Article ID: 1450

Q&A

Management Options for ADTRAN IQ Products

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Introduction

This document contains examples of typical IP addressing schemes used with ADTRAN IQ™ products. Listed below are general items to consider when choosing the IP addressing scheme for your network. Also included is how to configure the IQ units to send traps to a Network Management Station (NMS).
Note: All subnet masks used in the examples are assumed to 255.255.255.0

Out-of-Band Management

An optional 10Base T LAN card (P/N 1204005L1) is available for the DSU IQ, TSU IQ, & TSU IQ+ products. The IQ Probe has a built-in 10Base T port. The NxIQ product has the capability to utilize the built-in 10Base T port of a TSU XX0e series multiplexer. A discussion of this management method is below.

LAN Port Addressing Option

All of the IQ units in this type of network have the ESP 10Base T LAN card option. This allows the IQ units to have local LAN IP addresses.

Considerations:

- Can use dynamic routing to resolve IP path to remote site IQ units
- Utilizes IP address of local LAN for each site
- Can access remote site IQ unit from remote site LAN host
- Can use any type of Frame Relay encapsulation

Inband Management

The Inband Management feature of the ADTRAN IQ products allow the units to recognize IP datagrams addressed to the unit that are inband with customer data. Data Link Connection Identifier (DLCIs) can be configured in the unit so that they are monitored for the IP address configured on the IQ unit. For this option to work, the Frame Relay frames on the PVC monitored by the IQ unit must be encapsulated using RFC 1490/2427 (an industry standard) and the IP datagrams addressed to the IQ unit must be uncompressed. This feature allows for a number of advantages and flexibility in determining the management strategy, as described below.

It is important to note that the IQ units are capable of inband management both on the DTE port and the network port but the nature of their operation is different. The network port simply monitors PVCs (DLCIs) that are purchased from the Frame Relay carrier. The DTE port creates a separate PVC (default is 1007) for management. This PVC exists between the DTE port of the IQ and the router (DTE device) only. Therefore, it will appear to the router that an additional PVC is available (DLCI 1007) that has not been purchased from the Frame Relay carrier. This PVC is for management of this IQ unit only. No other data traffic (i.e., routing protocol updates, etc.) should be routed to this PVC.

Inband WAN Addressing Option

In an inband WAN-addressed network, the IQ units and the router serial ports all have WAN IP addresses.

Considerations:

- Additional router configuration required to access remote site IQ units
- Utilizes the same subnet for both the IQ units and the router serial ports
- Can access remote site IQ unit from remote site LAN host
- Requires RFC 1490/2427 Frame Relay encapsulation

Inband LAN Addressing Option

In an inband LAN-addressed network, the host site IQ unit has a WAN IP address, while the remote site IQ units each have a local LAN IP address.

Considerations:

- Can use dynamic routing to resolve IP path to remote site IQ units
- Utilizes separate subnet for the host site IQ unit only
- Cannot access remote site IQ unit from a remote site LAN host
- Requires RFC 1490/2427 Frame Relay encapsulation

Inband Subinterface Addressing Option

In an inband subinterface addressed network, the serial ports of the routers are subinterfaced. Each router port has a subinterface per PVC as well as a separate

subnet.

Considerations:

- No additional router configuration required to access remote site IQ units if using routing protocol that passes subnet mask information (i.e., OSPF, RIP2, etc.)
- Uses one additional subnet for local management traffic at the each site
- Can access remote site IQ unit from remote site LAN host
- Requires RFC 1490/2427 Frame Relay encapsulation only on DTE management PVCs (Default 1007)

Inband Hybrid Subinterface WAN Addressing Option

In an inband hybrid subinterface WAN-addressed network, the serial port of the host site router is subinterfaced. Each PVC at the host site router port has its own subinterface as well as its own subnet. The remote site routers are not subinterfaced.

