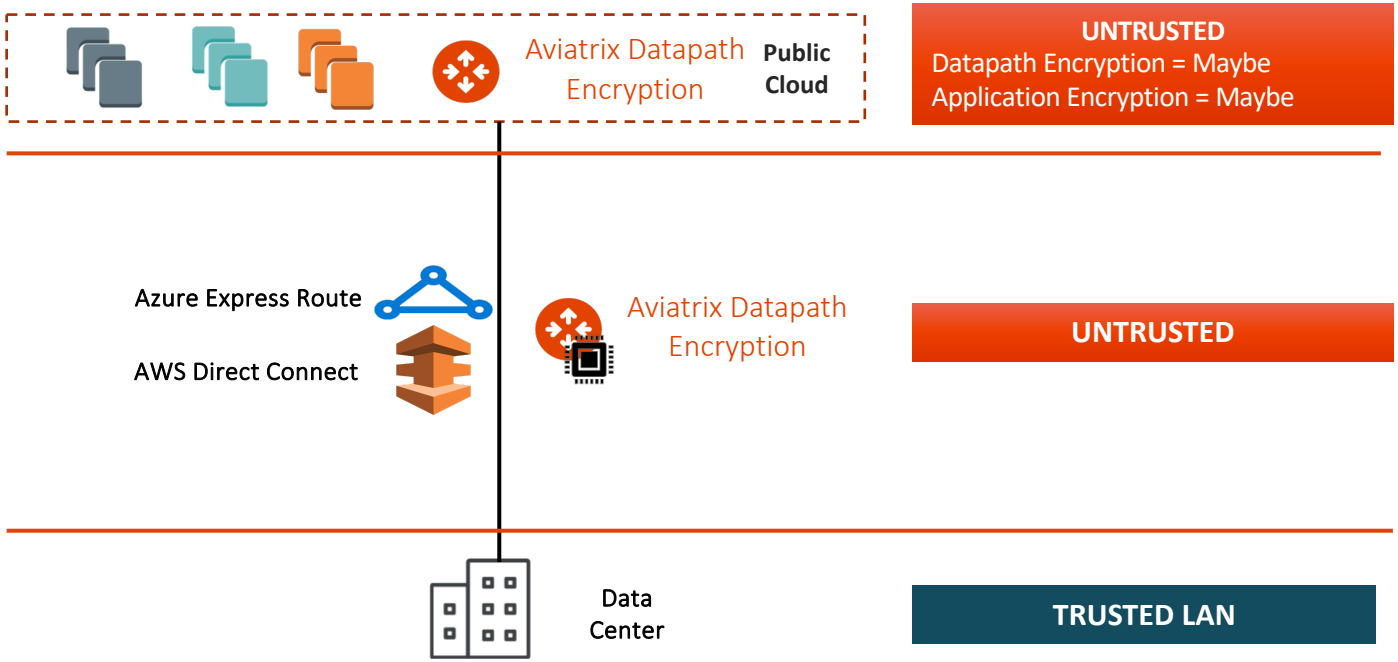
High-Performance Encryption (HPE)

ACE Solutions Architecture Technical Team

Zero Trust – Datapath Encryption

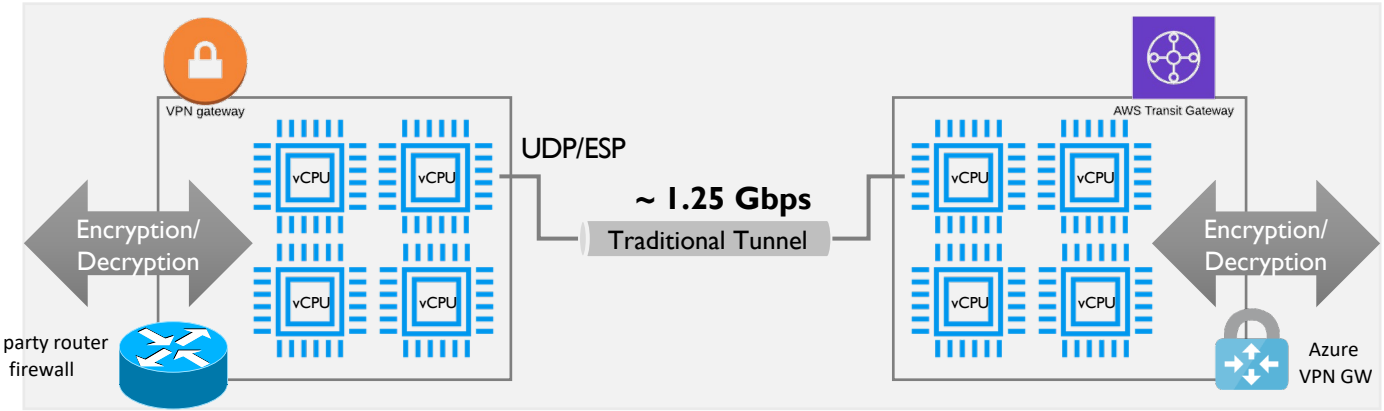
Why?

