White Paper:
Ethernet VPN, IP VPN and Dedicated Internet Access
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**Network Overview**

In today’s increasingly competitive global business environment, CIOs are constantly looking to improve operational efficiency by leveraging highly-developed communications systems. To meet these needs, FPL FiberNet offers highly reliable and feature-rich business-critical services that will enhance your everyday business operations, exceed your customer requirements and help you stretch your budget. Since service interruptions have a costly and disruptive effect on day-to-day operations, selecting a highly reliable and scalable provider with secure solutions is essential in your fast-paced environment. These enhanced product solutions offered by FPL FiberNet will allow you to maintain superior customer relationships and grow your business.

FPL FiberNet offers VPN services that meet and exceed the stringent demands of a variety of business objectives, recognizing that maintaining a competitive edge can be achieved by taking advantage of the right IT applications. Enterprises that leverage business critical applications increase their efficiency and reduce the likelihood of business failure. In selecting such VPN services, business CIO’s consider the following service requirements, all of which are supported by FPL FiberNet VPN solutions:

- Application protocol transparency
- Control of Network routing
- Ability to integrate all services over a common access technology
- Option to connect sites using different access technologies
- Ability to monitor the performance of the service
- Ability to adjust service bandwidth with quick provisioning times
- Simplicity of deploying new business applications

In order to meet the requirement of CIOs, FPL FiberNet offers advanced value-added VPN services:

- VLL is a point-to-point Ethernet VPN service that emulates the behavior of a lease line (pseudo-wire)
- VPLS is a multipoint Ethernet VPN service that emulates behavior of a LAN switch
- IP VPN supports IP-based applications, with traffic forwarded based on the IP address

FPL FiberNet also offers Dedicated Internet Access (DIA), which provides customers with routed internet access over the FPL FiberNet network. Our DIA service offers you a reliable internet connection with flexibility to grow with your data needs and business demands.

All services described above are delivered over FPL FiberNet’s highly reliable Fiber Optic network enabled by Alcatel-Lucent Service Routing equipment. Our network is protected and diversified for the following elements: fiber, route, equipment and power, ensuring your solution is highly reliable and resilient.
Network Architecture

FPL FiberNet’s IP/MPLS/Ethernet Network Architecture

LEGEND
- Metro
- Alcatel 7750/7450
- Alcatel 7750/7450/7250
- Alcatel 7250 or T5C Switch
- Network Interface Device used as demarc

(Service depicted above is typical but, is not standard)
Ethernet VPN

Product Definition

A Virtual Private Network (VPN) service is a private network that shares a common platform with other users, this service that has been popular over the past few years. In parallel, there has been an increasing interest in scalable, end-to-end Ethernet services. Several developments in the area of VPNs have helped to enable Ethernet-based VPNs. Chief among these are two MPLS technologies; Virtual Leased Line (VLL) and Virtual Private LAN Service (VPLS).

Virtual Leased Line (VLL), also known as Ethernet Point-to-point VPN service, emulates the behavior of a leased line between two points. In the industry, this technology is also referred to as Virtual Private Wire Service (VPWS) or Ethernet over MPLS (EoMPLS). VLLs use the pseudo-wire encapsulation for transporting Ethernet traffic over an MPLS tunnel across an IP/MPLS network.

Virtual Private LAN Service (VPLS), also known as Ethernet Multipoint-to-multipoint VPN service, emulates the behavior of a traditional bridge between multiple points. Ethernet Point-to-multipoint VPN service can be considered a special cases of Ethernet Multipoint-to-multipoint VPN service.

Service providers can use these technologies to offer advanced services to their customers such as managed VPN services. Similarly, large enterprises can use these technologies to virtually segment their networks based on business needs, and across geographical boundaries.

Advantages of Ethernet VPN services:

- Offers easy, scalable growth that can be quickly upgraded
- Supports multiple services over a single UNI (port)
- Offers vary high bandwidth WAN connections
- Delivers more bandwidth for the money than other data services
- Provide QoS / CoS options for various voice, video and data applications
- Eliminates the need for expensive WAN interfaces
- Allows better utilization of bandwidth
- Provides protocol transparency

