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XGS12 Chassis

This chapter provides details about the XGS12 chassis—its specifications and features.

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 high-speed backplane (160 Gbps between each adjacent two cards) designed for aggregation across load modules.

XGS12 supports both IxLoad and BreakingPoint software applications. The chassis architecture supports easy setup and management of high scale, multi-user system. It has a pluggable system controller for chassis management. Additional applications and load modules will be supported in future software releases.

The following are the two chassis bundles:

- XGS12-HS, 12-SLOT CHASSIS BUNDLE with XGS12 rack mountable chassis and High Performance Controller Module. The XGS12-HS bundle supports both IxLoad and BreakingPoint software applications.

The chassis includes the following:

- Chassis frame assembly, w/ STD SYNC (941-0041)
- High Performance Processor Module (942-0048),
- Fan assembly module (942-0031),
- 6000W power supply module (942-0032)
- Linux & Windows 7 operating systems

This chassis requires selection of a free IxOS software version.

- XGS12, 12-SLOT CHASSIS BUNDLE with XGS12 rack mountable chassis and Standard Performance Controller Module. The XGS12 bundle supports IxLoad application only.

The chassis includes the following:

- Chassis frame assembly, w/ STD SYNC (941-0041)

- Standard Processor Module (942-0033)
- Fan assembly module (942-0031)
- 6000W power supply module (942-0032)
- Windows 7 operating system

This chassis requires selection of a free IxOS software version.

The chassis provides improved modularity and access to the major components to reduce downtime of a failed chassis and to reduce the probability of needing to remove a failed chassis from the test environment.

The four XGS12-HS chassis modules that are bundled together are shown in Table 7-1.

Table 7-1. XGS12-HS Part Numbers and Modules

Part Number	Description
941-0041	Chassis Frame Assembly, with STD SYNC
942-0048	High Performance Processor Module
942-0031	Fan Assembly Module
942-0032	6000W Power Supply Module

The four XGS12-Standard chassis modules that are bundled together are shown in Table 7-2.

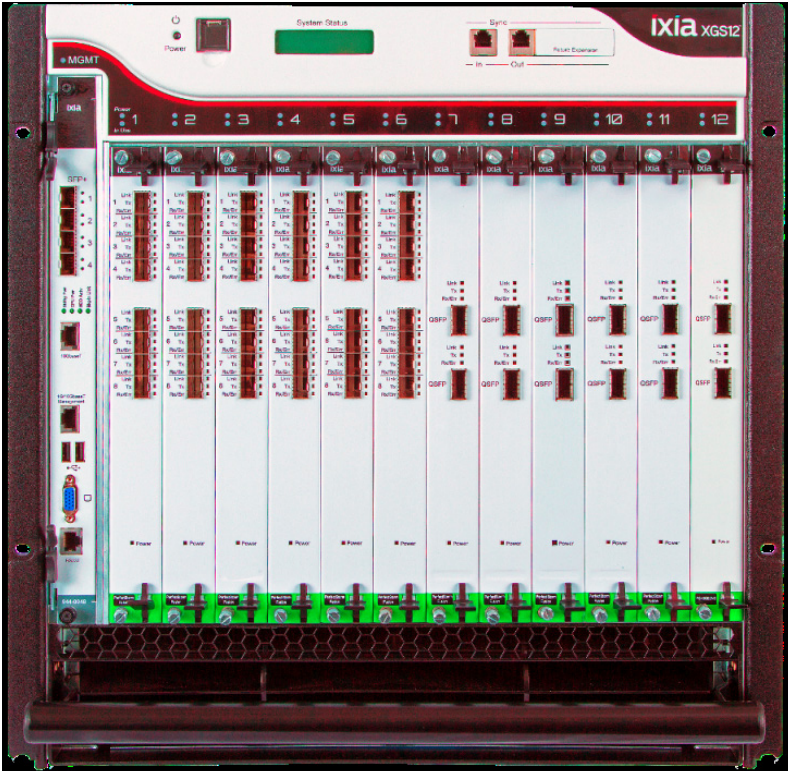
Table 7-2. XGS12-Standard Part Numbers and Modules

Part Number	Description
941-0041	Chassis Frame Assembly, with STD SYNC
942-0033	Standard Processor Module
942-0031	Fan Assembly Module
942-0032	6000W Power Supply Module

