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Release Notes for Cisco ASR 920 Series Aggregation Services Router, Cisco IOS XE Bengaluru 17.5.x

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Introduction

This release notes contain information about the Cisco ASR 920 Series Aggregation Services Routers, provides new and changed information for these routers, hardware support, limitations and restrictions, and caveats.

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This release notes provides information for these variants of the Cisco ASR 920 Series Routers:

- ASR-920-12CZ-A

- ASR-920-12CZ-D

- ASR-920-4SZ-A

- ASR-920-4SZ-D

- ASR-920-10SZ-PD

- ASR-920-24SZ-IM

- ASR-920-24SZ-M

- ASR-920-24TZ-M

- ASR-920-12SZ-IM

- ASR-920-12SZ-A

- ASR-920-12SZ-D

- ASR 920-8S4Z-PD

Starting with Cisco IOS XE Bengaluru Release 17.4.1, Cisco ASR-920-24SZ-IM, Cisco ASR-920-24SZ-M, Cisco ASR-920-24TZ-M, Cisco ASR 920-10SZ-PD, Cisco ASR-920-12CZ-A/D, and Cisco ASR-920-4SZ-A/D routers are auto upgraded to ROMMON version 15_6_44r_s.

Cisco ASR 920 Series Routers Overview

The Cisco ASR 920 Series Aggregation Services Routers provide a comprehensive and scalable set of Layer 2 and Layer 3 VPN services in a compact package. They are temperature-hardened, small form factor, with high throughput and low power consumption ideal for mobile backhaul, business services and residential voice, video, and data ("triple-play") applications.

Feature Navigator

Use the Cisco Feature Navigator to find information about feature, platform, and software image support. To access the Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on cisco.com is not required.

Feature Matrix

The feature matrix lists the features supported for each platform. For more information, see the Cisco ASR 920 Series Aggregation Services Routers Feature Compatibility Matrix.

The cumulative Feature Compatibility Release Matrix is available on Content Hub.

Software Licensing Overview

Starting with Cisco IOS XE Cupertino 17.7.1, PAK licenses are no longer available. When you purchase the Cisco IOS XE Cupertino 17.7.1 release or later, Smart Licensing is enabled by default. We recommend that you move to Smart Licensing before upgrading to Cisco IOS XE Cupertino 17.7.1 or a higher release, for a seamless experience.

If you are using Cisco IOS XE Bengaluru 17.6.1 or an earlier release version, Smart Licensing is not enabled by default. To enable Smart Licensing, see Software Activation Configuration Guide (Cisco IOS XE ASR 920 Routers).

The router offers the following base licenses:

- Metro Services

- Metro IP Services

- Advanced Metro IP access

  - SDM Video Template

Table 1: Cisco ASR 920 Software Licenses Feature Set

Metro Services	Metro IP Services	Metro Aggregation Services
—	Includes all features in Metro Services	Includes all features in Metro IP Services
QoS, with deep buffers and hierarchical QoS (HQOS)	IP routing (RIP, OSPF, EIGRP, BGP, IS-IS)	MPLS (LDP and VPN)
Layer 2: 802.1d, 802.1q	PIM (SM, DM, SSM), SSM mapping	MPLS TE and FRR
Ethernet Virtual Circuit (EVC)	BFD	MPLS OAM
Ethernet OAM (802.1ag, 802.3ah)	Multi-VRF CE (VRF lite) with service awareness (ARP, ping, SNMP, syslog, trace-route, FTP, TFTP)	MPLS-TP
Multiple Spanning Tree (MST) and Resilient Ethernet Protocol (REP)	IEEE 1588-2008 Ordinary Slave Clock and Transparent Clock	Pseudowire emulation (EoMPLS, CESoPSN, and SAToP)
Synchronous Ethernet	—	VPLS and HVPLS
IPv4 and IPv6 host connectivity	—	Pseudowire redundancy
—	—	MR-APS and mLACP

The router offers the following additional feature licenses:

