Datatek

INSTALLATION AND ADMINISTRATION

GUIDE

FOR SOLARIS®

RELEASE 1.0.22

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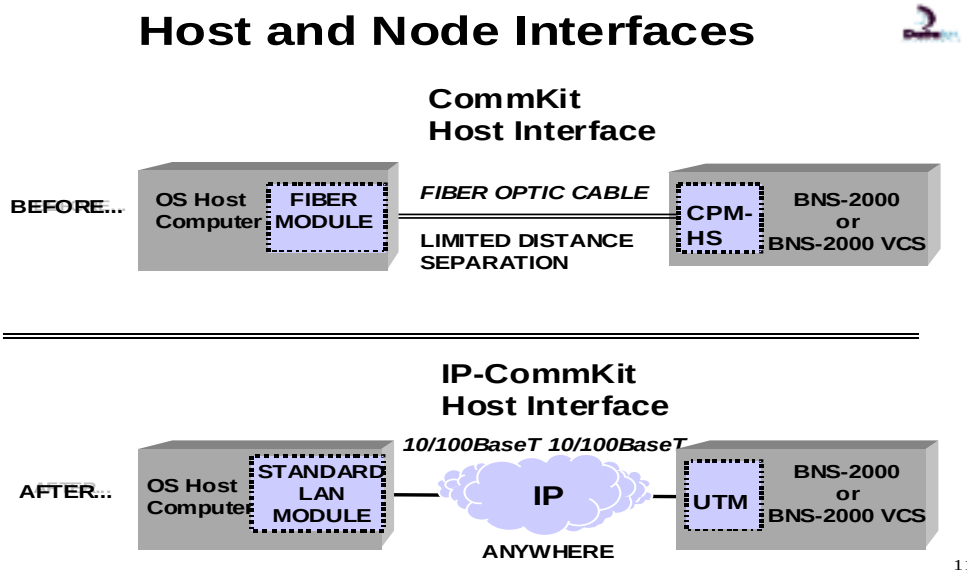
1 INTRODUCTION

1.1 WHAT IS IP-COMMKIT™?

IP-CommKit is a new twist on the CommKit Host Interface for BNS-2000 and BNS-2000 VCS (a.k.a. Datakit® II VCS). Where the CommKit Host Interface uses a fiber optic cable to connect the host computer to the BNS node, IP-CommKit uses a 10Base-T LAN. Instead of a fiber interface card in the host computer, IP-CommKit uses the host's standard LAN interface card. In the BNS node, use of IP-CommKit requires replacement of the CPM Module with a Universal Trunk Module (UTM).

All of these changes are invisible to the host applications and the BNS network. Host applications and CommKit features behave identically. No need to recompile your applications.



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2 DOCUMENTATION

Since IP-CommKit behaves like a CommKit Host Interface, you can use the CommKit Host Interface documentation to find answers to most questions. Specifically, use the *CommKit Host Interface for NCR PCI Computers Installation and Administration Guide*. This document follows the same general outline, i.e., it has the same major sections in the same order. Where there are changes or additions for IP-CommKit, they are described in the appropriate section of this document. While NCR computers running MP-RAS are very different from SUN computers running Solaris® releases, IP-CommKit is built from source code that was ported from the release of the CommKit Host Interface that ran on NCR computers. As a result, much of the information in the *CommKit Host Interface for NCR PCI Computers Installation and Administration Guide* applies to IP-CommKit running on SUN computers.

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3 INSTALLATION AND CONFIGURATION

3.1 OVERVIEW

This section describes the procedures for connecting a host computer to a Lucent Technologies BNS-2000 or BNS-2000 VCS network using IP-CommKit.

This section supercedes the *Installation and Configuration* section of the *CommKit Host Interface for NCR PCI Computers Installation and Administration Guide*.

This section references procedures in the *UTM User's Manual*. Have it handy before you begin.

This section assumes that your host computer is already connected to a LAN. If it's not, you should follow the procedures supplied with your computer for connecting it to a LAN.

Installation and configuration of IP-CommKit consists of the following steps:

- Obtain an IP address for the UTM and determine the appropriate subnet mask. Also determine the host IP address and, if needed, a gateway IP address.
- Install the UTM and I/O distribution board in the BNS node.
- Configure the UTM through its console port.
- Configure the UTM in the BNS node's controller database.
- Install the IP-CommKit software on the host computer.
- Register the IP-CommKit software.
- Customize the dkiptab and, if needed, dkitcfg and the other control tables.