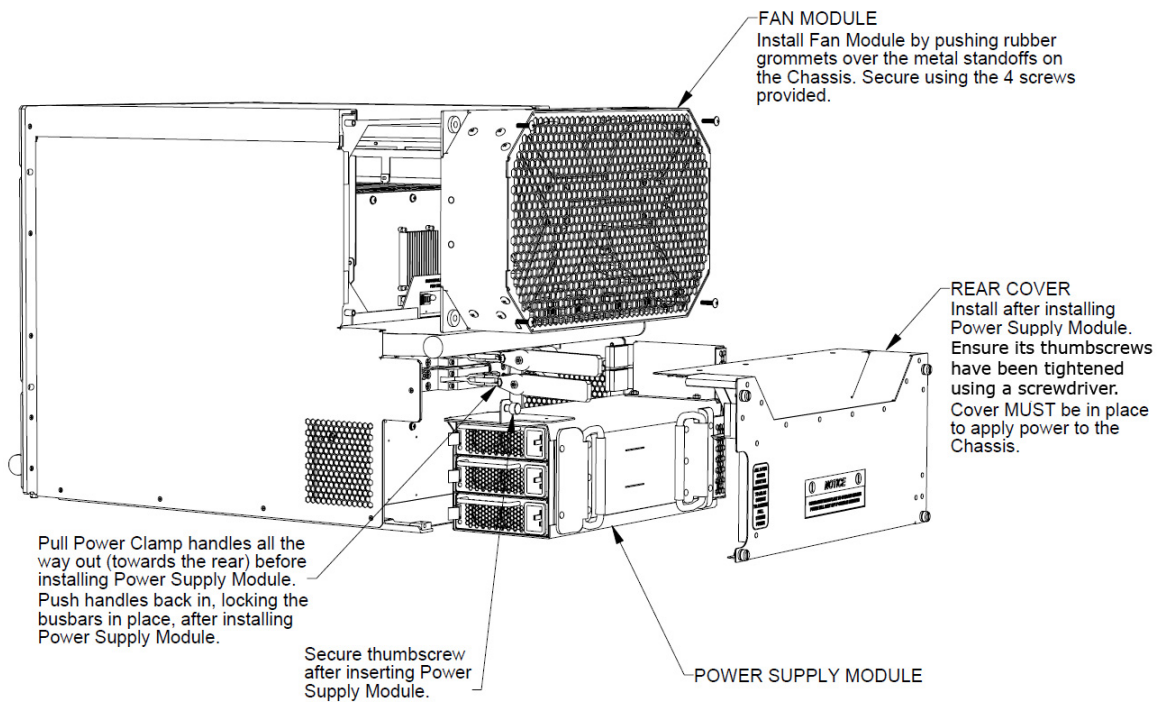
The XGS12 chassis, shown in [Figure 7-1](#), allows the hot-swapping of load modules, without requiring the chassis to be powered down. The Processor module for the XGS12 chassis is not hot swappable.

The System Controller is plugged into the front of the chassis, slot 0. The power supplies and fans are accessible from the rear of the chassis. Each of the modular components is capable of being removed in the field and replaced with minimum downtime.

Figure 7-1. XGS12 Chassis



The component modules of the XGS12 chassis are shown in the following figure:



Specifications

The XGS12 chassis specifications are contained in the following tables.

Table 7-3. XGS12-HS Processor Module Specifications

Processor Module	Field replaceable and removable processor card module with 2 x INTEL Sandy Bridge EP, E5-2658 2.1 GHz processors
Memory	64 GB RAM
Hard Disk Drive	Dual 400 GB Solid-State Drives
Operating System	Native Linux OS and Win7 VM for IxOS
Other Specs	IPMI support

Table 7-4. XGS12-Standard Processor Module Specifications

Processor Module	Field replaceable and removable processor card module with an Intel 2.26 GHz Core™ 2 Duo processor with 4 GB CPU memory, and 250 GB SATA hard drive
Memory	4GB
Hard Disk Drive	250GB
Operating System	Windows 7

Caution–Battery replacement
There is danger of explosion if battery is incorrectly replaced. Do not attempt to replace the battery.
Return to Ixia Customer Service for replacement with the same or equivalent type of battery. Ixia disposes of used batteries according to the battery manufacturer's instructions.

Note: The serial number for the Processor Module is located on module itself. This is used as the overall chassis serial number.