- ATM

- IEEE 1588-2008 Boundary Clock/Master Clock

- OC-x Port License

Determining the Software Version

Use the following commands to verify your software version:

- Consolidated Package— **show version**

Table 2: ROMMON Version

PIDs	ROMMON
ASR-920-12SZ-A , ASR-920-12SZ-D	15.6(44r)S

PIDs	ROMMON
ASR-920-12SZ-IM	15.6(44r)S
ASR-920-12CZ-A, ASR-920-12CZ-D, ASR-920-4SZ-A, ASR-920-4SZ-D, ASR-920-10SZ-PD,ASR-920-24SZ-IM, ASR-920-24SZ-M, ASR-920-24TZ-M, ASR920-8S4Z-PD, and ASR-920-20SZ-M	15.6(44r)S

Supported HoFPGA and ROMMON Versions

The tables below list the HoFPGA and ROMMON version of the software releases.

Table 3: HoFPGA and ROMMON Versions for the Cisco ASR-920-12CZ-A, ASR-920-12CZ-D, ASR-920-4SZ-A, ASR-920-4SZ-D, ASR-920-10SZ-PD, and ASR 920-8S4Z-PD

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.1	0X00040043	15.6(32r)S
Csico IOS XE Gibraltar 16.12.2a	0x00040043 (BFD/default template) 0x00020009 (Netflow template)	15.6(32r)S
Cisco IOS XE Amsterdam 17.1.x	0X00040043 (BFD/default template) 0x00020009 (Netflow template)	15.6(32r)S
Cisco IOS XE Amsterdam 17.3.1	0X00020009	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X00020009	15.6(43r)S
Cisco IOS XE Bengaluru 17.4.1	0X00040044 (BFD/default template)	15.6(44r)S
Cisco IOS XE Bengaluru 17.5.1	0X00040044 (BFD/default template)	15.6(44r)S

Table 4: HoFPGA and ROMMON Versions for the Cisco ASR-920-20SZ-M

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.1	0X0001000A	15.6(32r)S

Release	HoFPGA Version	ROMMON Version
Csico IOS XE Gibraltar 16.12.2a	0x0001000A (BFD/default template) 0x0001000A (Netflow template)	15.6(32r)S
Cisco IOS XE Amsterdam 17.1.x	0x0001000A (BFD/default template) 0x0001000A (Netflow template)	15.6(32r)S
Cisco IOS XE Amsterdam 17.3.1	0X0001000a	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X0001000a	15.6(43r)S
Cisco IOS XE Bengaluru 17.4.1	0X0001000a	15.6(44r)S
Cisco IOS XE Bengaluru 17.5.1	0X0001000b	15.6(44r)S

Table 5: HoFPGA and ROMMON Versions for the Cisco ASR-920-24SZ-IM, ASR-920-24SZ-M, and ASR-920-24TZ-M

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.1	0X00030014	15.6(32r)S
Csico IOS XE Gibraltar 16.12.2a	0x00030014 (BFD/default template) 0x00030014 (Netflow template)	15.6(32r)S
Cisco IOS XE Amsterdam 17.1.x	0x00030014 (BFD/default template) 0x00030014 (Netflow template)	15.6(32r)S
Cisco IOS XE Amsterdam 17.3.1	0X00030014	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X00030014	15.6(43r)S
Cisco IOS XE Bengaluru 17.4.1	0X00030016	15.6(44r)S
Cisco IOS XE Bengaluru 17.5.1	0X00040019	15.6(44r)S

Table 6: HoFPGA and ROMMON Versions for the Cisco ASR-920-12SZ-IM

Release	HoFPGA Version	ROMMON Version
Cisco IOSXE Gibraltar 16.12.1	0X0003001B	15.6(24r)S
Csico IOS XE Gibraltar 16.12.2a	0x0003001B (BFD/default template) 0x00020008 (Netflow template)	15.6(24r)S