Standard Product

- Ethernet VPN Topology Options; Connections within an FPL FiberNet metro area
  - Connect two locations; Point-to-point VPN
  - Connect a hub to multiple remote locations; Point-to-multipoint VPN
  - Connect multiple locations to each other; Multipoint-to-multipoint VPN
- Network Native LAN group protocol (MTU frame size set to 1546 bytes)
- Dedicated full-duplex
- Limited to 250 MAC addresses (multipoint topologies only)
- Access via 10/100Mbps, 1000Mbps, 100Mbps or 1000Mbps LAG ports, and DS3 or OC3c ports (by request only)
- Committed Information Rates (CIR) per site as follows:
  - 10-100Mbps in 10 Mbps increments (10/100Mbps port)
  - 100-500Mbps in 50Mbps increments & 500-1000Mbps in 100Mbps increments (1000Mbps port)
  - 2 to 8 x 1000Mbps in 1000Mbps increments (LAG 1000Mbps ports)
• Port Media and Physical Interfaces:
  o 100BaseTX; Cat5e (100m)
  o 100BaseFX; LC Connector; SMF (2km)
  o 1000BaseTX; CAT5e (100m)
  o 1000BaseSX; LC Connector; MMF (500m)
  o 1000BaseLX; LC Connector; SMF (2km)
  o DS3 (by request only)
  o OC3c (by request only)

• Protected and diversified MPLS Core/Edge Network (fiber, equipment, power)

• Performance (applies to CIR traffic only)
  o Latency (round-trip delay) \( \leq 5\text{ms} \) intra-Metro^\(^\wedge\)
  o Latency (round-trip delay) \( \leq 20\text{ms} \) inter-Metro^\(^\wedge\)
  o Jitter \( \leq 5\text{ms}^\wedge\)
  o Packet Delivery \( \geq 99.5%\wedge\)
  o Network Availability \( \geq 99.99%\wedge\)

^ Applies to CIR traffic only
* Some customer sites may require Protection feature in order to achieve this level of network availability

**Value Added Features**

• Protection, defined as fiber and route diversity for local fiber infrastructure
• Jumbo Frame support, with MTU set to 9000 bytes (available only with 1000Mbps ports)
• VLAN option for additional services through same port
• Port Upgrade: 100 to 1000Mbps (for CIR < 100Mbps)
• Additional Shadow Port (requires protection value added feature)
• Quality of Service allows the ability to prioritize traffic with four levels of QoS
• Bursting for traffic above CIR (best effort)
• Multicasting (up to CIR) for video-based traffic
• Inter-Metro connectivity for Ethernet VPN service across multiple metros
• Other customized solutions available upon request

**Notes:**

Point-to-point Ethernet VPN
Both A and Z locations should have same CIR (and PIR)

Point-to-multipoint Ethernet VPN
CIR set per site, however, service quality not guaranteed unless \( CIR_{\text{Hub}} \geq \sum CIR_{\text{Other Sites}} \)
Quality of Service feature highly recommended if \( CIR_{\text{Hub}} \leq \sum CIR_{\text{Other Sites}} \)

Multipoint-to-multipoint Ethernet VPN
CIR set per site, however, service quality not guaranteed if traffic exceeds location CIR
Quality of Service feature highly recommended for this service
IP VPN

Product Definition

An IP VPN (Virtual Private Network) service is a private network (cannot be seen by users outside the VPN service) that shares a common network with other users for IP traffic only. Another name for an IP VPN is a Virtual Private Routed Network (VPRN).

IP VPN emulates the behavior of a router between multiple points. Several elements combine for an IP VPN service:

1. Any number of legs can attach to the IP VPN service at any MPLS service router.
2. This service functions like one large virtual router.
3. IP VPN services are terminated into PE (Provider Edge) routers.
4. Extending the IP VPN interface to the customer allows IP VPN services to be extended from the PE routers.

This service is much more complex than Ethernet VPNs and requires more interaction between customer and service provider for IP addressing and routing protocols.

Advantages of IP VPN service

- Offload complex IT responsibilities
- Fully meshed service supports multiple access types

