



Transaction Encryption Device FX Server Installation and Operation Guide

Please Read

Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.

Notices

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Safety Precautions

Read, Retain, and Follow These Instructions

Carefully read all safety and operating instructions before operating this product. Follow all operating instructions that accompany this product. Retain the instructions for future use. Give particular attention to all safety precautions.

Warning and Caution Icons



WARNING:

Avoid personal injury and product damage! Do not proceed beyond any icon until you fully understand the indicated conditions.

The following icons alert you to important information about the safe operation of this product:



You will find this icon in the literature that accompanies this product. This icon indicates important operating or maintenance instructions.



You may find this icon affixed to this product and in this document to alert you of electrical safety hazards. On this product, this icon indicates a live terminal; the arrowhead points to the terminal device.



You may find this icon affixed to this product. This icon indicates a protective earth terminal.



You may find this icon affixed to this product. This icon indicates excessive or dangerous heat.



You may find this symbol affixed to this product and in this document. This symbol indicates an infrared laser that transmits intensity-modulated light and emits invisible laser radiation and an LED that transmits intensity-modulated light.

Heed All Warnings

Adhere to all warnings on the product and in the operating instructions.

Avoid Electric Shock

Follow the instructions in this warning.



WARNING:

To reduce risk of electric shock, perform only the instructions that are included in the operating instructions. Refer all servicing to qualified service personnel.

Servicing



WARNING:

Avoid electric shock! Opening or removing the cover may expose you to dangerous voltages.

Do not open the cover of this product and attempt service unless instructed to do so in the operating instructions. Refer all servicing to qualified personnel only.

Cleaning, Water, Moisture, Open Flame

To protect this product against damage from moisture and open flames, do the following:

- Before cleaning, unplug this product from the AC outlet. Do *not* use liquid or aerosol cleaners. Use a dry cloth for cleaning.
- Do not expose this product to moisture.
- Do not place this product on a wet surface or spill liquids on or near this product.
- Do not place or use candles or other open flames near or on this product.

Ventilation

To protect this product against damage from overheating, do the following:

- This product has openings for ventilation to protect it from overheating. To ensure product reliability, do not block or cover these openings.
- Do not open this product unless otherwise instructed to do so.
- Do not push objects through openings in the product or enclosure.

Placement

To protect this product against damage from breakage, do the following:

- Place this product close enough to a mains AC outlet to accommodate the length of the product power cord.
- Route all power supply cords so that people cannot walk on, or place objects on, or lean objects against them. This can pinch or damage the cords. Pay particular attention to cords at plugs, outlets, and the points where the cords exit the product.
- Make sure the mounting surface or rack is stable and can support the size and weight of this product.



WARNING:



Avoid personal injury and damage to this product! An unstable surface may cause this product to fall.

When moving a cart that contains this product, check for any of the following possible hazards:

- Move the cart slowly and carefully. If the cart does not move easily, this condition may indicate obstructions or cables that you may need to disconnect before moving this cart to another location.
- Avoid quick stops and starts when moving the cart.
- Check for uneven floor surfaces such as cracks or cables and cords.



WARNING:



Avoid personal injury and damage to this product! Move any appliance and cart combination with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart to overturn.

Fuse

When replacing a fuse, heed the following warnings.



WARNING:

Avoid electric shock! Always disconnect all power cables before you change a fuse.



WARNING:

Avoid product damage! Always use a fuse that has the correct type and rating. The correct type and rating are indicated on this product.

Grounding This Product (U.S.A. and Canada Only)

Safety Plugs

If this product is equipped with either a three-prong (grounding pin) safety plug or a two-prong (polarized) safety plug, do not defeat the safety purpose of the polarized or grounding-type plug. Follow these safety guidelines to properly ground this product:

- For a 3-prong plug (consists of two blades and a third grounding prong), insert the plug into a grounded mains, 3-prong outlet.

Note: This plug fits only one way. The grounding prong is provided for your safety. If you are unable to insert this plug fully into the outlet, contact your electrician to replace your obsolete outlet.

- For a 2-prong plug (consists of one wide blade and one narrow blade), insert the plug into a polarized mains, 2-prong outlet in which one socket is wider than the other.

Note: If you are unable to insert this plug fully into the outlet, try reversing the plug. The wide blade is provided for your safety. If the plug still fails to fit, contact an electrician to replace your obsolete outlet.

Safety Precautions

Grounding Terminal

If this product is equipped with an external grounding terminal, attach one end of an 18-gauge wire (or larger) to the grounding terminal; then, attach the other end of the wire to an earth ground, such as an equipment rack that is grounded.

20050727 Headend/Rack

FCC Compliance

Where this equipment is subject to U.S.A. FCC and/or Industry Canada rules, the following statements apply.

United States FCC Compliance

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against such interference when this equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

Canada EMI Regulation

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la class A est conforme à la norme NMB-003 du Canada.

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About This Guide

Introduction

This guide describes the Transaction Encryption Device (TED) FX server, details what you need to successfully install the TED FX server, and provides a process overview. This guide also provides hardware and software installation instructions, and standard instructions for properly powering down, powering up, and rebooting the TED FX server.

Purpose

Use this guide when you are completing the following tasks:

- Installing a new TED FX server in your network
- Upgrading the DNCS/ISDS software
- Replacing an existing TED or TED FX server with a new TED FX server
- Initializing a back-up TED FX server

Audience

This guide provides network system administrators, DNCS/ISDS operators, and field engineers with instructions for installing the TED FX server. These administrators should have extensive working experience within their network architecture and with using UNIX text editors.

System Requirements

Your system must have the correct DNCS/ISDS software to use the TED FX in your network. Contact Cisco Services if you are not sure about the DNCS/ISDS software installed on your system.

TED FX Server Models

This guide is primarily written for the TED FX server; however, you can use this guide when installing any model of the TED FX server.

Site Requirements

To successfully install the TED FX server in your headend, your site must contain the following specifications:

- A Universal Power System (UPS) back-up power system
- An environment that is air-conditioned with an operating temperature of 0°C (32°F) to 55°C (131°F)
- The TED FX server should be located in a area with restricted access for security

Resident Applications Supported

The TED FX server can be installed at sites that use the SA Resident Application (SARA), the Cisco® Reference TV Navigator (RTN), the Aptiv (Pioneer) Resident Application, the Time Warner Mystro Resident Application (MDN/ODN), or the Comcast i-Guide™ Resident Application.

Procedures for Your Network

Since this document applies to multiple network types, not all of the procedures in this document will apply to every network. Use the procedures that apply to your network architecture, and ignore the ones that do not.

Related Publications

You may find the following publications useful as resources when you implement the procedures in this document.

- *Installing and Operating the Replicated Database Package Installation and Operation Guide* (part number 4023374)
- *RNCS Installation and Upgrade Instructions* (part number 4003191)

Document Version

This is the sixth release of this guide. In addition to minor text and graphic changes, the following table provides the technical changes to this guide.

Description	See Topic
Added information on installing and configuring the rack-mounted version.	<i>Install the Rack-Mounted TED FX Server</i> (on page 12), also throughout document
Updated file installation procedure for pkgadd, replacing the swmtool procedure.	<i>Install the TED Files</i> (on page 18)
Added procedures to ensure that the TED FX server is initialized correctly.	<i>Ensure Correct Initialization of the TED FX Server</i> (on page 28)

Added an appendix with more information on safeguarding your pass phrases. *Safeguarding Pass Phrases* (on page 37)

Added an appendix that explains how to set up a standby or redundant TED FX server. *Set Up Redundant TED FX Servers* (on page 41)

1

Introducing the TED FX Server

Introduction

This chapter provides an overview of the TED FX server and diagrams of the front and back panels. In addition, this chapter provides a theory of operation for the TED FX server, which presents topics such as the encryption process and the PowerKEY® Conditional Access.

