



BreakingPoint Firmware Release Notes

Release 9.10, August 2020

Release Notes Version 1.0



Notices

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Keysight headquarters

26601 West Agoura Road
Calabasas, California 91302
+1 877 367 4942 – Toll-free North America
+1 818 871 1800 – Outside North America
+1.818.871.1805 – Fax
www.ixiacom.com/contact/info

Global Support	+1 818 595 2599	support@ixiacom.com
<i>Regional and local support contacts:</i>		
APAC Support	+91 80 4939 6410	support@ixiacom.com
Australia	+61-742434942	support@ixiacom.com
EMEA Support	+40 21 301 5699	support-emea@ixiacom.com
Greater China Region	+400 898 0598	support-china@ixiacom.com
Hong Kong	+852-30084465	support@ixiacom.com
India Office	+91 80 4939 6410	support-india@ixiacom.com
Japan Head Office	+81 3 5326 1980	support-japan@ixiacom.com
Korea Office	+82 2 3461 0095	support-korea@ixiacom.com
Singapore Office	+656 494 8910	support@ixiacom.com
Taiwan (local toll-free number)	00801856991	support@ixiacom.com

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Overview

Document Purpose

This document provides information regarding the BreakingPoint 9.10 (Version: 9.10.110.25, Build: 392694) release, including information about new features, resolved SRs, known defects and workarounds (if available).

Background

Powered by Application and Threat Intelligence, BreakingPoint enables companies to maintain resilient IT infrastructures against escalating threats. Only BreakingPoint security and performance testing products stress and optimize end-to-end IT infrastructures by creating real user actions with a blend of application and attack traffic including malware, mobile malware, DDoS, and more.

Technical Support

To contact the BreakingPoint Support team, e-mail them at support@ixiacom.com or call them at 1-818 595 2599.

Documentation

The listed BreakingPoint documentation can be obtained at:

<https://support.ixiacom.com/user-guide> > **BreakingPoint**

- *Ixia BreakingPoint User Guide*
- *Ixia BreakingPoint Virtual Edition (VE) Installation Guide*

Documentation for, *PerfectStorm - XGS12 Chassis Platform Assembly Guide*, can be obtained at:

http://downloads.ixiacom.com/library/user_guides/IxOS/8.00/EA_8.00_Rev_A/XGS12ChassisPlatformAssemblyGuide/XGS12ChassisPlatformAssemblyGuide.pdf

New Features

BreakingPoint 9.10 is an alignment release which adds multiple features and enhancements. This release consolidates all releases since last 9.0 alignment release, including the update and customer specific patch releases.

The new features in BreakingPoint 9.10 release are:

TLS Enhancements

In this release, we have continued to enhance the BreakingPoint TLS capabilities introducing the following:

- Multiple SNI Support for the Client Side
- TLS Session Reuse as percentage
- TLS 1.3 improvements:
 - Client Authentication Support
 - PSK (Session Reuse)
 - SNI Support
 - Eduard Curve (ED25519) Server Certificate
 - Enhanced Device Interoperability:
 - TLS 1.3 to TLS 1.2 fallback at run time: supports proxy DUTs that downgrade TLS 1.3 sessions to TLS 1.2
 - Middlebox Compatibility Mode: supports proxy DUTs enforcing the presence of the "Session ID" parameter, including the TLS Server to echo back the "Session ID" value
- TLS 1.2 support for Poly-Chacha
- EMS (Extended Master Secret) support
- Improved TLS Session capacity: up to 70% for TLS 1.2

Automation

In this release, we are completing the REST API version 2 framework, engineered from the ground-up as a more scalable and easier to use REST API solution.

Advantages of REST APIv2 include:

- JSON Structured Responses of REST API calls
- Autogenerated Python Wrappers and Documentation
- New REST API Browser: provides a basic Web UI for customers to view the data model, change fields, perform operations and access documentation

This is the Phase 4 incremental implementation of the new REST APIv2 which provides improvements such as:

- Dedicated offline RESTv2 Documentation
- REST APIs for ATI License Installation- both hardware and VE platforms
- Ability to suppress Print statements

With above enhancements and other improvements, RESTv2 is now offering a robust implementation covering most of the UI features and functionality.

Note: Please note that REST API v2 is not backwards compatible with REST API v1. Nevertheless, REST API v1 will continue to work and will be maintained for bug fixing.

Virtual Edition

For the Virtual Edition platform several new features have been introduced:

- Proxy support for BPS VE platform: same transparent proxy support available on HW is now available on VE.
- CloudInit is now supported.
- Disk Expansion: support for Disk Expansion has been added for the Virtual Controller on all platforms.
- Support for Hyper-V platform has been added for the Virtual Controller and Virtual Blade. Support includes only usage of the default networking driver (hv_netvsc).
- Support for new Mellanox Ethernet Controllers running in PCI PT or SR-IOV mode has been added. The list of supported NICs now includes 10G / 25G / 40G models.
- BreakingPoint DPDK version was upgraded to better align with newer versions present in some environments including AWS.
- BreakingPoint **VE License Engine** was upgraded (to ILU 5.30 from old ILU 4.60) to provide extra functionality. Due to this change, the licensing menu for BPS VE systems has moved to the WebPlatform from the green UI.

