

**DATAKIT® II VCS
LTS ADDRESSER**

**ADMINISTRATION GUIDE
ISSUE 1.2**

Lucent Technologies

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LTS Addresser

1. OVERVIEW

This document provides administrative and installation guidelines for the LTS Addresser DKAP application. This software application has been written for the Datakit II VCS Integrated Applications Processor (DKAP) module.

The LTS Addresser provides an interface between the MLT hosts and the different LTSs through the Datakit network. The MLT hosts are each connected to the Datakit network via a CPM-HS module and are running CommKit[®] software. The MLT hosts will call the LTS Addresser DKAPs and send messages to the appropriate DKAP for any LTS connected to that DKAP. Each LTS Addresser DKAP will read the application header of any message received and send the packet to the appropriate LTS.

Figure 1-1 shows the data connections between an MLT host, LTS Addresser DKAPs, and the LTSs. The maximum number of MLT hosts that can connect to one LTS Addresser DKAP is 20. Each MLT host is responsible for establishing a call to the data channel of each LTS Addresser DKAP. The LTS Addresser DKAP will route packets to the appropriate LTS by the identification number specified in the application header.

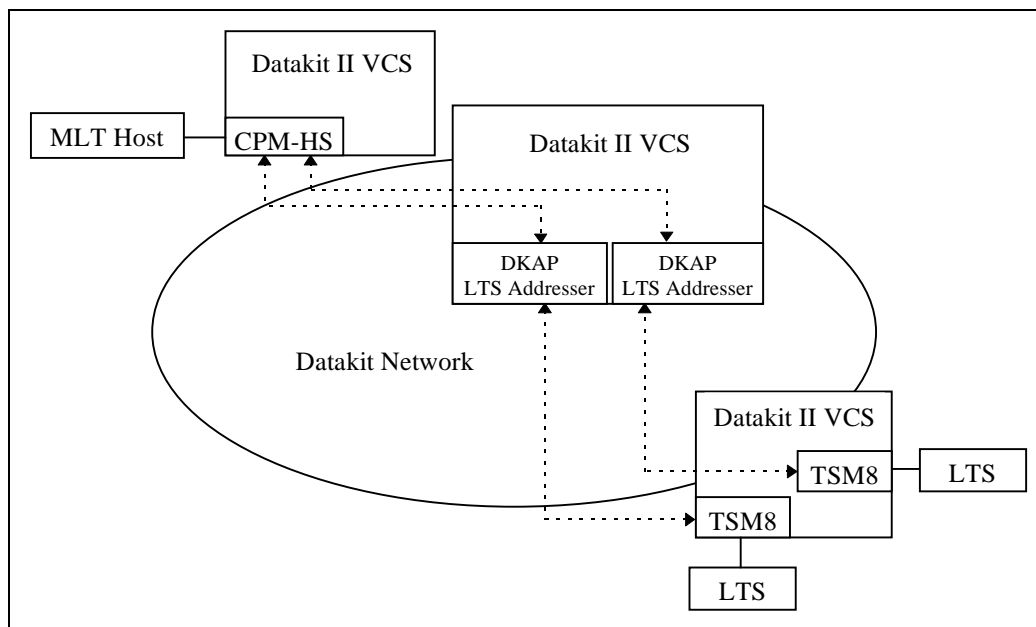


Figure 1-1 MLT, LTS Addresser DKAPs, and LTS Data Connections

Each LTS is connected to the Datakit network via a port on a synchronous module (TSM8, SAM, TSM-T1). The virtual circuits between the LTS Addresser DKAPs and the LTSs are set up by the LTS Addresser DKAP. The LTS Addresser DKAP terminates the BX.25 HDLC level 2 protocol for each LTS. The DKAP is a logical DTE and expects the LTSs to be logical DCEs

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(This refers to the HDLC level 2 logical DCE/DTE). The BX.25 specification allows both the DCE and DTE to start level 2. So the DKAP also will try to establish level 2, even though it is a logical DTE.

When the LTS Addresser DKAP gets an asynchronous packet from the MLT host, it will add the level 2 header before sending the packet to the appropriate LTS. When the DKAP receives the HDLC frame from the LTS, it will terminate the level 2 protocol, strip off the level 2 header, and send the packet to the appropriate MLT host.

