



options

Next-Gen Financial Cloud

# options | The Next-Generation Financial Cloud

## The Challenge

For years ultra low latency financial network architects have fought the balance between additional scale and functionality and maintaining the lowest network latency possible for trading. The paradigm that increased functionality equals additional latency has been a hard one to escape.

Capital Markets participants have had to choose between buying low-latency connectivity piecemeal from multi-tenant financial networks, using slow and expensive MPLS services, or building an expensive, underutilized, and difficult-to-maintain global network themselves. But what if they didn't?

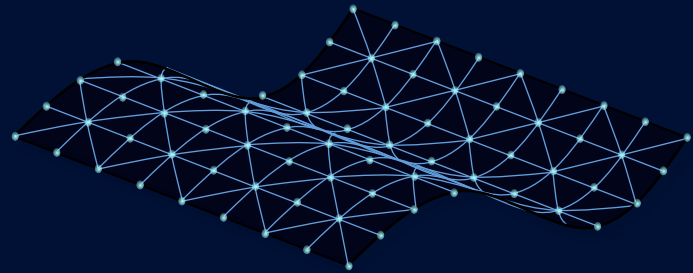
## The Solution: A True Next-Gen Network

- Client-dedicated virtual global routing domains – true private WANs that aren't just point-to-point
- Low latency profile
- Global trading counterparty connectivity
- Highly redundant underlying architecture
- Unrestricted private IP schema / no IP conflicts



- Hierarchical QoS for guaranteed bandwidth
- Public cloud onramps in key proximity centers
- Bare metal and virtual compute on demand with access to realtime and historical market data
- Precise network security with micro-segmentation

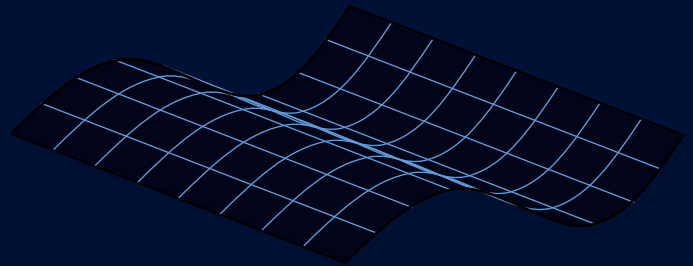
# options | The Definitive Capital Markets Fabric



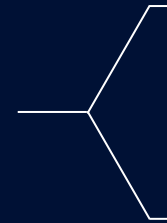
Next-Gen Financial Cloud







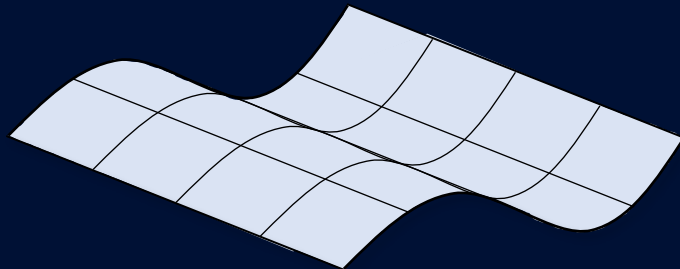
-  Global Market Data
-  Trading Counterparty Ecosystem
-  Integrated Public Cloud
-  Bank Security & Compliance



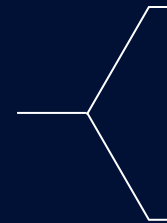
Hyper scalable  
transformative technology







-  Distributed VXLAN EVPN
-  Network Function Virtualization
-  Automation and Orchestration
-  Hierarchical QoS



High performance trading  
technology DNA



-  Carrier-Grade Network
-  Direct Exchange Connectivity
-  Performance Compute & Storage
-  White-Glove Datacenters



## The Next generation Data Centre interconnect

The IP fabric has allowed engineers to collapse traditional networking layers to a two-tier spine-and-leaf architecture optimized for large scale environments. In this model the Layer 3 network acts as an underlay with the EVPN/VxLAN overlay sits on top and allowing for the extension and interconnection of Layer 2 data centre



## Cloud and virtualization services

Virtual Extensible LAN (VxLAN) has emerged as the standard for network virtualization and cloud data centres now leverage a controller-less network virtualization mechanism using Ethernet Virtual Private Network (EVPN) with VxLAN whereby all VxLAN packet manipulations happen in the leaf switch



## Integrated Layer 2 and Layer 3 VPN services

Integrated and efficient Layer 2/Layer 3 connectivity with control plane-based learning. With MP-BGP as the control plane protocol more scalability and control over learning and flooding are possible.



