Oracle® Communications
EAGLE Collector Application Processor

Feature Manual

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Chapter 1

Introduction

Topics:

The Eagle Collector Application Processor, or ECAP, is a dedicated standalone platform for the collection of EAGLE 5 ISS traffic statistics data. The ECAP provides a user interface for configuration and application control and generates log files for monitoring and maintenance purposes.

Overview

The Eagle Collector Application Processor (ECAP) is a dedicated standalone platform for the collection of EAGLE® 5 ISS traffic statistics data. The ECAP platform is a frame mounted system that includes two or more ECAP servers, a power distribution breaker panel, and two (up to four) Ethernet switches. The ECAP server is a T1100 or T1200 Application Server (AS) running the Integrated Q.752 MTP/SCCP Accounting Feed application. The Eagle Collector Application Process collects raw MSUs from the EAGLE 5 ISS and generates data files that contain structured counts supportingITU-*T Recommendation Q.752, Section 7*. These counts are sent to another system for accounting activities.

The Integrated Accounting Feed application provides basic MTP and SCCP accounting and measurements capability on the EAGLE 5 ISS platform in accordance withITU-*T Recommendation Q.752, Section 7*. The concepts discussed inITU-*T Recommendation Q.752, Section 7* are known as "cascade remuneration" and "cascade remuneration verification", and are based on the principle that the originator of a message pays the network operator who owns the next node in the message's path for accepting the messages and subsequent processing. This operator then pays the network operator who owns the next node in the message's path, and so on until the message finally reaches its final destination, which could be in yet another network.

The ECAP platform is an adjunct system to the Tekelec portfolio of products that work in conjunction with the EAGLE 5 ISS and other system(s) so that the raw MSU data can be converted into accounting records in accordance with*Section 7*. The ECAP generates periodic traffic data files which are transferred to a configured Aggregator, allowing detailed usage reports to be compiled across all monitored links in the system. This system takes the STPLAN feed from EAGLE 5 ISS and collects specific information from each MSU. In general, the information consists of OPC, DPC, SI, SCCPCdPA, SCCPCgPA, and MAP Opcode. These values are organized and written to files and "pushed" to an external system for final analysis.

Note: For the purpose of this document, a ‘data file’ is defined as a compiled file of peg counts and other measurements inXMLor CSV format.

A single ECAP server can process up to 5000 MSUs per second on a T1100 server and up to 10000 MSUs per second on a T1200 server, providing precise measurements of MSUs and octets transmitted. See *Table 2: MSU to T1100 Server Mapping* and *Table 3: MSU to T1200 Server Mapping* for adding multiple ECAPs to an EAGLE 5 ISS system to increase capacity.

The ECAP provides a user interface for configuration and application control and generates log files for monitoring and maintenance purposes.

Scope and Audience

This manual is intended for anyone responsible for installing, maintaining, and using the Integrated Accounting Feed application in the EAGLE 5 ISS. Users of this manual and the others in the EAGLE 5 ISS family of documents must have a working knowledge of telecommunications and network installations.

Manual Organization

This manual is organized into the following chapters:

- *Introduction*, contains general overview of the ECAP system, general information about the organization of this manual, the audience, references to other Tekelec documentation you might need, information on customer assistance, documentation packaging, delivery, and updates, and a list of acronyms and abbreviations used in the document.
- *Feature Description*, provides a functional description of the Integrated Accounting Feed application and ECAP system, including overviews of the architecture and connectivity, hardware requirements, and considerations.
- *ECAP Configuration*, describes how to configure the components that comprise the Integrated Accounting Feed application.
- *Maintenance*, describes maintenance tasks for the Integrated Accounting Feed application, including alarms, disaster recovery, log files, and health check procedures.
- *MSU to XML Field Mapping*, describes how MSU parameters that come into the ECAP server relate to the peg count fields in the ECAP data file.

Documentation Admonishments

Admonishments are icons and text throughout this manual that alert the reader to assure personal safety, to minimize possible service interruptions, and to warn of the potential for equipment damage.

Table 1: Admonishments

Icon	Description
	**Danger**: (This icon and text indicate the possibility of *personal injury*.)
	**Warning**: (This icon and text indicate the possibility of *equipment damage*.)
	**Caution**: (This icon and text indicate the possibility of *service interruption*.)

Icon	Description
	**Topple**: (This icon and text indicate the possibility of *personal injury* and *equipment damage*.)

Customer Care Center

The Tekelec Customer Care Center is your initial point of contact for all product support needs. A representative takes your call or email, creates a Customer Service Request (CSR) and directs your requests to the Tekelec Technical Assistance Center (TAC). Each CSR includes an individual tracking number. Together with TAC Engineers, the representative will help you resolve your request.

The Customer Care Center is available 24 hours a day, 7 days a week, 365 days a year, and is linked to TAC Engineers around the globe.

Tekelec TAC Engineers are available to provide solutions to your technical questions and issues 7 days a week, 24 hours a day. After a CSR is issued, the TAC Engineer determines the classification of the trouble. If a critical problem exists, emergency procedures are initiated. If the problem is not critical, normal support procedures apply. A primary Technical Engineer is assigned to work on the CSR and provide a solution to the problem. The CSR is closed when the problem is resolved.

Tekelec Technical Assistance Centers are located around the globe in the following locations:

Tekelec - Global

Email (All Regions): support@tekelec.com

- **USA and Canada**

  Phone:

  1-888-367-8552 (toll-free, within continental USA and Canada)

  1-919-460-2150 (outside continental USA and Canada)

  TAC Regional Support Office Hours:

  8:00 a.m. through 5:00 p.m. (GMT minus 5 hours), Monday through Friday, excluding holidays

- **Caribbean and Latin America (CALA)**

  Phone:

  +1-919-460-2150

  TAC Regional Support Office Hours (except Brazil):

  10:00 a.m. through 7:00 p.m. (GMT minus 6 hours), Monday through Friday, excluding holidays

  - **Argentina**

    Phone:

    0-800-555-5246 (toll-free)

  - **Brazil**

Phone:

0-800-891-4341 (toll-free)

TAC Regional Support Office Hours:

8:00 a.m. through 5:48 p.m. (GMT minus 3 hours), Monday through Friday, excluding holidays

- **Chile**

  Phone:

  1230-020-555-5468

- **Colombia**

  Phone:

  01-800-912-0537

- **Dominican Republic**

  Phone:

  1-888-367-8552

- **Mexico**

  Phone:

  001-888-367-8552

- **Peru**

  Phone:

  0800-53-087

- **Puerto Rico**

  Phone:

  1-888-367-8552

- **Venezuela**

  Phone:

  0800-176-6497

- **Europe, Middle East, and Africa**

  Regional Office Hours:

  8:30 a.m. through 5:00 p.m. (GMT), Monday through Friday, excluding holidays

  - **Signaling**

    Phone:

    +44 1784 467 804 (within UK)

  - **Software Solutions**

    Phone:

+33 3 89 33 54 00

- **Asia**
  - **India**

    Phone:

    +91-124-465-5098 or +1-919-460-2150

    TAC Regional Support Office Hours:

    10:00 a.m. through 7:00 p.m. (GMT plus 5 1/2 hours), Monday through Saturday, excluding holidays
  - **Singapore**

    Phone:

    +65 6796 2288

    TAC Regional Support Office Hours:

    9:00 a.m. through 6:00 p.m. (GMT plus 8 hours), Monday through Friday, excluding holidays

Emergency Response

In the event of a critical service situation, emergency response is offered by the Tekelec Customer Care Center 24 hours a day, 7 days a week. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with the Tekelec Customer Care Center.

Related Publications

For information about additional publications that are related to this document, refer to the *Related Publications* document. The *Related Publications* document is published as a part of the *Release Documentation* and is also published as a separate document on the Tekelec Customer Support Site.

Documentation Availability, Packaging, and Updates

Tekelec provides documentation with each system and in accordance with contractual agreements. For General Availability (GA) releases, Tekelec publishes a complete EAGLE 5 ISS documentation set. For Limited Availability (LA) releases, Tekelec may publish a documentation subset tailored to specific feature content or hardware requirements. Documentation Bulletins announce a new or updated release.

The Tekelec EAGLE 5 ISS documentation set is released on an optical disc. This format allows for easy searches through all parts of the documentation set.

The electronic file of each manual is also available from the *Tekelec Customer Support* site. This site allows for 24-hour access to the most up-to-date documentation, including the latest versions of Feature Notices.

Printed documentation is available for GA releases on request only and with a lead time of six weeks. The printed documentation set includes pocket guides for commands and alarms. Pocket guides may also be ordered separately. Exceptions to printed documentation are:

- Hardware or Installation manuals are printed without the linked attachments found in the electronic version of the manuals.
- The Release Notice is available only on the Customer Support site.

Note: Customers may print a reasonable number of each manual for their own use.

Documentation is updated when significant changes are made that affect system operation. Updates resulting from Severity 1 and 2 Problem Reports (PRs) are made to existing manuals. Other changes are included in the documentation for the next scheduled release. Updates are made by re-issuing an electronic file to the customer support site. Customers with printed documentation should contact their Sales Representative for an addendum. Occasionally, changes are communicated first with a Documentation Bulletin to provide customers with an advanced notice of the issue until officially released in the documentation. Documentation Bulletins are posted on the Customer Support site and can be viewed per product and release.

Hardware Repair and Return

Any system components being returned for repair or replacement must be processed through the Tekelec Return Material Authorization (RMA) procedures. A hardware repair is defined as an item returned to Tekelec due to a failure, with the returned item being repaired and returned to the customer. It is essential that serial numbers are recorded correctly. RMAs cannot be created without a valid serial number. All repair and quality information is tracked by serial number.

Locate Product Documentation on the Customer Support Site

Access to Tekelec's Customer Support site is restricted to current Tekelec customers only. This section describes how to log into the Tekelec Customer Support site and locate a document. Viewing the document requires Adobe Acrobat Reader, which can be downloaded at www.adobe.com.

1. Log into the *Tekelec Customer Support* site.

   Note: If you have not registered for this new site, click the **Register Here** link. Have your customer number available. The response time for registration requests is 24 to 48 hours.

2. Click the **Product Support** tab.
3. Use the Search field to locate a document by its part number, release number, document name, or document type. The Search field accepts both full and partial entries.
4. Click a subject folder to browse through a list of related files.
5. To download a file to your location, right-click the file name and select **Save Target As**.

Chapter 2

Feature Description

Topics:

This chapter contains information regarding the workings of the Integrated Accounting Feed application, which runs on the Eagle Collector Application Processor (ECAP). This application allows detailed usage files to be compiled across all monitored links in the system. In addition, the Integrated Accounting Feed application provides a user interface for configuration and application control and generates log files for monitoring and maintenance purposes.

Introduction

The Integrated Accounting Feed application runs on the Eagle Collector Application Processor (ECAP) and provides a broad compliance to the requirements for basic MTP and SCCP accounting and measurements functionality as described inITU-*T Recommendation Q.752, Section 7* and *Tables 15 and 16*.

The Integrated Accounting Feed application performs collection of EAGLE® 5 ISS traffic statistics data. ECAP is one or more T1100-based or T1200-based servers that run in an integrated fashion with EAGLE 5 ISS that receives MSUs from the EAGLE 5 ISS and feeds them to an accounting system.

Note: The ECAP Frame supports either all T1100 servers or all T1200 servers, not both.

A single ECAP server can process up to 5000 MSUs per second on a T1100 server and 10000 MSUs per second on a T1200 server, providing precise measurements of MSUs and octets transmitted. Multiple ECAP servers can be connected to an EAGLE 5 ISS server for increased processing bandwidth.

The T1100 server can process up to 375 records per second. A T1200 server can process up to 750 records per second. A record is a unique combination of field values within an MSU.

The ECAP server periodically generates data files which are transferred to an accounting system, consisting of a server configured as an Aggregator. This application allows detailed usage files to be compiled across all monitored links in the system. See *Architectural Overview* for more information.

Note: TheAggregator may consist of a single server or anIP cluster that uses a virtualIP address.

The application provides a user interface for configuration and application control and generates log files for monitoring and maintenance purposes.

Hardware Requirements

The ECAP application can be installed on either the T1100 or T1200 hardware platform.

ECAP on the T1100 Platform

Hardware requirements for the ECAP on the T1100 platform are as follows:

- T1100 AS Frame

  Note: EAGLE 5 ISS supports a single ECAP Frame.
- Power Distribution breaker panel
- Two Ethernet Switch units
- A T1100 server, running the Integrated Q.752 MTP/SCCP Accounting Feed feature.
- The number of T1100 ECAP Servers per frame is two to six.
- The maximum number of T1100 ECAP Servers per frame is six.

- The EAGLE 5 ISS system used with the ECAP must be equipped with SSEDCM or E5-ENET cards (SLAN cards) running the STPLAN application. The cards must be provisioned with 100 Mbps links in order to achieve 5000 MSUs/sec.

The ECAP Servers are configured in an N+1 configuration based on the maximum expected traffic rate as shown in *Table 2: MSU to T1100 Server Mapping*.

Table 2: MSU to T1100 Server Mapping

MSU per Second	T1100 Servers
<= 5000	2
5001 to 10000	3
10001 to 15000	4
15001 to 20000	5
20001 to 25000	6

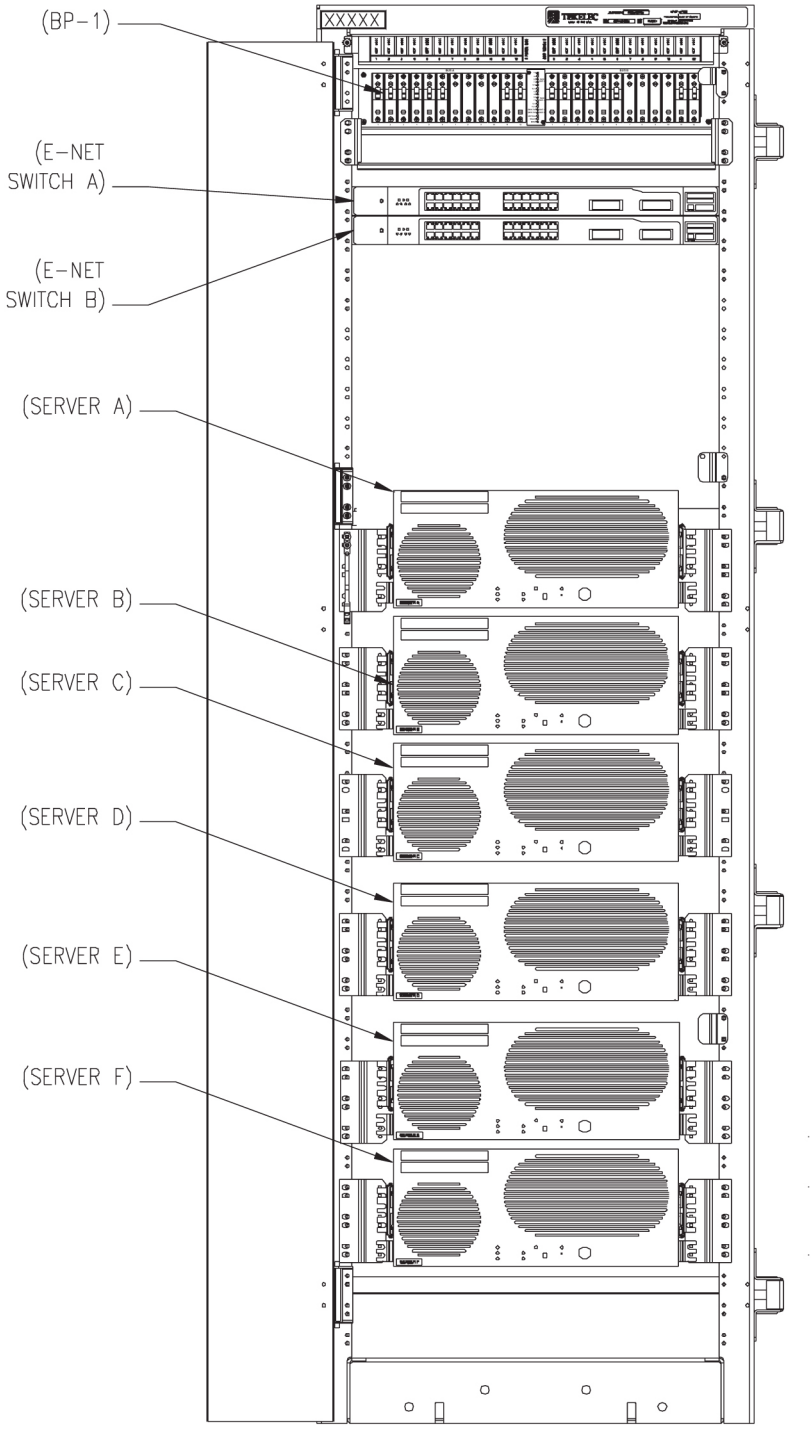

Figure 1: ECAP T1100 Frame

ECAP on the T1200 Platform

Hardware requirements for the ECAP on the T1200 platform are as follows:

- T1200 AS Frame

  Note: EAGLE 5 ISS supports a single ECAP Frame.

- Power Distribution breaker panel
- Two or four Telco switches

  Note: Two switches (one pair) must be configured if 12 or less ECAP servers are configured. Four switches (two pair) must be configured if more than 12 ECAP servers are configured.

- A T1200 server, running the Integrated Q.752 MTP/SCCP Accounting Feed feature.
- The number of T1200 ECAP Servers per frame is two to eighteen.
- The maximum number of T1200 ECAP Servers per frame is 18.
- The EAGLE 5 ISS system used with the ECAP must be equipped with SSEDCM or E5-ENET cards (SLAN cards) running the STPLAN application. The cards must be provisioned with 100 Mbps links in order to achieve 10000 MSUs/sec.

The ECAP Servers are configured in an N+1 configuration based on the maximum expected traffic rate as shown in *Table 3: MSU to T1200 Server Mapping*.

Table 3: MSU to T1200 Server Mapping

MSU per Second	T1200 Servers
<= 10000	2
10001 to 20000	3
20001 to 30000	4
30001 to 40000	5
40001 to 50000	6
50001 to 60000	7
60001 to 70000	8
70001 to 80000	9
80001 to 90000	10
90001 to 100000	11
100001 to 110000	12
110001 to 120000	13
120001 to 130000	14
130001 to 140000	15
140001 to 150000	16

MSU per Second	T1200 Servers
150001 to 160000	17
160001 to 170000	18

Architectural Overview

Figure 2: Integrated Accounting Feed Architectural Overview provides a high-level architectural view of the Integrated Accounting Feed application as it runs on the ECAP system. The EAGLE 5 ISS (100) connects to the Collector (101) via a direct connected Ethernet cable. The data feed from the EAGLE 5 ISS to the Collector is the STP LAN feature running on one or more SLAN cards (104). The Collector runs on the T1100/T1200 series of Tekelec Servers. The set of Collector hardware and software (the Integrated Accounting Feed application) is considered the ECAP.