- Compliance Requirement
- Data Security
- Business Policy
- Native Constructs Routing Scalability Challenges



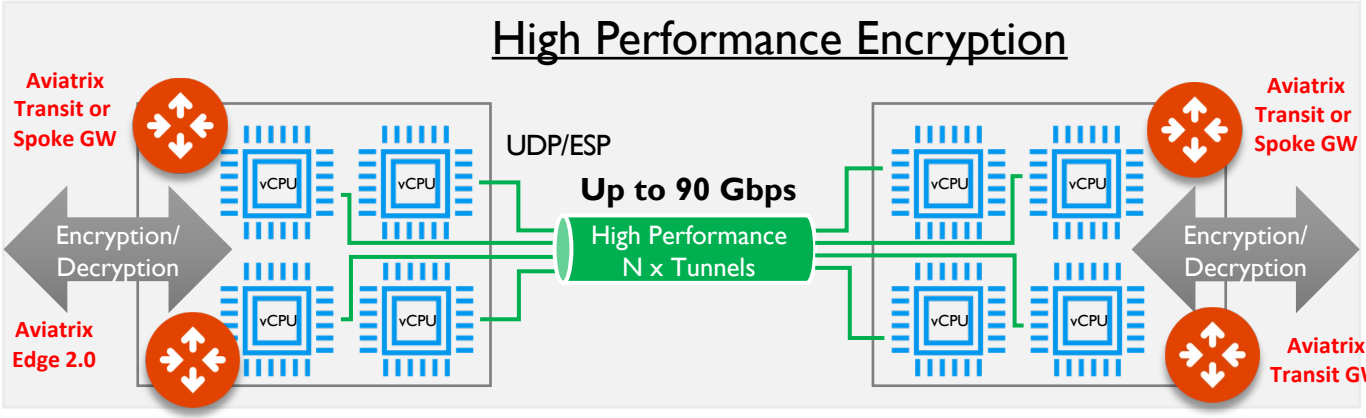
Without Aviatrix: Encryption / IPsec Performance Limitations

- All software-based IPsec VPN solutions have maximum performance of 2Gbps depending on ciphers used
- Software Routers use single core and establish only one tunnel
- Packet can only use single core despite availability of multiple cores



Solution: Aviatrix High Performance Encryption (HPE)