Note: Due to important BPS VE framework upgrades (i.e. DPDK and License Engine upgrade), updating previous BPS VE systems to 9.10 is not supported. Users need to deploy 9.10 from scratch. Please make sure to save and backup all the test configs, results and other relevant resources before moving to 9.10.

Public Cloud

In this release, we are adding support for **Google Cloud Platform (GCP)**, along with the pre-existing support for AWS and Azure. Starting with 9.10, users can seamlessly translate existing test methodologies and automation for all major public cloud validation. With GCP, the same Bring Your Own License (BYOL) model will be supported. In terms of Network Neighborhood, the following elements are supported in GCP: IPv4 Static/External Hosts, IPv4 Virtual Router, IPv4 DNS.

Infrastructure

Multicomponent Edit is a new editing mode which allows users to edit parameters of multiple components of the same type at once. It boosts user productivity by significantly reducing configuration time when dealing with multiple similar components.

Statistics

New stats have been added to better characterize DUT behaviors:

- New client SNI statistics available in the SSL Summary report section:
 - *SNI Extension Sent Successfully*
 - *SNI Extension Mismatch*
- Receive statistics for Session Sender in SYN-ONLY ramp-up mode, used in TCP SYN Flood tests.
- New statistics for various stages of the application transfer:
 - *Application First Byte* (e.g. Time To First Byte) is a new statistic representing the time between an action when the start transaction flag set is sent and the first expected byte on that actions' response is received. If the flow contains multiple actions with the start transaction flag set, the amount of time it takes a client to receive the first byte from the server will be computed for each action with start transaction flag.
 - *Connection First Byte* refers to the time elapsed between a SYN packet and the receipt of the first packet with payload as a response to a request having the start transaction flag set. This statistic is computed only once on a given flow. Please note that for the first session between hosts that have not communicated before, this statistic also includes the time needed to perform the ARP resolution.

ATI Innovations

With 9.10 release, we are enforcing BreakingPoint's position as the network security testing leader with two major innovations:

- **Polymorphic Malware:** custom-generated and thoroughly validated polymorphic malware samples released as a part of the monthly malware package. These morphed samples are targeted to test the depth of a detection engine to catch different variants of same malware.
- **Attack Campaigns:** closely resemble real-world APT malware-based attacks. Covering, to the extent possible, the real kill-chain. Delivered as canned strike lists (part of ATI StrikePack updates), attack campaigns are ideal to test advanced security devices/ infrastructures performing multi vector correlations.

TrafficREWIND

BreakingPoint 9.10 release is compatible with TrafficREWIND 9.10 which introduces new application support to further enrich the production traffic regeneration capabilities like Slack, Tumblr, Zendesk, VNC, Diameter and others.

Customer Issue Resolutions

This release also addresses several important issues reported by BreakingPoint users. Please refer to the [Resolved Defects](#) section for the complete list.

Software Compatibility

BreakingPoint 9.10 (Version: 9.00.108.26, Build: 377540) Firmware Release is a cross-platform release. Please review the following table to identify the software required for your hardware platform.

Platform	BreakingPoint Firmware	IxOS Software	FlixOS Software
XGS12-HS chassis	BreakingPoint 9.10	IxOS 9.10	FlixOS for Native IxOS: 2020.2.82.1 (see the Product Compatibility Matrix for the correct FlixOS version)
PerfectStorm ONE Fusion appliances	BreakingPoint 9.10	IxOS 9.10	FlixOS for Native IxOS: 2020.2.82.1 (see the Product Compatibility Matrix for the correct FlixOS version) Note: Starting with 8.13, PerfectStorm ONE does not support Windows-based software. To support 8.13 and higher releases, PerfectStorm ONE appliances need to be converted to Native IxOS .

Hardware Compatibility

The BreakingPoint 9.10 release is supported on CloudStorm and PerfectStorm load modules.

12-slot XGS12 Chassis and CloudStorm/PerfectStorm Fusion Load Module

Part Number	Description
940-0006	XGS12-HS 12-slot, Chassis Bundle
905-1016	CloudStorm 50GE FAN-OUT FACTORY INSTALLED option
905-1017	CloudStorm 50GE FAN-OUT-UPG UPGRADE Option
905-1029	CloudStorm 50G and 100GE Field upgrade option
905-1014	CloudStorm 25GE FAN-OUT FACTORY INSTALLED Option
905-1015	CloudStorm 25GE FAN-OUT-UPG FIELD UPGRADE Option
905-1018	CloudStorm 10GE FAN-OUT FACTORY INSTALLED Option
905-1019	CloudStorm 10GE FAN-OUT-UPG FIELD UPGRADE Option
905-1028	Field Hardware Upgrade from CloudStorm 10G to CloudStorm 10/40G
905-1030	Field Hardware Upgrade from CloudStorm 10/40G to CloudStorm 10/40/25G
905-1030	Field Hardware Upgrade from CloudStorm NonFusion to CloudStorm Fusion
944-1232	CloudStorm Fusion, 2-port 100GE Load Module (CS100GE2Q28NG), 40G Support with Upgrade license
944-1237	CS40GE2Q28NG: CloudStorm 40G fusion CloudStorm Fusion, 2-port 40GE Load Module (CS40GE2Q28NG), 100G Support with Upgrade license
944-1235	CS25GE8Q28NG: CloudStorm 25GE fusion 8-port 25GE Load Module
944-1233	CS100GE2Q28NGALL: CloudStorm 100GE fusion 2-port 100GE Load Module
944-1201	PerfectStorm Fusion, 2-port 40/10GE QSFP+ Load Module (PS40GE2NG)
944-1200	PerfectStorm Fusion, 8-port 10/1 GE SFP+ Load Module (PS10GE8NG)
944-1209	PerfectStorm Fusion, 4-port 10/1 GE SFP+ Load Module (PS10GE4NG)
944-1210	PerfectStorm Fusion, 2-port 10/1 GE SFP+ Load Module (PS10GE2NG)
944-1202	PerfectStorm Fusion, 1-port 100GE CXP Load Module (PS100GE1NG)