In This Chapter

- TED FX Server Overview..... 2
- Theory of Operation..... 4

TED FX Server Overview

Introduction

To help you understand the purpose of the TED FX server, this section provides a detailed description of the TED FX server and a diagram of the front and back panels of the TED FX server.

Description

The TED FX is a server that provides a security feature for allowing selective access to secured broadcast services, pay-per-view (PPV) services, impulse pay-per-view (IPPV) services, and video-on-demand (VOD) services. This security feature is known as *encryption*, which only allows authorized set-tops access to secured services.

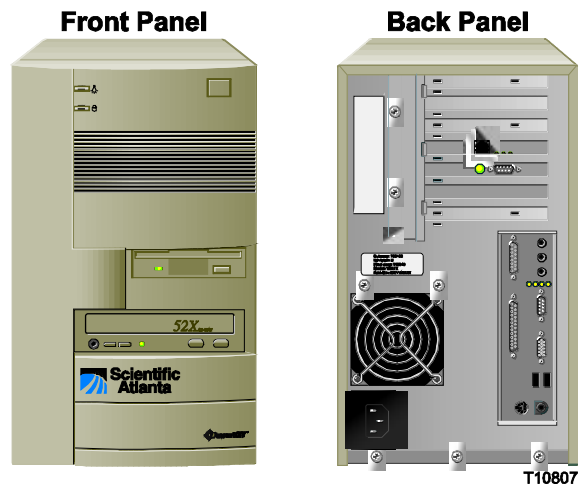
TED FX servers prior to Rev D run on a Linux operating system version 6.0 and include a network interface card, Rainbow CryptoSwift CryptoGraphic Accelerator Version 2, which increases the transaction encryption rate of the TED FX server. EMMs are encrypted messages addressed to specific set-tops to allow delivery of secure authorizations. The TED FX server encrypts approximately 150 EMMs per second and then sends those EMMs to the DNCS/ISDS for transporting throughout the network.

Rev D TED FX servers run on a Linux operating system version 7.0 and also include a network interface card, Rainbow CryptoSwift CryptoGraphic Accelerator Version 2.

TED FX Server Front and Back Panels

The following diagram shows the front and back panels of the TED FX server model that processes approximately 150 EMMs per second.

TED FX Server



TED FX Rack-Mounted Server

Front Panel



Back Panel



Theory of Operation

Introduction

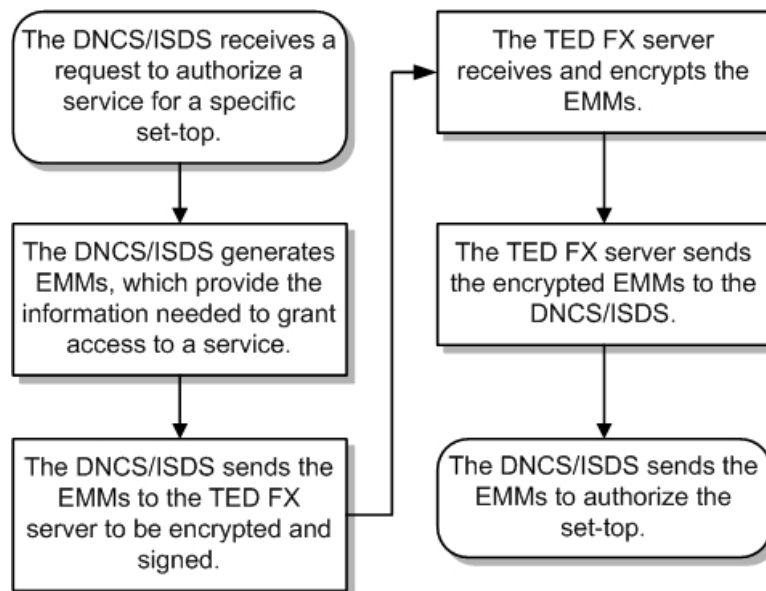
To successfully understand how the TED FX server operates in the network, this section provides a flow chart of the encryption process, describes PowerKEY Conditional Access (CA), and includes a diagram of the network.

Encryption Process Flow Chart

Encryption of a requested service ensures the privacy of the delivered service to the authorized set-top. Once the PowerKEY system secures the service, only an authorized set-top can access the service. The encryption process benefits the service provider by providing a basis for protecting the access of secured services requested by the subscriber. The following flow chart summarizes the EMM encryption and transmission process.

Process Flow Chart

The following flow chart summarizes the EMM encryption and transmission process.



PowerKEY Conditional Access

We use PowerKEY CA software to enhance the encryption and decryption techniques that secure the transmission of applications such as broadcast video, PPV, IPPV, and VOD. PowerKEY CA ensures that only the authorized subscriber can access the secured service in the network by encrypting or protecting the service. When requesting a PPV service or ordering premium services (like HBO), the service is encrypted to secure the transmission of the content throughout the network. PowerKEY CA is initialized on the DNCS/ISDS and the TED FX server to validate access to secured services.

2

Getting Started

Introduction

This chapter describes the tasks that you must complete and the requirements your system must meet before you install the TED FX server in your headend. This chapter also provides a process overview of the stages for installing a TED FX server and instructions for unpacking the TED FX server.

In This Chapter

- Before You Begin..... 8
- Process Overview 9
- Unpack the TED FX Server..... 10

Before You Begin

Introduction

This section provides a list of tasks that you must complete before installing the TED FX server. The TED FX server is a highly secured server and completing each task is essential for successfully installing the TED FX server.

Preparing for Installation

Before attempting to install the TED FX server, initial next to each task as you complete the task in the order given.

- 1 Verify that your system is running the correct DNCS/ISDS software. Contact Cisco Services if you are not sure about the DNCS/ISDS software installed on your system.
- 2 Read all the safety information included in this guide.
- 3 Ensure that the TED FX is located in an area with restricted access for security.
- 4 Ensure that the installer has extensive working experience with using UNIX text editors.
- 5 Ensure that an SA installer is present to provide their portion of the Conditional Access Authority (CAA) Pass Phrase.
- 6 Verify your **System Rev** version.
- 7 Obtain the **Customer CAA** CD from your network system administrator.
- 8 Obtain your portion of the CAA Pass Phrase from your network system administrator.
- 9 Obtain your Entitlement Agent (EA) Pass Phrase from your network system administrator.
- 10 Store your portion of the CAA Pass Phrase and the TED FX Chassis Padlock Key in a secure location (preferably a safe).

Process Overview

Introduction

This section describes the process for installing the TED FX server. The subsequent chapters of this guide provide the specific instructions to accomplish each stage.

Process

The following table describes the process for installing the TED FX server. To successfully install the TED FX server, you must complete each process listed in the order given.