If multiple MLT hosts have a session with the same LTS, the packets are queued. The LTS Addresser DKAP will modify the application packet header before sending it to the LTS to indicate which MLT host the packet is from. When the LTS Addresser DKAP receives the response from the LTS it will look in the application packet header to determine which MLT is to get the packet.

An MLT host can send a data packet to the LTS Addresser requesting a loop around diagnostic. When the LTS Addresser receives this request, it will drop the BX.25 level 2 for the specified LTS, perform a loop around test, send the test results back to the MLT host, and reestablish level 2. In order for the LTS Addresser to perform the loop around request from the MLT host, the SAM or TSM8 port must be configured as a permanently activated port (PAP). The LTS Addresser, however, will check the state of the leads on SAM ports during normal operation and drop the call if DCD and DTR are not up. So if the LTS is not up (or physically connected) the call to the SAM port will also not be up (unless running an MLT loop around diagnostic) even though that SAM port is configured as a PAP.

There is a control channel for each LTS Addresser DKAP that is used by the controlling MLT host to supply the LTS configuration information to the DKAP.

1.1 ASSUMPTIONS, RESTRICTIONS, AND LIMITATIONS

The DKAP module has a throughput limitation of 80 Kbps in each direction. Since the LTS endpoints are connected at 2400 baud with a 30% utilization, one DKAP connected to one MLT host could support approximately 100 LTS endpoints. Twenty MLT hosts can connect to one LTS Addresser DKAP, but if all twenty MLT hosts are actively sending data to the LTS Addresser DKAP then the number of LTS endpoints that could be supported by that DKAP would be less.

As mentioned above, the total number of LTSs serviced by one LTS Addresser DKAP will depend on the load and will be tunable by the network administrator. Therefore, the network administrator will be able to configure the number of LTSs serviced by an LTS Addresser DKAP to higher or lower than the 100 LTSs suggested (Refer to **Section 4.1.4**). The maximum number of LTSs that an LTS Addresser DKAP can support is 150.

An MLT host may need to connect to 768 LTS endpoints. Using the suggested number of 100 LTSs per LTS Addresser DKAP, this would require 8 LTS Addresser DKAPs. Multiple MLT

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hosts can be connected to the same LTS Addresser DKAP for access to the same LTS endpoints. The total number of LTS Addresser DKAPs that will be required will depend on the number of LTSs that can be serviced by one LTS Addresser DKAP.

1.2 ENVIRONMENT

The Datakit node containing the DKAP module running the LTS Addresser software must be running Datakit II Release 5.0 or above.

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2. DESCRIPTIVE CONFIGURATION

The LTS Addresser DKAP and SAM/TSM hardware configurations are described in this section. Refer to **Section 4** for additional configuration details.

2.1 DKAP

There are 20 channel sets available with Datakit II Release 3.1 and below, and 63 channel sets with Datakit II VCS Release 4.0 and above, but not all of these are used by the LTS Addresser DKAP. Channel set 1 contains the control channel, channel set 2 contains the data channels, and channel set 3 contains the lts channels. Channel set 1 and 2 are configured as *host* types so that they can *receive* calls. Channel set 3 is configured as a *terminal* type so that it can *originate* calls. The channel set definitions are shown below:

Channel Set 1:	HOST (<i>control channel</i>)
Channel Set 2:	HOST (<i>data channels</i>)
Channel Set 3:	TERM (<i>lts channels</i>)

2.2 SAM/TSM

The SAM and TSM ports that are connected to the LTS's must be configured as *host* types and have a *receiving* group associated with them. The port is defined to use the *hdlc* protocol and must have the PAP option set to *on*.

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3. INSTALLATION

This section contains the installation instructions necessary for the application. You should have received the DKAP application on either a controller tape, dat tape, or a diskette. Refer to the appropriate section depending on the type of media received.

3.1 CPM CONNECTED UNIX HOST INSTRUCTIONS

This section contains the prerequisites and instructions for loading the application and associated files from the *diskette* or *dat tape* provided to a CPM connected UNIX host. Proceed with this section if you received a *diskette* or *dat tape*.