PerfectStorm ONE Fusion Appliances

Part Number	Description
941-0028	PerfectStorm ONE Fusion, 40GE 2-port QSFP+ appliance (PS40GE2NG)
941-0027	PerfectStorm ONE Fusion, 8-port 10/1 GE SFP+ appliance (PS10GE8NG)
941-0031	PerfectStorm ONE Fusion, 4-port 10/1 GE SFP+ appliance (PS10GE4NG)
941-0032	PerfectStorm ONE Fusion, 2-port 10/1 GE SFP+ appliance (PS10GE2NG)
941-0033	PerfectStorm ONE Fusion, 8-port 1 GE SFP+ appliance (PS1GE8NG)
941-0034	PerfectStorm ONE Fusion, 4-port 1 GE SFP+ appliance (PS1GE4NG)

For the PerfectStorm platform, please refer to the [Product Compatibility Matrix](#) available on Ixia's website. An Ixia website account is required before accessing.

Browser Compatibility

The table below lists the HTML browsers supported by BreakingPoint. Browser versions that are more current than the versions listed in the table may work, but have not been tested at this time. Beta versions of HTML browsers are not supported.

Browser	Recommendation for Windows	Recommendation for MAC
Google Chrome	84.0.4147.135 (64-bit)	84.0.4147.135 (64-bit)
Firefox	Firefox 79.0 (64-bit)	Firefox 79.0 (64-bit)
Microsoft Edge	84.0.522.61	N/A
Safari	Not supported	13.1.2
Internet Explorer	Not supported	Not supported

Note: In BreakingPoint 3.5.1, and higher releases, logging in to the management UI will not be allowed from HTML browsers that have a maximum SSL version setting that is limited to only sslv3 (ssl3).

Note: Mac users with OS 10.8.2 can use Firefox or Google Chrome as their browser.

Upgrading to Release 9.10

Compatibility Matrix

BreakingPoint	9.10
IxOS	9.10
IxLoad	9.10
IxNetwork	9.10
Licensing	5.20

Installation Notes

Specific instructions for installation on PerfectStorm systems are contained in the sections below.

Note: The version numbers shown in the images below may not be the current version numbers, but the procedure is the same.

Systems running Native IxOS, BreakingPoint System Upgrade (PS One | XGS2-HS | XGS12-HS)

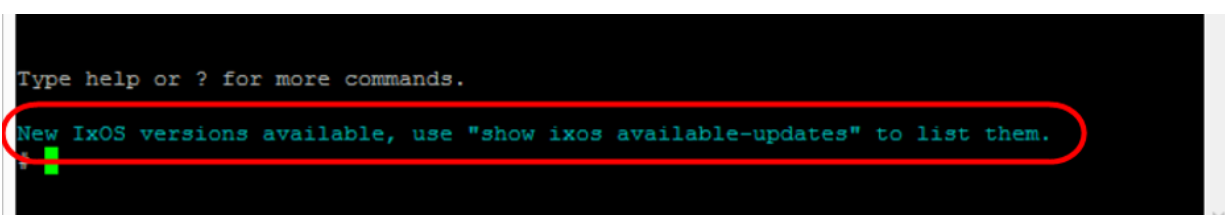
Ixia strongly recommends that you create backups of your system before upgrading to the BreakingPoint 9.10 Firmware release.

- **Upgrading IxOS on Native IxOS systems**

Online:

1. Access the Ixia Chassis CLI - `ssh admin@<chassisIP> -p 22, password: admin`
2. Apply command "enter Chassis" to access to Chassis CLI

You will be notified through the CLI when new builds of IxOS (IxOS9.00) are available.



```
Type help or ? for more commands.  
New IxOS versions available, use "show ixos available-updates" to list them.
```

3. Run the `install ixos <version>` command to perform the install. The build will be installed automatically from Ixia IxOS online repository (which is predefined in the OS).

Offline:

1. Download the IxOS build from <https://support.ixiacom.com/ixos-software-downloads-documentation>.
2. Use FTP to put the file on to the Chassis.

```
ftp://<chassisIP>  
user: admin  
password: admin
```

```
Put Ixia_Hardware_Chassis_XX.XX.XX-EA.tar.gz.gpg
```

4. Access the IxOS CLI - `ssh admin@<chassisIP> -p 22, password: admin`
5. Apply command "enter Chassis" to access to Chassis CLI
6. Run the `install ixos <version>` command to perform the install of the version that was downloaded.
7. Reboot the chassis.

