



Virtual Connect

Third party Access Network connectivity and backhaul solutions

Definition

With **Virtual Connect** a Carrier can order capacity on Enet's interconnects with SIRO; to which Enet will add national backhaul creating a single solution that seamlessly enables Carriers to access the SIRO network.

Enet will build the capacity and backhaul for the Carrier selected SIRO interconnect(s). The Carrier can then order individual services directly from SIRO, having avoided the complication and expense of arranging interconnects and backhaul themselves. Specifically, Enet can provide local or National handoff to the Carrier and granular interconnect and backhaul bandwidth to suit your needs. This bandwidth can be increased on request.

This NNI-to-NNI offering is currently available at our SIRO Interconnect points. The benefit for the Carrier is that they can maintain a direct relationship with SIRO, placing all orders for individual SIRO services directly on SIRO's ordering platform. Enet will provide the Carrier with capacity on Enet's SIRO Interconnect. Capacity starts at 2Gb rising in 1Gb increments as required. In addition to the interconnect access, Enet will backhaul the traffic to the local co-location for handoff on a Carrier's NNI with Enet. This traffic can also be taken nationally back to a Dublin E-NNI if required.

SIRO subscriber unicast n:1 or SIRO 1:1 products can be purchased and avail of the connectivity and backhaul the Virtual Connect offering provides a Carrier. Enet will carry all traffic transparently, handing the traffic off to the Carrier on a single agreed outer VLAN.

Service Description

The **Virtual Connect** product has the following components detailed later in this document:

- SIRO-to-Enet E-NNI
- Enet Backhaul
- Enet-to-Carrier E-NNI

Virtual Connect is a Layer 2 E-NNI to E-NNI solution and includes the following key elements:

- Carrier access to Enet's nationwide interconnects with SIRO
- Single Outer VLAN, per SIRO town, at the Enet NNI with the Carrier for traffic handoff
- SIRO Subscriber unicast n:1 or SIRO 1:1 products available
- Enet transparently carries the customer traffic
- End-user Traffic will utilise the Enet backhaul Network for a National service
- The Access Network Provider (ANP) provides access to the Access / Last mile network
- Carrier orders services from SIRO directly
- No order-by-order involvement of Enet, each new order will be handed off using the single agreed outer VLAN
- Carrier can see inner VLANs to identify individual customers or Unicast traffic
- Carrier deals with SIRO directly for any individual customer issues

Enet reserves the right to disconnect a Carrier, from the Virtual Connect offering, if they fail to manage the traffic levels through the E-NNI (ICLv element). The carrier must order upgrades to its Virtual Connect link(s) if and when peak utilisation of the service capacity goes above 70%. If at any time traffic levels repeatedly exceed the ordered capacity, Enet reserves the right to charge the Carrier for any additional capacity used and request the Carrier to upgrade (if available) the impacted service immediately.

Summary

Product Type	Virtual Connect
Bandwidth	Symmetrical bandwidths - 2Gb (rising in 1Gb increments) <i>SIRO provide Asymmetrical and Symmetrical offerings*</i>
Maximum MTU	9000 (this is on the Enet provided Service element) <i>(SIRO Last mile products service MTU levels may not achieve this)</i>
Class of Service 802.1p	Single Class of service for the OVC: Best Effort(0% CIR) or Assured Forwarding (100%)
Logical Connection / Solution Type	E-Line EVPL Single VC service
Managed Service	Yes (but with reactive fault handling)
VLAN ID's	VLAN IDs in the stack above the ICLv-VLAN Tag will have their P-Bit preserved
	The service will map a single VLAN-ID from one E-NNI to another E-NNI. It will be transparent to any ethernet tags above the ICLv-VLAN Tag / S-Tag used for hand off at the A-End and Z-end. i.e. the service will classify on a single tag at both ends and will support translation of Tags.
Demarcation	The service is delivered from the SIRO E-NNI at the A-end and the port of the Enet/Carrier E-NNI at the Z-end. Either side of these point is not part of the Service.