Considerations:

- Additional router configuration required to access remote site IQ units
- Uses one additional subnet for local management traffic at the host site
- Can access remote site IQ unit from remote site LAN host
- Requires RFC 1490/2427 Frame Relay encapsulation only on DTE management PVC (Default 1007)

Traps

There are three fields in the IQ units which need to be configured to enable traps: Trap DLCI, Trap IP, and Trap Port. The Trap DLCI identifies the DLCI on which the trap needs to be sent to reach the Network Management Station (NMS). The Trap IP is the IP of the NMS. The Trap Port is the port through which the trap needs to be sent to reach the NMS. If the NMS is reached via the Frame Relay network, then the Trap Port will be the network port. If the NMS is on the same network as the IQ unit, then the Trap Port will be the port which contains the management traffic (Ethernet if a LAN card is installed, otherwise, DTE port.)

Summary

The examples included below are intended to demonstrate the configuration necessary on the IQ units based on the addressing scheme selected. Other variations of these examples can be utilized based on individual requirements. For example, the inband WAN addressing method may be chosen for use with the remote site units, but an Ethernet option card can be utilized in the host site unit.

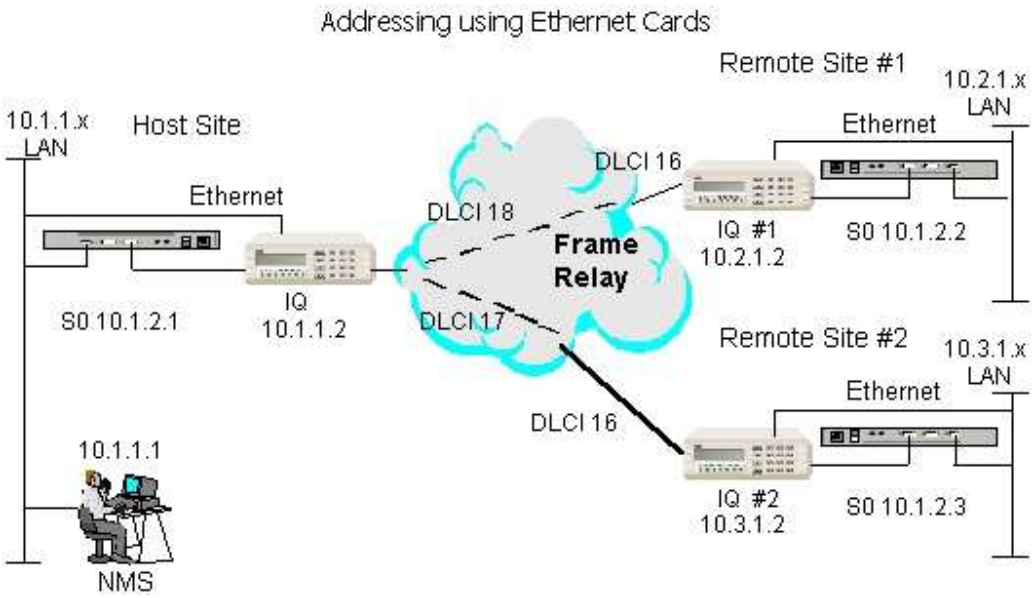

FIGURE 1

IQ Configurations for Figure 1

	Host Site IQ	Remote Site IQ #1	Remote Site IQ #2
DTE Port:			
Management DLCI:	1007 (default)	1007 (default)	1007 (default)
Management Option:	Disabled	Disabled	Disabled
Network Port:			
Management DLCI 1:	1006 (default)	1006 (default)	1006 (default)
Management DLCI 2:	1005 (default)	1005 (default)	1005 (default)
Mgmt DLCI 1 Mode:	Shared (default)	Shared (default)	Shared (default)
Mgmt DLCI 2 Mode:	Shared (default)	Shared (default)	Shared (default)
System:			
IP Address:	10.1.1.2	10.2.1.2	10.3.1.2
Trap DLCI:	0	0	0
Trap IP:	10.1.1.3	10.1.1.3	10.1.1.3
Trap Port:	Ethernet Port	Ethernet Port	Ethernet Port

