



Release Notes for Cisco IP Transfer Point (ITP) Cisco IOS Release 12.2(33)IR

Revised: June 13, 2008

Current Release—12.2(33)IRA

These release notes describe the enhancements provided in the Cisco IOS Release 12.2(33)IR release train. These release notes are updated as needed.

For a list of the software caveats that apply to the Cisco IOS Release 12.2(33)IR release train, see the [“Caveats for Cisco IOS Release 12.2\(33\)IRA” section on page 5](#).

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Introduction

The Cisco IP Transfer Point (ITP) for the Cisco 7600 Series Routers is a comprehensive product for transporting Signaling System 7 (SS7) traffic over traditional time-division multiplexing (TDM) networks or advanced SS7-over-IP (SS7oIP) networks. Cisco ITP supports traditional, advanced, and combined traditional/advanced networks.

Cisco IOS Release 12.2(33)IR runs on the Service and Application Module for IP (SAMI), a high performance service module for the Cisco 7600 series router platforms. SAMI is documented in the *Cisco Service and Application Module for IP User Guide for the Cisco 7600 Series Routers* available at: http://www.cisco.com/en/US/docs/wireless/service_application_module/sami/user/guide/overview.html



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System Requirements

This section describes the system requirements for Cisco IOS Release 12.2(33)IR and includes the following sections:

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Memory Requirements

The SAMI memory is not configurable and is sufficient for Cisco ITP.

Hardware Supported

Table 1 shows the supported interfaces for the Cisco ITP 7600 SAMI platform.

Table 1 Supported Interfaces for the Cisco ITP 7600 SAMI

Interface or Linecard	Part Number
Cisco 2-Port Fast Ethernet	PA-2FE-TX
Cisco 2-Port Clear Channel T3/E3 Shared Port Adapter	SPA-2XT3/E3
Cisco 4-Port Clear Channel T3/E3 Shared Port Adapter	SPA-4XT3/E3
Cisco 2-Port Channelized T3 (DS0) Shared Port Adapter	SPA-2XCT3/DS0
Cisco 4-Port Channelized T3 (DS0) Shared Port Adapter	SPA-4XCT3/DS0
Cisco 2-Port OC3c/STM1c ATM Shared Port Adapter	SPA-2XOC3-ATM
Cisco 4-Port OC3c/STM1c ATM Shared Port Adapter	SPA-4XOC3-ATM
Cisco 48-Port Gigabit Ethernet	WS-X6748-GE-TX



Note

For details on SAMI hardware features, refer to the “Overview” chapter of the *Cisco Service and Application Module for IP User Guide for the Cisco 7600 Series Routers*.

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco 7600 Series, use the **show version EXEC** command.

Features

This section lists the Cisco ITP features and the release that introduced the feature.

New Hardware Features in Release 12.2(33)IRA

12.2(33)IRA is the initial release of 12.2(33)IR and supports the hardware listed in the [“Hardware Supported” section on page 2](#).

New Software Features in Release 12.2(33)IRA

12.2(33)IRA is the initial release of 12.2(33)IR and supports the [Initial Software Features in Release 12.2\(33\)IR](#).

Initial Software Features in Release 12.2(33)IR

The Cisco ITP software for Cisco IOS Release 12.2(33)IR supports the software feature set of Cisco IOS Release 12.2(18)IXF, but Cisco IOS Release 12.2(18)IXF does not support SAMI.

The Cisco ITP Release 12.2(33)IR provides the following basic features and functionality:

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Quality of Service

The Cisco ITP Quality of Service (QoS) feature provides the framework that allows end-to-end QoS for SS7 packet flow through SS7 over IP (SS7oIP) networks. QoS is per SCTP association and classification is based on:

- Service indicator
- Destination Point Code, Global Title Address, M3UA/SUA routing key
- Input link set
- Service (translation type)
- Access lists
- M3UA/SUA routing key

Global Title Translation

A global title is an application address, such as an 800 number, calling card number, or mobile subscriber identification number. Global Title Translation (GTT) is the process by which the SCCP translates a global title into the point code and subsystem number of the destination SSP where the higher-layer protocol processing occurs. Cisco ITP offers full traditional SCCP and GTT support including ANSI GTI 2, China GTI 4, and ITU GTI 2 & 4.

