



Connecting to Fuze

June 2019

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A man with grey hair, wearing a light-colored suit jacket over a blue shirt, is shown in profile. He is holding a tablet computer in his left hand and has a thin earbud in his right ear. The background is a blurred city street with other people and buildings. The entire image has a purple tint.

What is Connectivity?

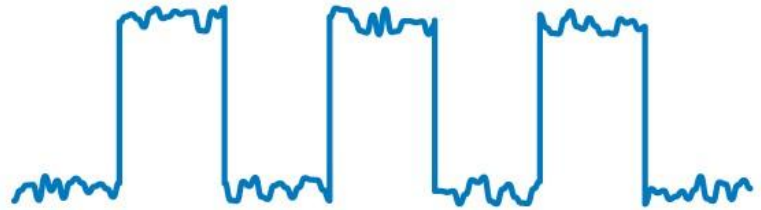
What is Connectivity?

- When we refer to connectivity, we refer to how you (or your organisation) connects to Fuze
- Some users may be located:
 - Inside a corporate office
 - In a shared office
 - At a Cafe
 - At an airport
 - Working from home
- The communications medium that your PC, Laptop, Tablet or Mobile device is called the 'network'
- The network in your office may be very different to that at the airport or your home
 - Traditionally corporate offices connect to services over private connections
 - This is changing as more companies are moving to Over The Top (OTT)/Direct Internet Access (DIA) services
 - Your home most likely uses standard broadband/internet with Wifi

Why is it important?

- The deciding factor on the quality of your Fuze experience is network
 - Can the network support Fuze
 - Is the network designed/configured to best support Fuze

- A poor network can have the following impact:
 - Voice cuts in/out
 - Video is pixelated
 - Screen share is delayed



- Choosing the right connectivity option is arguably the most important decision a customer will make!

A man with grey hair, wearing a light-colored suit jacket over a blue shirt, is shown in profile. He is holding a tablet computer in his left hand and has a thin, clear tube connected to his ear, which he is holding with his right hand. The background is a blurred city street with other people and buildings. The entire image is covered with a semi-transparent purple overlay.

History of Connectivity at Fuze

Historic Connectivity to Fuze

- ThinkingPhones traditionally connected customers via dedicated point-to-point circuits
 - Circuits were terminated in racks that Fuze owned/managed mostly in NA
 - Fuze would resell these services
 - There were very expensive to manage (rackspace, power, hardware, management/support)
- Fuze global expansion supported the shift away from traditional connectivity
 - Shift in trend to no longer favour private connectivity
 - Future DCs were designed to no longer terminate customer circuits
- Infrastructure shift into AWS further solidified DC approach for Fuze
- By late 2018 90% of Fuze customers connect via the OTT/DIA (Internet)