## Overlay technology that simplify topologies, and tunnels services over an IP infrastructure

Provisioning and management using a single VPN technology rather than both Layer 2 and Layer 3 is just simpler. With control plane and data plane separation allowing for far greater flexibility and control in network design.

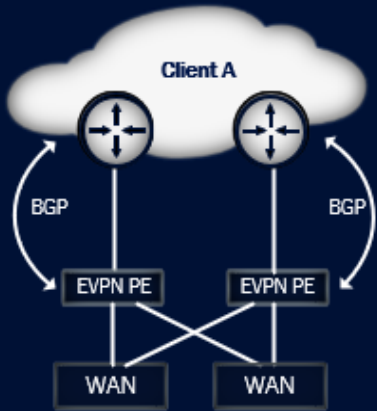
## EVPN/VxLAN

Enabling low latency managed bandwidth services



## Case study 1: Global Hedge Fund

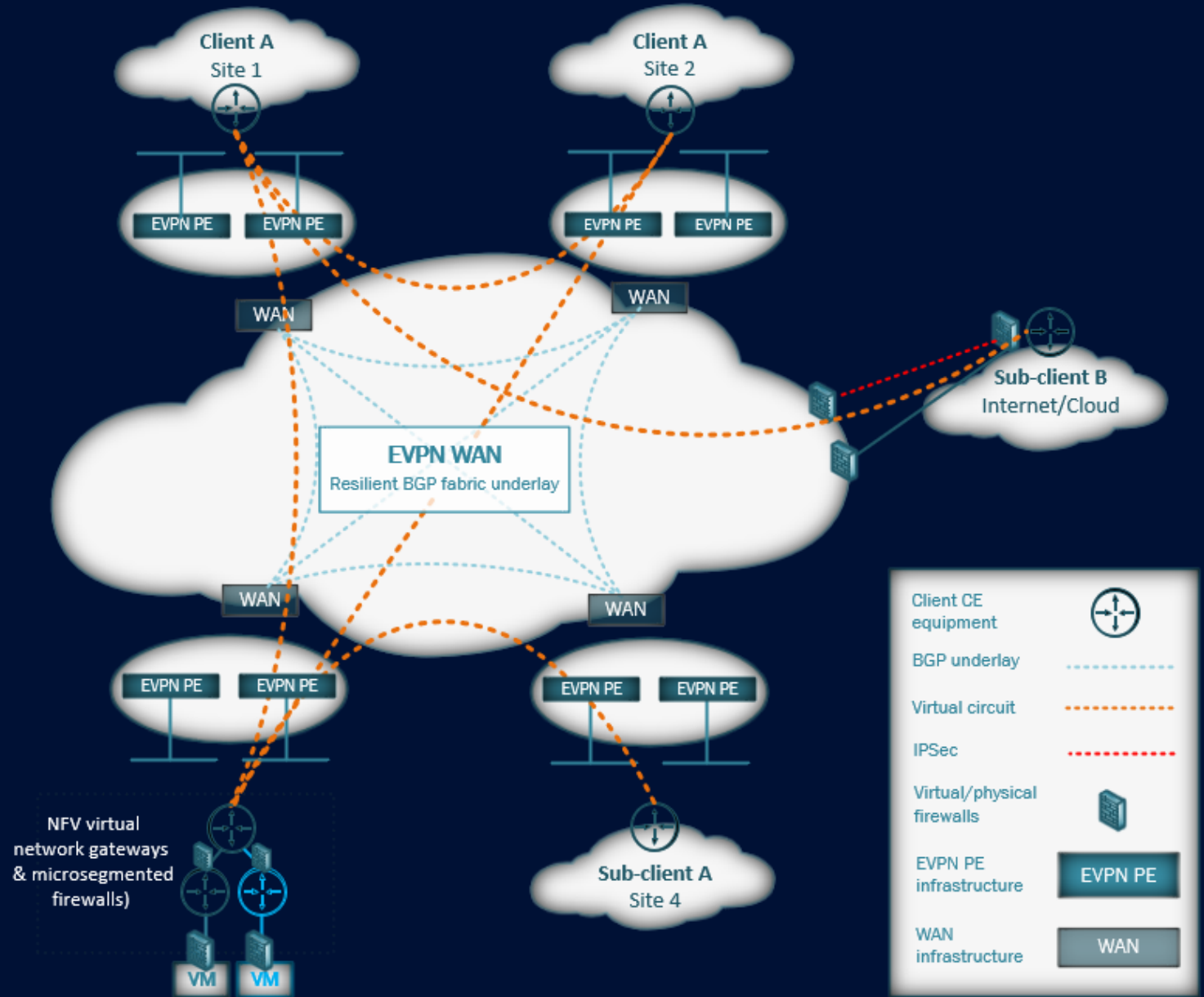
(NFV gateways, Sub-client access and Layer 3 EVPN overlays)



