, be sure to either add the address(es) for the Load DynamiX appliance(s) to the HTTP proxy or disable the proxy setting for the computer running the TDE.

HTTP access. The Load DynamiX TDE and command line Automation both use the HTTP protocol to communicate with the Appliance. If the system running the TDE or Automation cannot communicate with the Appliance via HTTP, no Projects will be executable. A simple test of HTTP access o the Appliance from any system is to open a browser on that system, enter the Appliance's IP address in the browser's address bar. What should be seen is the text "LoadDynamiX" in the upper left hand corner of the browser.

## **Software Installation**

1. The software is available on a Load DynamiX USB thumb drive or from the Load DynamiX FTP site (see [support@loaddynamix.com](mailto:support@loaddynamix.com) for details).

If you are downloading the GUI software from the Load DynamiX FTP site, copy the Load DynamiX .ZIP file to your computer.

- Uncompress the .ZIP file. If you do not have a program to uncompress the file you can download winRAR from rarlabs.com or other RAR sites.
- Copy the .exe file to your computer.

If you have the Load DynamiX TDE thumb drive, insert the thumb drive into the Management Workstation's USB port.

2. Double click the Load DynamiX TDE. file. Follow the setup instructions.

# Licensing

Load DynamiX licenses Appliances on a per-protocol basis. This means that, on a per-Appliance basis, each Protocol that is to be used on that Appliance must be enabled in the license that is associated with that Appliance. **An Appliance will NOT execute Projects that contain Protocols for which it is NOT licensed.** The TDE itself is not licensed but the TDE is the tool that is used to administer licenses for Appliances. Once an Appliance is Licensed, downgrading to a prior release will not undo Activation or any Licenses installed.

## Licensing Process Terminology:

**Protocols:** The basic unit of licensing. Purchase of the Load DynamiX product requires purchasing the use of various protocols - for example CIFS-SMB, NFSv3, iSCSI possibly Client and Server. Appliances will be licensed for all of the Protocols that a user has purchased when the product ships to the user.

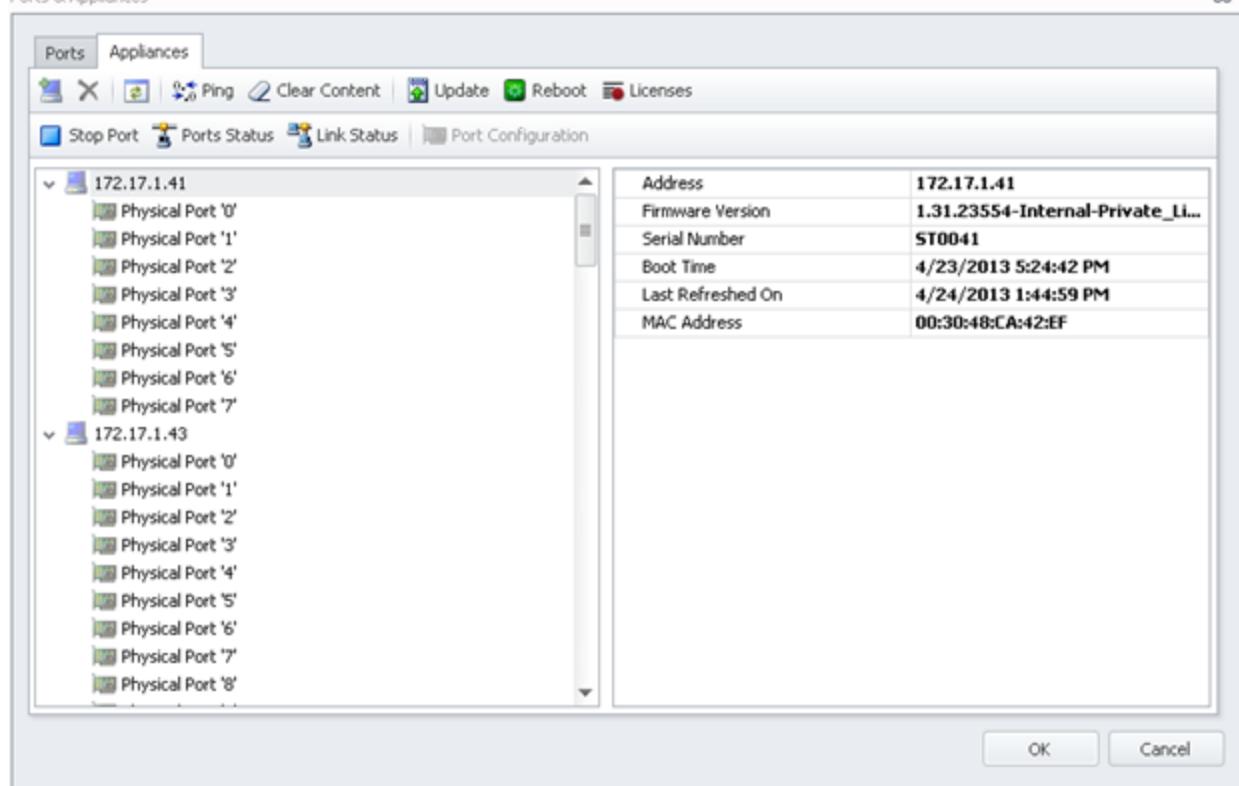
**Temporary Licenses:** A Temporary License is a license for one or more Protocols that is valid up to a certain Date. It is useful when evaluating a new Protocol before deciding to purchase the license for that Protocol.

**Permanent Licenses:** Most licenses are Permanent. When a user purchases Licenses for the SMB2 Client and Server Protocols, they are purchased permanently and will be licensed as such.

**Emergency Licenses:** If for some reason an Appliance's License file does not work, the user can create an Emergency License from the License Management window to enable all Protocols for 7 days. Once the Emergency License expires, it is NOT possible to create a new Emergency License until a Temporary or Permanent License has been installed.

**Activation:** Preparing an Appliance to be licensed. The Activation process installs an Activation Record on the Appliance and enables the Appliance to accept protocol licenses. **Activation of Appliances installed in customer facilities is only required for Appliances that were shipped before May 2013.** The easiest way to check if an Appliance is ready for licensing is to open the Ports & Appliances Window and select the Appliances Tab.

## Ports &amp; Appliances

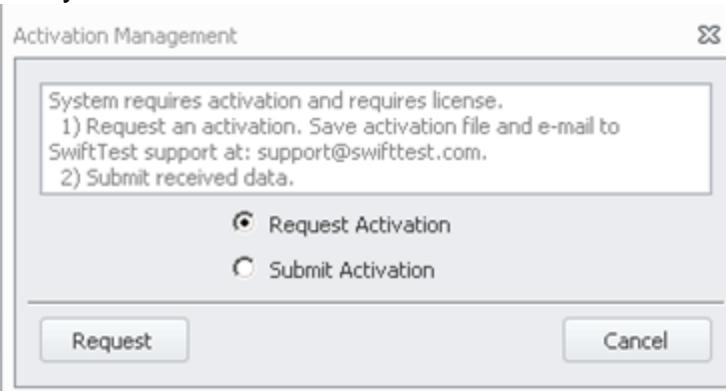


Click the Licenses button and if the following dialog appears, the Appliance is not currently running the appropriate revision of the Load DynamiX firmware

## Error

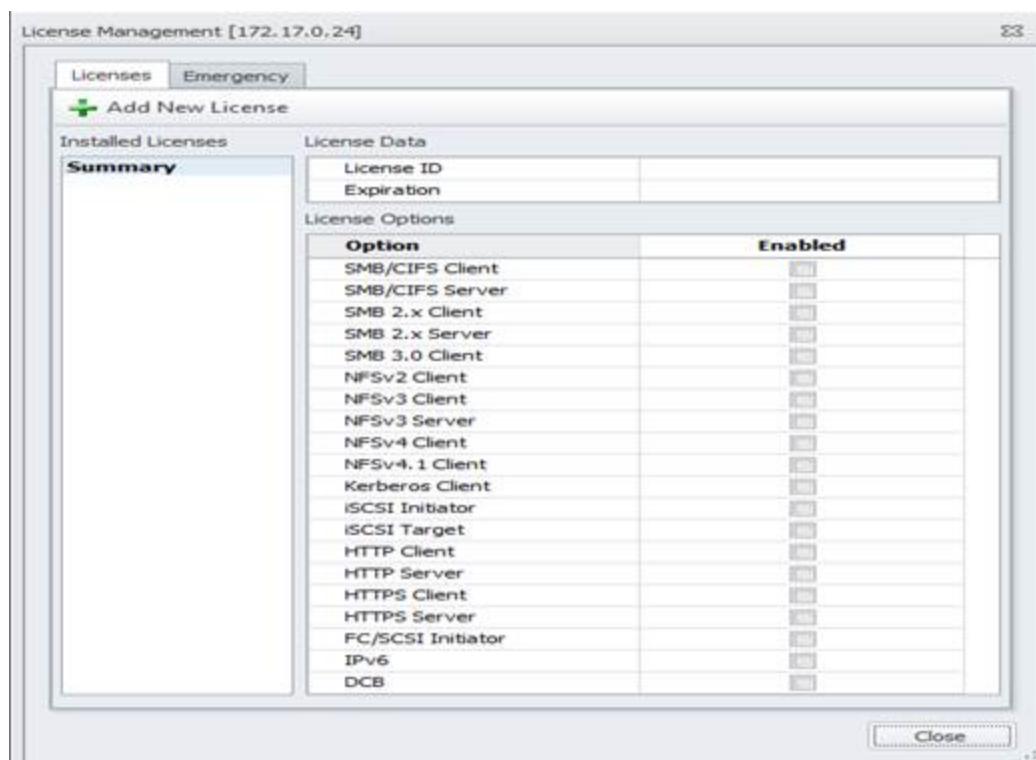


If instead of the error dialog above, the user gets the following message then the Appliance is ready to be Activated. If user does not see the Activation dialog below then the Appliance is already Activated and ready to have Licenses installed.



**Ready For Licenses:** An Appliance is ready for licenses once it has been Activated. Clicking on the

Licenses button in the Ports & Appliances > Appliances Tab will open the following License Management window which shows no licenses installed yet. This Appliance will not run any Load DynamiX Projects because none of the Protocols are licensed.



**Licensed:** When the License Management window shows active licenses then the Appliance is ready to run Projects that contain the licensed Protocols (**and ONLY the licensed Protocols**). The following License Management window shows active licenses.

License Management [172.17.1.49]

X

Licenses   Emergency

**Add New License**

Installed Licenses	License Data
<b>Summary</b> 179 (last)	License ID Expiration

License Options

Option	Enabled
SMB/CIFS Client	<input checked="" type="checkbox"/>
SMB/CIFS Server	<input checked="" type="checkbox"/>
SMB 2.x Client	<input checked="" type="checkbox"/>
SMB 2.x Server	<input checked="" type="checkbox"/>
SMB 3.0 Client	<input checked="" type="checkbox"/>
NFSv2 Client	<input checked="" type="checkbox"/>
NFSv3 Client	<input checked="" type="checkbox"/>
NFSv3 Server	<input checked="" type="checkbox"/>
NFSv4 Client	<input checked="" type="checkbox"/>
NFSv4.1 Client	<input checked="" type="checkbox"/>
Kerberos Client	<input checked="" type="checkbox"/>
iSCSI Initiator	<input checked="" type="checkbox"/>
iSCSI Target	<input checked="" type="checkbox"/>
HTTP Client	<input checked="" type="checkbox"/>
HTTP Server	<input checked="" type="checkbox"/>
HTTPS Client	<input checked="" type="checkbox"/>
HTTPS Server	<input checked="" type="checkbox"/>
FC/SCSI Initiator	<input checked="" type="checkbox"/>

**Close**

Licensing Process: (should only be used when Adding additional Licenses)**This process must be repeated for every Appliance that is to be Licensed.**

If an Appliance is Licensed, the set of Protocols which are licensed an Appliance will appear when the

Ports & Appliances > Appliances Tab, Licenses button  is pressed. Licensed Protocols will be indicated by check marks in the Enabled column as seen here.