Table 7-5. XGS12 Chassis Specifications

Size	<ul style="list-style-type: none"> • 19.0 in. W x 19.21 in. H x 27.2 in. D • 48.26cm W x 48.79cm H x 69.09cm D • 11 rackmount units (11RU)
Load Module Slots	12 (compatible with Ixia XM form factor load modules)
Chassis Power	<p>The chassis requires three single phase, 200-240VAC, 50/60Hz circuits, each capable of providing 3680 watts. These circuits must provide protection against over-currents, short circuits and earth faults for the XGS12 chassis. A 20A circuit breaker for each circuit is also required.</p> <p>All three power cords must be plugged into their single phase 200-240VAC, 50Hz/60Hz power sources at the same time for correct operation of the chassis.</p> <p>Note: The chassis power supplies are interlocked with the rear cover which must be installed for them to be enabled. After removing or installing the rear panel, ensure thumbscrews have been tightened down with a 'Flat Blade' screwdriver.</p> <p>Note: The load module power is enabled by the Ixia server program. If it is not running, the load modules will not be powered on.</p>
Power Cords	<p>All three power cords are required to operate the XGS12 chassis power supplies.</p> <p>Power Cord shipments:</p> <ul style="list-style-type: none"> • Ixia provides three power cords that are configured and rated to meet the specifications of the target country where the chassis is being installed. • For North American customers, the power cords have NEMA L6-20P plugs for attachment to the power source and IEC-60320-C19 connectors that attach to the XGS12 chassis. • For International shipments, the power cords supplied has plugs suitable for each destination country's power source and IEC-60320-C19 connectors that attach to the XGS12 chassis.

Chassis Weights	<p>Frame:</p> <ul style="list-style-type: none"> • 64 lbs. (29.1 kg) empty, component weight • 97 lbs. (44.1 kg) average shipping weight (with filler panels) <p>Fan module:</p> <ul style="list-style-type: none"> • 10.2 lbs. (4.63 kg) component weight • 17.3 lbs. (7.86 kg) average shipping weight <p>Power Supply module:</p> <ul style="list-style-type: none"> • 28 lbs. (12.72 kg) component weight • 35.1 lbs. (15.95 kg) average shipping weight <p>Processor module (Standard):</p> <ul style="list-style-type: none"> • 2.7 lbs. (1.23 kg) component weight • 8.5 lbs. (3.86 kg) average shipping weight <p>Processor module (High Performance)</p> <ul style="list-style-type: none"> • 10 lbs. (4.54 kg) component weight • 15.8 lbs. (7.17 kg) average shipping weight <p>Warning: Total chassis weight, without any load modules installed is 112.2 lbs. (50.89 kg). Do not attempt to lift the fully assembled chassis.</p>
Fan Module	Field replaceable chassis fan assembly that is easily installed and removed.
Air flow Clearance	12 inches is required at the rear of the chassis. 24 inches of clearance is preferred.
Power Supply Module	Field replaceable power supply module that is easily installed and removed. There are three 2825W power supplies in the Power Supply Module. Each power supply may be removed or replaced separately.
Timing Sources	Internal clock, synchronized with another Ixia chassis, GPS AFD-1unit, AFD2 IRIG-B unit or with the Timing Distribution Module.
Shipping Vibration	FED-STD-101C, Method 5019.1/5020.1
Operating temperature	41°F to 104°F, (5°C to 40°C) Note: Some high-density/high performance load modules require a lower maximum ambient operating temperature than the standard for the chassis. When a load module that requires the lower maximum operating temperature is installed in an XM chassis, the maximum operating temperature of the chassis is adjusted downward to match the maximum operating temperature of the load module. The operating temperature range specification is specified in the published datasheet for these load modules.
Storage temperature	41°F to 122°F, (5°C to 50°C)
Operating Humidity	0% to 85%, non-condensing

Storage Humidity	0% to 85%, non-condensing
Noise	<p>The XGS12 chassis running at maximum fan speed capacity may produce noise levels up to 87 dB(A). This is measured per the GR-63-CORE, Issue 1, paragraph 5.6.3 specification. The use of appropriate ear protection is recommended to protect against hearing impairment. Consult local health and safety regulations for recommended maximum exposure levels for noise and ear protection devices.</p> <p>Shown below are the maximum XGS12 chassis sound levels measured according to GR-63-CORE, Issue 1, Paragraph 5.6.3.</p> <ul style="list-style-type: none">• Front: 83.5 dB(A)• Left Side: 84.2 dB(A)• Rear: 86.5 dB(A)• Right Side: 84.4 dB(A)

