

## NEXTEP Transparent LAN Application Notes

Application Notes for the NEXTEP Transparent LAN termination service supplied to Channel Partners of NEXTEP Broadband.

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## **INTRODUCTION**

The philosophy adopted is for NEXTEP Broadband to provide an access network and allow Channel Partners to define their product and operational requirements without the network being a limiting factor.

The NEXTEP Transparent LAN termination service has been implemented to allow protocol/application independence, allowing seamless integration of all NEXTEP's Broadband services into a single private network.

## **WHAT IS THE NEXTEP TLAN ?**

The NEXTEP TLAN is a termination service that allows Channel Partners to quickly implement secure and cost effective Wide Area Networks (WAN) for end customers.

## **HOW DOES IT WORK ?**

A NEXTEP TLAN is a layer 2 switched Ethernet, private network. When implemented each end user TLAN is assigned their own Ethernet based logical network or Virtual LAN (VLAN) within the NEXTEP core network. Individual broadband links are made members of the private network by terminating access services onto the TLAN, allowing seamless integration of Tier 1, Tier 2 and fibre Ethernet services into a TLAN.



## WHAT ARE THE ADVANTAGES OF THE NEXTEP TLAN ?

- High security with no authentication/encryption required as end user traffic is separated into dedicated logical Ethernet networks
- NEXTEP's core network uses hardware based switching and not routing, provides lower and more consistent latency.
- Data transparency that enables many different layer 3 protocols to be used, including: IP, IPX, AppleTalk, NetBEUI.
- Private IP addressing schemes can be maintained and managed by the Channel Partner or end user.
- Less complex and expensive hardware is required at each site.
  - No Firewall required, due to the TLANs in built security. Reduces capital and operational cost.
  - No IP VPN devices are required to establish tunnels to secure data passing across the network.
  - Administration of user names, domains and passwords is not required.
- Direct communication is possible between any two sites, not requiring all data to pass through a single head site, providing greater bandwidth efficiency.
- No volume based traffic charges on the network.
- No external hacking, spamming or other attacks are possible.

## WHAT ARE THE APPLICATIONS ?

### Wide Area Networks (WAN)

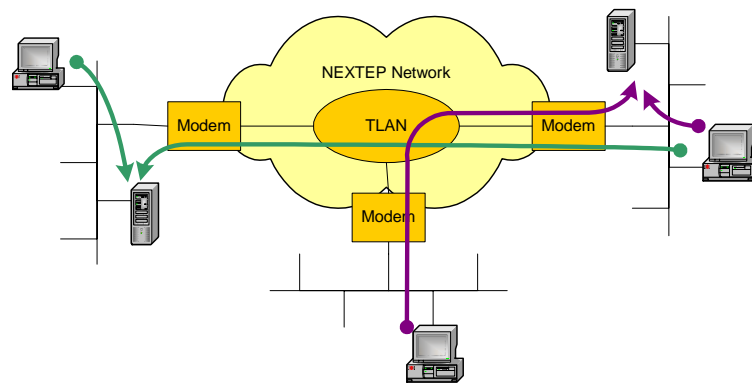
A WAN between company sites enables all sites to access each other on a secure network. This enables all sites to access servers and services from other sites or from a head office, without the need of firewalls. This enables applications such as data sharing, email, Internet, voice and video between sites.



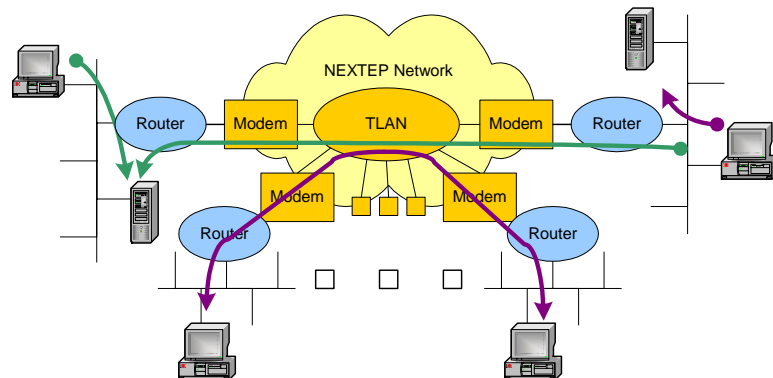
## Data/File Sharing

The NEXTEP TLAN enables all connected sites to communicate peer to peer without passing through a head site. Servers at any site can be accessed from any other site, not requiring all equipment to be placed at a single site.

