



Ethernet Fibre & Wireless

Reliable, scalable and affordable Ethernet Transport throughout Ireland

Definition

Enet Metro and National Ethernet products enable you to capture the growing market demand for converged services, delivering high quality Ethernet to your End-Users.

Enet offers extensive Ethernet coverage across Ireland using our comprehensive fibre and wireless networks. Service is available at c.90 Enet MAN locations and can also be delivered via approved third-party provider fibre networks and EoVDSL. Enet can deliver service as a “Managed Ethernet”, “Long Line Fibre” or an “Ethernet: Third-Party Demarcation” service.

Enet’s on-net fibre service can be delivered as fibre ring or fibre point to point topology in the last mile. Enet also offer a Microwave radio / Wireless solution as part of our Last Mile / Access solutions for Ethernet. This comes in two formats: the “Licensed” Wireless offering provides a unique spectrum per End User installation ensuring no third party interference. An alternative “Licence Exempt” Wireless offering is also available with beam forming software to reduce potential for interference on this unlicensed service.

This product is supported with comprehensive SLAs covering all aspects of your Ethernet service, with targets for service delivery, availability and network performance.

Product Description

The main features include:

- **Last mile options:**
 - Fibre, Licenced Wireless, Fibre PON and EoVDSL
- **Bandwidths:**
 - Fibre: Symmetric 10Mb-10Gb
 - Wireless Licensed: 10Mb to 1Gb*
 - Fibre PON Symmetric 100Mb, 200Mb, 500Mb and 1Gb
 - EoVSDL Asymmetric Up to 100Mb
- **Class of Service** options (0%, 100%)
- **SLA** is dependent on the product purchased
- Available as a **Metro, Dublin or National service**

** Wireless capability is dependent on line-of-site and distance from end-user site to high site. A site survey is required to determine the exact service performance.*

Product types

1. **On-Net Managed Ethernet** (Metro, Dublin & National)
2. **Metro Ethernet Point to Point fibre** (Metro only)
Enet installs their demarcation device (NTU) at the End-User site for pro-active end-to-end fault management.
3. **On-Net Long Line Fibre**
Enet installs their Patch Panel as the demarcation point providing unmanaged access at the End-User site. The core remains managed. Multiple services can be delivered over the same fibre if you use an Enet NTU.
4. **Ethernet: Third-Party demarcation**
This is an off-net product using a third-party provider’s last mile Fibre or Fibre-over-PON network.

This document is for illustrative purposes only, detailed specifications will be agreed at the time of purchase.

Demarcation is at the port on the third-party provider's NTU at the End-User site. Enet manages to the last device on the Enet network edge at the Colo. Enet can manage the Access element of the service with the third-party's assistance.

Enet offers several **Solution Types**:

- **Enet Ethernet Access EPL (Point to Interconnect service)**
Enet deliver a service terminated on an agreed E-NNI with a dedicated S-VLAN handoff at the e-NNI.
- **Enet Ethernet Access EPL – Dual E-NNI (Point to multi-interconnect service)**
You can protect an End-User site with a pair of protected E-NNIs, with dedicated S-VLAN handoff at the e-NNI.
- **Enet Ethernet Line EPL (Point-to-Point service)**
This plug-and-play service delivers a simple point-to-point connection between two sites (e.g. datacenters)
- **Enet Ethernet Line EVPL (Point to Multi-point service)**
Aggregate traffic from multiple sites onto a single Hub interface at a central location. You can connect a large number of sites to a head office, datacentre or carrier PoP in a cost effective and manageable way.

| | Technical Specification |
|--|--|
| Protocols and Standards | <ul style="list-style-type: none"> ✓ IEEE 802.1D MAC bridges — including .1p Priority ✓ IEEE 802.3ad LACP ✓ IEEE 802.1Q VLAN |
| Flexibility | ✓ Bandwidth can be upgraded as required |
| Customer Support | ✓ 24x7x365 Network Operations Centre support |
| Handoff | ✓ To Carrier on MAN using Layer 2 aggregated IEEE 802.1ad interconnection |
| MTU | ✓ 9000 bytes as standard |
| MAC Addresses | ✓ Default of 100 |
| For <i>services delivered with an Enet NTU</i> , the following details apply | |
| Service Handoff | ✓ Provider Bridge (IEEE 802.1ad PB) is the default configuration |
| Presentation | <ul style="list-style-type: none"> ✓ Fibre or Wireless Licensed: Electrical RJ45 1000Mbps or Optical (LC default, SC) ✓ Wireless Licence Exempt: Electrical RJ45 1000Mbps only |
| Interface Type | ✓ 1000 Base-T, 1000 Base-LX, 1000 Base-LR. Other media available on request |
| Demarcation Point | <ul style="list-style-type: none"> ✓ For Managed Service, the port facing the End-User network on the Enet NTU ✓ For Long Line, the Patch Panel |
| Power | <ul style="list-style-type: none"> ✓ All NTUs uses single AC power supply by Default. <ul style="list-style-type: none"> • For Fibre: Dual power AC/DC available on request and chargeable • For Wireless Licensed - Dual power DC available on request and chargeable • For Wireless Licence Exempt – single AC (Default) or DC only |
| For <i>services delivered as third party demarcation</i> , the following details apply | |
| Presentation | ✓ Electrical RJ45 1000Mbps or Optical LC |
| Demarcation Point | ✓ For Third-Party demarcation, the port on the third party providers NTU |
| Power | ✓ Single AC. A limited set of alternative are available depending on the third party provider. |

| Bandwidth | Bandwidth Type | Access Media |
|--------------------------|----------------|---------------------------------|
| 2Mb to 10Mb | Symmetrical | Fibre (On-net) |
| 10Mb to 10Gb | Symmetrical | Fibre (On-net & Extended Reach) |
| 100Mb, 200Mb, 500Mb, 1Gb | Symmetrical | Fibre over PON |
| 10Mb to 300Mb+ | Symmetrical | Wireless Licensed |
| 10Mb to 150Mb | Symmetrical | Wireless Licence Exempt |
| Up to 100Mb | Asymmetrical | EoVDSL |

Diversity

No business wants to experience an outage. Where potential downtime is not just an inconvenience to your operations, but can fundamentally impact your business, you need to consider a diverse and redundant design solution.

