

Xena3918

User Manual

This is the User Manual for Xena3918. Xena3918 is a PC application that lets you perform advanced IP multicast network tests according to the [IETF RFC 3918 standard](#) using [the Valkyrie layer 2-3 test platform](#).

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INSTALLATION

Windows

Xena3918 is a standard Windows .NET application supporting Windows XP (SP3) and all later Windows versions. It requires Microsoft .NET version 4.0.

After installation you can find a shortcut to the application either in the **Start -> Programs -> Xena Networks** menu or (if you have selected this during setup) on your desktop.

The application is installed as part of the Xena software release package [which can be obtained here](#).

Linux Support

[Refer to this page for details on support for Linux.](#)

GENERAL INFORMATION

CAPABILITIES

The Xena3918 application features the following capabilities:

- Enables the user to create, edit and execute test configurations using Xena Networks test equipment in accordance with [IETF RFC 3918 standard](#).
- Full support for all test-types specified in RFC 3918¹.
- Ability to partially enable one or more of the test-types.
- Support for IPv4 and IPv6.
- Support for all IGMP/MLD versions.
- Support for multiple XenaBay and XenaCompact test chassis.
- Ability to flexibly define the protocol layers supported by the test (Ethernet, Customer and Service VLANs, IP and UDP).
- Test reports can be created in either PDF or XML format or both.
- Extensive configuration options to fine-tune the tests.

TERMINOLOGY

This section provides explanations for the terminology used by the Xena3918.

Test Type

Denotes one of the test types defined in RFC 3918, sections 4 to 8, such as “Mixed Class Throughput” and “Multicast Latency”.

¹ With the exception of the “Encapsulation/Decapsulation” types.

Trial

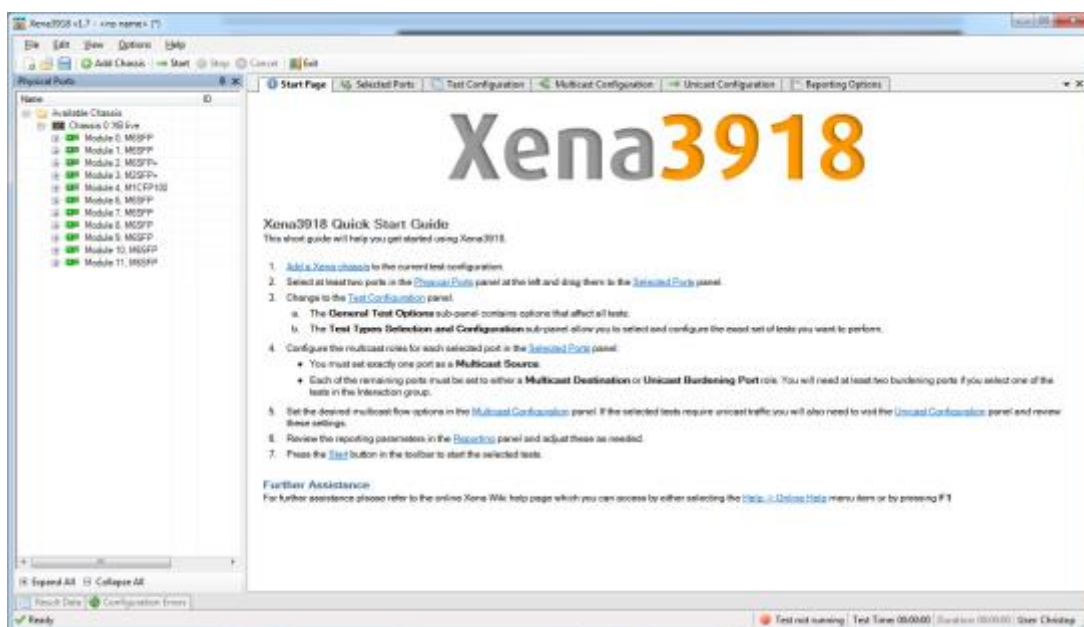
A “trial” denotes a single execution of a test with a given set of test parameters. If the test configuration specifies that the tests shall be performed at various packet sizes a number of trials will then be executed – one for each packet size specified.

Iteration

Each test type can be configured to repeat the test a number of times. Each of these repetitions is called an iteration. One iteration may comprise several trials.

OVERVIEW

The main Xena3918 application view is shown in the image below.



The various parts of the application view are explained below:

- At the top you find a menu bar with accesses various application-level functions. You also find a toolbar with quick shortcuts to the most used functions.
- At the left you find a tree view named “Physical Ports” showing the available Xena chassis, modules and ports.
- At the right you find a tabbed view with various application panels. These are explained below.

