1 *Platform and Reference Overview*

The Ixia system is the most comprehensive tool available for testing multilayer 10/100 Mbps Ethernet, Ethernet Gigabit, 10 Gigabit Ethernet, ATM, and Packet over SONET switches, routers, and networks.

The Ixia product family includes chassis, load modules, the Ixia IxExplorer software program, and optional Tcl scripts and related software. A chassis can be configured with any mix of load modules, and multiple chassis can be daisychained and synchronized to support very large and complex test environments. The Ixia IxExplorer software provides complete configuration, control, and monitoring of all Ixia resources in the test network, and the Tcl scripts allow to rapidly conduct the most popular industry benchmark tests.

The Optixia XM12 provides high port density and hot swappable capability. The Optixia XM2 provides hot-swappable capability in a more portable format. The Optixia X16 chassis also provides hot-swappable capability for up to 16 load modules.

The Optixia XL10 offers the highest port density with support for up to 240 Gigabit Ethernet ports and 54 10-GbE ports in a single chassis. Other chassis models are the IXIA 400T (supports up to four load modules), the IXIA 250 (supports one built-in module and two extra modules), and IXIA 100 (supports one card). Depending on network technology, one to 48 ports can be packaged on a card. A card is also referred to as a load module. For most media, any combination of load modules may be included in a single chassis. The highly scalable architecture supports daisy-chaining of up to 256 chassis that may be locally synchronized. Thus, even the most complex systems can be tested thoroughly and cost-effectively.

You can configure and control the unit directly through connections to a keyboard, mouse, monitor, and printer. Also, the unit can be connected to an Ethernet network, and an administrator can remotely monitor and control it using the IxExplorer software program. Multiple users can access the unit simultaneously, splitting the ports within a chassis and controlling the activity and configuration of all ports and functions.

Front panel displays give immediate indication of link state, transmission or reception of packets, and error conditions.

Ixia produces a number of load modules which provide data transmission and reception capabilities for a variety of Ethernet, ATM, and Packet Over Sonet (POS) speed and technologies. These load modules reside in an Ixia chassis, which provide different numbers of load module slots and power. This chapter introduces the Ixia hardware components. The Ixia chassis and load modules are compared and contrasted.

Ixia Chassis

The following Ixia chassis are currently available for sale:

- *XG12 Chassis*: The XG12 Chassis is the next generation high performance chassis platform capable of supporting next generation load modules. It is a 12 slot chassis with increased power and airflow delivery along with reservations for increased performance to the card. The 12-slot platform allows for higher port density load modules.

- *XGS12 Chassis*: The XGS12 Chassis is the next generation high performance platform capable of supporting all XM form factor load modules, including full chassis configurations of the Xcellon load modules. It is a 12-slot chassis with highspeed backplane (160 Gbps between each adjacent two cards) designed for aggregation across load modules.

- *Optixia XM12 Chassis*: Capable of holding up to 12 Ixia load modules and equipped with extra power and fans required for high-powered load modules. Supports higher port density. Modules can be inserted and removed from the chassis without shutting the chassis down, and a load module can be removed without impacting the processes of other load modules. An optional Sound Reducer (PN 943-0021) can be installed on the rear of the XM12 chassis, to reduce the fan noise by approximately 10 dB. The XM12 High Performance version (PN OPTIXIAXM12-02) has two 2.0 kW power supply; the standard XM12 version has two 1.6 kW power supply.

- *Optixia XM2 Chassis*: Capable of holding two Ixia load modules and equipped with extra power and fans required for some high-powered load modules. Supports higher port density. Modules can be inserted and removed from the chassis without shutting the chassis down, and a load module can be removed without impacting the processes of other load modules.

- *Optixia X16 Chassis*: Capable of holding up to 16 Ixia load modules and equipped with extra power and fans required for some high-powered load modules. Modules can be inserted and removed from the chassis without shutting the chassis down, and a load module can be removed without impacting the processes of other load modules.

- *Optixia XL10 Chassis*: Capable of holding a combination of high-density Ixia load modules with 24 ports. It supports up to 240 10/100/1000 Mbps ports. It is equipped with redundant power supplies. Modules can be inserted and removed from the chassis without shutting the chassis down, and a load module can be removed without impacting the processes of other load modules. The Optixia XL10 chassis includes sufficient power and airflow to support high-powered load modules.

- *IXIA 400T Chassis*: Capable of holding up to four Ixia load modules and equipped with extra power and fans required for some high-powered load modules.

- *IXIA 250 Chassis*: A portable Field Service Unit (FSU) which includes a single port (either copper 10/100/1000 or fiber 1000) and capable of holding up to two additional Ixia load modules. May optionally be equipped with a built-in CDMA receiver.

The following Ixia chassis are no longer available for sale:

- *IXIA 1600T Chassis*: Capable of holding up to 16 Ixia load modules and equipped with extra power and fans required for some high-powered load modules.

- *Ixia 100 Chassis*: The IXIA 100 is capable of holding one Ixia load module and includes a built-in GPS or CDMA receiver.

All Ixia chassis have the ability to hold one or more standard load modules. Ixia load modules provide media dependent and independent ports to Devices Under Test (DUTs). Any of the chassis may be daisy-chained and provide synchronized operations. The IXIA 100 chassis includes timing provisions based on GPS which allows accurate worldwide synchronization without local inter-chassis connections.

Each chassis contains a self-contained computer running Windows XP Professional™ and includes a 10/100/1000MB network interface and local disk. They may include a floppy drive, a CD-ROM drive, or DVD-ROM drive. A chain of chassis may be controlled through a monitor, keyboard, and mouse directly connected to any of the chassis or remotely through the network interface card. Multiple users may safely share ports in a chassis chain. Several of the high-end load modules consume more power and generate additional heat. Only a limited number of such modules may be used in selected chassis. The basic characteristics of these chassis are compared in *Table 1-1* on page 1-4. The

process of initial chassis configuration is explained in *Chapter 1, Platform and Reference Overview*. Each chassis is further described in its own chapter.