Standard Product

- IP VPN topology options for connections within an FPL FiberNet metro
  - Connect two locations with a point-to-point IP VPN
  - Connect a hub to multiple remote locations with a point-to-multipoint IP VPN
  - Connect multiple locations to each other with a multipoint IP VPN
- Limited to 200 IP routes (multipoint topologies only)
- Access via 10/100Mbps, 1000Mbps, 10 or 1000Mbps LAG Ethernet, and DS3 or OC3c ports (by request only)
- Committed Information Rates (CIR) per site as follows:
  - 10-100Mbps in 10Mbps increments (10/100Mbps port)
  - 100-500Mbps in 50Mbps increments & 500-1000Mbps in 1000Mbps increments (1000Mbps port)
  - 1 x 1000Mbps to 8 x 1000Mbps in 1000Mbps increments (LAG 1000Mbps ports)
- Port Media and Physical Interfaces:
  - 100BaseTX; Cat5e (100m)
  - 100BaseFX; LC Connector; SMF (2km)
  - 1000BaseTX; CAT5e (100m)
  - 1000BaseSX; LC Connector; MMF (500m)
  - 1000BaseLX; LC Connector; SMF (2km)
  - DS3 (by request only)
  - OC3c (by request only)
- Protected and diversified MPLS Core/Edge Network (fiber, equipment, power)
- Performance (applies to CIR traffic only):
  - Latency (round trip delay) ≤ 5ms intra-Metro ^
  - Jitter ≤ 5ms ^
  - Packet Delivery ≥ 99.5% ^
  - Network Availability ≥ 99.99% *
**Value Added Features**

- Protection, defined as fiber and route diversity for local fiber infrastructure
- Port Upgrade, 100 to 1000Mbps (for CIR < 100Mbps)
- Additional Shadow Port (requires Protection value added feature)
- Quality of Service for the ability to prioritize traffic with four levels of QoS
- Bursting for traffic above CIR (best effort)
- Multicasting up to CIR for video-based traffic
- Inter-Metro connectivity for IP VPN service across multiple FPL FiberNet metros
- Other customer specific requirements can be discussed on an individual case basis

**Notes:**
- Point-to-point IP VPN
  - Both A and Z locations should have same CIR (and PIR)
- Point-to-multipoint IP VPN
  - CIR set per site, however, service quality not guaranteed unless \( CIR_{Hub} \geq \sum CIR_{Other Sites} \)
  - Quality of Service feature highly recommended if \( CIR_{Hub} \leq \sum CIR_{Other Sites} \)
- Multipoint-to-multipoint IP VPN
  - CIR set per site, however, service quality not guaranteed if traffic exceeds location CIR
  - Quality of Service feature highly recommended for this service

**VPN Topologies**

Below are examples depicting the three VPN topologies offered: Point-to-point, Point-to-multipoint, Multipoint-to-multipoint.
Dedicated Internet Access

Product Definition
Dedicated Internet Access provides routed Internet bandwidth over the FPL FiberNet network to multiple, geographically diverse, peering locations within Florida. Based on the Alcatel-Lucent Service Routing platform, the FPL FiberNet network ensures these connections are fully resilient and highly reliable. FPL FiberNet has established interconnection arrangements in Miami (NAP) and diverse locations in Florida, allowing us to survive disaster scenarios affecting any particular facility. Additionally, our Dedicated Internet Access service includes dynamic selection of optimal routes among these hub sites. This allows FPL FiberNet to offer a higher level of performance and reliability when compared to any single location service provider. The figure below demonstrates this concept:

The figure below demonstrates this concept:

Standard Product
- Dedicated Internet Access with geographically diverse Internet peering points
- Access via 10, 100, 1000 and 1000Mbps LAG Ethernet ports (DS3/OC3c ports available upon request)
- Committed Information Rates (CIR) per site as follows:
  - 10-100Mbps in 10Mbps increments (10/100Mbps port)
  - 100-500Mbps in 50Mbps increments & 500-1000Mbps in 100Mbps increments (1000Mbps port)
- Port Media and Physical Interfaces:
  - 100BaseTX; Cat5e (100m)
  - 100BaseFX; LC Connector; SMF (2km)
  - 1000BaseTX; CAT5e (100m)
- 1000BaseSX; LC Connector; MMF (500m)
- 1000BaseLX; LC Connector; SMF (2km)
- DS3; BNC (100m) (by request only)
- OC3c; LC Connector, SMF (2km) (by request only)

- Protected and diversified MPLS Core/Edge Network (fiber, equipment, power)
- Performance
  - Network Availability ≥ 99.99% *
  - Otherwise, best effort

* Some customer sites may require Protection feature in order to achieve this level of network availability

**Value Added Features**

- Protection, defined as fiber and route diversity for local fiber infrastructure
- Port Upgrade, 100 to 1000Mbps (for CIR < 100Mbps)
- Additional Shadow Port:
  - 100 or 1000Mbps ports
  - working & shadow ports are protected as LAG group
  - requires Protection value added feature
- Bursting:
  - up to port speed (100Mbps port)
  - 200-1000Mbps in 100Mbps increments (1000Mbps port)
  - per usage (available Q3 2008)
- Other customer specific requirements can be discussed on an individual case basis
Value Added Features in Detail

