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IXIA PerfectStorm Load Modules

This chapter provides details about PerfectStorm 10GE and 40GE family of load modules—specifications and features.

Ixia's PerfectStorm family of load modules is a scalable solution for testing converged multi-play services, application delivery, and network security platforms for both wired and wireless networks.

The PerfectStorm product family consists of a new next generation chassis (XGS12), an XGS integrated system controller for both IxLoad and BreakingPoint and two load modules 8x10GE and 2x40GE. The PerfectStorm 10GE and 40GE load modules have two variants, fusion (IxLoad and BreakingPoint) and non-fusion (IxLoad only). The key feature of PerfectStorm 10GE/40GE NG cards is the fusion between IxLoad and BreakingPoint applications.

PerfectStorm supports the following:

- both IxLoad and BreakingPoint software applications; BPS runs on the fusion variants of the load module
- native 40GE QSFP+ interfaces
- line-rate application performance per interface
- hardware-based acceleration for SSL and IPsec performance

Key Features

The key features of PerfectStorm load modules are as follows:

Unified Applications and Security Test Platform

PerfectStorm is a unified applications and security test platform, with support for BreakingPoint and IxLoad software.

Networking Interfaces per Blade

- 8 x 10G
- 2x 40G

Blended Application Traffic

PerfectStorm Fusion can create blended application traffic and current security attacks with a very high count of concurrent wired and wireless users from a single 11u chassis.

Massive Scale Real-World Traffic Conditions

PerfectStorm tests and validates IT systems under controlled real-world scenarios that model your own unique environments.

It understands actual performance, system limitations, and real security posture in a better way, to right size data centers and eliminate incidents in production. It generates stateful applications and malicious traffic that simulate millions of real-world end-user environments to test and validate infrastructure, a single device, or an entire system. This includes complex data, video, voice, storage, and network application workloads.

Real Attacks

- 6,000+ live security attacks, 35,000+ pieces of live malware found in enterprise, core, and mobile networks, 180+ evasions
- DDoS and botnet simulation and custom attacks
- Research and frequent updates

PerfectStorm provides hardware-based acceleration for SSL and IPsec.

Multi-user Environment

PerfectStorm's multi-user environment leverages the per port user ownership model for all ports on the test modules installed into the chassis.

High-performing Business Applications

PerfectStorm ensures high-performing, and more available and secure business applications.

Disaster Recovery

PerfectStorm validates disaster recovery and business continuity.

Reduced Legal Exposure

PerfectStorm provides reduced legal exposure due to data loss by validating security using the industry's most up to date application and threat intelligence.

Platform Support

PerfectStorm is equipped with powerful multi-core, multi-threaded network processors, to satisfy the testing needs of equipment manufacturers having higher-density 10GE and 40GE equipments. As service providers and large enterprises prepare to deploy these equipments in their own networks, they must test and verify performance and functionality prior to deployment.

PerfectStorm's single, integrated system equipped with 12 PerfectStorm blades allows control of application traffic to nearly a terabit, up to 720 million concurrent connections, and new TCP connection rates of up to 24 Million. The hardware-based acceleration supports massive encryption levels. The system uses inline field programmable gate arrays (FPGAs) for enhanced accuracy pertaining to latency measurements with a resolution of 10ns.

PerfectStorm is compatible with XGS12 which is a 12-slot Chassis. The Chassis architecture supports easy setup and management of high scale, multi-user system. The XGS12 chassis includes a pluggable system controller for chassis management and web-based UI. This chassis is backward compatible with XM2/XM12 blades.

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

Load Modules

PerfectStorm load module comprises a two board set, the Main Board and the PHY Card. The Main Board contains the backplane interface, processors and FPGAs. The card occupies one slot in the XGS12 chassis and consumes no more than 400W of power.

The PerfectStorm family consists of the following models:

- PerfectStorm 10GE 8-port (SFP+)
- PerfectStorm Fusion 10GE 8-port (SFP+)
- PerfectStorm 40GE 2-port (QSFP+)
- PerfectStorm Fusion 40GE 2-port (QSFP+)

Each of these load modules are described as follows:

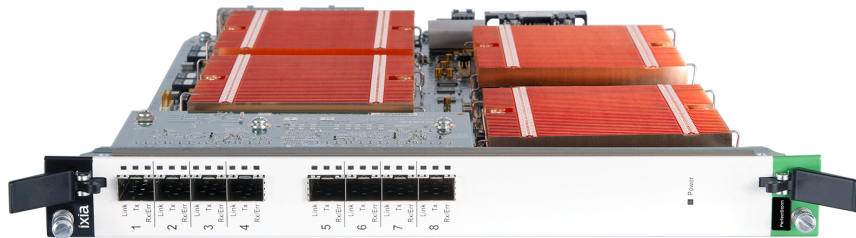
PS10GE8

PerfectStorm PS10GE8 is a 8 port 10-Gigabit Ethernet, load module with SFP+ interface. Each 10GE port uses of 1/8th of the network processor and memory resources available on the load module, allowing delivery of application traffic at wire-speeds for each port.

