

**CCITT Integrated SS7 ISUP,
V3.0 FSR03, Release Notes**

61090302033-0AR

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generated, used, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manuals, may cause interference in which case the user will be required to correct the interference at his/her own expense.

NOTICE: Customers connecting this device to the network shall, upon request of the telephone company, inform the telephone company of the particular lines such connections are made, the FCC registration number, and ringer equivalence number of this device. This information is contained on the label located on the rear panel of the system.

If this device causes harm to the network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be notified in advance to give you the opportunity to maintain uninterrupted service.

If you experience trouble with the system, please contact Summa Four, Inc., 25 Sundial Avenue, Manchester, NH 03103-7251, (800) 978-6624 for repair information. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected, or you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

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P/N 61090302033-0AR

Released: 01.15.98

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For further information about this product, contact:

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This symbol on the product's nameplate means it has been tested by Electronic Testing Labs, Inc.

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Preface

The *CCITT Integrated SS7 ISUP, V3.0 FSR03, Release Notes* provide important information about Version 3.0 FSR03 of CCITT Integrated SS7 ISUP software. This information includes

- A list of the enhancements and problems corrected since Version 3.0 FSR02.
- A description of the system requirements for Version 3.0 FSR03.
- A list of special considerations you should be aware of.
- A list of known design constraints.
- A list of known functional constraints and workarounds.

For information on how to install and use the CCITT Integrated SS7 product, refer to the *CCITT Integrated SS7, V3.0, System Supplement* (part number 61090301233).

These release notes are intended for programmers familiar with SDS or VCO Systems, SS7 concepts, UNIX, and Ethernet.

Section 1

CONTENTS OF THE RELEASE

1.1 INTRODUCTION

This section describes the problems corrected in CCITT Integrated SS7 ISUP, Release V3.0 FSR03. This is the latest Integrated SS7 ISUP release for SDS and VCO systems. This release supports the CCITT standards listed in Table 1.1.

Table 1.1: CCITT Standards Supported by V3.0 FSR03

SS7 Layer	Standard
MTP-2	Q.701-Q.703, 1992
MTP-3	Q.704-Q.707, 1992
ISUP	Q.761-Q.764, 1992

NOTE: The country variants of Integrated SS7 ISUP, V3.0 FSR03, may not support all specifications for the standards listed in Table 1.1, and in some cases, additional messages are required. The differences for each supported country are described in Appendix E of the CCITT Integrated SS7, V3.0, System Supplement.

1.2 INSTALLATION

The startup procedure has changed for this release. **Prior to running the new software, you must complete the following steps:**

1. Remove all the ebs drivers.
2. Turn power off.
3. Turn power back on for the ecpt drivers to be seen by the system.

*NOTE: If you are running a 4-link or 8-link configuration, the ecp drivers will not be loaded. Instead, the ecpt drivers will get loaded. **The port assignments for these drivers are slightly different from ecp. No matter which slot is occupied, the first occupied slot will have port numbers 1 through 4, the second one will have 5 through 8, and so on.***

For example, if there are two 4-port cards in the Sbus on a system, and they occupy ecpt4 and ecpt5, the card that occupies ecpt4 will still take ports 1 through 4. Previously, ecpt would have taken ports 17 through 20.

4. Follow the usual startup sequence as described in the *CCITT Integrated SS7, V3.0, System Supplement* (61090301233).

1.3 ENHANCEMENTS

V3.0 FSR03 supports the following new features:

- SS7 Link Availability Reported to Host
- Host Control Option
- New SS7 Command (\$C0 05)
- Two New CktInt.cfg Feature Flags
- New isup_console Feature
- Rotary/Cyclic Port Selection
- Singapore Number Portability
- 8-Link Capability

1.3.1 SS7 Link Availability Reported to Host

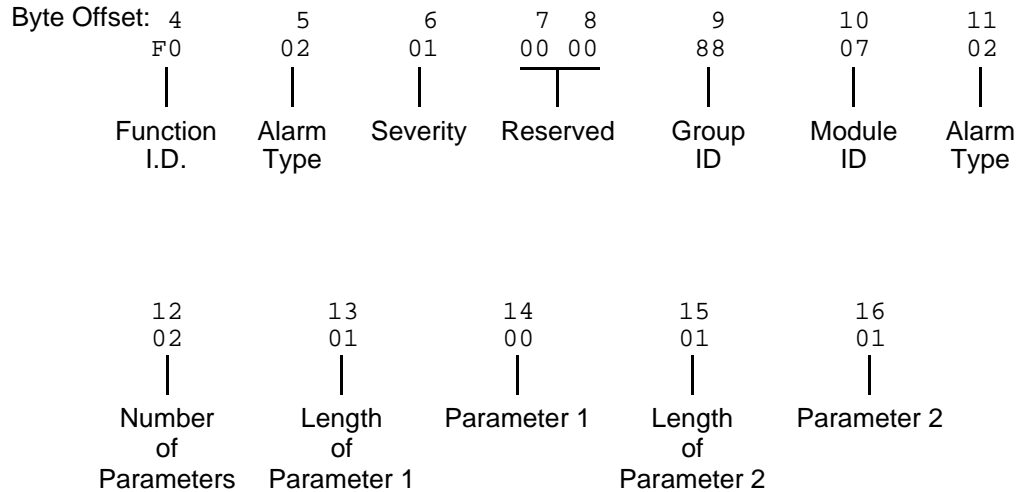
You can now transport two SS7 alarms—Link Unavailable (880702) and Link Available (880704)—from the MTP level to the host. See the *NewNet AccessManager Maintenance Manual* for more information on specific alarms.

Cktint sends SS7 Alarm Condition \$F0 reports to the host indicating these system alarms are being generated, including type and severity. This enhancement allows the host the flexibility to take corrective action from a remote facility.

A new feature flag, -FEATURE_FLAG 06, causes the MTP link alarms to be processed by cktint and an \$F0 alarm report to be sent to the host.