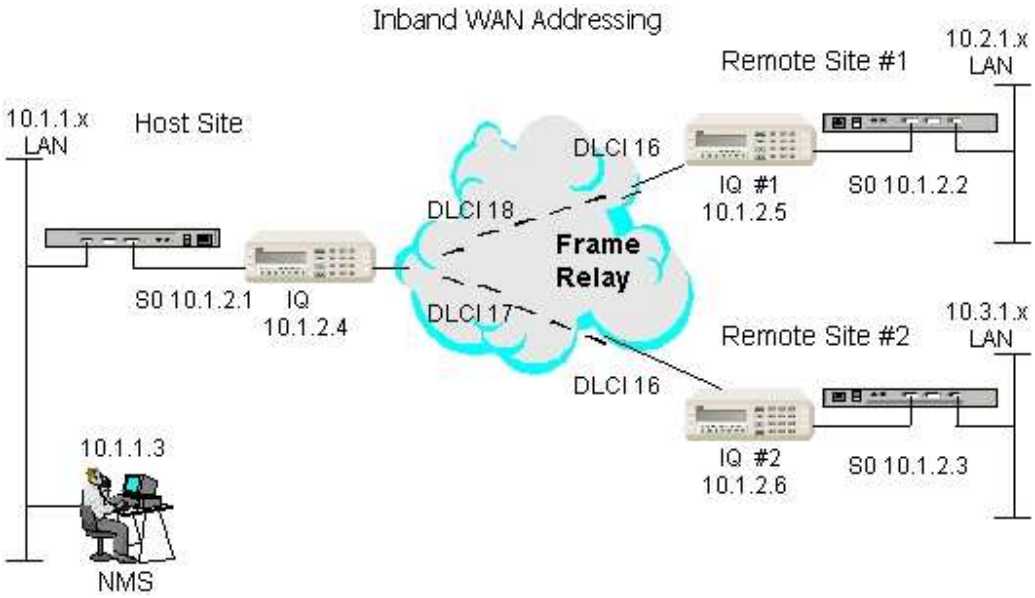

FIGURE 2

IQ Configurations for Figure 2

	Host Site IQ	Remote Site IQ #1	Remote Site IQ #2
DTE Port:			
Management DLCI:	1007 (default)	1007 (default)	1007 (default)
Management Option:	Enabled (default)	Enabled (default)	Enabled (default)
Network Port:			
Management DLCI 1:	1006 (default)	16	16
Management DLCI 2:	1005 (default)	1005 (default)	1005 (default)
Mgmt DLCI 1 Mode:	Shared (default)	Shared (default)	Shared (default)
Mgmt DLCI 2 Mode:	Shared (default)	Shared (default)	Shared (default)
System:			
IP Address:	10.1.2.4	10.1.2.5	10.1.2.6
Trap DLCI:	1007	16	16
Trap IP:	10.1.1.3	10.1.1.3	10.1.1.3
Trap Port:	DTE Port	Network Port	Network Port