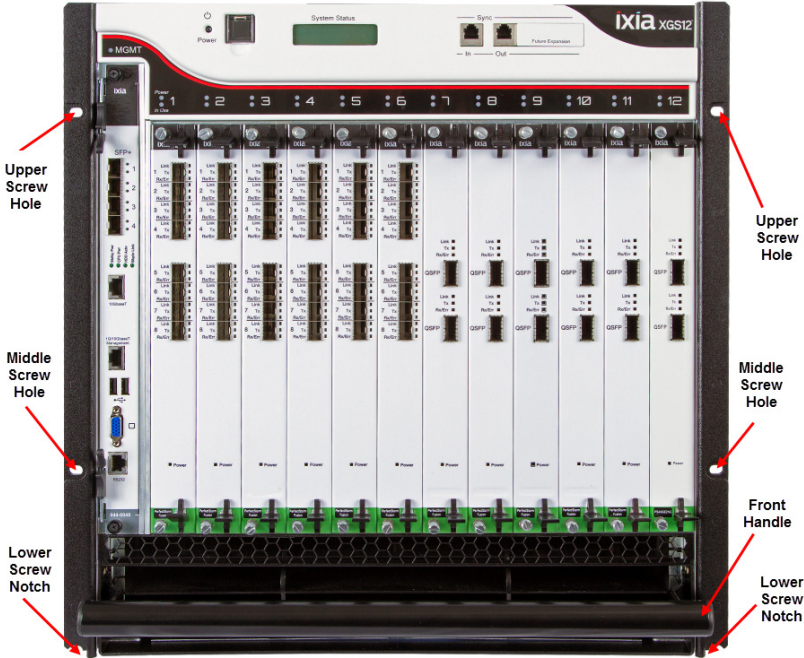


Hearing Protection: The XGS12 chassis generates noise levels above 80 dB(A). Ear protection must be worn. The use of appropriate ear protection is recommended to protect against hearing impairment. Consult local health and safety regulations for recommended maximum exposure levels for noise and ear protection devices.

Table 7-6. XGS12 Chassis controls and indicators

Front Panel Switches	On/Off momentary power push button
Monitor	HD-DB15 Super VGA
Ethernet	The Standard XGS12 chassis has two RJ-45 10/100/1000Mbps Gigabit Ethernet Management Port. The High Performance XGS12 chassis has one RJ-45 1GBaseT/10GBaseT management port, one RJ-45 RS232 serial port.
USB	The Standard XGS12 chassis has 4 USB dual type A, 4-pin jack connectors. The High Performance XGS12 chassis has two USB ports. Additionally there are four SFP+ sockets and one RJ-45 1GBaseT/10GBaseT port that are for future use.
Sync In	Single Sync In jack with a 4-pin RJ11
Sync Out	Single Sync Out jack with a 4-pin RJ11
Front Panel Indicators	See LEDs/LCD Display . 2 Paired LEDs above each slot position indicating Power and Active status. 2x16 LCD on front panel indicating chassis information.

Figure 7-2. Safety Features



XGS12 Chassis
Installation
Precautions

XGS12 chassis installation precautions are as follows:

- The chassis should be installed in the rack before installing the power supply module, fan module and load modules, thereby reducing the weight of the chassis.
- The two lower bolts used to secure the chassis to a rack can be used to hold the chassis frame in place while securing all of the other bolts (See Figure 6-2).
- Secure the chassis to rack face with all six bolts. Fully depress power supply clamps when installing power supply module.
- Secure the power supply module thumb bolt when installing power supply module.
- Install the rear power supply cover before applying AC power.

Note: After removing or installing this cover, ensure that the thumbscrews are tightened down with a screwdriver.

- Do not use the chassis without installing the Fan module.
- Do not use the chassis without installing the Processor module.
- Do not leave unused slots open. Use the filler panels to cover the un-used slots. See Installing Filler Panels for more information.
- Do not block the front air intake.
- A minimum air flow clearance of 12 inches is required. 24 inches of air flow clearance is preferred at the rear of the chassis.
- Operator intervention may be required to power cycle the XGS12 chassis or restart a software program in the event the XGS12 chassis operation is upset or stopped by electrostatic discharge.

LEDs/LCD Display

The XGS12 chassis has front panel LEDs for each load module slot.

Table 7-7. XGS12 LEDs

Label	Color	Description
Power	Green	When the Power LED is flashing, the board is being detected or initialized. The Power LED is illuminated when the board is powered.
In Use	Green	The Active LED is illuminated when a user has taken ownership of the load module.

LCD Display

An LCD display is provided on the chassis to indicate the status of the chassis without an external display device (monitor). The LCD operates in two modes:

- Startup: The LCD displays messages from IxServer to indicate the operation of IxServer as it initializes.
- Run: The LCD display provides chassis information. Information displayed includes chassis name, IxOS version, IP address, master/subordinate, and chassis status.