NOTE: You must include this flag in the CktInt.cfg file and restart Circuit Interworking to receive the \$F0 report at the host.

The following is an example of the SS7 \$F0 report format:



For detailed information on the SS7 Alarm Condition \$F0 Report, see the *CCITT Integrated SS7, V3.0, System Supplement*.

1.3.2 Host Control Option

This feature allows only one host to control a call. When enabled, if cktint receives a message from any host except the controlling host, the message will be rejected as "Invalid Controlling Host." A secondary host can only assume control of a controlling host's calls by sending an appropriate SS7 \$C0 05 command.

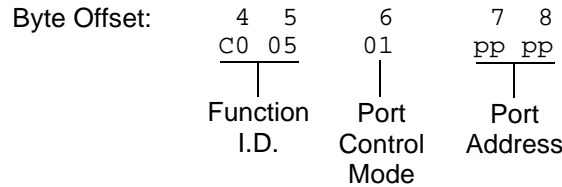
A new feature flag, `-FEATURE_FLAG05`, enables the Host Control Option (see *Section 1.3.4*).

NOTE: You must include this flag in the CktInt.cfg file and restart Circuit Interworking to enable the Host Control Option.

1.3.3 New SS7 Command (\$C0 05)

The SS7 \$C0 05 command allows a host process to relinquish control of a call assigned to itself, or assume control of a call that has been assigned to a different host.

The following is an example of the SS7 \$C0 05 command format:



For detailed information on the SS7 Host Assume/Relinquish Port Control \$C0 05 command, see the *ANSI Integrated SS7, V3.0, System Supplement*.

1.3.4 Two New CktInt.cfg Feature Flags

There are two new feature flags for the CktInt.cfg file:

- **-FEATURE_FLAG05**—Enables the Host Control Option. Allows only one host to control a call. A secondary host can assume control of a controlling host's calls by sending an SS7 \$C0 05 command (see *Section 1.3.2*).
- **-FEATURE_FLAG06**—Causes MTP link alarms to be processed by cktint and an SS7 \$F0 alarm report to be sent to the host (see *Section 1.3.1*).

1.3.5 New isup_console Feature

You can now display all the feature flags that have been included in the CktInt.cfg file by selecting "f" in the **isup_console** program. If no feature flags are present, the message "No feature flags are enabled," is displayed. The **isup_console** program is located in the `~/sys/CktIntAnEnv ($XNV)` directory. For detailed information on the isup_console, see *Section 5.6* in the *CCITT Integrated SS7, V3.0, System Supplement*.

1.3.6 Rotary/Cyclic Port Selection

V3.0 FSR03 is enhanced to include a new resource group configuration file, and a new parameter in CktInt.cfg, which allows you to specify the mode that the system uses for hunting and allocating a circuit for a call. The hunt modes are either CYCLIC or ROTARY.

In CYCLIC mode, the system selects the circuits from the resource group in a sequential manner; the next IDLE circuit in the group is selected for the new call. After the system has selected the last circuit in the sequence, it begins hunting from the first circuit in the group. Figure 1.1 is an example of CYCLIC mode in an eight-port resource group.

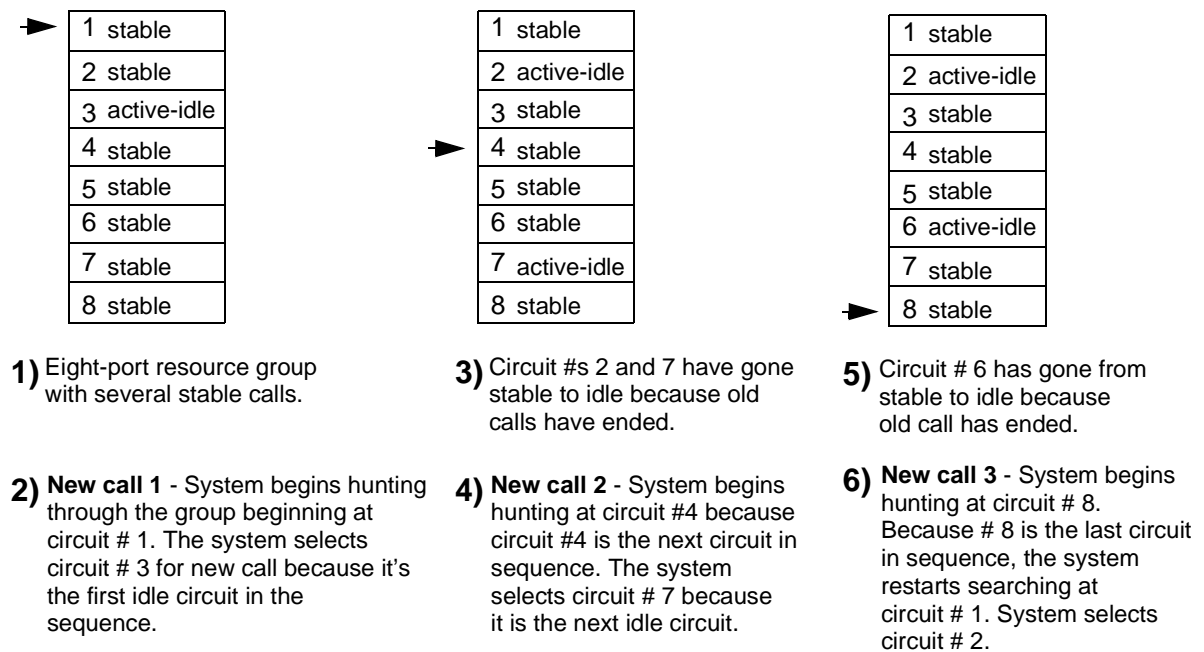


Figure 1.1: CYCLIC Hunting Example

In ROTARY mode, the system always begins hunting sequentially from circuit # 1. The first IDLE circuit in the sequence is always selected for the new call. Figure 1.2 is an example of ROTARY mode in an eight-port resource group.