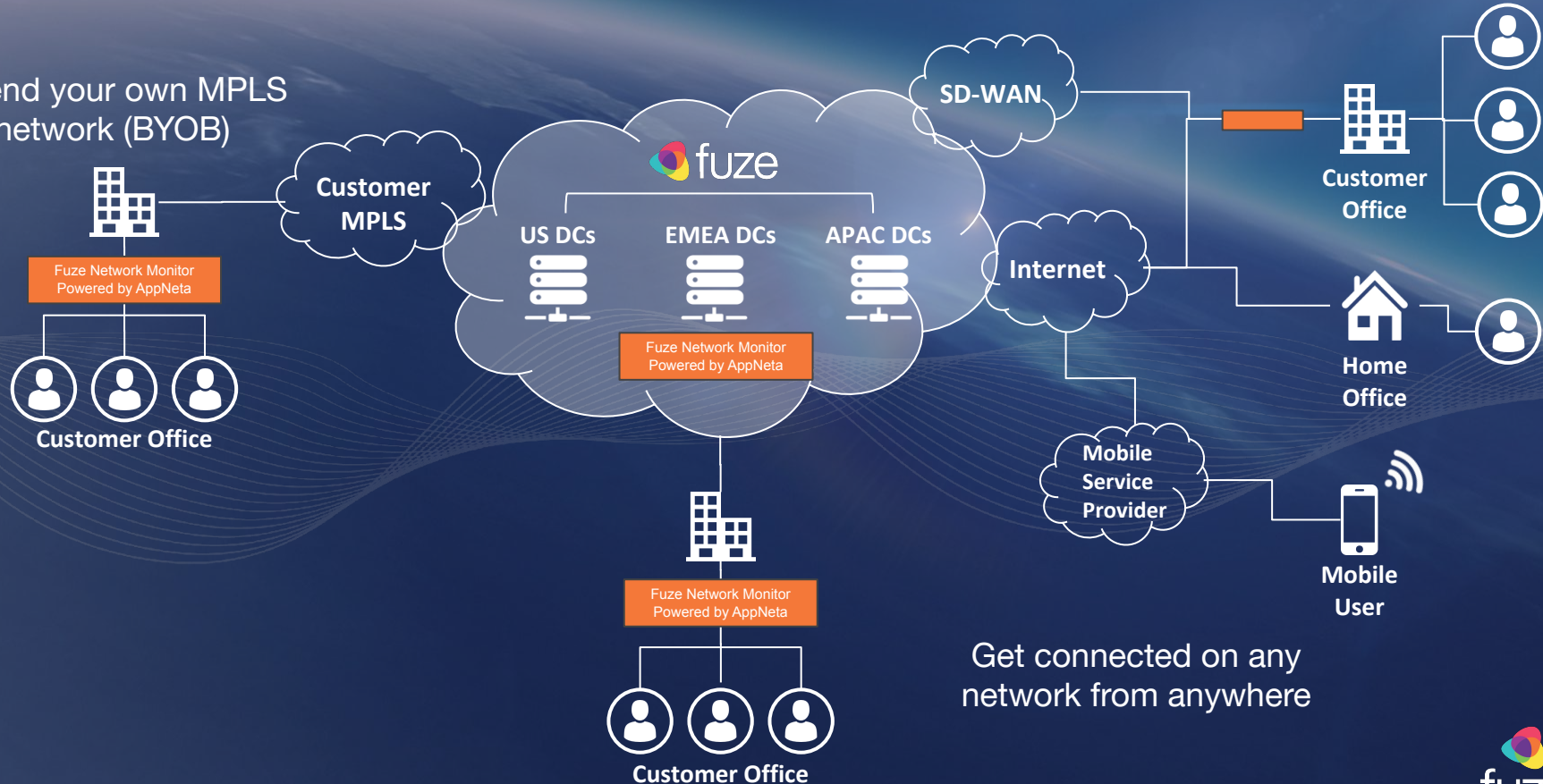
Shift From Resale Model

- A 2018 Connectivity Audit showed big decline in private connectivity requests
- Audit showed that private connectivity is no longer the default method for consuming real-time media
 - OTT/DIA now the norm
 - Alternatively SD-WAN provides a lot of the benefits of private connectivity at a cost closer to OTT/DIA
- Majority of service impacts were in the 'last mile'
 - Fuze was little more than a middle-man in supporting these situations
- Fuze ceased selling/reselling connectivity late 2018 and moved to a 100% referral model, with select connectivity partners
- Customers consult with connectivity experts and take a holistic approach to their connectivity needs

Fuze Connectivity Models

Connectivity Models—True Enterprise Flexibility

Extend your own MPLS network (BYOB)



Selecting a Model

- Choosing a connectivity model should take many things into consideration including (but not limited to):
 - Number of users at a given site including applications in use (bandwidth required)
 - Importance of site (is backup required)
 - Availability and cost of bandwidth

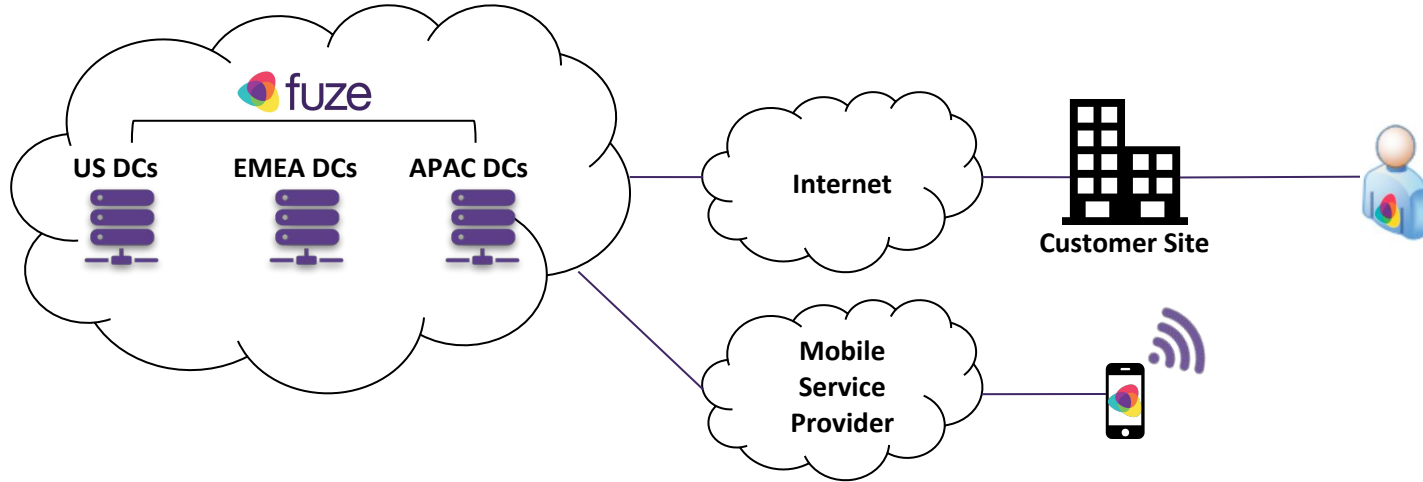
	Internet	Internet Exchange (IX)	SD-WAN	BYOB inc NNI
Pros	<ul style="list-style-type: none">• Inexpensive• Already exists• Easy to scale• Little to no effort on customer	<ul style="list-style-type: none">• No cost to customer• More direct path to Fuze• Reduced latency & hop count	<ul style="list-style-type: none">• Half the price of MPLS (average)• QoS using Internet carriage• Other application intelligence	<ul style="list-style-type: none">• Total control over bandwidth/traffic• Secure• QoS by default
Cons	<ul style="list-style-type: none">• Lacks QoS• Speeds vary by location	<ul style="list-style-type: none">• Requires ISP to Peer with Fuze (not guaranteed)• Lacks QoS (still Internet)	<ul style="list-style-type: none">• Requires dedicated hardware• No standard (tied to one vendor)	<ul style="list-style-type: none">• Expensive!!• Complex to configure• Often takes the most time to setup