In small installations the DSL modem can be connected directly to the LAN at each site. In effect creating a single LAN spread across all sites. This limitation of this is that traffic from all WAN protocols can pass between sites. When required, the DSL modem can be set to filter traffic to pass IP protocol only, which limits chatty protocols such as IPX and Netbios.



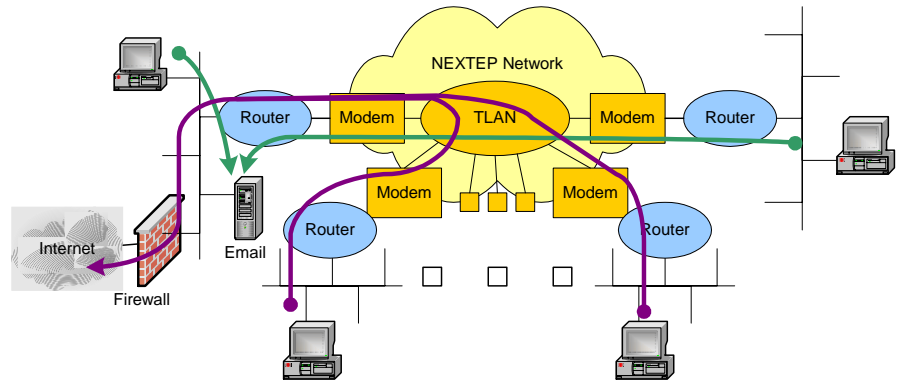
In larger WANs or those that require network separation between sites, simple routers can be added to each site to control the traffic flow between sites. This implementation reduces traffic on the WAN to only that destined for another site, providing further bandwidth efficiency.



For all applications the layer 3 protocol allowed across the WAN and the IP addressing scheme is independent of the NEXTEP service and under the control of the channel partner.

## Shared Internet Access

All sites have access to Internet and Email services through a head site. This enables central control of company wide Internet access and only the head site requires firewall equipment. Any hacking, or denial of service attacks are restricted to the head site and will not affect any other traffic between sites.



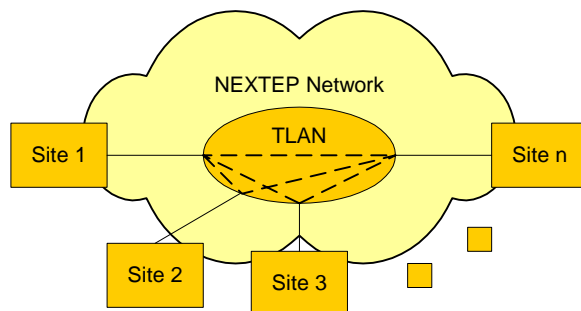
## Voice and Video

The low and consistent latency of the NEXTEP TLAN suits the demands of real time applications such as Voice and Video. This enables end users to set up video and voice calls across their TLAN network with a high level of performance and quality.

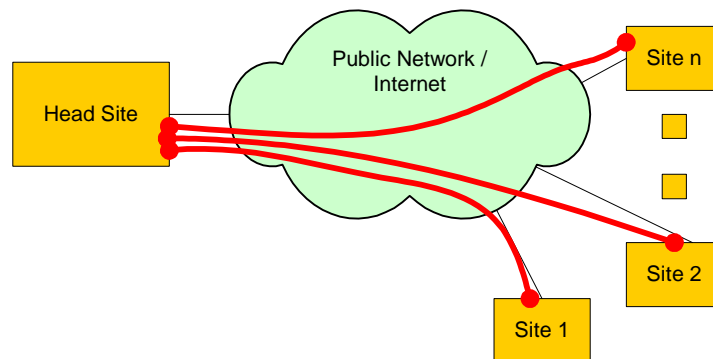


## How is this different to a Virtual Private Network (VPN)?

The NEXTEP TLAN links sites into a WAN by configuration of the core switch equipment when it is first established. Sites are uniquely identified by their location in the NEXTEP network and no login or password authentication is required. The private network is always on and running, and does not require tunnels to be established through a shared network. The NEXTEP TLAN is a star network topology with each link joining a centralised switch. This allows end users to logically establish a mesh network with every site being able to communicate with any other site, without the need of traffic passing through a head site. This provides higher bandwidth efficiency with traffic only going to its place of destination and not through an intermediary site.