Stage	Description
1	Unpack the TED FX server from the carton to verify the parts and the quantity. Note: The instructions for unpacking the TED FX server are located in the next section of this chapter.
2	Install the server in an area with restricted access.
3	Connect the TED FX server to your DNCS/ISDS to provide communication between the servers.
4	Verify the communications with the TED FX server from the DNCS/ISDS.
5	Verify your System Rev version.
6	Stop the DNCS/ISDS processes.
7	Download the TED files from the DNCS/ISDS to the TED FX server.
8	Choose one of the following: <ul style="list-style-type: none"> ■ Initialize the TED FX server if the DNCS/ISDS has never been initialized with the PowerKEY Conditional Access software. ■ Re-initialize the TED FX server if you are completing one of the following tasks: <ul style="list-style-type: none"> – Replacing an existing TED or TED FX server – Initializing a DNCS/ISDS that has been previously initialized – Initializing a back-up TED FX server
9	Restart the DNCS/ISDS processes after completing all previous steps.
10	Store your portion of the CAA Pass Phrase and the TED FX Chassis Padlock Key in a secure location (preferably a safe).

Unpack the TED FX Server

Introduction

To successfully install the TED FX server in your headend, you must unpack the TED FX server from the carton and verify all parts and quantities. This section provides instructions for unpacking the TED FX server from the carton.

Unpacking the TED FX Server

Complete these steps to unpack the TED FX server from the carton.

- 1 Open and remove all packing material from the carton.
- 2 Initial next to the following items to verify that your shipment includes the parts and quantities listed:
 - TED FX server (1) _____
 - Power Cord (1) _____
 - RJ-45 cross-over cable, 10 inches (1) _____
 - Adjustable rack brackets, for rack-mounted version (2) _____
 - Universal chassis fastener (1) _____
 - Chassis Padlock Key for securing the chassis (1) _____

Note: After installation, store the Chassis Padlock Key in the same secure location as your portion of the CAA Pass Phrase.
- 3 Are any parts missing?
 - If **yes**, see *Customer Support* (on page 36) of this guide for contact information.
 - If **no**, go to step 4.
- 4 Inspect all of the parts, including the TED FX server, for visible damages.
- 5 Are there any visible damages on any of the parts?
 - If **yes**, see *Return Products for Repair* (on page **Error! Bookmark not defined.**).
 - If **no**, go to step 6.
- 6 Read all the safety and operating instructions accompanied with this product.
- 7 Go to *Installing the TED FX Server* (on page 11).

3

Installing the TED FX Server

Introduction

This chapter provides instructions for installing a TED FX server and verifying that the DNCS/ISDS can communicate with the TED FX server.

In This Chapter

- Install the Rack-Mounted TED FX Server 12
- Connect the TED FX Server to the DNCS/ISDS..... 13
- Verify Communications with the TED FX Server 14

Install the Rack-Mounted TED FX Server

This section details the installation of the rack-mounted TED FX server. If you do not have a rack-mounted version, skip these steps and go directly to *Connect the TED FX Server to the DNCS/ISDS* (on page 13).

Safety Considerations



CAUTIONS:

- Do not tangle or strain interconnecting cables.
- Install 1U vent panels above and below the server to prevent overheating.

Exhaust air management is the key to cooling multiple units in a custom rack configuration. Inlet air temperature should be as cool as possible and should never exceed 122°F (50°C). Exhaust air should have little or no restrictions. Obstructions such as cabling or other devices that block airflow to the side or top of the rack should be avoided.

If you are concerned about inlet air temperature, you should measure the temperature of the inlet air in the actual rack as you plan to use it. You should have all cabling in place and all adjacent units installed and running.

Important: Opening the door on the back panel of the rack can have an *adverse* effect on the managed airflow. If access to the door on the back panel is not controlled, you should take the inlet air temperature with the back panel door open since, in most instances, opening the door will re-direct the airflow in an adverse manner.

Installing the Rack-Mounted TED FX Server

- 1 Install the adjustable rack brackets supplied with the TED FX server. These rack brackets provide additional support along with the following features:
 - Attaches directly to the rack
 - Allows you to slide the server partially out of the rack for service
 - Allows appropriate air circulation throughout the unit
- 2 Place the server in the rack.
- 3 Insert the mounting screws for the rack brackets into the appropriate mounting positions on the server.
- 4 Firmly tighten each bracket mounting screw.
- 5 Insert a mounting screw through each of the four-bezel mounting holes on the front panel of the server and then into the rack.
- 6 Firmly tighten each mounting screw.

Connect the TED FX Server to the DNCS/ISDS

Introduction

The TED FX server must be connected to the DNCS/ISDS to provide secure services throughout the network. This section provides instructions for connecting the TED FX server to the DNCS/ISDS.

Connecting the TED FX Server to the DNCS

Complete these steps to connect the TED FX server to the DNCS/ISDS.

- 1 Choose one of the following:
 - Place the TED FX server next to the DNCS/ISDS.
 - Install the TED FX server in a rack close to the DNCS/ISDS.

Important: Either location should be a restricted access, secure location.
- 2 Verify that the DNCS/ISDS is powered on and all processes are active.
- 3 Insert the RJ-45 Cat 5 cross-over cable into the Ethernet port on the back panel of the TED FX server.
- 4 Insert the other end of the RJ-45 Cat 5 cross-over cable into the Ethernet port <...> on the back panel of the DNCS/ISDS.

Note: The Ethernet port <...> is port Ø located on the system motherboard of the DNCS/ISDS.
- 5 Insert the female end of the power cord into the power receptacle on the back panel of the TED FX server.
- 6 Insert the other end of the power cord into a 120 V AC power source.
- 7 Press the power button on the front panel to power on the TED FX server.
- 8 Wait 60 seconds before proceeding to the next step.
- 9 Is the power LED illuminated on the front panel of the TED FX server?
 - If **yes**, go to step 14.
 - If **no**, go to step 10.
- 10 Verify that the power cord is inserted tightly into the power receptacle on the back panel of the TED FX server and into a 120 V AC power source.
- 11 Press the power button on the front panel to power on the TED FX server.
- 12 Wait 60 seconds before proceeding to the next step.
- 13 Is the power LED illuminated on the front panel of the TED FX server?
 - If **yes**, go to step 14.
 - If **no**, contact CiscoServices for assistance.
- 14 Go to *Verify Communications with the TED FX Server* (on page 14).

Verify Communications with the TED FX Server

Introduction

The DNCS/ISDS must be able to communicate with the TED FX server for the TED FX server to encrypt services in the network. This section provides instructions for verifying the communications link between the DNCS/ISDS and the TED FX server.

Verifying Communications with the TED FX Server

Complete these steps to verify that the DNCS/ISDS can communicate with the TED FX server.

Note: All UNIX commands are case sensitive.

- 1 Open an xterm window on the DNCS/ISDS.
- 2 Type **ping dncsted** and then press **Enter**.
- 3 Did the message **dncsted is alive** appear?
 - If **yes**, go to step 4.
 - If **no**, contact CiscoServices for assistance.
- 4 Go to *Initializing the TED FX Server* (on page 15).

4

Initializing the TED FX Server

Introduction

Initializing the TED FX server involves completing several steps to ensure that the TED FX server operates successfully in your headend. This chapter provides instructions for the following tasks:

- Stopping the DNCS/ISDS processes
- Installing the TED FX software from a CD
- Initializing the PowerKEY CA System
- Re-Initializing the PowerKEY CA System
- Restarting the DNCS/ISDS processes

Note: Since this document applies to multiple network types, not all of the procedures in this document will apply to every network. Use the procedures that apply to your network architecture, and ignore the ones that do not.

In This Chapter

- Stop System Components 16
- Install the TED Files..... 18
- Initialize the PowerKEY CA System 20
- Re-Initialize the PowerKEY CA System 24
- Restart System Components 26
- Ensure Correct Initialization of the TED FX Server 28

Stop System Components

Important: System components must be stopped before you install the TED files.