Upgrading the BreakingPoint System

- **BreakingPoint in Native IxOS:** `ixia-web-platform-bps-xx.xx.xx.xx.el7.x86_64.waf` should be used for chassis or appliances running in a Native IxOS system. Depending on the BPS version running on the system, the user needs to follow one of the two upgrade procedures below:

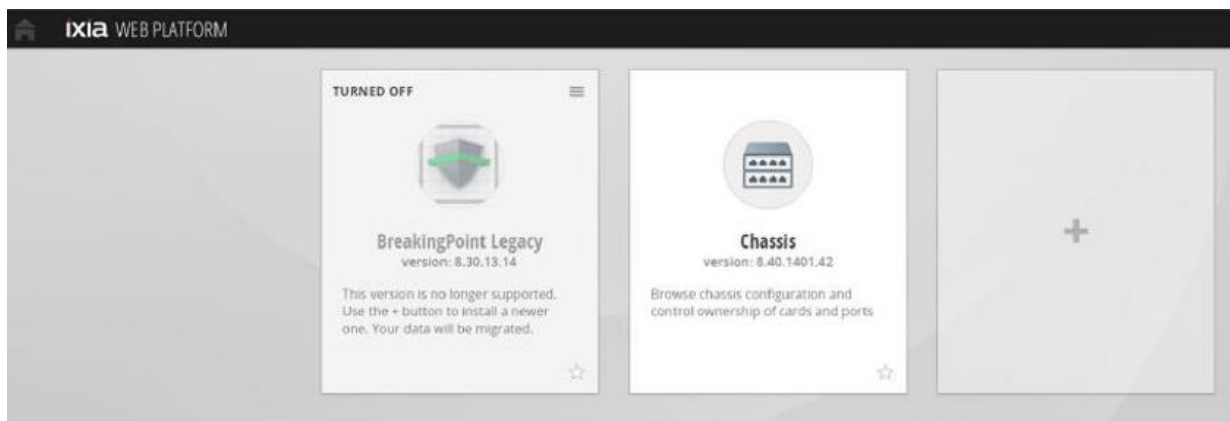
1. Systems running BreakingPoint 8.40 or newer

1. From IXIA BreakingPoint Page, click **Launch Administration**.
2. Click **BPS Software Update**
3. Click **UPDATE SYSTEM**
4. Click on the checkbox, "I created a backup"
5. Use BreakingPoint installer Package (`ixia-webplatform-bps-9.10.110.25..waf`) to upgrade to BreakingPoint 9.10 version. The installer package (`ixia-webplatform-bps-9.10.110.25..waf`) can be downloaded IXIA support download web page.

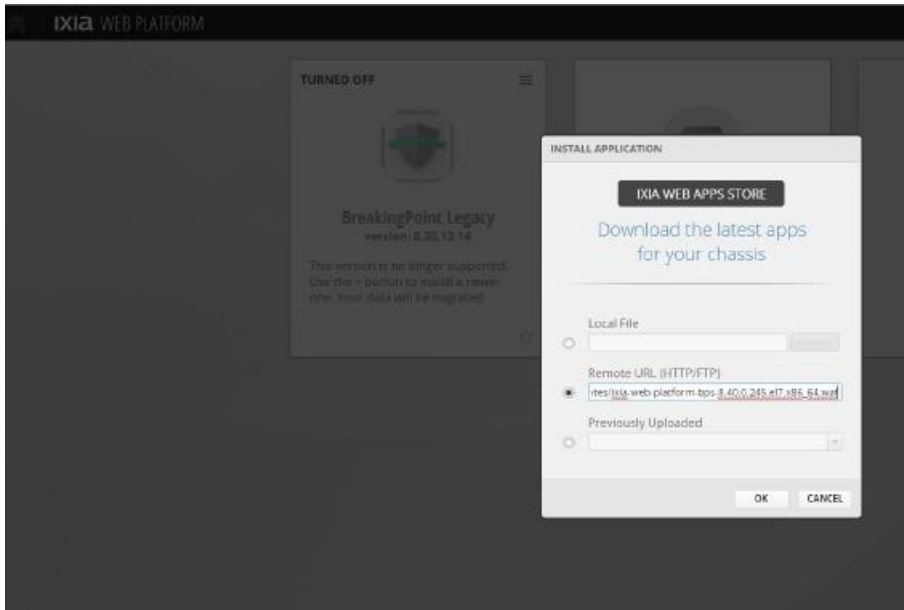
2. Systems running versions earlier than BreakingPoint 8.40

1. Once the IxOS installation is complete, connect to Chassis IP: `https://<Chassis IP>`.
2. Log in using user id: admin, password: admin.

After logging in, the WebPlatform Dashboard will display as shown in the image below.