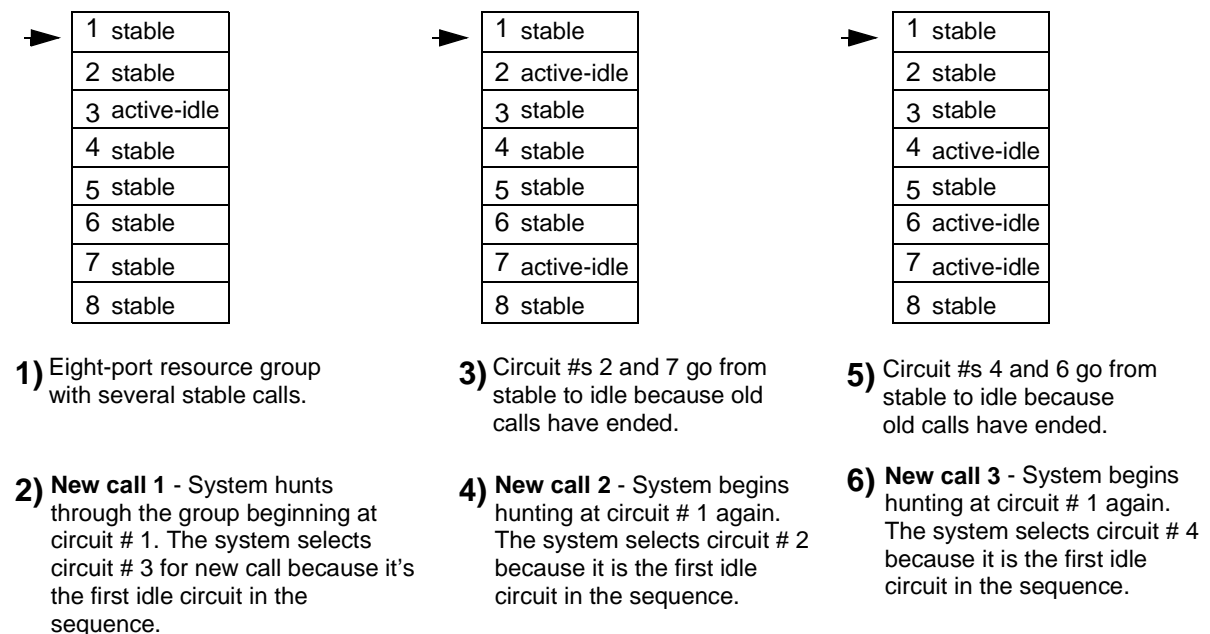


Figure 1.2: Rotary Hunting Example

You can modify the default resource group file, called `res_grp.cfg` in the `$XNV` directory, to suit the needs of your installation with any UNIX text editor. You can rename the file, but the renamed file must still reside in the `$XNV` directory for this feature to work. Figure 1.3 is an example of a `res_grp.cfg` file with 12 resource groups configured.

Resource Group	SDS/VCO Device	Circuit Selection Mode
1	0	ROTARY
2	0	ROTARY
3	0	ROTARY
4	0	ROTARY
5	0	CYCLIC
6	0	CYCLIC
7	0	CYCLIC
8	0	ROTARY
9	0	ROTARY
10	0	ROTARY
11	0	ROTARY
12	0	CYCLIC

Figure 1.3: Resource Group Configuration File Example

Table 1.2 summarizes the fields in the resource group configuration file.

Table 1.2: Resource Group Configuration File Fields

Field	Definition
Resource Group	The number of the resource group you defined in the SDS/VCO database. You can define up to 31 resource groups. Refer to the <i>System Administrator's Guide</i> for information. <i>NOTE: Although the SDS/VCO can support resource group values from 1 to 63, the Integrated SS7 software only supports resource group values from 1 to 31.</i>
SDS/VCO Device	Reserved. Always 0.
Selection Mode	CYCLIC or ROTARY. This mode applies to all circuits in the resource group.

NOTE: The default behavior of the `res_grp.cfg` file is to hunt resource groups in CYCLIC mode.

1.3.7 Singapore Number Portability

Cktint now supports Number Portability (NP) within the Singapore variant of ITU. NP is the addition of the parameter "Additional Calling Party Number" (0xFA) within the IAM message. Only the SINGAPORE variant of ITU supports this parameter, and you must include the following line in your `isup mml` configuration:

```
MODIFY-ISUPCONF:CFGNAME=CF0,VARIANT=SINGAPORE,MNTIND=ON;
```

1.3.8 8-Link Capability

V3.0 FSR03 is enhanced to support eight SS7 network links from the SPARC CPU5V/Sbus assembly. The additional four ports replace the current modem card in the Sbus assembly.

NOTE: There is no modem capability with an 8-link system. Instead, you must arrange dial-up to a local network and Telnet access to the SS7 subsystem.

To upgrade an existing system, you must purchase an 8-link Upgrade Kit (PN 35026650100, basic; PN 35026750100, redundant) that includes all necessary hardware and NewNet licensing. For more information, contact your Summa Four sales representative.

Hardware installation requires removing the modem card in the Sbus assembly (see Figure 1.4) and replacing it with a 4-port card (see Figure 1.5). Then, follow the directions in the *CCITT Integrated SS7, V3.0, System Supplement* for attaching the additional SS7 network link cables.