The Collectors are connected to the Aggregator (102) via a WAN Ethernet connection (105). The Aggregator (102) collects data from all Collectors and performs any processing decided by the customer (103).

Table 4: Integrated Accounting Feed Architecture Terms defines the terms used in *Figure 2: Integrated Accounting Feed Architectural Overview*.

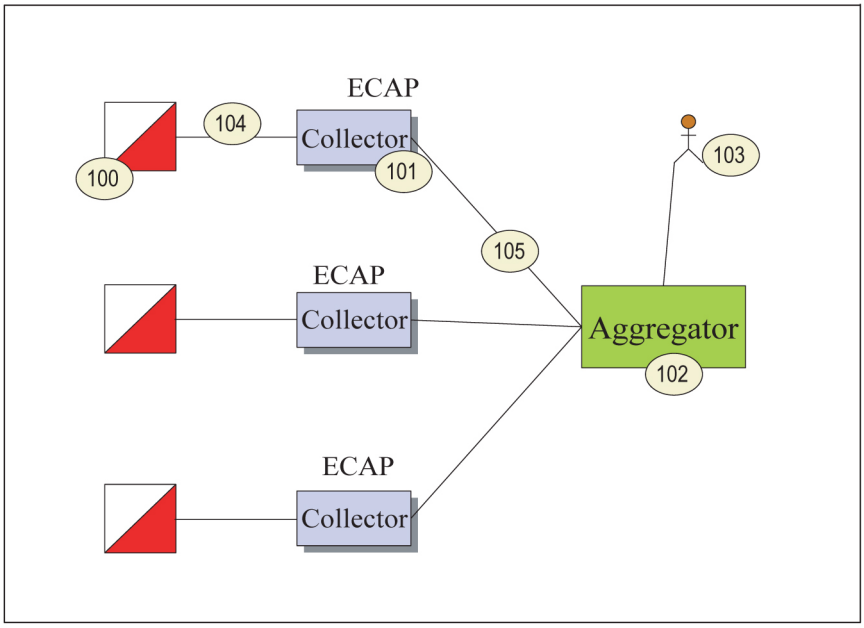

Figure 2: Integrated Accounting Feed Architectural Overview

Table 4: Integrated Accounting Feed Architecture Terms

Term	Definition
Collector	The Collector function runs on the ECAP servers. This function receives the STP LAN MSU feed and parses the MSUs in the feed into categories based on provisioning rules. The Collector provides the interface to the Aggregator function.
Aggregator	The Aggregator function accepts the data feed from all Collector functions within the customer's network and compiles user-defined accounting reports. The Aggregator function is installed on a system defined by the customer. This system should have the following characteristics: • Ability to accept a measurement file • Ability to sustain an IP connection and support Virtual IP, including a virtual IP address **Note:** The ability to support Virtual IP is recommended but not a requirement. • Ability to enable SecureShell

Interconnectivity

Figure 3: Interconnectivity Overview provides a high-level view of interconnectivity for the Integrated Accounting Feed application.

The number of ECAP Servers (200) and SLAN cards (E5-ENET and SSEDCM) (201) is dependent on the number of MSUs that need to be collected to provide the measurement data and the type of ECAP servers used. The capacity of 5000 MSUs per T1100 server and 10000 MSUs per T1200 server are the benchmarks. The ECAP servers and SLAN cards are configured on a one-for-one basis (1:1).

The Aggregator (102) must be capable of retrieving data files from all ECAP Servers in the customer's network.

An NMS (111) is used to capture SNMP traps generated by each server.

Maintenance personnel (109) access the Collectors via the Customer Network (108) that is connected to the Dual Ethernet Switches (107).

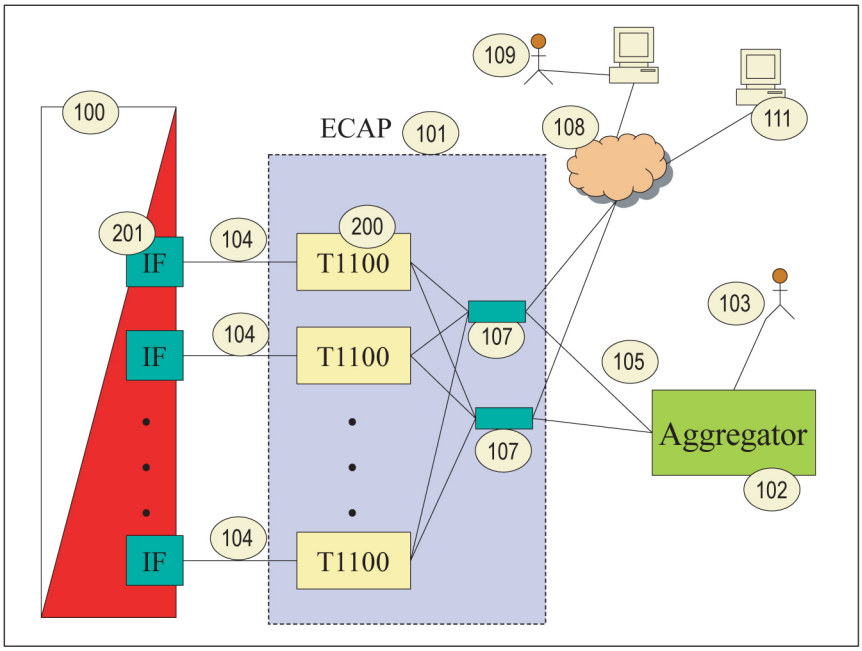

Figure 3: Interconnectivity Overview

See *Architectural Overview* for a description of the other details in *Figure 3: Interconnectivity Overview*.

Figure 4: Aggregator/ECAP/EAGLE 5 ISS Connectivity Diagram shows a detailed view of the EAGLE 5 ISS/ECAP/Aggregator connectivity. The diagram includes the types of connection that flow between each component.

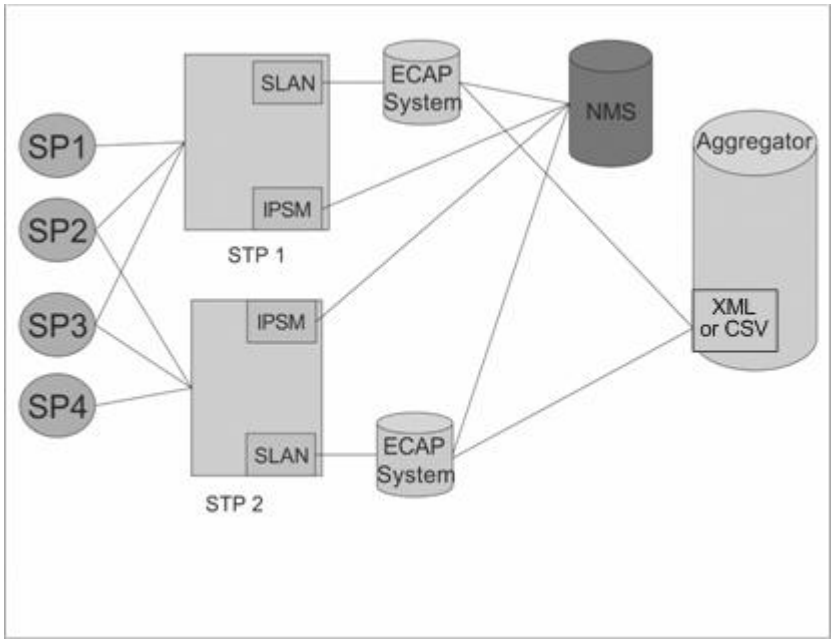

Figure 4: Aggregator/ECAP/EAGLE 5 ISS Connectivity Diagram

The connectivity elements are:

- **EAGLE 5 ISS Connectivity**
  - SLAN to ECAP for Q.752 accounting information
  - IPSM to NMS for alarms monitoring
- **ECAP Connectivity**
  - Ethernet to EAGLE SLAN for Q.752 accounting information retrieval
  - Ethernet to NMS for alarm transfer
  - Ethernet to Aggregator for XML data transfer
- **Aggregator Connectivity**
  - LAN to ECAP for Q.752 accounting information in XML data format. See *MSU to XML Field Mapping* for more details.

Integrated Accounting Feed Considerations

Some considerations for optimal ECAP performance are listed below.

- Because of the nature of the EAGLE 5 ISS and its SLAN subsystem, no other application requiring SLAN copied MSUs may operate simultaneously with the SLAN card.
- If over 50% of the message traffic consists of MSUs that are greater than 200 bytes, then the ECAP server is not able to reach the 5000 MSUs/second process rate.
- If an SLAN link is cancelled and later activated (using EAGLE 5 ISS commands `canc-dlk` and `act-dlk`), it can take up to 10 minutes for the link to come back up on its own. To bring the link up immediately, restart the ECAP processes using the Process Control menu option within `ecapcfg`.
- Never set the date and time of day on the ECAP server *backwards* while the ECAP processes are running. This includes setting the time manually or by configuring an NTP server. If the time needs to be set backwards, first route traffic away from the ECAP server by cancelling the associated SLAN DLK link. Then stop the ECAP process.
- Changing the DWI value from a higher number to a lower number (i.e., from 15 to 1) should be avoided, if possible, especially during high traffic periods.

Chapter 3

ECAP Configuration

Topics:

The Integrated Accounting Feed application requires configuration tasks to be performed on the Aggregator, NMS, ECAP network, Integrated Accounting Feed application, and EAGLE 5 ISS. This chapter includes instructions for configuring the tools within the Integrated Accounting Feed application.

Introduction

The Integrated Accounting Feed application requires configuration tasks to be performed on the Aggregator, NMS, ECAP network, Integrated Accounting Feed application, and EAGLE® 5 ISS. It is recommended that these tasks be performed in the following sequence:

- Configure the Aggregator (customer-specific)
- Configure the ECAP Network Interfaces for a T1100 or T1200 server
- Configure File Transfer from the ECAP server to the Aggregator
- Configure NTP to synchronize time between the ECAP server and the Aggregator
- Configure the NMS on the NMS system (customer specific) and configure the ECAP server to send SNMP traps to the NMS

  Note: SNMP traps are not sent to the EAGLE 5 ISS EMS.
- Configure the Integrated Feed Application
- Configure the EAGLE 5 ISS SLAN cards
- Configure Gateway Screening on EAGLE 5 ISS

Configuring the Aggregator

The Aggregator must be configured to receive data files from the ECAP. These configuration tasks are mostly customer-specific. However, an RSA Public Key must be generated from the File Transfer Interface and added to the Aggregator. See *Configuring File Transfer* for more information.

Configuring the Primary Aggregator

Use the `ecapcfg` command to configure the IP address, user ID, and the directory for the Primary Aggregator. See *Table 8: Configuration Menu Options* for restrictions on the these values.

Procedure

1. Log in to the ECAP server as the `ecapadm` user.
2. Use the `ecapcfg` command to open the ECAP Configuration menu.
3. Select **2** from the ECAP Configuration Menu and press **Enter** to open the File Mover Configuration menu.
4. Select **1** from the File Mover Configuration menu and press **Enter**.

```
IP Address = [default]?
```

   Enter the Primary Aggregator IP address and return to the File Mover Configuration menu.

5. Select **2** from the File Mover Configuration menu and press **Enter**.

```
USER ID = [default]?
```

   Enter the Primary Aggregator User ID and return to the File Mover Configuration menu.

6. Select **3** from the File Mover Configuration menu and press **Enter**.

```
Aggregator Directory for Files = [default]?
```

   Enter the Primary Aggregator file storage directory path name and return to the File Mover Configuration menu.

7. Select **7** from the File Mover Configuration menu and press **Enter**.

```
File Transfer Time (1-29 minutes after half hour)= [5]?
```

   Enter a numerical value (1 to 29) to set the file transfer time and return to the File Mover Configuration menu.

8. Select **E** from the File Mover Configuration menu and press **Enter** to close the File Mover Configuration menu.
9. Select **E** from the ECAP Configuration menu and press **Enter**.

```
Save Configuration and Restart ECAP (y or n)?
```

   Enter **Y** at the command prompt to save the configuration changes and start the ECAP processes.

   Note: Entering **N** at the command prompt discards the configuration changes and does not restart the ECAP processes.

Configuring the Backup Aggregator

Use the `ecapcfg` command to configure the IP address, user ID, and the directory for the Backup Aggregator. See *Table 8: Configuration Menu Options* for restrictions on the these values.

Procedure

1. Log in to the ECAP server as the `ecapadm` user.
2. Use the `ecapcfg` command to open the ECAP Configuration menu.
3. Select **2** from the ECAP Configuration Menu and press **Enter** to open the File Mover Configuration menu.
4. Select **4** from the File Mover Configuration menu and press **Enter**.

```
IP Address = [default]?
```

   Enter the Backup Aggregator 1 IP address and return to the File Mover Configuration menu.

5. Select **5** from the File Mover Configuration menu and press **Enter**.

```
USER ID = [default]?
```

   Enter the Backup Aggregator 1 User ID and return to the File Mover Configuration menu.

6. Select **6** from the File Mover Configuration menu and press **Enter**.

```
Aggregator Directory for Files = [default]?
```

   Enter the Backup Aggregator 1 file storage directory path name and return to the File Mover Configuration menu.

7. Select **E** from the File Mover Configuration menu and press **Enter** to close the File Mover Configuration menu.
8. Select **E** from the ECAP Configuration menu and press **Enter**.

```
Save Configuration and Restart ECAP (y or n)?
```

   Enter **Y** at the command prompt to save the configuration changes and start the ECAP processes.

   Note: Entering **N** at the command prompt discards the configuration changes and does not restart the ECAP processes.

Configuring ECAP Network Interfaces

Differences exist in the base hardware configuration of the T1100 and the T1200 servers. These differences result in separate configuration procedures for the T1100 and T1200 servers.

Table 5: Differences Between T1100 and T1200 Servers lists the differences in the hardware ports available on the two servers:

Table 5: Differences Between T1100 and T1200 Servers

T1100	T1200
The T1100 server is equipped with five ethernet ports: • eth93 • eth11 • eth92 • eth91 • eth12	The T1200 server is equipped with four ethernet ports: • eth01 • eth02 • eth03 • eth04

ECAP Network Interfaces on the T1100 Server

Each T1100 ECAP server requires three operational network interfaces:

- The Data Collection Interface is the incoming MSU data network interface. The interface connects an ECAP server to the EAGLE 5 ISS SLAN card via direct IP connection. Each ECAP server interfaces with one and only one SLAN card.
- The File Transfer Interface is used to transfer data files from the ECAP server to the Aggregator. This is a secure interface that transfers files via SCP.
- The Maintenance Interface allows the monitoring of alarms on a remote NMS. This interface supports secure remote login via SSH.

All interfaces are standard 100Mbps IP connections. While each ECAP server connects to only one Aggregator, the Aggregator may receive measurements data from multiple ECAP servers associated with a single EAGLE 5 ISS. *Figure 5: T1100 Network Configuration* provides an example network configuration.

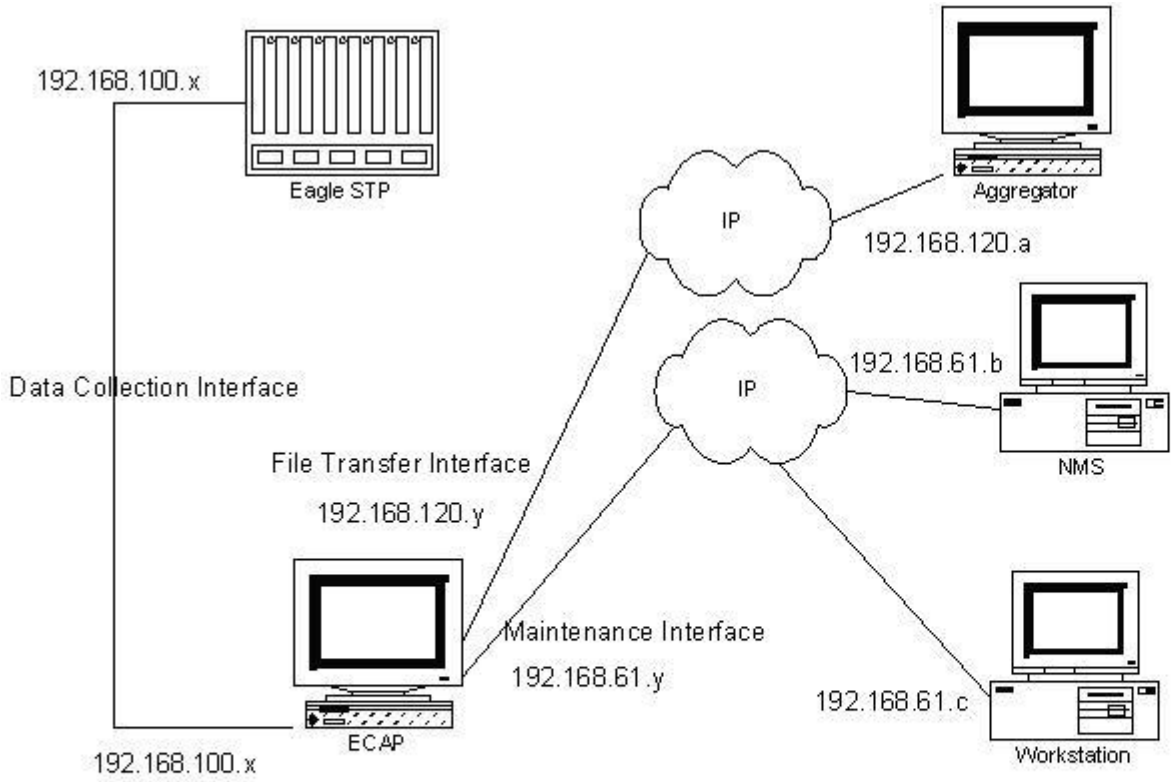

Figure 5: T1100 Network Configuration

ECAP network configuration is managed by `ecapcfg`. See *Table 6: ECAP Network Parameters on the T1100 Server* for a list of recommended interface settings.

Procedure

1. Log in to the ECAP server as the `ecapadm` user.
2. Use the `ecapcfg` command to open the ECAP Configuration Menu.
3. Select **5** from the ECAP Configuration Menu and press **Enter** to perform the Network Configuration.

```
Network Configuration
=====================
This may take a while...
Network Configuration
=====================
Server Type     : T1100
```

```
Designation     : 1A
Hostname        : ecap1

Platform Version: TPD-release-3.0.3-3.3.2_63.5.0.noarch
Software Version: TKLCaccmeas-X.0.0-0.X.i686


ECAP Processes are running.

Do you wish to stop all ECAP processes currently running? (y or n)y
```

4. Press **y** and press **Enter** to stop the ECAP processes.

```
Stopping ECAP Processes.

ECAP processes Stopped!

Press Enter to use the existing value.

Maintenance Interface IP address [] :192.168.61.1
Maintenance Network Netmask []: 255.255.255.0
Aggregator Interface IP address [] :192.168.120.1
Aggregator Network Netmask []: 255.255.255.0
External Default Router IP Address [] :192.168.61.250
SLAN Interface IP address [192.168.100.1] :
SLAN Interface Netmask [255.255.255.0]:

Default Router exist in Maintenance Network.

Do you wish to continue with the above specified network configuration ? (y or
n)y
```

Note: The values shown in the square brackets are current values (it will be the default if the given parameter has never been modified). For each parameter, the you can choose to either use the value shown in the square bracket or specify a new value. For network parameter information, see *Table 6: ECAP Network Parameters on the T1100 Server*.