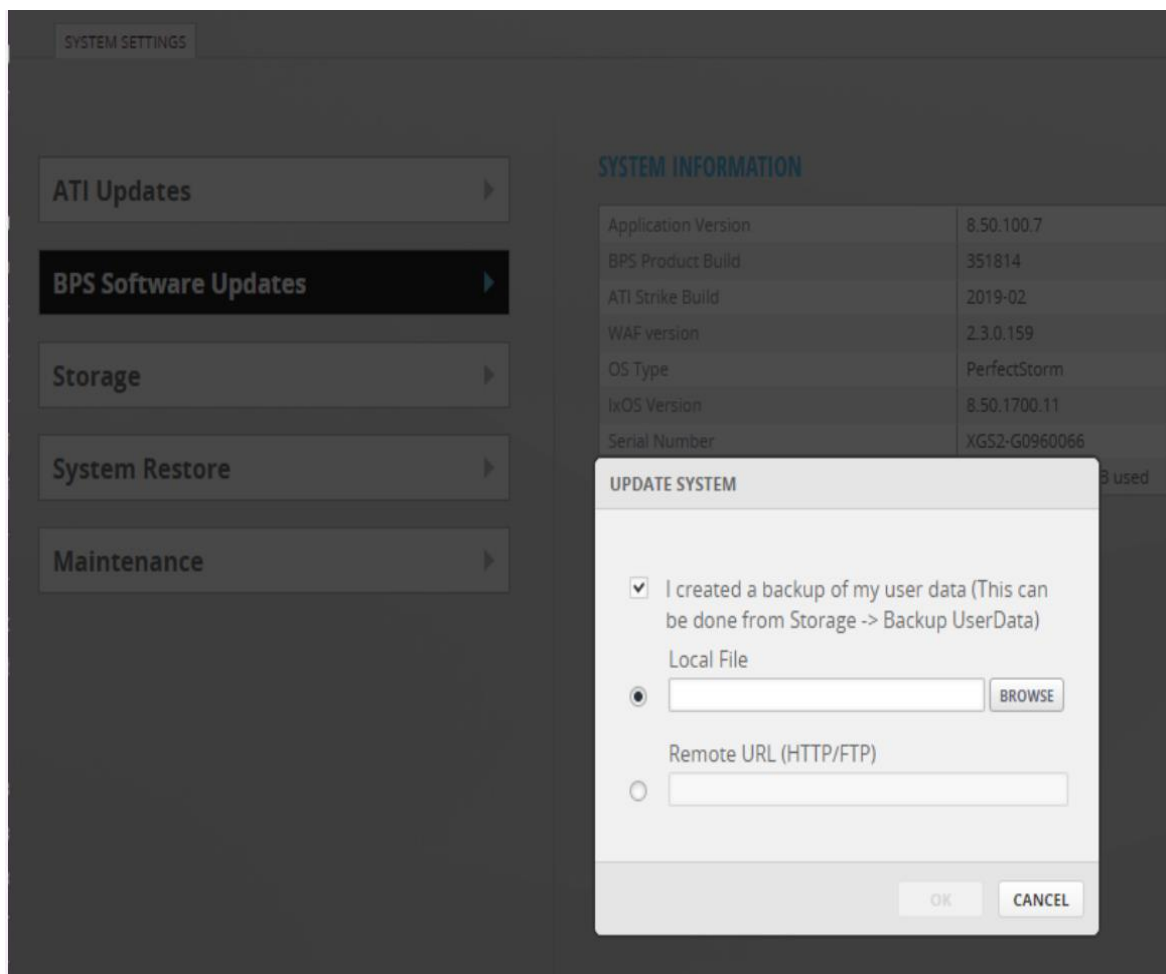


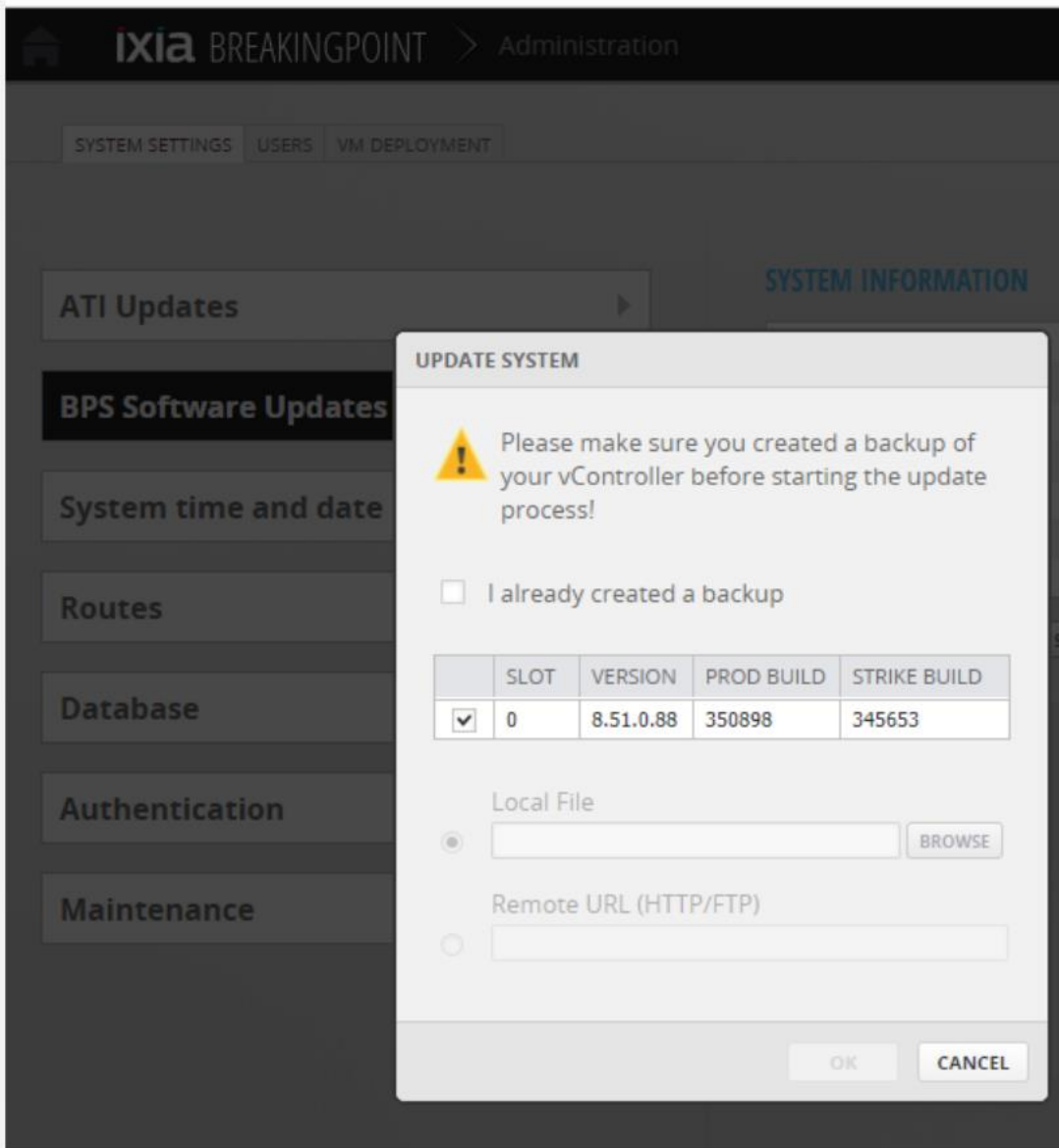
3. Click the **Install New Applications** icon (+) to install BreakingPoint using the BreakingPoint installer Package (`ixia-webplatform-bps-9.10.110.25..waf`). The installer package (`ixia-webplatform-bps-9.10.110.25..waf`) can be downloaded from the IXIA support download web page.
4. Select the Installer Package as shown in the image below. Then click **OK** to start the BreakingPoint installation.



5. After the installation is complete, log in using user id: admin and password: admin.
6. Click the **BreakingPoint Application** icon to launch BreakingPoint.

Figure 1: BreakingPoint System Update Page:



