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# How to connect to LHCONE

## Preparing to connect

- LHCONEconnectionguide-1.2.pdf: LHCONE Site Provisioning Guidelines V1.2
- LHCONE-BGP-Community-Filtering.pdf: LHCONE Community based BGP filtering

## Get the physical connection

A TierX can connect to the LHCONE L3VPN via its preferred or closest LHCONE Provider. The type of connection, the router interface, the routing protocol and all the connection details have to be agreed with the LHCONE provider of choice.

## How to use the L3VPN connection

In order to connect to the L3VPN, a TierX site should have:

- public IP addresses
- a public ASN
- a BGP capable router

Private ASes are not allowed in the LHCONE. If a site doesn't have a public AS, it may ask the VRF operator to announce the site address as belonging to the VRF's AS or any other AS dedicated for this purpose.

**The LHCONE L3VPN transports LHC data traffic only.** To do so:

- TierX can announce only IP prefixes assigned to their WLCG servers according to the LHCONE AUP
- **Traffic must be symmetric:** TierXs can send into the L3VPN only packets with IP source address in the announced address space. It's important to assure symmetry in order to avoid TCP traffic drops due to statefull firewalls (please refer to this presentation [↗](#)).

## Validation of a new connection

TierX sites can validate their brand new connection to the LHCONE by tracing the path to IP addresses of the LHCONE perSONAR probes. They are listed here: <https://twiki.cern.ch/twiki/bin/view/LHCONE/SiteList> (in the columns "LAT node" or "BW node" of the large table).

## Operations

In case of connectivity issue, a TierX has to get in touch with the NOC of its Network Operator.

## Terminology

- ASN: Autonomous System Number
- L3VPN or LHCONE-VRF: the full LHCONE VPN domain, made by the interconnections of all participating VRFs
- TierX: WLCG Tier1/2/3 end site
- VRF: LHCONE Layer3 VPN instance provided by a single Network Operator.

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