The scale and type of diversity is critical to the success of diverse connections. Your company can still suffer downtime if for example both ways to connect share an entry point into the customer building in the local access network. If a shared path is damaged, your service will go down, even if other elements are diverse. With Enet’s six-element diversity plan, you can avoid this by fully understanding the full suite of diversity we can provide.

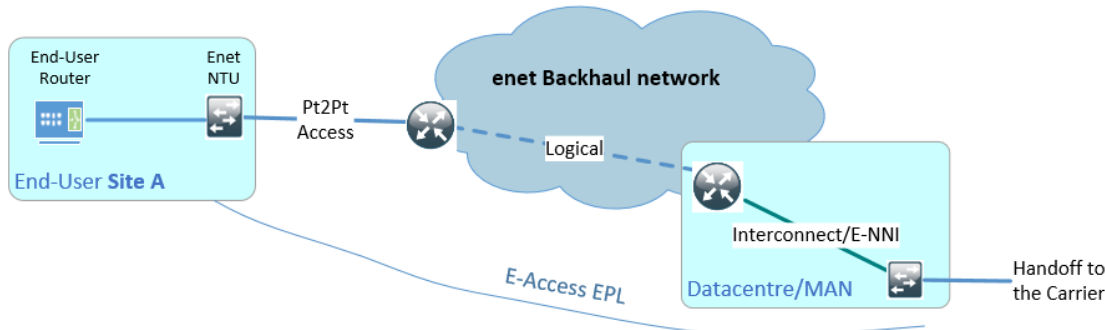
Diversity can be assured using a Primary Fibre and Secondary Fibre or Wireless, with the benefit of defined Price Reductions where both are ordered together. Our Tech Pre-Sales Team are more than happy to assist on the design of your specific diversity solution options.

See Enet’s Six Element Diversity Plan below for guidance:

| | Critical | Nice to have | Not required |
|--|----------|--------------|--------------|
| 1. Diverse element 1 : Dual NTU | | | |
| 2. Diverse element 2 : Dual Building Egress / Ingress | | | |
| 3. Diverse element 3 : Dual Local Access | | | |
| 4. Diverse element 4 : Dual Local PoP(s) | | | |
| 5. Diverse element 5 : Protected Backhaul | | | |
| 6. Diverse element 6 : Dual NNI | | | |

Service Delivery

The schematic below represents a national Fibre Managed Ethernet point-to-interconnect solution (E-Access EPL).



- Fibre is brought from the MAN to the End-User site and terminated on a fibre patch panel
- For Managed Ethernet, the Enet NTU is installed at the End-User site
- For Metro service, the Carrier must have an E-NNI at the local MAN Colocation Facility
- On-net fibre access is either diversely routed (east and west) or direct Point-to-Point Access to the Enet Colocation Facility
- Migration from existing products to this new product is not permitted
- For third party demarcation services the Carrier connects to the port on the third party providers NTU e.g. Radwin, Huawei etc. No enet NTU / CPE on-site.
- For Wireless a survey is required to determine line of site. Other key activities include ComReg license approval, high-site accommodation and approval as well as:
 - The installation of a dish and radio on the external of the premises (Pole may also be required)
 - Cabling from outdoor to the proposed indoor equipment location
 - Customer NTU is installed within the premises requiring power and rack space / comms cabinet

Enet Responsibilities

Enet is responsible for:

- Provisioning an Ethernet solution from the End-User's premises to the Interconnect
- The operation and maintenance of the Ethernet service
- Acquiring the public wayleave for civil elements of the service
- Assigning the VLAN identifiers on the Layer 2 aggregated interconnect corresponding to the desired Ethernet bandwidth

Carrier Responsibilities

The Carrier is responsible for:

- Allocating adequate rack space for installation of the fibre patch panel.
- If applicable, rack space for the Enet NTU and ensuring a clean protected power supply.
- Shaping the traffic in line with the purchased traffic profile
- The operation and maintenance of the services purchased by the End-User
- Owning the relationship with the End-User
- Acting as the point-of-contact for any End-User enquiries

Glossary

- NTU Network Terminating Unit
- MTU Maximum Transmission Unit
- MAC Media Access Control
- S-VLAN Service-Virtual Local Area Network
- EPL Ethernet Private Line
- COS Class of Service
- EVPL Ethernet Virtual Private Line

Further Information

Quotations

A quotation for service can be submitted via an email to the quoterequests@Enet.ie or a Carrier can **self-serve** using the **Enet Connect** Quotation and Ordering Platform. Details are available from your account manager.

Ordering and Provisioning

The **Ethernet Order Form** is available at <https://www.enet.ie/forms-and-downloads/>. Once filled out, email to the Enet Sales Support Team at salesupportteam@Enet.ie. The Sales team will provide Service eligibility checks for the service. Note that excess charges may apply.

Access to the Enet Connect platform, for Quotations and Ordering, can be made available to a Carrier via a request to their account manager. This is the most efficient way for a Carrier to retrieve quotes and place orders.

Further information

Contact your Enet Account Manager or contact us at:

Telephone: + 353 (0)61 274000

Webpage: www.Enet.ie