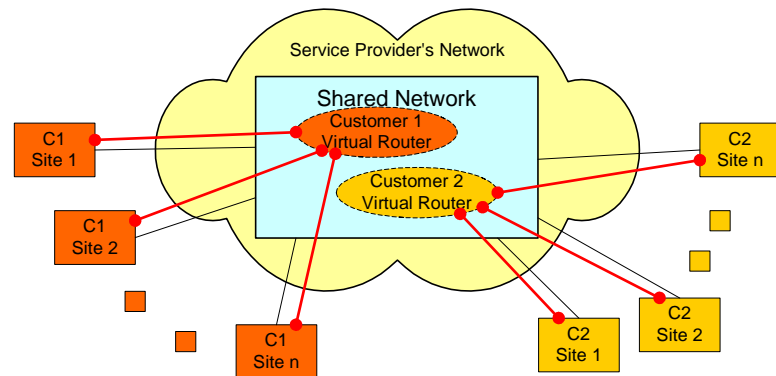


A VPN is a private network created virtually on top of a public or shared network such as the Internet. Software tunnelling and encryption technologies such as IPSec, PPP, L2TP or PPTP are used to establish the VPN. Each tunnel creates a point-to-point connection from one site to another, establishment of these links usually requires user authentication based on name/password. It is not scalable to create a mesh network by connecting every site to every other site using this method to allow direct communication between all sites. Commonly all tunnels are terminated into a central site, requiring that all communication between sites must go through a customer's head site.

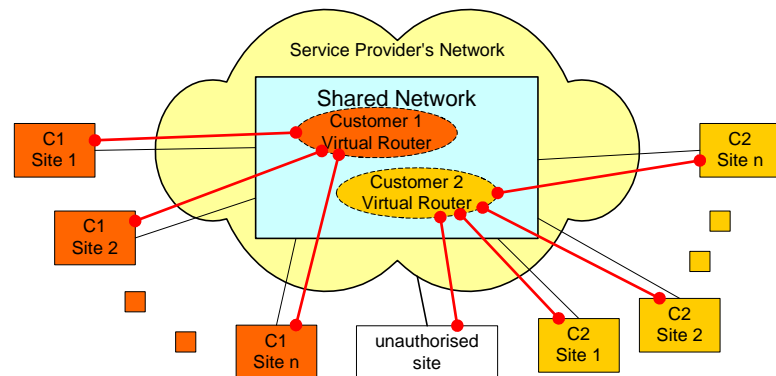


## HOW DOES THIS COMPARE WITH A PPP BASED VPN ?

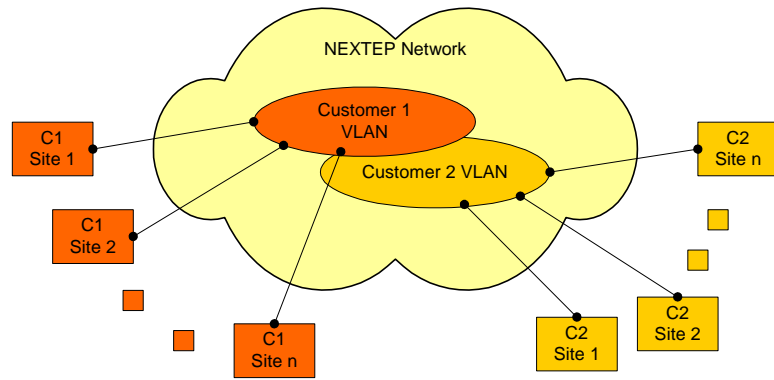
Typically PPP VPNs require the service provider to terminate PPP sessions in their core network. A PPP VPN is established using shared infrastructure where traffic segregation is based on end user authentication. All sites are connected to the service providers shared network along with other VPN customers. Authentication with login and password details is used to determine where a site is connected. The IP addresses for each site need to be pre-agreed and is assigned to each site as part of the PPP establishment process.



As connection to the VPN is dependant on authentication, it is possible for an unauthorised site access to a customer's VPN if hackers are able to obtain the login and password.



The NEXTEP TLAN is circuit based and doesn't rely on end user authentication as each customer site is connected directly to a customer's private network or VLAN. The traffic from each site passes across the NEXTEP core network, through circuits and it is not possible for a user to change the path of their circuit in the network. A change in circuit connection can only be performed by NEXTEP operations staff, at the time the circuit is configured or through a change request process that requires customer phone and/or written verification.



With only those sites specified by a customer connected to their TLAN no one is able to hack into or intercept data on a customer's TLAN.



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