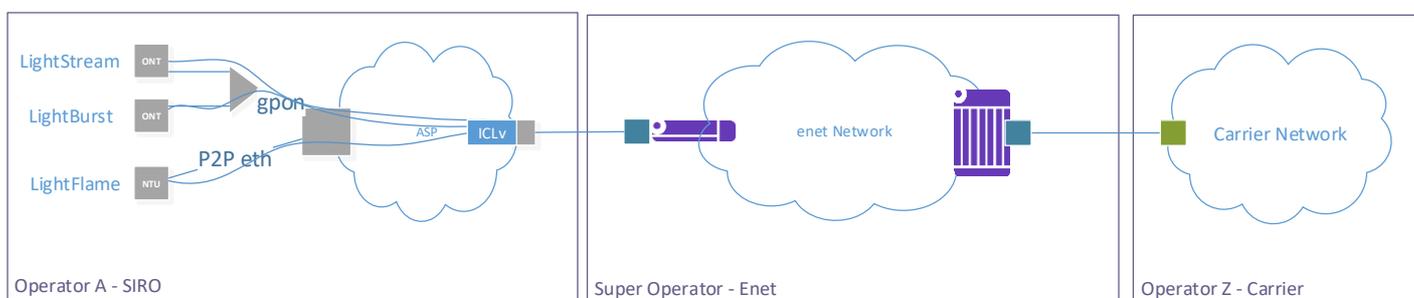
*The underlying services the Carrier orders from SIRO are carried by Enet transparently and can be Asymmetrical or Symmetrical.

Service Delivery

The Enet **Virtual Connect** product is built as an E-Line EVPL solution. Enet and SIRO agree an ICLv-VLAN outer tag for the specific Carrier's traffic which pass through the **Virtual Connect** link. Within this outer tag, inner tags differentiate the various services the Carrier has purchased directly from SIRO. The Enet Virtual Connect product is available on a specific ICLv Enet/SIRO interconnect

The Virtual Connect product is composed of the following key components:

- **SIRO-to-Enet E-NNI** The Access Network Provider (SIRO) and the SIRO/Enet ICLv (**ICLv-VLAN** outer tag)
- **Enet Backhaul** Enet use the Enet NNI with SIRO and Enet backhaul to get to a Carrier's NNI with Enet
- **Enet-to-Carrier E-NNI** The Carrier ordering the Virtual Connect product from Enet and directly ordering the individual services from SIRO. Single VLAN handoff per SIRO town.



Virtual Connect is a Transit E-Line service which provides E-NNI to E-NNI connectivity. The ICLv element uses the IEEE standard 802.1q to terminate layer 2 traffic to the Enet E-NNI. This presents the Carrier (buying from SIRO) with a unique outer SVLAN, referred to as the "ICLv VLAN", and inner CVLAN agreed with the Carrier in the Service (Domain) order. This enables Enet, the owner of the Interconnect, to decide where to forward traffic based on the outer ICLv VLAN.

The Carrier is responsible for managing all aspects of the End-User delivery and communications with the End User. This includes in-premises equipment (CPE, RGW, modems) connection to and all cabling and equipment beyond the ONT.

The Carrier must complete the Virtual Connect order form and ensure all relevant details are captured. The Virtual Connect order can only be completed once the chosen E-NNI between Enet and Carrier is in place and active.

Enet Responsibilities

Enet is responsible for:

- Accepting a **Virtual Connect** order from a Carrier and commencing the Service Delivery
- Liaising with SIRO to agree OUTER VLAN for the “ICLv VLAN”
- Managing the relationship with SIRO as they complete configuration work on the NNI
- Providing the Carrier with the required details (OUTER VLAN, Enet NNI reference etc) to engage with SIRO
- Approving the ICLv work from SIRO on request
- Placing the required internal orders for the Virtual Connect offering as outlined in the Carrier order
- Informing the Carrier when the backhaul is in place so the Carrier can place service orders with SIRO directly.
- Effective Service Assurance through our NOC and Support Team
- The operation and maintenance of the service purchased by the Carrier

Carrier Responsibilities

The Carrier (RSP) is responsible for:

- Accurately completing the relevant order form
- Assigning a contact for Enet to liaise with during Service Delivery
- Placing a connectivity order with SIRO to commence the ICLv process with SIRO
- Placing individual orders with SIRO for SIRO services (LightStream or LightBurst)
- Shaping the traffic in line with the purchased traffic profile
- Monitoring the traffic levels and timely ordering of upgrades as required
- Initial troubleshooting and logging service faults/incidents
- Logging individual service faults with SIRO
- Ordering and paying for Interconnect(s) with Enet to terminate the Virtual Connect traffic. This is the E-NNI between Enet and the Carrier. This Interconnect is ordered separately to this product.

Glossary

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| ● ANP | Access Network Provider e.g. SIRO |
| ● ICLv | Interconnect Link Virtual – the SIRO product which is a component of Virtual Connect |
| ● MTU | Maximum Transmission Unit |
| ● NTU | Network Terminating Unit |
| ● S-VLAN | Service-Virtual Local Area Network |
| ● VDSL | Very fast Digital Subscriber Line |

Further Information

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