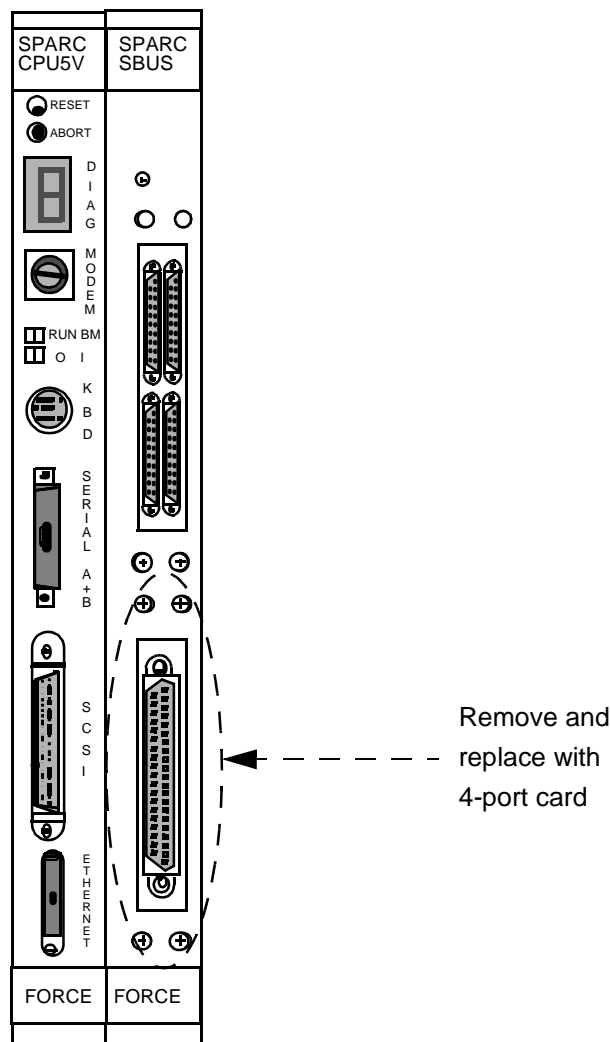


Figure 1.4: 4-link Sbus

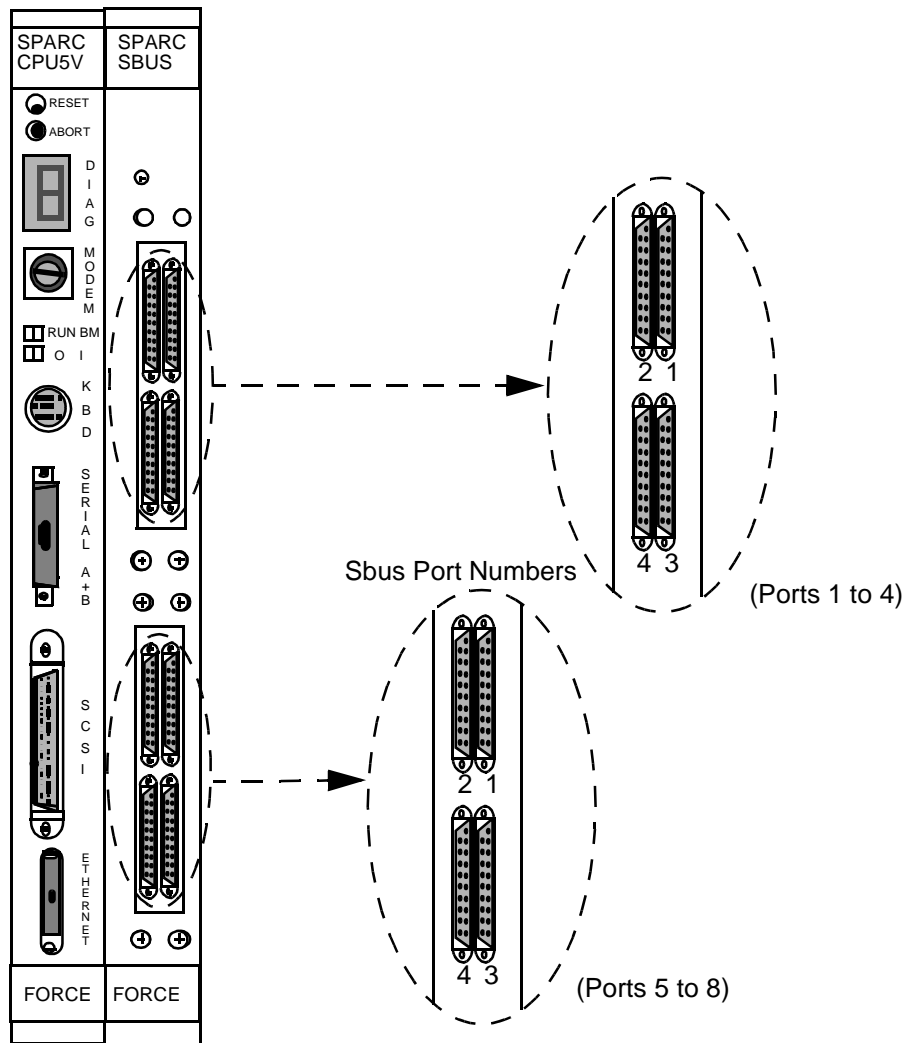


Figure 1.5: 8-link Sbus

After the hardware installation, you must modify the MTP Level 2 Provisioning part of the MTP configuration file in `/export/home/cktint/sys/SPcc ($SPC)` to include additional links and link sets for the SS7 network links you have added. For more information, see *Section 4.3* in the *CCITT Integrated SS7, V3.0, System Supplement*.