The following sections describe each step in detail.

3.2 IP ADDRESSES

This section assumes a basic knowledge of IP networks. If you don't have this knowledge, we recommend that you learn a little about them. We recommend *Internetworking with TCP/IP,* by Douglas E. Comer. Otherwise, enlist the help of your IP network administrator.

Each UTM module requires an IP address, as does the host computer. You should obtain IP addresses for the UTM modules from your IP network administrator. This document assumes that the host computer is already connected to a LAN, and thus already has an IP address assigned to it. If your host connects to several LANs, it will have several IP addresses assigned to it, one for each LAN. You should find out the addresses assigned to the LAN that the host will use for communicating with the UTM. You need the host's IP addresses in numeric form for configuring the UTM. To obtain this, enter the following command on the host computer:

```
$ ifconfig -a
```

The command should produce output similar to the following:

```
lo0: flags=4049<UP,LOOPBACK,RUNNING,MULTICAST> mtu 8232
        inet 127.0.0.1 netmask ff000000
le0: flags=4043<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 135.17.59.166 netmask ffffff00 broadcast 135.17.59.255
```

In this example, the host has one LAN interface labeled *le0*. The *inet* field in the report shows that the IP address assigned to *le0* is 135.17.59.166.

To configure the UTM, you also need the *subnet mask* for the IP subnets to which it attaches. Most often, an IP subnet corresponds to a LAN segment. For example, all interfaces attached to

the same 10Base-T hub are on the same LAN segment, and almost always have the same subnet mask. If the host and UTM connect to the same subnet, then you can find out the subnet mask from the output of the ifconfig command. In the previous example, the *netmask* field in the report shows that the subnet mask assigned to *le0* is ffffff00.

The subnet mask reported by ifconfig can't be used directly to configure the UTM. The value ffffff00 is an 8-digit hexadecimal representation of a 32-bit mask. Unfortunately, the UTM expects this value in the Internet *dot* representation. To perform the conversion, divide the 8-digit value into four 2-digit fields, and convert each field to decimal. Concatenate the four decimal fields, placing a "." (dot) between field. For example, ffffff00 converts to 255.255.255.0.

If the host and UTM do not attach to the same subnet, your IP network administrator must provide you with an appropriate subnet mask for the UTM. In addition, the administrator must provide you with the IP address of a gateway router. This gateway must reside on the same subnet as the UTM, and must know how to route packets from the UTM to the host computer. Again, you need the gateway address in numeric form.

3.3 UTM INSTALLATION

Consult the *UTM User's Manual*, Section 3, for instructions on how to install the UTM and I/O distribution board in the BNS node.

After you have installed the UTM and I/O distribution board in the BNS node, you must configure the UTM. The initial configuration of the UTM must be done through its console port. You can access the UTM console port in a variety of ways. For example, you can connect a "dumb" terminal directly to the console port on the I/O distribution board. You can also connect the console port into the BNS network through a SAM or TY module, and then access the console through a terminal or host that is connected to the network. Section 3 of the *UTM User's Manual* shows how to make connections to the UTM's console port.

To configure the UTM, you need an IP address and subnet mask that you will assign to the UTM, as well as the IP address assigned to the host LAN interface. If the UTM and host are not on the same subnet, you will also need the IP address of a gateway that can forward packets from the UTM to the host.

Enter the following commands on the UTM console port.

```
<TRK-UNIV> login passwd=initial

<TRK-UNIV> rm

<TRK-UNIV> trk type=IPDSU

<TRK-UNIV> trk modtype=CPM

<TRK-UNIV> lo ipaddr=utm_ip_address submask=utm_subnet_mask

<TRK-UNIV> ga ipaddr=gateway_ip_address

<TRK-UNIV> trk dest=host_ip_address
```

Here the IP addresses and subnet mask are shown in ***bold Italics***. You would replace these names with numbers when you enter the commands.