3.1.1 PREREQUISITES

3.1.1.1 SPACE REQUIREMENTS

The LTS Addresser DKAP application is approximately 160,000 bytes. The total disk space required to load the DKAP application and associated files is approximately 500 K on the CPM connected UNIX host. CommKit software must be resident on the UNIX host for downloading to the DKAP.

3.1.1.2 COMPONENTS

- UNIX® Computer
- Interface Hardware for CommKit
- CommKit® Software
- CPM Module for Datakit II VCS
- Datakit II VCS Release 5.0 or higher
- Basic Network
- UNIX Operating System V Release 3.1.1 or Compatible
- C compiler (Not required for 3B2 Computer)
- DKAP and SAM/TSM Modules

3.1.2 INSTALLING FROM DISKETTE OR DAT TAPE

This section describes the steps necessary to install the application and associated files on the CPM connected UNIX host. These steps should be used by the System administrator who is responsible for the UNIX host computer.

Step 1: Create the login *dkapladm* on the CPM connected UNIX host computer. This login must be created with a home directory of */usr/dkapladm*. This is the administrator login for the DKAP application.

Note: If you have previously installed other Datakit II VCS DKAP applications, this login may already exist and step 1 can be skipped.

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Step 2: Login to the CPM connected UNIX host computer using the *dkapladm* login you created above. This login is to be the owner of all files associated with the DKAP application. Insert the *diskette* or *dat tape* provided into the appropriate diskette or tape drive. The following command will install the LTS Addresser DKAP application and associated files onto the CPM connected UNIX host. From the home directory of the *dkapladm* login type the following command, where <ret> indicates to hit the return key and *driver_name* is the device driver name of the diskette or tape drive you are using:

```
cpio -icvBd < /dev/driver_name <ret>
```

After executing this command, the following directory structure will be built under the home directory of the *dkapladm* login, where # depends on the Datakit II release.

```
./Dkapl
./Dkapl/Dwnld
./Dkapl/Dwnld/App/LTSR#
./Dkapl/Dwnld/ccsim.h
./Dkapl/Dwnld/dksrvtab.entry
./Dkapl/Dwnld/maint.h
./Dkapl/Dwnld/makefile
./Dkapl/Dwnld/sdownload
./Dkapl/Dwnld/sdownload.c
./Dkapl/LTSR#
./Dkapl/LTSR#/README
```

Write down the LTSR# file name for use later when configuring the DKAP module (see **Section 4.1.3**).

Step 3: Now you need to add an entry to the server table for downloading the DKAP application. The DKAP connects to this UNIX host, when the DKAP module is initialized, to download the DKAP application using an entry in the server table. The entry is provided for you in the *Dkapl/Dwnld/dksrvtab.entry* file. Add this entire entry file to the server table. The entry file provided is in the correct format for the server table, which is tab separated fields. You may want to modify the entry depending on the security desired. The server table may be the */etc/dksrvtab* file, or a new file in the *srvtab* directory. When using the *srvtab* directory, create the new server entry file with the file name *sdownload*.

The server entry specifies a log file to create and append to each time a DKAP is downloaded. The log file is */usr/dkapladm/Dkapl/Dwnld/slogd1* and can be deleted periodically if necessary to save space. Refer to the CommKit software documentation for further details on the server table.

Note: If you have previously installed other Datakit II VCS DKAP applications, this server entry may already exist and step 3 can be skipped.

The *sdownload* file is an executable application that is used by the above server entry to download the DKAP application to the DKAP board. This executable file is located in the *Dkapl/Dwnld* directory of the *dkapladm* login. The *sdownload.c*, header, and make files are also included in

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this directory. These files are included in case you need to generate a new sdownload executable. If you are not installing on a 3B2 machine you will need to generate a new sdownload. Your UNIX host must have a C compiler on it, then you can make a new sdownload executable by typing the following from the UNIX shell prompt, where <ret> indicates to hit the return key:

```
cd $HOME/Dkapl/Dwnld <ret>
make <ret>
```

3.2 DATAKIT II VCS CONTROLLER INSTRUCTIONS

This section contains the prerequisites and instructions for loading the executable from the *tape* provided to a Datakit II node. Proceed with this section if you received a *controller tape*.