Gateway Screening

The Cisco ITP Gateway Screening feature (GWS) prevents unauthorized use of the STP and controls the flow of messages into or through the STP. GWS screens the contents of the incoming or outgoing Message Signaling Unit (MSU). At any stage during the screening process, the message can be routed to its destination, sent to MLR for application level handling or be discarded. This functionality supports combinations of the following MSU parameters: MTP3 layer, SCCP layer, and ISUP message type.

You can implement GWS in conjunction with Access Lists, Global Translation Table (GTT), and Multi-Layer Routing (MLR). GWS also allows you to configure GWS tables to drop an SCCP packet matching a set of conditions. When you drop an SCCP packet, an SCCP error return function sends a UDTS back to the source of the SCCP packet.

SS7 Load Sharing

Cisco ITP supports MTP3 and SCCP load sharing for links, link sets, and combined link sets for any link types.

Multiple Point Codes

Cisco ITP supports the primary, secondary, and capability point codes and M3UA/SUA routing keys. With the multiple instances feature, there is support for up to 256 TDM links to adjacent nodes.

Multiple Instances

The Cisco ITP Multiple Instance feature makes it possible to connect the Cisco ITP to different networks at one time, each with specific variant and network indicator values. The Cisco ITP treats each combination of variant and network indicator as a separate instance. Each instance acts as a separate logical Cisco ITP. Each instance is a separate domain with a defined variant, network indicator, Cisco ITP point code, optional capability point code, and optional secondary point code. Each instance also has its own routing table and Global Title Translation (GTT) table. You can configure up to 8 different instances on the Cisco ITP.

The Cisco ITP Instance Translation feature enables the conversion of packets between instances of the same variant. The Cisco ITP Instance Conversion feature enables conversion between ITU and ANSI instances for point code and global title.

MLR

MLR enables intelligent routing of SMS messages based on the application or service from which they originated or to which they are destined. SMS applications such as audience interaction services place a heavy demand on the capacity of the legacy SS7 infrastructure, as well as the SMSC servers. These applications create extremely high bursts of signaling traffic over a very short time span, which can result in denial of service and lost messages.

The MLR feature can make SMS message routing decisions based on information found at the MTP, SCCP, TCAP, and MAP-user layer based on a flexible schema including, but not limited to, OPC/DPC/SI and CdPA parameters, CgPA parameters, and any TCAP-layer operation code. For SMS-specific operation codes, such as mobile-originated/mobile-terminated (MO/MT) messages, MLR allows for routing on additional MAP-user-layer parameters such as sending short message entity (SME), destination SME, originating IMSI, and MAP-layer service center address. MLR supports IS-41 SMS message routing, next to full operation code routing for GSM.

MO Proxy

MO Proxy enables the routing of segmented GSM MAPv2 and higher messages based on application-layer parameters by terminating the MO dialogue. This capability helps ensure that the SMS MO dialogues for a given B-address are handled by the same Short Message Service Center (SMSC).

SMS Notification Proxy

The purpose of the IS-41 SMS Notification Proxy feature is to perform a broadcast of incoming ANSI-41 SMS Notifications to a group of SMSCs and to provide a reply to the Home Location Register (HLR) after receiving the first positive acknowledgement message from any of the SMSCs in the distribution.

Simple Network Management Protocol

The Simple Network Management Protocol (SNMP) is an application-layer protocol that provides a message format for communication between SNMP managers and agents. The SNMP manager can be part of a Network Management System (NMS) such as CiscoWorks.

SS7 Routing

SS7 routing is any-to-any routing between all link types including OPC/DPC based routing using MLR.

Caveats for Cisco IOS Release 12.2(33)IRA

This section lists and describes caveats that affect the Cisco ITP or SAMI software for Cisco IOS Release 12.2(33)IRA.