Enter the following command to check the configuration:

```
<TRK-UNIV> vfy mod
```

The output should be similar to the report below.

```
Current Configuration:
   DK Board Type ==> TN1009 (CPM-HS)  w/Serial# 136.
   Service State ==> Out of Service.
   Operating Mode ==> Simplex.
   Trunk Type ==> IP-DSU Compatible Trunk on 10BaseT Network Port.
   IP-DSU Loopback Status ==> Loopbacks are not enabled.
   IP-DSU Data Encryption Status ==> Disabled.
   Actual IP-DSU Service State ==> Not Connected.
   Local MAC Address ==> 0.19.5.84.49.56
   Local IP Address ==> utm_ip_address
   Subnet Mask ==> subnet_mask
   Gateway IP Address ==> gateway_ip_address
   IP-DSU Destination IP Address ==> host_ip_address
   SNMP Trap Manager ==> Not defined.
```

Check the address and subnet mask fields that you entered. If they are correct, enter the following command to restore the UTM to service.

```
<TRK-UNIV> rs
```

The UTM has many useful console commands that are not described here. See section 4 of the *UTM User's Manual* for a complete description. Once you have done the initial configuration of the UTM through the console port, you can access all console commands through the LAN port via *telnet*. For example, you should be able to *telnet* to the UTM from the host on which you installed the IP-CommKit software.

3.4 BNS NODE CONFIGURATION

If you are upgrading a CPM-HS module to a UTM, you don't need to make any changes to the BNS node configuration. You can simply remove the CPM-HS module and its I/O distribution board, and install the UTM and its I/O distribution board in the same slot. The UTM appears as a CPM-HS module to the controller in the BNS node.

If this is a new installation, you must configure the UTM in the BNS node's controller database. The following procedure describes a simple configuration. It consists of entering a *group*, an *address* and a *cpm* in the controller database.

Before you begin, pick a name that you will use as this host's address in the BNS network. In configurations using a single dkserver, it's convenient to make this address and the group name the same as the host's nodename. By default, dkserver announces itself to the BNS node by the host's nodename. To determine this name, enter the following command on the host:

```
$ uname -n
```

This prints the host's nodename. Note that the *uname*(1M) command with no flags is equivalent to *uname -s*. This prints the *system name*, which can be different from the nodename. If you find this confusing, you can use the *setuname*(1M) command to make the system name and node name the same.

If you want to use a name that's different from the host's nodename, you must modify the dkitcfg file. See section 3.6.2.

Now, enter a group. A group binds together a collection of like modules under one name. In this simple example, there is only one UTM, so the group has only one member. In more complex configurations, you can put up to eight UTMs in one group and distribute incoming calls between these modules using round robin service.

The following dialogue shows the procedure for entering a group on the BNS node console. Text that you type exactly is shown in **bold**, and text that you modify for your installation is shown in ***bold italics***. **<Enter>** and <**Delete**> refer to the enter and delete keys on your keyboard.

```
CC0> enter group
GROUP [up to 8 chars]: nodename
TYPE [local, trunk: +(local)]: local
DIRECTION [originate, receive, 2way]: 2way
DEVICE OR HOST [up to 8 chars: +(standard)]: <Enter>
PASSWORD [up to 8 chars, none: +(none)]: <Enter>
ROUND ROBIN SERVICE [per_port, per_module, none: +(none)]: <Enter>

GROUP [up to 8 chars]: <Delete>
```

Next, enter an address. An address is bound to one or more groups. In this simple example, there is one group, with one UTM in the group. We use the same name for the group and address in this example, although it's not required.

```
CC0> enter address
```

```
LEVEL [network, area, exchange, local, speedcall: +(local)]: <Enter>
TYPE [numeric, mnemonic, both: +(mnemonic)]: <Enter>
MNEMONIC ADDRESS [up to 8 chars]: nodename
PAD SUPPORT [yes, no: +(no)]: <Enter>
DIRECTORY ENTRY [up to 30 chars double quoted, none: +(none)]:
"appropriate description of host"
GROUP(S) [up to 4 groups separated by commas, none: +(none)]:
nodename
ORIGINATING GROUP NAME SECURITY PATTERN(S)
[comma-separated pattern list, same_as, none: +(none)]:
<Enter>
INITIAL SERVICE STATE [in, out: +(out)]: in

LEVEL [network, area, exchange, local, speedcall: +(local)]: <Delete>
```

Next, enter the cpm. In reality, the cpm is a UTM, but the BNS controller can't tell the difference. In the dialog below, you must use values for ***mod_address*** and ***num_channels*** that are correct for your configuration. Use the slot number where you installed the UTM for the ***mod_address.*** By default, dkdaemon (1M) sets the number of channels per UTM to 64, so use this value for ***num_channels***. If you want to use more channels, you must modify the dkitcfg file. See section 3.6.2.

```
CC0> enter cpm
MODULE ADDRESS: mod_address
COMMENT [up to 60 chars double quoted, or none: +(none)]:
"appropriate comment"
```

```
HARDWARE TYPE [422, hs: +(hs)]: <Enter>
NUMBER OF CHANNELS [3-512: +(32)]: num_channels
CALL SCREENING PROFILE ID [up to 8 chars, none: +(none)]: <Enter>
CONNECT-TIME BILLING [on, off: +(off)]: <Enter>
SINGLE OR MULTIPLE GROUPS [single, multiple: +(single)]: <Enter>
GROUP [up to 8 chars]: nodename
ENDPOINT NUMBER OR RANGE [0000-9999, none: +(none)]: <Enter>

MODULE ADDRESS: <Delete>
```