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Amsterdam 17.1.x	0x0003001B (BFD/default template) 0x00020008 (Netflow template)	15.6(24r)S
Cisco IOS XE Amsterdam 17.3.1	0X0003001b	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X0003001b	15.6(43r)S
Cisco IOS XE Bengaluru 17.4.1	0X0003001e	15.6(43r)S
Cisco IOS XE Bengaluru 17.5.1	0X0003001e	15.6(43r)S

Table 7: HoFPGA and ROMMON Versions for the Cisco ASR-920-12SZ-A and ASR-920-12SZ-D

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.1	0X00010039	15.6(29r)S
Csico IOS XE Gibraltar 16.12.2a	0x00010039 (BFD/default template) 0x10000007 (Netflow template)	15.6(29r)S
Cisco IOS XE Amsterdam 17.1.x	0x00010039 (BFD/default template) 0x10000007 (Netflow template)	15.6(29r)S
Cisco IOS XE Amsterdam 17.3.1	0X10000008	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X10000008	15.6(43r)S
Cisco IOS XE Bengaluru 17.4.1	0X00010040 (BFD/default template)	15.6(43r)S
Cisco IOS XE Bengaluru 17.5.1	0X10000008	15.6(43r)S

Table 8: IM FPGA Versions for the Cisco ASR-920-24SZ-IM

Release	Gigabit Ethernet Interface Module (Phase 1) FPGA	Gigabit Ethernet Interface Module (Phase2) FPGA	8 T1/E1	16 T1/E1	32 T1/E1
Cisco IOS XE Amsterdam 17.1.x	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Amsterdam 17.3.1	0.49	69.24	0.54	0.54	0.46

Release	Gigabit Ethernet Interface Module (Phase 1) FPGA	Gigabit Ethernet Interface Module (Phase2) FPGA	8 T1/E1	16 T1/E1	32 T1/E1
Cisco IOS XE Amsterdam 17.3.2	0.75	N/A	N/A	0.54	0.46
Cisco IOS XE Bengaluru 17.4.1	0.75	N/A	N/A	0.54	0.46
Cisco IOS XE Bengaluru 17.5.1	0.75	N/A	N/A	0.54	0.46

Table 9: IM FPGA Versions for the Cisco ASR-920-12SZ-IM

Release	Gigabit Ethernet Interface Module (Phase 1) FPGA	Gigabit Ethernet Interface Module (Phase2) FPGA	8 T1/E1	16 T1/E1	32 T1/E1
Cisco IOS XE Amsterdam 17.1.x	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Amsterdam 17.3.1	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Amsterdam 17.3.2	0.75	N/A	N/A	0.54	0.46
Cisco IOS XE Bengaluru 17.4.1	0.75	N/A	N/A	0.54	0.46
Cisco IOS XE Bengaluru 17.5.1	0.75	N/A	N/A	0.54	0.46

Restrictions and Limitations

Note The error message "PLATFORM-1-NOSPACE: SD bootflash : no space alarm assert" may occur in the following scenarios:

- Any sector of SD Card gets corrupted

- Improper shut down of router

- power outage.

This issue is observed on platforms which use EXT2 file systems.

We recommend performing a reload of the router. As a result, above alarm will not be seen during the next reload due to FSCK(file systems check) execution.

However, If the error persists after a router reload, we recommend to format the bootflash or FSCK manually from IOS.

- Embedded Packet Capture (EPC) is not supported on ASR 920 routers.

- The **default** *command-name* command is used to default the parameters under that interface. However, when speed is configured on the interface, the following error is displayed:

  ```
  Speed is configured. Remove speed configuration before enabling auto-negotiation
  ```

- For VCoP, only SFP-T3F-SATOP-I is supported.

- Adding or deleting the Trunk Ethernet flow points (TEFPs) with scaled bridge-domain, without delay causes the Cisco ASR 920 Series router to crash.

- Virtual services should be deactivated and uninstalled before performing replace operations.

- The Cisco ASR920 Series Routers no longer support the controller and nid-controller commands for the Cisco ME1200 switch.