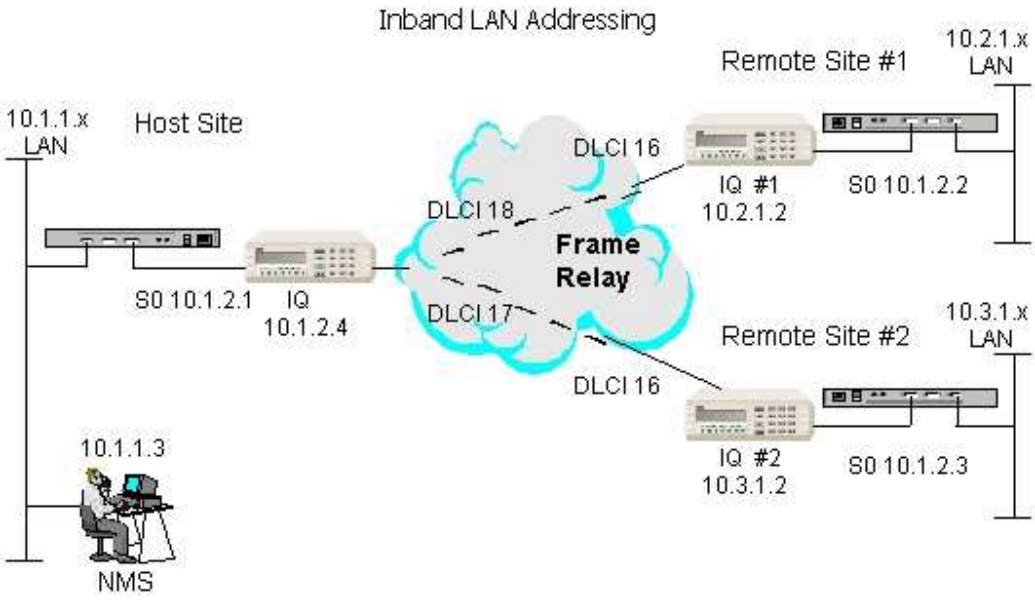

FIGURE 3

IQ Configurations for Figure 3

	Host Site IQ	Remote Site IQ #1	Remote Site IQ #2
DTE Port:			
Management DLCI:	1007 (default)	1007 (default)	1007 (default)
Management Option:	Enabled (default)	Disabled	Disabled
Network Port:			
Management DLCI 1:	1006 (default)	16	16
Management DLCI 2:	1005 (default)	1005 (default)	1005 (default)
Mgmt DLCI 1 Mode:	Shared (default)	Shared (default)	Shared (default)
Mgmt DLCI 2 Mode:	Shared (default)	Shared (default)	Shared (default)
System:			
IP Address:	10.1.2.4	10.2.1.2	10.3.1.2
Trap DLCI:	1007	16	16
Trap IP:	10.1.1.3	10.1.1.3	10.1.1.3
Trap Port:	DTE Port	Network Port	Network Port