Finally, restore the cpm to service.

```
CC0> restore cpm
MODULE ADDRESS: mod_address
```

3.5 SOFTWARE INSTALLATION

3.5.1 PREREQUISITES

Before installing any software on your computer, verify that it is running a release of its operating system that supports IP-CommKit. See the IP-CommKit Release Notes for a list of supported operating system releases. Do not attempt to install the IP-CommKit software if your computer is running an operating system release that is not supported.

3.5.2 REMOVING COMMKIT HOST INTERFACE SOFTWARE

If you are upgrading a computer from the CommKit Host Interface to IP-CommKit, you must remove the CommKit Host Interface software before installing the IP-CommKit. For SUN computers, Pacific Labs (formerly, Pacific Access) supplies the host interface software under the name VCL Host ®. Consult the documentation provided by Pacific Labs for instructions on removing the VCL Host software package.

3.5.3 INSTALLING IP-COMMKIT SOFTWARE

Use the following procedure to install the IP-CommKit software.

The IP-CommKit software is delivered electronically or on CD as multiple files in tape archive (tar) format. The Solaris files are named **ipcksol*x*.tar** where ***x*** is 6, 7, 8 or 9 and correspond to Solaris 2.6, 7, 8 or 9 respectively. (For a particular version of Solaris, the same file is used for both 32 bit and 64 bit kernel machines.) *Log in as* ***root*** on the host where you wish to install the software. Now, enter the following commands:

```
# cd /var/spool/pkg
```

If a version of IP-CommKit was previously installed, remove it by using the following commands:

```
# pkgrm –s /var/spool/pkg ipcommkit
# pkgrm ipcommkit
```

Copy the new tar file into this directory and then execute:

```
# cd /cdrom/cdrom0
# cp ipcksolx.tar /var/spool/pkg
# tar xf ipcksolx.tar
```

```
# pkgadd ipcommkit
```

Be patient while the **pkgadd** command runs since it can take several minutes on smaller hosts.

When the installation script completes, your host is configured to start the IP-CommKit software automatically at boot time. You can reboot your host now, but you will need to register your copy of the software and configure your control tables before you can use IP-CommKit. To reboot your host, enter the following commands:

```
# cd /
# shutdown –y –i6 –g0
```

3.5.4 REGISTRATION

Starting with revision 1.0.12, the IP-CommKit software is copy-protected. You must obtain a software key and register your copy of the software before you can use IP-CommKit.

Here is how the registration process works: When you purchase IP-CommKit, Datatek provides you with a *software certificate number*. For example, here is the software certificate number for the IP-CommKit software running on one of our development machines:

20SN9-000651-UJ8H

If you received your software on a CD, the software certificate number is printed a piece of paper enclosed with the CD. If the software was delivered electronically, the software certificate number is included in the e-mail message. In either case, *you must save the software certificate number since it serves as your proof of purchase*.

After installing the IP-CommKit software on your host computer, contact Datatek to obtain a *software key*. To generate your software key, Datatek needs your software certificate number

and the nodename of the host on which the software is installed. To determine the nodename, enter the following command on the host:

```
$ uname -n
```

This prints the host's nodename. Case is important so make sure you provide the name exactly as it appears. The best way to contact us is to send an e-mail message to the following address:

ipcommkit@datatekcorp.com

In addition to your software certificate number and your host's nodename, please include your name, company's name, email address and telephone number. Also include the revision number of the IP-CommKit software. This will help us to contact you when new releases are available. To check the revision number of the IP-CommKit software, enter the following command:

```
$ pkginfo -x ipcommkit
ipcommkit       IP-CommKit for Solaris 9
                (sparc) 1.0.20
```

In this example, the revision number is 1.0.20.

