IP-FANOUT
Virtual Network Application
User's Manual

Version 2001.2

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APPLICATIONS, INC

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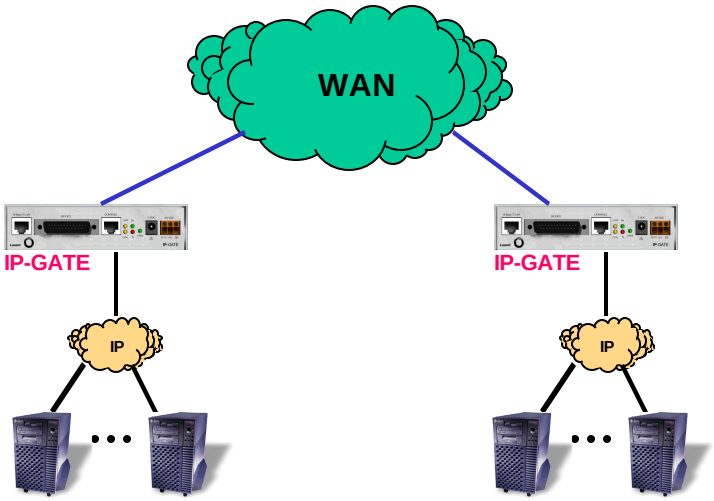
Introduction

The IP-GATE is a device that which provides for intelligent routing of selected Internet Protocol traffic on a WAN infrastructure. The IP-GATE is also an embedded function of the DT-4000. The intent is to extend the network presence of the home Internet Protocol network to a remote site.

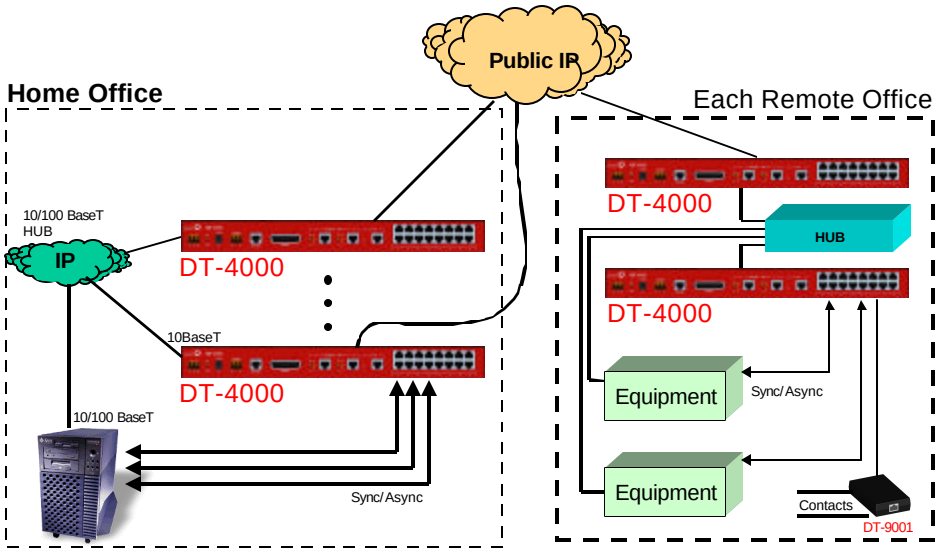
Such a configuration may be depicted as the following:



In the diagram above, the two IP clouds are actually a single cohesive network. The notion of a sub-network and separate masks for a remote installation is not required. This allows the remote location of one or many Internet Protocol devices without regard to establishing an address to geographic location relationship.

In some cases, the wide area transport network is itself an Internet Protocol network. Such a configuration would provide security for users of the private network being transported. Devices on the public network may blocked from access to the private network. Consequently, it is possible to have a completely different address scheme for the private network.