License Management [172.17.1.49]



Licenses Emergency

**Add New License**

Installed Licenses		License Data	
<b>Summary</b> 179 (last)		License ID	
		Expiration	

License Options

Option	Enabled
SMB/CIFS Client	<input checked="" type="checkbox"/>
SMB/CIFS Server	<input checked="" type="checkbox"/>
SMB 2.x Client	<input checked="" type="checkbox"/>
SMB 2.x Server	<input checked="" type="checkbox"/>
SMB 3.0 Client	<input checked="" type="checkbox"/>
NFSv2 Client	<input checked="" type="checkbox"/>
NFSv3 Client	<input checked="" type="checkbox"/>
NFSv3 Server	<input checked="" type="checkbox"/>
NFSv4 Client	<input checked="" type="checkbox"/>
NFSv4.1 Client	<input checked="" type="checkbox"/>
Kerberos Client	<input checked="" type="checkbox"/>
iSCSI Initiator	<input checked="" type="checkbox"/>
iSCSI Target	<input checked="" type="checkbox"/>
HTTP Client	<input checked="" type="checkbox"/>
HTTP Server	<input checked="" type="checkbox"/>
HTTPS Client	<input checked="" type="checkbox"/>
HTTPS Server	<input checked="" type="checkbox"/>
FC/SCSI Initiator	<input checked="" type="checkbox"/>

**Close**

If the Appliance is not Activated then open the Ports & Appliances window > Appliances tab. Highlight the Appliance to be Activated and click the Licenses button . When the Activation dialog appears

Activation Management

System requires activation and requires license.  
 1) Request an activation. Save activation file and e-mail to  
 SwiftTest support at: support@swiftest.com.  
 2) Submit received data.

Request Activation  
 Submit Activation

**Request** **Cancel**

click the Request Activation radio button and then click **Request**. The TDE will open a dialog box which allows the user to save the Activation File on his computer's hard drive. The file will be named <Appliance Mac Address>\_request.txt.

This file must be emailed to Load DynamiX Support so that Support (support@loaddynamix.com) can create the Activation Record and License File for this Appliance. Save the file to a folder and then email it

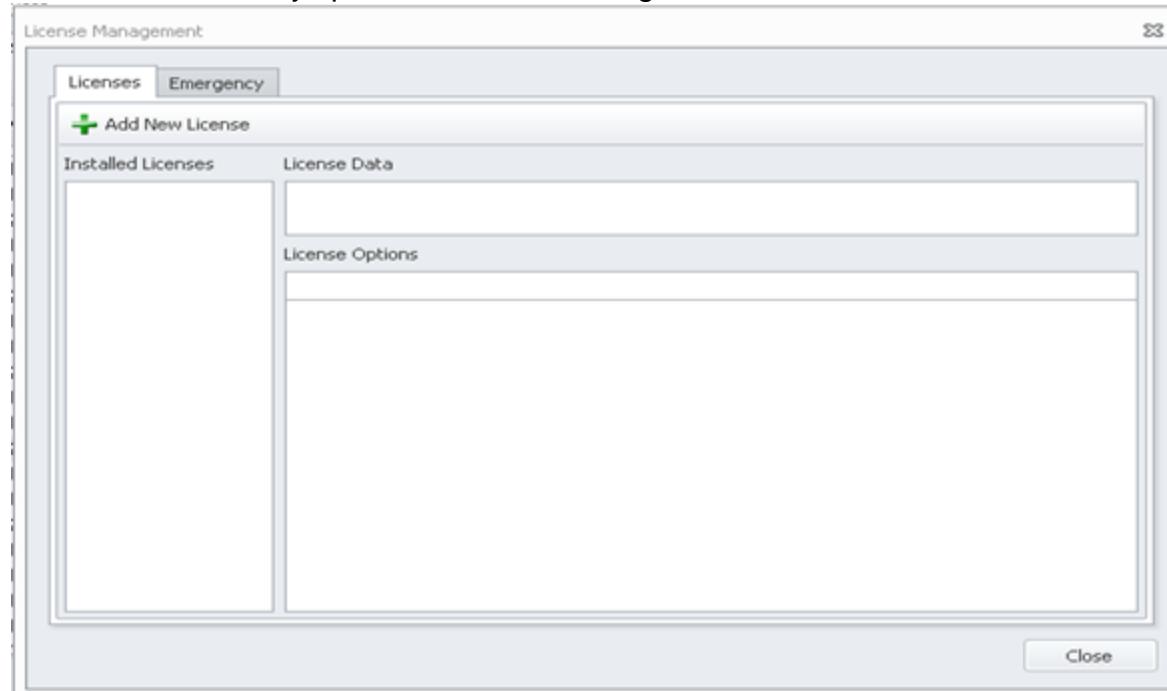
as an attachment to Load DynamiX Support. When Load DynamiX Support responds to this email they will provide the user with two files:

Activation Record: <Appliance Mac Address>\_<Appliance Serial Number>.activation.txt

License File: <Appliance Serial Number>\_license.txt

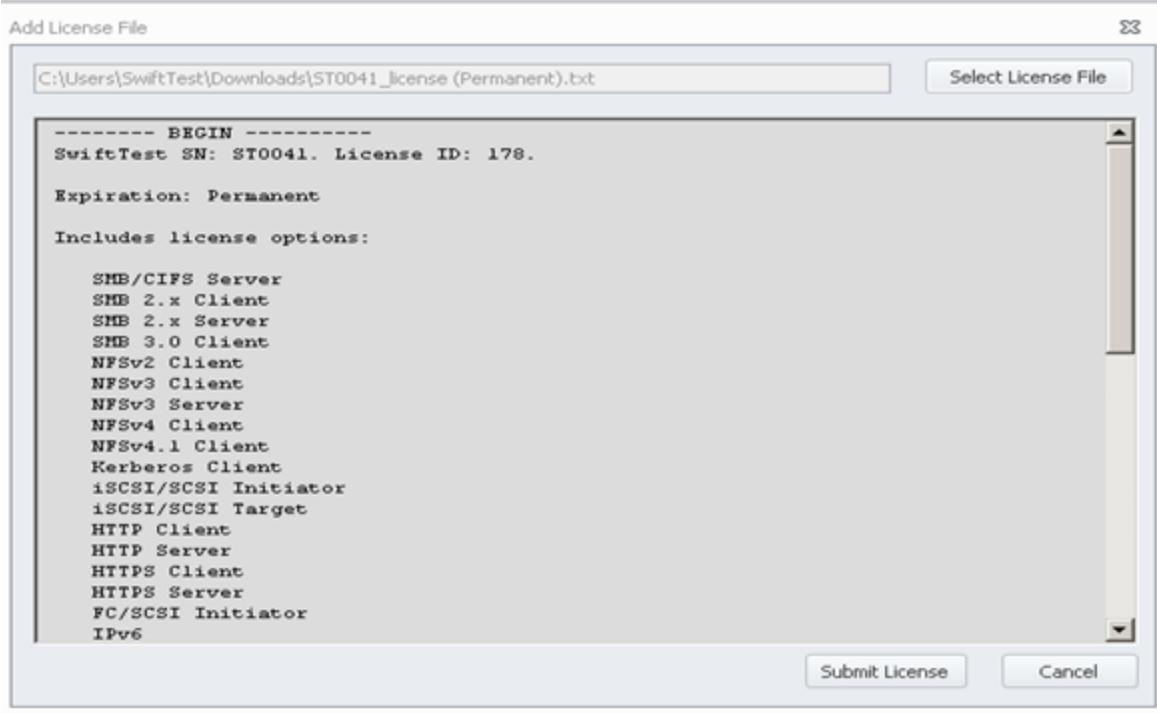
Save these files to the computer's hard drive.

Click the Licenses button  in the Ports & Appliances >Appliance tab with the Appliance to be licensed highlighted and then click the Submit Activation radio button and select the <Appliance Mac Address>\_<Appliance Serial Number>.activation.txt file. The TDE will deploy the Activation Record and then immediately open the License Management window.

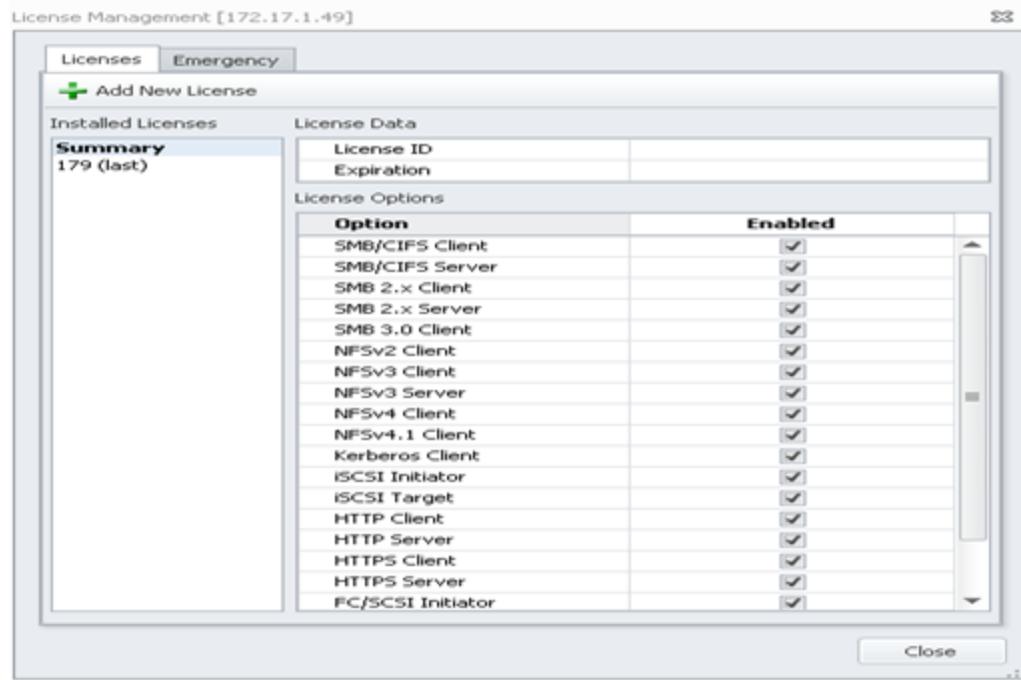


Click the Add New License button  and select the License File: <Appliance Serial Number>\_license.txt and the contents of the License File will be displayed in the window.

Add License File

**Submit License**

Click **Submit License** to deploy the License File and the supported Protocols will be displayed on the right side of the window.



The Appliance is now ready to run projects that contain the Protocols that appear on the right side of the window.

## Emergency License

If for some reason an Appliance's License file does not work, use the Emergency License.

Click the Emergency Tab on the License Management window and then click the Enable Emergency button

**Enable Emergency**

which will enable all Protocols on this Appliance for 7 days.