We will send you a reply with a software key that we generate from your software certificate number and your host's nodename. For example, here is the software key for my development machine:

AW422-2222-N2JH-C92Z

While e-mail is the best way to obtain a software key, we can also give you one over the telephone. Here are our names and numbers:

Dan Conklin	Jacquie Kupper
Senior Product Manager	Senior Release Coordinator
732 667-1080 ext. 162	732 667-1080 ext. 149

With the software certificate number and software key, you can register the IP-CommKit software on your host. Log in as *root*. If IP-CommKit is running, stop it first (See details in section 6.3) and run the following command:

```
$ /opt/dk/sbin/dkregister
```

The command will prompt you for the software certificate number and the software key, then validate the values that you enter. If they are correct, it will save the registration information on the host's disk. You will need to re-register your IP-CommKit software on this host again when you install subsequent new releases.

It is now a good time to customize your control tables. (If you had just re-registered your IP-CommKit software and do not need to customize your control tables, start IP-CommKit again. See section 6.3 for details.)

3.6 CUSTOMIZE THE CONTROL TABLES

3.6.1 DKIPTAB

(IP-CommKit must be stopped before you update this table. See section 6.3 for details.)

The **dkiptab** is a new control file for IP-CommKit that tells the IP-CommKit software the IP addresses assigned to the UTM and the host LAN interfaces. Even if you are upgrading a computer from the CommKit Host Interface to IP-CommKit, you still must enter the **dkiptab** before IP-CommKit will operate. While the installation scripts create a **dkiptab** file in the

appropriate directory, it contains only comments. Fortunately, the **dkiptab** is very easy to enter with your favorite text editor. See the manual page (*dkiptab*(4)) for the file format and examples.

3.6.2 DKITRC AND DKITCFG

/etc/init.d/dkitrc is a shell script that starts and stops the IP-CommKit software on the host computer. It is linked into several /etc/rc?.d directories so that it runs automatically when the init state of the host computer changes, i.e., at startup and shutdown. The operation of **dkitrc** is controlled by **/etc/init.d/dkitcfg**.

The **dkitrc** and **dkitcfg** scripts for IP-CommKit are different from the scripts used in some versions of CommKit Host Interface software. If you are upgrading a computer from the CommKit Host Interface to IP-CommKit, and you customized the configuration in **/etc/init.d/dkitrc** script, you will need to customize the **dkitcfg** script supplied with the IP-CommKit software. The most common reason for customizing the **dkitcfg** script is to change the number of channels available per interface from the *default value of 64*. The **dkitcfg** script itself contains instructions for making modifications. It should not be necessary to make any modifications to the **dkitrc** script.

3.6.3 DKSRVTAB

If you are upgrading your computer from the CommKit Host Interface to IP-CommKit, it's likely that the tables used by **dkserver** [see *srvtab*(4)] have already been customized. No changes to these tables are needed to use IP-CommKit.

If you are installing IP-CommKit on a computer that has never run the CommKit Host Interface software, the installation script installs a default set of server tables**. /opt/dk/sbin/dkcust** is a script that can automatically customize these default tables. To use **dkcust**, you should know the area and exchange assigned to the BNS node in which you install the UTM. This information can be obtained by entering the *verify node* command on the BNS node console. Ask your BNS node administrator, if you need assistance.

To use **dkcust**, simply run it and answer the questions.

4 CONTROL TABLES

The control tables used for the CommKit Host Interface are identical to those used for IP-CommKit. Refer to *Control Tables* section of the *CommKit Host Interface for NCR PCI Computers Installation and Administration Guide* for a detailed description of the control tables.

IP-CommKit has one additional control table, dkiptab. This file is read by dkipd when it starts to find the IP addresses assigned to the UTM and host LAN interfaces. See the manual page (*dkiptab*(4)) for the file format and examples.

5 ADMINISTRATION

All of the topics discussed in the Administration section of the *CommKit Host Interface for NCR PCI Computers Installation and Administration Guide* apply to IP-CommKit as well. There are few minor changes and additions that are noted below:

5.1 FILES THAT GROW

dkipd creates a log file in /var/opt/dk/log/dkipdlog. This file will grow continuously, although at a very slow rate compared to other log files, and should be cleaned out periodically by the system administrator.

5.2 DKITRC SCRIPT FILE

In addition to starting dkdaemon and dkserver, **dkitrc** starts **dkipd**.

5.3 SPECIAL DEVICE FILES

The minor devices for the diagnostic channels, /dev/dk/diag0, etc., are not created for IP-CommKit. These devices were used for managing hardware diagnostics for the fiber interface board that is part of the CommKit Host Interface. IP-CommKit uses the LAN interface on your host computer, and thus relies on the hardware diagnostics supplied with the LAN interface.