3.2.1 PREREQUISITES

3.2.1.1 SPACE REQUIREMENTS

The LTS Addresser DKAP application is approximately 160,000 bytes on the Datakit II Node where the application is to reside.

3.2.1.2 COMPONENTS

- UNIX® Computer
- Interface Hardware for CommKit
- CommKit® Software
- CPM Module for Datakit II VCS
- Datakit II VCS Release 5.0 or higher
- Basic Network
- DKAP and SAM/TSM Modules

3.2.2 INSTALLING FROM CONTROLLER TAPE

This section describes the steps necessary to install the application on the Datakit II VCS control computer. These steps should be used by the Datakit administrator who is responsible for the Datakit II node where the application is to reside.

Step 1: Insert the *controller tape* provided into one of the control computer tape drives on the Datakit II node where the application is to reside. Make sure the red light to the tape drive goes out before proceeding with the instructions.

Step 2: From the control computer console type the following command, where <ret> indicates to hit the return key.

```
utilsh <ret>
```

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Step 3: The control computer will respond to the above command with the *UTILSH*> prompt. From this prompt type the following command, where <ret> indicates to hit the return key.

```
dkcsh <ret>
```

Step 4: The control computer must be running Datakit II Release 3.0 or higher. The control computer will respond to the above command with the *DKC\$* prompt. If you are not using the *primary* tape drive then make sure you specify the correct device in the following *cpio* command. From this prompt type the following commands, where <ret> indicates to hit the return key and *Tape0* specifies the primary tape drive.

```
cd /download <ret>  
cpio -icmav </dev/Tape0 <ret>
```

Step 5: After executing the *cpio* command, a file name is displayed with the format *LTSR#*, where # depends on the Datakit II release. Write down the *LTSR#* file name for use later when configuring the DKAP module (see **Section 4.1.3**).

Step 6: To return to the *CC0* prompt, type the following commands, where <ret> indicates to hit the return key.

```
exit <ret>  
exit <ret>
```

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4. CONFIGURATION

The configuration listed in this section follows conventions described in this section. For ease of documentation all addresses associated with a group will have the same name as the group. Input values that are enclosed in parenthesis, such as (*slot number*) and (*Unix host address*), are instructions to the Datakit administrator and are site dependent. It may be necessary to consult the appropriate Datakit II VCS documentation for further information on the various Datakit commands.

4.1 DKAP

A DKAP module can have 20 or 63 channel sets configured depending on the Datakit II Release. With the LTS Addresser DKAP application, only channel sets 1 through 3 are used. Channel set 1 is used for MLT host access to the control channel, channel set 2 is used for MLT host access to the data channels, and channel set 3 is used for the *lts* channel access to the SAM/TSM connected LTS end points.

Figure 4-1 shows the DKAP channel sets and associated groups for an example configuration. In this example, the group and address name for channel set 1 is *control*, the group and address name for channel set 2 is *data*, and the group name for channel set 3 is *lts*. The example shows one TSM8 port connected to an LTS with a group name and address of *tsmlts*. To use this naming convention when configuring more than one LTS Addresser DKAP, you can add a number to the group and address names for uniqueness. For example, a second DKAP could use the group and address names *control2*, *data2*, and *lts2* for channel sets 1, 2, and 3, respectively. You could also put the slot number of the DKAP in the naming convention for uniqueness.