Table 1-1.   Ixia Chassis Comparison

Chassis	# of slots	Special Feature	Mounting
XG12	12	The XG12 Chassis is the next generation high performance chassis platform capable of supporting next generation load modules. It is a 12 slot chassis with increased power and airflow delivery along with reservations for increased performance to the card. The 12-slot platform allows for higher port density load modules.	Rack
XGS12	12	The XGS12 Chassis is the next generation high performance platform capable of supporting all XM form factor load modules, including full chassis configurations of the Xcellon load modules. It is a 12-slot chassis with highspeed backplane (160 Gbps between each adjacent two cards) designed for aggregation across load modules.	Rack
Optixia XM12	12	12 slots for load modules. Modular subcomponents for higher serviceability. Higher port density. Hot-swappable load modules. DVD-ROM drive. The XM12 High Performance verstion (OPTIXIAXM12-02) has two 2.0 kW power suplies.	Rack
Optixia XM2	2	Two slots for load modules. Modular subcomponents for higher serviceability. Higher port density. Hot-swappable load modules. DVD-ROM drive. DVD Drive is not present in newer versions of XM2 chassis (starting with 941-0003-07 and 941-0023-02).	Desktop/ Rack
Optixia X16	16	16 slots for load modules. Modular subcomponents for higher serviceability. Hot-swappable load modules. DVD-ROM drive.	Rack
Optixia XL10	10	10 slots for large high-density load modules. Redundant power supplies. Hot-swappable load modules. CD-ROM drive.	Free standing/ Rack
1600T	16	16 slots for load modules. Floppy drive.	Rack
400T	4	Four slots for load modules. Floppy drive.	Desktop/ Rack

Table 1-1.   Ixia Chassis Comparison

Chassis	# of slots	Special Feature	Mounting
250	2	Built-in 10/100/1000 TXS4 or 1000 SFPS4 port. Floppy drive.	Desktop/ Portable
100	1	Built-in GPS for worldwide synchronization	Rack

Note: Based on power requirements, Ixia chassis do not support all possible mixes of load modules. The Ixia chassis notifies you of conflicts on chassis power-up. Contact Ixia support for configuration verification.

Ixia Load Modules

Ixia offers a number of load modules that provide one to 24 ports of technology and media dependent interfaces to DUTs. The load modules are divided into logical families. Each family of load modules is discussed in details in its own chapter in this manual.

- *IXIA Impairment Load Modules: Offer 4x1GE, 4x10GE, or 2x40GE Ethernet interfaces that can emulate 64, 32, or 8 unidirectional network clouds respectively*

- *IXIA Xcellon-Lava Load Modules: Provide testing of high-density data center 40 Gigabit Ethernet (40GbE) and 100 Gigabit Ethernet (100GbE) network equipments.*

- *IXIA 40/100 Gigabit Ethernet Load Modules*: Provide 40 and 100 Gbps Ethernet with a variety of interfaces.

- *IXIA 10 Gigabit Ethernet Load Modules*: Provide 10 Gbps Ethernet with a variety of interfaces.

- *IXIA 1GbE and 10GbE Aggregation Load Modules*: Provide 10 Gbps and 1 Gbps Ethernet on the same module with a variety of interfaces.

- *IXIA 10GE LAN/WAN and OC 192 POS Load Modules*: Provide Optical Carrier interfaces that operate in concatenated mode at OC192 or 10 Gigabit Ethernet rates. One of the following modes can be used:

  - 10 Gigabit Ethernet LAN

  - 10 Gigabit Ethernet WAN

  - Packet over Sonet (POS)

  - Bit Error Rate Testing (BERT)

- *IXIA 10/100/1000 Load Modules*: Provide either 10 Mbps, 100 Mbps, or 1000 Mbps Ethernet speeds with auto-negotiation (except for Gigabit).

- *IXIA Gigabit Load Modules*: Provide 1000 Mbps Ethernet speeds.

- *IXIA OC12 ATM/POS Load Modules*: Provide Asynchronous Transfer Mode (ATM) functions.

- *IXIA 10/100 Load Modules*: Utilize a copper interface and provide either 10 Mbps or 100 Mbps Ethernet speeds with auto-negotiation with or without a per-port CPU.

- *IXIA 100 Load Modules*: Utilize a fiber interface and provide 100 Mbps Ethernet with auto-negotiation.

- *IXIA OC12 ATM/POS Load Modules*: Enables high performance testing of routers and broadband aggregation devices such as DSLAMs and PPP termination systems.

- *IXIA OC12c/OC3c Load Modules*: Provide selectable Optical Carrier interfaces that operate in concatenated mode at OC3 or OC12 rates. Packet over Sonet (POS) is implemented on the interfaces.

- *IXIA OC48c Load Modules*: Provide Optical Carrier interfaces that operate in concatenated mode at OC48 rates. Either Packet over Sonet (POS) or Bit Error Rate Testing (BERT) may be performed.

- *IXIA Power over Ethernet Load Modules*: Provide 10/100/1000 port emulation of network Powered Devices.

- *IXIA Stream Extraction Modules*: Provide 10/100/1000 stream capture and analysis of network devices.

- IXIA FCMGXM Load Modules: Deliver high-density converged data center infrastructure for testing end-to-end Fibre Channel and Fibre Channel over Ethernet (FCoE) testing.

- IXIA Xcellon-Flex Load Modules: Deliver high-density, high performance test solutions.

- IXIA Xcellon-Multis Load Modules: Deliver highest density 40G and 100G higher speed Ethernet (HSE) test equipment, providing more flexible test coverage and 4x100GE, 12x40GE, or dual-rate 40GE/100GE, all in a single-slot load module.

- *IXIA PerfectStorm Load Modules*: Provides a scalable solution for testing converged multi-play services, application delivery, and network security platforms for both wired and wireless networks

- *IXIA Xdensity XDM10G32S/8S Load Modules*: Provide test solutions for high density 10GE converged data center switches and routers.

Load modules with part numbers that contain -3 or -M are limited in their functionality. Newer boards also may have an 'L' before the last number in their part number, signifying the same limited functionality (that is, LSM10GL1-01). In general, -3 and -M modules do **not** have the following functions:

- Flows, except where Streams are not supported

- Advanced Streams (however, included with OC48C-3)

- Packet Groups (however, included with OC48C-3)

- Latency (however, included with OC48C-3)

- Sequence Checking (however, included with OC48C-3)

- Data Integrity (however, included with OC48C-M)

- Multiple DLCIs on OC48c load modules

- Convert to streams in capture view

- Protocol Server for router testing

'L' modules do **not** have the following functions:

- Advanced Routing functions
- Receive port filtering

Reduced vs. Full Feature

Some load modules are available in a Reduced Features version, which is identified by an 'R' before the last number in their part number. The following table illustrates the differences for one family of cards, NGY.

Table 1-2.   Comparison of Full/Reduced Features, NGY Cards

	Standard	eXtra Performance 8-port	eXtra Performance 2/4-port	Reduced
PCPU	800 MHz	800MHz	1GHz	400MHz
PCPU Memory	512MB	1GB	1GB	128MB
Capture Memory	512MB	350MB	350MB	64MB
Table UDF Entries	1M	1M	1M	32K
UDF Range List	512K	512K	512K	256K
UDF Value List Entries	512K	512K	512K	256K
PGID	1M	1M	1M	64K

Load Module Names

The load module names used within the IxExplorer software differ slightly from the load module names used in Ixia marketing literature. *Table 1-3* on page 1-7 describes the mapping from load module names to the names in the Ixia price list and those used in IxExplorer. The reverse mapping, alphabetized, is shown in *Table 1-4* on page 1-12.

> **Note**: Load modules without a price list column entry are no longer available for purchase.