OTT & Internet Exchange Summary

- **This is the Fuze preferred model**
 - **90% of Fuze customers connect this way**
- This model allows customers to use their existing Internet connections
- Costs for using the OTT/IX model are very inexpensive, if not zero, assuming the existing Internet Connections are in place and suitable)
- With IX, the peering is done at the ISP level, so there is no expected cost for the customer
 - Once the ISP is peered with Fuze, latency/RTT/Hop Count should be reduced automatically
- Assuming the Fuze Service Requirements guide is followed, there is no setup required for this model to work
- Support is all handled by the Customer's ISP

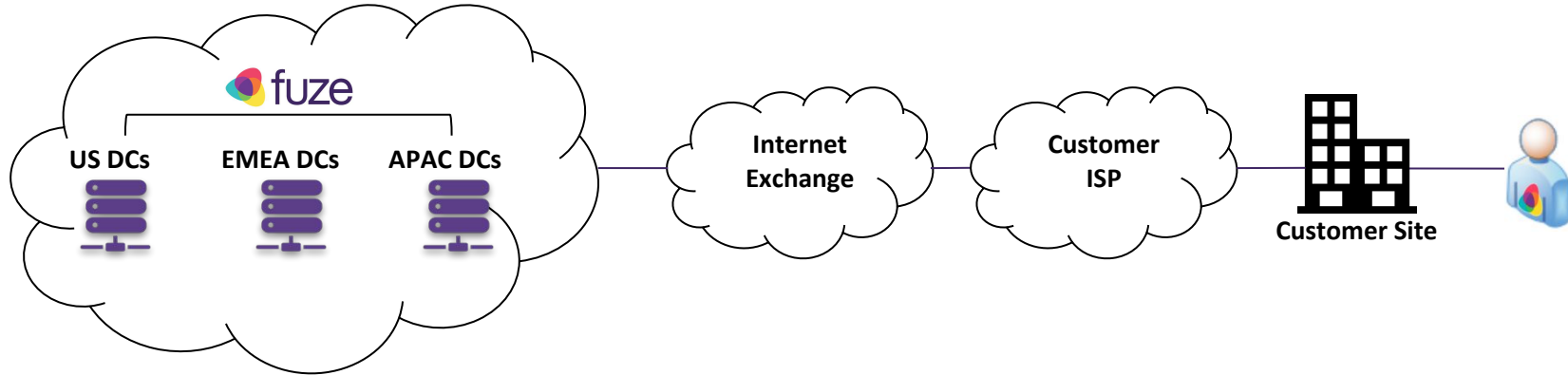
Connecting OTT to Fuze

- 90% of Fuze customers consume their Fuze services via OTT/DIA (Internet) services
- Use your existing Internet Connection
- Fuze has redundant Tier 1 Internet connections in each DC



Connecting via Internet Exchange (IX) to Fuze

- Fuze is connected to IXs in the US, EMEA & APAC
- Customer's ISP peers with Fuze at IX
- IX provides a direct route between ISP and Fuze, eliminating multiple hops/providers in between customer and Fuze