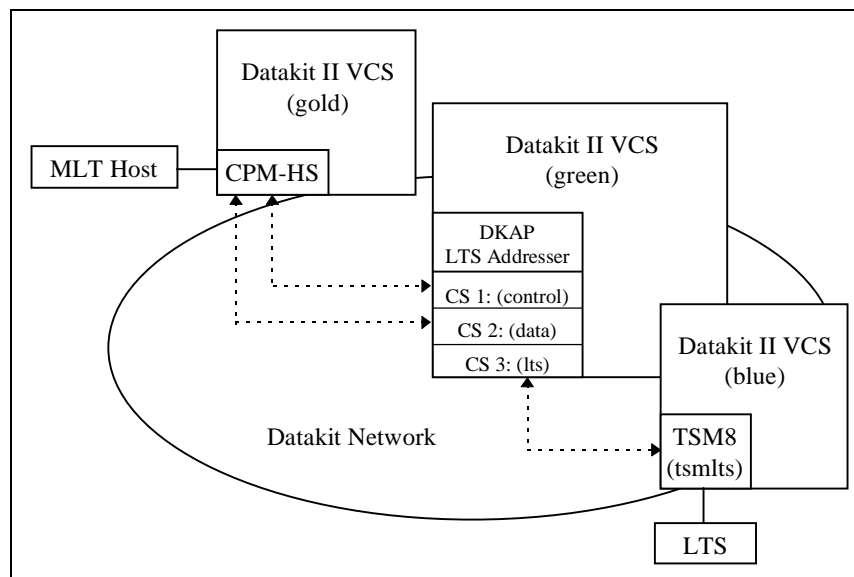


Figure 4-1 LTS Addresser DKAP Example Configuration

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4.1.1 GROUP NAMES

A *receive* group must be configured for the DKAP channel sets 1 and 2, an *originate* group must be configured for the DKAP channel set 3. The configuration directions are shown using the groups defined with the DKAP in **Figure 4-1**. Channel set 1 is used for the control channel, channel set 2 is used for the data channels, and channel set 3 is used for the lts channels. When configuring multiple LTS Addresser DKAPs, you will need to configure a unique group for channel sets 1 and 2 for each DKAP. Depending on the security desired, you can use the same group for channel 3 on the different DKAPs.

Channel Set 1: Configure a *receive* group associated with channel set 1 that will be used for accessing the control channel of the LTS Addresser DKAP. When configuring multiple LTS Addresser DKAPs you need to configure a unique group for channel set 1 for each DKAP. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter group <ret>
```

You will be prompted to enter the group information. The following shows the group definition for the group associated with channel set 1 of the DKAP in **Figure 4-1**.

GROUP:	control
TYPE:	local
DIRECTION:	receive
DEVICE OR HOST:	standard
HOST AUTOBAUD:	off
ROUND ROBIN SERVICE:	none

Channel Set 2: Configure a *receive* group associated with channel set 2 that will be used for accessing the data channels of the LTS Addresser DKAP. When configuring multiple LTS Addresser DKAPs you need to configure a unique group for channel set 2 for each DKAP. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter group <ret>
```

You will be prompted to enter the group information. The following shows the group definition for the group associated with channel 2 of the DKAP in **Figure 4-1**.

GROUP:	data
TYPE:	local
DIRECTION:	receive
DEVICE OR HOST:	standard
HOST AUTOBAUD:	off
ROUND ROBIN SERVICE:	none

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Channel Set 3: Configure an *originate* group associated with channel set 3 that is used when originating calls to the SAM/TSM connected LTS end points. When configuring multiple LTS Addresser DKAPs on the same Datakit node, you *do not* need to configure a different group for channel set 3 for each DKAP. Depending on the security desired, they can each use the same group. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter group <ret>
```

You will be prompted to enter the group information. The following shows the group definition for the group associated with channel set 3 of the DKAP in **Figure 4-1**.

GROUP:	lts
TYPE:	local
DIRECTION:	originate
DEVICE OR HOST:	standard
PASSWORD:	none

4.1.2 ADDRESSES

An address must be configured for channel sets 1 and 2. Channel set 1 is used for accessing the control channel, and channel set 2 is used for accessing the data channels. When configuring multiple LTS Addresser DKAPs you need to configure a unique address for channel sets 1 and 2 for each DKAP. The configuration directions are shown using the address defined with the DKAP in **Figure 4-1**.

Channel Set 1: Configure an address associated with channel set 1 that will be used for accessing the control channel of the LTS Addresser DKAP. When configuring multiple LTS Addresser DKAPs you need to configure a unique address for channel set 1 for each DKAP. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter address <ret>
```

You will be prompted to enter the address information. The following shows the address definition for the address associated with channel set 1 of the DKAP in **Figure 4-1**.

LEVEL:	local
TYPE:	mnemonic
MNEMONIC ADDRESS:	control
PAD SUPPORT:	no
DIRECTORY ENTRY:	none
GROUP(S):	control
ORIGINATING GROUP NAME SECURITY PATTERN(S):	none
INITIAL SERVICE STATE:	in

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Channel Set 2: Configure an address associated with channel set 2 that will be used for accessing the data channels of the LTS Addresser DKAP. When configuring multiple LTS Addresser DKAPs you need to configure a unique address for channel set 2 for each DKAP. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

enter address <ret>

You will be prompted to enter the address information. The following shows the address definition for the addresses associated with channel set 2 of the DKAP in **Figure 4-1**.