Protection

The standard Ethernet or IP VPN Services may be provided over local infrastructure without fiber or route diversity between Provider Edge (PE) equipment to Customer Edge (CE) equipment or Network Interface Device (NID);

Where available, fiber and route diversity can be provided as a value added feature to the Customer Edge (CE) equipment from the Provider Edge (PE) equipment (note that this feature does not provide route diversity for single entrance and/or fiber/route diversity in riser). Protection over the local fiber infrastructure is provided by LAG links over a Switch Ethernet Network. The benefit provided by this feature is that in the event of a fiber cut in the local fiber infrastructure or a port failure at either PE (blue) or CE (teal), 100% of CIR bandwidth (PIR bandwidth is not protected) would still be available at customer premise.

Jumbo Frame

The standard Ethernet VPN Product offered by FPL FiberNet has a Maximum Transmission Unit (MTU) of 1546 bytes. For customers that require a larger MTU, we offer support for Jumbo frames that increases MTU to 9000 bytes, available only with 1000Mbps ports.

Port Upgrade

The standard Ethernet VPN or IP VPN solution comes with a 100Mbps port for CIR < 100 Mbps. For customers that require 1000Mbps port but do not wish to commit to at least 100Mbps CIR, we offer a value added feature to upgrade standard 100Mbps port to a 1000Mbps port.
VLAN Service

The standard Ethernet VPN provides service to a customer through a physical port per location. As a value added feature, multiple services can be delivered to a customer at a single location through the same physical port. This feature, in accordance with IEEE 802.1q, requires that services be tagged at the location with different VLAN tags so that traffic can be separated by the customer and FPL FiberNet.

Additional Port

The standard Ethernet VPN and IP VPN provides service to a customer through one physical port per location. As a value added feature, one additional 100Mbps or 1000Mbps LAG port can be added as a shadow port. In order to implement LAG ports, the ports need to be the same type and, usually, terminate at the same customer equipment.

Note: Available only with protection feature or if common equipment is present

Bursting

The standard Ethernet VPN and IP VPN solutions provide the highest quality of service up to the Committed Information Rate (CIR), with the Peak Information Rate (PIR) set equal to CIR (i.e. CIR = PIR). As a value added feature, PIR can be set at maximum port speed (100 or 1000Mbps) or for multiple LAG port groups, at the maximum LAG group speed. For DIA, in addition to the above, PIR can be set from 200-1000Mbps in increments of 100Mbps or bursting can be charged per usage. (available Q3 2008)

Bursting bandwidth is available at best-effort quality. Since bursting is best-effort, overall service quality may degrade during periods of bursting if critical packets are not able to meet required SLAs (i.e. delay, jitter, loss packets, etc.). To mitigate this effect, customers can prioritize their traffic using Quality of Service feature described on next page.
**Multicasting**

The standard Ethernet VPN and IP VPN services have limited (1 Mbps) multicasting bandwidth. As a value added feature, multicasting can be supported. This feature will enable customers to multicast without limitations (up to 2 Gbps).

Note: This feature is only applicable to Point-to-Multipoint and Multipoint-to-multipoint VPNs

**Inter-Metro**

The standard Ethernet VPN and IP VPN services are designed for traffic within any FPL FiberNet Metro. As a value added feature, we can expand these services across any FPL FiberNet Metro.

FPL FiberNet MPLS Metros:
1. Miami / Fort Lauderdale / Palm Beach
2. Tampa / St. Petersburg
3. Orlando E/W
4. Jacksonville / Daytona
5. Sarasota / Fort Myers

**Quality of Service**

The standard Ethernet VPN and IP VPN services provide for the highest quality of service for the Committed Information Rate (CIR). However, different types of traffic require different service requirements. The table below summarizes these requirements for typical types or categories of traffic:

<table>
<thead>
<tr>
<th>Traffic Type or Category</th>
<th>Service Requirements</th>
<th>Suggested QoS Level</th>
</tr>
</thead>
</table>
| Voice                        | • Minimal End-to-end Delay  
                               | • Minimal Jitter   
                               | • Minimal Packet Loss | • Expedite               |
| Video                        | • Reasonable End-to-end Delay  
                               | • Minimal Jitter   
                               | • Minimal Packet Loss | • High Priority          |
| Preferred Data               | • Reasonable End-to-End Delay  
                               | • Reasonable Jitter 
                               | • No Packet Loss       | • Low Priority           |
| Best Effort Data             | • No Delay Constraints  
                               | • No Packet Loss    | • Best-Effort          |

As a value added feature, we offer the ability for customers to prioritize their traffic with multiple levels of Quality of Service to get the best CIR utilization and any PIR option. This feature allows the customer to prioritize their traffic in a manner that best matches their traffic service requirements. This will provide best utilization of bandwidth with minimal to no impact to end users within the enterprise.
Traffic (packets) can be classified based on any of the following methods:
   Ethernet VPN
   IEEE 802.1p bits (Layer 2)
   IP VPN
       IP Precedence bits (Layer 3)
       DSCP bits (Layer 3)
   Default setting (best effort)
Frequently Asked Questions (FAQ):

Q Where does FPL FiberNet offer Ethernet services?
A FPL FiberNet offers Ethernet services at the following Metro in Florida; Miami, Ft Laud, WPB, Orlando, Tampa, Jacksonville, Naples, Ft Myers and Sarasota.

Q Does FPL FiberNet support Ethernet, Fast Ethernet and Gigabit Ethernet?
A FPL FiberNet supports Ethernet (10Mbps), Fast Ethernet/FE (100Mbps) and Gigabit Ethernet/GE (1000Mbps)

Q Does FPL FiberNet support multiple physical interfaces for Ethernet, Fast Ethernet and Gigabit Ethernet?
A FPL FiberNet supports all the following media, interfaces, connectors at all locations in FPL Metros

<table>
<thead>
<tr>
<th>Port Media</th>
<th>Physical Interface</th>
<th>Connector</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>10BaseTX</td>
<td>CAT5e cable</td>
<td>N/A</td>
<td>100m</td>
</tr>
<tr>
<td>100BaseTX</td>
<td>CAT5e cable</td>
<td>N/A</td>
<td>100m</td>
</tr>
<tr>
<td>100BaseFX</td>
<td>single-mode fiber</td>
<td>LC</td>
<td>2km</td>
</tr>
<tr>
<td>1000BaseTX</td>
<td>CAT5e cable</td>
<td>N/A</td>
<td>100m</td>
</tr>
<tr>
<td>1000BaseSX</td>
<td>multi-mode fiber</td>
<td>LC</td>
<td>500m</td>
</tr>
<tr>
<td>1000BaseLX</td>
<td>single-mode fiber</td>
<td>LC</td>
<td>2km</td>
</tr>
</tbody>
</table>

Notes: Provisioning times may vary depending on whether capacity exists or not. Cross-connect distance limitations may prevent the availability of electrical (TX) handoffs.

Q What is FPL FiberNet’s standard interval for Ethernet service?
A FPL FiberNet’s standard interval for Ethernet service is 15 business days for On-Net sites and 60 business days for Off-Net sites. FPL FiberNet defines a site to be On-Net for Ethernet if Equipment and Capacity for desired Ethernet service is available at location where service is being requested; otherwise the site is considered Off-Net.

Q Is FPL FiberNet’s Ethernet service Native LAN?
A FPL FiberNet’s standard Ethernet service sets Ethernet Group Protocol, according to IEEE 802.1q, as Native and MTU to 1546 bytes. This makes FPL FiberNet’s network transparent to customer VLAN tags in traffic and limits packet MTU to 1546 bytes. This allows customer to pass its VLAN or stacked VLAN tagged traffic through FPL FiberNet provided VPN as long as MTU does not exceed 1546 bytes.

Q Does FPL FiberNet support Jumbo frames in its Ethernet service?
A FPL FiberNet supports jumbo frames of up to 9000 bytes as a value added feature with 1000Mbps ports.

Q What mode does FPL FiberNet support half-duplex, full-duplex or auto-negotiate to full-duplex mode?
A FPL FiberNet standard Ethernet service supports auto-negotiate to full-duplex or full-duplex mode.

Q Does FPL FiberNet’s Ethernet service support VLAN stacking, translation, or swapping?
A Since FPL FiberNet's standard Ethernet service is transparent to customer VLAN tagging, VLAN stacking, translation, or swapping is not a standard offer from FPL. However, if a customer needs this type of service, we can work with customer to customize a solution.

