

## Feature rich IP VPN and managed connectivity services.

### Key Features:

- Support for VoIP, Video and Data applications
- Any to any connectivity provides best performance and value
- Ethernet transmission lowers cost, improves reliability & performance
- Multicast support enables voice and video broadcasting
- Customisable QoS assures key application performance
- Support for multiple customer VPNs facilitates private user groups
- Traffic encryption (chargeable option) further reduces risk of network intrusion
- EFM (Ethernet over copper lines) provides fibre performance at lower cost : ideal for branches and for backup
- ADSL2+ : Better performance than ADSL
- Bandwidth scalability at each site balances performance with budget
- Flexibility with customer routers : reuse or exchange existing kit

### Associated Services:

- Internet connectivity
- Managed Firewall
- Performance reporting and monitoring
- Remote site VPN
- Remote worker VPN

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Vtesse **ETHER/IP** is a 4th generation **IP VPN service** that provides a secure, scalable platform for application service delivery across the Enterprise. **ETHER/IP** leapfrogs legacy MPLS technologies to ensure best in class availability, performance & value. The service offers a very broad range of access options ensuring the best possible fit to customer needs at each site. **ETHER/IP** features customisable Quality of Service ensuring predictable application performance, a consistent user experience and compatibility with existing services.

### Service Overview

**ETHER/IP** services are provisioned on Vtesse's **native Ethernet** national network. This modern approach to IP service delivery ensures reliable, flexible, scalable, high performance **any to any** connectivity between customer premises and staff locations. IP service interfaces are presented on customer premises using appropriately configured routers, with their IP VPN payloads then being switched between sites efficiently and securely using fast Ethernet switches.

Customer benefits of this approach include **increased reliability, better performance** (lower jitter and latency) and **best value**.

**ETHER/IP** features a very flexible approach to Class and Quality of Service. Our standard service template includes **6 Classes of Service**, pre-defined for voice, video and several classes of data applications.

Customers may wish to implement **ETHER/IP** alongside or in place of existing IP VPN services. To help with integration and migration all 6 **ETHER/IP QoS profiles** may be **custom configured** to match existing policies, facilitating integration and helping to maintain a consistent end user experience.

**ETHER/IP** features a wide range of customer premise access technologies, enabling the best possible match to the price, performance and availability needs of each customer location to be achieved.

**ETHER/IP** Service may also be securely extended to remote offices, home offices and mobile workers through the Internet.

### Standard Classes of Service (CoS)

6 standard Classes of Service are defined with Quality of Service being managed through the network using DIFFSERV. All employ **bandwidth management and prioritisation** mechanisms, which assign a relative priority and bandwidth allocation to each Service Class. This approach allows application performance at each site to be proactively managed, ensuring that in the event of contention, key applications receive the prioritisation and resources they need.

The **ETHER/IP** Service Level Agreement defines service availability, latency, jitter and packet loss targets.

### Additional Attributes

The service is **inherently secure** (Discrete Layer 2 VLANs carry each customer Layer 3 VPN service) and bandwidth is scalable at each customer connection point. Customer data may be further secured using **encryption techniques**.

**Multiple IP VPNs** may be configured at each site, facilitating secure "communities of interest", with VPN membership determined by administrators.

**Online tools** simplify management, reporting, customer service and standard service level monitoring.

# ETHER/IP

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## National IP VPN Services

### Bandwidth:

- EFM services: 2,4,6,8,10, 20, 30, 40Mb
- LES10 services: 4,6,8,10Mb
- LES100 services: 10, 25,50,75,100Mbit
- LES1000 services: 100,250,500,750, 1000Mbit
- Private Fibre Services: 1- 10Gbit
- ADSL2+ services: Up to 24Mbit (Typical 6-8Mbit) downstream. 1.5Mbit upstream.

### Service Availability:

- Pop To PoP 99.99%
- Via LAN extension service 99.95%
- Via diverse LAN extension service 99.99%
- Via EFM service 99.95%
- Via private fibre service, up to 99.95%
- Via ADSL2+ services: 99.9%

### Customer routing options:

- OSPF
- BGP
- RIP
- Static
- EIGRP

### Connectivity:

- LAN Extension
- Private Fibre
- EFM (Ethernet over Copper)
- ADSL & ADSL2+
- Private circuits (SDH)

### Broadcast support:

- Unicast and Multicast

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### ETHER/IP Connectivity

The map above illustrates the location of Vtesse ETHER/IP fixed line Points of Presence (PoP).

### LAN Extension Service (LES) Access

LES access allows transparent delivery of all Vtesse ETHER/LIGHT service types and QoS classes at speeds from **10Mbit up to 1Gbit** per site. It is provisioned using dedicated fibre pairs between customer premises and Vtesse PoPs and terminated on an Ethernet interface on the customer site that provides both service management and customer connectivity. LES access is the preferred mechanism for larger administrative locations.

### Leased Line Access

Allows **2Mbit** (up to 8 via bonding), **34Mbit** and **155Mbit** service to be delivered to sites that are beyond the range of both LAN Extension and bonded copper (EFM) services.

### Direct Fibre Access

For high bandwidth service delivery up to **10Gbit** and/or guaranteed diversity, typically to HQ/data centre locations, Direct Fibre Access is provisioned from customer premises to Vtesse PoP with Vtesse managed private Dark Fibre.

### Service/Site Speeds

Service speeds to each site will be determined by circuit capacity and network switch port speed settings. **Speeds can be upgraded and downgraded**, at each port at short notice.

### Access Diversity

Protected access may be provided for LES access, Leased Line and Direct Fibre access using multiple customer routers via multiple fibre routes to multiple PoPs. **Guaranteed route diversity** protects against individual route failure and **increases service availability** to key locations. Access diversity may also be provided by alternative access services. (EFM backup for LES, for example)

Direct Fibre Access connectivity to ETHER/LIGHT is available within many UK telehotels and commercial data centres.

### Ethernet First Mile (EFM) Access

EFM access provides a lower cost alternative to some fibre based 10Mbit and 100Mbit LES circuits.

EFM services are provisioned to customer premises using multiple pairs of copper circuits. These "bonded" copper circuits provide Ethernet connectivity from 2Mbit to a maximum of 40Mbit.

EFM service coverage is constantly expanding and should be national during 2010.

EFM supports a subset of ETHER/IP QoS classes and is suitable for smaller premises with less demanding service needs or for backup of higher performance circuits.

### ADSL & ADSL2+ Access

ADSL provides affordable, VPN connectivity to non-critical customer locations. Bandwidths of up to 2.5Mb upstream and 24Mb downstream can be provisioned with ADSL2+. ADSL connected sites support a subset of ETHER/IP QoS classes. Service performance will be a function of individual line quality. ADSL coverage is widespread. ADSL2+ coverage is constantly improving.