Application Panels

Panel	Explanation
Start Page	The default main page shown to the user. This page contains a brief guide to assist you in creating an initial test configuration. You can close this panel once you feel that it is no longer useful to you.
Selected Ports	This panel allows you to include Xena testports in your test and to configure the behavior of these ports. You select the ports in the Physical Ports view and drag them to the Selected Ports panel to include them in the test.
Test Configuration	This panel controls all aspects of the Test Configuration, including the selection of the actual tests to perform.
Multicast Configuration	This panel controls all aspects of the Multicast flow configuration.
Unicast Configuration	This panel controls all aspects of the Unicast flow configuration. The Unicast configuration is used in a number of the available tests as background traffic.
Reporting Options	This panel control all aspects of the reporting function.
Result Data	This panel displays the test data in a grid view.
Configuration Errors	This panel displays any configuration errors detected in your configuration when attempting to start a test.

RFC 3918 Test Types

RFC 3918 defines the following test types, which are separated into a number of functional groups:

Forwarding and Throughput

This group contains the following tests which are all fully supported by the Xena3918:

- **Aggregated Multicast Throughput.** This test determines the maximum zero-loss throughput rate for N destination interfaces of the same multicast groups. It is similar to the Throughput test from RFC 2544 but uses multicast traffic exclusively.
- **Mixed Class Throughput.** This test determines the maximum zero-loss throughput rate of a DUT/SUT when both unicast class frames and multicast class frames are offered simultaneously to a fixed number of interfaces as defined in RFC 2432. It is similar to the Throughput test from RFC 2544 but uses a mix of unicast and multicast traffic.
- **Scaled Group Forwarding Matrix.** This test determines the Forwarding Rate as a function of tested multicast groups for a fixed number of tested DUT/SUT ports. It is similar to the Loss test from RFC 2544.

The group also contains these tests which are not supported by the Xena3918 as present:

- **Encapsulation/Decapsulation (Tunneling) Throughput tests.**

Forwarding Latency

This group contains the following tests:

- **Multicast Latency.**
- **Min/Max Multicast Latency.**

These two tests have been combined into one test in the Xena3918 as both tests can be executed by the same test procedure.

The tests produces a set of multicast latency measurements from a single, multicast ingress interface of a DUT/SUT through multiple, egress multicast interfaces of that same DUT/SUT. The test is similar to the Latency test in RFC 2544 but measures exclusively the latency between the single source port and the destination port(s).

Overhead

This group contains the following tests:

- **Group Join Delay.**
- **Group Leave Delay.**

These two tests have been combined into one test in the Xena3918 as both tests can be executed by the same test procedure.

The Join test determine the time duration it takes a DUT/SUT to start forwarding multicast frames from the time a successful IGMP group membership report has been issued to the DUT/SUT. The Leave test determine the time duration it takes a DUT/SUT to cease forwarding multicast frames after a corresponding IGMP Leave Group message has been successfully offered to the DUT/SUT.

Capacity

This group contains the following tests which are all fully supported by the Xena3918:

- **Multicast Group Capacity.**

The test determine the maximum number of multicast groups a DUT/SUT can support while maintaining the ability to forward multicast frames to all multicast groups registered to that DUT/SUT.

Interaction

This group contains the following tests which are all fully supported by the Xena3918:

- **Forwarding Burdened Group Join Delay**
- **Forwarding Burdened Multicast Latency**

These tests are similar to the **Group Join Delay** and **Multicast Latency** tests but with additional meshed unicast traffic being sent through the DUT from a set of separate ports.

GETTING STARTED

This section explains how to get started using the Xena3918 to execute a few simple tests. The test configuration will consist of one multicast source port and two multicast destination ports. It will not use any unicast traffic ports.

1. Start the Xena3918 application.
2. Press the **Add Chassis** button in the menu bar. Enter the address and password of the Xena chassis you want to use. Press the **OK** button and wait until the application has successfully connected to the chassis.