LEVEL:	local
TYPE:	mnemonic
MNEMONIC ADDRESS:	data
PAD SUPPORT:	no
DIRECTORY ENTRY:	none
GROUP(S):	data
ORIGINATING GROUP NAME SECURITY PATTERN(S):	none
INITIAL SERVICE STATE:	in

4.1.3 DKAP MODULE

You need to configure a DKAP module for the LTS Addresser DKAP. When configuring multiple LTS Addresser DKAPs you need to configure a DKAP module for each DKAP. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

enter dkap <ret>

You will be prompted to enter the DKAP module information. The software version is of the format LTSR#, where # depends on the Datakit II Release. This is the file name that you wrote down from **Section 3**. The example below shows the DKAP module definition for the LTS Addresser for Datakit II Release 5.0.

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COMPONENT:	module
MODULE ADDRESS:	(slot number)
COMMENT:	“LTS Addresser”
HARDWARE CONFIGURATION TYPE:	dkap
DOWNLOAD SERVER:	(Unix host address or controller)*
SOFTWARE VERSION:	LTSR5
UPLOAD SERVER:	none
NUMBER OF USER CHANNELS:	(maximum 171)**

* This depends on where you installed the LTS Addresser application. If you installed it on a CPM connected Unix host then use the address of the Unix host. If you installed it on a Datakit II VCS control computer then use controller.

** This number depends on the total number of logical channels the LTS Addresser will be supporting. This number should be the sum of the control, data, and lts channels supported by this DKAP.

4.1.4 DKAP CHANNEL SETS

For the LTS Addresser DKAP you need to configure channel sets 1, 2, and 3. Channel set 1 is for accessing the control channel, channel set 2 is for accessing the data channels, and channel set 3 is for establishing connections to the SAM/TSM connected LTS end points. When configuring multiple LTS Addresser DKAPs you need to configure channel sets 1, 2, and 3 for each DKAP.

Channel Set 1: Configure channel set 1 as a *host* type for access to the control channel. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter dkap <ret>
```

You will be prompted to enter the dkap channel set information. The following shows the DKAP channel set definition for channel set 1 of the DKAP in **Figure 4-1**.

COMPONENT:	chnlset
MODULE ADDRESS:	(slot number)
CHANNEL SET ID:	1
NUMBER OF CHANNELS PER CHANNEL SET:	1
SERVICE TYPE:	host
GROUP:	control
PREDEFINED DESTINATION:	none

Channel Set 2: Configure channel set 2 as a *host* type for access to the data channels. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter dkap <ret>
```

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You will be prompted to enter the dkap channel set information. The following shows the DKAP channel set definition for channel set 2 of the DKAP in **Figure 4-1**.

COMPONENT:	chnlset
MODULE ADDRESS:	(slot number)
CHANNEL SET ID:	2
NUMBER OF CHANNELS PER CHANNEL SET:	(maximum 20)*
SERVICE TYPE:	host
GROUP:	data
PREDEFINED DESTINATION:	none

- * This number should be the total number of simultaneous MLT hosts that need to access this DKAP.

Channel Set 3: Configure channel set 3 as a *terminal* type for the lts channels, which are used to establish the connections to the SAM/TSM connected LTS end points. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

enter dkap <ret>

You will be prompted to enter the dkap channel set information. The following shows the DKAP channel set definition for channel set 3 of the DKAP in **Figure 4-1**.

COMPONENT:	chnlset
MODULE ADDRESS:	(slot number)
CHANNEL SET ID:	3
NUMBER OF CHANNELS PER CHANNEL SET:	(maximum 150)*
SERVICE TYPE:	terminal
GROUP:	lts
PREDEFINED DESTINATION:	none

- * This number should be the total number of SAM/TSM connected LTS end points to be supported by this DKAP.