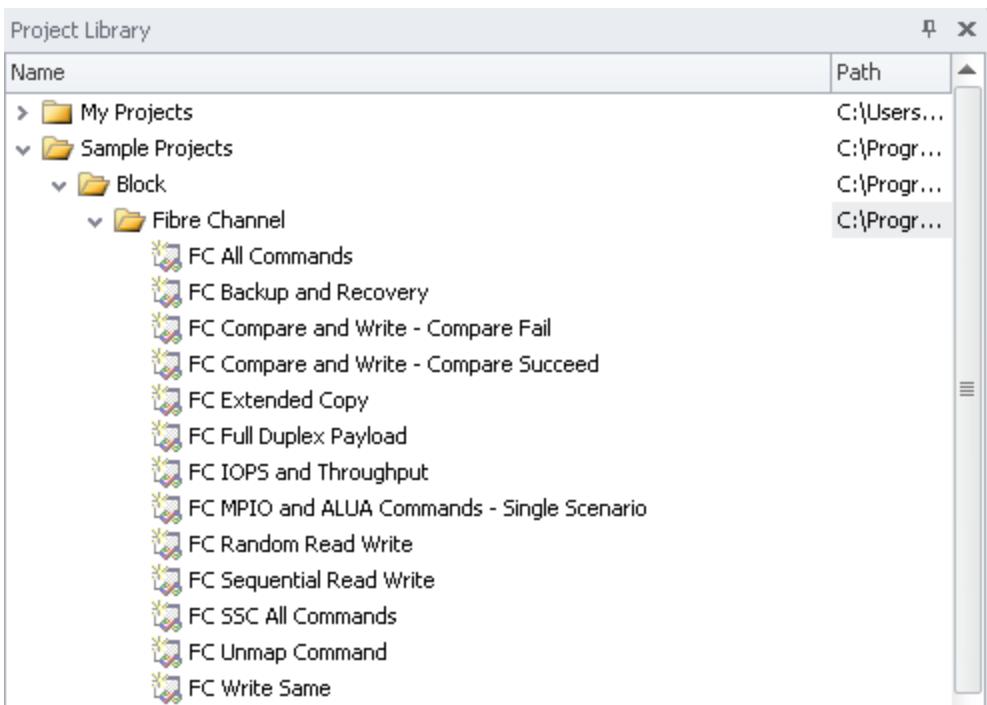
# Initial System Test

If the new Load DynamiX Appliance that is being configured for the first time is one of the FC Series Appliances (Models 6202, 6202E, 6204, 6204E or 6208), proceed with the Fibre Channel Initial System Test. If the Appliance is a Load DynamiX U1022, U1044, U1122, U1144 then proceed with the Fibre Channel Series or Unified Series FC Port Initial System Test instructions and then follow the 10GbE Initial System Test instructions.

## Fibre Channel Series or Unified Series FC Port Initial System Test

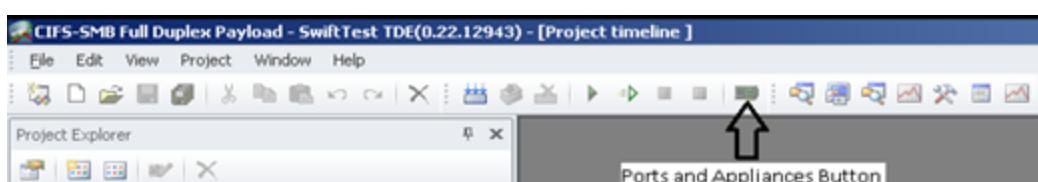
Start the Load DynamiX Test Development Environment (GUI) by double clicking on the icon on your desktop or in the Start menu. Occasionally, on a Windows 7 system, the TDE will not start unless it is Run as Administrator. If after attempting to execute the TDE, an error dialog box saying that the "Load DynamiX TDE has stopped executing" pops up, right click on the TDE icon and select Run as Administrator. This is only required the first time the TDE is executed.

- Click Project Library tab in the lower left corner of the main TDE window.
- Click Sample Projects and open the Block then Fibre Channel folder.
- Double Click the FC Full Duplex Payload project.

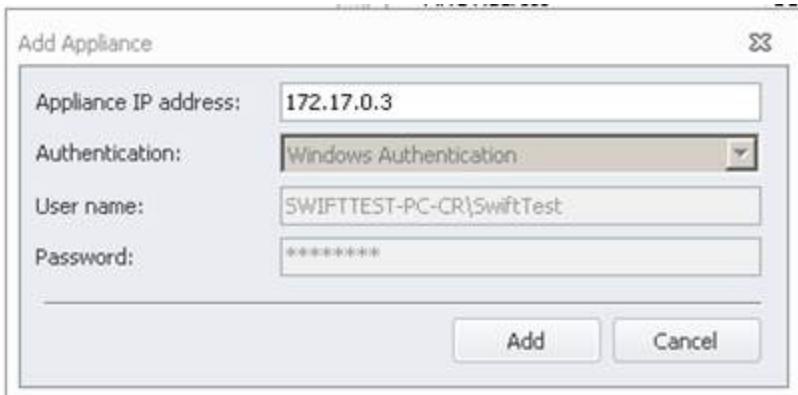


The sample test is Read-Only. Save a copy in your My Projects directory.

Establish a connection from the TDE to the Appliance:

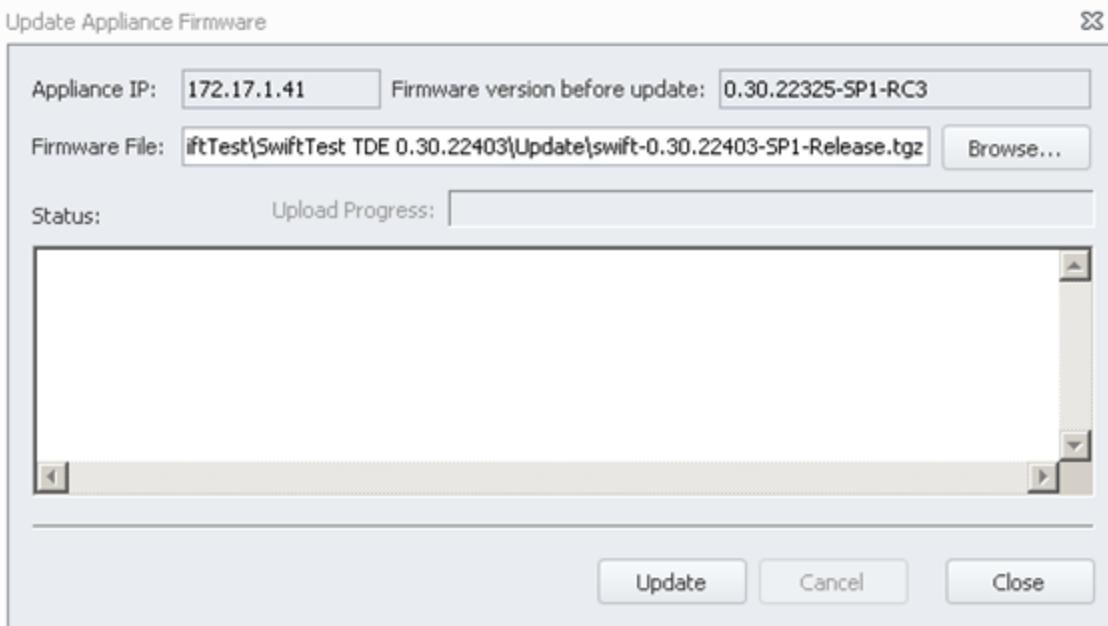


- a. Click the Ports & Appliances icon in the upper center portion of the GUI.
- b. Select the Appliances tab in the Ports & Appliances window.
- c. Click the Add icon  at the top of the window.
- d. Type the Management IP address of the Appliance and click Add.



Ensure the Appliance is running the latest software:

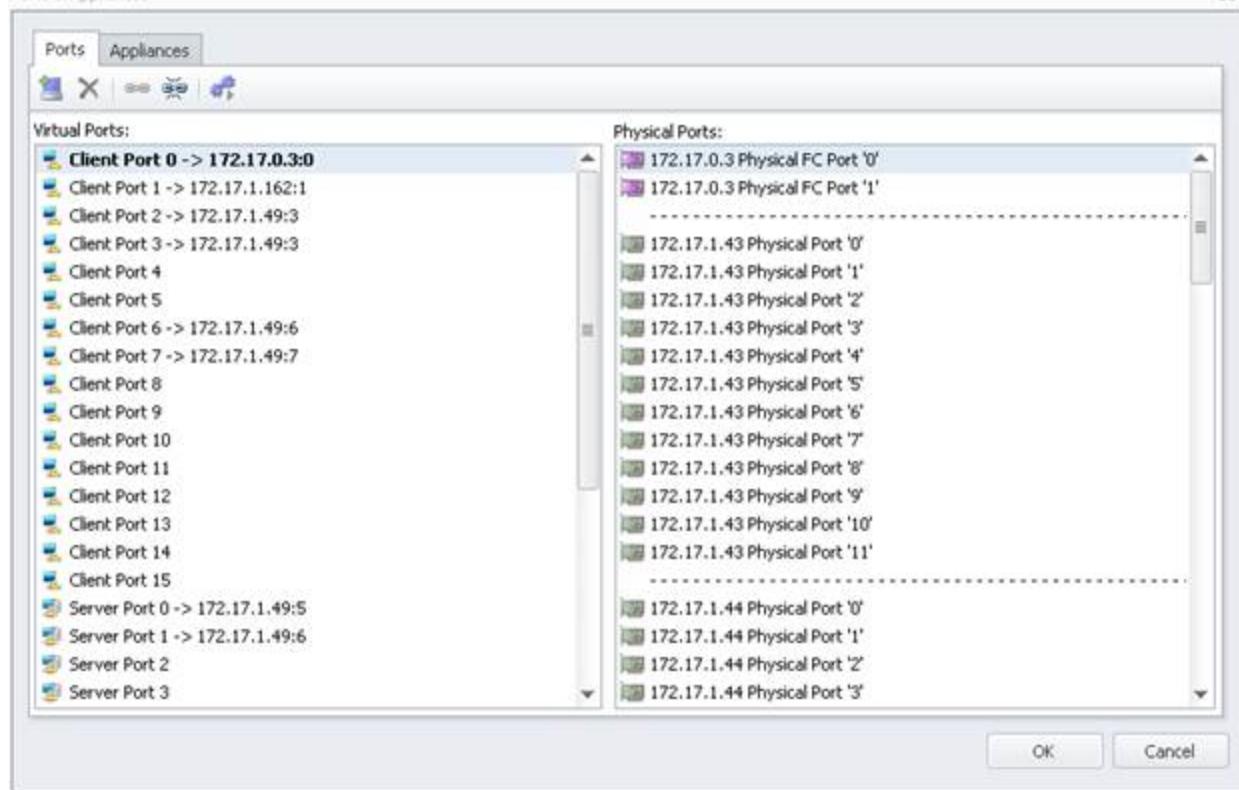
- Click the IP address of the Appliance and click the Update Appliance Firmware icon .



- Click Update in the Update software window.
- When the update finishes click Close. (the next 3 steps are optional)
- Click the Reboot icon.
- Click Reboot in the Reboot Appliance window.
- When the reboot finishes, click Close.

