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## Simple IP Radio Dispatch Tunnel Using XT-3305

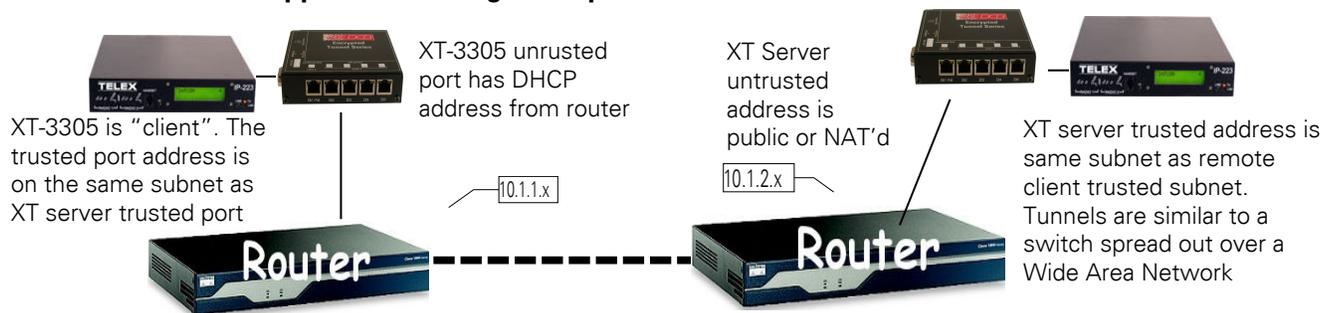
### Introduction:

Radio installers rely on DCB tunnel products to implement secure networks for mission critical applications. DCB Encryptors (XT, UT, and ET products) enable IP dispatching across multiple networks. They remove the **multi-cast problem** faced in many IP network installations, thus are frequently used along with Telex, Motorola, Kenwood, Harris, Zetron, AVTEC, and other two-way radio consoles.

The tunnels make it easy to enable inter-agency communications. The network behind the tunnels (the trusted user side) is the same private network at all locations. The tunnels create what can be thought of as a Wide Area Network Ethernet switch. The concept of using the DCB tunnels is equivalent to an Ethernet Layer 2 VPN. But with far less cost and complexity.

This document describes some of those techniques with examples we've seen at PSAPs and other dispatch centers.

### Point to Point Application through a corporate network



Telex IP addresses: 192.168.2.x at both ends of the link.

Internal corporate network addresses: 10.1.1.x on the left side, 10.1.2.x on the right hand side

Corporate router on the left is set for DHCP to give DHCP address to XT-3305 untrusted (B) port

On the right, the XT-3305 untrusted (B) port is assigned a fixed address in the 10.1.2.x range

XT-3305 addresses on the trusted (A) port side are in the 192.168.2.x range at both locations

The XT-3305 uses either the default port 22, the SSH tunneling port, or any port designated by the IT department.

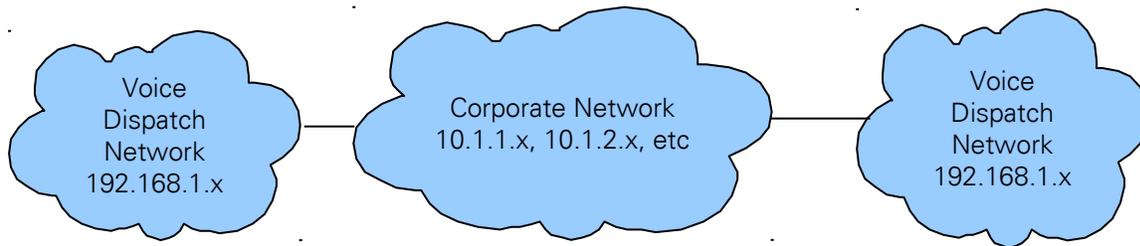
The link between the XT-3305's may be either encrypted or be unencrypted.