3. Locate the three ports you want to use in the left-most **Physical Ports** tree view, right-click them and choose the **Add Port to Test Configuration**. You can either select them one by one or perform a multiple-selection by holding down the **Ctrl** key while selecting port ports with the mouse.
4. Change to the **Selected Ports** panel. You should now see the three ports you have chosen to include in the test:
 - Set the role of the port you want to use as the multicast source port to **MC Source**.
 - Set the role of the two other ports to **MC Destination**.
 - Set the IP address, routing prefix and Gateway address for each of the ports.
5. Change to the **Test Configuration** panel.
 - Leave the options in the **General Test Options** subpanel at their default values.
 - Change to the **Test Types Selection and Configuration** subpanel. Ensure that only the "Group Join/Leave Delay", "Aggregated Multicast Throughput" and "Multicast Latency" tests are enabled (checked). Leave the options for all enabled subtests at their default values.
6. Change to the **Multicast Configuration** panel.
 - Check the following options in the **Multicast Flow Definition** subpanel:
 - Ensure that the **IGMP/MLD Version** is set to a version supported by your DUT.
 - Check that the **Start Address** in the **Multicast Address Range** section is supported by your DUT. You will only need a single multicast group address for the selected tests.
 - Check that the **Packet Rate** option is set to a value which is sensible for your DUT.
 - Check that the selected protocol header segments in the **Protocol Segments** subpanel are sensible for your DUT. Note the following default field assignments:
 - The Ethernet Source MAC address will be set to the MAC address of the port.
 - The Ethernet Destination MAC address will be set to the multicast MAC address according to [RFC 1112, section 6.4](#).
 - The Source IP address will be set to the address specified for the port.
 - The Destination IP address will be set to the multicast group address.
7. Save your configuration by clicking the **Save** button in the toolbar or by pressing **<Ctrl-S>** on the keyboard. Provide a filename for the configuration when asked.
8. Start the test by clicking the **Start** button in the toolbar.
9. The **Result Data** panel at the bottom should not be shown automatically and will allow you to follow the progress of the tests.
10. When all selected tests have completed the final PDF report should be opened in your default PDF viewer application.

APPLICATION REFERENCE

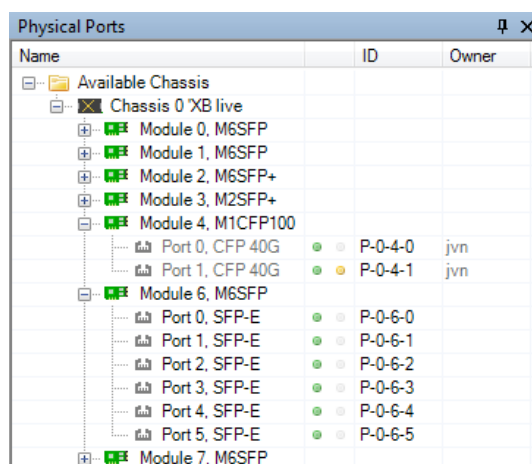
This section explains the options available in the various configuration panels.

PHYSICAL PORTS PANEL

This panel displays all available ports on the currently connected Xena chassis. It is possible to connect to multiple Xena chassis at the same time.

It also allows you to perform the following actions:

- View the current sync (link) and traffic state of the ports.
- View the ownership of the ports, i.e. are the ports reserved and by whom.
- Request or relinquish ownership of ports.
- Determine which ports will be used in the multicast tests.



Name	ID	Owner
Available Chassis		
Chassis 0 XB live		
Module 0, M6SFP		
Module 1, M6SFP		
Module 2, M6SFP+		
Module 3, M2SFP+		
Module 4, M1CFP100		
Port 0, CFP 40G	P-0-4-0	jvn
Port 1, CFP 40G	P-0-4-1	jvn
Module 6, M6SFP		
Port 0, SFP-E	P-0-6-0	
Port 1, SFP-E	P-0-6-1	
Port 2, SFP-E	P-0-6-2	
Port 3, SFP-E	P-0-6-3	
Port 4, SFP-E	P-0-6-4	
Port 5, SFP-E	P-0-6-5	
Module 7, M6SFP		

You can reserve or relinquish ownership of a port by right-clicking on it and selecting the appropriate action. Note that the Xena3918 will automatically reserve ownership of used ports when a test is started.

SELECTED PORTS PANEL

This panel displays the ports that have been actively selected for use in the test configuration. The ports are shown in a grid view with the following columns:

Column	Explanation
Port Name	The name (ID and type) of the port.
MC Port Role	The role this port plays in the overall test configuration. See below for a

	description of the rules for port role assignment.
Port Speed	The physical port speed to use in the test. Normally this should be left at the default AUTO value, but certain DUTs require that the port speed is fixed to a specific rate.
IP Address	The IP address that you want to use for the port. All ports in the configuration need an IP address.
Prefix	The decimal network prefix for the address.
Gateway Address	The gateway address for the assigned IP address. Usually this will be the address of the DUT port which the test port is connected to.

Start Page

Selected Ports

Test Configuration

Multicast Configuration

Reporting Options

Select ports in the Physical Ports panel and drag them here to include them in the test.