- The following interface modules (IMs) do not require the activation command for IM boot up, provided no other IM is activated in subslot 0/1 before.

  However, if an IM was activated in the system earlier, deactivate the previously-activated IM before inserting a new IM in system.

    - 16-Port T1/E1 Interface Module

    - 32-Port T1/E1 Interface Module

    - 8-Port T1/E1 Interface Module

    - 4-port OC3/STM-1 (OC-3) or 1-port OC12/STM-4 (OC-12) Interface Module

    - 14-Port Serial Interface Module

    - 6-Port E and M Interface Module

    - 4-Port C37.94 Interface Module

- RS422 works on ports from 0 to 7 only.

- The frame drops may occur for packets with packet size of less than 100 bytes, when there is a line rate of traffic over all 1G or 10G interfaces available in the system. This restriction is applicable only on RSP2 module and ASR 920 platform, and is not applicable for RSP3 module.

- MPLS VC label packet with time-to-live (TTL) value of 2 is dropped at egress MPLS PE device due to ASIC limitations. During PHP process, MPLS TTL value for the VC label is decremented by one with implicit-null. The VC label-related TTL value is set to 255 while imposing the VC label due to multiple VC switching scenarios.

  Use the **no mpls ip propagate-ttl** command as the Short Pipe mode for the required label.

- Interface naming is from right to left. For more information, see the Cisco ASR 920 SoftwareConfiguration Guide .

- Packet size greater than 1460 is not supported over IPsec Tunnel.

- Minimal traffic drop might be seen for a moment when higher rate traffic is sent through the IPsectunnels for the first time.

- One Ternary Content-Addressable Memory (TCAM) entry is utilized for Segment Routing Performance Measurement. This is required for the hardware timestamping to function.

- While performing an auto upgrade of ROMMON, only primary partition is upgraded. Use the **upgrade rom-mon filename** command to upgrade the secondary partition of the ROMMON. However, the router can be reloaded during the next planned reload to complete the secondary ROMMON upgrade.

- Some router models are not fully compliant with all IETF guidelines as exemplified by running the pyang tool with the lintflag. The errors and warnings exhibited by running the pyang tool with the lint flag are currently non-critical as they do not impact the semantic of the models or prevent the models from being used as part of the toolchains. A script is provided, **check-models.sh**, which runs pyang with lint validation enabled, but ignoring certain errors. This allows the developer to determine what issues may be present.

- If IPv6 Global IP is configured as the BFD peer, and if the interface goes down, a VRRP flap may occur. This may occur because, VRRP works on the basis of Link-local IP and not global IP. As a result, VRRP flaps on the previously backed up device and prints a DAD message.

Documentation Updates

Rearrangement in the Configuration Guides

- The following are the modifications in the CEM guides.

  - Introduction of the Alarm Configuring and Monitoring Guide:

    This guide provides the following information:

    - Alarms supported for SONET and SDH, and their maintenance

    - Alarm profiling feature

    - Auto In-Service States for cards, ports, and transceivers

For more information, see the Alarm Configuring and Monitoring Guide, Cisco IOS XE 17 (Cisco ASR 920 Series).

- Rearrangement of Chapter and Topics in the Alarm Configuring and Monitoring Guide:
  - The Auto In-Service States Guide is now a chapter inside the Alarms Configuring and Monitoring Guide.
  - Alarms at SONET Layers topic in the following CEM guides, is added to the Alarms Configuring and Monitoring Guide:
    - 1-Port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module Configuration Guide
  - The Alarm History and Alarm Profiling chapters are removed from the below CEM Technology guides, and added into the Alarm Configuring and Monitoring Guide:
    - 1-Port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module Configuration Guide

- Configuring IEEE 802.3ad Link Bundling is now available in Etherchannel Configuration Guide, Cisco IOS XE 17 (Cisco ASR 920 Series).