**Requirement:** Unrestricted use of class A addressing. Access to a core services, hosting virtualised infrastructure with sub-client ecosystem in the public cloud, internet or datacentre.

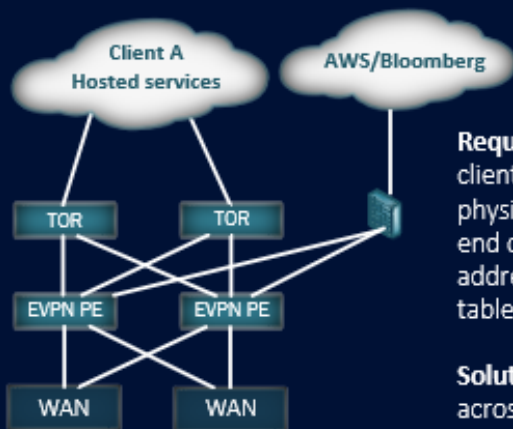
**Solution:** Layer3 EVPN connectivity across the Options' financial cloud leveraging NFV virtualization inside the DC, segmenting and securing traffic flows.

- **EVPN-VXLAN L3:** EVPN replaces requirement for MPLS routing on all underlay nodes, advertises VRF and IP Prefix information via type-5 routes.
- **Core service availability:** All core services available to the tenant by import/export of VRF routes.
- **Virtualized Edge Nodes:** Provide routing and switching separation of tenant instances within a multi-tenant virtualized network.
- **Virtualized Edge Services Firewalls:** north-south data flows are Controlled with policy enforced via virtual firewalls on edge service nodes.
- **VM to VM Security:** The tenant environment is secured via distributed firewalls, ensuring security and visibility.