The following are sample lines in an .mml file for MTP Level 2 Provisioning with an 8-link configuration:

```
MML-CONFIG:LOG=OFF,TIMEOUT=4000;
MODIFY-SP:NAME=SUMMA,SPC=0-0-1,NI=INTERNATIONAL,TYPE=SEP;
MODIFY-SP:SPC=0-0-1,RESTART=ON,SLTC=ON;
ADD-LSET:LSET=STP1,DPC=0-0-2,ACTIVE=8,LOADED=8,TYPE=ALINK,BR=64000;
ADD-LINK:LINK=STP1-0,LSET=STP1,SLC=0,PORT=1,TYPE=DTE,PRIORITY=0;
ADD-LINK:LINK=STP1-1,LSET=STP1,SLC=1,PORT=2,TYPE=DTE,PRIORITY=1;
ADD-LINK:LINK=STP1-2,LSET=STP1,SLC=2,PORT=3,TYPE=DTE,PRIORITY=2;
ADD-LINK:LINK=STP1-3,LSET=STP1,SLC=3,PORT=4,TYPE=DTE,PRIORITY=3;
ADD-LINK:LINK=STP1-4,LSET=STP1,SLC=4,PORT=5,TYPE=DTE,PRIORITY=4;
ADD-LINK:LINK=STP1-5,LSET=STP1,SLC=5,PORT=6,TYPE=DTE,PRIORITY=5;
ADD-LINK:LINK=STP1-6,LSET=STP1,SLC=6,PORT=7,TYPE=DTE,PRIORITY=6;
ADD-LINK:LINK=STP1-7,LSET=STP1,SLC=7,PORT=8,TYPE=DTE,PRIORITY=7;
ADD-RTSET:RTSET=ATT4E-CC,DPC=0-0-7,ROUTE1=STP1;
MODIFY-LSET:LSET=STP1,ADMINSTATE=ACTIVE;
MODIFY-L2TIMER:TIMER=T2,value=10000;
DISPLAY-L2TIMER:TIMER=*;
DISPLAY-RTSET:RTSET=*;
DISPLAY-LSET:LSET=*;
MODIFY-ALARM-CONFIG:DISPLAY=OFF;
EXIT;
```

1.4 CORRECTED PROBLEMS

This subsection describes the problems corrected since V3.0 FSR02. The TR number for the fix is listed when a number is available.

U702060002	<p>DRS functionality for Hong Kong variant has been fixed. Previously, when cktInt received a delayed release, the circuit state was cleared as if a normal release had been received. The circuit became idle, and when the host tried to respond with a release, it was rejected and the release would not go to the network. This has been fixed so that the delayed release is passed on to the host and the circuit state is not idled. This allows the host to send a release to the network.</p> <p>In order for this fix to work, your mtp mml configuration must have a national indicator of NATIONAL and your isup mml field must have a variant of HONGKONG.</p>
U705050005	<p>The isup_console d option has been corrected to act in the following way.</p> <p>When the d option from isup_console is used to display the debug flags, all of the flags that are turned ON are displayed. If no debug flags are ON, the message, "No debug switches are active," is displayed. Also, if you toggle any debug flag, the current and previous states (i.e., ON, OFF) are displayed.</p>
U705190005	<p>The Integrated SS7 software is enhanced with four new debug flags:</p> <ul style="list-style-type: none"> • Debug flag 33—When this flag is on, detailed information gets printed in the log file concerning invalid SS7 messages. • Debug flag 34—When this flag is on, detailed information gets printed in the log file concerning protocol violations. • Debug flag 35—When this flag is on, detailed information gets printed in the log file concerning an IAM message that was received in an invalid state. • Debug flag 36—When this flag is on, detailed information gets printed in the log file concerning call object creation and deletion.
U705190012	<p>When the SS7 stacks sent CktInt an unblock message with an ISUP_MAINTENANCE primitive, CktInt incorrectly responded to the message with an unblock ACK. An unblock message with this primitive type is used to inform CktInt of the maintenance state, and CktInt should not attempt to process the message. Processing this message sometimes caused CktInt's circuit states to get out of synch with the actual circuit states. This problem has been fixed.</p>
U705200008	<p>CktInt now processes \$D3 reports during start-up. Blocks and unblocks are now sent to the network when CktInt receives the appropriate \$D3 reports.</p>
U706060004	<p>In non-redundant configurations, when the SS7 stack sent CktInt an MTP PAUSE message for one or more SS7 links, CktInt reset all configured trunk groups after it received the MTP RESUME. This caused stable calls to be torn down. This issue is fixed.</p>

U706260004	The isup_console tool accepted hexadecimal trunk group input for circuit-related operations and decimal for group operations. This has been changed so the trunk group input is decimal for both circuit- and group-related operations.
U707020001	The isup_console help menu displayed the "c" as "'c' for to re-configure," which was inconsistent with other help menu entries and grammatically incorrect. Now it is displayed as "'c' to reconfigure."
U707020002	When the "c" option was used in the isup_console, the message "Sent request to reconfigure to NewNet Stack" was displayed. This was incorrect. The message now reads, "Sent request to reconfigure Circuit Interworking."
U707030003	In previous releases, circuit states became stuck when cktint received a continuity check request from the network. During a successful continuity check request, NewNet's circuit state would become stuck in IN-BUSY. This has been fixed. During an unsuccessful continuity check request, the circuit sub-state would become stuck in "continuity." This has also been fixed.
U707250002	The first call after a switchover was creating a core file in the \$EBSHOME/access/dat directory, which caused AccessISUP to fail. This problem has been corrected.
U708110001	Under heavy traffic conditions, the circuit sub-state was getting stuck in the "released" state because CktInt was hunting on circuits in "released" state. This issue is fixed. CktInt now selects only idle circuits.
U709190004	In previous releases, if there were ports out of service when cktint started up, those ports would stay stuck in a locally blocked state. This issue has been fixed. Now, when circuits are out of service on start-up and then cktint receives an In Service \$D9 message, cktint will unblock those circuits.
U709190005	Cktint no longer tries to unblock circuits on the standby side when it receives In Service \$D9 and \$D3 messages. Also, ports will not get stuck in a locally blocked state after a switchover.
U709250002	In previous releases, when cktint received an MTP PAUSE for a particular SP, cktint would still attempt to send SS7 messages to NewNet for that SP. This caused unexpected behavior from NewNet. This issue has been fixed. When all the SS7 links are down for an SP, cktint rejects all SS7 messages for that SP with an NSB of 0xD1 (Far End SP Unavailable). The host is responsible for re-sending the message once the links come back in service.
U709250004	In previous releases, when cktint received an MTP PAUSE or MTP RESUME from NewNet within a CGB or CBU message, it responded with a CGBA or CBUA. Messages with those primitive types should not be responded to. This issue is fixed. Now, when a CGU or CGB message is received, cktint will not respond to MTP PAUSE or MTP RESUME primitives.