5. Press **y** and press **Enter**.

```
Configuring the network......
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl setIntf bond0.200 192.168.61.1
255.255.255.0
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl setIntf bond1.201 192.168.120.1
255.255.255.0
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl delDefRout bond1.201
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl repDefRout 192.168.61.250 bond0.200
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl lockIntf eth93 100 off full
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl setIntf eth93 192.168.100.1
255.255.255.0.

Network Successfully Configured.
Press Enter to return to the Menu
```

6. Press **Enter** to return to the ECAP Configuration menu.

Table 6: ECAP Network Parameters on the T1100 Server

Parameter	Data Collection Interface	File Transfer Interface	Maintenance Interface	Sync Interface
Device Name	eth93	bond1.201 **Note:** Device bond1.201 is a VLAN-tagged device of bond1. Devices eth11 and eth 92 are enslaved to bond1.	bond0.200 **Note:** Device bond0.200 is a VLAN-tagged device of bond0 Devices eth12 and eth91 are enslaved to bond0.	bond0.202 **Note:** Device is a VLAN-tag of bond0 Devi and eth91 are bond0.
IP Address	Default at install: 1A: 192.168.100.1 1B: 192.168.100.2 1C: 192.168.100.3 1D: 192.168.100.4 1E: 192.168.100.5 1F: 192.168.100.6	locally administered	locally administered	Default at inst 1A: 192.168.20 1B: 192.168.202 1C: 192.168.20 1D: 192.168.20 1E: 192.168.202 1F: 192.168.202
Netmask	Default at install: 255.255.255.0	locally administered	locally administered	Default at inst 255.255.255.0
Boot Protocol	none	none	none	none
Start on Boot	yes	yes	yes	yes

Both the Maintenance and the File Transfer Interfaces use channel bonding to provide IP link redundancy and failover.

For bonded interfaces such as the File Transfer and Maintenance Interfaces, when taking down individual physical interfaces enslaved to the bond with the `ifdown` or `ifconfig down` commands (e.g. `ifdown eth12`), perform the following steps to bring the bonds back up correctly:

1. `ifup` or `ifconfig up` on the bonded interface (e.g. `ifup bond0`).
2. `ifup` or `ifconfig up` on the VLAN-tagged bonded interface (e.g. `ifup bond0.200`).

The bonded interface should then be up and working correctly again.

Cisco switches (with 2-layer routing schemes) are used to connect with the external networks. On a T1100 frame, a pair of Cisco switches serves an ECAP system consisting of a maximum of 6 ECAP servers with designation ranging from 1A to 1F. An OOBM interface is used for the initial setup and configuration for T1100 servers.

ECAP Network Interfaces on the T1200 Server

Each T1200 ECAP server requires three operational network interfaces:

- The Data Collection Interface is the incoming MSU data network interface. The interface connects an ECAP server to the EAGLE 5 ISS SLAN card via direct IP connection. Each ECAP server interfaces with one and only one SLAN card.
- The File Transfer Interface is used to transfer data files from the ECAP server to the Aggregator. This is a secure interface that transfers files via SCP.
- The Maintenance Interface allows the monitoring of alarms on a remote NMS. This interface supports secure remote login via SSH.

All interfaces are standard 100Mbps IP connections. While each ECAP server connects to only one Aggregator, the Aggregator may receive measurements data from multiple ECAP servers associated with a single EAGLE 5 ISS. *Figure 6: T1200 Network Configuration* provides an example network configuration.

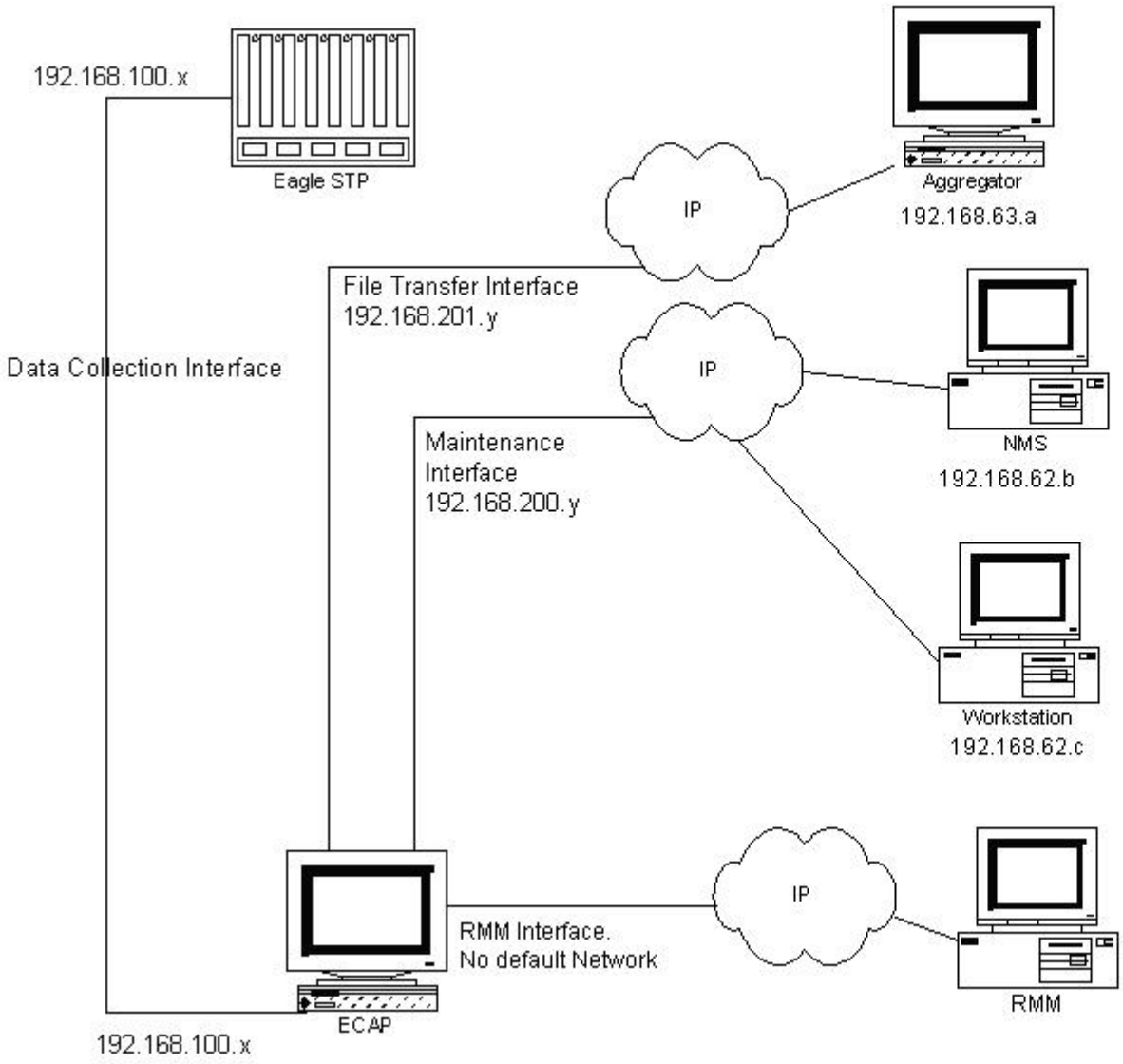

Figure 6: T1200 Network Configuration

ECAP network configuration is managed by `ecapcfg`. See *Table 7: ECAP Network Parameters on a T1200 Server* for a list of recommended interface settings.

Procedure

1. Log in to the ECAP server as the `ecapadm` user.
2. Use the `ecapcfg` command to open the ECAP Configuration Menu.
3. Select **5** from the ECAP Configuration Menu and press **Enter** to perform the Network Configuration.

```
Network Configuration
=====================
Server Type     : T1200
Designation     : 1C
```

```
Hostname        : ECAP3

Platform Version: TPD-release-3.0.3-3.3.2_63.5.0.noarch
Software Version: TKLCaccmeas-X.0.0-0.X.i686

Subnet and Netmask for MTC and AGG Network and the Default Route Network must be
 consistent across all ECAP servers.

Press Enter to use the existing value.

Maintenance Network Subnet [192.168.200.0] :
Maintenance Network Netmask [255.255.255.0]:
Aggregator Network Subnet [192.168.201.0] :
Aggregator Network Netmask [255.255.255.0]:
Do you want to have Default Router in Maintenance Network [Recommended] (y or n)
 ? [Y] :y
SLAN Interface IP address [192.168.100.6] :
SLAN Interface Netmask [255.255.255.0]:

Default Router exist in Maintenance Network.

Do you wish to continue with the above specified network configuration ? (y or
n)y
```

Note: The values shown in the example within the square brackets are current values (it will be the default if the given parameter has never been modified). For each parameter, the you can choose to either use the value shown in the square bracket or specify a new value. For network parameter information, see *Table 7: ECAP Network Parameters on a T1200 Server*.

4. Press **y** and press **Enter**.

```
Configuring the network......
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl setIntf bond0.200 192.168.200.6
255.255.255.0
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl setIntf bond0.201 192.168.201.6
255.255.255.0
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl delDefRout bond0.201
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl repDefRout 192.168.200.3 bond0.200
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl lockIntf eth02 100 off full
Executing : /usr/TKLC/ecap/bin/ecapPlat.pl setIntf eth02 192.168.100.6
255.255.255.0.

Network Successfully Configured.
Press Enter to return to the Menu
```

5. Press **Enter** to return to the ECAP Configuration menu.

Table 7: ECAP Network Parameters on a T1200 Server

Parameter	Data Collection Interface	File Transfer Interface	Maintenance Interface	Sync Interface
Device	eth02	bond0.201 **Note:** Device bond0.201 is a VLAN-tagged device of bond0.	bond0.200 **Note:** Device bond0.200 is a VLAN-tagged device of bond0.	bond0.202 **Note:** Device bond0.202 is a VLAN-tagged device of bond0.

Parameter	Data Collection Interface	File Transfer Interface	Maintenance Interface	Sync Interface
		Devices eth01 and eth03 are enslaved to bond0.	Devices eth01 and eth03 are enslaved to bond0.	Devices eth01 and eth03 are enslaved to bond0.
IP Address	Default at install: 1A: 192.168.100.1 1B: 192.168.100.2 ... 1F: 192.168.100.6 ... 1L: 192.168.100.12 ... 1R.192.168.100.18	Default at install: 1A: 192.168.201.1 1B: 192.168.201.2 ... 1F: 192.168.201.6 ... 1L: 192.168.201.12 ... 1R.192.168.201.18	Default at install: 1A: 192.168.200.1 1B: 192.168.200.2 ... 1F: 192.168.200.6 ... 1L: 192.168.200.12 ... 1R.192.168.200.18	Default at install: 1A: 169.254.1.1 1B: 169.254.1.2 ... 1F: 169.254.1.6 ... 1L: 169.254.1.12 ... 1R.169.254.1.18
Netmask	Default at install: 255.255.255.0	Default at install: 255.255.255.0	Default at install: 255.255.255.0	Default at install: 255.255.255.0
Boot Protocol	none	none	none	none
Start on Boot	yes	yes	yes	yes

For bonded interfaces such as the File Transfer and Maintenance Interfaces, when taking down individual physical interfaces enslaved to the bond with the `ifdown` or `ifconfig down` commands (e.g. `ifdown eth12`), perform the following steps to bring the bonds back up correctly:

1. `ifup` or `ifconfig up` on the bonded interface (e.g. `ifup bond0`).
2. `ifup` or `ifconfig up` on the VLAN-tagged bonded interface (e.g. `ifup bond0.200`).

The bonded interface should then be up and working correctly again.

For T1200 Servers, Telco switches are used to connect with the external networks (with 3-layer routing schemes). On a T1200 frame, four Telco switches serve an ECAP system consisting of a maximum of 18 ECAP servers with designations ranging from 1A to 1R. An RMM Interface is used for the initial setup and configuration for T1200 servers.

Configuring File Transfer

In addition to the listed network configuration tasks, the File Transfer Interface must be configured to automatically push data files from the ECAP server to the Aggregator. In normal operating conditions, the ECAP server pushes data files to the Aggregator every 30 minutes.

To configure the File Transfer Interface to perform this function, run the `ssh-keygen` command from each ECAP server to generate the ECAP server's RSA public key. This public key must then be placed on the Aggregator.

1. Log into the the ECAP server as `ecapadm` user.
2. Generate the RSA Public key using the `ssh-keygen` command.

   Output from `ssh-keygen` appears:

```
[ecap1] # ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key ("your_local_home"/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in id_rsa.
Your public key has been saved in id_rsa.pub.
The key fingerprint is:
17:5a:e7:77:ad:2c:0b:8e:f3:97:f8:20:53:79:69:55 ecapadm@ecap1
```

Caution: DO NOT enter a passphrase when prompted. Just press **Enter**.

After generating the public key, place the contents of the `id_rsa.pub` key file on the Aggregator in the <agg_userId> home directory in order to gain file transfer access to the AggregatorFTP directory. Use *Adding the RSA Public Key to a Linux/UNIX Aggregator* or *Adding the RSA Public Key to a Windows Aggregator* depending on the OS of the Aggregator.

Note: The <*agg_userId*> represents the user name that is used to log into the Aggregator when transferring data file. This information is configured in the **File Mover Configuration Menu** within `ecapcfg` for the Primary Aggregator (and optionally on the Backup Aggregator). See *Configuring the Primary Aggregator* or *Configuring the Backup Aggregator* for more information.

Adding the RSA Public Key to a Linux/UNIX Aggregator

After generating the public key, the `id_rsa.pub` key file must then be placed on the Aggregator in the <agg_userId> directory in order to gain file transfer access to the Aggregator FTP directory.

Note:

- The **<agg_userId>** represents the user name that is used to log into the Aggregator when transferring data file.
- The **<homeDir>** represents the home directory of the <agg_userId> on the Aggregator.

This information is configured in the *File Mover Configuration Menu* within `ecapcfg` for the Primary Aggregator (and optionally on the Backup Aggregator). See *Configuring the Primary Aggregator* or *Configuring the Backup Aggregator* for more information:

Note:

- If both a Primary and Backup Aggregator are configured using the `ecapcfg`, you *MUST* repeat *Adding the RSA Public Key to a Linux/UNIX Aggregator* for each Aggregator configured.
- When following these steps for a Backup Aggregator, you must substitute *bak1_aggregator* for all instances of the word *aggregator* in the given commands.

Procedure

1. Copy the `id_rsa.pub` file to the home directory on the Aggregator.

   ```
   [ecap1] # scp ~/.ssh/id_rsa.pub
   <agg_userId>@aggregator:<homeDir>/ecap_id_rsa.pub
   ```

   ```
   <agg_userId>@aggregator's password:
   id_rsa.pub 100%  604     0.5KB/s   --:-- ETA
   ```

2. Copy the `ssh` to the Aggregator to put the key file in the correct place.

   ```
   [ecap1] # ssh <agg_userId>@aggregator
   ```

   ```
   <agg_userId>@aggregator's password:
   ```

3. If the <agg_userId> does not have an `.ssh` directory under the home directory (<homeDir>), it must be created and permissions set to 700. The contents of the ECAP's public key file must then be appended to the `authorized_keys` file in the `.ssh` directory, and the file's permissions set to 644.

   ```
   [aggregator] # mkdir -p ~/.ssh
   [aggregator] # chmod 700 .ssh
   [aggregator] # cat ecap_id_rsa.pub >> .ssh/authorized_keys
   [aggregator] # chmod 644.ssh/authorized_keys
   [aggregator] # exit
   ```

4. Test the performed steps using the `ssh` command:

   ```
   [ecap1] # ssh <agg_userId>@aggregator
   ```

5. To configure the File Transfer Interface on the ECAP for an Aggregator that uses a virtual IP address (IP cluster node), these additional steps must be performed at the ECAP.
   a) Repeat *Step 1* through *Step 3* for each member of the cluster that shares the virtual IP address.
   b) Test the File Transfer Interface as described in *Step 4* for each member of the cluster.

      Note: Do NOT use the virtual IP address of the cluster. Use the IP address of each member's physical network device.

   c) Edit the `/var/TKLC/ecap/ecapadm/.ssh/known_hosts` file. This file will have one server SSH keys defined per line, in the format `<ip address> ssh-rsa <ssh key>`. Find the IP addresses for each member of the IP node cluster, and replace the server's physical IP address with the cluster's virtual IP address.
   d) Test the File Transfer Interface as described in *Step 4* for each member of the cluster using the virtual IP address.

If the steps were performed correctly, you will be logged on to the Aggregator and will not be prompted for a password. The command line prompt will correspond to the display on the Aggregator.

The Integrated Accounting Feed application will be able to transfer data files to the Aggregator once the application has been configured via `ecapcfg` (see *Configuring the Integrated Accounting Feed Application*).

In the case of any failures, the configuration of one or more ECAP network interfaces may need to be modified through the `ecapcfg`. For more information, see *Configuring ECAP Network Interfaces*.

Adding the RSA Public Key to a Windows Aggregator

After generating the public key, the `id_rsa.pub` key file must then be placed on the Aggregator in order to gain file transfer access to the Aggregator FTP directory.

Procedure

1. Copy the ECAP's `id_rsa.pub` file to the Aggregator.
2. Append the contents of the id_rsa.pub file to the appropriate authorized keys file used on the Aggregator, which is usually `authorized_keys` or `authorized_keys2`.

   Note: Refer to your *SSH User's Manual* for the appropriate way to do this.

Configuring NTP

Synchronize each ECAP server's local time with the Aggregator via NTP. This allows the entire ECAP/Aggregator network to have synchronized time.

Use the following procedure to configure NTP using `platcfg`.

Procedure

1. Log in to the ECAP server as the `platcfg` user.
2. Select **Network Configuration** from the Platform Configuration Utility Main Menu and press **Enter**.
3. Select **NTP** from the Network Configuration Menu and press **Enter**.
4. Select **Edit.**
5. Edit the IP addresses as desired and click **OK**.

   Note: NTP will be functional on the server when only one server is defined; however, providing more than one server will make the protocol more reliable.

6. Verify that the edit was successful by double-checking the entered values.
7. Click **Exit** to return to the Network Configuration menu.
8. Save and **Exit** the menu.