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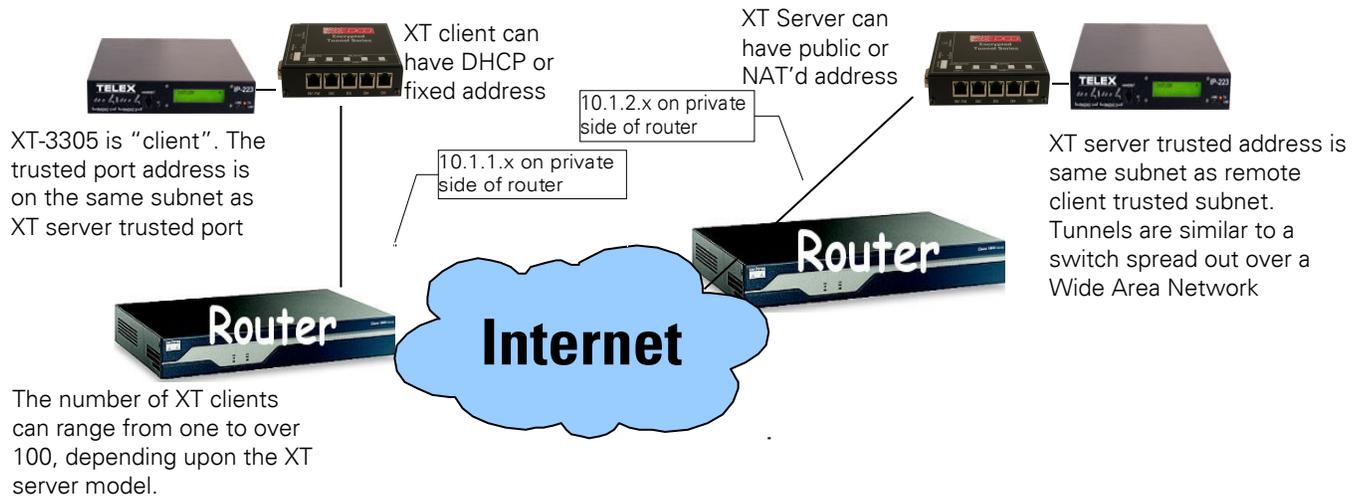
The illustration below shows how the corporate network functions as transport only for the voice IP. Since the XT-3305 passes all traffic, including multicast through a single port, there is minimal configuration on the corporate network. It is possible that only one single fixed address for server end XT-3305 would be required. If encryption is turned on in the XT-3305, the corporate network is invisible to the voice dispatch network and the voice dispatch network is invisible to the corporate network.



Note: The IP addresses used are for illustration purposes only



**Point to Point Application through the Internet**



Telex IP addresses: 192.168.2.x at both ends of the link.

User side network addresses behind the routers: 10.1.1.x on the left side, 10.1.2.x on the right hand side

Router on the left is NAT'd and uses DHCP to give an address to XT-3305 untrusted (B) port

On the right, the XT-3305 is assigned a fixed address of 63.252.225.2 is on a "DMZ".

XT-3305 addresses on the trusted (A) port side are on the same class "C" private network address range of 192.168.2.x at both locations

The XT-3305 uses either the default port 22, the SSH tunneling port, or another port designated by the network manager.

The link between the XT-3305's can be encrypted or unencrypted. Since the link is over the Internet, encryption is recommended.