## Case study 2: Electronic Trading Firm

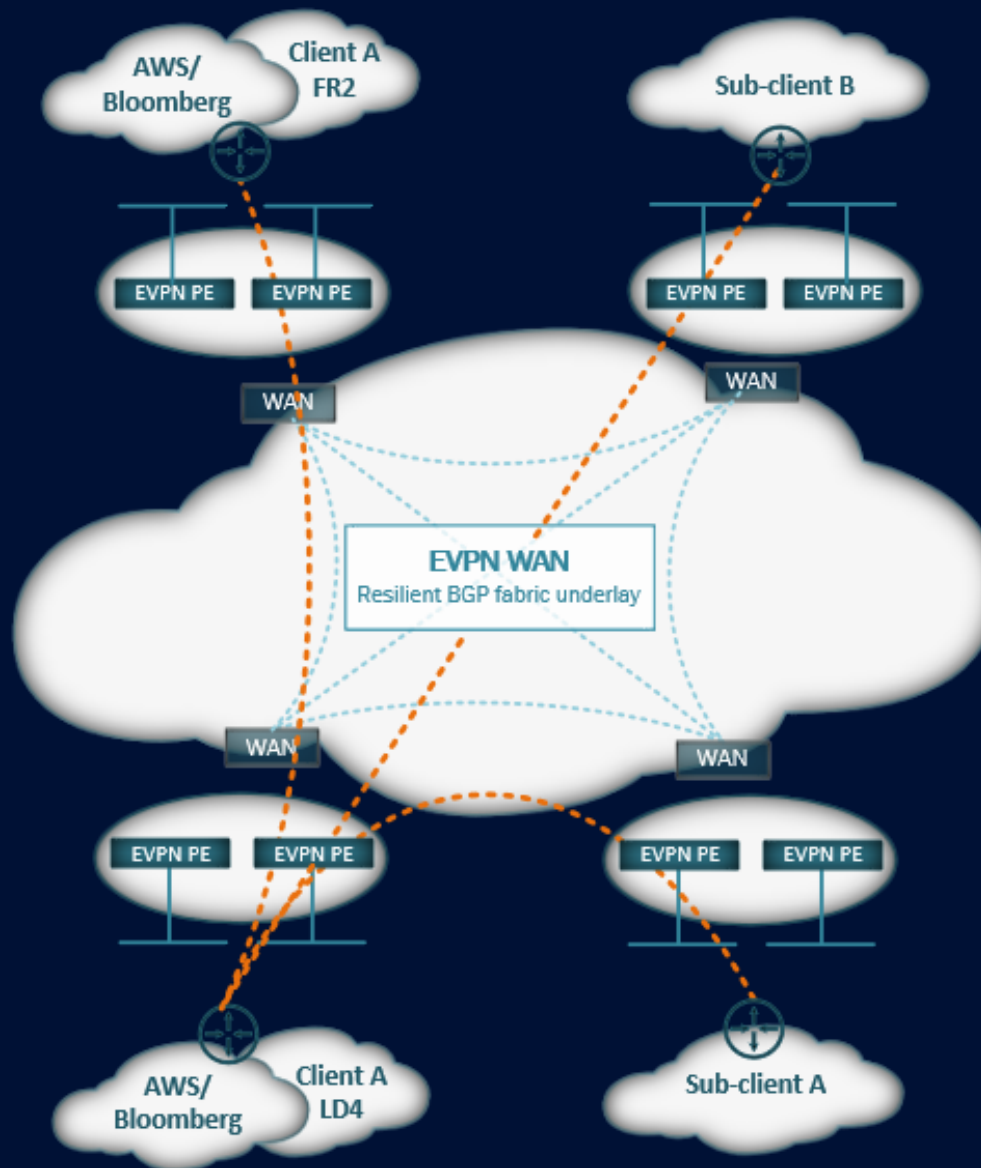
(AWS, Bloomberg and sub-client access across shared WAN)



**Requirement:** Connectivity between client managed AWS environment, physical servers, Bloomberg and the end clients, using conflicting IP addressing in core & tenant routing table(s).

**Solution:** Layer3 EVPN connectivity across the financial cloud leveraging NFV virtualization inside the DC segmenting and securing all flows.

- **EVPN-VXLAN:** L3 -EVPN replaces requirement for MPLS routing on all underlay nodes, advertises VRF and IP Prefix information via type-5 routes. Client able to utilize multiple large subnets within Class-A IPv4 network.
- **Secure L7 Firewall access:** To public cloud and internet services (Bloomberg)
- **Core Service availability:** all core services available to the tenant by import/export of VRF routes
- **Extension of routing instance:** throughout the network to allow for seamless segmented client connectivity across multiple remote sites.
- **Public cloud access:** integrated transparently for client access from hosted private cloud.





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