Return to the Ports tab and connect the Appliance Client Port 0 to the Project:

- Click Ports on the Ports & Appliances window.
- Drag Physical FC Port '0' to Client Port 0 (FC Physical Ports cannot be dragged onto Server Ports)



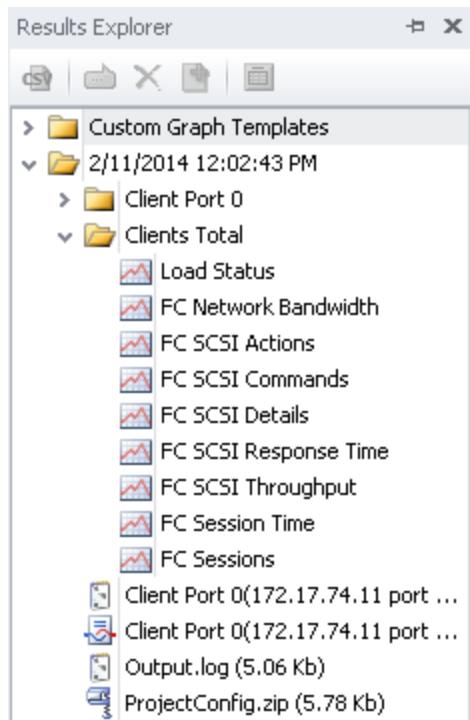
- Click OK.

## Run the Sample Test

- The FC Full Duplex sample Test requires that the FC Target WWPN be entered into the Open FC Connection Action. To do this, got the Ports & Appliances window and click the Appliances tab. Highlight Port 0 and copy the desired Target WWPN from the window. Open the Read and Write Scenarios and paste the Target WWPN into the Input of the Open FC Connection Action. Also open the Read Capacity(10) Action in each Scenario and set the correct value for the LUN that is to be read or written. This test will write and read 1MB at LBA 0 in a loop 100 times to the LUN selected. Save the changes to the Scenarios by clicking the OK button at the bottom right.
- After following the steps described above, click the Start Button icon at the top of the main GUI window or press F5 to begin the test.

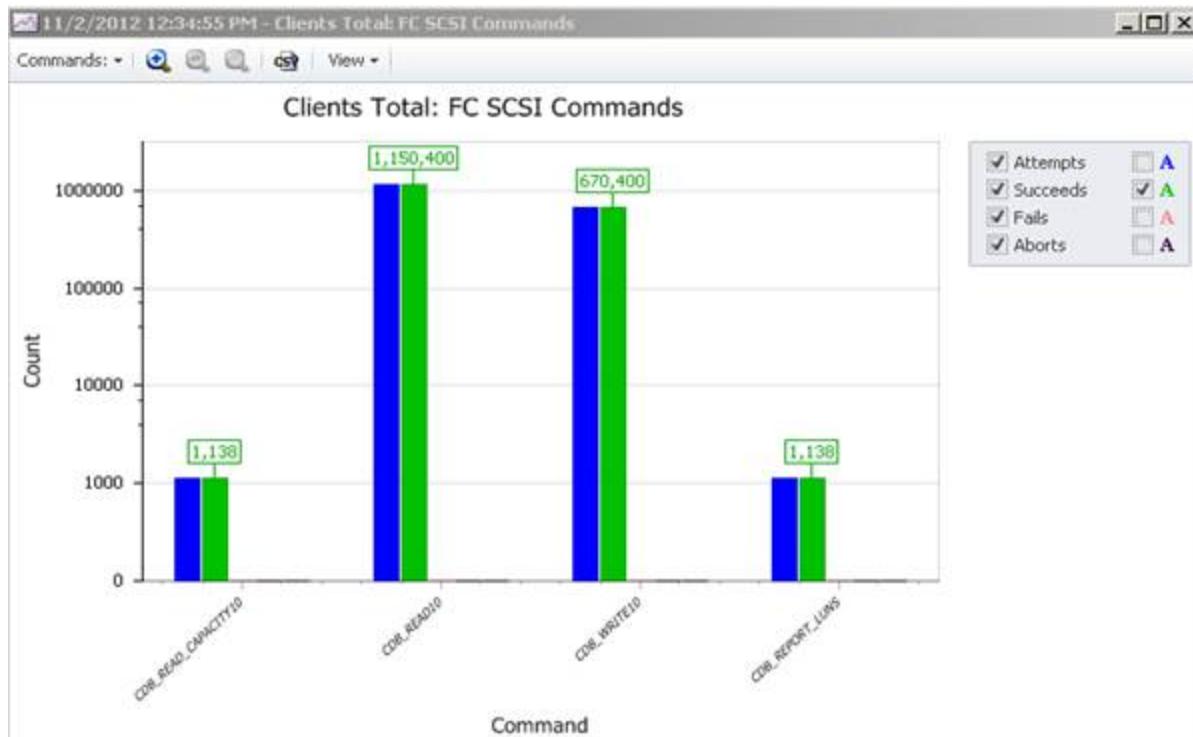


- View statistics during and after the test:
  - Click View->Results Explorer to view test statistics.
  - Expand the Results folder with the current date and time.



- Expand Clients Total folder.
- Double click the FC SCSI Commands report to view the SCSI commands that have executed.

If only Read Capacity(10) commands show as successful and FC Sessions show as failed then it is likely that the wrong Target has been used in the FC Open Connection Action or that the connection between the Appliance and Target is bad. Check the Ports and Appliances Window to ensure the correct physical Ports and Targets have been selected.



If this test is successful (reads and writes successfully sent to the FC Target), the Load DynamiX Test Development Environment and the Load DynamiX Appliance are operating correctly. If you see low/zero

commands executed or Fails or Aborts, there is likely a problem.

Once this test is successful, connect the 850nm Multi-mode Fiber cable with LC connector to another Physical FC Port (whichever was not used in the initial test run), drag that test Port onto Client Port 0 and rerun the test. Repeat this process for all Physical FC Ports on the Load DynamiX FC Series Appliance.

## FCoE Series 10G Initial System Test

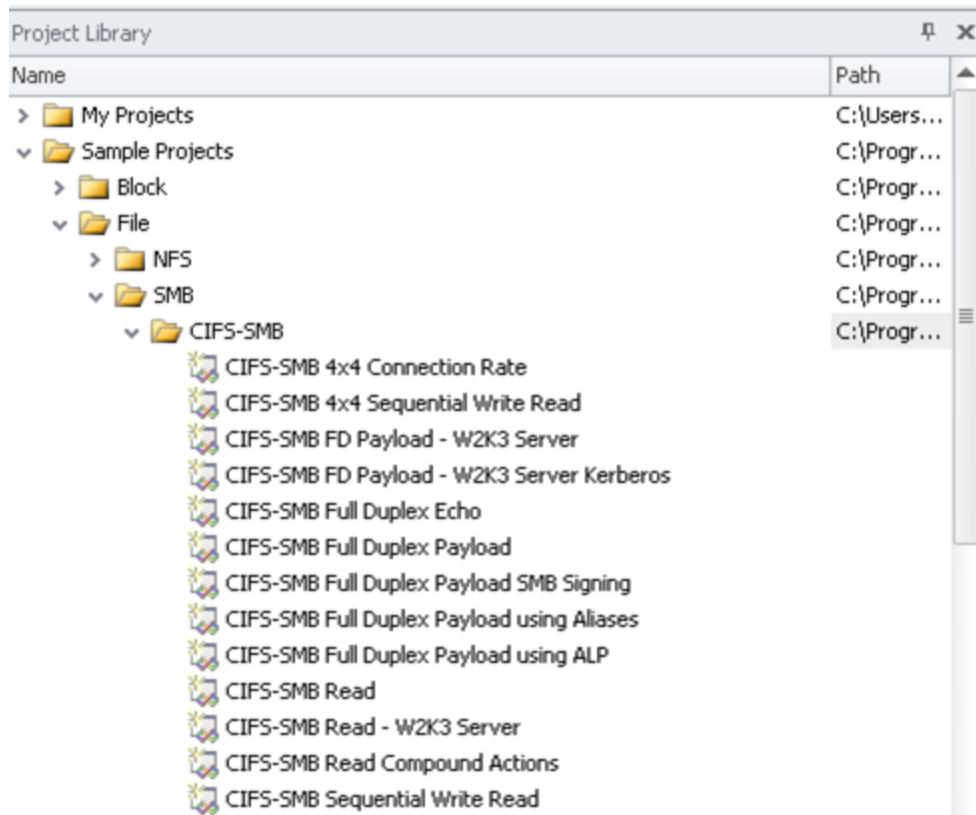
The FC Full Duplex Payload sample Test requires that the FCoE Load Generation Test Ports be connected to an FCoE Target. Open the Fibre Channel Full Duplex Payload sample Project. Connect the physical FCoE Test Port to Client Port 0 and insert the WWPN of the FCoE Target into the Open FC Connection Action Target WWPN input field. Execute the sample and follow the instructions in the Run the Sample Test section above.

## Unified Series 10GbE Initial System Test

Start the Load DynamiX Test Development Environment (GUI) by double clicking on the icon on your desktop or in the Start menu. Occasionally, on a Windows 7 system, the TDE will not start unless it is Run as Administrator. If after attempting to execute the TDE, an error dialog box saying that the "Load DynamiX TDE has stopped executing" pops up, right click on the TDE icon and select Run as Administrator. This is only required the first time the TDE is executed.

Click Project Library window in the lower left corner of the main GUI window.

- Click Sample Projects then open the File then SMB then CIFS-SMB folders.
- Double click the CIFS-SMB Full Duplex Payload project.
- The sample Test is Read-Only. Save a copy in your My Projects directory.

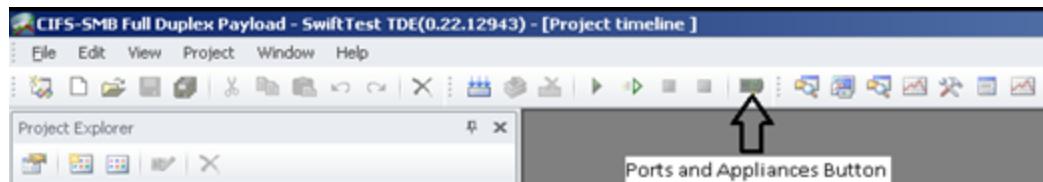


NOTE: the sample Project documented here is one example of many back-to-back samples that can be

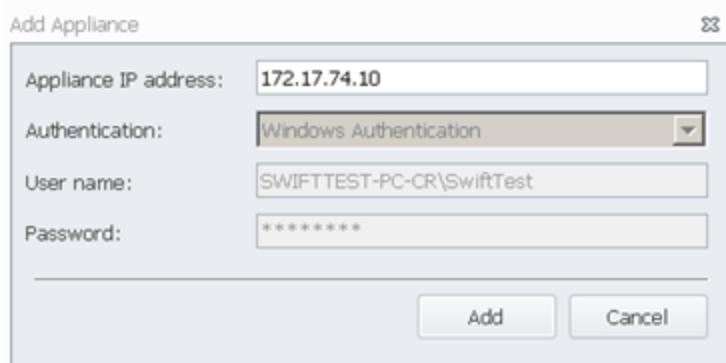
used to complete the Initial System Test. If a Protocol other than CIFS-SMB is preferred, use one of the following instead:

- HTTP: HTTP Full Duplex Payload
- NFSv3: NFSv3 Sequential Write Read
- SMB2: SMB Full Duplex Payload
- iSCSI: iSCSI Full Duplex Payload