Configuring NMS

ECAP servers generate SNMP traps to capture platform alarms. The MIBs required for platform traps are pre-existing, the snmpAgent used for platform alarms is activated during ECAP installation, and most of the hardware checks that would result in traps are defaulted to enabled. However, the Integrated Accounting Feed application also requires enabling the following:

- Breaker Panel/Power System traps on servers 1A and 1B (applicable on T1100 servers only).
- Platform process traps if more or less than one instance of MeasServer, TimeServer, sentryd, or Logd are found.
- Network ping traps if the Data Collection, File Transfer, Sync, RMM, or Maintenance Interfaces (see *ECAP Network Interfaces on the T1100 Server* and *ECAP Network Interfaces on the T1200 Server*) are down.
- IP Bonding traps if the File Transfer or Maintenance Interfaces (see *ECAP Network Interfaces on the T1100 Server* and *ECAP Network Interfaces on the T1200 Server*) are down.
- Disk capacity usage alarms if the ECAP storage volume usage exceeds 80% or 90% of total capacity.

These traps are enabled by configuring the NMS IP address for the location where the traps will be destined.

NMS configuration tasks involve configuring both the actual system used to monitor alarms and configuring the ECAP server to send alarms to the NMS.

Configuring the NMS used to monitor alarms involves customer-specific tasks. At a minimum, these parameters must be configured:

- Port Number - 162 or as configured on the NMS server
- Community String - Public or any other designated string for the NMS server

Refer to the documentation for your system for information on configuring these parameters.

Use the following procedure to configure the ECAP server to send alarms to the NMS.

Procedure

1. Log in to the ECAP server as the `platcfg` user .
2. Select **Network Configuration** from the Platform Configuration Utility Main Menu and press **Enter**.
3. Select **SNMP Configuration** from the Network Configuration Menu and press **Enter**.
4. Select **NMS Configuration** from the SNMP Configuration Menu and press **Enter**.
5. Select **Edit**.
6. Select a task from the NMS Server Action menu.

   You can add, edit, or delete an NMS Server.

   Note: The SNMP Community String and Port Number values must match the values configured on the NMS.

7. Save and **Exit** the menu.

Configuring the Integrated Accounting Feed Application

The Integrated Accounting Feed application automatically creates the **ecapadm** and **ecapuser** accounts. The **ecapadm** user can control or configure the Integrated Accounting Feed application and run the `savelogs` command (see *Savelogs*). The **ecapadm** user is part of the ecap group.

The **ecapuser** account is a limited account that can NOT control or configure the Integrated Accounting Feed application. However, this user may run `savelogs`. The **ecapuser** user is part of the ecap group.

The Integrated Accounting Feed application is configured via the `ecapcfg` command. Entering this command opens the Integration Accounting Feed Configuration Menu.

The Configuration Menu provides options that describe the EAGLE 5 ISS and Aggregator configuration values. A graphical representation of the menu layout is provided in *Figure 7: Integrated Accounting Feed Configuration Menu*.

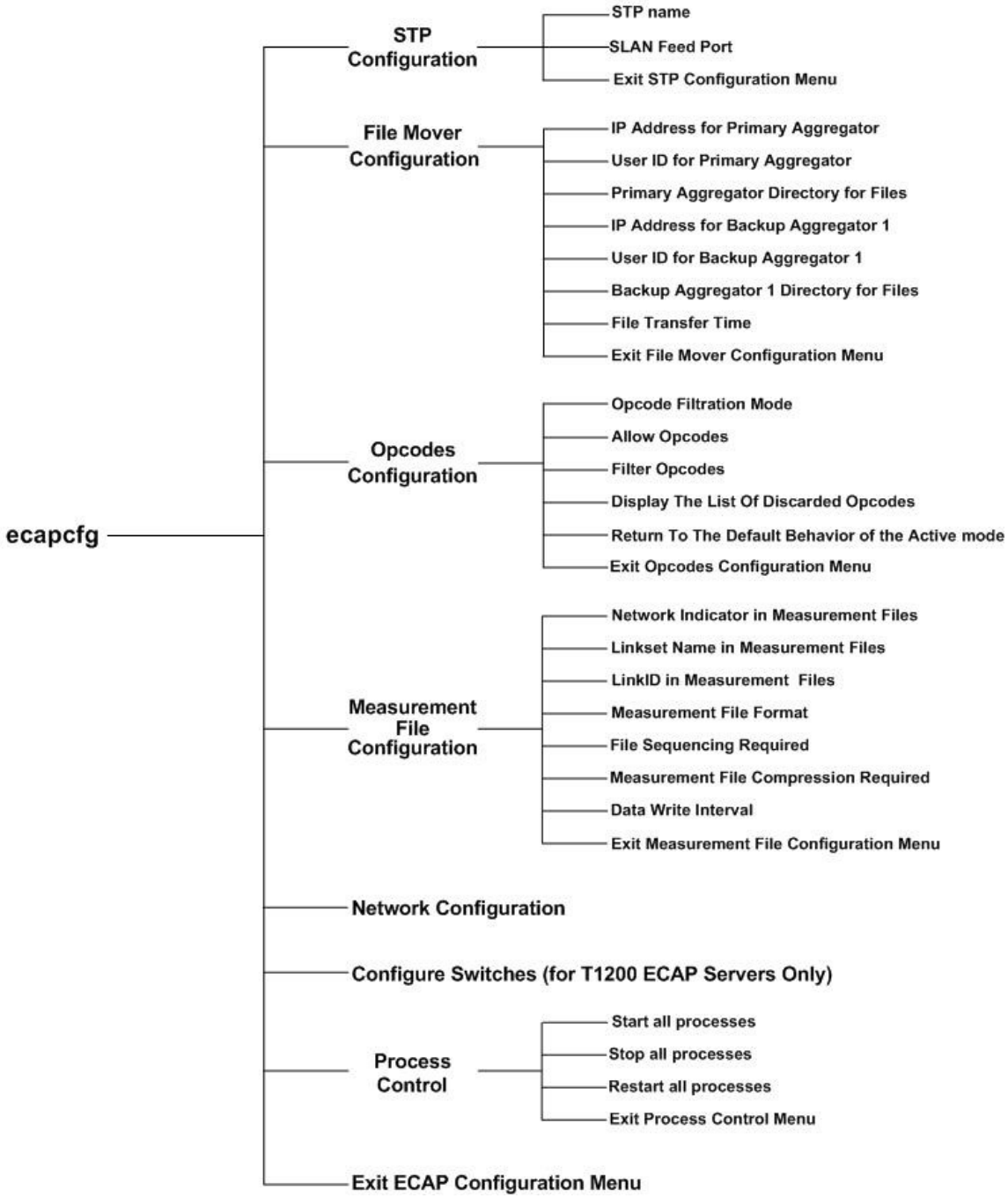

Figure 7: Integrated Accounting Feed Configuration Menu

The menu options and their functions are provided in *Table 8: Configuration Menu Options*.

Table 8: Configuration Menu Options

Menu Option	Description	Range of Values
STP Configuration	Displays a set of options that enable the operational parameters associated with the EAGLE 5 ISS MSU feed to be set or changed.	[1..2, E] Unlike the parameters in all other menu options, the STP Configuration parameters are not immediately saved when the user inputs a value. For these parameter changes to take effect, ECAP processes must be restarted. **Note:** If any of these STP Configuration parameters are modified, then the ECAP processes must be restarted. Upon exiting `ecapcfg` after modifying any of these STP Configuration parameters, you are prompted to save the values and restart the ECAP processes. Also, if you start or restart the ECAP processes before exiting `ecapcfg`, then theses values are automatically saved .
1. STP name (Value change requires ECAP restart)	Sets the STP name that is used in the filename of the data file transferred to the Aggregator. Typically, the STP name reflects the STP CLLI from which the ECAP is receiving MSUs.	The value has a 12-character limit. The STP name should not contain any white space or / characters. The STP name will reflect the STP CLLI from which the ECAP is receiving MSUs.
2. SLAN Feed Port	Sets the port number that the application monitors for the EAGLE 5 ISS MSU feed. The value entered	[1024..5000]

Menu Option	Description	Range of Values
(Value Change requires ECAP restart)	must match the "ipport" parameter in the `ent-ip-node` EAGLE 5 ISS configuration command (see *Configuring SLAN Cards*).	
File Mover Configuration	Displays a set of options that enable the parameters associated with the remote Aggregator configuration to be set or changed.	[1..7, E]
1. IP Address for Primary Aggregator	Sets the IP address for the Primary Aggregator. **Note:** It is recommended that this value be set to a valid IP address the first time `ecapcfg` is run. If not, an error message will be printed when attempting to start the ECAP processes and FileMover will not function properly.	The value must be a decimal-separated 4-octet value, with each octet in the 0-255 range.
2. User ID for Primary Aggregator	Sets the user name that is used to log in to the Primary Aggregator when transferring data files. **Note:** The user password is not required for file transfer if the *Configuring File Transfer* procedure is performed.	No restrictions.
3. Primary Aggregator Directory for Files	Sets the path to the directory in which the data files will be stored on the remote Primary Aggregator.	No restrictions.
4. IP Address for Backup Aggregator 1	Sets the IP address for Backup Aggregator 1. **Note:** This value cannot be set until the Primary Aggregator IP Address value is set.	The value must be a decimal-separated 4-octet value, with each octet in the 0-255 range. **Note:** The IP address for the Backup Aggregator cannot be the same as the IP address for the Primary Aggregator.
5. User ID for Backup Aggregator 1	Sets the user name that is used to log in to Backup Aggregator 1 when transferring data files. **Note:** The user password is not required for file transfer if the *Configuring File Transfer* procedure is performed. **Note:** This value cannot be set until the Primary AggregatorIP Address value is set.	No restrictions.
6. Backup Aggregator 1 Directory for Files	Sets the path to the directory in which the data files will be stored on remote Backup Aggregator 1.	No restrictions.

Menu Option	Description	Range of Values
	Note: This value cannot be set until the Primary AggregatorIP Address value is set.	
7. File Transfer Time	Sets the number of minutes after the half hour to send data files to the Aggregator (1 - xx:01 and xx:31, 2 - xx:02 and xx:32, etc.) This parameter allows you to stagger the transfer time of the various ECAP servers sending data files to the Aggregator.	[1..29] The default, value for this field is 5.
Opcodes Configuration	Displays a set of options that allows control over the set of opcodes that are included in the data files.	[1..5, E]
1. Opcode Filtration Mode	Sets the Opcode Filtration mode for the ECAP server by specifying the manner in which Opcodes are filtered. (Start with all Opcodes being counted or no Opcodes being counted).	[1 for AllowAll, 2 for DiscardAll] AllowAll is the default mode for the ECAP. **Note:** The default behavior for each mode is: • AllowAll - All MSU packets will be counted by the ECAP. • DiscardAll - All MSU packets will be discarded by the ECAP.
2. Allow Opcodes	Sets the Opcodes which are counted by the ECAP. In DiscardAll mode, the specified Opcode will be added to the list of allowed Opcodes. In AllowAll mode, the specified Opcodes will be removed from the list of discarded Opcodes. **Note:** This command is additive, meaning that the Opcodes specified will be added to the current allowed Opcode list for DiscardAll mode.	[Opcode Values] **Note:** There is a maximum of ten (10) space delimited opcode values per invocation of this menu option. An opcode must be an integer between 0 and 255. '\' serves as a line continuation character.
3. Filter Opcodes	Sets the Opcodes which will be discarded by ECAP. In AllowAll mode, the specified Opcodes will be added to the list of discarded Opcodes. In DiscardAll mode the specified Opcodes will be removed from the list of allowed Opcodes.	[Opcode Values] **Note:** There is a maximum of ten (10) space delimited opcode values per invocation of this menu option. An

Menu Option	Description	Range of Values
	Note: This command is additive, meaning that the Opcodes specified will be added to the current discarded Opcode list for AllowAll mode.	opcode must be an integer between 0 and 255. '\' serves as a line continuation character.
4. Display the List of Discarded Opcodes	Displays a list containing all discarded or allowed Opcodes specified for the active mode.	
5. Return to the Default Behavior of the Active [AllowAll/DiscardAll] Mode	Clears the list of all the discarded or allowed Opcodes. This returns the active opcode filtration mode to the default behavior.	
Measurement File Configuration	Displays a set of optional parameters that can be configured.	[1..7, E]
1. Network Indicator in Measurement Files	If set to Y, the Network Indicator information will be placed in the measurement data file. By default, this field will be set to N (disabled).	[Y, y, N, n]
2. Linkset Name in Measurement Files	If set to Y, the Incoming and Outgoing Link Set Names will be placed in the output XML file. By default this field will be set to N (disabled). **Note:** Parameters LinkID and Linkset Name are effective only when `slanlsn=on` on EAGLE 5 ISS. If `slanlsn=off`, LinkID is captured in measurement files but Linkset Name is not.	[Y, y, N, n] **Note:** Either the "Linkset Name in Measurement Files" or the "LinkID in Measurement Files" option must be enabled.
3. LinkID in Measurement Files	If set to Y, then the linkId will be placed in the output file. By default, this field will be set to Y (enabled). **Note:** Parameters LinkID and Linkset Name are effective only when `slanlsn=on` on EAGLE 5 ISS. If `slanlsn=off`, LinkID is captured in measurement files but Linkset Name is not.	[Y, y, N, n] **Note:** Either the "Link Set Name Included in Measurement File" or the "LinkId Included in Measurement File" option must be enabled.
4. Measurement File Format	Sets the output format for the measurement files. The file format can be XML or CSV. By default, this field will be set to XML	[XML, xml, CSV, csv]
5. File Sequencing Required	If set to Y, a 4-digit sequence number will be added to the output measurement data filename. By default, this field will be set to N (disabled).	[Y, y, N, n,]

Menu Option	Description	Range of Values
6. Measurement File Compression Required	If set to Y, the output measurement data files are compressed before they are transferred to the Aggregator. By default, this field will be set to N (disabled).	[Y, y, N, n]
7. Data Write Interval (Minutes)	Sets the interval, in minutes, at which the Integrated Accounting Feed application generates the data file. This file is stored on the ECAP server and is periodically transferred to the Aggregator. **Note:** For information on changing the Data Write Interval, see *Changing Data Write Intervals*.	[1,5,10,15] By default, this field is set to 5.
Network Configuration	Configures network interfaces on the ECAP server. Inputs must be specified as shown in *Configuring ECAP Network Interfaces*.	
Configure Switches **Note:** This option is only available for T1200 servers.	Configures the Telco Switches associated with a T1200 ECAP system.	IP address values for the external interfaces
Process Control	Displays a set of options that enable the application processes to be started and stopped.	[1..3, E]
1. Start all processes	If action is confirmed, this option starts all application processes that are not currently running.	[Y, y, N, n]
2. Stop all processes	If action is confirmed, this option stops all running application processes.	[Y, y, N, n]
3. Restart all processes	If action is confirmed, this option stops all running application processes, and then restarts all processes.	[Y, y, N, n]

When changes to the STP configuration parameters are saved, all the ECAP processes will be restarted. For more information on Data Write Interval, see *Changing Data Write Intervals*.

All other configurable parameters can be modified at run time such that the ECAP processes are not restarted. Any modification to these parameters via `ecapcfg` is automatically saved for future application usage.

Changing Data Write Intervals

A Data Write Interval (DWI) is a time interval measured in minutes at which the ECAP server generates a measurements peg count file. A DWI will always end on a time boundary that is divisible by the DWI value. For example, if the DWI is set for five (5) minutes, then measurement files will always be written on 5-minute boundaries such as 5:20, 5:25, 5:30, etc. A file would not be written on a boundary that is not divisible by 5, such as 5:22.

A measurement period is 30 minutes, the following DWI values result in the indicated number of files :

- DWI=1 results in 30 files in a measurement period
- DWI=5 results in 6 files in a measurement period
- DWI=10 results in 3 files in a measurement period
- DWI=15 results in 2 files in a measurement period

When a DWI is modified, the current interval completes and the measurement file is written. The next interval will begin with the new DWI value. The first interval with the new DWI value will end at the next divisible boundary. Depending on whether the DWI value is increased or decreased, the first interval can be shortened.

DWI is Increased

When a DWI is increased, the first interval with the new DWI can be shortened. From then on, full intervals will occur.

For example, if the current DWI value is set at 1-minute intervals, measurement files are written at every 1-minute boundary (7:19, 7:20, 7:21, etc). At 7:21:32, the DWI value is changed from 1 to 5. The current 1-minute interval completes and a measurement file is written at 7:22:00. This covers the time period between 7:21:01 - 7:22:00.

The next interval with the new DWI value of 5 begins at 7:22:01. This interval will end at the next boundary divisible by five, which is 7:25:00. At 7:25:00, a measurement file is written to cover the time period between 7:22:01 and 7:25:00. This is a shortened 3-minute interval. From then on, measurement files will be written at normal 5-minute intervals (7:30, 7:35, 7:40, etc).

DWI is Decreased

When a DWI is decreased, the current interval completes and the measurement file is written. This can be a shortened interval. From then on, full intervals will occur with the new DWI value.

For example, if the current DWI value is set for 15-minute intervals, measurement files are written at every 15- minute boundary (3:00, 3:15, 3:30, etc). At 3:37:08, the DWI value is changed from 15 to 10. The current 15-minute interval completes and a measurement file is written at 3:45:00. This covers the time period between 3:30:01 - 3:45:00.

The next interval with the new DWI value of 10 begins at 3:45:01. This interval will end at the next boundary divisible by ten, which is 3:50:00. At 3:50:00, a measurement file is written to cover the time period between 3:45:01 and 3:50:00. This is a shortened 5-minute interval. From then on, measurement files will be written at normal 10-minute intervals (4:00, 4:10, 4:20, etc).

DWI Limitation

If the DWI is modified so that the first interval with the new value is a shortened interval (as shown in *DWI is Increased* and *DWI is Decreased*) and if the processes are then restarted before this first interval is complete, then the start time of this shortened interval will be incorrect in the measurement file. It will appear as a full interval. ECAP processes are restarted if any parameter under the STP Configuration menu is modified. They can also be restarted using the option under the Process Control menu.

Configuring SLAN Cards

Configuring the SLAN Cards to Interface with an ECAP Server

The EAGLE 5 ISS SLAN card must be configured to interface with an ECAP server via the Data Collection Interface.

Use the `ent-dlk` and `ent-ip-node` commands to establish the links for the SLAN cards. See *Table 9: SLAN Card Parameters* for a list of these commands and their parameters as they apply to the Integrated Application Feed application. Refer to the *Commands Manual* for a complete description of how to use these commands to configure SLAN cards for the EAGLE 5 ISS.