CPU Slot LED Definitions

The specifications of LEDs for the Processor module and the LEDs above the Processor module slot are shown in the following table:



ESD Discharge Warning: Operator intervention may be required to power cycle the unit or restart a software program in the event the unit is upset by electrostatic discharge.

Table 7-8. LED Specifications

	LED	Color	Description
On the chassis front face	CPU card Slot LED	Yellow	The backplane is initializing.
		Green	The backplane has initialized
Processor module - front panel	Stdby Pwr LED	Green	5V Stand-by power is available
	CPU Pwr LED	Green	CPU Card power is available
	HDD Act LED		
	Bkpln Link LED	Green	PCIe link to backplane is up
Processor module - Ethernet LEDs for each port	Link LED	Green	Port has link Note: Link and Activity LEDs are included for all Ethernet ports.
	Act LED		Flashes when port has activity

Supported Modules

The modules that are supported on the XGS12 are listed in the following table.

Table 7-9. Supported Modules

Part Number	Module	Function
944-1200	PerfectStorm 10GE 8-port Fusion (PS10GE8NG)	PerfectStorm 10GE Fusion 8-port Load Module, 10GE 8-port SFP+ with support for IxLoad and BreakingPoint software. Compatible ONLY with XGS12-HS, 12-SLOT CHASSIS BUNDLE with XGS12 rack mountable chassis and High Performance Controller Module (940-0006).
944-1201	PerfectStorm 40GE 2-port Fusion (PS40GE2NG)	PerfectStorm 40GE Fusion 2-port Load Module, 40GE 2-port QSFP+ with support for IxLoad and BreakingPoint software. Compatible ONLY with XGS12-HS, 12-SLOT CHASSIS BUNDLE with XGS12 rack mountable chassis and High Performance Controller Module (940-0006).
944-1204	PerfectStorm 10GE 8-port (PS10GE8)	PerfectStorm 10GE 8-port Load Module, 10GE 8-port SFP+ with support for only IxLoad software. Compatible with XGS12-HS, 12-SLOT CHASSIS BUNDLE with XGS12 rack mountable chassis and High Performance Controller Module (940-0006) and XGS12, 12-SLOT CHASSIS BUNDLE with XGS12 rack mountable chassis and Standard Performance Controller Module (940-0007).
944-1205	PerfectStorm 40GE 2-port (PS40GE2)	PerfectStorm 40GE 2-port Load Module, 40GE 2-port QSFP+ with support for only IxLoad software. Compatible with XGS12-HS, 12-SLOT CHASSIS BUNDLE with XGS12 rack mountable chassis and High Performance Controller Module (940-0006) and XGS12, 12-SLOT CHASSIS BUNDLE with XGS12 rack mountable chassis and Standard Performance Controller Module (940-0007).

Hot-Swap Procedure

Each XGS12 chassis provides the ability of removing and reinstalling a load module without requiring the removal of power from the rest of the chassis. The process of removing/installing a Load Module does not impact either the operation of the OS or remaining load modules installed in the chassis.

The hot-swap procedure is detailed in Appendix D Hot-Swap Procedure.

Cooling Fan Speed Control

The XGS12 chassis automatically monitors and measures the temperature of installed load modules. The XGS12 automatically adjusts the fan speed to maintain proper cooling.

Power outage
recovery and
Automatic booting
scenario

The BIOS on the XGS12 is set to Power On after a power failure.

The XGS12 chassis will start up, boot Windows 7 and automatically login to the Ixia user account. Anything that is in the Startup folder will also launch..

Rack Mount Cautions



Caution: If this unit is installed in a network equipment rack, please observe the following precautions.

- a:** Elevated Operating Ambient Temperature: If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consider installing the equipment in an environment that is compatible with the maximum allowable ambient temperature specified for the chassis (40° C).
- b:** Reduced Air Flow: Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not reduced. Do not block the back or the front of the chassis, and leave approximately 12 inches of space, 24 inches preferred, for the back of the unit for proper ventilation. The air flow clearance should be 12 inches on the front.
- c:** Mechanical Loading: Mount the chassis so that it is level in the rack and that a hazardous condition is not caused. Please install all six mounting bolts.
- d:** Circuit Overloading: Consider the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Pay attention to equipment nameplate ratings when addressing this concern.

- e:** Reliable Earthing: Maintain reliable earthing (grounding) of rack-mounted equipment. Chassis frame should be screwed down to racks to ensure proper grounding path. In addition, pay special attention to supply connections other than direct connections to the branch circuit (such as use of power strips).
- f:** Replacement of the power supply cord must of the same type cord and plug configuration that was shipped with the unit.