The TED files are a group of files that install and execute the encryption and decryption software. Use the procedures in this section to stop system components in the proper order. Failing to stop system components in the order described in this section may cause you to encounter difficulties during the installation.

Introduction

Before continuing with the installation process, follow the instructions in this section to stop the Application Server for your system and the DNCS/ISDS.

Stopping the Application Server

This section provides procedures for stopping a SARA Server, an Aptiv Application Server, if necessary, or the Time Warner Mystro Application Server (MDN), if necessary. Choose the procedure that pertains to your system.

Stopping the Application Server at SARA Sites

- 1 Press the middle mouse button on the Application Server and select **App Serv Stop**.
- 2 From an xterm window on the Application Server, type **appControl** and then press **Enter**. The Applications Control window appears.
- 3 Type **2** (for Startup/Shutdown Single Element Group), and then press **Enter**. The system displays all Application Server processes.
Note: The system updates the display periodically, or you can press **Enter** to force an update.
- 4 When the **Curr Stt** (Current State) field of the Applications Control window indicates that all of the Application Server processes have stopped, follow the on-screen instructions to close the Applications Control window.
- 5 Type **appKill** and then press **Enter**. The `appInited` process stops.

Stopping the Time Warner Mystro Application Server

If the site you are upgrading uses the Time Warner Mystro application server (MDN), refer to the documents provided by Mystro to shut down the Mystro application server.

Stopping the Aptiv Application Server

If your site uses the Aptiv application server, refer to the documents provided by Aptiv to shut down the Aptiv application server.

TED FX Stopping the RNCS Processes on the DNCS/ISDS

If the RNCS licensed feature is enabled on your DNCS/ISDS, then refer to *RNCS Installation and Upgrade Instructions* (part number 4003191) to stop the RNCS processes.

Stopping the DNCS/ISDS

- 1 At the DNCS/ISDS, press the middle mouse button and then select **DNCS Stop**. A confirmation message appears.
- 2 Click **Yes**.
- 3 From an xterm window on the DNCS/ISDS, type **dncsControl** and then press **Enter**. The DnCS Control utility window opens.
- 4 Type **2** (for Startup/Shutdown Single Element Group), and then press **Enter**. The system displays all DNCS/ISDS processes.
Note: The system updates the display periodically, or you can press **Enter** to force an update.
- 5 When the **Curr Stt** (Current State) field of the utility window indicates that all of the DNCS/ISDS processes have stopped, follow the on-screen instructions to close the DnCS Control window.

Install the TED Files

Introduction

To allow the TED FX server to encrypt requested services, the TED files must be installed on the TED FX server. This section provides instructions for installing the TED files.

Installing the TED Files

Complete these steps to install the TED files onto the TED FX server.

Notes:

- You must complete the instructions for stopping the DNCS/ISDS processes, in the previous section, before installing the TED files.
 - All UNIX commands are case sensitive.
- 1 Open an xterm window on the DNCS/ISDS.
 - 2 Type **su** and press **Enter**. The password prompt appears.
 - 3 Type your root password and press **Enter**.

Note: If you do not know your root password, contact your network system administrator for assistance.

- 4 Type **cd /dvs/dnscs/TED** and press **Enter**. The /dvs/dnscs/TED directory is now the working directory.
- 5 Type **./loadTedFiles.sh** and press **Enter**.

Note: Be sure to type a period before the /.

Results:

- The system copies the appropriate files to the TED FX server.
- The system initializes the TED FX server with the appropriate files.
- The devtedlog file appears.

Example: The following example of the devtedLog file allows you to view the process of the ./loadTedFiles.sh command.

```
Now printing the devtedLog.000 file....
LOG: Thur Dec 20 14:34:06 2001
----- devtedInit Started -----
LOG: Thur Dec 20 14:34:06 2001
----- Starting devted executable -----
LOG: Thur Dec 20 14:34:06 2001
----- Cryptography Cards Initialized -----
LOG: Thur Dec 20 14:34:06 2001
----- BSAFE Random Number Structure Initialized -----
```

```
LOG: Thur Dec 20 14:34:06 2001
----- RPC Mechanism Connected and ready for Provisioning Requests -----
-
LOG: Thur Dec 20 14:34:06 2001
----- Pass Phrase(s) Initialized -----
LOG: Thur Dec 20 14:34:06 2001
----- Entering Loop to Process RPC Requests -----
```

6 Review the **devtedLog file**, and if any of the following errors appear, contact CiscoServices for assistance.

- devted process could not be started
- CryptoSwift cards could not be accessed
- FORK_ERROR
- Shared memory could not be created

Note: If no errors appear in the devtedLog file, go to step 7.

7 To log out as the root user, type **exit** and press **Enter**. The xterm window closes.

8 Go to *Initialize the PowerKEY CA System* (on page 20).

Initialize the PowerKEY CA System

Introduction

PowerKEY CA ensures that only an authorized subscriber can access a secured service. As part of the PowerKEY CA system, the PowerKEY CAA keys, the Entitlement Agent (EA) pass phrase, and the Factory Root Certificate Authorization Key must be initialized. This section provides instructions for initializing the PowerKEY CAA keys, the EA pass phrase, and the Factory Root Certificate Authorization Key.

Important:

- Only initialize the PowerKEY CA system if your DNCS/ISDS has never been initialized. If your DNCS/ISDS has been initialized, see *Re-Initialize the PowerKey CA System* (on page 24).
- Store your portion of the CAA Pass Phrase and the TED FX Chassis Padlock Key in a secure location (preferably a safe).

Initializing the PowerKEY CAA Keys and the EA Pass Phrase

Complete these steps to initialize the PowerKey CAA Keys and the EA Pass Phrase on the DNCS/ISDS and the TED FX server.

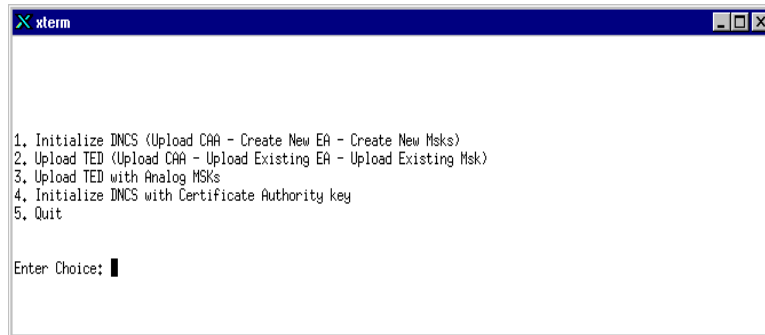
Important:

- To ensure the security of your system, an SA installer must be present when you are ready to complete these instructions in this section. Only SA installers know the other portion of the CAA Pass Phrase that is necessary to complete these instructions.
- For more information on the pass phrases and on safeguarding your pass phrases, see *Safeguarding Pass Phrases* (on page 37).

Note: All UNIX commands are case-sensitive.

- 1 Open an xterm window on the DNCS/ISDS and log on as the **dncs** user.
- 2 Type **export EMCDEBUG=** and press **Enter**.
- 3 Type **export EMCERROR=** and press **Enter**.
- 4 Insert the **Customer CAA** CD into the CD-ROM drive on the DNCS/ISDS.