Table 9: SLAN Card Parameters

Command	Parameters	Description
`ent-dlk`	:loc=*xxxx*	Location of the SLAN card.
	:ipaddr=[IP address of the SLAN card] **Note:** The IP addresses given to the right are the default addresses for the ECAP servers and the recommended addresses for the SLAN cards. These locations can be changed; however, the SLAN cards must be located within the same subnet as the associated ECAP server.	Locally allocated static IP address of the SLAN card. The guideline for allocating the particular IP address is: ECAP IP 192.168.100.1(Server 1A) to SLAN IP 192.168.100.101 ECAP IP 192.168.100.2 (Server 1B) to SLAN IP 192.168.100.102 ... ECAP IP 192.168.100.6 (Server 1F) to SLAN IP 192.168.100.106 ... ECAP IP 192.168.100.12 (Server 1L) to SLAN IP 192.168.100.112 ... ECAP IP 192.168.100.18 (Server 1R) to SLAN IP 192.168.100.118 **Note:** For T1100 there is a maximum of 6 ECAP servers per frame, only ECAP servers 1A through 1F are applicable.
	:speed=100	Sets the port speed to 100Mbps.
`ent-ip-node`	:loc=*xxxx*	Location of the SLAN card.
	:ipaddr=192.168.100.z	address of the ECAP Data Collection Interface.
	:ipappl=stplan	Sets the application that will be using the interface.
	:cap=xxx	Maximum percentage of Ethernet capacity allocated to this connection. For SSEDCM SLAN cards communicating with ECAP server, cap=100.

Command	Parameters	Description
		For E5-ENET SLAN cards communicating with ECAP server, use these peak performance ratings in the capacity formula to calculate the correct cap parameter value: • T1100 ECAP server: 6000 MSU/sec • T1200 ECAP server: 12,000 MSU/sec **Note:** For more information on the capacity formula used to calculate the correct parameter value, refer to the *Database Administration - Features Manual* or the *Commands Manual*.
	:ipport=[1024..5000]	Port through which EAGLE 5 ISS and ECAP communicate. The value entered must match the "SLAN feed port" parameter used during the the ECAP configuration process. (See *Table 8: Configuration Menu Options*).

Configuring the Copy Original OPC for the STPLAN Option

The EAGLE 5 ISS SLAN card must be configured to copy the original OPC from the incoming MSUs of only SCCP routed messages to the STPLAN application using the `chg-ss7opts` command with the `SLANCPORGOPC` parameter. The `SLANCPORGOPC` parameter has two values:

- on - After the MSU has been processed by other applications, but before the MSU is copied for the STPLAN application, the OPC of the MSU is replaced by the point code that was the OPC of the MSU when the MSU entered the EAGLE 5 ISS.
- off - The OPC of the MSU is not replaced by the point code that was the OPC of the MSU when the MSU entered the EAGLE 5 ISS.

This is an example of the possible output for the `rtrv-ss7opts` command when the SLANCPORGOPC parameter is provisioned.

Refer to the *Database Administration - Features Manual* and the *Commands Manual* for a complete discussion of these commands.

Configuring the SLAN Card to Allow the Incoming and Outgoing Linkset Names

The EAGLE 5 ISS SLAN card must be configured to allow the incoming and outgoing linkset names to be included in the STPLAN message format using the `chg-ss7opts` command with the `SLANLSN` parameter. The `SLANLSN` parameter has two values:

- `on` – The incoming and outgoing linkset names are copied into the STPLAN message format.
- `off` – The incoming and outgoing linkset names are not copied into the STPLAN message format.

Refer to the *Database Administration - Features Manual* and the *Commands Manual* for a complete description of these commands.

Configuring Gateway Screening

Gateway Screeningcompares an MSU attempting to enter the EAGLE 5 ISS to provisioned criteria in the EAGLE 5 ISS database to determine whether the MSU should be processed.

Refer to the *Database Administration Manual – Gateway Screening* for information on configuring the Gateway Screening feature and screening criteria.

The stop action copy must be configured in a screen set for the Integrated Accounting Feed application. This set is used to copy the MSU for the STP LAN feature.

Note: The gateway screening stop action set can only have one copy stop action.

Chapter 4

Maintenance

Topics:

This chapter contains information and instructions used to maintain proper function of the Integrated Accounting Feed application. These maintenance checks include various alarms, disaster recovery plans, log files, and system health checks.

Alarms

The listed alarms are associated with the Integrated Accounting Feed application:

- The ECAP server raises alarms and provides SNMP traps that are monitored via a customer NMS.
- Connectivity problems between the EAGLE® 5 ISS and ECAP server are raised as UAMs on the EAGLE 5 ISS.
- Conditions associated with the Integrated Accounting Feed application may impact operation and may have associated alarms.

Platform Alarms

All standard alarming and monitoring services for the platform running the Integrated Accounting Feed application are provided. Additional alarming services include breaker panel alarms, ECAP process alarms, and alarms on the File Transfer and Maintenance Interfaces.

These alarms are monitored by an NMS which receives SNMP traps. In order for the NMS to monitor the SNMP traps, the Maintenance Interface must be configured per *Configuring ECAP Network Interfaces*, and the ECAP server must be configured to send alarms to the NMS per *Configuring NMS*. The customer is responsible for providing the network connectivity between the ECAP Maintenance Interface and the NMS as identified in *Figure 5: T1100 Network Configuration* and *Figure 6: T1200 Network Configuration* .

Table 10: Critical Platform Alarms, *Table 11: Major Platform Alarms*, and *Table 12: Minor Platform Alarms* list the platform alarms for the Integrated Accounting Feed application.

Use the following procedure to obtain additional information on the alarms raised.

Procedure

1. Log in to the ECAP server as the `platcfg` user.
2. Select **Diagnostics** from the Platform Configuration Utility Main Menu and press **Enter**.
3. Select **Online Diagnostics** from the Network Diagnostics Menu and press **Enter**.
4. Select **Verbose** from the Online Diagnostics menu and press **Enter**.
5. An output report, containing debug information for each individual test performed on the server, is displayed.
6. Select **Exit** to return to the Online Diagnostics menu.

Platform Alarm Tables

Table 10: Critical Platform Alarms, *Table 11: Major Platform Alarms*, and *Table 12: Minor Platform Alarms* list the platform alarms by severity. Notice that the alarm number starts with a 1, 3 or 5 depending on severity.

Critical Alarms

Table 10: Critical Platform Alarms

Alarm Number	Alarm Title	Alarm Description
1000000000000001	Breaker Panel Feed Unavailable	Generated by syscheck
1000000000000002	Breaker Panel Breaker Failure	Generated by syscheck
1000000000000004	Breaker Panel Monitoring Failure	Generated by syscheck
1000000000000008	Power Feed Unavailable	Generated by syscheck
1000000000000010	Power Supply 1 Failure	Generated by syscheck
1000000000000020	Power Supply 2 Failure	Generated by syscheck
1000000000000040	Power Supply 3 Failure	Generated by syscheck
1000000000002000	Uncorrectable ECC Memory Error	Chipset has detected uncorrectable (multiple-bit) memory error that Error Correcting Code (ECC) circuitry in memory cannot correct.

Major Alarms

Table 11: Major Platform Alarms

Alarm Number	Alarm Title	Alarm Description
3000000000000001	Server Fan Failure	A fan on the system is either failing or has failed completely; in either case, there is a danger of component failure due to overheating.
3000000000000002	Server Internal Disk Error	Server has issues replicating data to one or more mirrored disk drives.
3000000000000004	Server RAID Disk Error	Indicates that the offboard storage server had a problem with its hardware disks.
3000000000000008	Server Platform Error	Platform error such as corrupt system configuration, missing files, or corrupt syscheck.
3000000000000010	Server File System Error	Syscheck could not write to at least one of server's file systems.
3000000000000020	Server Platform Process Error	Either the minimum number of instances for a process is not running or too many instances are running.

3000000000000040	Server RAM Shortage Error	Generated by syscheck
3000000000000080	Server Swap Space Shortage Error	Generated by syscheck
3000000000000100	Server Provisioning Network Error	Connection between server's eth0 interface and the customer network is not functioning properly
3000000000000200	Server Eagle Network A Error	Generated by syscheck
3000000000000400	Server Eagle Network B Error	Generated by syscheck
3000000000000800	Server Sync Network Error	Generated by syscheck
3000000000001000	Server Disk Space Shortage Error	Either a file system has exceeded failure threshold, or more than 90% of total number of available files have been allocated, or file system has different number of blocks than it had at install.
3000000000002000	Server Default Route Network Error	Server's default network route has a problem.
3000000000004000	Server Temperature Error	Server's internal temperature is too high.
3000000000008000	Server Mainboard Voltage Error	One or more of monitored voltages on mainboard is out of normal operating range.
3000000000010000	Server Power Feed Error	One of the power feeds to the server has failed.
3000000000020000	Server Disk Health Test Error	Hard drive has either failed or is going to.
3000000000040000	Server Disk Unavailable Error	The smartd service is not able to read the disk status because the disk has other problems reported by other alarms. This alarm occurs only while a server is booting.
3000000000080000	Device Error	The offboard storage server had a problem with its disk volume filling up.
3000000000100000	Device Interface Error	IP bond is not configured or is down.
3000000000200000	Correctable ECC Memory Error	Chipset has detected a correctable (single-bit) memory error that has been corrected by ECC circuitry in the memory.

3000000000400000	Power Supply A Error	Power supply 1 (feed A) has failed.
3000000000800000	Power Supply B Error	Power supply 2 (feed B) has failed.
3000000001000000	Breaker Panel Feed Error	Server is not receiving information from breaker panel relays.
3000000002000000	Breaker Panel Breaker Error	Power fault has been identified by breaker panel.
3000000004000000	Breaker Panel Monitoring Error	Failure in the hardware or software that monitors the breaker.
3000000008000000	Server HA Keepalive Error	Heartbeat process has detected that it has failed to receive a heartbeat packet within the timeout period. (HA is High Availability.)
3000000010000000	DRBD is unavailable	DRBD is not functioning properly on the local server. The DRBD state (disk state, node state, and/or connection state) indicates a problem.
3000000020000000	DRBD is not replicating	DRBD is not replicating to the peer server. Usually this indicates that DRBD is not connected to the peer server. It is possible that a DRBD Split Brain has occurred.
3000000040000000	DRBD peer problem	DRBD is not functioning properly on the peer server. DRBD is connected to the peer server, but the DRBD state on the peer server is either unknown or indicates a problem.
3000000080000000	HP disk problem	Issue with either a physical or logical disk in the HP disk subsystem.
3000000100000000	HP Smart Array controller problem	Issue with an HP disk controller.
3000000200000000	HP hpacucliStatus utility problem	Issue with the process that caches the HP disk subsystem status for syscheck. The hpacucliStatus daemon may not be running or is hung.

Minor Alarms

Table 12: Minor Platform Alarms

Alarm Number	Alarm Title	Alarm Description
5000000000000001	Server Disk Space Shortage Warning	File system has exceeded a warning threshold or more than 80% (but less than 90%) of the total number of available files have been allocated on the file system.
5000000000000002	Server Application Process Error	Either the minimum number of instances for a required process are not running or too many instances are running.
5000000000000004	Server Hardware Configuration Error	One or more of the server's hardware components are not in compliance with Tekelec specifications.
5000000000000008	Server RAM Shortage Warning	Generated by syscheck
5000000000000020	Server Swap Space Shortage Warning	Swap space available on the server is less than expected.
5000000000000040	Server Default Router not Defined	Default network route is either not configured or the current configuration contains an invalid IP address or hostname.
5000000000000080	Server Temperature Warning	Internal temperature within the server is outside of the normal operating range.
5000000000000100	Server Core File Detected	An application process has failed and debug information is available.
5000000000000200	Server NTP Daemon Not Synchronized	NTP daemon (background process) has been unable to locate a server to provide an acceptable time reference for synchronization.
5000000000000400	CMOS Battery Voltage Low	CMOS battery voltage has been detected to be below the expected value, usually meaning battery end-of-life failure is coming.
5000000000000800	Server DIsk Self Test Warning	Non-fatal disk issue (such as an unreadable sector) exists.

5000000000001000	Device Warning	Either we cannot perform a SNMP GET on the configured SNMP OID or the value that was returned failed the specified comparison operation.
5000000000002000	Device Interface Warning	Can be generated by an SNMP trap or an IP bond error. If Syscheck is configured to receive SNMP traps, this alarm indicates that an SNMP trap was received with the "set" state. If syscheck is configured for IP bond monitoring, this alarm can mean a slave device is not up, a primary device is not active, or syscheck is unable to read bonding information from interface configuration files.
5000000000004000	Server Reboot Watchdog Initiated	Hardware watchdog was not strobed by the software and so the server rebooted the server.
5000000000008000	Server HA Failover Inhibited	The server has been inhibited and therefore High Availability (HA) failover cannot occur.
5000000000010000	Server HA Active to Standby Transition	The server is transitioning High Availability (HA) state from Alive to Standby.
5000000000020000	Server HA Standby to Active Transition	The server is transitioning High Availability (HA) state from Standby to Active.
5000000000040000	Platform Health Check Failure	Syscheck configuration error
5000000000080000	NTP Offset Check Failure	Time on the server is outside the acceptable range or offset) from the NTP server.
5000000000100000	NTP Stratum Check Failure	NTP is syncing to a server, but the stratum level of the NTP server is outside of the acceptable limit.
5000000000200000	SAS Presence Sensor Missing	T1200 server drive sensor is not working.
5000000000400000	SAS Drive Missing	The number of drives configured for this server is not being detected.
5000000000800000	DRBD failover busy	DRBD sync is in progress from the peer server to the local

		server. The local server is not ready to act as the primary DRBD node, since it's data is not up to date.
5000000001000000	HP disk resync	The HP disk subsystem is currently resynchronizing after a failed/replaced drive, or some other change in the configuration of the HP disk subsystem.

EAGLE 5 ISS Alarms

Connectivity problems that occur on the Data Collection Interface between the EAGLE 5 ISS and ECAP server are raised as UAMs on the EAGLE 5 ISS. See *Table 13: EAGLE 5 ISS UAMs* for a list of these UAMs.

Refer to the *Maintenance Manual* for more information on the EAGLE 5 ISS related alarms.

Table 13: EAGLE 5 ISS UAMs

UAM	Message Text	Resolution
0152	LIM(s) have been denied STPLAN service.	The SLAN subsystem cannot process all of the MSUs from the LIM and SCCP cards. MSUs have been discarded. **Recovery** 1. Use the `rept-stat-slan` command to verify that the EAGLE 5 ISS SLAN subsystem is IS-NR and is sending MSU packets to ECAP. Refer to the *Commands Manual* for information on the `rept-stat-slan` command. 2. Perform a network health check (see *Network Check*). If not successful, configure the network using `ecapcfg` (see *Configuring ECAP Network Interfaces*). 3. Verify MeasServer is running by performing a process check (see *Process Check*). 4. SLAN capacity has been exceeded. Additional SLAN/ECAP pairs may be needed to increase MSU processing capacity.
0153	STPLAN not available	There are no SLAN cards in the IS-NR state. **Recovery** 1. Use the `rept-stat-slan` command to verify that the EAGLE 5 ISS SLAN subsystem is IS-NR and is sending MSU packets to ECAP. Refer to the *Commands Manual* for information on the `rept-stat-slan` command. 2. Perform a network health check (see *Network Check*). If not successful, configure the network using `ecapcfg` (see *Configuring ECAP Network Interfaces*).

UAM	Message Text	Resolution
0155	STPLAN connection unavailable	SLAN link has been canceled or ECAP application MeasServer or TimeServer process terminated. **Recovery** 1. Verify MeasServer and TimeServer are running by performing a process check (see *Process Check*). 2. The physical link between the EAGLE 5 ISS SLAN card and the ECAP server has been disconnected. Perform a network health check (see *Network Check*).

Integrated Accounting Feed Application Alarms

Integrated Accounting Feed Application alarms that can occur during operation are listed in *Table 14: Major Integrated Accounting Feed Application Alarms* and *Table 15: Minor Integrated Accounting Feed Application Alarms*. If these alarms occur, follow the procedures listed in the Resolution column. If the provided corrective procedures do not work, contact the Tekelec Customer Care Center (see *Customer Care Center*).

Note: The alarm is cleared from the active alarms GUI of NMS after the associated problem is resolved on the ECAP server.

Table 14: Major Integrated Accounting Feed Application Alarms

Alarm	Message Text	Resolution
ecapFileTransferTo AggFailed	File Transfer Failure to both Primary and Backup Aggregators	FileMover could not transfer one or more measurement files to any of the configured Aggregators. These files will be available in /usr/TKLC/ecap/meas_files/pending_ftp/ directory. **Recovery** **1.** Verify that both Primary and Backup Aggregators are configured properly (See *Configuring the Primary Aggregator* and *Configuring the Backup Aggregator*). An entry must be present for the configured IP address values in the /etc/hosts database with host names as "aggregator" for Primary Aggregator and "bak1_aggregator" for Backup Aggregator. If not, re-configure the aggregator details using `ecapcfg`. **2.** Perform a network health check (see *Network Check*). If not successful, configure the network using `ecapcfg` (see *Configuring ECAP Network Interfaces*).

Alarm	Message Text	Resolution
		3. Verify that the IP address, user ID, and directory for the Primary and Backup aggregators are configured correctly in the FileMover menu in `ecapcfg`. (See *Configuring the Primary Aggregator* and *Configuring the Backup Aggregator*). 4. Verify the available disk space on both the Primary and Backup Aggregators. If there is a shortage of disk space, then re-configure the aggregator details using `ecapcfg`. (See *Configuring the Primary Aggregator* and *Configuring the Backup Aggregator*). This alarm will be cleared when the FileMover is able to successfully transfer all the measurement files on the Aggregator network (either to Primary or Backup Aggregator).
tpdDiskSpaceShortageError	Server Disk Space Shortage Error	Disk usage for the ECAP logical volume (mounted at /usr/TKLC/ecap) increases above 90% of its total disk capacity. **Recovery** 1. Check available disk space (see *Disk Check*). 2. Verify that FileMover and FileScrubber are running periodically (see *Crontab Check*) and are configured correctly via `ecapcfg`. If not, re-configure FileMover configuration properly using `ecapcfg`. See *Configuring the Integrated Accounting Feed Application*. 3. Verify that there are no FileMover and FileScrubber related ECAP alarms are on NMS. This alarm will be cleared when the ECAP logical volume usage is reduced below 90%.
tpdPlatProcessError	Server Platform Process Error	At least one of the required ECAP processes is not operational. See *Process Check* for a list of processes that must always be running. **Recovery** 1. Verify that sentryd is running (see *Process Check*). 2. Verify that surv is running periodically (see *Crontab Check*) and configured correctly via `ecapcfg`. If not, re-run `ecapcfg` to set up cron jobs properly.

Alarm	Message Text	Resolution
		3. Verify that only one instance of every required ECAP processes is running. (See *Process Check*). This alarm will be cleared when all the required ECAP processes are running. If not, capture the log files present in /usr/TKLC/ecap/logs/directory and contact the Tekelec Customer Care Center (see *Customer Care Center*).