IP-CommKit has one additional special device file, /dev/dk/dkip, tied to minor device number 16384. This device is used exclusively by **dkipd** to initialize the driver when it starts up.

5.4 PRINTER ADMINISTRATION

There are several figures in this section that show fibers connecting hosts to CPM-HS boards in the switches. With IP-CommKit, the hosts are connected to UTMs in the switches through IP networks.

6 TROUBLESHOOTING

6.1 OVERVIEW

This section describes troubleshooting procedures for IP-CommKit. It supercedes the *Troubleshooting* section of the *CommKit Host Interface for NCR PCI Computers Installation and Administration Guide*.

6.2 PROCEDURES

You are most likely to have difficulty with IP-CommKit right after installation. The following sections describe procedures for troubleshooting the most common problems encountered after installation. If you are having difficulty, start with the first procedure and work towards the end. Resist the temptation to skip procedures that seem obvious.

6.2.1 CHECK THAT THE UTM IS IN SERVICE

Enter the following command on the UTM console port:

```
<TRK-UNIV> vfy mod
```

The output should be similar to the report below.

```
Current Configuration:
   DK Board Type ==> TN1009 (CPM-HS)  w/Serial# 136.
   Service State ==> In Service.
   Operating Mode ==> Simplex.
   Trunk Type ==> IP-DSU Compatible Trunk on 10BaseT Network Port.
```

```
IP-DSU Loopback Status ==> Loopbacks are not enabled.
IP-DSU Data Encryption Status ==> Disabled.
Actual IP-DSU Service State ==> Not Connected.
Local MAC Address ==> 0.19.5.84.49.56
Local IP Address ==> utm_ip_address
Subnet Mask ==> subnet_mask
Gateway IP Address ==> gateway_ip_address
IP-DSU Destination IP Address ==> host_ip_address
SNMP Trap Manager ==> Not defined.
```

Specifically, check that the ***Service State*** is ***In Service***. If it's not, enter the following command on the UTM console:

```
<TRK-UNIV> rs
```

6.2.2 CHECK THAT THE CPM IS IN SERVICE

Enter the following command on the BNS node console:

CC0> dstat mod ***mod_address***

In this command, ***mod_address*** is the slot number where you installed the UTM. The output should be similar to the report below:

00-12-18 13:43:46 NODE=*node_name*

M dstat module *mod_address*

********** MODULE 19 **********

MODULE TYPE **SERVICE STATE** HARDWARE ERROR COUNT SERIAL NUMBER

cpmhs **in service** 1 136

LAST HARDWARE ALARM

none

ONLINE ENABLED CABLE AVAIL

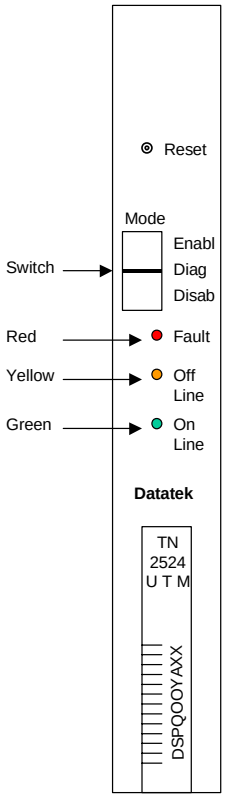
yes yes connected yes

Specifically, check that the ***SERVICE STATE*** is ***in service***. If it's not, enter the following command on the node console:

CC0> rs cpm ***mod_address***

6.2.3 CHECK THE MODE SWITCH ON THE UTM

Verify the Mode switch on the faceplate of the UTM module is in the **enabl** position. The Mode switch supports three positions: **Enabl**, **Diag** and **Disab**. The Mode switch must be in the **Enabl** position for the UTM to function properly.



6.2.4 PING THE UTM FROM THE HOST

On the host computer, enter the following command:

$ ping ***utm_ip_address***

In this command, ***utm_ip_address*** is the IP address that you assigned to the UTM module. The output should be similar to the report below:

utm_ip_address is alive

If you do not get this output, then the host and UTM cannot exchange packets. In this case, the report would appear as follows:

no answer from ***utm_ip_address***

If you get this output, check that you are using the correct UTM IP address. If you are, you should enlist the aid of you IP network administrator. Don't proceed until you can *ping* the UTM from the host.