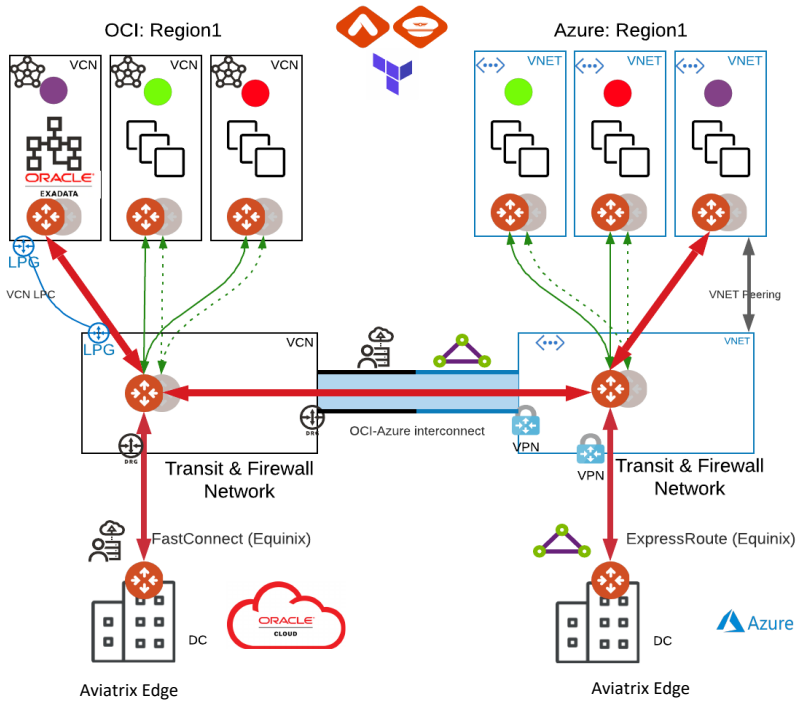
- Aviatrix Controller automatically builds multiple tunnels between Aviatrix devices
- Uses all available CPU cores
- IPsec encryption performance can be up to 90 Gbps



High Performance Encryption is also called **INSANE MODE**

High Performance Encryption (HPE)

1. Between the Cloud (over DirectConnect, ExpressRoute, FastConnect, Cloud Interconnect) to the DC via:
   - Aviatrix **Edge**
2. Between networks in one cloud (same or different regions)
   - Automatic VPC/VNet/VCN peering to build required underlay
3. Between networks in different clouds
   - Requires private underlay (e.g., Equinix, Epsilon, OCI-Azure Interconnect)
   - Over Public Internet (v6.4)



Aviatrix Edge will be discussed in Site2Cloud module

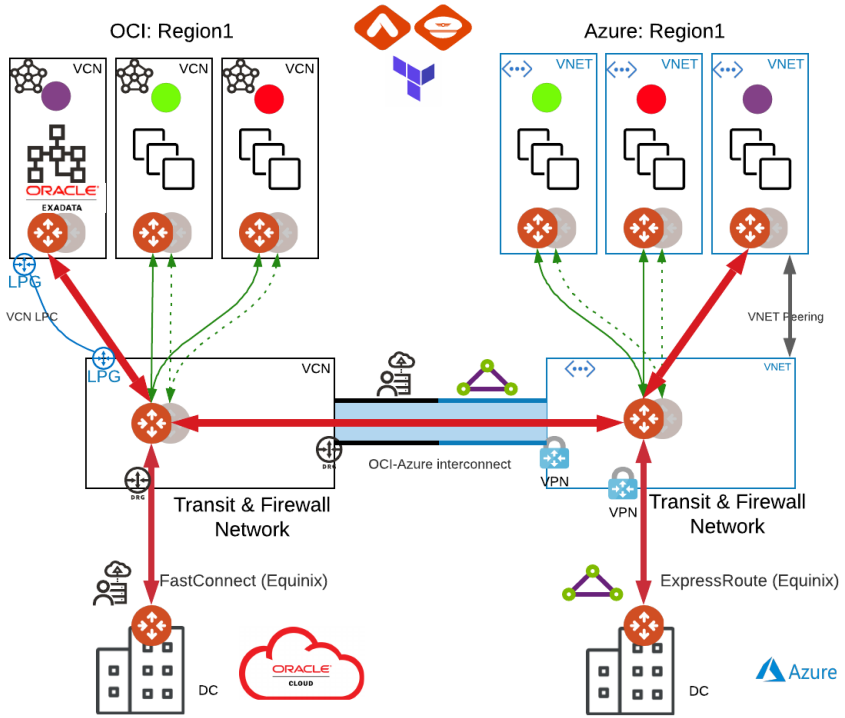
HPE Peering – Public or Private IP?

- **HPE in the same cloud**
  - Will use *CSP-native peering* so the tunnels will be built over private IPs.