Table 15: Minor Integrated Accounting Feed Application Alarms

Alarm	Message Text	Resolution
ecapFileTransferToPriAggFailed	File Transfer Failure to Primary Aggregator	FileMover could not transfer one or more measurement files to the Primary Aggregator. An attempt was made to transfer these files to the Backup Aggregator (if configured). **Recovery** **1.** Verify that the Primary host entry is proper in /etc/hosts database with hostname as "aggregator". If not, re-configure the aggregator details using `ecapcfg`. (See *Configuring the Primary Aggregator*). **2.** Perform a network health check (see *Network Check*). If not successful, configure the network using `ecapcfg` (see *Configuring ECAP Network Interfaces*). **3.** Verify that the IP address, user ID, and directory for the Primary aggregator is configured correctly in the File Mover menu in `ecapcfg`. (See *Configuring the Primary Aggregator* and *Configuring the Backup Aggregator*). **4.** Verify the available disk space on the Primary Aggregator. If there is a shortage of disk space, then re-configure the Primary Aggregator using `ecapcfg`. (See *Configuring the Primary Aggregator*). This alarm will be cleared when the FileMover is able to successfully transfer all the measurement files to the Primary Aggregator.

Alarm	Message Text	Resolution
ecapFileScrubFailed	Failed to scrub at least one Measurement File older than 48 hours	FileScrubber could not purge at least one measurement file older than 48 hours. These files will still be available in the /usr/TKLC/ecap/meas_files/archive_ftp/ directory. **Recovery** **1.** Verify that no read-only or non-measurement files are present in the /usr/TKLC/ecap/meas_files/archive_ftp directory. This alarms will be cleared when FileScrubber is able to successfully delete all the measurement files older than 48 hours from the /usr/TKLC/ecap/meas_files/archive_ftp directory.
tpdDiskSpaceShortageErrorWarning	Server Disk Space Shortage Error Warning	Disk usage for the ECAP logical volume (mounted at /usr/TKLC/ecap) is between 80% - 90% of its total disk capacity. **Recovery** **1.** Check available disk space (see *Disk Check*). **2.** Verify that FileMover and FileScrubber are running periodically (see *Crontab Check*) and configured correctly via `ecapcfg`. If not, re-run `ecapcfg` to set up the FileMover configuration properly. See *Configuring the Integrated Accounting Feed Application*. **3.** Verify that there are no FileMover and FileScrubber related ECAP alarms on NMS. This alarm will be cleared when the ECAP logical volume usage is reduced below 80%.

Integrated Accounting Feed Conditions

The conditions listed in *Table 16: Integrated Accounting Feed Conditions* may impact Integrated Accounting Feed operation. If these conditions occur, follow the procedures listed in the Resolution column. If the provided corrective procedures do not work, contact the Tekelec Customer Care Center (see *Customer Care Center*).

Table 16: Integrated Accounting Feed Conditions

Condition	Resolution
No data files on the Aggregator	The ECAP server is operational and periodically generating data files, but the files are not being transferred to the Aggregator. Remedy: 1. Verify that the files are not on the Backup Aggregator. 2. Verify that FileMover is periodically running (see *Crontab Check*) and configured correctly via `ecapcfg`. If not, re-run `ecapcfg` to set up FileMover and/or start the ECAP processes. See *Configuring the Integrated Accounting Feed Application*. 3. Perform a network health check (see *Network Check*). If not successful, configure the ECAP network using `platcfg` (see *Configuring ECAP Network Interfaces*).
Data files are zero length	The ECAP disk is probably full. This causes the filename to be generated, but no data is stored in the file. Remedy: 1. Check available disk space (see *Disk Check*). 2. Verify that FileMover and FileScrubber are periodically running (see *Crontab Check*) and configured correctly via `ecapcfg`. If not, re-run `ecapcfg` to set up the processes and/or start the ECAP processes (see *Configuring the Integrated Accounting Feed Application*).
Data file contains no records	The data file contains standard data header but no record entries. This occurs when no MSU records are received from EAGLE 5 ISS. There are no SLAN cards in the IS-NR state. Remedy: 1. Use the `rept-stat-slan` command to verify that the EAGLE 5 ISS SLAN

Condition	Resolution
	subsystem is IS-NR and is sending MSU packets to ECAP. Refer to the *Commands Manual* for information on the `rept-stat-slan` command. 2. Verify gateway screens are properly configured (see *Configuring Gateway Screening*). The EAGLE 5 ISS SLAN card will only copy MSUs that have been screened.
Data file contains no tag for incominglinksetname/outgoinglinksetname	The data file contains standard data file header with the record entries, but the tag entry for incominglinksetname and outgoinglinksetname is missing. Remedy: **1.** Use the `rtrv-ss7opts` command to determine whether the SLANLSN parameter on EAGLE 5 ISS is set to ON. This parameter can be set using the `chg-ss7opts` command. **Note:** The default value for this parameter is OFF. **2.** In the ecapcfg under the Optional Parameters menu, verify that the Link Set Name included in measurement file option is set to Y.
MSU/octet counts are less than expected	The MSU peg counts reported by ECAP do not correspond to EAGLE 5 ISS measurements for the same time period. **Note:** EAGLE 5 ISS and ECAP reporting periods may not match exactly due to differences in independent timing standards. Remedy: 1. Check EAGLE 5 ISS alarm log for UAM 0152 (see *Table 13: EAGLE 5 ISS UAMs*). If present, MSUs have been discarded during the copy to ECAP due to traffic volume or Data Collection Interface disconnect. Perform a network health check (see *Network Check*). 2. Verify gateway screens are properly configured (see *Configuring Gateway Screening*). The EAGLE 5 ISS SLAN card

Condition	Resolution
	will only copy MSUs that have been screened. 3. Use the `rept-ftp-meas:type=systot:enttype=stplan` command to obtain an STPLAN measurement report. Use this report to determine the number of MSUs flowing to the ECAP server from EAGLE 5 ISS. Refer to the *Commands Manual* for information on the `rept-ftp-meas` command.

Disaster Recovery

No specific backup routine is provided by ECAP, therefore no specific restore routine is present.

There are two known failures that could lead to disaster if allowed to persist for an ECAP server. See *Table 16: Integrated Accounting Feed Conditions* for a list of associated condition messages and corrections.

Table 17: Disaster Recovery

Failure	Result
Aggregator and/or File Transfer Interface to Aggregator down or misconfigured	This will eventually lead to a disk full condition on the ECAP server if not corrected within a week due to an accumulation of data files. If the Aggregator is down or in fault condition, this must be corrected according to methods and procedures described by Aggregator documentation. When the File Transfer Interface becomes active, all accumulated data files are sent to the Aggregator at the next File Transfer interval (for example, xx:05 or xx:35). If a significant amount of data is sent to the Aggregator in one 30-minute interval, it could result in a degraded performance level for the ECAP server during the transfer.
Dead Integrated Accounting Feed processes or Data Collection Interface From SLAN down or misconfigured	Other ECAP servers in the ECAP system handle the load that would normally be sent to the ECAP server whose Data Collection Interface is down. If another ECAP server goes down or its Data Collection Interface goes down or is misconfigured, this could cause the ECAP/SLAN system to go into overload and lose data packets. Therefore, this scenario should also be corrected as soon as possible.

In the event of a catastrophic failure where ECAP hardware fails, contact the Tekelec Customer Care Center (see *Customer Care Center*).

Log Files

The Integrated Accounting Feed application generates log files for the following processes (see *Process Check* for a description of the processes):

- MeasServer
- TimeServer
- FileMover
- FileScrubber
- Logd
- sentryd
- surv

These logs are written to the /usr/TKLC/ecap/logs directory. The current log file is <process>.log, where <process> is the name of the process that is writing to the log file.

When the log file for any of the processes, except the surv log, reaches 16 MB, that file is archived to <process>.log.1. A maximum of four log archives are maintained in the logs directory: <process>.log.1 - <process>.log.4 with.1 being the newest archive and .4 being the oldest. Each time a log file is archived to .1, the existing archives are renamed, and the oldest archive (.4) is discarded.

The surv log maintains only one log archive. surv.log.1.

Savelogs

Logs and other relevant system information may be saved for debugging purposes by issuing the `savelogs` command. This command creates and stores a compressed tarball (*.tar.Z) in the /tmp directory to be offloaded by scp and viewed later.

Health Check

Use the described health checks to ensure the Integrated Application Feed is running properly.

Process Check

The process health check ensures that processes associated with the Integrated Accounting Feed application are running.

The following processes should always be running:

- sentryd: Keeps the other Integrated Accounting Feed application processes up and running
- MeasServer: Receives and decodes EAGLE 5 ISS SLAN packets, and stores them to a data file
- TimeServer: Responds to time queries from the EAGLE 5 ISS SLAN card

- Logd: Manages all ECAP logging

The following processes run periodically :

- FileMover: Moves data files to the Aggregator then archives the files on the ECAP
- FileScrubber: Deletes data files that are more than 48 hrs old
- surv: Ensures the sentryd process is running

The process health check is performed by the `ps` and `grep` commands. This is an example of the expected command/output:

```
# ps –ef | grep sentryd
root  24159  1  0 08:50 ?        00:00:00 /usr/TKLC/ecap/bin/sentryd
```

```
# ps –ef | grep MeasServer
root  24160  1  0 08:50 ?        00:00:00 /usr/TKLC/ecap/bin/MeasServer
```

```
# ps –ef | grep TimeServer
root  24161  1  0 08:50 ?        00:00:00 /usr/TKLC/ecap/bin/TimeServer
```

```
# ps –ef | grep Logd
root  24162  1  0 08:50 ?        00:00:00 /usr/TKLC/ecap/bin/Logd
```

Crontab Check

The `crontab` command is used to ensure that the surv, FileMover, and FileScrubber processes have been set up to be run periodically by the system.

Note: Crontab is configured **per user**. You must be logged in as user **ecapadm** when executing this command.

This is an example of the expected command/output:

```
 # crontab -1
5,35 * * * * /usr/TKLC/ecap/bin/FileMover
0 * * * * /usr/TKLC/ecap/bin/FileScrubber -d /usr/TKLC/ecap/meas_files/archive_ftp
 -t 172800
*/5 * * * * /usr/TKLC/ecap/bin/surv
```

Note: The minutes entry (5, 35) for FileMover may vary, but should have a difference of 30 minutes.

Disk Check

The disk space check is used to verify that disk space on the ECAP storage volume is not approaching 100%.

This is an example of the expected command output on a T1100 server :

```
# df -h
Filesystem                   Size  Used  Avail Use%  Mounted on
...
/dev/mapper/vgroot-ecap--vol 99G   198M   94G   1%   /usr/TKLC/ecap
```

This is an example of the expected command output on a T1200 server:

```
# df -h
Filesystem                  Size  Used  Avail  Use%   Mounted on
...
/dev/mapper/vgroot-ecapvol  165G  286M  156G    1%   /usr/TKLC/ecap
```

Network Check

The Network Diagnostics commands are used to verify connectivity between the EAGLE 5 ISS SLAN card and the ECAP server and between the ECAP server and the Aggregator. Along with the conditions listed in *Table 16: Integrated Accounting Feed Conditions*, this check should be done in response to the Device Interface Error or Device Interface Warning platform alarms (see *Table 11: Major Platform Alarms* and *Table 12: Minor Platform Alarms*). These diagnostic tasks are accessed through `platcfg` and include the following:

- Netstat: enables you to access network statistics for the ECAP server.
- Ping: enables you to attempt an ICMP ping of another ECAP server on the network.
- Traceroute: enables you to trace the network route to another ECAP server on the network.

Verifying EAGLE 5 ISS to ECAP Connectivity

Use this procedure to access the Network Diagnostics to verify connectivity between the EAGLE 5 ISS SLAN card and the ECAP Server.

Procedure

1. Log into ECAP as the `platcfg` user.
2. Select **Diagnostics** from the Platform Configuration Utility Main Menu and press **Enter**.
3. Select **Network Diagnostics** from the Diagnostics Menu and press **Enter**.
4. Select the desired task from the Network Diagnostics Menu and press **Enter**.
5. Perform the desired task.
6. Save and **Exit** the menu.

Verifying ECAP to Aggregator Connectivity

Use this procedure to verify the connectivity between the ECAP and the Aggregator.

1. Verify the connectivity between the ECAP and the Aggregator using the Network Diagnostics described in *Verifying EAGLE 5 ISS to ECAP Connectivity*.

2. Perform a secure shell connectivity check.

   The expected command output:

```
# cd ~
# touch sshtest
# scp sshtest <agg_userId>@aggregator:<homeDir>
sshtest                                       100% 0 0.0KB/s --:--ETA
```

   If the network check passes, you should not be prompted for a password. After the network check passes, you may safely remove the sshtest test file by using the `rm` command on the ECAP server, and whatever method necessary on the Aggregator. If the `scp` command asks for a password, see the appropriate procedure for your operating system in *Configuring File Transfer*.

Appendix A

MSU to XML Field Mapping

Topics:

This appendix provides information on how the MSU parameters that come into the ECAP server relate to the peg count fields in the data file. An overview of the generated data files is provided, along with examples of the MSU parameters.

Introduction

This appendix provides information on how the MSU parameters that come into the ECAP server relate to the peg count fields in the data file. An overview of the generated data files is provided, along with three samples: an ISUP MSU, an SCCP MSU, and an SCCP MSU with a TCAP layer (MAP MSU). For each example, the fields that are extracted from the MSU and copied to the data file are highlighted.

Note: The MSU contents displayed in the following examples do not contain Layer 2 information, which causes the 3 octet discrepancy between the length of the MSU contents displayed and the `<octcount>` field in the XML output. The `<octcount>` field includes the 3 octets of Layer 2 in its count, e.g. the ISUP MSU contents show octets 0-27 (28 octets), while the `<octcount>` field shows 31.

Data Files

The Integrated Accounting Feed application generates data files periodically. These files are stored in the `/usr/TKLC/ecap/xml/pending_ftp` directory until they are copied to the Aggregator. Once a file has been copied to the Aggregator, it is moved to the `/usr/TKLC/ecap/xml/archive_ftp` directory where it remains for approximately 48 hours. These data files can be in XML or CSV format.

The data files contain the measurement peg counts in an XML or a CSV format. The file tags are described in *Table 18: Data File Tags*.

Table 18: Data File Tags

Tag	Range of Values	Description
<ecapreport> </ecapreport>	N/A	A section delimiter that identifies a data file for a specific node and interval.
<stp> </stp>	unrestricted	Character string representing the name of the STP node that generated the data file. Derived from the STP name entered via the Integrated Accounting Feed Configuration Menu. See (*Configuring the Integrated Accounting Feed Application*).
<collector> </collector>	63[[A..Z][a..z][0..9][-]]	String of up to 63 characters representing the hostname of the ECAP server generating the data file.
<startdate> </startdate>	[01..31][01..12] [0000..9999]	Decimal representation of the collection start date of the records contained in the data file. Date is local to the ECAP server generating the file. Format is DDMMYYYY.

Tag	Range of Values	Description
<starttime> </starttime>	[00..23][00..59] [00..59]	Decimal representation of the collection start time of the records contained in the data file. Time is local to the ECAP server generating the file. Format is HHMMSS.
<enddate> </enddate>	[01..31][01..12] [0000..9999]	Decimal representation of the collection end date of the records contained in the data file. Date is local to the ECAP server generating the file. Format is DDMMYYYY.
<endtime> </endtime>	[00..23][00..59] [00..59]	Decimal representation of the collection end time of the records contained in the data file. Time is local to the ECAP generating the file. Format is HHMMSS.
<sequence_no> </sequence_no>	XML	String of 4 numbers that represents the sequence number for the data file. This number is reset to 0 at the start of each calendar day and is incremented each time a new file is written. This sequence number is optional and disabled by default. It can be enabled via the Integrated Accounting Feed Configuration Menu. See *Configuring the Integrated Accounting Feed Application*.
<extension> </extension>	[XML, xml, CSV, csv]	The output format for the data file. The file format can be XML or CSV.
<record> </record>	N/A	Section delimiter that identities a new data file.
<signallingstandard> </signallingstandard>	“ANSI”, “ITU-I”, “ITU-N”, or “undefined”	Character string (without quotes) representing the protocol by which the data file was decoded. “undefined” is an invalid protocol and represents an error in decoding.
<linkid> </linkid>	[0..65535]	EAGLE 5 ISS STP link ID on which the MSUs were received (incoming link). This is a decimal value. This tag will be present for all the MSUs captured with the SLANLSN parameter OFF in EAGLE. If the SLANLSN parameter is set to ON, the

Tag	Range of Values	Description
		linkid tag may or may not be present based on whether the LinkID Included in Measurement File option is enabled using the ecapcfg utility.
<incominglinksetname> </incominglinksetname>	10[[A..Z][a..z][0..9][-]]	The EAGLE 5 ISS STP Incoming Link Set Name on which the MSUs were received (incoming link). This is a string. This tag will be present if the SLANLSN parameter has been set to ON via EAGLE 5 ISS command `chg-ss7opts`, and if the Link Set Name Included in Measurement File option is enabled using the ecagcfg utility.
<outgoinglinksetname> </outgoinglinksetname>	10[[A..Z][a..z][0..9][-]]	The EAGLE 5 ISS STP Outgoing Link Set Name on which the MSUs are transmitted (outgoing link). This is a string. This tag will be present if the SLANLSN parameter has been set to ON via EAGLE 5 ISS command `chg-ss7opts`, and if the "Link Set Name Included in measurement file" option is enabled using the ecagcfg utility.
<ni> </ni>	"International network", " Spare for international use", "National network", or "Reserved for national use"	Character string (without quotes) that identifies the Network Indicator.
<si> </si>	“isup” or “sccp”	Character string (without quotes) representing the message service type. “isup” represents an MTP message. “sccp” represents an SCCP or MAP message.
<mtp> </mtp>	N/A	Section delimiter that identifies the MTP layer point codes (Routing Label).
<opc> </opc>	[000..255][000..255] [000..255] (ANSI), or [000..007][000..255]	Decimal representation of the Originating Point Code from the MTP layer.

Tag	Range of Values	Description
	[000.007] (ITU-I), or [0..16383] (ITU-N)	
<dpc> </dpc>	[000..255][000..255] [000..255] (ANSI), or [000..007][000..255] [000.007] (ITU-I), or [0..16383] (ITU-N)	Decimal representation of the Destination Point Code from the MTP layer.
<sccp> </sccp>	N/A	A section identifier that identifies the SCCP layer information.
<cgpadigits> </cgpadigits>	[], [0..9999999999999 99999999] [0..FFFFFFFFFFFFFFFFFFFF]	Decimal or hexadecimal representation of the Calling Party Address. This field is optional or may contain up to 21 digits.
<cdpadigits> </cdpadigits>	[], [0..9999999999999 99999999] [0..FFFFFFFFFFFFFFFFFFFF]	Decimal or hexadecimal representation of the Called Party Address. This field is optional or may contain up to 21 digits.
<cgpapc> </cgpapc>	[], [000..255][000..255] [000..255] (ANSI), or [000..007][000..255] [000.007] (ITU-I), or [0..16383] (ITU-N)	Decimal representation of the Originating Point Code from the SCCP layer. This field is optional.
<cdpapc> </cdpapc>	[], [000..255][000..255] [000..255] (ANSI), or [000..007][000..255] [000.007] (ITU-I), or [0..16383] (ITU-N)	Decimal representation of the Destination Point Code from the SCCP layer. This field is optional.
<map> </map>	N/A	A section identifier that identifies the MAP layer information.
<opcode> </opcode>	[0..255]	Decimal representation of the MAP operation code. Identifies the MAP operation performed.