Additional References

Product Information

- Cisco ASR 920 Series Aggregation Services Router Data Sheets

Hardware Installation Guides

- Cisco ASR 920 Series Aggregation Services Router Hardware Guides

Software Configuration Guides

- Cisco ASR 920 Series Aggregation Services Router Configuration Guides

Regulatory Compliance and Safety Information

- Regulatory Compliance and Safety Information for the Cisco ASR 920 Series Aggregation Services Routers

Field Notices and Bulletins

- Field Notices—We recommend that you view the field notices for this release to determine whether your software or hardware platforms are affected. You can find field notices at http://www.cisco.com/en/US/support/tsd_products_field_notice_summary.html.

- Bulletins—You can find bulletins at http://www.cisco.com/en/US/products/sw/iosswrel/ps5012/prod_literature.html.

MIB Support

To view supported MIB, go to http://tools.cisco.com/ITDIT/MIBS/MainServlet.

Accessibility Features in the Cisco ASR 920 Series Routers

For a list of accessibility features in Cisco ASR 920 Series Routers, see the Voluntary Product Accessibility Template (VPAT) on the Cisco website, or contact accessibility@cisco.com.

All product documents are accessible except for images, graphics, and some charts. If you would like to receive the product documentation in audio format, braille, or large print, contact accessibility@cisco.com.

End-of-Life and End-of-Sale Notices

For End-of-Life and End-of-Sale Notices for the Cisco ASR 920 Series Routers, see http://www.cisco.com/c/en/us/products/routers/asr-920-series-aggregation-services-router/eos-eol-notice-listing.html.

What's New in Cisco IOS XE Bengaluru 17.5.x

This chapter describes the new hardware and software features supported on the Cisco ASR 920 Series routers in Cisco IOS XE Bengaluru 17.5.x.

For information on features supported for each release, see Feature Compatibility Matrix.

What's New in Hardware for Cisco IOS XE Bengaluru 17.5.x

There are no new hardware features in this release.

What's New in Software for Cisco IOS XE Bengaluru 17.5.x

Feature	Description
1 port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module	
Unframed Framing Support on E1 and Channel STM links	In this release, a new framing mode unframed is supported for the 1 port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module. With the unframed mode, you can create serial interface under the SDH VC12 mode.
Carrier Ethernet	
CFM Sessions Hardware Offload	This feature enables for effective CPU utilization by offloading the one second CCM interval sessions on the hardware.
Cisco ASR 920 Series Aggregation Services Router	
SNMP Dying Gasp Enhancement	This feature enables FPGA based effective space utilization between Ethernet OAM and SNMP. Use the **platform-oam-snmp-dg-enable** command on Cisco router to configure this feature.
IP SLAs	

Feature	Description
TWAMP Light	This feature enables you to configure a TWAMP Light session using the **ip sla responder twamp-light test-session** command.
MPLS Layer 2 VPNs	
EVPN Integrated Routing and Bridging (L2 and L3 Anycast Gateway) and Data Center Interconnect or Border Leaf (Single Homing)	This feature allows the devices to forward both layer 2 or bridged and layer 3 or routed traffic providing optimum unicast and multicast forwarding for both intra-subnets and inter-subnets within and across data centers. Data Center Interconnects (DCI) products are targeted at the Edge or Border Leaf (BL) of data center environments, joining data centers to each other in a point-to-point or point-to-multipoint fashion, or at times extending the connectivity to internet gateways or peering points.
On-Change Notifications for L2VPN Pseudowire	This feature allows you to subscribe on-change Network Configuration Protocol (NETCONF) notifications for L2VPN pseudowire. You can generate an alert from a device when the pseudowire status changes.
QoS: Policing and Shaping	
IP Address Range-Based Filtering Support for CoPP ACL	The CoPP ACL Template feature supports Ingress on In-band Management Loopback interface and Ingress on Data plane interface to block traffic using MPLS. CoPP ACL supports Source IP based filtering.
Segment Routing	
SR-PM Delay Deduction (Loopback Mode)	This feature improves the SR-PM detection time as the PM probes are not punted on the remote nodes. Also, it does not a require a third-party support for interoperability.
SR-TE PM: Liveness of SR Policy Endpoint	This feature enables Performance Measurement (PM) liveness detection and delay measurement for an SR policy on all the segment lists of every candidate path that are present in the forwarding table using PM probes. Thus, you can easily monitor the traffic path and efficiently detect any drop of traffic due to cable or hardware or configuration failures. This feature provides the following benefits: • End-to-end liveness is verified before activating the candidate path in the forwarding table. • End-to-end liveness failure can trigger re-optimization to another path by deactivating the current path.
Segment Routing Flexible Algorithm with OSPF	This feature allows you to configure Segment Routing Flexible Algorithm with OSPF. Flexible Algorithm with OSPF supports metric minimization and avoidance, multi-plane, delay metric with rounding, and ODN with auto-steering.
Segment Routing Policy Counters	This feature enables statistic counters to be displayed when traffic passes over the SR-TE tunnel. You can use the command **show segment-routing traffic-eng policy name** *policy name* to view the counters.