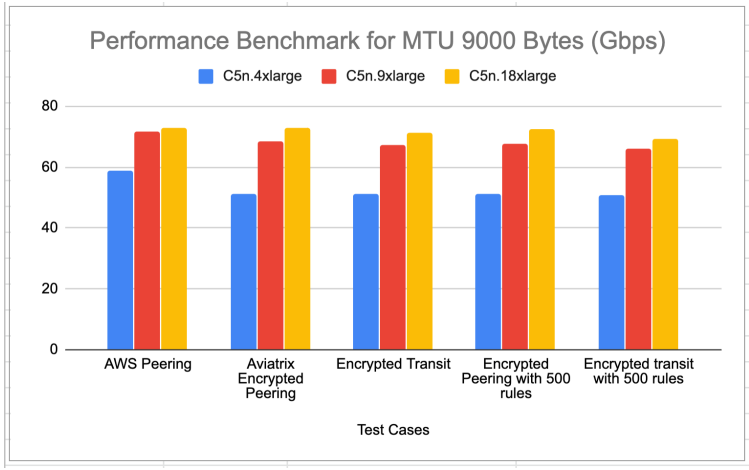
- **HPE across different clouds**
  - Supported over private circuits (Direct Connect, Express Route, Cloud Interconnect, Fast Connect).
  - Supported over internet (AWS, Azure, GCP, OCI).

HPE Performance – Matching the Speed of the Underlay

https://read.docs.aviatrix.com/HowTos/insane_mode_perf.html

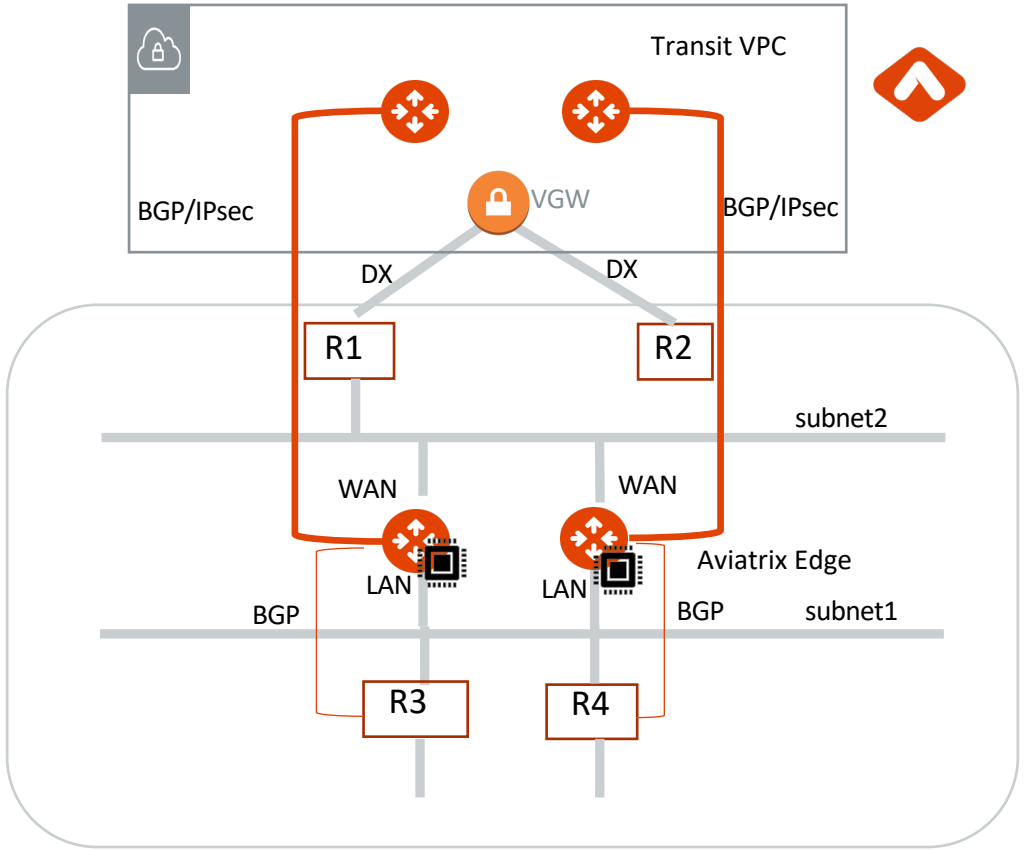


- ~90 Gbps in-region in AWS
  - 9000 MTU supported
- Line-Rate (~9.6 Gbps) over single 10 Gbps Direct Connect or ExpressRoute