Table 1-3.   Load Module to IxExplorer Card Name Map

Family	Load Module	Price List Names	IxExplorer Card Name
10/100 Ethernet	LM100TX	LM100TX	10/100
	LM100TX3	n/a	10/100-3
	LM100TX8	LM100TX8	10/100 TX8
	LM100TXS8	LM100TXS8	10/100 TXS8
	LM100MII	n/a	10/100 MII

Table 1-3.   Load Module to IxExplorer Card Name Map

Family	Load Module	Price List Names	IxExplorer Card Name
10/100/1000 Ethernet	ALM1000T8	ALM1000T8	10/100/1000 ALM T8
	ASM1000XMV12X-01	ASM1000XMV12X-01	10/100/1000 ASM XMV12X
	Xcellon-Ultra XP-01	Xcellon-Ultra XP	Xcellon-Ultra XP
	Xcellon-Ultra NP-01	Xcellon-Ultra NP	Xcellon-Ultra NP
	Xcellon-Ultra NG-01	Xcellon-Ultra NG	Xcellon-Ultra NG
	CPM1000T8	CPM1000T8	10/100/1000 CPM T8
	ELM1000ST2	ELM1000ST2	10/100/1000 ELM ST2
	LM1000T-5	LM1000T-5	Copper 10/100/1000
	LM1000TX4	LM1000TX4	10/100/1000 TX4
	LM1000TXS4	LM1000TXS4, LM1000TXS4-256	10/100/1000 TXS4 10/100/1000 TXS4-256
	LM1000STX2	LM1000STX2	10/100/1000 STX2
	LM1000STX4	LM1000STX4	10/100/1000 STX4
	LM1000STXS2	LM1000STXS2	10/100/1000 STXS2
	LM1000STXS4	LM1000STXS4, LM1000STXS4-256	10/100/1000 STXS4 10/100/1000 STXS4-256
	LM1000SFP4	LM1000SFP4	1000 SFP4
	LM1000SFPS4	LM1000SFPS4 LM1000SFPS4-256	1000 SFPS4 1000 SFPS4-256
	LSM1000XMS12-01 LSM1000XMSR12-01	LSM1000XMS12-01 LSM1000XMSR12-01	10/100/1000 XMS12 10/100/1000 XMSR12
	LSM1000XMV16-01 LSM1000XMVR16-01	LSM1000XMV16-01 LSM1000XMVR16-01	10/100/1000 LSM XMV16 10/100/1000 LSM XMVR16
	LSM1000XMV12-01 LSM1000XMVR12-01	LSM1000XMV12-01 LSM1000XMVR12-01	10/100/1000 LSM XMV12 10/100/1000 LSM XMVR12
	LSM1000XMV8-01 LSM1000XMVR8-01	LSM1000XMV8-01 LSM1000XMVR8-01	10/100/1000 LSM XMV8 10/100/1000 LSM XMVR8
	LSM1000XMV4-01 LSM1000XMVR4-01	LSM1000XMV4-01 LSM1000XMVR4-01	10/100/1000 LSM XMV4 10/100/1000 LSM XMVR4
	LSM1000XMSP12-01	LSM1000XMSP12-01	10/100/1000 LSM XMSP12
	LSM1000XMVDC4-01	LSM1000XMVDC4-01	10/100/1000 LSM XMVDC4
	LSM1000XMVDC4-NG	LSM1000XMVDC4-NG	10/100/1000 LSM XMVDC4NG
	LSM1000XMVDC8-01	LSM1000XMVDC8-01	10/100/1000 LSM XMVDC8
	LSM1000XMVDC12-01	LSM1000XMVDC12-01	10/100/1000 LSM XMVDC12
	LSM1000XMVDC16-01	LSM1000XMVDC16-01	10/100/1000 LSM XMVDC16

Table 1-3.   Load Module to IxExplorer Card Name Map

Family	Load Module	Price List Names	IxExplorer Card Name
	LSM10/100/ 1000XMVDC16NG	LSM10/100/ 1000XMVDC16NG	LSM10/100/1000XMVDC16NG
	OLM1000STX24	OLM1000STX24	10/100/1000 STX24
	OLM1000STXS24	OLM1000STXS24	10/100/1000 STXS24
100MB Ethernet	LM100FX	n/a	100 Base FX MultiMode
	LM100FXSM	n/a	100 Base FX SingleMode
Gigabit	LM1000SX	n/a	Gigabit
	LM1000SX3	n/a	Gigabit-3
	LM1000GBIC	n/a	GBIC
	LM1000GBIC-P1	n/a	GBIC-P1
ATM	LM622MR, LM622MR-512	LM622MR w/ OPTATMMR, LM622MR-512 w/ OPTATMMR	ATM 622 Multi-Rate
		LM622MR w/ OPTPOSMR	ATM/POS 622 Multi-Rate
		LM622MR w/ OPTATMMR+ OPTPOSMR	ATM/POS 622 Multi-Rate
OC12c/OC3c	LMOC12c/LMOC3c	LMOC12c, LMOC12cSM	OC12c/OC3c POS
OC48	LMOC48cPOS		OC48c POS
	LMOC48cPOS-M		OC48c POS-M
	LMOC48cBERT		OC48c BERT
	LMOC48POS/BERT		OC48c POS/BERT
	LMOC48VAR		OC48c POS VAR
	MSM2.5G1-01	MSM2.5G1-01	2.5G MSM
OC192	LMOC192cPOS		OC192c POS
	LMOC192cVSR-POS		OC192c VSR POS
	LMOC192cBERT		OC192c BERT
	LMOC192cVSR-BERT		OC192c VSR BERT
	LMOC192cPOS+BERT		OC192c POS/BERT
	LMOC192cVSR-POS+BERT		OC192c VSR POS/BERT
	LMOC192cPOS+WAN		OC192c POS/10GE WAN
	LMOC192cPOS+BERT+WAN		OC192c POS/BERT/10GE WAN