Port Name	MC Port Role	Port Speed	IP Address	Prefix	Gateway Address
P-0-9-0 (SFP-E 10/100/1000M)	MC Source	AUTO	10.0.0.2	24	10.0.0.1
P-0-9-1 (SFP-E 10/100/1000M)	MC Destination	AUTO	20.0.0.2	24	20.0.0.1
P-0-9-2 (SFP-E 10/100/1000M)	MC Destination	AUTO		24	
P-0-9-3 (SFP-E 10/100/1000M)	UC Burden	AUTO		24	
P-0-9-4 (SFP-E 10/100/1000M)	Undefined	AUTO		24	
P-0-9-5 (SFP-E 10/100/1000M)	Undefined	AUTO		24	

Port Roles

The following rules apply when assigning roles to ports:

- There must be exactly one Multicast Source (MC Source) port. The MC Source port is the port that acts as the multicast server and transmits the multicast traffic to the multicast groups.
- There must be at least one Multicast Destination (MC Destination) port. The MC Destination ports act as the multicast clients and will receive the traffic sent to the multicast groups.
- If the selected tests require burdening traffic there must be at least two Unicast Burdening (UC Burden) ports. Burdening ports are used to emulate additional unicast traffic to burden the DUT.

Adding A Port

To include a port in the test configuration, perform one of the following two actions:

- Select the **Selected Ports Panel**. Then select the port in the **Physical Ports** panel and drag it to the **Selected Ports Panel**.
- Right-click the port in the **Physical Ports** panel and select the **Add Port to Test Configuration** menu option.

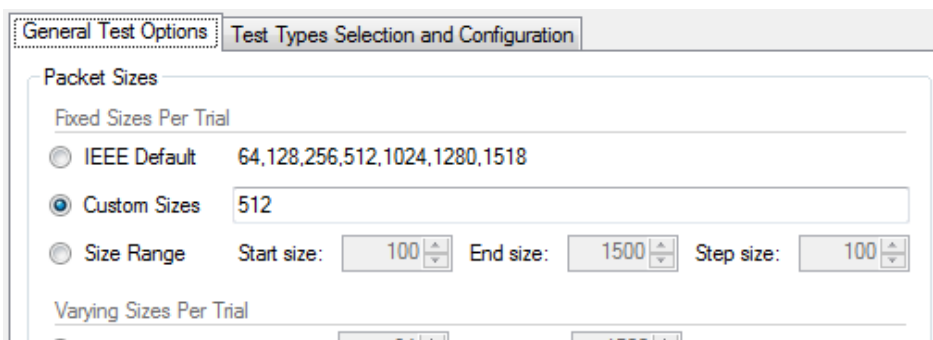
Removing A Port

To stop using one or more ports in a test perform one of the following two actions:

- Select the port(s) you want to remove from the test in the **Selected Ports Panel**. Then you can either press the **Remove Port** button at the lower right or right-click on the port and select the **Remove Port** menu item.
- Right-click the port in the **Physical Ports** panel and select the **Remove Port from Test Configuration** menu option.

TEST CONFIGURATION PANEL

This panel contains options that control the actual execution of the tests. It also allows you to select exactly what tests to run.



General Test Options

This sub-panel contains general options that affect all selected tests.

Packet Sizes

Using this option, you can select the packet sizes to use in the test. If you select one of the options from the *Fixed Sizes Per Trial* section the tests will be repeated for each packet size selected. If you select one of the options from the *Varying Sizes Per Trial* only one trial will be executed.

Other Options

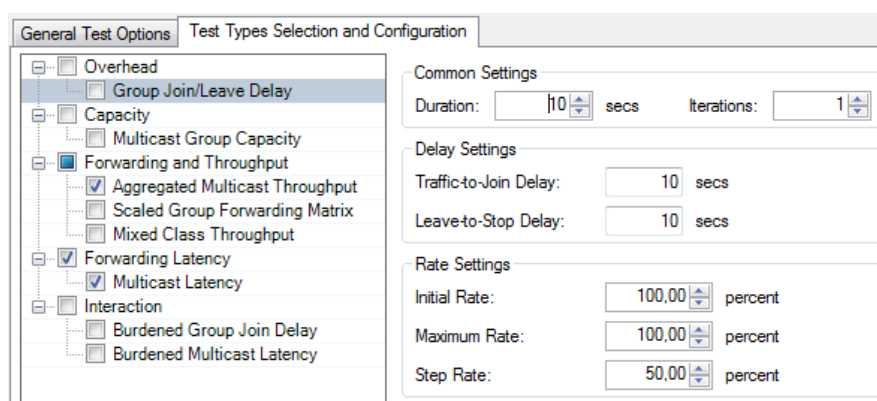
Option	Explanation
Latency Mode:	Determines the mode used to measure latency.
Latency Unit:	Determine the unit which is used to report latency measurements.
Jitter Unit:	Determine the unit which is used to report jitter measurements.
Toggle Sync State:	If selected the port sync states will be toggled off and on between each trial.