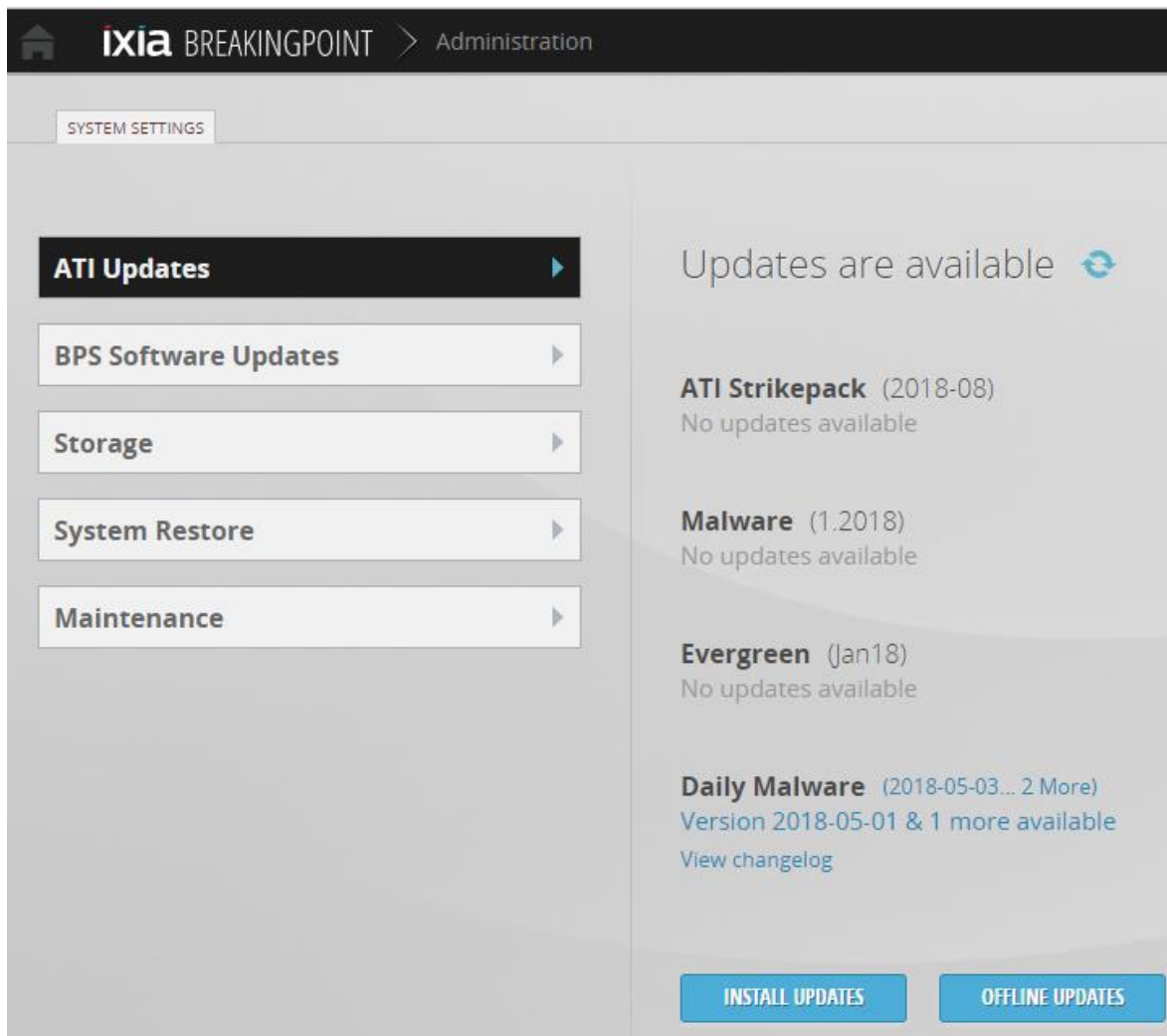


Update ATI Packages – applies to all BreakingPoint Versions

The Application and Threat Intelligence (ATI) program provides updates frequently to ensure the delivery of the industry's most up to date application and threat intelligence. Starting from this release, both Online and Offline ATI updates procedures are available. For Online update, user will be notified the availability of the Update right after logging into the BreakingPoint systems, please refer to Figure 1. Choose the package to be installed and click "INSTALL UPDATES".

For an Offline update, download ATI Update Packages from: <https://support.ixiacom.com/support-overview/product-support/downloads-updates> , click **OFFLINE UPDATES**, please refer to Figure 3.

Figure 3: Ixia WEB APPS Start Page



Resolved Defects

The following table lists defects from previous releases that have been resolved. If you have any concerns or questions regarding the defects listed here, please contact the BreakingPoint support team at support@ixiacom.com or call them at 1-818-595-2599.

CR ID #	Description
1509999	Resolved the issue where high performance malware tests would sometimes remain stuck in 99% progress.
1516347	Resolved the issue that occurred in some malware scalability scenarios where the UI could become unresponsive during the test.
1527594	Resolved the issue where startPacketTrace TCL API calls were not correctly documented and failed when used.
1528633	Resolved the issue where a one-arm server does not obey the "seed_sequential" dictionary token.
1513931	Resolved the issue where the Session Sender Lab was reporting a lower number of flows per second.
1538212	Resolved the issue that occurred in some scenarios where Test Paths did not enforce the correct direction of traffic.
1538227	Resolved the issue where Multiple SGSN with 1 GGSN tests sometimes reported an incorrect number of Client and Server side Tunnels.
1443178	Resolved the issue where Routing Robot scenarios with a minimum packet size of 66 bytes, sometimes reported UDP Checksum errors
1444222	Resolved the issue where tests with cards in Layer2-3 mode sometimes reported spikes in latency stats (between 160-300 ms).
1522598	Resolved the issue where BPS VE setups deployed in Azure Cloud failed to add slot by the public IP from another Virtual Network.
1538235	Resolved the issue where the "Maximum Super Flows Per Second" parameter did not work as expected when it had values lower than "1".
1540005	Resolved the issue where "TCP option Reset at End" did not have the desired effect in some scenarios.
1540059	Resolved the issue where Super Flows using "Generated Seed" in "Application Profile" were not always generating the random seed properly - resulting in 1 byte payloads being sent on the wire.

Known Issues and Defects

Note: To run IPsec tests, you must install the IPsec package. The installation procedure is similar to a Strikepack installation. The IPsec package can be found at: <https://support.ixiacom.com/support-overview/product-support/downloads-updates/versions/185>.

The following section details the known issues and defects of Firmware Release 9.10. Workarounds are listed for each defect if they are available. If you have any concerns or questions regarding the defects listed here, please contact the BreakingPoint support team at support@ixiacom.com or call them at 1-818-595-2599.

BreakingPoint Hardware:

Reference #	Description
1522597	Changing the card mode to BPSQT mode if BPSQT is not installed will lead to card instability.

BreakingPoint Licensing:

Reference #	Description
1353064	"License statistics" does not show the actual hostname and IP of the controller checking out the licenses from the license server.

BreakingPoint Virtual Edition:

Reference #	Description
	Google Cloud Platform limitations <ul style="list-style-type: none">• Some attacks may get blocked by Google Cloud Infrastructure• MTU is limited to 1460 bytes• Some bad TCP packets are blocked by Google Cloud Infrastructure (bad L4 checksum, bad TCP header length, etc.)
1527029	In the GUI, the Port Capabilities from Port Information tab is not populated with the speed for Mellanox boards.
1528057	Hostname changes on the Virtual Controller and Virtual Blade are not supported in this release.