Establish a connection from the TDE to the Appliance:

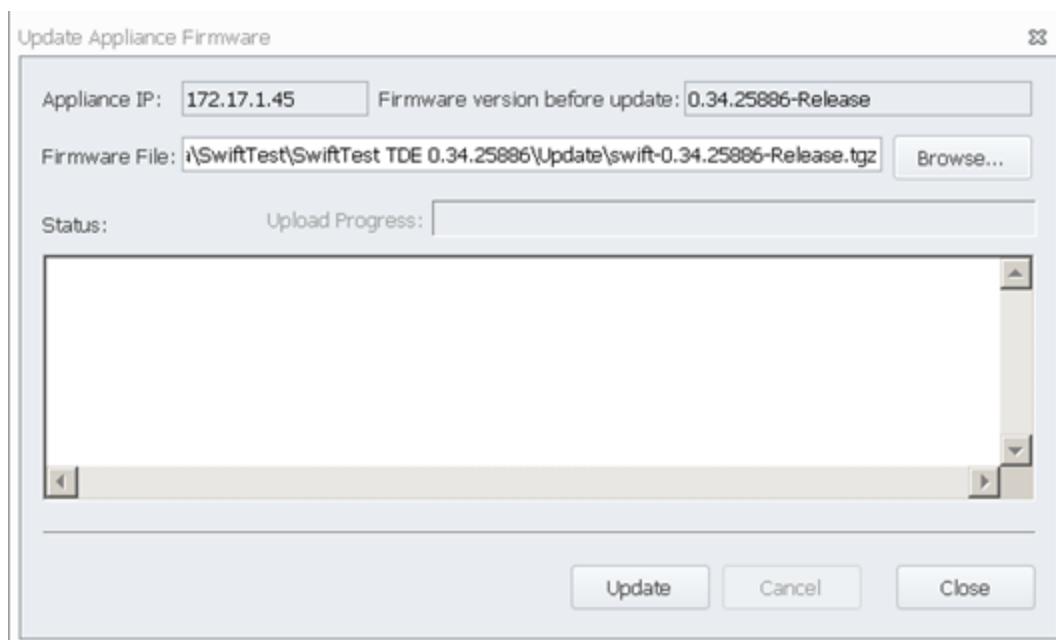


- Click the Ports & Appliances icon in the TDE Toolbar.
- Select the Appliances tab in the Ports & Appliances window.
- Click the Add Appliance icon at the top left of the window.
- Type the Management IP address of the Appliance and click Add.



Ensure the Appliance is running the latest software:

- Click the IP address of the Appliance and click the Update Appliance Firmware icon
- The Firmware File input field will be loaded with the path to the Load DynamiX Appliance firmware (swift-\*.tgz) that is delivered with this TDE.

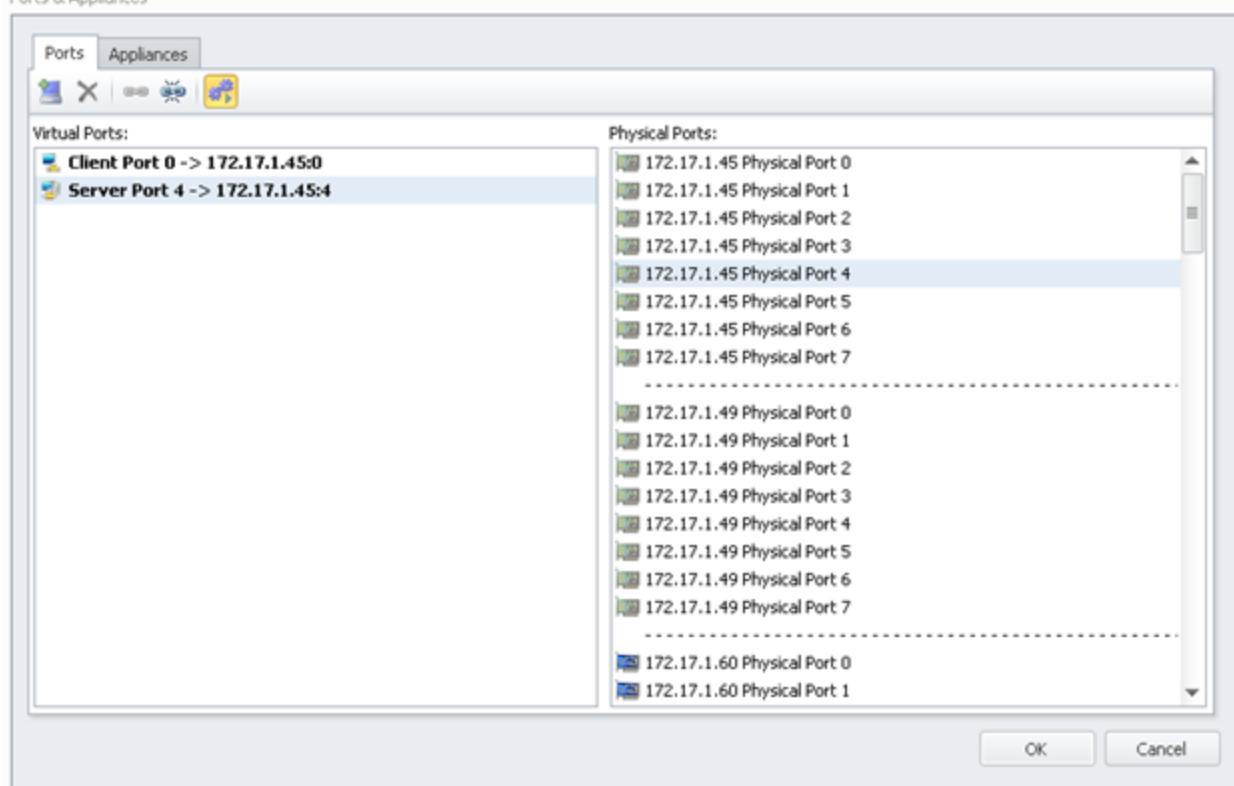


- Click the Update button to download the firmware to the Appliance. Browsing for the swift.tgz file is only required if a different firmware version is to be uploaded to the Appliance.
- When the update finishes click Close. (the next 3 steps are optional)
- Click the Reboot icon.
- Click Reboot in the Reboot Appliance window.
- When the reboot finishes, click Close.

Return to the Ports tab and connect the Appliance Client Port 0 and Server Port 4 to the physical Ports on the Appliance that are connected to each other (back-to-back). Assume that on the Appliance physical Port 0 is connected to physical Port 4:

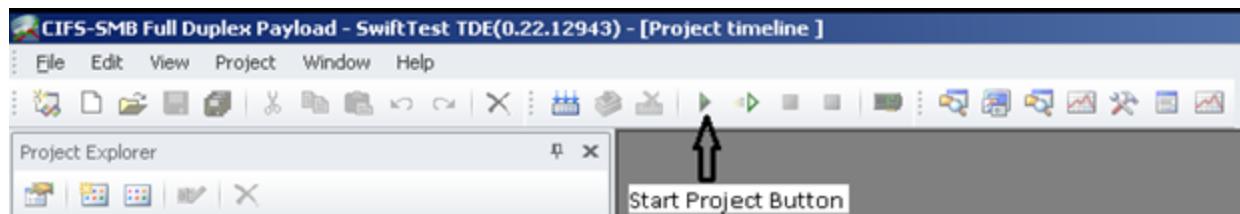
- Click Ports on the Ports & Appliances window.
- Drag Physical Port '0' to Client Port 0.
- Drag Physical Port '4' to Server Port 4 on a Model 3100, 5108T or 5108S (or if using a Load DynamiX Model 5100 Appliance, drag Physical Port '1' to Server Port 4).
- Click OK.

Ports &amp; Appliances



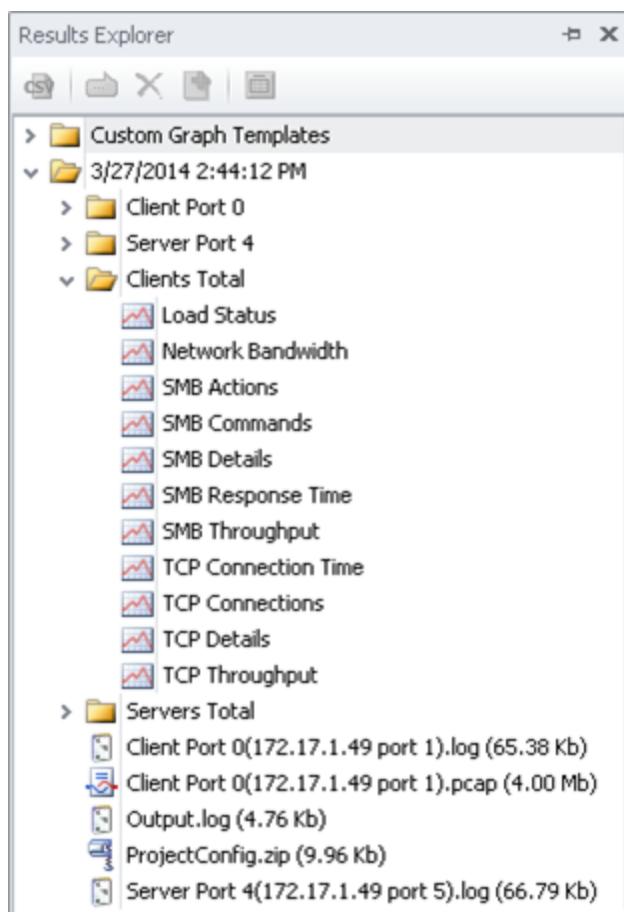
## Run the Sample Test

After following the steps described above in Initial System Configuration, click the Start Button icon in the TDE Toolbar or press F5 to begin the test.



View statistics during and after the test:

- Click View->Results Explorer to view Test statistics.
- Expand the Results folder with the current date and time.