Table 1-3.   Load Module to IxExplorer Card Name Map

Family	Load Module	Price List Names	IxExplorer Card Name
10GE	LM10GELAN		10GE LAN
	LM10GELAN-M		10GE LAN-M
	LM10GEWAN		10GE WAN
	LSM10G1-01	LSM10G1-01	10GE LSM
	LSM10GL1-01	LSM10GL1-01	10GE LSM LAN XFP
	LSM10GMS-01	LSM10GMS-01	10GE LSM MACSec
	LSM10GXL6-01	LSM10GXL6-01	10GE LSM XL6
	LM10GEXAUI		10GE XAUI
	LM10GEXAUI+ BERT		10GE XAUI/BERT
	LM10GEXAUI BERT only		10GE XAUI BERT
	LM10GEXENPAK		10GE XENPAK
	LM10GEXENPAK-M		10GE XENPAK-M
	LM10GEXENPAK+BERT		10GE XENPAK/BERT
	LM10GEXENPAK-MA+BERT		10GE XENPAK-M/BERT
	LM10GEXENPAK BERT only		10GE XENPAK BERT
	LM10G	LM10GUEF, LM10GUEF-FEC, LM10GUEF-P, LM10GULF, LM10GUVF w/OPT10GELWAN	10G UNIPHY, 10G UNIPHY-P 10G UNIPHY-XFP 10G UNIPHY-FEC
	LSM10GXM3-01 LSM10GXMR3-01	LSM10GXM3-01 LSM10GXMR3-01	10GE LSM XM3 10GE LSM XMR3
	LSM10GXM8-01 LSM10GXMR8-01 LSM10GXM8XP-01 LSM10GXM8S-01 LSM10GXMR8S-01 LSM10GXM8GBT-01 LSM10GXMR8GBT-01 NGY-NP8-01	LSM10GXM8-01 LSM10GXMR8-01 LSM10GXM8XP-01 LSM10GXM8S-01 LSM10GXMR8S-01 LSM10GXM8GBT-01 LSM10GXMR8GBT-01 NGY-NP8-01	10GE LSM XM8 10GE LSM XMR8 10GE LSM XM8XP 10GE LSM XM8S 10GE LSM XMR8S 10GE LSM XM8 10GBASE-T 10GE LSM XMR8 10GBASE-T NGY-NP8 (10GE LSM XM8-NP)
	LSM10GXM4-01 LSM10GXMR4-01 LSM10GXM4XP-01 LSM10GXM4S-01 LSM10GXMR4S-01 LSM10GXM4GBT-01 LSM10GXMR4GBT-01 NGY-NP4-01	LSM10GXM4-01 LSM10GXMR4-01 LSM10GXM4XP-01 LSM10GXM4S-01 LSM10GXMR4S-01 LSM10GXM4GBT-01 LSM10GXMR4GBT-01 NGY-NP4-01	10GE LSM XM4 10GE LSM XMR4 10GE LSM XM4XP 10GE LSM XM4S 10GE LSM XMR4S 10GE LSM XM4 10GBASE-T 10GE LSM XMR4 10GBASE-T NGY-NP4 (10GE LSM XM4-NP)

Table 1-3.   Load Module to IxExplorer Card Name Map

Family	Load Module	Price List Names	IxExplorer Card Name
	LSM10GXM2XP-01	LSM10GXM2XP-01	10GE LSM XM2XP
	LSM10GXMR2-01	LSM10GXMR2-01	10GE LSM XMR2
	LSM10GXM2S-01	LSM10GXM2S-01	10GE LSM XM2S
	LSM10GXMR2S-01	LSM10GXMR2S-01	10GE LSM XMR2S
	LSM10GXM2GBT-01	LSM10GXM2GBT-01	10GE LSM XM2 10GBASE-T
	LSM10GXMR2GBT-01	LSM10GXMR2GBT-01	10GE LSM XMR2 10GBASE-T
	NGY-NP2-01	NGY-NP2-01	NGY-NP2 (10GE LSM XM2-NP)
	MSM10G1-02	MSM10G1-02	10G MSM
	ASM1000XMV12X-01	ASM1000XMV12X-01	10/100/1000 ASM XMV12X
	Xcellon-Ultra XP-01	Xcellon-Ultra XP	Xcellon-Ultra XP
	Xcellon-Ultra NP-01	Xcellon-Ultra NP	Xcellon-Ultra NP
	Xcellon-Ultra NG-01	Xcellon-Ultra NG	Xcellon-Ultra NG
40GE	HSE40GETSP1-01	HSE40GETSP1-01	40GE LSM XMV
100GE	HSE100GETSP1-01	HSE100GETSP1-01	100GE LSM XMV
40/100GE	HSE40GETSP1-01	HSE40GETSP1-01	40GE LSM XMV
	HSE100GETSP1-01	HSE100GETSP1-01	100GE LSM XMV
	HSE40/100GETSP1-01	HSE40/100GETSP1-01	40/100GE LSM XMV
	HSE40GEQSFP1-01	HSE40GEQSFP1-01	40GE LSM XMV QSFP
Power over Ethernet	PLM1000T4-PD	PLM1000T4-PD	Power over Ethernet PLM 20W
	LSM1000POE4-02	LSM1000POE4-02	Power over Ethernet PLM 30W
Stream Extraction Module	AFM1000SP-01	AFM1000SP-01	AFM - Stream Extraction Module
Voice Quality	VQM01XM	VQM01XM	Voice Quality Resource Module
Excellon-Flex	FlexAP10G16S		FlexAP10G16S
	FlexFE10G16S		FlexFE10G16S
10GE Ethernet	Xdensity		XDM10G32S
ImpairNet	EIM10G4S		EIM10G4S
	EIM1G4S		EIM1G4S
Xcellon-Lava	Lava AP40/100GE 2P		Lava AP40/100GE 2P
	Lava AP40/100GE 2P		Lava AP40/100GE 2P

Table 1-4.   IxExplorer Card Name to Load Module Name Map (Alphabetical)

IxExplorer Card Name	Load Module	Price List Names
10/100	LM100TX	LM100TX
10/100-3	LM100TX3	LM100TX3
10/100 MII	LM100MII	
10/100 TX8	LM100TX8	LM100TX8
10/100 TXS8	LM100TXS8	LM100TXS8
10/100/1000 ALM T8	ALM1000T8	ALM1000T8
10/100/1000 ASM XMV12X	ASM1000XMV12X-01	ASM1000XMV12X-01
10/100/1000 CPM T8	CPM1000T8	CPM1000T8
10/100/1000 ELM ST2	ELM1000ST2	ELM1000ST2
10/100/1000 LSM XMSP12	LSM1000XMSP12-01	LSM1000XMSP12-01
10/100/1000 LSM XMVDC4	LSM1000XMVDC4-01	LSM1000XMVDC4-01
10/100/1000 LSM XMVDC4NG	LSM1000XMVDC4-NG	LSM1000XMVDC4-NG
10/100/1000 LSM XMVDC8	LSM1000XMVDC8-01	LSM1000XMVDC8-01
10/100/1000 LSM XMVDC12	LSM1000XMVDC12-01	LSM1000XMVDC12-01
10/100/1000 LSM XMVDC16	LSM1000XMVDC16-01	LSM1000XMVDC16-01
10/100/1000 LSM XMVDC16NG	10/100/1000 LSM XMVDC16NG	10/100/1000 LSM XMVDC16NG
10/100/1000 LSM XMV16 10/100/1000 LSM XMVR16	LSM1000XMV16-01 LSM1000XMVR16-01	LSM1000XMV16-01 LSM1000XMVR16-01
10/100/1000 LSM XMV12 10/100/1000 LSM XMVR12	LSM1000XMV12-01 LSM1000XMVR12-01	LSM1000XMV12-01 LSM1000XMVR12-01
10/100/1000 LSM XMV8 10/100/1000 LSM XMVR8	LSM1000XMV8-01 LSM1000XMVR8-01	LSM1000XMV8-01 LSM1000XMVR8-01
10/100/1000 LSM XMV4 10/100/1000 LSM XMVR4	LSM1000XMV4-01 LSM1000XMVR4-01	LSM1000XMV4-01 LSM1000XMVR4-01
10/100/1000 STX2	LM1000STX2	LM1000STX2
10/100/1000 STX24	OLM1000STX24	OLM1000STX24
10/100/1000 STX4	LM1000STX4	LM1000STX4
10/100/1000 STXS2	LM1000STXS2	LM1000STXS2
10/100/1000 STXS24	OLM1000STXS24	OLM1000STXS24
10/100/1000 STXS4 10/100/1000 STXS4-256	LM1000STXS4	LM1000STXS4, LM1000STXS4-256
10/100/1000 TX4	LM1000TX4	LM1000TX4
10/100/1000 TXS4 10/100/1000 TXS4-256	LM1000TXS4	LM1000TXS4, LM1000TXS4-256