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

**Note**

If you have an account with Cisco.com, you can also use the Bug Toolkit to find select caveats of any severity. To reach the Bug Toolkit, **log in** to Cisco.com and click **Service and Support: Technical Assistance Center: Select & Download Software: Jump to a software resource: Software Bug Toolkit/Bug Watcher**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Cisco ITP Software for Cisco IOS Release 12.2(33)IRA - Open Caveats

This section documents possible unexpected behavior by Cisco IOS Release 12.2(33)IR:

Severity 2 Caveats

- CSCsq36322

Symptom On a Cisco 7600 router, a FlexWAN2 or SAMI line card may become disabled if a Non-Stop Operation (NSO) switchover occurs while the linecard reloads.

Conditions This issue occurs only when a linecard such as FlexWAN2 or SAMI processor, is reloading and an NSO switchover occurs. After switchover completes, output of the **show cs7 mtp3 offload** command shows the linecard processors in a *DisabledSys* state, and is not re-initialized by the active SUP.

Workaround The linecard may be manually reset using the **hw-module module standby-sup-slot reset** command.

- CSCsq56937

Symptom M2PA links and/or M3UA/SUA ASPs may remain failed after more than one SAMI PPC reloads within a minute of another SAMI PPC reload.

Conditions If PPC 3 reloads and another PPC reloads within a minute of PPC 3 then the ARP table on the other PPC may be incomplete. M2PA links and M3UA/SUA ASPs will remain inactive in this situation due to lack of ARP information.

Workaround Reload of the SAMI PPC may clear this condition.

Severity 3 Caveats

- CSCsq67784

Symptom Packets may become hung on the M2PA Tx Inhibit Queue for certain M2PA links and never recover without user intervention.

Conditions This issue may occur during NSO Switchover or unexpected SAMI single processor reload. The packets and related memory remain on the inhibit queue for the related link.

Workaround The packets and associated memory can be freed from the inhibit queue for the associated link by performing a shutdown/no shutdown sequence on the M2PA link itself.

- CSCsm66950

Symptom Cisco ITP HSL links may flap (fail/recover) during an NSO Switchover.

Conditions HSL link failures may occur during NSO Switchover only when traffic rates over individual links exceed 0.60 erlang in either direction.

Workaround Traffic over HSL links should be below 0.60 erlang during NSO Switchover to prevent possible link failure and loss of traffic.

- CSCso74665

Symptom SUP may crash during attach or ipc-con to FlexWAN console.

Conditions Attach or ipc-con to FlexWAN console while the FlexWAN is in the process of crashing.

Workaround Avoid attaching to FlexWAN console unless instructed to do so by Cisco TAC.

- CSCsq14771

Symptom The Cisco ITP may attempt to route messages after GTT to an unavailable AS PC. GTT error messages similar to the following are observed on the console:

```
%CS7SCCP-5-SCCPGNRL: SCCP error sending via M3UA/SUA. Instance: 0 MsgType udt LS:
VirtualLS7-6 OPC: 0.0.18 CgPA: tt 9 gta 99881234 ssn 32 DPC: 0.62.71 CdPA: tt 1 gta 12345670 ssn
32
```

Conditions The problem can occur if all of the following conditions hold:

- GTT to an AS PC is configured.
- The AS PC is unavailable.
- A default route is configured where the AS PC is a member of the default route.

Workaround Update the GTT configuration to route to the AS name rather than the AS PC.

- CSCsq59320

Symptom On a distributed 7600 Cisco ITP, the **show cs7 audit** status may display erroneously a status of N/A after switchover.

Conditions Enhanced Gateway Screening (GWS) and/or MLR configured, as well as cs7 audit. After NSO switchover, the status of the audit does reports come to SUCCESS, but stays in N/A state.

Workaround Disable the optional audit capability using the **no cs7 audit** command.

- CSCsq46691

Symptom Active and standby supervisors have different running config for the cs7 route load statement.

Conditions This issue may occur if running CS7 NSO state and saving the route table to a TFTP location.

Workaround Always save to local disk and then copy file manually to TFTP if needed. Loading from tufty on bootup is not supported.

- CSCsm47893

Symptom A User Part Unavailable (UPU) message destined for an M3UA AS in a different MTP3 instance is not converted to a DUPU message.