1528058	Cloud Init is not currently supported on Virtual Machines deployed through Microsoft Azure Public Cloud.
1528272	For instances running in Amazon AWS Public Cloud, the DPDK Performance Acceleration feature cannot be enabled on C5.XLARGE instance types. This is caused by the memory limit of the instance.
1530388	For instances running in Amazon AWS Public Cloud, you may occasionally experience a small packet loss for high throughput tests. This is caused by packet drops occurring at the AWS infrastructure level.
1536838	In Microsoft Azure Public Cloud, there are scenarios where the RX / TX statistics may be inaccurate due to the SO/LRO mechanism.
1538040	Strike attacks will be blocked on VMware ESXi hypervisors, where multicast promiscuous cannot be enabled in SR-IOV mode. This is a hypervisor documented behavior.
1540536	For instances running in Amazon AWS Public Cloud, if the test is using IPv6 address, RPC - Call packets are not reaching the server port.
1543349	Because the current release delivers a new base OS version, updating from previous versions on BreakingPoint is not supported. In order to use BreakingPoint 9.10 Virtual Edition a clean deployment is required.
1543634	For Mellanox ConnectX-5 100Gbps board the port speed is incorrectly displayed as 34464 in the TCL API and GUI.
1545292	If ports are not appearing in the Virtual Blade after enabling Performance Acceleration, please make sure that your VM compatibility is upgraded (on VMware setups).

BreakingPoint SSL:

Reference #	Description
1536243	Session resumption percentage will not function correctly when a low session capacity is configured.
1542900	DHE cypher is not supported in this release and will be addressed in a future version. In some SSL CC tests, this may cause test instability.
1544479	BreakingPoint SSL Server will not pick the minimum TLS version when there is a mismatch and the client is asking for a lower TLS version: <ul style="list-style-type: none"> Downgrade to TLS1.0 from TLS1.1 is not supported Downgrade to TLS1.1 from TLS1.2 is not supported

	<ul style="list-style-type: none"> Downgrade to TLS1.0 from TLS1.2 is not supported
1544621	Session resumption percentage has limited statistics in this release.

BreakingPoint Automation:

Reference #	Description
1547292	When requesting the latest values for real time stats using RESTv2, the list with stats values retrieved may be incomplete. To avoid this, the argument numdatapoints should be set to a value > 1, by default this value is 1. bps_connection.testmodel.realTimeStats(runid=test_id, rtsgroup="all",numSeconds= -1, numDataPoints=2)
1547306	When using RESTv2, the realtime stats operation is not retrieving a set of values for each second if numseconds = numdatapoint > 1.
1533948	When using RESTv2, when pulling the real time statistics available for a specific time interval, some stat names may not be retrieved.

BreakingPoint Functionality:

Reference #	Description
1541043	Components (client Tags/server Tags) are not saved when using the new Multicomponent Edit functionality.
1544481	Running a high number of parallel performance tests (more than 12 instances) can create instability on some of the cards.
1536140	Occasionally L2-3 tests on CloudStorm cards are not responding to run time settings. Workaround: To work around this issue, Stop the test from the UI.

Operational Considerations

Reference #	Description
1486863	<p>Be aware that when you are testing, NP assignment is driven by affinity. The affinity is established based on the order of the interface selection.</p> <p>In case of running on a CloudStorm fan-out card, the NP allocation is done dynamically, based on the resources needed. However, in order to ensure that all resources are allocated at all times, you need to select the client/server interfaces from different Resource Groups.</p>
1427345	<p>The available disk space on the chassis after Native IxOS conversion becomes limited. Up to 70% of the HDD contains information for restoring the chassis to Windows mode (undoing the Native IxOS conversion). We recommended that you reclaim this disk space by deleting the legacy BPS information (use IxOS CLI command: <code>uninstall bps legacy</code>) before running a long duration scaled test.</p>
1425901	<p>CloudStorm hardware interprets the increment/decrement port settings in a slightly different manner than earlier BPS blades. In both cases the user sets the "starting port number" and the "mask size". For example, consider an incrementing case where the mask is set to eight bits; In CloudStorm, the port numbers generated will increment from "starting port + 0" to "starting port + 255". In blades other than CloudStorm, using the same settings, the eight least significant bits in the starting port will be replaced by an incrementing value of 0 to 255. It should be noted that if the user sets the "starting port number" such that the masked bits are zero, the resulting port # sequences generated by both sets of hardware will be identical. This is likely the most common configuration as the masked bits in the "starting port number" are essentially ignored by legacy hardware. The newer mechanism gives more flexible control over the port ranges.</p>
1425332	<p>On CloudStorm for a Security/Security NP test in combination with other components such as AppSim or Routing Robot, adding a new component and changing the tags might take longer. The higher the number of components the longer the delay for the tag change.</p>
1423380	<p>Four AppSim components are required to achieve the Max GTP UE attached rate on CloudStorm.</p>
1422408	<p>The Delayed Start feature in Layer 2/3 on a CloudStorm blade has a +/- 10 second tolerance in this release.</p>
1409901	<p>The files created for backups of native IxOS databases vary in size, and can take more than an hour to backup or to restore. The main component of their size is the number and size of test reports included in the database files. If you wish to reduce the time taken by the backup and restore functions, delete unneeded test reports prior to running the backup or restore.</p>
1398134	<p>Note that GTP tunnel creation is not dependent on the number of sessions. BPS creates tunnels irrespective of session rate.</p>

1309762

When PerfectStorm is in L2/L3 mode, only one network processor is available to generate application traffic. Therefore, maximum performance/throughput is expected to be lower for L4/L7 test components while L2/L3 tests will perform as expected.