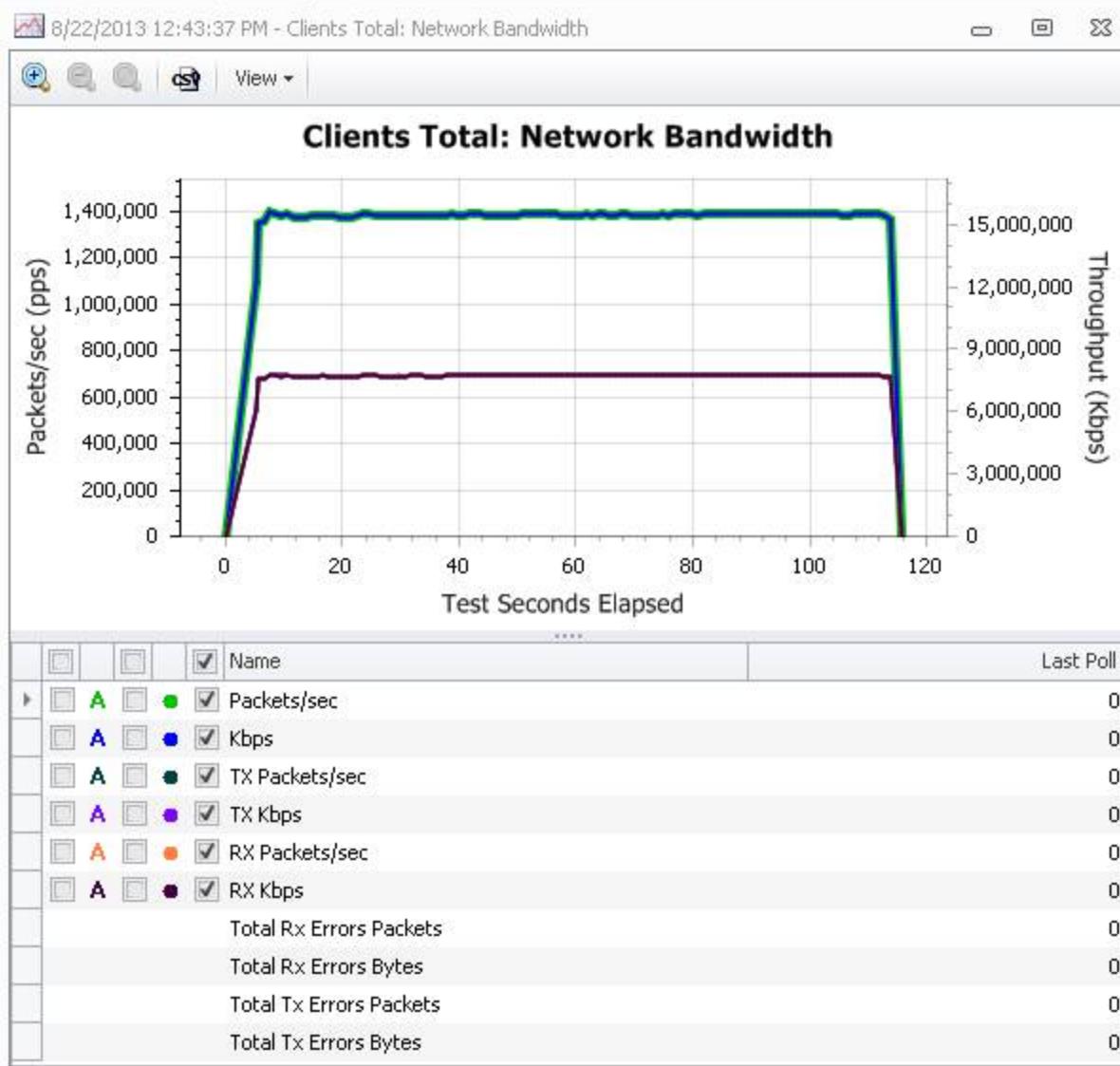
Expand Clients Total folder.

- Double click the SMB Throughput report to view CIFS-SMB throughput.

If no results display, it's likely that the wrong Ports have been selected for the Test or that the Ethernet cable used for the back-to-back connection is bad. Check the Ports and Appliances Window to ensure that physical Ports that have been connected back-to-back have been selected. If Port settings are correct, replace the Ethernet cable.

If you see results for SMB (e.g. you see SMB Actions, SMB Throughput, etc. graphs), continue to the next step. If not, check to ensure the cable is connected between physical Ports 0 and 4 (the two top-most Test Ports). If this does not solve the problem, contact Load DynamiX support ([support@loaddynamix.com](mailto:support@loaddynamix.com)).

- Double click the Network Bandwidth report to view total Ethernet bandwidth or TCP Throughput. Click the blue A at the top of the window to view the total throughput for each polling interval. You should see 15Gbps or higher using the 10GbE Ports.



If the back-to-back Test is successful, the Load DynamiX Test Development Environment and the Load DynamiX Appliance are operating correctly. If you see low/zero bandwidth or errors, there is likely a problem with the Ethernet cable.

Once the back-to-back Test is successful, connect cables from the 10GbE Test into a compatible 10GbE Ethernet switch to verify operation through the switch..

- Re-run CIFS-SMB Full Duplex Payload Test to verify sending data through your network. Now that the Physical Ports are now connected through your switch/network, the same test should still work, but you will likely experience lower throughput, depending on the capability of your switch/network. If you see low/zero bandwidth or errors, you either have a problem with the Ethernet cables or the Ethernet Switch, and you should seek help from a network engineer.

Click the Start icon again and view the results by expanding the results folder with the most recent date & time. If you see comparable throughput, then you know that the test is working correctly.

# Running Load DynamiX Projects

The GUI Software Installation, Initial System Test and Run Sample Test steps above ensure that your Load DynamiX TDE is installed correctly, can communicate with your Load DynamiX Appliance and that the Appliance is functioning correctly.

To ensure that you are able to move forward with more relevant testing, consider these suggestions.

1. Ensure that the Load DynamiX clients have the appropriate permissions necessary to log into the desired the Device Under Test.
2. Configure any intervening network infrastructure to allow the Load DynamiX Client IP addresses to route or switch to the desired the Device Under Test.

# Information Typically Required to Design a Load DynamiX Project

Some pieces of information that will be helpful to know before beginning to design a Project using the Load DynamiX TDE

**Device Under Test IP Address(es):** Load DynamiX Projects require a device under test to connect to and that device is specified by its IP Address. Is just a single IP address required (for example, NFSv3 Tests require three separate connections, are these connections to the same IP Address)?

**Protocol:** Which Protocol (CIFS-SMB, SMB2, NFSv2, NFSv3, NFSv4, NFSv4.1, Fibre Channel, iSCSI, HTTP, etc.) is to be tested?

**TCP Ports:** Which TCP Ports will be used (CIFS-SMB:445, SMB2:445, NFSv2:2049, NFSv3:111/627/2049, NFSv4/4.1:2049, iSCSI:3260, HTTP:80 or others)?

**Domain/Machine Name:** CIFS-SMB and SMB2 allow input of Domain and Machine Name in their authentication commands. What values are to be used, if any?

**Authentication Method:** All Load DynamiX supported protocols require some form of authentication. Be sure to know what authentication method the device under test uses to authenticate access.

**Users:** How many and what are the User names and passwords that will be used during the test.

**Filesystems and Files:** Most Load DynamiX protocols are file-oriented (CIFS-SMB, SMB2, NFSv2, NFSv3, NFSv4, HTTP). What filesystem (volume or share name) and files are going to be used? Are the files going to be created or must they exist in advance? What type of files are required (regular, device, link, pipe, stream, etc.)?

**URI:** The HTTP protocol requires URI information to access files.

**IQN:** The iSCSI Protocol requires ISCSI Qualified Names for Clients to log in to iSCSI Servers.

**LUN:** The iSCSI Protocol requires specific Logical Unit Numbers for data read and/or write operations.

**Size:** How many megabytes, gigabytes, or terabytes of storage are going to be required for the test? Does the filesystem or LUN have the capacity that is required?

**Load:** How much load does the test need to place on the device under test?

**Duration:** How long should the test run?

**Throughput:** What throughput (packets/sec, kilobytes/sec, etc.) is required or desired?

## Information Required Decision Matrix

Protocol	IP Addr /WWPN	Ports	Dom/Mach Name	Auth	User Names	File-systems	Files	URI	IQN	LUN	Size	Load	Duration
CIFS-SMB	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	YES	YES	YES
SMB2	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	YES	YES	YES
NFSv2	YES	YES	NO	YES	YES	YES	YES	NO	NO	NO	YES	YES	YES
NFSv3	YES	YES	NO	YES	YES	YES	YES	NO	NO	NO	YES	YES	YES
NFSv4	YES	YES	NO	YES	YES	YES	YES	NO	NO	NO	YES	YES	YES
iSCSI	YES	YES	NO	YES	NO	NO	NO	YES	YES	YES	YES	YES	YES
HTTP/S	YES	YES	NO	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES
Fibre Ch.	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES
Obj Stor	YES	YES	NO	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES

# Load DynamiX Automation on Linux

For more details on Automation, please see the discussion in the TDE online help:

Appendix: Test Automation.

# Appliance Admin User Interface

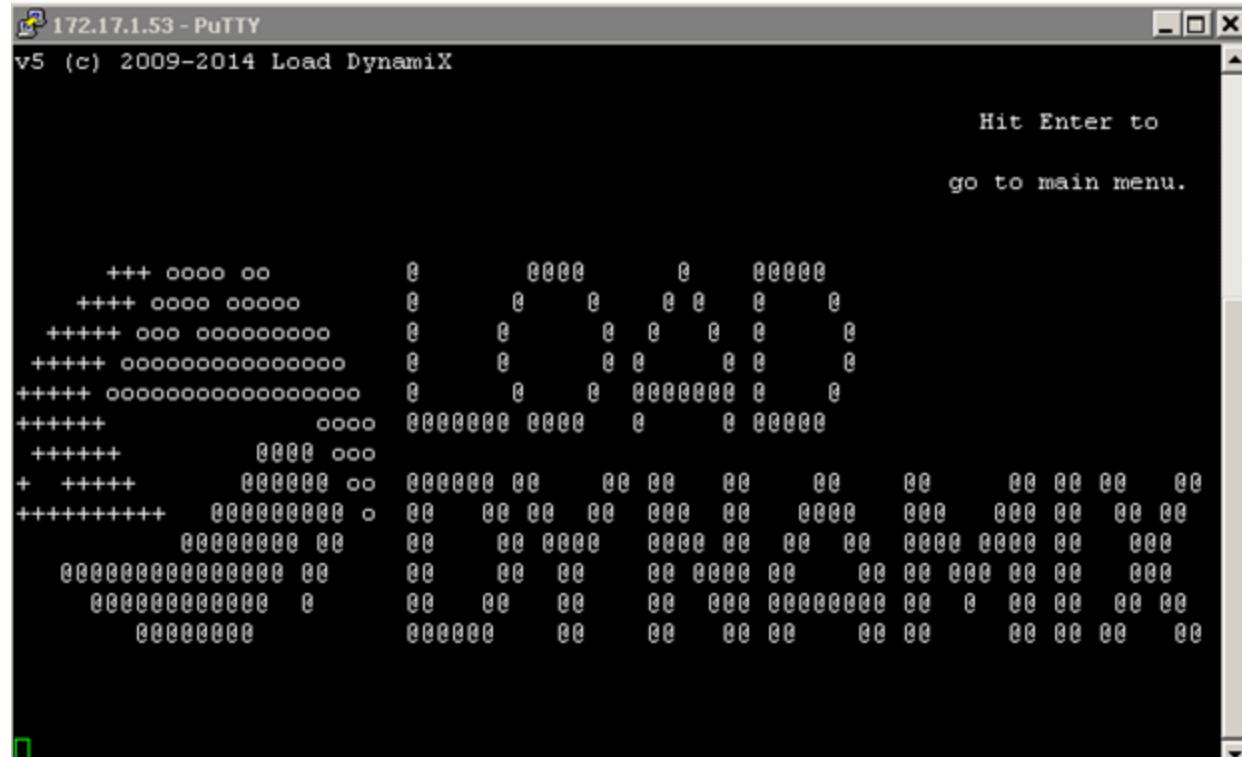
When Telneting/SSH into a Load DynamiX Appliance, the user is presented with a Login prompt for User ID and Password. The User ID and Password for the Load DynamiX Appliance are:

User ID == config

Password == config

The user interface that appears when logging in as config/config is:

Splash Screen



Button Legend for all menus:

< OK > - complete the current selected operation

<Cancel> - Return to the Main Menu (or to splash screen if in Main Menu)

< No > - do not complete the current operation

< Back > - return to the previous screen or menu

<Left/Right Arrow or Tab> - move left or right between buttons

<Up/Down Arrow> - move up or down on Menu items

## TO SET APPLIANCE IP ADDRESS

Press the Enter key to get the Main Menu

**Main Menu**

Please choose what you want to do:

- 1 Network settings**
- 2 Network diagnostic
- 3 Date/Time settings
- 5 External Validation Service settings
- 0 Reboot

< Enter >      < Exit >

Press the Enter key to change the Appliance's IP Address

**Interface details**

Details for network interface adm0 are shown below.  
 Interface name: adm0  
 MAC address : 00:25:90:2f:99:20  
 IP address : 172.17.1.163/24  
 Default route: 172.17.1.1

Do you want to change configuration on this interface?