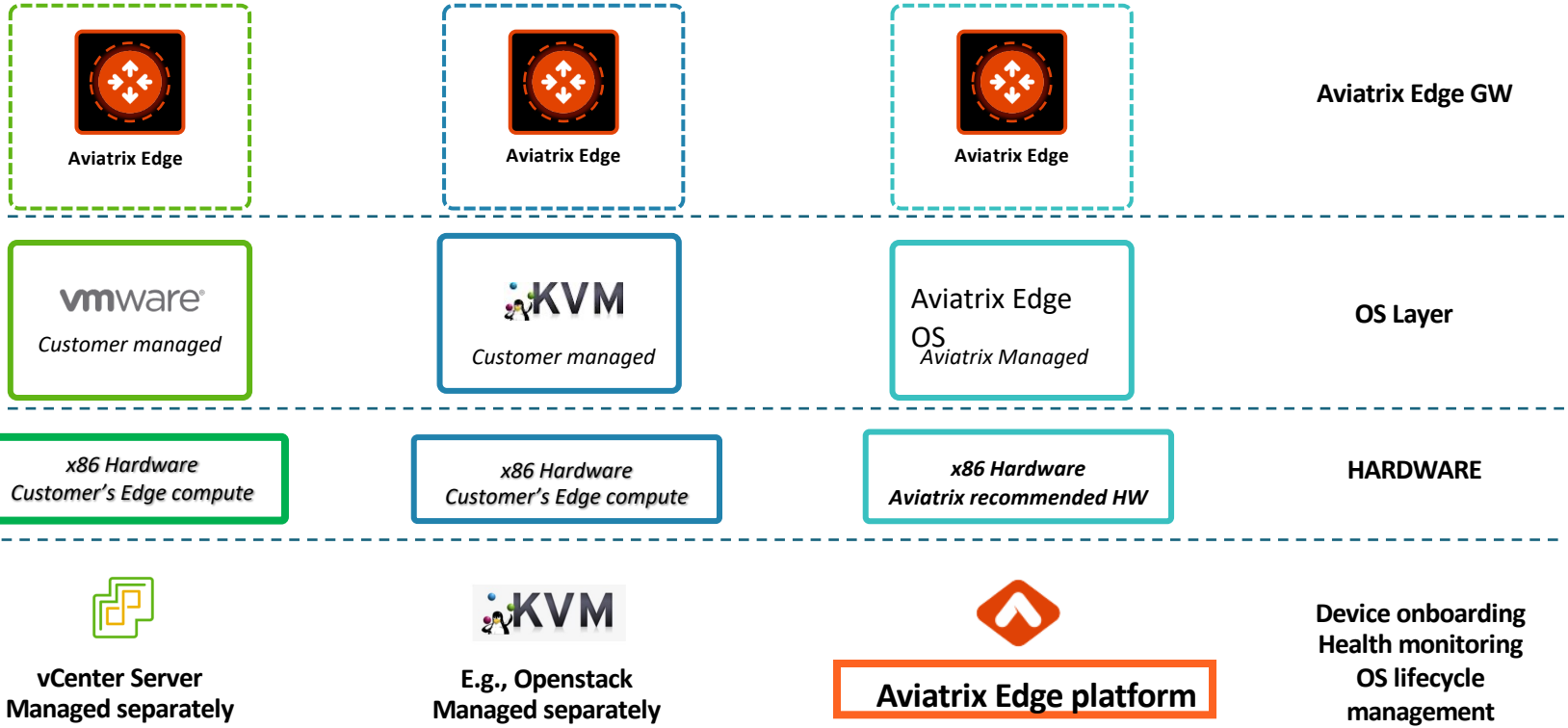


Architecture over Direct Connect and Other Private Circuits

https://read.docs.aviatrix.com/HowTos/CloudN_insane_mode.html



Aviatrix Edge GW for DC – Supported platforms



Next: ActiveMesh