6.2.5 CHECK /VAR/OPT/DK/DKIPDLOG

Enter the following command on the host computer:

$ tail /var/opt/dk/log/dkipdlog

This displays the end of the log file created by *dkipd*(1M). The last two lines of the output should be similar to the report below:

Dec 18 12:08:54 (8626) Connectivity from ***host_ip_address*** to ***utm_ip_address*** established

Dec 18 12:09:19 (8626) UTM module ***utm_ip_address*** restored to service

Here, the ***host_ip_address*** is the IP address assigned to the host computer, and the ***utm_ip_address*** is the IP address assigned to the UTM. Note that *dkipd* will use the name associated with the address, if possible. If your host connects to several UTMs, you should see these two messages repeated for each UTM IP address.

If you see the first line, "Connectivity from …", but not the second, "UTM module …", it indicates that the CPM is out of service. Go back to the procedure for checking that the CPM is in service.

If the output on your host is different, compare it to the following output examples that are associated with common problems.

/opt/dk/sbin/dkipd: Error in configuration file "/etc/opt/dk/dkiptab"

Line 38: 0 dino **135.17..59.203**

Can't resolve address: 135.17..59.203

This output is typical of an error in *dkiptab*, the configuration file for *dkipd*. You may have forgotten to customize the file for you application, or you may have made a typing error. In the output above, there was an error typing in the IP address of the UTM module. Note that the error message indicates the line number where the error was detected.

Dec 18 14:26:38 (8810) Received keep-alive message from unknown address: 135.17.59.203

This output is typical when the UTM IP address you configured in *dkiptab* does not match the UTM IP address you configured through the UTM console.

If the messages that you see don't look similar to any of the examples above, consult the *dkipd*(1M) manual page. This describes all messages that are written to the log file.

The primary responsibility for *dkipd* is to establish communications with the UTM. You can confirm that *dkipd* and the UTM have established communications by issuing the ***vfy*** command on the UTM console. The report should contain the following line:

Actual IP-DSU Service State ==> Peer Connectivity Established.

6.2.6 CHECK /VAR/OPT/DK/DKDAEMONLOG

Enter the following command on the host computer:

tail -17 /var/opt/dk/log/dkdaemonlog

This displays the log file created by dkdaemon(1M). The output should look similar to the following report:

Dec 18 14:55:09 (8866) /opt/dk/sbin/dkdaemon : Started, Log Level = 5

Dec 18 14:55:09 (8867) acct_start: Accounting Disabled

Dec 18 14:55:09 (8867) /opt/dk/sbin/dkdaemon : Startup Complete

Dec 18 14:55:09 (8867) dkhsstart: Unit 0: 512 Chans, Ver 4, Rbuf 1024, NurpB 4

Dec 18 14:55:09 (8867) **startstr: dkhs Unit 0 ACTIVE**

Dec 18 14:55:09 (8867) startstr: dkhs Unit 1 Down, Retrying

Dec 18 14:55:09 (8867) startstr: dkhs Unit 2 Down, Retrying

Dec 18 14:55:09 (8867) startstr: dkhs Unit 3 Down, Retrying

Dec 18 14:55:09 (8867) startstr: dkhs Unit 4 Down, Retrying

Dec 18 14:55:09 (8867) startstr: dkhs Unit 5 Down, Retrying

Dec 18 14:55:09 (8867) startstr: dkhs Unit 6 Down, Retrying

Dec 18 14:55:09 (8867) startstr: dkhs Unit 7 Down, Retrying

Dec 18 14:55:09 (8867) **startstr: dknp Unit 0 ACTIVE**

Dec 18 14:55:09 (8867) **startstr: dkxmx Unit 0 ACTIVE**

Dec 18 14:55:09 (8867) LOG: (0, 0) dkxqt mux driver is active

Dec 18 14:55:11 (8867) SERVER: (0, 2) "dino" Started by UID 0

By default, *dkdaemon* tries to start all eight logical interfaces. Only one logical interface is used on the host computer where this log file was generated. This is ***Unit 0***, and *dkdaemon* reports that it is ***ACTIVE***. *dkdaemon* reports that the remaining logical interfaces are ***Down***. On your host, you should check that all logical interfaces that you specified in the dkiptab are active.

If the messages that you see don't look similar to any of the examples above, consult the *dkdaemon* (1M) manual page. This describes all messages that are written to the log file.