Test Type Selection

This sub-panel allows you to select which tests to perform and to configure the options for each test. The tests are grouped according to RFC 3918.

To enable a test just make sure that the checkbox next to the test name is checked.

To configure a test select the test in the treeview and set the options in the panel to the right.



Test Type Options

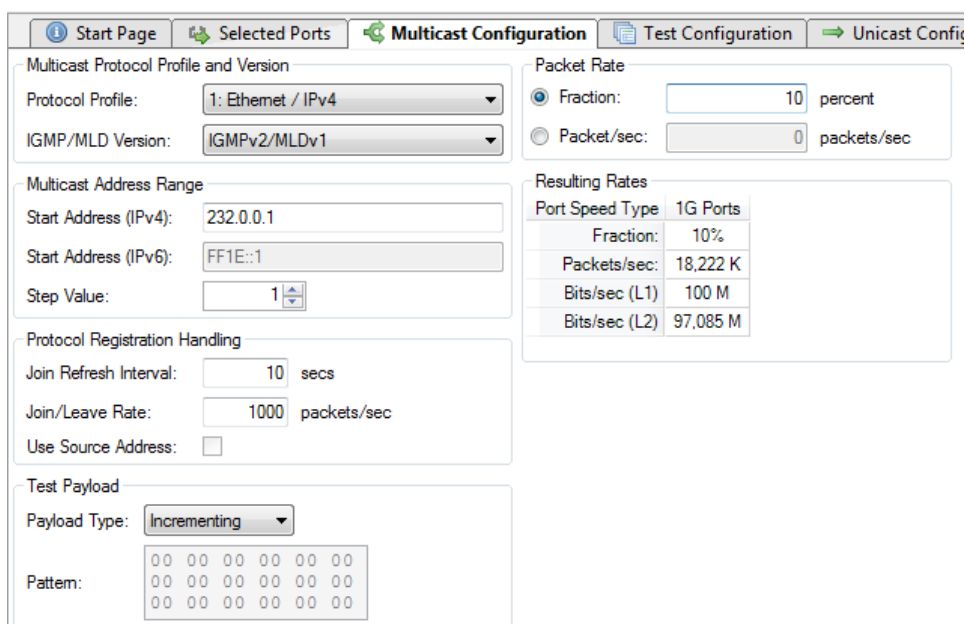
Each test type is associated with a set of test options. All available test options are described below. Note that all options do not apply to every test type.

Option	Explanation
Duration:	The duration in seconds of the time used in each trial for the actual measurement. This does not include the test setup and teardown phases so the total duration of a test will be longer.
Iterations:	The number of times a test is repeated using the same set of variable parameters (packet size, rate, etc.)
Traffic-to-Join Delay:	The number of seconds to wait between starting the multicast traffic on the server and sending the Join requests from the clients. This delay ensures that we can accurately check that traffic is not received by clients before they Join the multicast groups.
Leave-to-Stop Delay:	The number of seconds to wait between sending the Leave requests from the clients and stopping the multicast traffic on the server. This delay ensures that we can accurately check that the Leave requests from clients are actually honoured by the server before stopping the traffic.
Multicast Group Count:	If present this option allows you to define a multicast group count sweep with a start, end and step value.
Multicast Group Count Selection:	If present this option allow you to specify a series of multicast group counts which can be used if multiple iterations have been configured.
Initial Rate:	If present this option denotes the initial rate in percent of the overall rate configured in the Multicast Stream panel.

Maximum Rate:	If present this option denotes the maximum rate in percent of the overall rate configured in the Multicast Stream panel.
Minimum Rate:	If present this option denotes the minimum rate in percent of the overall rate configured in the Multicast Stream panel.
Step Rate:	if present this option is used to increment the rate percentage when iterating from a starting to a maximum rate.
Resolution:	If present this option denotes a minimum difference between rates which will be used to stop the iteration.
Unicast Traffic Ratio:	<p>If present this option denotes the percentage of the overall rate configured in the Multicast Stream panel to be used for unicast traffic.</p> <p>Note that the unicast rate will be <u>added</u> to the configured multicast rate. So if the multicast rate has been set to e.g. 10% and the UC traffic ratio is set to 50% the total rate for the port will be $10\% + (50\% \text{ of } 10\%) = 15\%$.</p>

MULTICAST CONFIGURATION PANEL

This panel contains configuration options that control the generation of multicast traffic.