- 5 In the xterm window, type **camDnCSTedInit** and press **Enter**. The following menu appears in the xterm window.



```

xterm
1. Initialize DNCS (Upload CAA - Create New EA - Create New Msk)
2. Upload TED (Upload CAA - Upload Existing EA - Upload Existing Msk)
3. Upload TED with Analog MSKs
4. Initialize DNCS with Certificate Authority key
5. Quit

Enter Choice: █

```

- 6 At the **Enter Choice** prompt, type **1** to select the Initialize DNCS option, and press **Enter**. The **Enter Name of file containing CAA Key [default=floppy]** prompt appears.

- 7 Type the following command and press **Enter**:

```
/cdrom/cdrom0/key.enc
```

Results:

- The following messages appear:

```
Connecting to TED please wait
```

```
Connecting to TED
```

- 8 At the confirmation prompt, type **yes** to continue and press **Enter**.

Results:

- The following message appears:

```
Loading CAA to TED and DNCS. Please wait.
```

- The CD is automatically ejected.

- 9 Remove the CAA CD from the CD-ROM drive. The **CAA Pass Phrase** prompt appears.

- 10 Ask the installer to type the SA portion of the **CAA Pass Phrase**.

- 11 Type your portion of the **CAA Pass Phrase** and press **Enter**. The **Re-enter CAA Pass Phrase** prompt appears.

Note: If you do not know the CAA Pass Phrase, contact your network system administrator for assistance.

- 12 Ask the SA installer to retype the SA portion of the **CAA Pass Phrase**.

- 13 Retype your portion of the **CAA Pass Phrase** and press **Enter**.

Results:

- The CAA key, protected by a pass phrase, is stored in the DNCS/ISDS database.

- The **EA Pass Phrase** prompt appears.

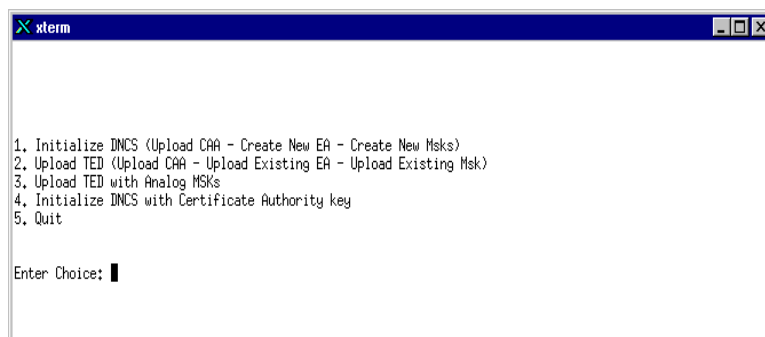
- 14 Type your **EA Pass Phrase** and then press **Enter**. The **Re-enter EA Pass Phrase** prompt appears.
Note: The EA Pass Phrase must consist of 10 to 64 alphanumeric characters long.
- 15 Retype your EA Pass Phrase and press **Enter**. The EA and Multi-Session Keys (MSK) are generated and stored in encrypted form in the DNCS/ISDS database.
- 16 When the message **press enter to continue** appears, press **Enter**. The **Enter Choice** prompt appears.
- 17 At the **Enter Choice** prompt, type **5** to quit and press **Enter**. The **dncs** prompt appears.
- 18 Go to *Initializing the Factory Root Certificate Authorization Key* (on page 22).

Initializing the Factory Root Certificate Authorization Key

The Factory Root Certificate Authorization Key is part of the encryption process that allows the set-top to unlock the secured service. Complete these steps to initialize the Factory Root Certificate Authorization Key on the DNCS/ISDS.

Note: All UNIX commands are case-sensitive.

- 1 Obtain and insert the **Factory Root Certificate Authorization Key** CD into the CD-ROM drive of the DNCS/ISDS.
- 2 Type **camDnCSTedInit** and press **Enter**. The following menu appears on the xterm window.



- 3 At the **Enter Choice** prompt, type **4** to select the Initialize DNCS with Certificate Authority Key option, and press **Enter**. The **Enter name of file containing Certification Authority Key** prompt appears.
- 4 Type the following command and press **Enter**:
/cdrom/cdrom0/12345.ca

Results:

- The message **A root certificate authority key to validate key certificates is installed on the DNCS** appears.
- The CD ejects automatically.

- 5 Click **OK**, and then remove the Factory Root Certificate Authorization Key CD from the CD-ROM drive. The message **Operation is complete result success** appears.
- 6 When the message **press enter to continue** appears, press **Enter** to continue. The **Enter Choice** prompt appears.
- 7 At the **Enter Choice** prompt, type **5** to select quit and press **Enter**.

Results:

- Error messages may appear from previous typos. For example, an error message may appear if you typed a command incorrectly at first, but then corrected your error during a second attempt. Ignore these messages if each step verified success either by displaying a success message or by displaying the next prompt in the procedure.
 - The **dnscs** prompt reappears.
- 8 To close the xterm window, type **exit** and press **Enter**.
 - 9 Go to *Restart System Components* (on page 26).

Re-Initialize the PowerKEY CA System

Introduction

Re-initializing the PowerKEY CA system involves uploading the PowerKEY CAA keys and the existing Entitlement Agent (EA) pass phrase onto the DNCS/ISDS and the TED FX server. This section provides instructions to re-initialize the PowerKey CA system.

Only re-initialize the PowerKEY CA system if you are completing the following tasks:

- Replacing an existing TED FX server
- Re-initializing a previous initialized DNCS/ISDS
- Initializing a back-up TED FX server

Important: If the DNCS/ISDS has never been initialized, you must initialize the DNCS/ISDS to apply the PowerKEY CAA keys, the Entitlement Agent (EA) pass phrase, and the Factory Root Certificate Authorization Key. See *Initialize the PowerKEY CA System* (on page 20) for further instructions.

Before You Begin

To ensure the security of your system, an SA installer must be present when you are ready to complete the instructions in this section. Only SA installers know the other portion of the CAA Pass Phrase that is necessary to complete the instructions.

Important:

- All UNIX commands are case sensitive.
- For more information on the pass phrases and on safeguarding your pass phrases, see *Safeguarding Pass Phrases* (on page 37).

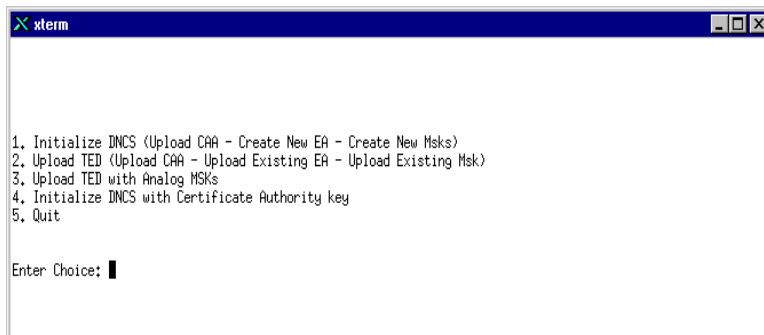
Re-Initializing the PowerKEY CA System

Complete these steps to re-initialize the PowerKey CAA Keys and the EA Pass Phrase on the DNCS/ISDS and the TED FX server.

Note: All UNIX commands are case sensitive.

- 1 Open an xterm window on the DNCS/ISDS and log on as the **dncs** user.
- 2 Type **export EMCDEBUG=** and press **Enter**.
- 3 Type **export EMCERROR=** and press **Enter**.