< Yes >      < No >

Press the Enter key for < Yes > or <Right Arrow>/Enter for < No >

Select < Yes > to change the IP Address configuration

**TCP/IP setup**

You can use DHCP=2 to automatically configure a network interface or you can specify an IP and related settings manually. Choose one option:

- 1 Use DHCP to auto-detect my network settings**
- 2 Specify an IP address manually

< OK >      < Cancel >

Press the Enter key to get the Specify and IP address manually page (recommended)

**IP address**

Please enter an IP address for adm0:

172.17.1.163

< OK >      < Cancel >

Enter the new IP address into this field and press the Enter key.

**Network mask**

Please enter an Network mask for adm0:

< OK >      <Cancel>

Enter the appropriate (valid and non-empty) Network mask for the Appliance and press the enter key.

**Gateway**

Please enter an Gateway for adm0:

< OK >      <Cancel>

Enter the Gateway router IP address for the Appliance or empty (if there is none) and press the Enter key.

## TO SET APPLIANCE TIME and DATE

To set the Date and Time, highlight **Date/Time settings** on the Main Menu and press the Enter key.

**Date/Time Menu**

```
Current local date/time set to:  
Fri 07 Oct 2016 05:00:45 PM PDT PDT -07  
  
UTC equivalent:  
Sat 08 Oct 2016 12:00:45 AM UTC UTC +00  
  
NTP Server:  
not configured  
  
Do you want change those settings?
```

**1 Timezone**  
2 Date  
3 Time  
4 NTP server

< OK >      <Cancel>

If the Date, Time and Timezone are not correct, press the Enter key to set the Timezone

## Timezone Selection Menu 1/3

Please select a continent or ocean.

- Africa
- Americas**
- Antarctica
- Arctic Ocean
- Asia
- Atlantic Ocean
- Australia
- Europe
- Indian Ocean
- Pacific Ocean

&lt; Next &gt;

&lt; Back &gt;

Select the appropriate continent or ocean using the Up or Down Arrows and press the Enter Key for the next page.

## Timezone Selection Menu 2/3

Please select a country.

- St Martin (French part)
- St Pierre & Miquelon
- St Vincent
- Suriname
- Trinidad & Tobago
- Turks & Caicos Is
- United States**
- Uruguay
- Venezuela
- Virgin Islands (UK)
- Virgin Islands (US)

100%

&lt; Next &gt;

&lt; Back &gt;

Select the appropriate country and press Enter.

## Timezone Selection Menu 3/3

Please select a time zone region.

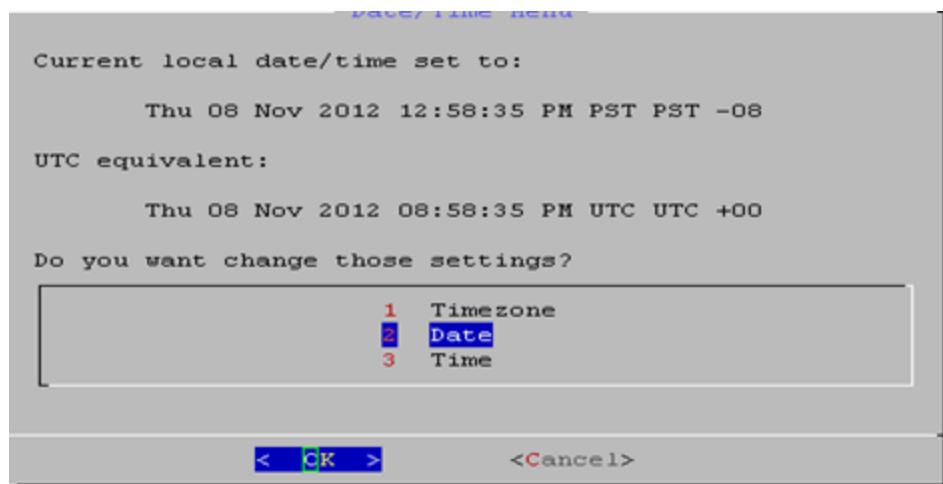
- Mountain Time - Navajo
- Mountain Standard Time - Arizona
- Pacific Time**
- Alaska Time
- Alaska Time - Alaska panhandle
- Alaska Time - southeast Alaska panhandle
- Alaska Time - Alaska panhandle neck
- Alaska Time - west Alaska
- Aleutian Islands
- Metlakatla Time - Annette Island
- Hawaii

100%

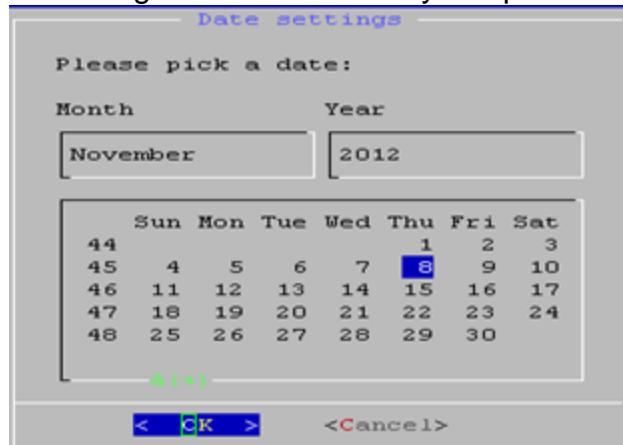
&lt; Next &gt;

&lt; Back &gt;

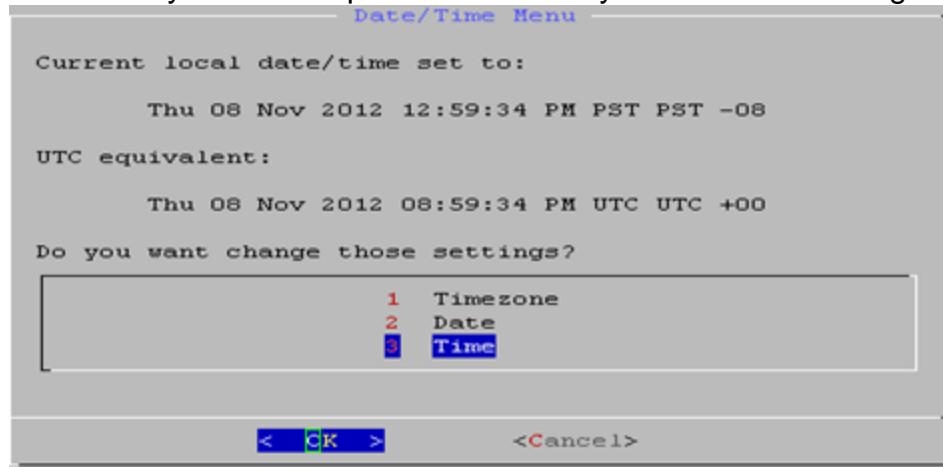
Select the appropriate Timezone and press the Enter key.

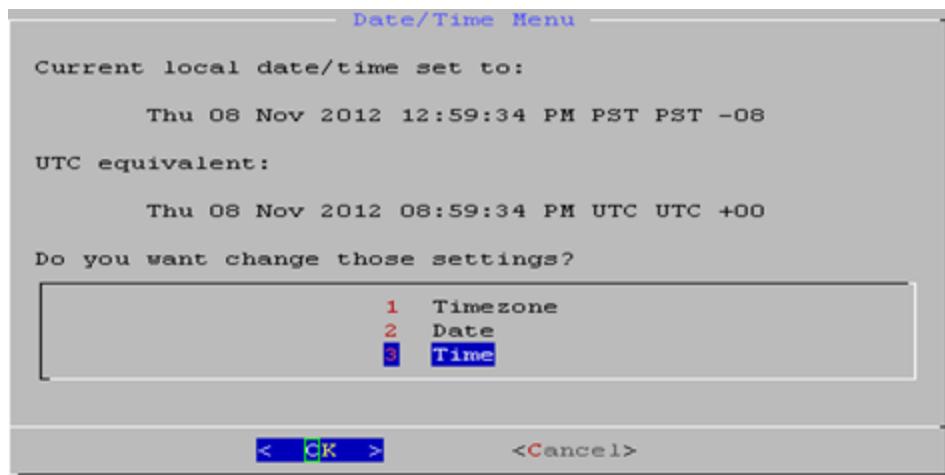


If the Timezone and Time and Date are correct, press the Right Arrow key to select <Cancel> and press the Enter key to return to the Main Menu. If the Date and Time are not correct then highlight the Date menu item using the Down Arrow key and press the Enter key.



Select today's Date and press the Enter key to move on to setting the Time.



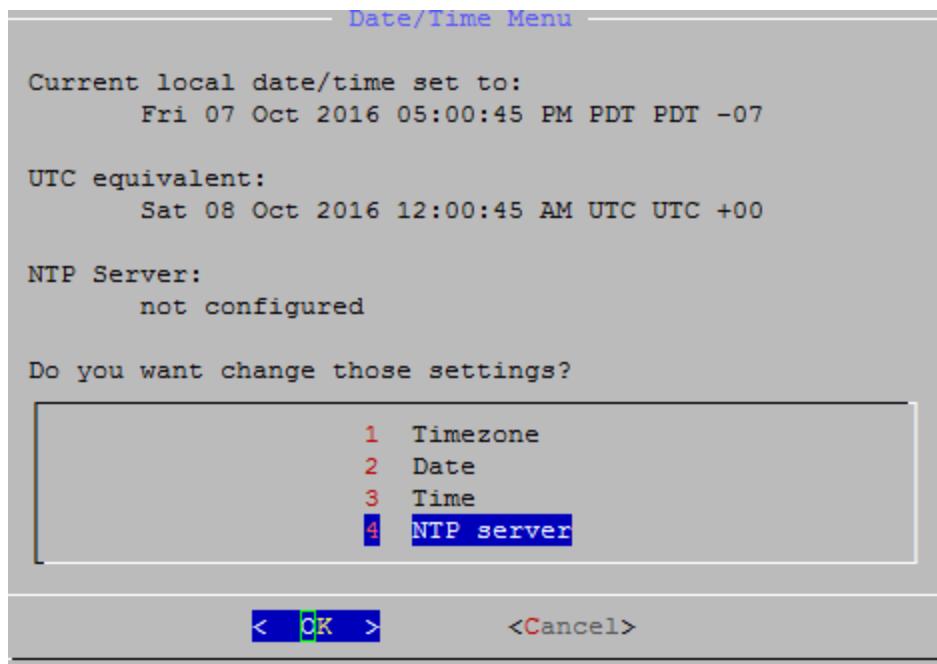


If the Time setting is incorrect, highlight the Time menu item and press the Enter key. If Timezone, Date and Time are correct, press the Right Arrow key to select <Cancel> and press the Enter key.