U709250006	When NewNet initiates a reset, it sends cktint a reset message with a START_RESET primitive. CktInt incorrectly responded to this message with a release complete (RLC). A reset message with this primitive type is used to inform CktInt of the reset, and CktInt should not attempt to process the message. This issue has been fixed. CktInt no longer sends an RLC in response to a START_RESET primitive.
U709250008	Cktint was printing invalid error messages for errors numbered 85 and above. This problem has been fixed and cktint now prints all the correct error messages.
U709250010	<p>In previous releases, when there was a problem with an element in the network, such as the loss of power to a transceiver, cktint never closed the correct host and system sockets.</p> <p>When a host transceiver or hub is powered down, there are two situations that can occur. First, Solaris may declare the socket to the host as a "Broken Pipe." Second, nothing happens. Previously, cktint was not recognizing the broken pipe and would not close that socket to the host or the system. In the second case, the tcp variable was too large. Once the variable was changed to 30 seconds, Solaris would declare a time-out on the host socket. After this time-out occurred, cktint still did not close the host or system sockets.</p> <p>These problems have been corrected. When Solaris declares a broken pipe or socket time-out, cktint will close that socket from that particular host to the system.</p>
U709250012	If the SDS/VCO closes a socket, cktint will now close the associated host socket.

<p>U709250016</p>	<p>In previous releases, Cktint did not consistently track the SDS Port In Service and SDS Card In Service flags for the isup_console status command. These flags now do the following:</p> <table border="1" data-bbox="662 449 1203 718"> <thead> <tr> <th></th> <th>SDS Port In Service</th> <th>SDS Card In Service</th> </tr> </thead> <tbody> <tr> <td>\$D3 out of service</td> <td>NO</td> <td>No change</td> </tr> <tr> <td>\$D3 in service</td> <td>YES</td> <td>No change</td> </tr> <tr> <td>\$D9 out of service</td> <td>NO</td> <td>NO</td> </tr> <tr> <td>\$D9 in service</td> <td>YES</td> <td>YES</td> </tr> </tbody> </table> <p>The following are minor functional constraints:</p> <ul style="list-style-type: none"> On start-up, cktint cannot tell if a card is out of service (OOS); it can only detect that each port on that card is OOS. This causes no functional problems, just a display mismatch. If cktint is started while the card is OOS, cktint will show NO, YES (Port OOS, Card IS (In Service)) and locally block all the ports on that card. When the card is put back IS, the ports are unblocked and cktint will show YES, YES (Port IS, Card IS). On start-up, the standby side will always show YES, YES (Port IS, Card IS) and L-BLKED. Again, this causes no functional problems, just a display mismatch. After a switchover, it will be consistent with the active side. 		SDS Port In Service	SDS Card In Service	\$D3 out of service	NO	No change	\$D3 in service	YES	No change	\$D9 out of service	NO	NO	\$D9 in service	YES	YES
	SDS Port In Service	SDS Card In Service														
\$D3 out of service	NO	No change														
\$D3 in service	YES	No change														
\$D9 out of service	NO	NO														
\$D9 in service	YES	YES														
<p>U709260007</p>	<p>If the host opens and closes its socket very fast, <defunct> processes are no longer created.</p>															
<p>U709290001</p>	<p>When cktint received a non-SS7 Out of Service \$D9 message, depending on how many SS7 circuits were configured, it could take more than a minute to process. This has been corrected by eliminating unnecessary processes.</p>															
<p>U710020001</p>	<p>When the host opened a socket and then closed that socket to cktint within the same second, extra _tcprvcvclnt processes were often created. This issue has been fixed. Rapid host connections and disconnects no longer produce extra processes.</p>															
<p>U710140002</p>	<p>If the standby side of the SS7 stack was brought up first, and the active side of the stack was brought up later, the circuit states were stuck in LR-BLKED after a switchover. This problem has been fixed.</p>															
<p>U711110002</p>	<p>Invalid parameter formats were resulting in cktint core dump. This has been corrected.</p>															

Section 2

SYSTEM REQUIREMENTS

2.1 INTRODUCTION

This section provides a listing of system requirements for running CCITT Integrated SS7 ISUP, V3.0 FSR03. These requirements are divided into hardware, firmware and software. Contact Summa Four, Inc. Technical Support for any site-specific information.

2.2 HARDWARE REQUIREMENTS

In addition to the Integrated SS7 System hardware, V3.0 FSR03 requires a non-redundant or redundant SDS-1000 or VCO/80 System or a VCO/20 System with an SS7 VME shelf.

CAUTION: Redundant and non-redundant VCO/80 systems manufactured prior to January 1, 1996 must have the VME Power Switch Module and VME backplane upgraded prior to installing Integrated SS7. If you install Integrated SS7 in an older VCO/80 system, without this upgrade, the hardware will be severely damaged.

To determine the manufacture date on your VCO/80 system, open the front door of the system and check date on the manufacturing label, which is located in the upper right hand corner of the system enclosure. If the date on the label is prior to January 1, 1996, do not install the Integrated SS7 hardware until after your system has been upgraded. For information on how to upgrade the VME Power Switch Module and backplane, contact Summa Four Technical Support at 1-800-9SUMMA4 (1-800-978-6624).

For console access, a non-redundant Integrated SS7 system also requires an ASCII terminal with null modem or cable (purchased separately).

For console access, redundant systems require two ASCII terminals with null modems or cables (purchased separately) or a VT 320 compatible dual session terminal.

2.3 FIRMWARE REQUIREMENTS

There are no special firmware requirements for V3.0 FSR03. However, the firmware in the SDS-1000 or VCO must have the appropriate revision level required by the Generic. For information, refer to the *Generic Release Notes*.