- 4 Type **camDnctsTedInit** and press **Enter**. The following menu appears on the xterm window.



```

xterm
1. Initialize DNCS (Upload CAA - Create New EA - Create New Msks)
2. Upload TED (Upload CAA - Upload Existing EA - Upload Existing Msk)
3. Upload TED with Analog MSKs
4. Initialize DNCS with Certificate Authority key
5. Quit

Enter Choice: █

```

- 5 Type **2** to select **Upload** and then press **Enter**. The CAA Pass Phrase prompt appears.
- 6 Ask the SA installer to type the SA portion of the **CAA Pass Phrase**.
- 7 Type your portion of the **CAA Pass Phrase** and then press **Enter**. The **Re-enter CAA Pass Phrase** prompt appears.
- Note:** If you do not know the CAA Pass Phrase, contact your network system administrator for assistance.
- 8 Ask the SA installer to retype the SA portion of the **CAA Pass Phrase**.
- 9 Retype your portion of the **CAA Pass Phrase** and then press **Enter**.

Results:

- The CAA key, protected by a pass phrase, is stored in the DNCS/ISDS database.
 - The **EA Pass Phrase** prompt appears.
- 10 Type your **EA Pass Phrase** and then press **Enter**. The **Re-enter EA Pass Phrase** prompt appears.
- Important:** If you do not know your EA Pass Phrase, you must contact your network system administrator. Your network system administrator creates the EA Pass Phrase and then stores it in a secured location. The EA Pass Phrase must consist of 10 to 64 alphanumeric characters long.
- 11 Retype your **EA Pass Phrase** and then press **Enter**. The EA and MSKs are generated and stored in encrypted form in the DNCS/ISDS database
- 12 When the message **press enter to continue** appears, press **Enter**. The **Enter Choice** prompt appears.
- 13 At the **Enter Choice** prompt, type **5** to select quit and then press **Enter**. The **dncts** prompt appears.
- 14 Close the xterm window and return to the Administrative Console.
- 15 Go to *Restart System Components* (on page 26).

Restart System Components

After completing the instructions in the previous sections, your next step is to restart the system components. You must complete the procedures in this section to restart the following system components in the order listed:

- DNCS/ISDS processes
- SARA Server processes
- Aptiv or MDN servers, if necessary
- If using the RCS feature, restart RNCS processes at each remote site

Restarting the DNCS/ISDS

- 1 From an xterm window on the DNCS/ISDS, type **./profile** and press **Enter** to source the environment variables you stopped previously.
- 2 From an xterm window on the DNCS/ISDS, type **dncsStart** and press **Enter**. The Informix database, the SOAPServers, and DNCS/ISDS processes start.
- 3 Click the middle mouse button on the DNCS/ISDS and select **Administrative Console**. The Administrative Console opens.
- 4 From the Administrative Console Status window, click **Control** for the DNCS/ISDS.

Results:

- The Dncc Control window opens.
 - Green indicators begin to replace red indicators on the Dncc Control window.
- 5 From an xterm window on the DNCS/ISDS, type **dnccControl** and then press **Enter** to start the dnccControl utility.
 - 6 Type **2** (for Startup / Shutdown Single Element Group) and then press **Enter**. The utility updates to list the status of all of the processes and servers running on the DNCS/ISDS.
 - 7 Wait for the utility to list the current status (Curr Stt) of all the processes and servers as **running**.

Notes:

- The utility updates automatically every few seconds or you can press **Enter** to force an update.
- The indicators on the Dncc Control window all become green when the processes and servers have restarted.

Restarting the Application Server

This section provides procedures for restarting a SARA Server, a Time Warner Mystro Application Server, or an Aptiv Application Server. Choose the procedure that pertains to your system.

Restarting the Application Server at SARA Sites

- 1 Press the middle mouse button on the Application Server and select **App Serv Start**.
- 2 From an xterm window on the Application Server, type **appControl** and then press **Enter**. The Applications Control window opens.
- 3 Select option **2** on the Applications Control window. The system displays a list of Application Server processes and their current status.
Note: The system updates the display periodically, or you can press **Enter** to force an update.
- 4 When the Application Control window indicates that the current state (**Curr Stt**) of each process is running, follow the on-screen instructions to close the Applications Control window.

Restarting the Time Warner Mystro Application Server

If necessary, refer to the documents supplied by Mystro to restart the MDN.

Restarting the Aptiv Application Server

If necessary, refer to the documents supplied by Aptiv to restart the Aptiv application server.

Restarting the RNCS Processes on the DNCS/ISDS

If your DNCS/ISDS is licensed for the RNCS feature, then refer to the *RNCS Installation and Upgrade Instructions* (part number 4003191) to restart the RNCS processes.

Ensure Correct Initialization of the TED FX Server

In some cases, certain TED FX processes do not start after rebooting the Rev D TED FX server. This issue is caused by an incomplete `/etc/rc.d/rc.local` file in the Rev D TED FX server. This section contains procedures to follow to ensure that your TED FX server starts all its processes.

Verify the `/etc/rc.d/rc.local` File

For the TED FX server to boot properly, the `/etc/rc.d/rc.local` file must contain the following line:

```
/home/rainbow/release/installTed.sh
```

Follow this procedure to verify that the file contains the previous line.

Verifying the `/etc/rc.d/rc.local` File

- 1 Log on to the DNCS/ISDS as root user.
- 2 Open an xterm window on the DNCS/ISDS.
- 3 Type **rsh dncsted grep installTed /etc/rc.d/rc.local** and press **Enter**.
- 4 Did the following line appear on the screen?

```
/home/rainbow/release/installTed.sh
```

 - If **yes**, go to step 5.
 - If **no**, go to step 6.
- 5 Your `/etc/rc.d/rc.local` file is correct. The processes on your TED FX should start properly. You have completed this procedure.
- 6 If no result displays on the screen, or if the following line displays:

```
# /home/rainbow/release/installTed.sh
```

 (note the `"#"` at the beginning of the line), go to *Repair the `/etc/rc.d/rc.local` File* (on page 28).

Repair the `/etc/rc.d/rc.local` File

Complete the procedure in this section to repair the Rev D TED FX server `/etc/rc.d/rc.local` file.

Repairing the `/etc/rc.d/rc.local` File

- 1 Log on to the DNCS/ISDS as root user.
- 2 Open an xterm window on the DNCS/ISDS.
- 3 Type **rsh dncsted** and press **Enter**. A result similar to the following appears on the screen.

```
Last login: Wed Feb 18 19:20:17 from dncsted-x
You have new mail.
[root@dncsted /root]#
```

- 4 Type **echo "/home/rainbow/release/installTed.sh" >> /etc/rc.d/rc.local** and press **Enter**. The line **/home/rainbow/release/installTed.sh** is added to the **/etc/rc.d/rc.local** file.
- 5 To verify the change, type **grep installTed /etc/rc.d/rc.local** and press **Enter**.
- 6 Did the following line appear on the screen?
/home/rainbow/release/installTed.sh
 - If **yes**, go to step 7.
 - If **no**, contact CiscoServices for further assistance.
- 7 Go to *Reboot the TED FX Server* (on page 29).

Reboot the TED FX Server

After you have verified and repaired the **/etc/rc.d/rc.local** file on the Rev D TED FX server, you must reboot the Rev D TED FX server.

Caution: Rebooting the Rev D TED FX server affects broadcast services. Perform this procedure only in a maintenance window.