Multicast Configuration Panel

Multicast Protocol Profile and Version

Protocol Profile: **1: Ethernet / IPv4**

IGMP/MLD Version: **IGMPv2/MLDv1**

Multicast Address Range

Start Address (IPv4): **232.0.0.1**

Start Address (IPv6): **FF1E::1**

Step Value: **1**

Protocol Registration Handling

Join Refresh Interval: **10** secs

Join/Leave Rate: **1000** packets/sec

Use Source Address: ☐

Test Payload

Payload Type: **Incrementing**

Pattern: **00 00 00 00 00 00**

Packet Rate

☒ Fraction: **10** percent

☐ Packet/sec: **0** packets/sec

Resulting Rates

Port Speed Type	1G Ports
Fraction:	10%
Packets/sec:	18,222 K
Bits/sec (L1)	100 M
Bits/sec (L2)	97,085 M

Flow Definition Panel

This sub-panel defines the common multicast options. These are explained below.

Option	Explanation
<i>Multicast Protocol Profile and Version</i>	
Protocol Profile:	The protocol segment profile to use for the multicast traffic.
IGMP/MLD Version:	Specifies the IGMP or MLD version to use. Note that the IP version is implicitly selected in the Protocol Profile option described above.
<i>Multicast Address Range</i>	
Start Address (IPv4):	The starting address to use when allocating a multicast group address sequence. Only valid if IPv4 is selected through the protocol profile.
Start Address (IPv6)	The starting address to use when allocating a multicast group address sequence. Only valid if IPv6 is selected through the protocol profile.
Step Value	The step value used to increment the address when generating a multicast group address sequence.
<i>Protocol Registration Handling</i>	
Join Refresh Interval:	The interval in seconds with which the join requests will be retransmitted. This is useful for longer-running tests where the router may otherwise timeout the individual learning requests.

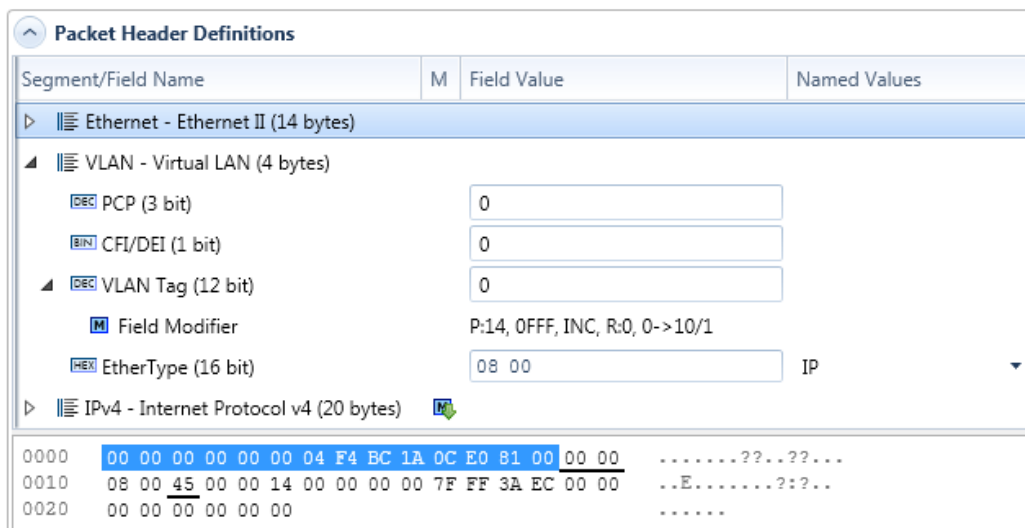
Join/Leave Rate:	The maximum rate with which the IGMP Join or Leave packets are sent. This is used to spread out the request transmission to prevent the DUT from being overwhelmed and drop requests.
Use Source Address:	If selected the multicast address will be added as a source address to the IGMPv3/MLDv2 Group Record in the Join/Leave requests. If not selected the Group Records will not contain any source addresses. See RFC 3376, section 4.2.9 for details.
Test Payload	
Payload Type:	The type of test payload in the packets generated by the MC source port.
Pattern:	If the payload type has been set to "Pattern" you can specify the pattern here.
Packet Rate	
Fraction:	This option allows you to specify the overall rate used for the multicast stream as a percentage of the physical port rate.
Packet/sec:	This option allows you to specify the overall rate used for the multicast stream as a packets per second value.

Protocol Segments

This sub-panel defines the protocol segments used for the multicast traffic generated by the source port. You can add, remove and rearrange segments as you please.