Tag	Range of Values	Description
<msucount> </msucount>	[1..4294967295]	Decimal representation of the number of MSUs processed with the specified MTP and/or SCCP parameters.
<octcount> </octcount>	[1..4294967295]	Decimal representation of the number of octets processed with the specified MTP and/or SCCP parameters. This number excludes the Layer 1 Flag and CRC information.

Note:

- There may be multiple records where the MAP field is missing.
- All SCCP fields (including MAP) will be missing for SI=ISUP.
- The link_id, ni_str, incoming_linkset_name, and outgoing_linkset_name fields are optional.
- Either the link_id, incoming_linkset_name, or outgoing_linkset_name will always be present in measurement data files.

Data File XML DTD

The XML Filename adheres to this format:
`<stp>_<collector>_<enddate>_<endtime>[<sequence_no>].<extension>`

Refer to *Table 18: Data File Tags* for the descriptions, ranges, and formats for the data tags included in the filename. The XML DTD describes the content and structure of the measurement XML data fields:

```
<!ELEMENT ecapreport (stp,collector,date,time,record*)>
<!ELEMENT stp (#PCDATA)>
<!ELEMENT collector (#PCDATA)>
<!ELEMENT startdate (#PCDATA)>
<!ELEMENT starttime (#PCDATA)>
<!ELEMENT enddate (#PCDATA)>
<!ELEMENT endtime (#PCDATA)>
<!ELEMENT record (signallingstandard,linkid,si,mtp,sccp?,map?,msucount,octcount)>

<!ELEMENT signallingstandard (#PCDATA)>
<!ELEMENT linkid (#PCDATA)>
<!ELEMENT incominglinksetname (#PCDATA)>
<!ELEMENT outgoinglinksetname (#PCDATA)>
<!ELEMENT ni (#PCDATA)>
<!ELEMENT si (#PCDATA)>
<!ELEMENT mtp (opc,dpc)>
<!ELEMENT opc (#PCDATA)>
<!ELEMENT dpc (#PCDATA)>
<!ELEMENT sccp (cgpadigits?,cdpadigits?,cgpapc?,cdpapc?)>
<!ELEMENT cgpadigits (#PCDATA)>
<!ELEMENT cdpadigits (#PCDATA)>
<!ELEMENT cgpapc (#PCDATA)>
<!ELEMENT cdpapc (#PCDATA)>
<!ELEMENT map (opcode)>
<!ELEMENT opcode (#PCDATA)>
<!ELEMENT msucount (#PCDATA)>
<!ELEMENT octcount (#PCDATA)>
```

Note:

- The linkid is present if the SLANLSN parameter on Eagle 5 ISS is set to OFF. If the parameter SLANLSN is set to ON, then `ecapcfg` can be used to configure whether or not it is present in the measurement file. By default, it is present.
- The incominglinksetname and the outgoinglinksetname are not present if the SLANLSN parameter on EAGLE 5 ISS is set to OFF. If the parameter is set to ON, then the ecapcfg utility can be used to configure whether or not it is present in the measurement file. By default, it is not present
- If EAGLE parameter SLANLSN is toggled from ON to OFF while measurements are being collected, it is possible that the measurements file that is generated after the toggle (only this one file, not subsequent files) will have one or more pairs of identical records. This limitation is due to the fact that when the pair of records is stored in memory, they are unique. The only difference between them is that one record has linkset names (generated before the toggle) and the other record does not (generated after the toggle). But since SLANLSN is set to OFF when the measurement file is written, linkset names are not written to the file. Therefore, the two records are identical when written.

Data File CSV DTD

The CSV (Comma Separated Values) format is an alternative to the XML format. CSV data files consume less disk space as compared to XML data files.

All XML data fields described in *Table 18: Data File Tags* are included in the CSV file. The fields in the CSV data file are formatted differently from the fields int he XML file. CSV data files contain a common file header followed by peg counts as comma separated values.

The CSV DTD describes the content and structure of the CSV data fields.

```
-----------------------------------------------------------------------------------------------------------------------------

CSV version :"#version"
stp         :  #stpname
collector   : #collector
startdate   : #ddmmyyyy
starttime   : #hhmmss
enddate     : #ddmmyyyy
endtime     : #hhmmss


"record",standard,link_id,ni,incoming_linkset_name,outgoing_linkset_name,
sio_val,"mtp",opc_val,dpc_val,"mtp","sccp",cgpa_val,cdpa_val,sccpopc_val,
sccpdpc_val,"sccp","map",opcode_val,"map",msu_count,oct_count,"record"


-------------------------------------------
```

Note:

- SCCP pcs will be represented by the "NULL" string in the CSV measurement files if they match with the MTP PC. If the SCCP OPC matches with the MTP OPC, this will be represented by "NULL" in the CSV file. Similarly, if SCCP DPC matches with MTP DPC, this will be represented by " NULL" in the CSV file.
- The optional fields (link_id, ni_str, incoming_linkset_name, and outgoing_linkset_name) have a fixed position in the CSV record, whether the field is currently enabled or disabled. If an optional

field is disabled it will not display in the CSV file. This field will appear in each record as an empty comma (a comma with nothing after it).

Compressing Measurement Data Files

To reduce the disk storage requirements for measurement data files, the files can be compressed using the Measurement File Compression Required option in `ecapcfg` . When enabled, files will be compressed before they are transferred to the Aggregator. By default, files are not compressed.

Compression will be done using the Linux command, `gzip` . After a compressed measurement data file is transfered to the Aggregator, it must be unzipped and converted into a readable format using the Linux command, `gunzip`. For more details on the `gzip` and `gunzip` Linux commands, refer to *gzip.org*

1. Log into the ECAP server as the `ecapadm` user.
2. Use the `ecapcfg` command to open the ECAP Configuration menu.
3. Select **4** from the ECAP configuration menu and press **Enter** to open the Measurement File Compression menu.
4. Select **6** and press **Enter**.

```
Do you want to enable Compression for measurement files (y or n) = [N]?
```

5. Press **y** or **Y** and press **Enter** to enable compression for measurement files.

```
File Compression option is set to Y.
```

ISUP MSU

The following is an example of ISUP MSU with the ECAP data file.

```
*** Start of MTP Level 3 ***
                          MSU
0000 00000101 05
     ----0101    ----.-- Service Indicator                          ISDN User Part

     --00----    ----.-- Spare                                      0
     00------    ----.-- Network Indicator                          00 -
International Network
0001 00100010 22 K---.-- Destination Point Code 2-4-2
0002 10010000 90
     --010000
     10------    K---.-- Origination Point Code 2-2-2
0003 00000100 04
0004 00000100 04
     ----0100
     0000----    ----.-- Signalling Link Code                       0

*** Start of ISDN User Part ***
                         Initial address
```

```
0005 00000000 00 K---.-- Circuit Identification Code              0
0006 00000000 00
     ----0000
     0000----    ----.-- Spare                                    0
0007 00000001 01 .T-..E. Message Type                            01
0008 00000000 00         Nature of connection indicators
     ------00    ----.-- Satelite Indicator                     00 - no satelite
 circuit in the connection
     ----00--    ----.-- Continuity Check Indicator             00 - continuity
 check not required
     ---0----    ----.-- Echo Control Device Indicator           0 - outgoing
half echo control dev not inclu
     000-----    ----.-- Spare                                    0
                          Forward call indicators
0009 00000000 00
     -------0    ----.-- National/International Call Indicator   0 - call to be
 treated as national call
     -----00-    ----.-- End-to-End Method Indicator             00 - no
end-to-end method available
     ----0---    ----.-- Interworking Indicator                  0 - no
interworking encountered
    ---0----    ----.-- End-to-End Information Indicator       0 - no end-to-end
 information available
     --0-----    ----.-- ISDN User Part Indicator               0 - ISDN user
part not used all the way
     00------    ----.-- ISDN User Part Preference Indicator     00 - ISDN user
 part preferred all the way
0010 00000000 00
     -------0    ----.-- ISDN Access Indicator                  0 - originating
 access non-ISDN
     -----00-    ----.-- SCCP Method Indicator                  00 - no
indication
     ----0---    ----.-- Spare                                    0
     0000----    ----.-- Reserved for National Use                0
0011 00000000 00 ----.-- Calling party's category              00000000 -
Calling party's cagtegory unknown at this time
0012 00000000 00 ----.-- Transmission Medium Requirement       00000000 -
speech
                          Variable Portion
0013 00000010 02 .---.-- Called party number Pointer             Offset 0015
0014 00000000 00 .---.-- Optional Portion Pointer             Points to Nothing

                          Called party number
0015 00001100 0c .--..-- Called party number Length              12
0016 00000000 00
     -0000000    ----.-- Nature of Address Indicator           0000000 - spare

     0-------    ----.-- Odd/Even Indicator                     0 - even number
 of address signals
0017 00000000 00
     ----0000    ----.-- Spare                                    0
     -000----    ----.-- Numbering Plan Indicator                 000 - spare
     0-------    ----.-- Internal network number indicator        0 - routing to
 internal network number allowed
0018 00000000 00 ------- Address
00000000000000000000
0019 00000000 00
0020 00000000 00
0021 00000000 00
0022 00000000 00
0023 00000000 00
0024 00000000 00
0025 00000000 00
```

```
0026 00000000 00
0027 00000000 00
```

ECAP XML Output

If the SLANLSN parameter is set to OFF, or if the 'Linkset Name in Measurement Files' option is disabled:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE ecapreport SYSTEM "ecapreport.dtd">
<ecapreport>
  <stp>e1021201</stp>
  <collector>nc1lxvader</collector>
  <startdate>26092005</startdate>
  <starttime>102800</starttime>
  <enddate>26092005</enddate>
  <endtime>102900</endtime>

  <record>
    <signallingstandard>ITU-I</signallingstandard>
    <linkid>1</linkid>
    <ni>International Network</ni>
    <si>isup</si>
    <mtp>
      <opc>002-002-002</opc>
      <dpc>002-004-002</dpc>
    </mtp>
    <msucount>1</msucount>
    <octcount>31</octcount>
  </record>

</ecapreport>
```

If the SLANLSN parameter is set to ON, and the 'Linkset Name in Measurement Files' option is enabled:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE ecapreport SYSTEM "ecapreport.dtd">
<ecapreport>
  <stp>e1021201</stp>
  <collector>nc1lxvader</collector>
  <startdate>26092005</startdate>
  <starttime>102800</starttime>
  <enddate>26092005</enddate>
  <endtime>102900</endtime>

  <record>
    <signallingstandard>ITU-I</signallingstandard>
    <linkid>1</linkid>
    <incominglinksetname>abc</incominglinksetname>
    <outgoinglinksetname>xyz</outgoinglinksetname>
    <ni>International Network</ni>
    <si>isup</si>
    <mtp>
      <opc>002-002-002</opc>
      <dpc>002-004-002</dpc>
    </mtp>
    <msucount>1</msucount>
    <octcount>31</octcount>
  </record>
```

```
</ecapreport>
```

ECAP CSV Output
If the SLANLSN parameter is set to OFF, or if the 'Linkset Name in Measurement Files' option is disabled:

```
-----------------------------------------------------------------------------------------------------------------------------

  CSV version : "1.0"
  stp                : Tekelec_SLAN1
  collector       : ecap125
  startdate       : 16072009
  starttime      : 061500
  enddate        : 16072009
  endtime       : 061600

"record",ITU-I,1,International
Network,,,isup,"mtp",002-002-002,002-004-002,"mtp",1,11,"record"
-----------------------------------------------------------------------------------------------------------------------------
```

If the SLANLSN parameter is set to ON, and the 'Linkset Name in Measurement Files' option is enabled:

```
-----------------------------------------------------------------------------------------------------------------------------

  CSV version : "1.0"
  stp                : Tekelec_SLAN1
  collector       : ecap125
  startdate       : 16072009
  starttime       : 061500
  enddate        : 16072009
  endtime        : 061600

"record",ITU-I,1,International
Network,abc,xyz,isup,"mtp",002-002-002,002-004-002,"mtp",1,11,"record"
-----------------------------------------------------------------------------------------------------------------------------
```

SCCP MSU

The following is an example of SCCP MSU with the ECAP data file. If an SCCP MSU contains a CgPA or CdPA point code, the point code is copied to the peg count report, but only if the point code differs from the OPC or DPC.

```
*** Start of MTP Level 3 ***
                          MSU
0000 00000011 03
     ----0011    ----.-- Service Indicator SCCP
     --00----    ----.-- Spare                                   0
     00------    ----.-- Network Indicator                       00 -
International Network
0001 00010010 12 K---.-- Destination Point Code 2-2-2
0002 01010000 50
     --010000
     01------    K---.-- Origination Point Code 2-2-1
```

```
0003 00000100 04
0004 00000100 04
     ----0100
     0000----    ----.-- Signalling Link Code                    0

*** Start of SCCP ***
                          Unitdata
0005 00001001 09 .T-..E. Message Type                           09
0006 10000000 80
     ----0000    .....-- Protocol Class                         Class 0
                          Variable Portion
     1000----    ----.-- Message Handling                       1000 - return
message on error
0007 00000011 03 .---.-- Called Party Address                   Offset 0010
0008 00010011 13 .---.-- Calling Party Address                  Offset 0027
0009 00100011 23 .---.-- Data Portion Pointer                   Offset 0044
0010 00010000 10 .--..-- Called Party Address Length            16
0011 01001011 4b
     -------1    .--..-. Point Code Indicator                   Included
     ------1-    .--..-. Subsystem Number Indicator             Included
     --0010--    .....-- Global Title indicator                 0010 - Global
title w/ translation type
     -1------    ----.-- Routing indicator                      1 - route on
SSN
     0-------    ----.-- Reserved for National use              0 - Reserved
for National use
0012 00010010 12 ----.-- Signalling Point Code 4-2-2
0013 00100000 20
0014 00000000 00 ----.-- Subsystem Number                       0
0015 00001000 08 ----.-- Translation Type                       8
0016 00100001 21 ------- Address information 123456789012345678901O
0017 01000011 43
0018 01100101 65
0019 10000111 87
0020 00001001 09
0021 00100001 21
0022 01000011 43
0023 01100101 65
0024 10000111 87
0025 00001001 09
0026 00000001 01
0027 00010000 10 .--..-- Calling Party Address Length          16
0028 01001011 4b
     -------1    .--..-. Point Code Indicator                   Included
     ------1-    .--..-. Subsystem Number Indicator             Included
     --0010--    .....-- Global Title indicator                 0010 - Global
title w/ translation type
     -1------    ----.-- Routing indicator                      1 - route on
SSN
     0-------    ----.-- Reserved for National use              0 - Reserved
for National use
0029 00010001 11 ----.-- Signalling Point Code                  4-2-1
0030 00100000 20
0031 00000000 00 ----.-- Subsystem Number                       0
0032 00000010 02 ----.-- Translation Type                       2
0033 10010000 90 ------- Address information 098765432109876543210
0034 01111000 78
0035 01010110 56
0036 00110100 34
0037 00010010 12
0038 10010000 90
0039 01111000 78
0040 01010110 56
0041 00110100 34
```

```
0042 00010010 12
0043 00001001 09
                          Data Portion

*** Start of TCAP and SCCP Management ***
                          TCAP Layer
0044 00000101 05 .---.-- TCAP Length                              5
0045 01100010 62 .T-..E. Begin Message                            98
0046 00000011 03 .---.-- Message Length                           3
                          Transaction Portion
0047 01001000 48 .--..-. Originating TX ID                        72
0048 00000001 01 .---.-- Transaction ID Length                    1
0049 00000000 00 ----.-- Originating Transaction ID               00
                          Optional Dialogue Portion
                          -
                          Optional Component Portion
```

ECAP XML Output

If the SLANLSN parameter is set to OFF or if the 'Linkset Name in Measurement File's option is disabled:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE ecapreport SYSTEM "ecapreport.dtd">
<ecapreport>
  <stp>e1021201</stp>
  <collector>nc1lxvader</collector>
  <startdate>27092005</startdate>
  <starttime>111700</starttime>
  <enddate>27092005</enddate>
  <endtime>111800</endtime>

  <record>
    <signallingstandard>ITU-I</signallingstandard>
    <linkid>0</linkid>
    <ni>International Network</ni>
    <si>sccp</si>
    <mtp>
      <opc>002-002-001</opc>
      <dpc>002-002-002</dpc>
    </mtp>
    <sccp>
      <cgpadigits>09876543210987654321 90</cgpadigits>
      <cdpadigits>12345678901234567890 10</cdpadigits>
      <cgpapc>004-002-001</cgpapc>
      <cdpapc>004-002-002</cdpapc>
    </sccp>
    <msucount>1</msucount>
    <octcount>53</octcount>
  </record>

</ecapreport>
```

If the SLANLSN parameter is set to ON and the 'Linkset Name in Measurement File's option is enabled:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE ecapreport SYSTEM "ecapreport.dtd">
<ecapreport>
  <stp>e1021201</stp>
```

```
  <collector>nc1lxvader</collector>
  <startdate>27092005</startdate>
  <starttime>111700</starttime>
  <enddate>27092005</enddate>
  <endtime>111800</endtime>

  <record>
    <signallingstandard>ITU-I</signallingstandard>
    <linkid>0</linkid>
    <incominglinksetname>abc</incominglinksetname>
    <outgoinglinksetname>xyz</outgoinglinksetname>
    <ni>International Network</ni>
    <si>sccp</si>
    <mtp>
      <opc>002-002-001</opc>
      <dpc>002-002-002</dpc>
    </mtp>
    <sccp>
      <cgpadigits>09876543210987654321 90</cgpadigits>
      <cdpadigits>12345678901234567890 10</cdpadigits>
      <cgpapc>004-002-001</cgpapc>
      <cdpapc>004-002-002</cdpapc>
    </sccp>
    <msucount>1</msucount>
    <octcount>53</octcount>
  </record>

</ecapreport>
```

ECAP CSV Output

If the SLANLSN parameter is set to OFF or if the 'Linkset Name in Measurement File's option is disabled:

```
-------------------------------------------------------------------------------------------------------------------------

  CSV version : "1.0"
  stp                 : Tekelec_SLAN1
  collector         : ecap125
  startdate         : 16072009
  starttime         : 060700
  enddate          : 16072009
  endtime          : 060800

"record",ITU-I,0,International
Network,,,sccp,"mtp",002-002-001,002-002-002,"mtp","sccp",09876543210987654321,
12345678901234567890,004-002-001,004-002-002,"sccp",1,45,"record"
-------------------------------------------------------------------------------------------------------------------------
```