It supports only IxLoad software and is compatible with XGS12 chassis.

The PS10GE8 load module is shown in the following figure:

Figure 36-1. PerfectStorm Module-PS10GE8

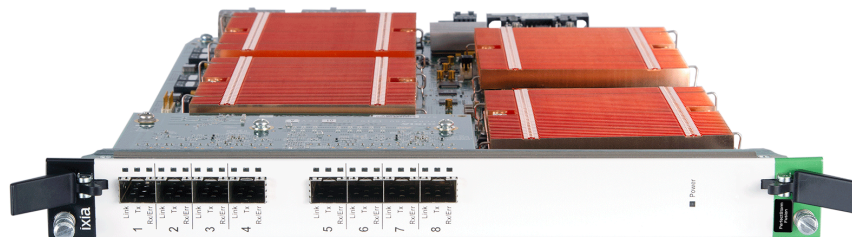


PS10GE8NG

PerfectStorm PS10GE8NG is a 8 port 10-Gigabit Ethernet, fusion load module with SFP+ interface. This mode provides extra flexibility to allocate all available NP resources and memory available on a single module while using a single 10 GE interface to transmit or receive the traffic. Ixia test applications transparently configure the allocation of NP resources to achieve the maximum performance. It supports IxLoad and BreakingPoint software and is compatible with XGS12 chassis.

The PS10GE8NG load module is shown in the following figure:

Figure 36-2. PerfectStorm Module-PS10GE8NG



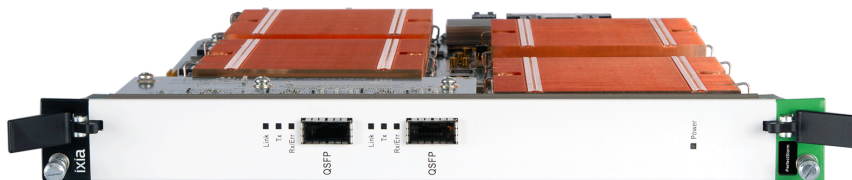
PS40GE2

PerfectStorm PS40GE2 is a 2 port 40-Gigabit Ethernet, load module with QSFP+ interface. Each 40GE port uses of $\frac{1}{2}$ of the network processor and memory resources available on the load module, allowing delivery of application traffic at wire-speeds for each port.

It supports only IxLoad software and is compatible with XGS12 chassis.

The PS40GE2 load module is shown in the following figure:

Figure 36-3. PerfectStorm Module-PS40GE2



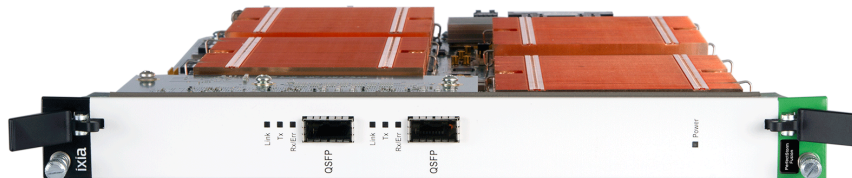
PS40GE2NG

PerfectStorm PS40GE2NG is a 2 port 40-Gigabit Ethernet, fusion load module with QSFP+ interface. This mode provides extra flexibility to allocate all network processor and memory resources available on a load module to a single 40GE port. Ixia test applications transparently configure the allocation of NP resources to achieve the maximum performance.

It supports IxLoad and BreakingPoint software and is compatible with XGS12 chassis.

The PS40GE2NG load module is shown in the following figure:

Figure 36-4. PerfectStorm Module-PS40GE2NG



Part Numbers

Part Numbers for PerfectStorm Load Modules and supported adapters are provided in the following table.

Table 36-1. Part Numbers for PerfectStorm Modules

Model Number	Part Number	Description
PS10GE8NG	944-1200	<ul style="list-style-type: none">• 8-ports of 10GE with the SFP+ physical interface.• SSL and IPsec hardware acceleration.
PS10GE8	944-1204	<ul style="list-style-type: none">• 8-ports of 10GE with the SFP+ physical interface.• SSL and IPsec hardware acceleration.
PS40GE2NG	944-1201	<ul style="list-style-type: none">• 2-ports of 40GE with the SFP+ physical interface.• SSL and IPsec hardware acceleration.
PS40GE2	944-1205	<ul style="list-style-type: none">• 2-ports of 40GE with the SFP+ physical interface.• SSL and IPsec hardware acceleration.

Specifications

The load module specifications are contained in [Table 36-2](#).