Note the following default field assignments:

- The Ethernet Source MAC address will be set to the MAC address of the port.
- The Ethernet Destination MAC address will be set to the multicast MAC address according to [RFC 1112, section 6.4](#).
- The Source IP address will be set to the address specified for the port.
- The Destination IP address will be set to the multicast group address.



Segment/Field Name	M	Field Value	Named Values
▶ Ethernet - Ethernet II (14 bytes)			
▶ VLAN - Virtual LAN (4 bytes)			
PCP (3 bit)		0	
CFI/DEI (1 bit)		0	
▶ VLAN Tag (12 bit)		0	
Field Modifier		P:14, 0FFF, INC, R:0, 0->10/1	
EtherType (16 bit)		08 00	IP
▶ IPv4 - Internet Protocol v4 (20 bytes)			

```

0000  00 00 00 00 00 00 04 F4 BC 1A 0C E0 81 00 00 00  .....??..??...
0010  08 00 45 00 00 14 00 00 00 00 7F FF 3A EC 00 00  ..E.....?:?..
0020  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  .....
  
```

UNICAST CONFIGURATION PANEL

This panel contains configuration options that control the generation of unicast traffic.

Flow Definition Panel

Option	Explanation
<i>Test Payload</i>	
Payload Type:	The type of test payload in the packets generated by the MC source port.
Pattern:	If the payload type has been set to "Pattern" you can specify the pattern here.

Protocol Segments

This sub-panel defines the protocol segments used for the unicast traffic generated by the relevant ports. Refer to the description for the equivalent multicast protocol segment panel above.

REPORTING OPTIONS PANEL

The Reporting tab contains a number of options that affect the way reports are generated for the test.

Identification

This section contains a number of options that can help identify the test context.

- **Customer Name:** The name of the customer for which the test is performed.
- **Customer Service/Access Id:** These two options allow you to provide details about the network circuits you are testing.
- **Comments:** Allows you to provide any multi-line comments for the test configuration.

Report Generation

This section contains options that affect the way reports are generated.

- **Report Filename Prefix:** Specifies the prefix for the report filename.
- **Append Timestamp to Filename:** If checked a timestamp on the form <YYYYMMDD-HHMMSS> is appended to the filename prefix.
- **Include Graphs in Report:** If checked the report will include bar charts showing the test results. This is only applicable for PDF type reports.

Report Formats

This section allows you to select which types of reports will be generated. You can enable several types. The generated report files will be given a file extension that matches the selected type, i.e. ".pdf" for PDF files and so forth.

XML Report Specification

You can find the [specification for the XML Report here](#).

CONFIGURATION ERRORS PANEL

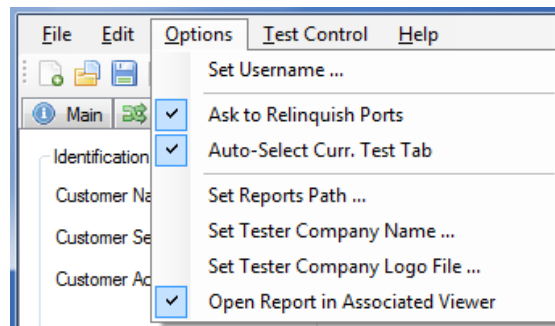
This panel will show any configuration errors detected by the program when you attempt to execute a configuration. If any such errors are found the panel will be shown and the execution attempt will be aborted. You will have to correct any reported errors before the program will allow you to execute the configuration.

Each error will be shown in a separate line in the panel. If you double-click on an error message you will be taken to the relevant configuration panel that will allow you to correct the error.

This panel is by default found in the lower auto-hiding panel group. By "auto-hiding" we mean that the panel is initially hidden but will popup either if the panel tab is clicked or if the Xena2889 program decides that it is necessary to direct the attention of the user to the panel. You can make the panel visible always by clicking the little "pin" icon in the top-right of the panel header.

APPLICATION SETTINGS

The Xena3918 application features a number of application-level settings which are valid for all test configurations. These can be accessed in the Options menu item as shown in the figure below.



- **Set Username:** Allows you to specify the username used when logging in to the Xena testers. The default value will be your Windows username (shortened to 8 characters if longer).
- **Ask to Relinquish Ports:** If checked the Xena3918 will prompt you when you try to use a port which is currently reserved by someone else. If unchecked the Xena3918 will unceremoniously relinquish the port and reserve it in your name.
- **Open Last Configuration On Start:** If checked the configuration you had open when you last closed the application will automatically be opened the next time you start the application.
- **Set Reports Path:** Allows you to specify a different location for the generated reports. The default location is <ProgramData>XenaNetworksXena3918Reports. The location of <ProgramData> varies between versions of Windows but can be obtained by inspecting the environment variable "ProgramData".
- **Set Tester Company Name:** Allows you to set the name of the company performing the tests. The default value is "Xena Networks ApS".