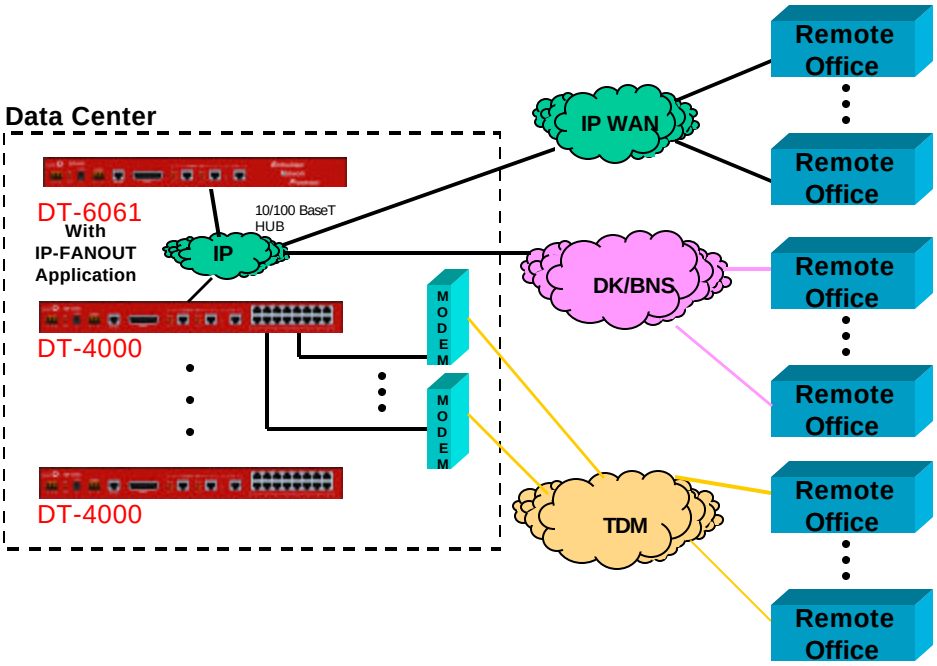
Such a virtual private network is shown below:



In the private network established above, a public Internet Protocol service network is used for transport. The only addresses visible on the public network is that of the DT-4000s which interface to that network. The private Internet Protocol network is routed on the IP-GATE ports of the DT-4000s individually to each remote office.

Most WAN infrastructures use transparent HDLC framing, and support point to point connections with IP-GATE devices. In fact, using a public IP network results in point to point connections as well. There are a large number of situations where a single “home office” is required to export portions of its network to many “remote” offices. Further, the “home” location may wish to use a one or a small number of IP-GATE interfaces to accomplish the virtual private network. When such a situation occurs, there is an additional component that allows one to many connectivity. That component is the IP-FANOUT application to the DT-6061.

Consider the following diagram:



As depicted above, the private network can use one or more completely different network technologies. Mediation between an Internet Protocol network and an Datakit/BNS network is accomplished either by a UMI or a pair of DT-4000 ports when the DT-4000 is simultaneously supporting both networks.

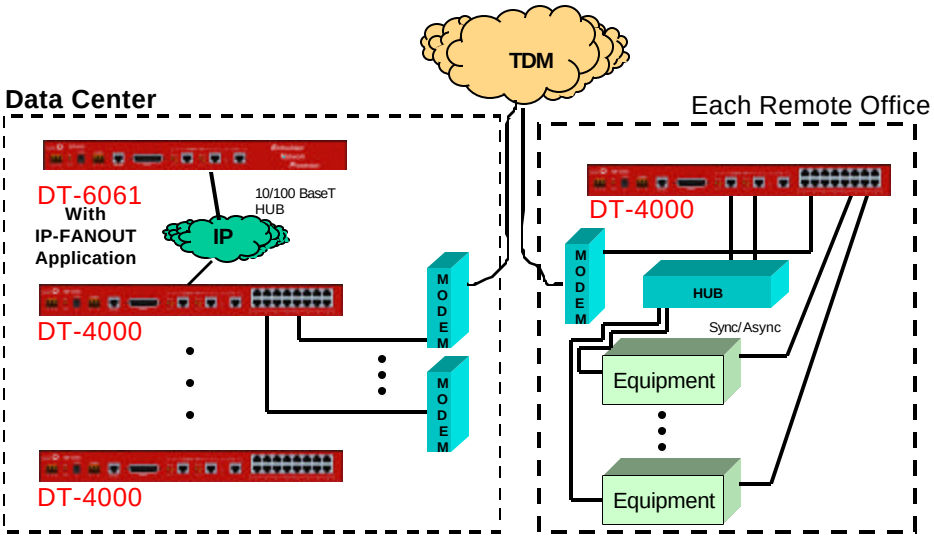
The equipment in the remote office remains the same regardless of the network used. A DT-4000 directly supports a Datakit/BNS network without mediation. A TDM connection merely requires the terminating modem set. Finally, the IP WAN may terminate directly on the DT-4000.

The IP-FANOUT application allows many remote offices to be a cohesive network with the data center.

Typical Deployment

In this section, a typical deployment of the **IP-FANOUT** application is discussed. The typical deployment is to provide a presence of the Internet Protocol network into offices that have no such connectivity. An existing four-wire modem set is typically used. Since the **IP-FANOUT** application can handle a large number of remote offices, there may not be a need to have more than one DT-6061 in any given network.