2.4 SOFTWARE REQUIREMENTS

Version 3.0 FSR03 requires the following software:

- SDS/VCO Generic V3.3 or later
- Solaris Release V2.4

Table 2.1 is a list of the Integrated SS7 software checksums.

Table 2.1: Integrated SS7 Software Checksums

File Name	File Size	Checksum (/usr/bin/sum)
ebs.cpio.Z	6001077	19623 11721
install_ebs.sh	3523	15890 7
cktint.cpio.Z	1686471	30322 3294
install_cktint.sh	3500	59818 7

Section 3

SPECIAL CONSIDERATIONS

3.1 INTRODUCTION

This section describes the special considerations you should be aware of while using CCITT Integrated SS7 ISUP, V3.0 FSR03. This section provides explanations for the following areas:

- Commands and reports
- Debug flags
- Host Considerations
- Redundancy
- Routing alarm messages to the console

3.2 COMMANDS AND REPORTS

3.2.1 CktInt Requires \$DA And \$DB Reports

Do not suppress the \$DA and \$DB Reports in your SS7 application. These reports are required by CktInt for non-SS7 to SS7 calls and SS7 to non-SS7 calls because of the disconnect control byte. Cktint must see an on-hook.

3.3 DEBUG FLAGS

Turning on the debug flags may negatively impact performance.

NOTE: Make sure all debug flags are turned off for production systems.

3.4 HOST CONSIDERATIONS

3.4.1 Queue Overflow

If a host is not reading messages for its socket connection, a queue overflow will occur. This may cause CktInt to drop host messages. Once the host reads its messages, the buffers are cleared and regular message relay resumes.

3.4.2 Multiple Hosts Affect Call Handling

Additional TCP connections affect SDS/VCO call handling capacity. Optimal performance can be achieved with four or fewer simultaneously active TCP connections.

3.5 REDUNDANCY

3.5.1 No Switchover When Ethernet Fails

If Ethernet fails, the system does not switch over.

Workaround

Add a routine to your host application that can detect when the Integrated SS7 system is unreachable and initiates a switchover.

3.5.2 ASCII Terminals On Redundant Systems

If you turn the Integrated SS7 console off, or power to the terminal is lost, the SPARC5V CPU may abort and return to the boot prompt.

It is possible to connect a single ASCII terminal to both side A and side B via an electronic A/B selector switch. However, the selector must be capable of providing surgeless, spikeless change-overs. If the selector switch does not have this feature, the SPARC5V CPU may abort and return to the boot prompt when a change-over occurs.

3.5.3 Calls During Switchover

Only stable (answered) calls are preserved by the system during a redundancy switchover.

3.5.4 Loss of Network or SS7 Selector Switch Links

The loss of any network links do not cause a switchover. Also, the loss of SS7 selector switch links do not cause a switchover. If you are going to perform maintenance on any of the links, you must first switch the system over to the standby side.

3.5.5 SDS and VCO/80 Do Not Boot Without SPARC CPU Installed

An SDS or VCO/80 system configured for SS7 does not boot if one of the SPARC CPUs is removed from the Control Subrack. The NBC does not download, the NBC's LEDs stay illuminated, and the SDS/VCO system freezes.

3.6 ROUTING ALARM MESSAGES TO THE CONSOLE

To route alarm messages to the system console, complete the following steps:

1. Start the MML utility by entering the following command and pressing **Return**:

```
mml 0
```

2. At the system prompt, enter the following command and press **Return**:

```
MODIFY_ALARM_CONFIG:DISPLAY=ON;
```

3. Exit the MML utility by entering the following command and pressing **Return**:

```
EXIT;;
```

Section 4

DESIGN CONSTRAINTS

4.1 INTRODUCTION

Summa Four, Inc. has identified and evaluated design constraints in Integrated SS7 ISUP< V3.0 FSR03. This section provides explanations and, where applicable, workarounds in the area that follows:

- Redundancy

4.2 REDUNDANCY

4.2.1 U705050007: No Switchover When SS7 Is Stopped On Active Side

The system does not switch over automatically when one of the following conditions occur:

- If the Active CktInt and EBS stacks are stopped
- If CktInt hangs or dies
- If any EBS stack process dies and the MONITOR_OPTION is OFF (needs to be off to fix the problem where the Ethernet cable is detached and the system will flip flop sides).

Work Around

Set the All Host Link Failure Action, on the SDS System Host Configuration Screen, to Conditional Switchover. When the Conditional Switching option is selected, a major alarm is generated if all host links fail and a system switchover is initiated if the Standby controller is on-line (file sync. completed) and has active host links.

4.2.2 U707160004: Associated Ports Are Lost After Switchover

CktInt associates ports as specified in the SS7 \$49 Command and the association is maintained until call tear down. If the controlling port is an SDS/VCO port, and the associated port is an SS7 port, the two ports are associated until one or the other is released by the host. When one of the ports is released, CktInt automatically releases the other.

However, if the system switches over while the call is stable, CktInt, on what is now the Active side, has no knowledge of port association established prior to switchover. This is because the CktInt on side A does not communicate with CktInt on side B and vice versa. If the host attempts to release the call by its port association, the release will fail.

If the system switches over a second time, and the call is still stable, the CktInt module that established the port association is now on the Active side, and host can release the call by its port association.

Workaround

Do not use the port association option in host applications.

Section 5

KNOWN FUNCTIONAL CONSTRAINTS

5.1 INTRODUCTION

Summa Four, Inc. has identified and evaluated functional constraints in Integrated SS7 ISUP, Version 3.0 FSR03. This section provides explanations and where applicable, workarounds for functional constraints in the areas that follow:

- Circuits
- Commands and reports
- Debug
- Initialization
- isup_console
- Multiple Hosts
- SS7 Messages and Parameters
- Redundancy
- Miscellaneous Problems

5.2 CIRCUITS

The constraints in this subsection apply to problems with circuits and circuit groups.