Rebooting the TED FX Server

- 1 Log on to the DNCS/ISDS as root user
- 2 Open an xterm window on the DNCS/ISDS.
- 3 Type **rsh dncsted** and press **Enter**. A result similar to the following appears on the screen.

```
Last login: Wed Feb 18 19:20:17 from dncsted-x
You have new mail.
[root@dncsted /root]#
```

- 4 Type **shutdown -g0 -y -i6** and press **Enter**. The connection is dropped and the following message displays:

```
Read error from network: Connection reset by peer
Connection closed
```

Important: Wait at least 2 minutes for the TED FX server to reboot.

- 5 After waiting at least 2 minutes for the TED FX server to reboot, log on to the DNCS/ISDS as root user.
- 6 In an xterm window on the DNCS/ISDS, type **rsh dncsted ps -ax | grep devted** and press **Enter**. A result similar to the following displays on the screen:

```
544 ?      S        0:00  ./devtedInit -logfile stdout
545 ?      S        0:00  ./Logger -n/home/rainbow/release/devtedLog
-f10 -1500
555 ?      S        0:00  ./devtedInit -logfile stdout
```
- 7 Did a result similar to that shown previously in step 6 display on your screen?
 - If **yes**, you have completed this procedure.
 - If **no**, contact CiscoServices for further assistance.

5

Supporting the TED FX Server

Introduction

To support the TED FX server's function of encrypting services, it is important to properly power down, power up, and reboot the TED FX server. This chapter provides standard instructions for powering down, powering up, and rebooting the TED FX server.

In This Chapter

- Standard Instructions 32

Standard Instructions

Introduction

You must follow the standard instructions to successfully power down, power up, or reboot the TED FX server. This section provides instructions for powering down, powering up, and rebooting the TED FX server.

Powering Down the TED FX Server

Complete these steps to properly power down the TED FX server.

Note: All UNIX commands are case-sensitive.

- 1 Open an xterm window on the DNCS/ISDS.
- 2 Type **su** and press **Enter**. The password prompt appears.
- 3 Type your **password** and press **Enter**.
Note: If you do not know your password, contact your network system administrator for assistance.
- 4 Type **rsh dncsted shutdown -h now** and press **Enter**.
- 5 Wait 60 seconds before proceeding to the next step.
- 6 Press the **Power** button on the front panel of the TED FX server to turn the power off.
- 7 If you would like to power up the TED FX server, wait 60 seconds, and then go to *Powering Up the TED FX Server* (on page 32).

Powering Up the TED FX Server

When the TED FX server has been powered down, complete these steps to properly power up the TED FX server.

Note: All UNIX commands are case sensitive.

- 1 Press the power button on the front panel of the TED FX server to turn the power on, and wait 60 seconds before proceeding to the next step.
- 2 From an xterm window on the DNCS/ISDS, type **ping dncsted** and press **Enter**.
- 3 Did the message **dncsted is alive** appear?
 - If **yes**, you have successfully powered up the TED FX server.
 - If **no**, complete steps 4 through 6.
- 4 Verify that the power cord is tightly inserted into the power receptacle on the back panel of the TED FX server and into a 120 V AC power source.

- 5 Type **ping dncsted** and press **Enter**.
- 6 Did the message **dncsted is alive** appear?
 - If **yes**, you have successfully powered up the TED FX server.
 - If **no**, contact CiscoServices for assistance.

Rebooting the TED FX Server

Important: Only complete these steps when the TED FX server is not responding to any command from the DNCS/ISDS and when you are unable to properly power down the TED FX server.

Complete these steps to reboot the TED FX server.

- 1 Open an xterm window on the DNCS/ISDS.
- 2 Type **su** and press **Enter**. The password prompt appears.
- 3 Type your **password** and press **Enter**.

Note: If you do not know your password, contact your network system administrator for assistance.
- 4 Type **rsh dncsted reboot** and press **Enter**.
- 5 Wait 60 seconds before proceeding to the next step.
- 6 From an xterm window on the DNCS/ISDS, type **ping dncsted** and press **Enter**.
- 7 Did the message **dncsted is alive** appear?
 - If **yes**, the TED FX server has successfully rebooted.
 - If **no**, go to step 8.
- 8 Verify the following connections.
 - The RJ-45 Cat 5 cross-over cable is properly inserted into the **Ethernet** ports on the back panel of the TED FX and the DNCS/ISDS servers.
 - The LED of the Ethernet ports is illuminated on the back panels of the TED FX and DNCS/ISDS servers.
- 9 Retype **ping dncsted** and press **Enter**.
- 10 Did the message **dncsted is alive** appear?
 - If **yes**, the TED FX server has successfully rebooted.
 - If **no**, contact CiscoServices for assistance.

6

Customer Information

If You Have Questions

If you have technical questions, call Cisco Services for assistance. Follow the menu options to speak with a service engineer.

Access your company's extranet site to view or order additional technical publications. For accessing instructions, contact the representative who handles your account. Check your extranet site often as the information is updated frequently.

A

Safeguarding Pass Phrases

Introduction

This appendix identifies the key components of an effective storage and retrieval plan for your TED FX pass phrases.

With an effective plan in place, your pass phrases are secure against accidental loss, yet readily available should the TED FX require service or replacement.

In This Appendix

- Overview 40
- Safeguarding Recommendations..... 41

Overview

Each service provider has a unique pair of pass phrases that secure the TED FX. These pass phrases are required when replacing or reinitializing a TED FX.

The way the service provider uses the pass phrases adds a layer of security to the TED FX:

- The first pass phrase applies to Conditional Access Authority (CAA) activity. This pass phrase comes in two parts: one is known only to the service provider, the other is known only to us.
- The second pass phrase applies to Entitlement Agent (EA) activity. This pass phrase is only known to the service provider.
- Both the individual in charge of handling the pass phrases at the service provider and one of our representatives must be present to enter the two parts of the CAA pass phrase into the TED FX. Following that, the service provider personnel must enter the confidential EA pass phrase to initialize the TED FX.

Safeguarding Recommendations

We recommend the following safeguards to secure your pass phrases and your TED FX server.

Pass Phrase Recommendations

Always store your pass phrases in a secure location, preferably a safe.

Retrieve your pass phrases from storage and make sure that they have not been corrupted by a digital virus, transcription error, etc. If the pass phrases have been corrupted, call Cisco Services for assistance.

As you return your pass phrases to storage, document the return process. Record who stored them (system administrator, manager, etc.), where they are stored (central office disk, local safe, etc.), and how they are stored (encrypted, word processor file, etc.).

Also determine who to call if the pass phrases must be retrieved during off hours.

If you lose your pass phrases, call Cisco Services for assistance.

TED FX Recommendations

We strongly recommend that you set up a spare TED FX server with the same pass phrases as the operational TED FX server.

For optimal results, install a new TED FX server in the headend and store the original TED FX server as a spare in a secure location. The spare can become operational by re-entering both halves of the CAA pass phrase and then the EA pass phrase as described in *Initialize the PowerKEY CA System* (on page 20) and *Re-Initialize the PowerKEY CA System* (on page 24).

An on-site, spare TED FX server, along with the safeguarded pass phrases, provide the fastest possible means of recovery if a TED FX server fails and begins to affect your network.

B

Set Up Redundant TED FX Servers

Introduction

This appendix contains details on setting up a standby TED FX server. You can set up the TED FX server for failover in a production network, or have the TED FX server associated with a backup DNCS/ISDS.

In This Appendix

■ Overview	44
■ Setting Up a Redundant TED FX Server	45
■ Setting Up a TED FX Server in a Redundant DNCS/ISDS Network	48

Overview

A redundant TED FX is a TED FX server not normally connected to the DNCS/ISDS.