If the SLANLSN parameter is set to ON and the 'Linkset Name in Measurement File's option is enabled:

```
-------------------------------------------------------------------------------------------------------------------------

  CSV version : "1.0"
  stp                  : Tekelec_SLAN1
  collector         : ecap125
  startdate         : 16072009
  starttime         : 060700
  enddate          : 16072009
```

```
  endtime         : 060800

"record",ITU-I,0,International
Network,abc,xyz,sccp,"mtp",002-002-001,002-002-002,"mtp","sccp",
0987654321098765432l9,12345678901234567890l,004-002-001,
004-002-002,"sccp",1,45,"record"
-------------------------------------------------------------------------------------------------------------------------
```

MAP MSU

The following is an example of SCCP MSU with a TCAP layer with the ECAP data file.

```
*** Start of MTP Level 3 ***
                          MSU
0000 00000011 03
     ----0011    ----.-- Service Indicator SCCP
     --00----    ----.-- Spare                              0
     00------    ----.-- Network Indicator                  00 - International
Network
0001 00010010 12 K---.-- Destination Point Code 2-2-2
0002 01010000 50
     --010000
     01------    K---.-- Origination Point Code 2-2-1
0003 00000100 04
0004 00000100 04
     ----0100
     0000----    ----.-- Signalling Link Code               0

*** Start of SCCP ***
                          Unitdata
0005 00001001 09 .T-..E. Message Type                       09
0006 10000000 80
     ----0000    .....-- Protocol Class                     Class 0
                          Variable Portion
    1000----    ----.-- Message Handling                   1000 - return message
 on error
0007 00000011 03 .---.-- Called Party Address               Offset 0010
0008 00010011 13 .---.-- Calling Party Address              Offset 0027
0009 00100011 23 .---.-- Data Portion Pointer               Offset 0044
0010 00010000 10 .--.-- Called Party Address Length         16
0011 00001011 0b
     -------1    .--..-. Point Code Indicator               Included
     ------1-    .--..-. Subsystem Number Indicator         Included
     --0010--    .....-- Global Title indicator             0010 - Global title
 w/ translation type
     -0------    ----.-- Routing indicator                  0 - route on GT
     0-------    ----.-- Reserved for National use          0 - Reserved for
National use
0012 00010010 12 ----.-- Signalling Point Code              4-2-2
0013 00100000 20
0014 00000000 00 ----.-- Subsystem Number                   0
0015 00001000 08 ----.-- Translation Type                   8
0016 00100001 21 ------- Address information 123456789012345678901O
0017 01000011 43
0018 01100101 65
0019 10000111 87
0020 00001001 09
```

```
0021 00100001 21
0022 01000011 43
0023 01100101 65
0024 10000111 87
0025 00001001 09
0026 00000001 01
0027 00010000 10 .--..-- Calling Party Address Length        16
0028 01001011 4b
     -------1    .--..-. Point Code Indicator                Included
     ------1-    .--..-. Subsystem Number Indicator          Included
     --0010--    ....-- Global Title indicator              0010 - Global title
 w/ translation type
     -1------    ----.-- Routing indicator                   1 - route on SSN
     0-------    ----.-- Reserved for National use           0 - Reserved for
National use
0029 00010001 11 ----.-- Signalling Point Code 4-2-1
0030 00100000 20
0031 00000000 00 ----.-- Subsystem Number                    0
0032 00000010 02 ----.-- Translation Type                    2
0033 10010000 90 ------- Address information 098765432109876543210
0034 01111000 78
0035 01010110 56
0036 00110100 34
0037 00010010 12
0038 10010000 90
0039 01111000 78
0040 01010110 56
0041 00110100 34
0042 00010010 12
0043 00001001 09
                         Data Portion

*** Start of TCAP and SCCP Management ***
                          TCAP Layer
0044 00100010 22 .--..-- TCAP Length                         34
0045 01100001 61 .T-..E. Unidirectional Message              97
0046 00100000 20 .--..-- Message Length                      32
                          Optional Dialogue Portion
                          Dialogue Portion
0047 01101011 6b .--..-. Dialogue Portion Tag                107
0048 00010100 14 .--..-- Dialogue Portion Length             20
0049 00101000 28 .--..-. External Tag                        40
0050 00010010 12 .--..-- External Length                     18
0051 00000110 06 .--..-. Object Identifier Tag               06
0052 00000111 07 .--..-- Object Identifier Length            7
                          Dialogue-as-ID value
0053 00000000 00 .--..-. CCITT Q Recommendation              00
0054 00010001 11 .--..-. Q                                   17
0055 10000110 86 .--..-. Document 773 (X'305)                1414
0056 00000101 05
0057 00000001 01 .--..-. as(1)                               01
0058 00000001 01 .--..-. dialoguePDU                         01
0059 00000001 01 .--..-. Version1 (1)                        01
0060 10100000 a0 .--..-. ASN.1-type Tag                      160
0061 00000111 07 .--..-- ASN.1-type Length                   7
0062 01100000 60 ---..-- Dialogue PDU Selection             Dialogue Request Tag
0063 00000101 05 .--..-- Request Length                      5
                          Optional Protocol Version
                          -
0064 10100001 a1 .--..-. Application Context name Tag        161
0065 00000011 03 .--..-- AC Length                           3
0066 00000110 06 .--..-. Object Identifier Tag               6
0067 00000001 01 .--..-- Object Identifier Length            1
0068 00000110 06 .--..-. Context Data                        06
```

```
                          Optional User Information
                          -
                          -
                          Component Portion
0069 01101100 6c .--..-. Component Portion Tag              108
0070 00001000 08 .--..-- Component Portion Length           8
                          Invoke Component
0071 10100001 a1 .--..-. Invoke Tag                         161
0072 00000110 06 .--..-- Invoke Length                      6
                          Invoke ID
0073 00000010 02 .--..-. Invoke ID Tag                      2
0074 00000001 01 .--..-- Invoke ID Length                   1
0075 00000000 00 ----.-- Invoke ID                          0
                          Optional Linked ID
                          -
                          Operation Code
0076 00000010 02 ---..-- Operation Code Tag                 Local Operation Code
0077 00000001 01 .--..-- Operation Code Length              1
0078 00000101 05 ----.-- Operation Code 05
                          Optional parameters
```

ECAP XML Output

If the SLANLSN parameter is set to OFF or if the 'Linkset Name in Measurement Files' option is disabled:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE ecapreport SYSTEM "ecapreport.dtd">
<ecapreport>
  <stp>e1021201</stp>
  <collector>nc1lxvader</collector>
  <startdate>26092005</startdate>
  <starttime>154300</starttime>
  <enddate>26092005</enddate>
  <endtime>154400</endtime>

  <record>
    <signallingstandard>ITU-I</signallingstandard>
    <linkid>0</linkid>
    <ni>International Network</ni>
    <si>sccp</si>
    <mtp>
      <opc>002-002-001</opc>
      <dpc>002-002-002</dpc>
    </mtp>
    <sccp>
      <cgpadigits>09876543210987654321 90</cgpadigits>
      <cdpadigits>12345678901234567890 10</cdpadigits>
      <cgpapc>004-002-001</cgpapc>
      <cdpapc>004-002-002</cdpapc>
    </sccp>
    <map>
      <opcode>5</opcode>
    </map>
    <msucount>1</msucount>
    <octcount>82</octcount>
  </record>

</ecapreport>
```

If the SLANLSN parameter is set to ON and the 'Linkset Name in Measurement Files' option is enabled:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE ecapreport SYSTEM "ecapreport.dtd">
<ecapreport>
  <stp>e1021201</stp>
  <collector>nc1lxvader</collector>
  <startdate>26092005</startdate>
  <starttime>154300</starttime>
  <enddate>26092005</enddate>
  <endtime>154400</endtime>

  <record>
    <signallingstandard>ITU-I</signallingstandard>
    <linkid>0</linkid>
    <incominglinksetname>abc</incominglinksetname>
    <outgoinglinksetname>xyz</outgoinglinksetname>
    <ni>International Network</ni>
    <si>sccp</si>
    <mtp>
      <opc>002-002-001</opc>
      <dpc>002-002-002</dpc>
    </mtp>
    <sccp>
      <cgpadigits>09876543210987654321 90</cgpadigits>
      <cdpadigits>12345678901234567890 10</cdpadigits>
      <cgpapc>004-002-001</cgpapc>
      <cdpapc>004-002-002</cdpapc>
    </sccp>
    <map>
      <opcode>5</opcode>
    </map>
    <msucount>1</msucount>
    <octcount>82</octcount>
  </record>

</ecapreport>
```

ECAP CSV Output

If the SLANLSN parameter is set to OFF or if the 'Linkset Name in Measurement Files' option is disabled:

```
-------------------------------------------------------------------------------------------------------------------------------

  CSV version : "1.0"
  stp                : Tekelec_SLAN1
  collector       : ecap125
  startdate       : 16072009
  starttime       : 060600
  enddate        : 16072009
  endtime        : 060700

"record",ITU-I,0,International
Network,,,sccp,"mtp",002-002-001,002-002-002,"mtp","sccp",098765432109876543219,
123456789012345678901,004-002-001,004-002-002,"sccp","map",5,"map",1,131,"record"
-------------------------------------------------------------------------------------------------------------------------------
```

If the SLANLSN parameter is set to ON and the 'Linkset Name in Measurement Files' option is enabled:

```
-------------------------------------------------------------------------------------------------------------------------------

  CSV version : "1.0"
  stp                : Tekelec_SLAN1
  collector       : ecap125
  startdate       : 16072009
  starttime       : 060600
  enddate        : 16072009
  endtime        : 060700

"record",ITU-I,0,International
Network,abc,xyz,sccp,"mtp",002-002-001,002-002-002,"mtp","sccp",
0987654321098765432l9,12345678901234567890l,004-002-001,004-002-002,
"sccp","map",5,"map",1,131,"record"
-------------------------------------------------------------------------------------------------------------------------------
```

Glossary

A

Aggregator	A dedicated server where ECAP XML data files are sent; responsible for aggregating data from multiple ECAPs into billable form. An Aggregator MUST have the following characteristics: • SSH capable • Parse and accumulate measurement data file output from multiple ECAP servers • 1 virtual IP address • Format and generate billing reports that are useful to the customer
AS	Application Server A logical entity serving a specific Routing Key. An example of an Application Server is a virtual switch element handling all call processing for a unique range of PSTN trunks, identified by an SS7 DPC/OPC/CIC_range. Another example is a virtual database element, handling all HLR transactions for a particular SS7 DPC/OPC/SCCP_SSN combination. The AS contains a set of one or more unique Application Server Processes, of which one or more normally is actively processing traffic. Action Set Authentication Server Authentification servers provide public access to certificates, and are

A

integrated with electronic information retrieval systems to this end. Free access to certificates is necessary to support authentication in open systems.

Application Simulator

Test tool that can simulate applications and/or SMSCs.

C

CdPA

Called Party Address

The field in the SCCP portion of the MSU that contains the additional addressing information of the destination of the MSU. Gateway screening uses this additional information to determine if MSUs that contain the DPC in the routing label and the subsystem number in the called party address portion of the MSU are allowed in the network where the EAGLE 5 ISS is located.

CgPA

Calling Party Address

The point code and subsystem number that originated the MSU. This point code and subsystem number are contained in the calling party address in the SCCP portion of the signaling information field of the MSU. Gateway screening uses this information to determine if MSUs that contain this point code and subsystem number area allowed in the network where the EAGLE 5 ISS is located.

CLLI

Common Language Location Identifier

The CLLI uniquely identifies the STP in terms of its physical

C

location. It is usually comprised of a combination of identifiers for the STP's city (or locality), state (or province), building, and traffic unit identity. The format of the CLLI is:

The first four characters identify the city, town, or locality.

The first character of the CLLI must be an alphabetical character.

The fifth and sixth characters identify state or province.

The seventh and eighth characters identify the building.

The last three characters identify the traffic unit.

CRC

CAM Redundancy Controller

Cyclic Redundancy Check

A number derived from, and stored or transmitted with, a block of data in order to detect corruption. By recalculating the CRC and comparing it to the value originally transmitted, the receiver can detect some types of transmission errors.

CSV

Comma-separated values

The comma-separated value file format is a delimited data format that has fields separated by the comma character and records separated by newlines (a newline is a special character or sequence of characters signifying the end of a line of text).

D

Data Collection Interface

Incoming MSU data network interface from the EAGLE SLAN card.

D

DPC — Destination Point Code

DPC refers to the scheme in SS7 signaling to identify the receiving signaling point. In the SS7 network, the point codes are numeric addresses which uniquely identify each signaling point. This point code can be adjacent to the EAGLE 5 ISS, but does not have to be.

E

ECAP — EAGLE Collector Application Processor

A dedicated standalone platform for the collection of EAGLE 5 ISS traffic statistical data.

ECAP provides the information and data needed to apply the charging rules to an external billing and charging application, called the Aggregator. ECAP depends on the Eagle SLAN card for this information.

F

FTP — File Transfer Protocol

A client-server protocol that allows a user on one computer to transfer files to and from another computer over a TCP/IP network.

Feature Test Plan

I

ICMP — Internet Control Message Protocol

ID — Identity, identifier

IP — Intelligent Peripheral

Internet Protocol

I

	IP specifies the format of packets, also called datagrams, and the addressing scheme. The network layer for the TCP/IP protocol suite widely used on Ethernet networks, defined in STD 5, RFC 791. IP is a connectionless, best-effort packet switching protocol. It provides packet routing, fragmentation and re-assembly through the data link layer.
IP Address	The location of a device on a TCP/IP network. The IP Address is either a number in dotted decimal notation which looks something like (IPv4), or a 128-bit hexadecimal string such as (IPv6).
IPSM	IP Services Module A card that provides an IP connection for the IPUI (Telnet) and FTP-based Table Retrieve features. The IPSM is a GPSM-II card with a one Gigabyte (UD1G) expansion memory board in a single-slot assembly running the IPS application.
IS-NR	In Service - Normal
ISS	Integrated Signaling System
ISUP	ISDN User Part The ISDN-specific part of the transmission with additional information via a signaling channel between exchanges.

I

ITU

International Telecommunications Union

An organization that operates worldwide to allow governments and the private telecommunications sector to coordinate the deployment and operating of telecommunications networks and services. The ITU is responsible for regulating, coordinating and developing international telecommunications, and for harmonizing national political interests.

K

Key

For the ICNP feature, a unique DS value used to access a table entry, consisting of a number length and number type.

L

LAN

Local Area Network

A private data network in which serial transmission is used for direct data communication among data stations located in the same proximate location. LAN uses coax cable, twisted pair, or multimode fiber.

See also STP LAN.

LIM

Link Interface Module

Provides access to remote SS7, IP and other network elements, such as a Signaling Control Point (SCP) through a variety of signaling interfaces (DS0, MPL, E1/T1 MIM, LIM-ATM, E1-ATM, IPLIMx, IPGWx). The LIMs consist of a main assembly and possibly, an interface appliqué board. These

L

appliqués provide level one and some level two functionality on SS7 signaling links.

M

MAP

Mated Application Part

Mobile Application Part

An application part in SS7 signaling for mobile communications systems.

MB

Megabyte — A unit of computer information storage capacity equal to 1,048, 576 bytes.

MSU

Message Signal Unit

The SS7 message that is sent between signaling points in the SS7 network with the necessary information to get the message to its destination and allow the signaling points in the network to set up either a voice or data connection between themselves. The message contains the following information:

- The forward and backward sequence numbers assigned to the message which indicate the position of the message in the traffic stream in relation to the other messages.
- The length indicator which indicates the number of bytes the message contains.
- The type of message and the priority of the message in the signaling information octet of the message.
- The routing information for the message, shown in the routing

M

label of the message, with the identification of the node that sent message (originating point code), the identification of the node receiving the message (destination point code), and the signaling link selector which the EAGLE 5 ISS uses to pick which link set and signaling link to use to route the message.

MTP

Message Transfer Part

The levels 1, 2, and 3 of the SS7 protocol that control all the functions necessary to route an SS7 MSU through the network

Module Test Plan

N

NMS

Network Management System

An NMS is typically a standalone device, such as a workstation, that serves as an interface through which a human network manager can monitor and control the network. The NMS usually has a set of management applications (for example, data analysis and fault recovery applications).

NTP

Network Time Protocol

O

OPC

Originating Point Code

Within an SS7 network, the point codes are numeric addresses which uniquely identify each signaling point. The OPC identifies the sending signaling point.

O

OS	Operating System Operations Systems

R

RMA	Return Material Authorization
RSA	Regional Service Area Rural Statistical Areas Reset Answer The Rivest-Shamir-Adleman Algorithm for public-key encryption developed by Ron Rivest, Adi Shamir, and Leonard Adleman.

S

SCCP	Signaling Connection Control Part The signaling connection control part with additional functions for the Message Transfer Part (MTP) in SS7 signaling. Messages can be transmitted between arbitrary nodes in the signaling network using a connection-oriented or connectionless approach.
SI	Service Indicator
SLAN	Signaling Transfer Point Local Area Network A feature in the EAGLE 5 ISS that copies MSUs selected through the gateway screening process and sends these MSUs over the Ethernet to an external host computer for further processing.

S

SNMP	Simple Network Management Protocol. An industry-wide standard protocol used for network management. The SNMP agent maintains data variables that represent aspects of the network. These variables are called managed objects and are stored in a management information base (MIB). The SNMP protocol arranges managed objects into groups.
SSEDCM	Single Slot Enhanced Data Communications Module
SSH	Secure Shell A protocol for secure remote login and other network services over an insecure network. SSH encrypts and authenticates all EAGLE 5 ISS IPUI and MCP traffic, incoming and outgoing (including passwords) to effectively eliminate eavesdropping, connection hijacking, and other network-level attacks.
STP	Signal Transfer Point The STP is a special high-speed switch for signaling messages in SS7 networks. The STP routes core INAP communication between the Service Switching Point (SSP) and the Service Control Point (SCP) over the network. Spanning Tree Protocol
STPLAN	Signaling Transfer Point Local Area Network

S

The application used by the SLAN card and E5-SLAN card to support the STP LAN feature. This application does not support 24-bit ITU-N point codes.

T

TCAP

Transaction Capabilities Application Part

A protocol in the SS7 protocol suite that enables the deployment of advanced intelligent network services by supporting non-circuit related information exchange between signaling points using the Signaling Connection Control Part connectionless service. TCAP also supports remote control - ability to invoke features in another remote network switch.

U

UAM

Unsolicited Alarm Message

A message sent to a user interface whenever there is a fault that is service-affecting or when a previous problem is corrected. Each message has a trouble code and text associated with the trouble condition.

V

VLAN

Virtual Local Area Network

A logically independent network. A VLAN consists of a network of computers that function as though they were connected to the same wire when in fact they may be physically connected to different segments of a LAN. VLANs are configured through software rather than hardware. Several VLANs can co-exist on a single physical switch.

W

WAN	Wide Area Network A network which covers a larger geographical area than a LAN or a MAN.

X

XML	eXtensible Markup Language A version of the Standard Generalized Markup Language (SGML) that allows Web developers to create customized tags for additional functionality.