Q Does FPL FiberNet support multiple VLANs over the same physical port in accordance with IEEE 802.1q standard?

A FPL FiberNet supports multiple services over the same port by VLAN tagging each service's traffic. This service follows IEEE 802.1q standard.

Q Does FPL FiberNet Ethernet service support multicast traffic?

A FPL FiberNet standard Ethernet service supports a limited bandwidth of multicast traffic; 1 Mbps. However, as a value added feature, multicasting up to the committed information rate is supported.

Q Does FPL support Ethernet priority via the IEEE 802.1p standard?

A FPL FiberNet supports priority of traffic via IEEE 802.1p standard. We refer to this as QoS or Quality of Service. This is a value added feature which allows customers to tag their traffic into up to 4 levels of traffic priority. This feature will be available by Q2 2008. If more granular QoS is required, we can work with customer to customize a solution.

Q How does FPL FiberNet treat Spanning Tree BPDU packets; drop, pass, or process?

A FPL FiberNet will PASS Spanning Tree BPDU packets.

Q Does FPL FiberNet support 802.3ad link aggregation of multiple Ethernet ports? If not, is your service transparent to link aggregation protocols?

A FPL FiberNet supports link aggregation of multiple Ethernet ports in accordance with IEEE 802.3ad standard as a value added feature. FPL FiberNet's network will be transparent for Static LAG protocol, however, LACP protocol pass thru is not supported.

Q Is FPL FiberNet's Ethernet service completely transparent to all Layer 3 protocols?

A Yes, FPL FiberNet's Ethernet service is transparent to all Level 3 protocols.

Q Does FPL FiberNet offer fractional Ethernet services?

A FPL FiberNet offers the following fractional speeds for 100Mbps ports; 10-100Mbps in 10Mbps increments.

FPL FiberNet offers the following fractional speeds for 1000Mbps ports; 100-500Mbps in 50Mbps increments & 500-1000Mbps in 100Mbps increments. These rates can be specific per VLAN into common port.

Q Does FPL FiberNet support full GigE (1,000 Mbps) and full FastE bandwidth (100Mbps) across a GigE or FastE port respectively?

A YES, but bandwidth utilization will depend on frame size mix.

Q Is FPL FiberNet's Ethernet service burstable, tiered or usage-based?

A FPL FiberNet offers bursting service that is priced depending on Committed Information Rate (CIR). Bursting is tiered in that it is allowed, as a value added feature, from CIR up to maximum port speed or maximum LAg group speed.
### IP/Eth CIR | Std. Port | Upgraded Port | LAG Grp Speed
--- | --- | --- | ---
10-90Mbps | 100Mbps | 1000Mbps | 200Mbps
100-1000Mbps | 1000Mbps | N/A | 2000Mbps

**Q** What is FPL FiberNet’s network architecture used to deliver Ethernet services?

**A** Below is a description for FPL FiberNet’s network to deliver Ethernet services:

**Core/Edge** - MPLS Network
- Alcatel 7750/7450 Service Platform as Provider Edge equipment
- Interconnected via 10G links
- Protected for power, fiber, route, and equipment
- Currently, no over-subscription

**Access** - Subtended MPLS or Ethernet Switch Network
- Alcatel 7250 or Telco Systems 24G / 24T as Customer Edge equipment
- Interconnected via 1G links back to Alcatel 7750/7450
- Protection of fiber & route available as value added feature
- Power provided by customer
- Currently, no over-subscription

**Q** Does FPL FiberNet manage or monitor its network?

**A** FPL FiberNet monitors the network from our NOC which operates 7x24x365.

**Q** What are FPL FiberNet’s Service Level Agreements (SLA) for its Ethernet service?

**A** These are available in MSA in greater detail but a summary version is as follows;

- **Latency (RTD)** ≤ 5ms intra-Metro and ≤ 20ms inter-Metro
- **Jitter** ≤ 5ms
- **Packet Delivery** ≥ 99.5%
- **Network Availability** ≥ 99.99%
- **Mean Time to Respond (MTTR)** ≤ 2 hours
- **Time to Repair (TTR)** ≤ 8 hours

Credits for not meeting any of the above apply but are limited for customer provided power failure, fiber cuts of un-protected services, or fiber cuts of un-diversified entrance and/or risers conduits.

For more information call your sales executive or 1-866-STRANDS and visit us at www.fplfibernet.com