- **Set Tester Company Logo File:** Allows you to specify the path to an image file which will be used as the logo in the reports. The default logo is the Xena Networks logo. The image can be in PNG or JPG format. It should have the approximate dimensions of 150 x 60 pixels and be set to a DPI of 96.
- **Open Report in Associated Viewer:** If checked the Xena3918 will attempt to open the generated report in the associated viewer. This is currently only applicable for PDF reports. This requires that a suitable PDF viewer (such as the Adobe Acrobat Reader) is installed on your PC.

COMMAND LINE INVOCATION

The Xena3918 supports a number of command line options which can be used to automate the execution of a predefined configuration file.

INVOCATION DETAILS

Xena3918 is the first application in the Xena test tools series that does not require a separate executable file to perform the command line functionality. The same executable (*xena3918_<version>.exe*) is used for both the GUI and the command line functions.

COMMAND LINE OPTIONS

The valid command line options are as follows:

Command option	Explanation
-c, -config	Load a test configuration file with the specified path.
-e, -execute	Execute the specified test configuration file (requires -c <file>). If this option is used the program will not show the GUI but will run in command line mode.

-u, -user	Set the username used when logging on to Xena testers (default: xenarun).
-r, -reportpath	Set the path where reports are saved.
-o, -company	Set the company name used in reports.
-l, -logo	Set the path to the report logo file.
-h, -help	Display this help screen.

TROUBLESHOOTING

This section contains some guidelines when you encounter a problem with one of the Xena test applications, such as [XenaManager-2G](#), [Xena2544](#), [Xena1564](#), [Xena3918](#) or [Xena2889](#) and want to obtain help from your support representative.

BASIC INSTRUCTIONS

This section explains how you should report a problem to your support representative.

Describe the Problem

To enable fast resolution of your problem we request that your support request contains the following information:

- Name and version of the Xena test software used (the version can be seen in the main title bar)
- A description of what you are trying to do with the software.
- If the software misbehaved please describe what you actually encountered and you expected instead.
- Screenshots of any error situation.
- The test configuration file for the application (contained in the support archive).
- Any debug log files for the application (contained in the support archive).

Create a Support Information Archive

The Xena test applications include a menu entry called **Create Support Information Archive** which will create a compressed ZIP archive containing both the currently loaded configuration file and the content of the **Logs** and **Settings** directories. This file can then be emailed to your support representative.

For the Xena2544 and similar test applications this menu entry is located in the **Help** menu. For the XenaManager-2G application it is located in the **Tools** ribbon menu.

Please note: For the Xena2544 and similar test applications it is important that the configuration file used when the problem was detected is loaded when the support archive is generated. Otherwise the configuration file will not be part of the archive.

Attach Screenshots

Screenshots are a great and easy way of communicating what you see on the screen. To obtain a screenshot of a running program and send it to Xena support perform the following actions:

1. Point your mouse inside the program window.
2. Press the <Alt-PrintScr> keys simultaneously.
3. Switch to your email program and start a new email message.

4. Press <Ctrl-V> or select “Paste” from the menu (most likely the “Edit” menu) to insert the screenshot into the email.

ADDITIONAL DETAILS

This section goes into a bit more detail about the various items contained in the Xena Support Archive mentioned above.

Configuration Files

The Xena test applications keeps their configurations in special files with an application-specific extension. The extensions used are as follows:

<i>Xena2544:</i>	*.x44 or *.x2544
<i>Xena1564:</i>	*.x1564
<i>Xena3918:</i>	*.x3918
<i>XenaIntegrator:</i>	*.xint
<i>XenaManager-2G:</i>	*.xmcfg

The configuration files will be located in a common Xena data directory on your PC. More specifically they will be located in the following path: **C:<UserAppDataDir>Xena<XenaTestApplication>**. The <UserAppDataDir> directory depends on your Windows version:

<i>Windows Vista, 7 and 8:</i>	C:Users<username>AppDataRoaming
<i>Windows XP:</i>	C:Documents and Settings<username>}Application Data

The <username> is the name of the currently logged-in user.

The Xena test applications include a menu entry called **Explore Xena Data Directory** in the **File** menu that will open a Windows Explorer in the correct directory, regardless of the Windows version.

Debug Log Files

The Xena test applications logs certain events and errors to a series of debug log file located in the Logs subdirectory under the above mentioned main application data directory. If you encounter errors it may help the support if you include these files in your support request.