5.2.1 CktInt May Hang If Cards Out Of Service At Startup

The system supports up to 1728 circuits. However, CktInt may hang during initialization if there are cards out of service when you start CktInt.

Workaround

Make sure all SDS/VCO cards are in service before starting CktInt.

5.2.2 U610010003: CktInt Core Dumps With Bad Circuit Number

CktInt core dumps if the `ckt_ss7_to_sds` files are configured with circuit numbers greater than 0x1F.

5.2.3 U703130001/U703180001: Wrong Port State After Restore

When the SS7 links and carrier are restored, after they both were down, CktInt reports that the circuit states are active and idle, but the SS7 stack reports that the circuit states are LR-blocked.

5.3 COMMANDS AND REPORTS

The constraints described in this subsection apply to commands and reports.

5.3.1 Outgoing Continuity Checks Do Not Work

All outgoing continuity check requests initiated by the Host via the SS7 \$49 command coded “continuity check required on this circuit” or “continuity check required on the previous circuit” do not work.

5.3.2 U708200007: Controlling Host Is Set By Rejected Command

If an SS7 \$49 Command is rejected, the host that sent the command becomes permanently associated with the circuit (or circuit group) specified in the command. This may stop other hosts from using the circuit.

Workaround

To clear this condition, perform a circuit or circuit group reset.

5.4 DEBUG

The constraints described in this subsection apply to debug.

5.4.1 U508155173: No Timestamps For Debug Entries

CktInt does not timestamp debug entries.

5.4.2 INITIALIZATION

The constraints described in this subsection apply to initialization and start-up of CktInt.

5.4.3 U611070001: Wrong Power Up States

If CktInt and the SS7 stack start while SDS/VCO cards are downloading, circuit states in CktInt can get stuck in UNKNOWN or TRANSIENT states. Manual intervention (sending a Reset Circuit Group command from the isup_console) is needed to recover from this situation.

Workaround

Make sure all card downloads are complete before starting SS7 software.

5.4.4 U703230001: \$70 Command May Fail On Start-up

If the SDS/VCO Host Control of Call Load feature (set from the System Host Configuration screen of the SDS/VCO Administration Console) is enabled when CktInt starts up, all of the \$70 commands CktInt sends to the SDS/VCO to ensure that all of the SS7 ports are on hook are rejected with a network status byte if 3C (\$6C or \$72 command received before host issued \$C0 04 command). If the Host Control of Call Load feature is not enabled, the \$C0 04 command fails, but the \$70 commands succeed.

5.4.5 U708200005: SS7 Resource Provisioning Files Are Not Correctly Verified

The system does not properly verify that the circuits defined in the resource provisioning files (`ckt_ss7_to_sds` and `grp_ss7_to_sds`) are configured ports on the SDS/VCO.

When CktInt initializes, the Integrated SS7 system sends a Request Resource Allocation (\$80) Command to the SDS/VCO for each group defined in `grp_ss7_to_sds`. In response to each \$80 Command, the SDS/VCO checks for the corresponding port in the SDS/VCO database, and returns a Resource Allocation (\$80) Report to CktInt if the circuit is defined in the database and is available.

A problem in this process occurs when the port is not defined in the SDS/VCO database. If the port is not defined, no information about the port is returned to CktInt and CktInt considers the circuit on-line and available. The host is not notified of an error and an initialization error message is not generated for the user.

CktInt allows you to send an outgoing IAM using the address of the undefined port. However, Port Hook State Control (\$70) and Voice Path Control (\$66) Commands to the SDS/VCO, are rejected with a network status byte of 23 (invalid port address). CktInt recognizes that these commands are rejected, but takes no action to respond to the rejection.

5.4.6 U708200008: Warmboot With Autostart Takes 20 Minutes

If autostart is configured and the system is warm booted, it will take at least 20 minutes for the SS7 software to start.

5.5 isup_console

The constraints described in this subsection apply to `isup_console`.

5.5.1 U701290007: isup_console Options

The `isup_console` prompt lists the “a” and “q” options, which are no longer supported. These options are not displayed as valid options when you use the help (h) option.

5.6 MULTIPLE HOSTS

The constraints described in this subsection apply to multiple hosts.

5.6.1 U606240002: Host Connect/Disconnect Problems

If the Integrated SS7 systems is configured with more than six hosts, some links may not be released when the hosts are disconnected and the isup_console program lists the link status as ONLINE_READY.

5.6.2 U703140003: ROUNDROBIN Does Not Work When Only One Host Is Running

If only one host is up and running in a multihost environment, the ROUNDROBIN mode for host load sharing does not work correctly.

Workaround

If using only one host, use BROADCAST mode.

5.7 REDUNDANCY

The constraints in this subsection apply to problems with circuits and circuit groups.

5.7.1 U712110002: Circuit States on Switchover

Initially, CktInt circuit states are Active/Idle on the active side and Locally Blocked/Idle on the standby side. After switchover, the circuit states of both the active and standby sides become Active/Idle, but the standby side should be Locally Blocked/Idle. This does not affect call processing.

5.8 SS7 MESSAGES AND PARAMETERS

The constraints described in this subsection apply to SS7 messages and parameters.

5.8.1 CktInt Issues A REL Too Soon

When an associated port with an SS7 circuit goes on-hook, a REL is passed to the network indicating that the circuit is available, even though the port may be in a CP_GUARD state.

5.8.2 U703070004: CktInt Processes Invalid IAM Messages

When an SS7 \$49 Command, with an IAM message, is rejected with a network status byte CA (Outgoing port is in wrong state), CktInt appears to process the IAM message anyway, since it returns an ACM and ANM message to the host, which indicates that the IAM was passed on to the SS7 network.

5.9 MISCELLANEOUS PROBLEMS

This subsection contains descriptions for miscellaneous problems.

5.9.1 U609060005: Invalid SLTA Pattern Not Rejected

The Integrated SS7 system acknowledges SLTAs with invalid patterns.