Table 1-4.   IxExplorer Card Name to Load Module Name Map (Alphabetical)

IxExplorer Card Name	Load Module	Price List Names
10/100/1000 XMS12 10/100/1000 XMSR12	LSM1000XMS12-01 LSM1000XMSR12-01	LSM1000XMS12-01 LSM1000XMSR12-01
100 Base FX MultiMode	LM100FX	
100 Base FX SingleMode	LM100FXSM	
1000 SFP4	LM1000SFP4	LM1000SFP4
1000 SFPS4 1000 SFPS4-256	LM1000SFPS4	LM1000SFPS4, LM1000SFPS4-256
2.5G MSM	MSM2.5G1-01	MSM2.5G1-01
10G MSM	MSM10G1-02	MSM10G1-02
10G UNIPHY, 10G UNIPHY-P 10G UNIPHY-XFP 10G UNIPHY-FEC	LM10G	LM10GUEF, LM10GUEF-FEC, LM10GUEF-P, LM10GULF, LM10GUVF w/ OPT10GELWAN
10GE LAN	LM10GELAN	
10GE LAN-M	LM10GELAN-M	
10GE LSM	LSM10G1-01	LSM10G1-01
10GE LSM LAN XFP	LSM10GL1-01	LSM10GL1-01
10GE LSM MACSec	LSM10GMS-01	LSM10GMS-01
10GE LSM XL6	LSM10GXL6-01	LSM10GXL6-01
10GE LSM XM3 10GE LSM XMR3	LSM10GXM3-01 LSM10GXMR3-01	LSM10GXM3-01 LSM10GXMR3-01
10GE LSM XM8 10GE LSM XMR8 10GE LSM XM8XP 10GE LSM XM8S 10GE LSM XMR8S 10GE LSM XM8 10GBASE-T 10GE LSM XMR8 10GBASE-T NGY-NP8	LSM10GXM8-01 LSM10GXMR8-01 LSM10GXM8XP-01 LSM10GXM8S-01 LSM10GXMR8S-01 LSM10GXM8GBT-01 LSM10GXMR8GBT-01 NGY-NP8-01	LSM10GXM8-01 LSM10GXMR8-01 LSM10GXM8XP-01 LSM10GXM8S-01 LSM10GXMR8S-01 LSM10GXM8GBT-01 LSM10GXMR8GBT-01 NGY-NP8-01
10GE LSM XM4 10GE LSM XMR4 10GE LSM XM4XP 10GE LSM XM4S 10GE LSM XMR4S 10GE LSM XM4 10GBASE-T 10GE LSM XMR4 10GBASE-T NGY-NP4	LSM10GXM4-01 LSM10GXMR4-01 LSM10GXM4XP-01 LSM10GXM4S-01 LSM10GXMR4S-01 LSM10GXM4GBT-01 LSM10GXMR4GBT-01 NGY-NP4-01	LSM10GXM4-01 LSM10GXMR4-01 LSM10GXM4XP-01 LSM10GXM4S-01 LSM10GXMR4S-01 LSM10GXM4GBT-01 LSM10GXMR4GBT-01 NGY-NP4-01

Table 1-4.   IxExplorer Card Name to Load Module Name Map (Alphabetical)

IxExplorer Card Name	Load Module	Price List Names
10GE LSM XM2XP	LSM10GXM2XP-01	LSM10GXM2XP-01
10GE LSM XMR2	LSM10GXMR2-01	LSM10GXMR2-01
10GE LSM XM2S	LSM10GXM2S-01	LSM10GXM2S-01
10GE LSM XMR2S	LSM10GXMR2S-01	LSM10GXMR2S-01
10GE LSM XM2 10GBASE-T	LSM10GXM2GBT-01	LSM10GXM2GBT-01
10GE LSM XMR2 10GBASE-T	LSM10GXMR2GBT-01	LSM10GXMR2GBT-01
NGY-NP2	NGY-NP2-01	NGY-NP2-01
10GE WAN	LM10GEWAN	LM10GE123F, LM10GE124F
10GE XAUI	LM10GEXAUI	
10GE XAUI BERT	LM10GEXAUI BERT only	
10GE XAUI/BERT	LM10GEXAUI+ BERT	
10GE XENPAK	LM10GEXENPAK	
10GE XENPAK BERT	LM10GEXENPAK BERT only	
10GE XENPAK/BERT	LM10GEXENPAK+BERT	
10GE XENPAK-M	LM10GEXENPAK-M	
10GE XENPAK-M/BERT	LM10GEXENPAK-MA+BERT	
40GE LSM XMV	HSE40GETSP1-01	HSE40GETSP1-01
100GE LSM XMV	HSE100GETSP1-01	HSE100GETSP1-01
40/100GE LSM XMV	HSE40/100GETSP1-01	HSE40/100GETSP1-01
40GE LSM XMV QSFP	HSE40GEQSFP1-01	HSE40GEQSFP1-01
Xcellon-Ultra NP	Xcellon-Ultra NP-01	Xcellon-Ultra NP
Xcellon-Ultra XP	Xcellon-Ultra XP-01	Xcellon-Ultra XP
Xcellon-Ultra NG	Xcellon-Ultra NG-01	Xcellon-Ultra NG
AFM1000SP-01	AFM Stream Extraction Module	AFM1000SP-01
ATM 622 Multi-Rate	LM622MR	LM622MR w/OPTATMMR
ATM/POS 622 Multi-Rate		LM622MR w/OPTPOSMR
ATM/POS 622 Multi-Rate		LM622MR w/ OPTATMMR+ OPTPOSMR, LM622MR-512 w/ OPTATMMR+ OPTPOSMR
Copper 10/100/1000	LM1000T-5	LM1000T-5
GBIC	LM1000GBIC	
GBIC-P1	LM1000GBIC-P1	