Once dkdaemon starts, the host computer establishes communications with the BNS node controller. You can confirm this by running the following command on the BNS node console:

CC0> disp conn mod ***mod_address***

Here, ***mod_address*** is the slot number where you installed the UTM. The output should look similar to the report below:

00-12-19 17:46:20 NODE=*node_name*

M display connections mod ***mod_address***

MODULE: 19

CH/PT CU/TM GROUP BOARD CS/LCH PT/LCH PT/DLCI	PKT CNT (+ = PDD or PVC, # = RRC)	STATE	TO MOD	CH/PT CU/TM GROUP BOARD CS/LCH PT/LCH PT/DLCI	PKT CNT
1 ****	295	**ACTIVE**			

Note that channel 1 is in the **ACTIVE** state.

6.2.7 CHECK /VAR/OPT/DK/DKSRVLOG

Enter the following command on the host computer

$ tail /var/opt/dk/log/dksrvlog

This displays the log file generated by *dkserver*(1M). The last few lines of the output should look similar to the following report:

Dec 18 14:55:11 (8893) [0.000] SERVER dino is INITING files=(/etc/opt/dk/srvtab /etc/opt/dk/dkuidtab) loglvl=6

Dec 18 14:55:11 (8893) [0.000] **dkmgr : SERVER dino is ACTIVE and SERVING**

The host file where this log file was generated is named *dino*, and it runs a single *dkserver* process. The last line of the log file indicates that *dkserver* is ***ACTIVE and SERVING***. Some hosts run several *dkserver* processes. The last line should be repeated for each *dkserver* process.

You might see an error message similar to the one below in the log file:

Dec 19 17:00:59 (515) [0.000] ERROR dkmgr: Unable to create server ***server_name*** dk_errno = 3

The indicates that the address ***server_name*** has not been entered on the BNS node, or that the address is not in service. Enter the following command on the BNS node to check the address:

CC0> ver addr all ***server_name***

The report should be similar to the one below:

00-12-19 17:16:42 NODE=*node_name*

M verify address all ***server_name***

MNEMONIC ADDRESS: ***server_name*** X.121 NANP ADDRESS:

LEVEL: local **SERVICE STATE: in**

PAD SUPPORT: no

DIRECTORY: none

SECURITY: none

GROUP: *group_name*

If the report indicates that the address has not been entered, enter it using the instructions in the *BNS Node Configuration* section of this document. If the report shows that the address is out of service, restore the address with the following command:

CC0> res addr local ***server_name***

When dkserver starts, it tells the BNS node that it is ready to accept incoming calls. You can confirm this by entering the follow command on the BNS node console:

CC0> disp conn mod ***mod_address***

The report should be similar to the one below:

00-12-19 17:46:20 NODE=*node_name*

M display connections mod ***mod_address***

MODULE: 19

CH/PT	CU/TM GROUP BOARD CS/LCH PT/LCH PT/DLCI	PKT CNT (+ = PDD or PVC, # = RRC)	STATE	TO MOD	CH/PT	CU/TM GROUP BOARD CS/LCH PT/LCH PT/DLCI	PKT CNT
1	****	295	ACTIVE				
2	***group_name***	89	**SERVING**				

Note that channel 2 is in the **SERVING** state.

6.3 STOPPING AND STARTING

Some configuration changes require stopping and starting the IP-CommKit software to make the changes effective. Specifically, changes to */etc/opt/dk/dkiptab* require stopping and starting. You can always do this by rebooting the host computer. However, this can be disruptive and time consuming. A more convenient method is to log in as root, then enter the follow commands:

```
# sh /etc/init.d/dkitrc stop
# sh /etc/init.d/dkitrc start
```

7 COMPATIBILITY

This section of the *CommKit Host Interface for NCR PCI Computers Installation and Administration Guide* describes the differences between UNIX® System V Release 3 (SVR3) and Release 4 (SVR4) versions. IP-CommKit for Solaris was derived from the SRV4 version, so the information in this section also applies to IP-CommKit. However, it's only useful if you are porting a CommKit Host Interface application that ran under SRV3 to IP-CommKit.

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8 MANUAL PAGES

Most of the manual pages for the CommKit Host Interface are identical to those for IP-CommKit. The following man pages have been eliminated:

ATDIAG

DKCFG

DKDIAG

DKMAP

DKREGISTER

DKUNLOCK

DKVFY

PCDIAG

These pages described commands that were used for copy protection or fiber interface hardware configuration and diagnostics. These commands are not needed for IP-CommKit.

The following manual pages have been added or revised for IP-CommKit

DKIPD

DKIPTAB

DKITRC

Use the **man** command to obtain copies of these pages.

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