Consider the Following Diagram:



In the diagram above, each remote office contains a DT-4000 providing the IP connectivity. If there is any other Internet Protocol equipment at the remote site, a generic unmanaged hub is used to attach that equipment to the private network. The traffic is routed through the modem set to the DT-6061 IP-FANOUT application. The traffic is then routed to the Data Center Internet Protocol network. In the converse direction, traffic that is destined for the remote offices are forwarded by a DT-4000 IP-GATE port to the IP-FANOUT application. The IP-FANOUT uses acquired routing information to forward the traffic to the specific offices addressed. The IP-FANOUT acquires the routing information directly from the IP-GATE connections. That is, no configuration is ever required.

IP-FANOUT Features

This section defines the features of the **IP-FANOUT** application. This is done as a list, but some features require further elaboration.

- Up to 64 remote offices per instance of the IP-FANOUT application.
- One Data Center per instance of the IP-FANOUT application.
- Up to 30 instances of the IP-FANOUT application may be present on the same DT-6061.
- 1 Configuration Console is available to be used by the **IP-FANOUT** administrator for diagnostic and measurement purposes.
- The **IP-FANOUT** application is self-configuring and does not require any initial setup information.

Suggested Reference

The following documents are resident at http://www.datatekcorp.com under the documentation button.

Document	Scope
DT-6061 Platform User's Manual.	Describes the DT-6061 Embedded Network Processor infrastructure and command set. This includes configuration information, hardware specifications, and SNMP MIB support. The DT-6061 is the infrastructure on which the Virtual Console application shall reside.
IP-GATE User's Manual	Describes the stand-alone IP-GATE interface device.
DT-4000 User's Manual.	Describes the DT-4000 multi-protocol access device. The DT-4000 is used as the interface for physical serial connections, and for the IP-GATE interface connections.
DT-6061 Redundant Operation White Paper.	Describes the method of operating the DT-6061 in a 1+1 sparing configuration. **Note**: *This paper is not posted on the above site. Contact the author for a copy via email.*

IP-FANOUT Interfaces

The TCP port numbers associated with a DT-6061 application are normally referenced by which **instance** the application is installed. The IP-FANOUT may be installed on any of the 30 **instances** of the DT-6061.

Consult the DT-6061 infrastructure manual for information on how to install an application.

The TCP Numbers associated with the IP-FANOUT application instance are as follows:

Set	**#Channels**	**TCP Port#**	**Usage**
OA&M	1	10000 + **Instance#**	Administration of the IP-FANOUT application. This is the standard configuration TCP port number for a DT-6061 application. For example, instance #1 is 10001, instance #2 is 10002, and so on. Connections to this TCP port are made via a Telnet client.
Home IP-GATE	1	30000 + (200 * **Instance#**)	There is a single IP-GATE port that represents the home, or data center, network connection.
Remote IP-GATE	64	30000 + (200 * **Instance#**) + Remote Office#.	There are up to 64 remote offices supported on each instance of the IP-FANOUT application. All remote offices each connect to a unique TCP port number.

IP-FANOUT Command Set

Input Conventions

All parameters may be given on the command line. Parameters of the form **name=<value>** may be given in any order.

For several complex commands, listed below, missing parameters, or corrections of errors in given parameters, of the form **name=<value>** are collected by prompting the console user. The user responds to a prompt for the **name** by typing the required **<value>** followed by *newline*. Defaults are supplied in some cases, so the user need only enter *newline*.

Commands may be entered in upper or lower case.

Parameters of the form **name=value** may use upper or lower case for **name**.
Default values, if any, are shown in parenthesis as part of the prompt.
Case is not preserved for values. Backspace erases one character.

Login

Syntax: login PASSWD=<password>

The login command is used to allow access to the other configuration commands.

The login command is only visible when the application is in the *logged out* (i.e. secure) mode. The unit enters this mode whenever a *logout* command is issued or when the Telnet to the application instance OA&M TCP port is interrupted for any reason.

The password is not echo-suppressed. The password consists of up to seven alphanumeric characters. Special characters are not allowed.

The default password is “initial”.

Logout

Syntax: logout

The logout command is only allowed if the console user is logged *in*. It uses no arguments. It will set the console to the logged *out* mode.

Change Password

Syntax: chgpass PASSWD=<old> NEWPASS=<new> CONFIRM=<new>

The **chgpass** command is used to change a user password on the system console. The command is only allowed if the user is logged *in*.