Table 1-4.   IxExplorer Card Name to Load Module Name Map (Alphabetical)

IxExplorer Card Name	Load Module	Price List Names
Gigabit	LM1000SX	
Gigabit-3	LM1000SX3	
OC12c/OC3c POS	LMOC12c/LMOC3c	LMOC12c, LMOC12cSM
OC192c BERT	LMOC192cBERT	
OC192c POS	LMOC192cPOS	
OC192c POS/10GE WAN	LMOC192cPOS+WAN	
OC192c POS/BERT	LMOC192cPOS+BERT	
OC192c POS/BERT/10GE WAN	LMOC192cPOS+BERT+WAN	
OC192c VSR BERT	LMOC192cVSR-BERT	
OC192c VSR POS	LMOC192cVSR-POS	
OC192c VSR POS/BERT	LMOC192cVSR-POS+BERT	
OC48c BERT	LMOC48cBERT	
OC48c POS	LMOC48cPOS	
OC48c POS VAR	LMOC48VAR	
OC48c POS/BERT	LMOC48POS/BERT	
OC48c POS-M	LMOC48cPOS-M	
Power over Ethernet	LM1000T4-PD	LM1000T4-PD
Voice Quality Resource Module	VQM01XM	VQM01XM
Lava AP40/100GE 2P	Lava AP40/100GE 2P	
Lava AP40/100GE 2P	Lava AP40/100GE 2P	

Ixia Load Module Properties

The Ixia load modules, or load modules, support a wide range of features, which are described in Table 1-5.

The full set of supported features per card is described in the spreadsheet *Port Features by Port Type* on the *Ixiacom.com* website, under *Support/User Guides/Spreadsheets*.

Table 1-5. Ixia Load Module Feature Descriptions

Feature Category	Feature	Usage
Basic	Local CPU	Each port on the card is supported by an individual CPU for use in protocol server and other sophisticated operations.
	Layer 2/3 Only	The card only supports Layer 2 and 3 control and operation. No protocols except ARP and PING are supported.
	Layer 7 Only	The card only supports Layer 7 usage through the local CPU. This type of card is generally only useful for application testing as in IxLoad and Chariot.
Statistics Selection	Checksum errors (IPv4/TCP/UDP)	Support generation and checking of special checksums for IPv4, TCP, and UDP packets.
	Data integrity	Supports data integrity generation and checking.
	Tx Duration	Supports the generation of a transmit duration statistic.
	Per stream stats	Statistics are available for each stream.
Receive Modes	Capture	Received data may be captured to a capture buffer.
	Packet groups	Supports generation of packet group IDs in packets.
	Latency S&Fwd LB to FB	Latency measurement offers the option of measuring the time from last data bit out to first data bit in
	Latency S&Fwd LB to FP	Latency measurement offers the option of measuring the time from last data bit out to first preamble bit in

Table 1-5.   Ixia Load Module Feature Descriptions

Feature Category	Feature	Usage
	Inter-arrival Jitter	Inter-Arrival Time (IAT) compares the time between PGID packet arrivals. In this case, when a packet with a PGID is received, the PGID is examined. If a packet has already been received with the same PGID, then the timestamp of the previous packet is subtracted from the current timestamp.
		The interval between the timestamps is the jitter, and it is recorded for statistical purposes.
	Delay Variation	Offers the option of measuring variation between latency of consecutive frames.
	MEF Frame Delay	Measurement method: First data bit in to DUT; last data bit out of DUT.
	Forwarding Delay	Measurement method: Last data bit in to DUT; last data bit out of DUT.
	Advanced PG Filter	A set of features which allow packet group matching to ignore or mask: • Group ID • Signature • Filter data
	Round-trip flows	Supports calculation of round-trip flows.
	Data integrity	Supports data integrity generation and checking.
	First time stamp	Supports first time stamp operation.
	Tx/Rx Time Stamp Mode	Allows the system to use the time stamp of the last bit of the packet; this is useful when multiple rates are present in the network topology.
	Sequence checking	Supports packet sequence generation and verification.
	Sequence checking per packet ID	When packet groups are used, allows sequence checking generation and verification.
	ISL encapsulation	Receive side of port can accommodate ISL encapsulation on receive side.
	Small packets	Supports the ability to capture packets smaller than a legal packet; captured data may be corrupted when this feature is used.
	Wide packet groups	This feature allows ports, which utilize packet groups, to extend the number of bits in the PGID to 17 bits (or more).

Table 1-5.   Ixia Load Module Feature Descriptions

Feature Category	Feature	Usage
	PRBS Mode	When the Receive Mode is set to PRBS mode, both Wide Packet Groups and Sequence Checking are automatically enabled. In PRBS mode, all latency-related statistics are removed and the following per PGID statistics are added: • PRBS Bits Received • PRBS Errored Bits • PRBS BER
	Split PGIDs	Allows for the creation of split PGID data.
	Latency bins	Latency data may be categorized by latency values for each packet group.
	Time bins	Latency may be measured over time.
	Echo	Ports with this feature may echo all received traffic as transmitted packets.
	Preamble capture	Frame's preamble may be included in the capture buffer.
	Simulate cable disconnect	A cable disconnect state may be simulated.
	Flexible Pattern Offset	Allows to set the Filter/Trigger pattern to a specific offset.
	Multi Switched-Path	Allows for the detection of loss/duplicate packets.
	Intrinsic Latency Adjustment	Reduces the measured latency by the amount of latency that is induced by the test equipment itself (not the DUT). Retrieves pre-determined latency value for a 'known' transceiver, or calculates and stores that value for a 'new' transceiver.
	Misdirected Mask	Sets the signature mask used for identifying misdirected packets.
	Rate Monitoring (convergence)	Enables testing convergence times and service interruptions.
	Auto-Detect Instrumentation	On the receive side, automatically detects a specified signature and Instrumentation parameters for Data Integrity, Sequence Checking, or Latency for streams generated with Automatic Instrumentation Offsets using Ixia software applications.
	TSO/LRO	Transmit Segmentation Offload/Large Receive Offload (TSO/LRO) operation mode.

Table 1-5. Ixia Load Module Feature Descriptions

Feature Category	Feature	Usage
Transmit Modes	Packet streams	Supports the generation of packet streams.
	Packet flows	Supports the generation of packet flows.
	Advanced scheduler	Supports the operation of the advanced scheduler, which allows inter-mixing of multiple packet streams.
	Forced collisions	Supports the insertion of forced collisions.
	Tx Data integrity	Supports data integrity generation and checking.
	Odd preamble	Supports the ability to send a preamble with an odd number of bytes. This is not applicable to boards with dual PHYs (Ethernet/Fiber) when a port is in fiber mode.
	Gap time units	The inter-frame, -burst, and -stream gaps can be programmed in discreet units of time as opposed to indirectly through a percentage of maximums frame rate.
	Gap byte count	Gaps may be expressed as a number of bytes.
	Modifiable preamble	The packet's preamble content may be modified. On 10GE load modules that support this feature there are two options: modify the 7 rightmost bytes of the 8 byte preamble or modify the inner 6 bytes of the 8 byte preamble.
	Forced minimum IPG	In advanced scheduler mode, a minimum gap may be enforced.
	Increment frame size by N	Frame sizes may be incremented by an arbitrary value between transmitted frames.
	Increment/ Decrement DA/SA by N	DA and SA values may be incremented or decremented by an arbitrary value between transmitted frames.
	Random data on even offset only	When random data is generated within a frame's content, the random data may only be placed at even byte boundaries.
	Insert bad TCP checksum	Supports the generation of bad TCP checksums.
	Checksum Override	Overrides IPv4, IPv6 and TCP checksums.