Feature	Description
Upgrading the Software on the Cisco ASR 920 Series Routers	
Secondary ROMMON Version Auto Upgrade	After primary ROMMON version is auto upgraded, secondary ROMMON version auto upgrade process takes place. The secondary ROMMON upgrade is only completed during the next planned manual reload of the router.

CHAPTER 3

Caveats

This chapter describes open and resolved severity 1 and 2 caveats and select severity 3 caveats:

- The "Open Caveats" sections list open caveats that apply to the current release and may apply to previous releases. A caveat that is open for a prior release and is still unresolved applies to all future releases until it is resolved.

- The "Resolved Caveats" sections list caveats resolved in a specific release, but open in previous releases.

The bug IDs are sorted alphanumerically.

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Note   The Caveats section includes the bug ID and a short description of the bug. For details on the symptoms, conditions, and workaround for a specific caveat you must use the Bug Search Tool.

Open Caveats – Cisco IOS XE Bengaluru 17.5.1

Caveat ID Number	Description
CSCvw38827	Observing RSP2A-64 and RSP2A-128 logs in Cisco RSP2 HA router with CEM
CSCvx42526	A900-IMA2Z IM is impacted during SSO

Resolved Caveats – Cisco IOS XE Bengaluru 17.5.1

Caveat ID Number	Description
CSCvs50029	Interface flaps and input errors seen with optics GLC-FE-100BX-D in ASR920-12CZ
CSCvv21542	Command to change from dynamic to static FAN algorithm for Cisco ASR-920-24SZ-IM, Cisco ASR-920-24SZ-M, and Cisco ASR-920-24TZ-M

Caveat ID Number	Description
CSCvv23077	config failure is seeen from 16_9_4 to 17_3_1 images upgrade
CSCvv42595	REP flapping randomly and frequently due to port down
CSCvv72192	IMA2Z IM, XFP and SFP+ are present and then XFP is removed LED still shows as green
CSCvv99456	ACL entries with FRAGMENT keywords are not working on the Cisco ASR920 platform
CSCvw64784	RSP2 CEM ACR: Not able to reuse same clock id on another controller After deleted clock id.
CSCvw93411	Interface counters are not incrementing after 2yrs, 22+ weeks on Cisco ASR920-24SZ-M
CSCvx24923	Cisco ASR-920-12SZ-A and Cisco ASR-920-12SZ-D 2.43 FPGA commit for reload or brom select issue
CSCvr43362	ASR-920-12SZ-IM, ASR-920-12SZ-A/ASR-920-12SZ-D: Fan speed control measures for overheating router

Cisco Bug Search Tool

Cisco Bug Search Tool (BST), the online successor to Bug Toolkit, is designed to improve effectiveness in network risk management and device troubleshooting. You can search for bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. For more details on the tool, see the help page located at http://www.cisco.com/web/applicat/cbsshelp/help.html