Conditions Inter-instance conversion is being used. Traffic initiated by an M3UA AS in one instance is sent to an unavailable user part in a different instance, triggering a response mode UPU.

Workaround None

- CSCsq35508

Symptom Segmented XUDT messages may be corrupted during instance conversion.

Conditions

- The instance variant is: ITU, China, Japan_NTT or Japan_TTC.
- The ingress XUDT is segmented, with optional parameter before data portion.
- CdPA is global title without PCSSN.
- Perform final gtt, the result is PC/SSN

An example configuration is:

```
cs7 instance 0 gtt selector sel0_8 tt 33 gti 2 gta 123 pcssn 3.2.2 pcssn ssn 8
```

Workaround None

- CSCso05935

Symptom When clock source bit primary is set on an E1 controller, the state of the active controller may be kept in the DOWN state after reloading.

Conditions Clock source bit primary is configured on the controller. The SAMI module reloads.

Workaround Execute the **shut** command on the affected controller, followed by the **no shut** command

- CSCso79569

Symptom The linkset status for all linksets may be displayed as *unavailable* for a minute after an NSO switchover. Afterward the correct linkset state will be restored.

Conditions The problem may only occur if a linecard reload is in progress when the switchover is initiated.

Workaround None

- CSCso51563

Symptom A linkset in a primary/secondary linkset pair fails to shutdown when the linkset shutdown command is issued.

Conditions If a primary/secondary linkset pair is configured between two endpoints, and both the links are shutdown in rapid succession, then the shut on the first linkset may fail. The linkset will shutdown for a few seconds, then it will become available again. In the running config the linkset will be set to shutdown.

Workaround Wait at a second or two between shutting down each linkset.

- CSCsq57065

Symptom The SS7 Port Adapter only supports one speed for the entire PA - all channel-groups should be set to either 56k or 64k. But on the 7600, this is not enforced by the CLI. If the user has MTP2 links up using one speed, then configures a channel-group on the same PA with a different speed and sets that interface to **encap mtp2**, the existing links fail.

Conditions Cisco ITP with MTP2 links on an SS7 PA configured with different speeds for channel-groups on the same SS7 PA.

Workaround Remove the channel-group with the wrong speed. Add a new channel-group that uses the same speed as the valid links and set that interface to **encap mtp2**.

- CSCso13465

Symptom For PostGTT MLR, if the matched rule is result to PC, MLR won't be able route the packet to that PC, instead MLR will change the DPC in the packet to that PC and use GTT table to route the packet out.

Conditions Post GTT MLR - Routed to a ruleset - with a PC result.

Workaround Convert MLR to intercept pre-GTT.

- CSCsm94197

Symptom On a distributed 7600 Cisco ITP, loading/replacing a GTT table may fail when an AS defined in the other instance is used in app-group.

Conditions GTT results to an AS in another instance and configures the mapset as an item without indicating the instance. When saving the gtt-table to file occurs, the network name of the mapset item will save as an incorrect instance name; then the reload/replace fails.

Workaround When configuring the app-group, indicate the instance of AS, then save to the file. This GTT table can now load/replace successfully.

- CSCso92582

Symptom Customers using an ATM IMA E1 port adapter and using the command **national reserve** under the ATM configuration may need to re-enter the command after the cable is removed and reinserted.

Conditions It only affects the **national reserve** command.

Workaround Re-enter the command after the cable is removed and reinserted.

- CSCsq61641

Symptom Linecard I/O Memory may become depleted after an NSO switchover.

Conditions Only occurs when using SGMP. The amount of I/O memory depleted is dependent on the number of xua associations on the LC, the number of bindings, and the traffic rate when the switchover occurs. In the worst case where high traffic is occurring and 100+ ASPs are offloaded to a single processor, and 1000s of bindings exist, I/O memory leak consumed the full amount of memory on the card. This did not happen every switchover. Maybe 1 in 10 switchover's.

Workaround Do not use SGMP, but rather use C-link alternate route for xua destinations.

Cisco ITP Software for Cisco IOS Release 12.2(33)IRA - Resolved Caveats

This section does not apply to initial software releases, including 12.2(33)IRA.

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