The redundant TED FX server contains the same software and pass phrases as the primary TED FX server. The redundant TED is normally idle, but available if needed if the primary TED FX server fails.

The procedures in this section detail how to provision the redundant TED FX so that, when needed, you only need to plug in and power on the redundant TED FX server for use.

Setting Up a Redundant TED FX Server

Complete these steps to install the TED files, and initialize the PowerKey CAA Keys and the EA Pass Phrase on the redundant TED FX server.

Before You Begin

Before you begin, you must make sure you meet the following requirements:

- You must complete the instructions in *Stop System Components* (on page 16) before installing the TED files.
- To ensure the security of your system, an SA installer must be present when you are ready to complete these instructions in this section. Only SA installers know the other portion of the CAA Pass Phrase that is necessary to complete these instructions.
- For more information on the pass phrases and on safeguarding your pass phrases, see *Safeguarding Pass Phrases* (on page 37).

Setting Up a Redundant TED FX Server

Complete these steps to provision the redundant TED FX server.

Note: All UNIX commands are case sensitive.

- 1 Power off the primary TED FX server.
- 2 Disconnect the RJ-45 cross-over cable from the primary TED FX Ethernet port.
- 3 Connect the RJ-45 cross-over cable to the redundant TED FX Ethernet port.
- 4 Power on the redundant TED FX server.
- 5 After the TED FX server boots up, open an xterm window on the DNCS/ISDS.
- 6 Type **ping dncsted** and press **Enter**.
- 7 Did the message `dncsted is alive` appear?
 - If **yes**, go to step 8.
 - If **no**, contact Cisco Services for assistance.
- 8 In the xterm window, type **su** and press **Enter**. The password prompt appears.
- 9 Type your root password and press **Enter**.

Note: If you do not know your root password, contact your network system administrator for assistance.
- 10 Type **cd /dvs/dncs/TED** and press **Enter**. The `/dvs/dncs/TED` directory is now the working directory.

- 11 Type `./loadTedFiles.sh` and press **Enter**.

Note: Be sure to type a period before the `/`.

Results:

- The system copies the appropriate files to the TED FX server.
- The system initializes the TED FX server with the appropriate files.
- The `devtedlog` file appears.

Example: The following example of the `devtedLog` file allows you to view the process of the `./loadTedFiles.sh` command.

```
Now printing the devtedLog.000 file....
LOG: Thur Dec 20 14:34:06 2001
----- devtedInit Started -----
LOG: Thur Dec 20 14:34:06 2001
----- Starting devted executable -----
LOG: Thur Dec 20 14:34:06 2001
----- Cryptography Cards Initialized -----
LOG: Thur Dec 20 14:34:06 2001
----- BSAFE Random Number Structure Initialized -----
LOG: Thur Dec 20 14:34:06 2001
----- RPC Mechanism Connected and ready for Provisioning Requests -----
-
LOG: Thur Dec 20 14:34:06 2001
----- Pass Phrase(s) Initialized -----
LOG: Thur Dec 20 14:34:06 2001
----- Entering Loop to Process RPC Requests -----
```

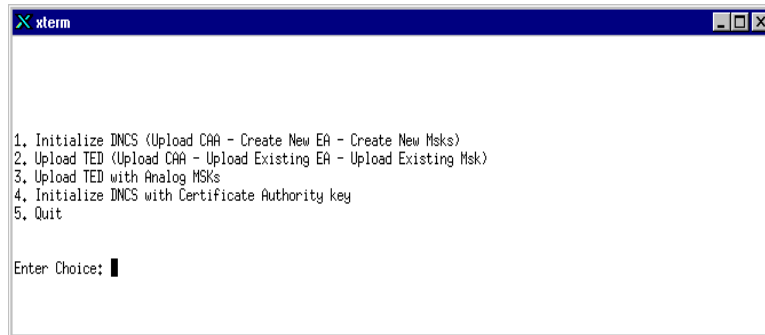
- 12 Review the **devtedLog file**, and if any of the following errors appear, contact Cisco Services for assistance.

- `devted` process could not be started
- CryptoSwift cards could not be accessed
- `FORK_ERROR`
- Shared memory could not be created

Note: If no errors appear in the `devtedLog` file, go to step 13.

- 13 To log out as the root user, type **exit** and press **Enter**. The xterm window closes.
- 14 Open another xterm window and log into the DNCS/ISDS as `dncs` user.
- 15 Type **export EMCDEBUG=** and press **Enter**.
- 16 Type **export EMCERROR=** and press **Enter**.

- 17 In the xterm window, type **camDnCSTedInit** and press **Enter**. The following menu appears in the xterm window.



```

xterm
1. Initialize DNCS (Upload CAA - Create New EA - Create New Msk)
2. Upload TED (Upload CAA - Upload Existing EA - Upload Existing Msk)
3. Upload TED with Analog MSKs
4. Initialize DNCS with Certificate Authority key
5. Quit

Enter Choice: █

```

- 18 Type **2** to select **Upload** and press **Enter**. The CAA Pass Phrase prompt appears.
- 19 Ask the installer to type the SA portion of the **CAA Pass Phrase**.
- 20 Type your portion of the **CAA Pass Phrase** and press **Enter**. The **Re-enter CAA Pass Phrase** prompt appears.
- Note:** If you do not know the CAA Pass Phrase, contact your network system administrator for assistance.
- 21 Ask the SA installer to retype the SA portion of the **CAA Pass Phrase**.
- 22 Retype your portion of the **CAA Pass Phrase** and press **Enter**.

Results:

- The CAA key, protected by a pass phrase, is stored in the DNCS/ISDS database.
 - The **EA Pass Phrase** prompt appears.
- 23 Type your **EA Pass Phrase** and then press **Enter**. The **Re-enter EA Pass Phrase** prompt appears.
- Important:** If you do not know your EA Pass Phrase, you must contact your network system administrator. Your network system administrator creates the EA Pass Phrase and stores it in a secured location. The EA Pass Phrase must consist of 10 to 64 alphanumeric characters long.
- 24 Retype your EA Pass Phrase and press **Enter**. The EA and Multi-Session Keys (MSK) are generated and stored in encrypted form in the DNCS/ISDS database.
- 25 When the message **press enter to continue** appears, press **Enter**. The **Enter Choice** prompt appears.
- 26 At the **Enter Choice** prompt, type **5** to quit and press **Enter**. The DNCS/ISDS prompt appears.
- 27 Close the xterm window and return to the Administrative Console.
- 28 The redundant TED FX server is now provisioned and ready for use. You can continue to use the redundant TED FX server as the primary server, or switch back to the primary server.
- 29 Restart your system components. Go to *Restart System Components* (on page 26).

Setting Up a TED FX Server in a Redundant DNCS/ISDS Network

If you are establishing a backup DNCS/ISDS platform to serve as a failover for a primary system, you must stage the TED FX attached to the backup as you would on the primary system. This is required to ensure that the EMM generation from the backup system is compatible with the devices provisioned from the primary DNCS/ISDS.

Once the primary system is completely initialized, the database from the primary DNCS/ISDS must be replicated to the backup DNCS/ISDS. This procedure is covered in *Installing and Operating the Replicated Database Package Installation and Operation Guide* (part number 4023374).

Once the database replication has been verified, follow the steps detailed in *Re-Initialize the PowerKEY CA System* (on page 24) to initialize the TED FX on the backup system.

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