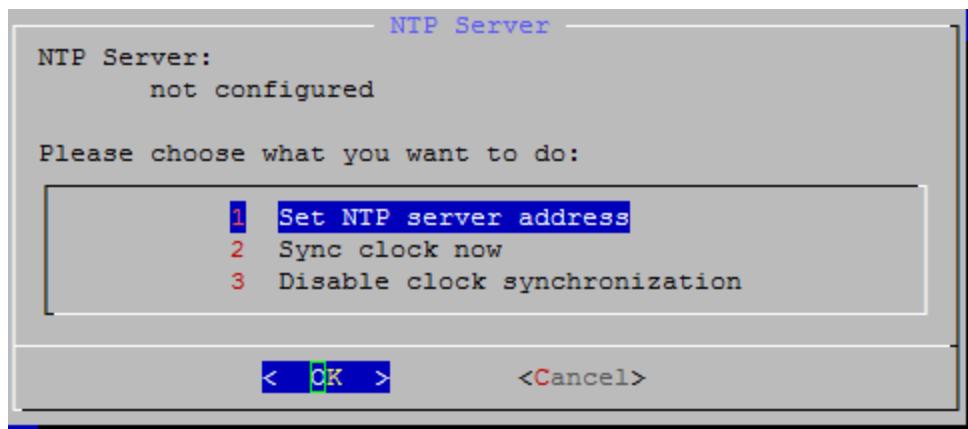


Click on the Hour Minute and Second windows to change the 24 hour time setting and then press the Enter key to select this time and return to the Main Menu.

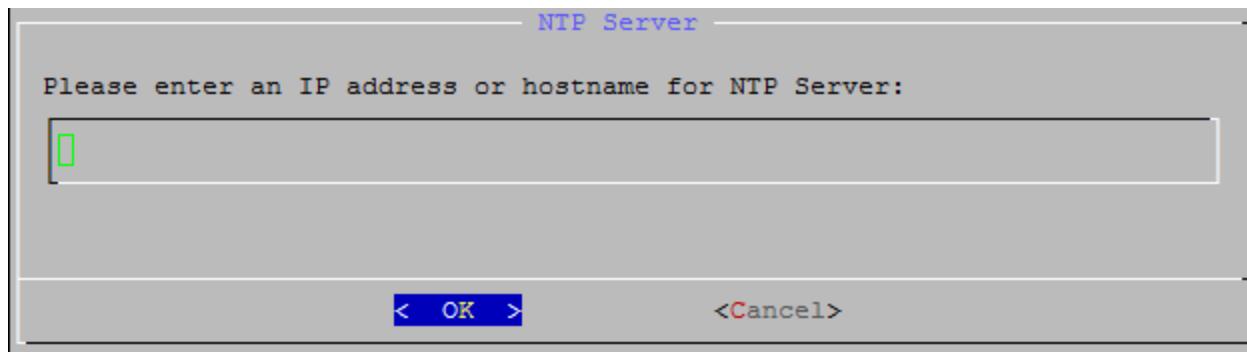
If it is desired to use an NTP (Network Time Protocol) server to provide the Appliance with time, timezone and date information automatically, use the NTP Server interface.



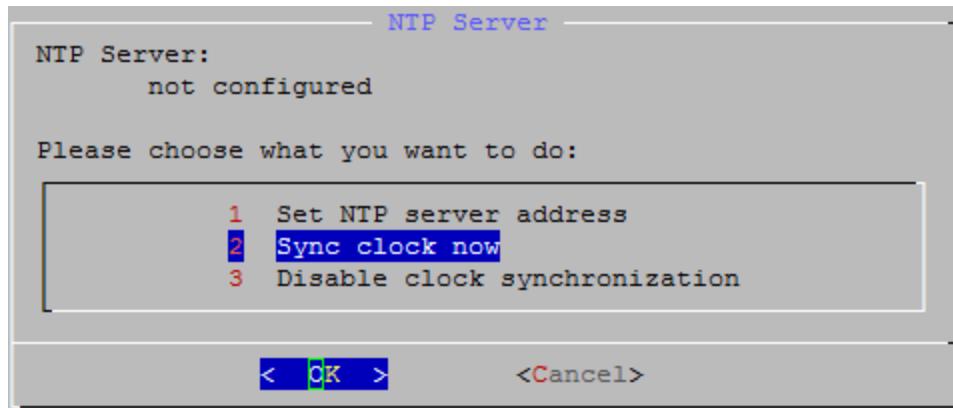
Click OK to get to the NTP Server interface.



Click OK to enter the address of the NTP server.



Enter the IP address or hostname of the NTP Server and click OK.



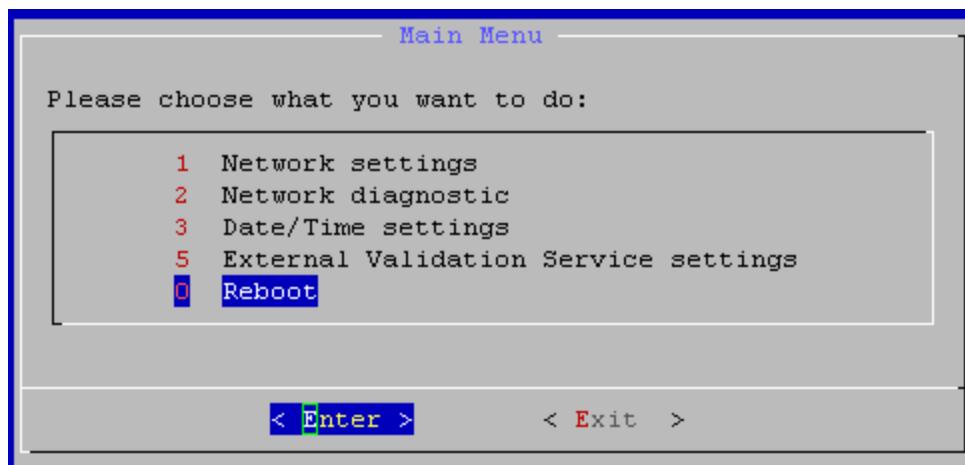
Click Sync clock now to synchronize the Appliance and NTP Server and click Cancel, Cancel and Exit to complete the session.

The Appliance Admin User Interface also provides three additional capabilities:

1. Reboot the Appliance
2. Network Diagnostics
3. External Validation Service settings

### To Reboot the Appliance

From the Main Menu, highlight the Reboot menu item

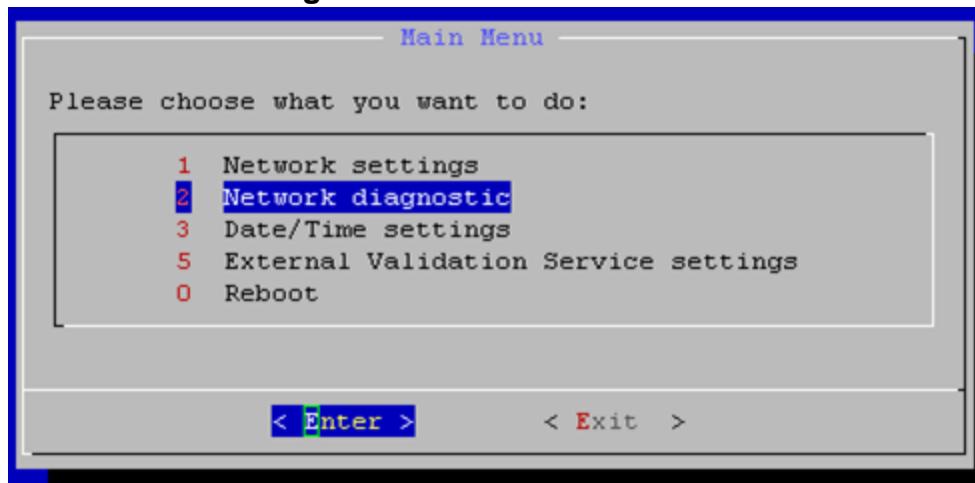


Press the Enter key

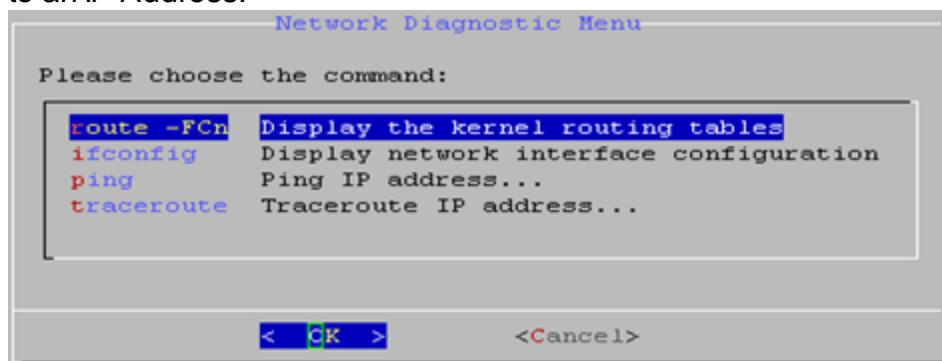


Press the Enter key to Reboot the Appliance or press the Right Arrow key to Select <No> to return to the Main Menu. This session will disappear if <Yes> is selected.

## To run Network Diagnostics



Use the Network Diagnostics menu to display the Appliance's routing tables; Display the Appliance's network configuration details; Ping an IP address from the Appliance; Run a Traceroute from the Appliance to an IP Address.



Highlight the desired diagnostic feature and press the Enter key. The first two items (Display routing tables and network configuration) are view only interfaces. Ping and Traceroute take an IP address as input.

## External Validation Service settings

To enable the Appliance to use an External Validation Service to validate that certain Project configuration values are set as required, click on External Validation Service settings in the main menu and provide an IP address for that service. Contact Load Dynamix Support ([support@loaddynamix.com](mailto:support@loaddynamix.com)) for more information.



# Troubleshooting Tips

## Installation

The Load DynamiX TDE is dependent on the .NET framework version 4.x. Please be sure that version 4.x is present on the Load DynamiX Management Workstation.

The HTTP protocol is used to communicate between the Management Workstation and Appliance. The Management Workstation must be able to send and receive HTTP packets to/from the Load DynamiX Appliance.

## Project Execution

### Product Features

There are a number of capabilities that the Load DynamiX product provides that are intended to help determine if the desired results are achieved.

**PCAP** (Tracing Parameters) - packet capture and review is often one of the easiest ways to find issues with test programs including items such as:

TCP Connection creation information

Protocol specific information (e.g. meta data (ex: SMB TRANS2 Get File Information) and Read and Write commands/data, return codes)

Event order (in what sequence do different Actions take place)

NOTE: Tracing Parameters are not a performance tool. Using Tracing Parameters to capture PCAP data will reduce performance in the Load DynamiX Client and Server software.

**Results Folder** - the results folder contains the statistics and log files that are captured during the execution of a Load DynamiX Test Project.

Statistics - statistics are captured real time and may be observed by opening the Results Folder during a test run and selecting the statistic that is interesting.

For example,

SMB Commands – view counts of the number of commands of a given type executed

Load Status - to see how the various Scenarios launched by the test are doing, etc.

While these statistics can be used for real time evaluation of the progress of a test, they are also excellent troubleshooting tools.

**Client and Server Port log files** - at the end of a test run, the Load DynamiX appliance sends a log file to the TDE containing execution details for the test. There is a log file for each Logical Port in the Test and this log file can be immensely helpful in determining the cause of test failures.

Network statistics are captured in Client and Server log files for debugging purposes. These statistics can be used to debug issues at the lowest levels of the communications process.