Table 1-5.   Ixia Load Module Feature Descriptions

Feature Category	Feature	Usage
	Frequency offset	The frequency for the card as a whole may be modified a few percent from nominal.
	Echo	The port echoes all received packets.
	Flexible Time Stamp	The position of the time stamp in transmitted packets may be repositioned.
	Protocol Offset	The beginning of the IP (or other) protocol header may be repositioned so as to accommodate leading headers, as in PPP.
	Random IPG	The IPG between packets may be set to a random value.
	Copper RJ45/Fiber SFP	The port has the ability to transmit and receive from either its copper RJ-45 Ethernet or Fiber SFP optic interface.
	Weighted Random Frame Size	The port has the ability to generate packets with random frame sizes. The frame sizes are programmed through a set of frame sizes and weightings.
	Scheduled duration	The duration of the transmit operation may be scheduled for a number of seconds.
	Simulate cable disconnect	A cable disconnect state may be simulated.
	Repeatable Random Streams	Allows for repeating randomly generated stream data.
	GRE	An IP transport protocol available for insertion into transmitted streams.
	Stacked VLANs	Allows for sending multiple VLAN IDs in a single packet.
	Tx Ignore Link	Allows for transmission of packets with the link down.
	Protocol Pad	Allows for a data pad to be added before the protocol head field in a frame.
	Dynamic Rate Change	Allow rate change without stopping transmit.
	Dynamic Frame Size Change	Allow frame size change without stopping transmit.
	New Incrementing Frame Size	Allow packets/burst setting in incrementing frame size mode

Table 1-5.   Ixia Load Module Feature Descriptions

Feature Category	Feature	Usage
	Auto-Detect Instrumentation	On the transmit side, automatically configures a specified signature and Instrumentation parameters for Data Integrity, Sequence Checking, Latency, or PRBS for streams generated for Ixia software applications that use Automatic Instrumentation Offsets.
	Intrinsic Latency Adjustment	Reduce the measured latency by the amount of latency that is induced by the test equipment itself (not the DUT). Retrieves pre-determined latency value for a 'known' transceiver, or calculates and stores that value for a 'new' transceiver.
	PRBS	When the port is in PRBS mode, all latency-related statistics are removed and the following per-PGID statistics are added: • PRBS Bits Received • PRBS Errored Bits • PRBS BER
	TSO/LRO	Transmit Segmentation Offload/Large Receive Offload (TSO/LRO) operation mode.
User Defined Fields (UDF)	Odd offset	UDFs are allowed to start at an odd offset.
	Overlap	UDFs may overlap within a 4-octet boundary. Otherwise UDFs must start at least 4 octets apart.
	Cascade	UDFs may continue from previous stream values.
	Cascade from self	UDFs may continue from previous values on the same UDF.
	Split	UDFs may be split into multiple 8-bit and 16-bit counters.
	Bit mask	UDFs output data may be masked with an arbitrary bit mask. Otherwise limitations on the number of changes of bits applies.
	Incr By N	Allows UDFs to increment by an arbitrary value.
	UDF5	The port has a fifth UDF.

Table 1-5.   Ixia Load Module Feature Descriptions

Feature Category	Feature	Usage
	Advanced	The port supports additional UDF features, including:
		Nested counters
		Linked lists
		Step size
		Value list
		Range list
	IPv4	The port supports UDF - IPv4 type counting.
	Range List	The port supports UDF generated values over a list of value ranges.
	Value List	The port supports UDF generated values from a list of values.
	Nested Counter	The port supports UDF generated values from two nested counters.
	Table	The port supports a UDF that derives values from a table of offsets and values, by packet.
	Chained UDFs	The port supports the ability to chain from a specified UDF.
	Protocol Pad	Allows for a data pad to be added before the protocol head field in a frame.
POS/ BERT	POS	Supports Packet over SONET operation.
	BERT	Supports Bit Error Rate Testing through the generation and verifications of patterns.
	Channelized BERT	Support channelized BERT testing.
	BERT error insertion	Supports BERT error insertion.
	DCC	Supports additional DCC channel streams.
	SRP	Supports Serial Reuse Protocol—passive receive.
	SRP Full	Supports Serial Reuse Protocol—active send/receive.
	RPR	Supports Resilient Packet Ring operation.
	FEC	Support Forwarding Error Correction.
	GFP	Supports the Generic Framing Protocol.
	SONET error insertion list	Support the insertion of Sonet errors.

Table 1-5.   Ixia Load Module Feature Descriptions

Feature Category	Feature	Usage
	Multiple DLCIs	Supports the use of more than one DLCI in frame relay testing.
	CJPAT/CRPAT	Supports generated CJPAT and CRPAT frame data patterns.
10 Gigabit Ethernet	OC192	Supports OC192 POS operation.
	WAN	Supports 10 GE WAN operation.
	LAN	Supports 10 GE LAN operation.
	XAUI	Supports 10GE XAUI interface.
	XENPAK	Supports 10GE XENPAK interface.
	LASI	Supports Link Alarm Status Interrupt.
	XFP	Supports an XFP interface.
	SFP	Supports an SFP (small form-factor pluggable) transceiver interface.
	UNIPHY	Supports UNIPHY operation, which allows the same port to operate in LAN, WAN, POS and BERT modes.
	Lane skew	Supports the ability to skew multiple PCS (Physical Coding Sublayer) lanes.
	Set pause destination address	The destination for pause control packets may be set.
	Link Fault Signalling	Supports the link fault signalling protocol.
	Gap Control Mode	Allows for the selection of the gap control algorithm, as defined by IEEE.
	Pre-Emphasis	Allows for boosting transmit signal.
	MACSec	Supports MACSec functionality.
		Media Access Control Security (MACsec) is a L2 protocol which authenticates the entire L2 frame (except for the Ethernet CRC) and provides confidentiality for all or some of the MACsec data segment. This protocol is defined in IEEE 802.1AE
Protocol Server	Basic Routing	Supports basic routing protocols, including BGP, IS-IS and OSPF, but none of those in the list for *Advanced Routing.*
	DHCP	Supports the DHCP protocol.