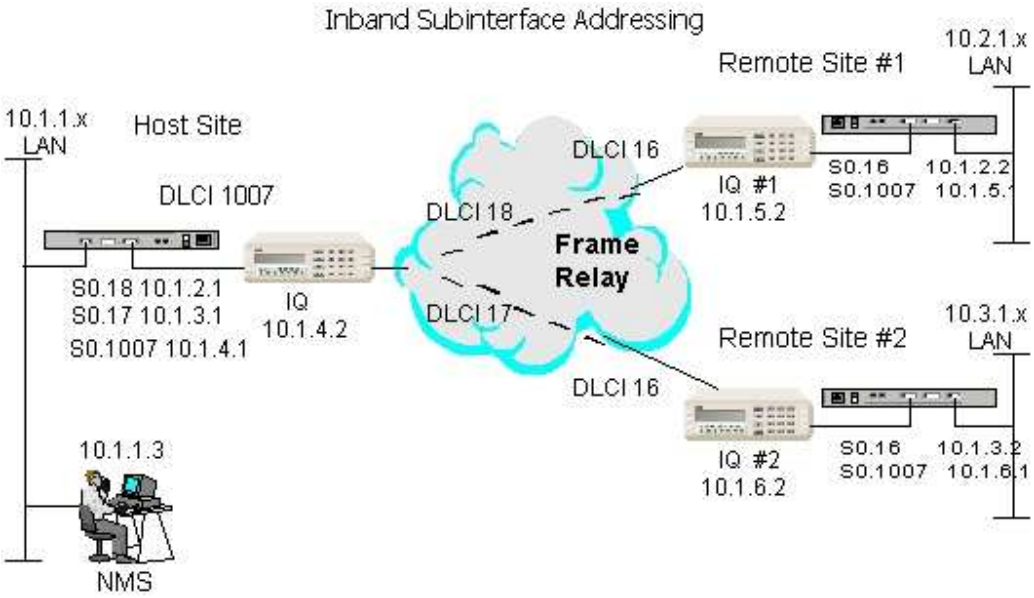

FIGURE 4

IQ Configurations for Figure 4

	Host Site IQ	Remote Site IQ #1	Remote Site IQ #2
DTE Port:			
Management DLCI:	1007 (default)	1007 (default)	1007 (default)
Management Option:	Enabled (default)	Enabled (default)	Enabled (default)
Network Port:			
Management DLCI 1:	1006 (default)	1006 (default)	1006 (default)
Management DLCI 2:	1005 (default)	1005 (default)	1005 (default)
Mgmt DLCI 1 Mode:	Shared (default)	Shared (default)	Shared (default)
Mgmt DLCI 2 Mode:	Shared (default)	Shared (default)	Shared (default)
System:			
IP Address:	10.1.4.2	10.1.5.2	10.1.6.2
Trap DLCI:	1007	1007	1007
Trap IP:	10.1.1.3	10.1.1.3	10.1.1.3
Trap Port:	DTE Port	DTE Port	DTE Port

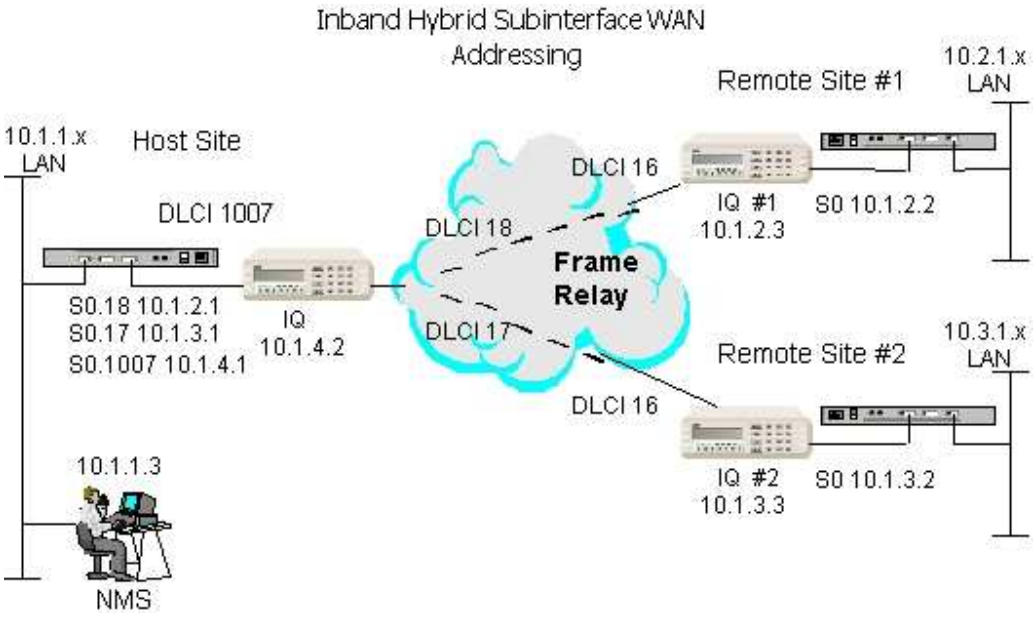

FIGURE 5

IQ Configurations for Figure 5

	Host Site IQ	Remote Site IQ #1	Remote Site IQ #2
DTE Port:			
Management DLCI:	1007 (default)	1007 (default)	1007 (default)
Management Option:	Enabled (default)	Enabled (default)	Enabled (default)
Network Port:			
Management DLCI 1:	1006 (default)	16	16
Management DLCI 2:	1005 (default)	1005 (default)	1005 (default)
Mgmt DLCI 1 Mode:	Shared (default)	Shared (default)	Shared (default)
Mgmt DLCI 2 Mode:	Shared (default)	Shared (default)	Shared (default)
System:			
IP Address:	10.1.4.2	10.1.2.3	10.1.3.3
Trap DLCI:	1007	16	16
Trap IP:	10.1.1.3	10.1.1.3	10.1.1.3
Trap Port:	DTE Port	Network Port	Network Port