4.2 SAM/TSM

The LTS end points are connected to the Datakit Network via a SAM or TSM port. This section shows the configuration of the SAM/TSM ports and the groups associated with them. The configuration prompts are shown using a TSM8. If you are using a SAM, the command and prompts for entering the SAM will be different. Refer to the appropriate Datakit II VCS documentation for further information on configuring a SAM port or further details on the TSM port configuration.

4.2.1 GROUP NAMES

Each SAM/TSM port must be able to receive a call from the DKAP, so the groups defined for these ports must be *receive* groups. Depending on the security desired, you may use

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the same group for different SAM/TSM ports. The configuration directions are shown using the group defined with the TSM8 port in **Figure 4-1**.

Configure a *receive* group associated with the TSM8 port connected to the LTS. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter group <ret>
```

You will be prompted to enter the group information. The following shows the group definition for the group associated with the TSM8 port in **Figure 4-1**.

GROUP:	tsmlts
TYPE:	local
DIRECTION:	receive
DEVICE OR HOST:	standard
HOST AUTOBAUD:	off
ROUND ROBIN SERVICE:	none

4.2.2 ADDRESSES

An address must be configured for the SAM/TSM ports. Depending on the security desired, you may use the same address for different SAM/TSM ports. If you decide to use the same address for the different SAM/TSM ports, you will need to use direct port addressing. Refer to the appropriate Datakit II VCS documentation for further information on direct port addressing. The configuration directions are shown using the address defined with the TSM8 port in **Figure 4-1**.

Configure an address associated with the TSM8 port connected to the LTS. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter address <ret>
```

You will be prompted to enter the address information. The following shows the address definition for the address associated with the TSM8 port in **Figure 4-1**.

LEVEL:	local
TYPE:	mnemonic
MNEMONIC ADDRESS:	tsmlts
PAD SUPPORT:	no
DIRECTORY ENTRY:	none
GROUP(S):	tsmlts
ORIGINATING GROUP NAME SECURITY PATTERN(S):	none
INITIAL SERVICE STATE:	in

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4.2.3 SAM/TSM MODULE

Before the SAM/TSM port can be configured, the SAM/TSM module must be configured. The configuration directions are shown using a TSM8. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter tsm8 <ret>
```

You will be prompted to enter the TSM8 module information. The following shows the TSM8 module definition for the TSM8 port shown in **Figure 4-1**.

COMPONENT:	module
MODULE ADDRESS:	(slot number)
DOWNLOAD SERVER:	controller
SOFTWARE VERSION:	standard
NUMBER OF USER CHANNELS:	(total number of ports)

4.2.4 SAM/TSM PORT

This section shows the configuration for the SAM/TSM port when using the LTS Addresser DKAP application. The configuration directions are shown using the TSM8 port in **Figure 4-1**.

Configure a TSM8 port connected to an LTS. At the Datakit console, CC0> prompt, enter the following command, where <ret> indicates to hit the return key.

```
enter tsm8 <ret>
```

You will be prompted to enter the TSM8 port information. The following shows the TSM8 port definition for the TSM8 port in **Figure 4-1**.

COMPONENT:	port
MODULE ADDRESS:	(slot number)
PORT NUMBER:	(port number)
PADDLEBOARD TYPE:	(site dependent)
PROTOCOL:	hdlc
SERVICE TYPE:	host
GROUP:	tsmlts
BAUD RATE:	2400
IS AN AT&T VDM CONNECTED TO THIS LINE:	no
MULTIPOINT BRIDGING:	none
PERMANENTLY ACTIVATED PORT:	yes*
EXTERNAL PIPELINING:	disable
BUFFER FLUSHING:	disable

- * The PAP option must be set to yes for both TSM8 and SAM ports in order to perform loop around diagnostics from the MLT host. See **Section 1**.

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4.3 DOWNLOADING DKAP

Once the DKAP module has been configured, it will need to be restored to service. This will cause the DKAP module to download the LTS Addresser application from the controller or CPM connected host computer, depending on the configuration. You need to first restore the channel sets of the DKAP module to service. To restore a channel set on the DKAP to service, enter the following command at the Datakit console, where <ret> means to hit the return key, *dkap_slot_number* is the slot number of the DKAP module, and *cs_number* is the DKAP channel set number:

```
rs dkap c dkap_slot_number cs_number <ret>
```

So if the dkap was in slot number 5 and you want to restore channel sets 1, 2, and 3 of the DKAP module, the command would be:

```
rs dkap c 5 1-3 <ret>
```

Now you can restore the DKAP module to service, which will download the LTS Addresser application. To restore the DKAP module, enter the following command at the Datakit console, where <ret> means to hit the return key and *dkap_slot_number* is the slot number of the DKAP module:

```
rs dkap m dkap_slot_number <ret>
```

So if the dkap was in slot number 5, then to restore the module the command would be:

```
rs dkap m 5 <ret>
```

4.4 LTS ADDRESSER ACCESS

This section describes accessing the LTS Addresser DKAP. The control and data channels of the LTS Addresser DKAP are accessed by the MLT hosts. The channels of the LTS Addresser DKAP are used to originate the calls to the SAM/TSM connected LTS end points. The addresses of the SAM/TSM ports connected to the LTSs is supplied to the DKAP by the controlling MLT host.

The control channel is accessed by the controlling MLT host. The MLT host will need the Datakit dial string of the control channel for each LTS Addresser DKAP it is to control. For the example shown in **Figure 4-1**, the address that the controlling MLT host would use to connect to the control channel of the LTS Addresser DKAP would be: *green/control*.

The data channels are accessed by any of the MLT hosts. The MLT hosts will need the Datakit dial string of the data channels for each LTS Addresser DKAP it needs to access. For the example shown in **Figure 4-1**, the address the MLT host would use to connect to a data channel of the LTS Addresser DKAP would be: *green/data*.

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The controlling MLT host will supply the LTS Addresser DKAP with the dial strings of the TSM/SAM connected LTS end points. For the example shown in **Figure 4-1**, the address the controlling MLT host would supply to the LTS Addresser DKAP to connect to the LTS end point would be: *blue/tsmlts*.

4.5 EXAMPLE DKAP CONFIGURATION

Figure 4-1 illustrates an example DKAP configuration using the LTS Addresser DKAP. Below is the DKAP and TSM8 configurations shown in this example. The *gold*, *green*, and *blue* nodes are on Datakit II Release 5.0, the DKAP is in slot number 5 on the *green* node and is running the LTS Addresser application that is downloading from the controller, and the TSM8 is in slot 7 on the *blue* node and has port 1 defined.

```
CC0> v dkap 5
```

```
96-06-01 08:00:11 NODE=green
verify dkap 5
```

```
MODULE ADDRESS: 5
MODULE TYPE: dkap                NCHLS: 121
SERVICE STATE: in
HARDWARE CONFIGURATION TYPE: dkap
DOWNLOAD SERVER: controller
VERSION: LTSR5
UPLOAD SERVER: none
UPLOAD ALWAYS BEFORE DOWNLOAD: no
UPLOAD ONLY AFTER FAULT: no
COMMENT: LTS Addresser
```

```
96-06-01 08:00:11 NODE=green
verify dkap 5
```

CHNL	CHNLS	CHNL RANGE	TYPE	GROUP	SRVC
1	1	5-5	host	control	in
2	20	6-25	host	data	in
3	100	26-125	term	lts	in

CHNL	PDD
1	N/A
2	N/A
3	none

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CC0> v tsm8 7

96-06-01 08:00:11 NODE=blue
verify tsm8 7

MODULE ADDRESS: 7
MODULE TYPE: tsm8 NCHLS: 8
SERVICE STATE: in
DOWNLOAD SERVER: controller
VERSION: standard

PORT	TYPE	EIA	BAUD	PROTO	CODE	SRVC	GROUP	VDM	DUPLX	SWITCH CARRIER
1	host	dte	2400	hdlc	N/A	in	tsmlts	no	full	no
PORT	CHNLS	CHNL RANGE	MPOINT BRDGNG	PAP	BILL	PIPELNG	PIPE LEVEL	STOP BITS	STOP BITS	PARITY
1	1	5-5	none	yes	N/A	disable	N/A	N/A	N/A	N/A
PORT	XON/XOFF	BFLUSH	NRZI							
1	N/A	disable	N/A							

96-06-01 08:00:11 NODE=blue
verify tsm8 7

PORT PDD

PORT COMMENT
1 Connected to LTS