Table 1-5.   Ixia Load Module Feature Descriptions

Feature Category	Feature	Usage
	DHCPv6	Supports the DHCPv6 protocol.
	Advanced Routing (note 1)	Supports advanced routing protocols: • BGP-IPv6 • IGMP (new) with IPMPv3 • ISIS-IPv6 • OSPFv3 • PIM-SM • Layer 2 VPN (LDP) • Layer 3 VPN (BGP) • LDP • MLD • RIPng
	ARP	Supports ARP generation and receipt handling.
	Gratuitous ARP	Gratuitous ARP is sent by the host when its IP to MAC mapping changes, so that everybody else on the subnet updates their ARP tables.
	ARP rate control	The rate at which multiple ARP packets are transmitted may be controlled.
	IGMP rate control	The rate at which multiple IGMP packets are transmitted may be controlled.
	PING	Supports PING generation and receipt.
	FCoE/NPIV	Supports Fibre Channel over Ethernet and N_Port_ID Virtualization.
	PTP	Supports Precision Time Protocol.
	RTP	Supports Real-time Transport Protocol

Notes:

1. On older OC48c, OC192c and 10GE modules, these protocols require that the ports have been upgraded to 128MB of CPU memory.

Card Properties

Details about the card characteristics described in *Table 1-6* are presented in the chapters about specific load modules.

Table 1-6.   Card Specifications

Specification	Usage
# ports	The number of ports supported by the card(s).
-3/-M/L Card Available	Whether a limited feature card is available.
L2/L3 Card Available	Whether a Layer 2/3 only card is available.
Layer 7 Card Available	Whether a Layer 7 only card is available.
Data Rate	The choice of data rates offered by the card.
Connector/Frequency-Mode	The connector type used on the card. For optical connections, the light frequency used and whether the fiber is used for singlemode or multimode.
Capture buffer size	The size of each port's capture buffer.
Captured packet size	The range of packet sizes that may be captured on the card.
Streams per port	The number of streams available on each port.
Flows per port	The number of stream flows available on each port. If available, this is always 15,872.
Advanced streams	The number of advanced streams available on each port.
Preamble size: min-max	The range of sizes, in bytes, for generated preambles.
Frame size: min-max	The range of sizes, in bytes, for generated frames.
Inter-frame gap: min-max	The gap between frames, expressed as a range of time.
Inter-burst gap: min-max	The gap between bursts of frames, expressed as a range of time.
Inter-stream gap: min-max	The gap between streams, expressed as a range of time. Sometimes expressed as a percentage of the maximum rate.

Table 1-6.   Card Specifications

Specification	Usage
Latency	The accuracy of latency operations.
Intrinsic Latency Adjustment	Reduce the measured latency by the amount of latency that is induced by the test equipment itself (not the DUT). Retrieves pre-determined latency value for a 'known' transceiver, or calculates and stores that value for a 'new' transceiver.

Number of captured packets, an important characteristic, cannot be expressed as a simple number. It is dependent on a number of factors as mentioned in the following list:

• Size of the capture buffer

• Size of the captured packet

• Size of the capture slice, set by you

• Memory used by other functions

• Memory overhead per captured packet

The general equation is:

```
# of captured packets = (size of capture buffer) -
(memory used by other functions)

(min (captured packet, capture slice) + (per packet
overhead)
```

To get an idea of the memory available for packet capture, a set of simple experiments can be run. For example, Table 1-7 indicates the measured number of packets captured for different packet sizes. The type of card used is an LM100TX, which has a 2MB capture buffer. The buffer slice is set to 8191.

Table 1-7.   Measured Number of Packets for an LM100TX Card

Packet Size	Number of Packets Captured	Memory Used by Captured Packets
64 bytes	18,668	1,194,752
1K bytes	1,698	1,738,752
4K bytes	436	1,785,856
8K bytes	219	1,794,048

The experiment indicates that there is approximately 1.8 MB available for data capture.

Maximum number of PGIDs

The maximum number of PGIDs for designated load module families is provided in Table 1-8.

Table 1-8.Maximum PGID Summary

Load Module Family	Receive Mode	Maximum Number PGIDs[1](Decimal)
LM100TX		
	Packet Group	57344
	First Timestamp	
LM1000GBIC		
	Packet Group	57344
	Sequence Checking	N/A
	First Timestamp	
LM100TXS8		
	Packet Group	65536
	Packet Group + Sequence Checking	128
	Capture + Sequence Checking	128
	Wide Packet Group	131072
LM1000STXS4 and **LSM1000XMS12-01**, **LSM1000XMSP12-01**		
	Packet Group	65536
	Packet Group + Sequence Checking	128
	Capture + Sequence Checking	128
	Wide Packet Group	131072
	Wide Packet Group (Reduced Feature)	65536
LSM1000XMV family (4, 8, 12, and 16-port)		
	Wide Packet Group	131072
	Wide Packet Group (Reduced Feature)	65536
	Wide Packet Group/Wide Bin Mode (Full Feature)	1048576
ASM1000XMV	Wide Packet Group/Wide Bin Mode	1048576
LSM10G including **MSM10G** and **MSM2.5G**		
	Wide Packet Group	2097152
	Wide Packet Group (Reduced Feature)	65536
100GE LSM XMV, **40GE LSM XMV, and 40/100GE LSM XMV**	Wide Packet Group	1048576

Table 1-8.Maximum PGID Summary

Load Module Family	Receive Mode	Maximum Number PGIDs[1](Decimal)
LM10G and **LM10GE**		
	Packet Group	65536
	Sequence Checking	8192
	Packet Group + Sequence Checking	8192
	Wide Packet Group	131072
LMOC-12		
	Packet Group	57344
	Sequence Checking	N/A
LMOC-48		
	Packet Group	65536
	Packet Group + Sequence Checking	512
	Capture + Sequence Checking	512
LMOC-192		
	Packet Group	1024
	Sequence Checking	1024
	Packet Group + Sequence Checking	1024
	Wide Packet Group	131072
LM622MR		
	Packet Group	65536
	Packet Group + Sequence Checking	128
	Capture + Sequence Checking	128
	Wide Packet Group	131072
LavaAP40/100GE		
	Sequence Checking	1048576
	Data Integrity	
	Wide Packet Groups	1048576
	Latency/Jitter	

1. The maximum number of PGIDs is the maximum hardware PGID that can be supported by a particular load module in a particular mode. If time bin, latency, or other parameters are enabled, the maximum PGID that can be supported is reduced.

   All modules have a maximum 2048 time bins. All modules that support latency bins have quantity 16 latency bins.

New in Version 6.60 EA Patch1

The following features are new in this release:

*   XGS12 Chassis

    For more information, see Chapter 7, *XGS12 Chassis*

*   PerfectStorm Load Modules

    For more information, see Chapter 36, *IXIA PerfectStorm Load Modules*

*   Subscription Licensing model for IxVM ports

    For more information, see *Licensing*.