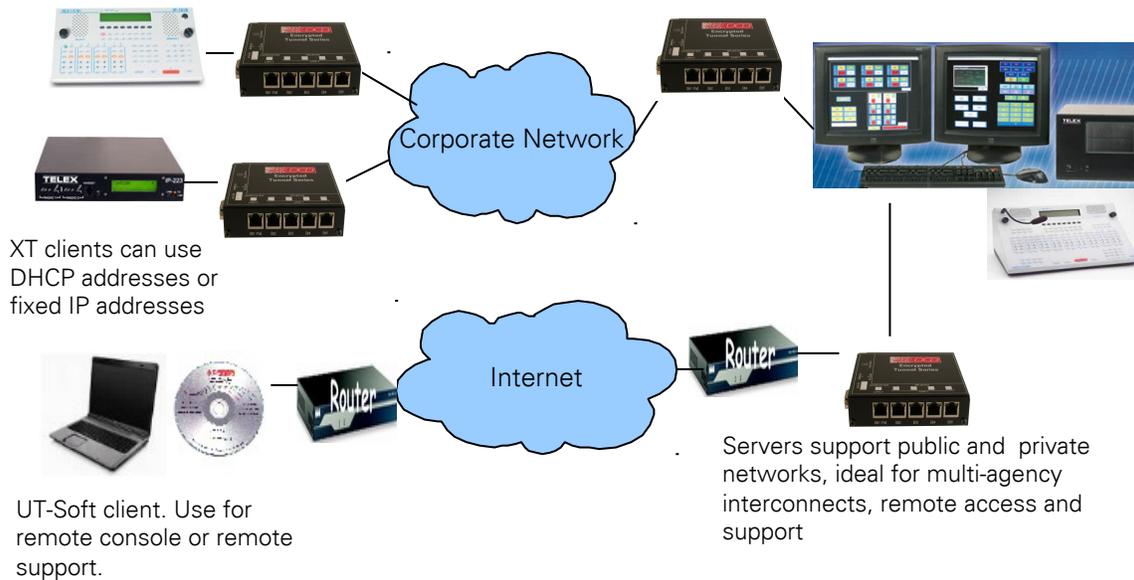
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**Corporate Network and Internet Combination Network**



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Protection options: Redundant physical or cloud server, redundant network links.

In the above illustration, the voice dispatch system uses the corporate network and also uses the Internet for transport.

By using encryption, and placing the voice dispatch system on its own private network, the corporate network is isolated and protected from intrusion via the Internet. The encryption on the links through the Internet also isolates and protects the dispatch system from Internet intrusion.

All of the voice dispatch equipment in the above illustration is on the same private network, for example, 192.168.2.x.

The XT-3305 Soft client on the PC allows a PC to be anywhere, operating as a portable C-Soft console. The PC client can be wire connected, 802.11 wireless connected, or cell modem connected. The XT-3305 Soft client software can also serve as VPN software to a XT-3305 or XT-33056602 operating as a VPN server.

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#### **Benefits of the UT Tunnels:**

- ⤴ \$ - The XT-3305 and XT-6602 are low cost, much less expensive than GRE routers
- ⤴ The XT devices are much easier to set up than are GRE routers
- ⤴ Using the XT devices provides an easy way to work with/through firewalls
- ⤴ The XT uses voice and video friendly UDP transport protocol
- ⤴ The XT has multicast capability. All multicast traffic is passed transparently
- ⤴ The XT default passes all multicast, but can be configured to allow only specific addresses. Allowed multicast addresses are set in a simple comma delimited file.
- ⤴ Very little needs to be known about the customer network when using the XT
- ⤴ IP based voice dispatch systems can be on its own private network
- ⤴ The XT adds encryption to radios that do not have encryption capability on the IP side
- ⤴ The XT can tunnel data with or without encryption
- ⤴ The XT separates voice dispatch from the rest of the customer network
- ⤴ The XT works with routers, DSL, cable modems, wireless ethernet, satellite links, etc.
- ⤴ The XT works like a switch, filtering traffic at the MAC address, IP or port level
- ⤴ The XT uses just a single IP port number, defaults to port 22, can be any port
- ⤴ An XT can be set to server mode, client mode, or both (both used as mid-point relay)
- ⤴ XT-3305 as a server supports up to 8 clients, the XT-6602 supports 50 clients, the XT-6632 supports 100 clients
- ⤴ The XT-3305 is 9 to 30 VDC, the XT-6602 operates 7 to 18 VDC
- ⤴ XT's support backup servers, backup links to XT servers.