All three parameters must be given on the same line as the command. None of those entries are echo-suppressed.

If the current password is valid, and the two entries for the new password match, the password is changed to the new value.

Help

Syntax: help |? [Command]

The **help** command is always visible. The help command displays the currently allowed commands for the mode that the unit is currently entered. The alternate command for help is a question mark.

Version

Syntax: ver

The **version** command is only visible when the application is *logged in*. The command has no arguments. It displays the current software and database revisions of the application.

Verify of Configuration

Syntax: vfy

The **vfy** command is only visible when the application is *logged in*. The command is used to verify the parameters of the IP-FANOUT instance such as the instance number, the IP address of the DT-6061, and other relevant information.

Display of Measurements

ALL' to indicate the entire allowed numeric range.

The **dmeas** command will display all connections with a target of **ALL**. Only the *home site* IP-GATE connection is displayed with a target of **HOME**. For *remote site* IP-GATE connections, the target of **RMT** is used with a range of connections.

When measurements are displayed via the **dmeas** command, and more than a single entity has been specified; only non-zero entries are actually displayed.

Displaying Current Connections

Syntax: dc

The **dconn** command is used to display all of the current connections into the IP-FANOUT application.

Please note that the command does not require any arguments. The command will issue a report that shows the connection peer for each active connection.

Snooping on Traffic

Syntax: snoop [OFF | ALL | HOME | RMT < ALL | <Range> >]
[VERBOSE]

The IP-FANOUT application has a diagnostic ability to snoop on any of interfaces which carry data. This is done with the **snoop** command. All output is directed to the OA&M connection.

If the command is invoked with no arguments, it produces a report of all active snooper configurations.

If the command is invoked with the **OFF** option, all of the active snooper configurations are disabled.

If the command is invoked with the **ALL** option, the IP-GATE connections to the home site and every remote site is simultaneously enabled.

If the command is invoked with the **HOME** option, the IP-GATE connection to the home network is snooped.

If the command is invoked with the **RMT <Range>** option, the IP-GATE connection to the remote site(s) specified is snooped. A **<Range>** may be a single remote site (e.g. 3), a set of remote sites (e.g. 3-5), or all remote sites (i.e. **all**).

The command also takes an optional argument for **verbose** operation. When the snooper operates in verbose mode, the IP header checksum is verified. Should the packet be of the TCP protocol, the TCP header is verified, and the contents of TCP packet are decoded and displayed including any data.

Clear Measurements

Syntax: clr < ALL | HOME | RMT <RANGE> >

The measurements displayed with the **dmeas** command are aggregated until cleared. The **clear** command will set measurements to zero. When the target is **ALL**, both the *home site* and all of the *remote site* IP-GATE connection measurements are cleared. When the target is **HOME**, only the *home site* IP-GATE measurements are cleared. When the target is **RMT**, a range of *remote sites* indicates which IP-GATE connections are to have the measurements cleared.

Prompt Labels

Syntax: label [word (no spaces) | NONE]

The prompt on the application console may be customized with a label up to eight characters in length. The value of **none** deletes any existing label on the prompt. The current configuration is displayed during a *verify configuration*, by invoking the **label** command without arguments, or merely by the prompt display.

Application Comments

Syntax: comment [L1=”Any Comment”]
[L2=”Any Comment”]
[L3=”Any Comment”]

The **IP-FANOUT** application may have comments which are displayed with the *verify configuration* command. Up to three lines of comments are available. Each line may have a comment up to 64 characters in length. Each comment is double quoted to allow for spaces to be embedded. A comment with no characters (i.e. “”) is used to delete a comment which is not desired. It is not necessary to delete prior to adding a new comment. The new comment shall replace the existing comment at the line specified.

IP-FANOUT Measurements

This section itemizes the measurements available using the *display measurements* (**dmeas**) command.

The base measurements are always displayed, and the error and exception counters are only displayed if nonzero.

The measurements are per console, and per administrator.

The measurements available are as follows:

Measurement Description	**Type**
Number of Bytes Received	Base
Number of Bytes Transmitted	Base
Number of IP Packets Received	Base
Number of IP Packets Transmitted	Base
Number of Route Requests Sent to a Remote IP-GATE	Non-Zero
Number of Route Responses received from a remote IP-GATE	Non-Zero
Number of Packets dropped due to flow control in the network.	Non-Zero

Warranty

The warranty period for hardware shall be one year from the date of delivery, and the warranty for software shall be 90 days from the date of delivery.
Replacements and repairs are guaranteed for the longer of the remaining original warranty period or 90 days.

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