Table 36-2. PerfectStorm Load Module Specifications

Feature	PerfectStorm 10GE	PerfectStorm Fusion 10GE	PerfectStorm 40GE	PerfectStorm Fusion 40GE
Load Modules	PS10GE8	PS10GE8NG	PS40GE2	PS40GE2NG
Hardware, Load Module Specifications				
Number of Ports	8	8	2	2
Physical Interface	8-port, 10GE SFP+	8-port, 10GE SFP+	2-port, 40GE QSFP+	2-port, 40GE QSFP+
Transceiver Support (pluggable transceivers)	10GBASE-SR/SW (850 nm) 10GBASE-LR/LW (1310 nm)	10GBASE-SR/SW (850 nm) 10GBASE-LR/LW (1310 nm)	QSFP+, 40GBASE-SR4	QSFP+, 40GBASE-SR4
Memory	64GB	64GB	64GB	64GB
Hardware Encryption Offload	Yes	Yes	Yes	Yes
Hardware-Based Traffic Capture	N/A	N/A	N/A	N/A
FPGA Offload	Yes	Yes	Yes	Yes
IPv4, IPv6, UDP, TCP	Hardware checksum generation			
Load Module Dimensions	16" (L) x 12.00" (W) x 1.3" (H) 406 mm (L) x 305 mm (W) x 33 mm (H)			
Operating Temperature Range	41°F to 95°F (5°C to 35°C), ambient air			
Chassis Capacity				
Cards per Chassis	12	12	12	12
Port Density per XGS12 Chassis	144-port, 10GE SFP+	144-port, 10GE SFP+	24-port, 40GE QSFP+	24-port, 40GE QSFP+
Chassis Compatibility	XGS12	XGS12	XGS12	XGS12
XGS12 Chassis Bundles	XGS12-HS (940-0006) XGS12 (940-0007)	XGS12-HS (940-0006)	XGS12-HS (940-0006) XGS12 (940-0007)	XGS12-HS (940-0006)

Feature	PerfectStorm 10GE	PerfectStorm Fusion 10GE	PerfectStorm 40GE	PerfectStorm Fusion 40GE
Transceiver and Cable Support				
	Part number: 988-0011: SFP+, 10Gb/1Gb SR optical Xcvr, 850nm (cable included)		Part number: 948-0028: QSFP+ 40GBASE-SR4 optical transceivers	
	Part number: 988-0012: SFP+, 10Gb/1Gb LR optical Xcvr, 1310nm		Part number: 942-0041: MT 12-fiber MMF cable, 3-meter length	

Application Support

The Ixia application support for PerfectStorm load modules is provided in the following table:

Table 36-3. PerfectStorm Application Support

Hardware	Application Support
PerfectStorm PS10GE8	IxOS, IxLoad, TCL API
PerfectStorm Fusion PS10GE8NG	IxOS, IxLoad, BreakingPoint, TCL API
PerfectStorm PS40GE2	IxOS, IxLoad, TCL API
PerfectStorm Fusion PS40GE2NG	IxOS, IxLoad, BreakingPoint, TCL API

Mechanical Specifications

Front Panel

The Front panel of the 8x10GE and 2x40GE PerfectStorm load modules are shown in the following figures (applies to Fusion and non-Fusion versions):

Figure 36-5. Front panel of 8x10GE PerfectStorm PS10GE8

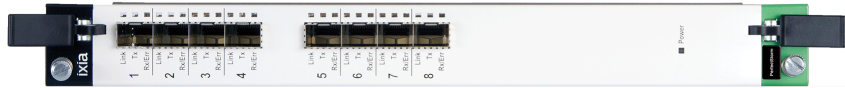


Figure 36-6. Front panel of 8x10GE Fusion PerfectStorm PS10GE8NG

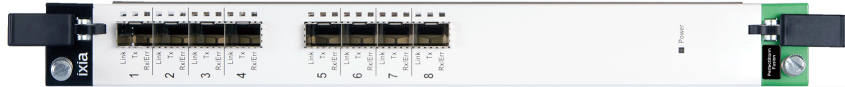


Figure 36-7. Front panel of 2x40GE PerfectStorm PS40GE2



Figure 36-8. Front panel of 2x40GE Fusion PerfectStorm PS40GE2NG



LED Panel

The LED panel specifications are provided in the following table.

Table 36-4. LED panel specifications of PS10GE8(NG) and PS40GE2(NG) Load Modules

Feature	Specification
Link	<ul style="list-style-type: none"> • OFF indicates link is down • Solid Green indicates link is up
Tx	<ul style="list-style-type: none"> • Off indicates Tx is inactive • Blinking Green indicates Tx is active
Rx/Err	<ul style="list-style-type: none"> • Off indicates Rx is inactive • Blinking Red indicates Rx is active with errors • Blinking Green indicates Rx is active