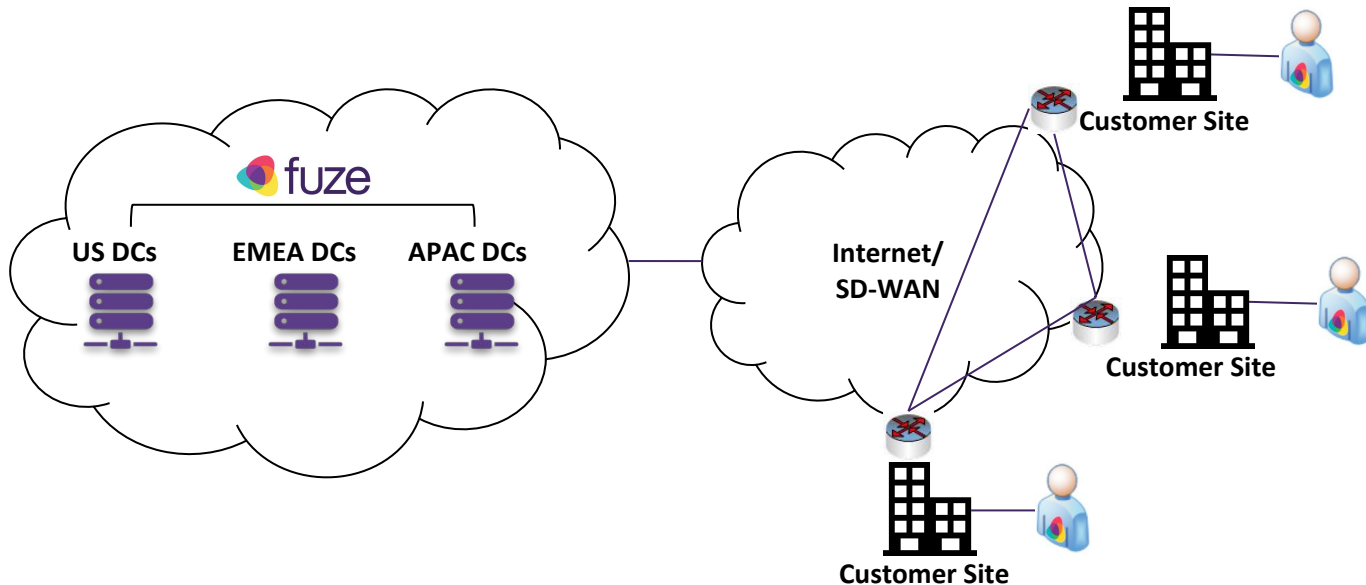


SD-WAN Summary

- Costs for SD-WAN is typically half that of a private solution such as MPLS
- Fuze does not sell this solution, rather Fuze has worked with different SD-WAN vendors to classify the Fuze environment on their platforms
 - Customers can identify Fuze as their UCaaS provider within the SD-WAN solution which will optimise routing of Fuze traffic
- Fuze does not host **any** SD-WAN solutions in its DCs, so connection to Fuze is still OTT
- As SD-WAN uses existing Internet Connections, the big cost is in the hardware/services to set it up
- Support of this model would be direct from the SD-WAN provider or the customer's ISP

Connecting via SD-WAN to Fuze

- Customer typically installs hardware at each office location
- SD-WAN solution is configured with all Fuze DC subnets
- SD-WAN solution routes Fuze traffic the most efficient path OTT (Fuze does not host **any** SD-WAN hardware in their DCs)



BYOB Summary

- Bring Your Own Bandwidth (BYOB) is designed to allow customers to connect their existing network to Fuze
- Any offering under this model is **100% referral based**
- Fuze utilises circuit aggregators which customers can use to extend their networks and then take advantage of common NNIs Fuze holds with these aggregators
- Customers looking for point to point circuits should utilise the partnership Fuze has with GTT
 - GTT can provide private circuits and DIA services direct to customers
 - Customers utilising private circuits will then access NNIs between GTT & Fuze
 - **Fuze access charge applies**
- Customers looking to extend their existing MPLS network to Fuze (BYOB) should utilise the partnership Fuze has with Epsilon
 - Customers can extend their network to Epsilon at any of their global [PoPs](#)
 - Epsilon offer equipment hosting at a number of locations globally (**subject to approval/availability**)
 - Customer will access NNI between Epsilon & Fuze
 - **Fuze access charge applies**
- Fuze maintains NNIs with Centurylink at select DCs in the US to support connectivity
 - Customers who have an MPLS network with Centurylink can connect to Fuze over existing NNIs
 - Customer will access NNI between Centurylink & Fuze
 - **Fuze access charge applies**

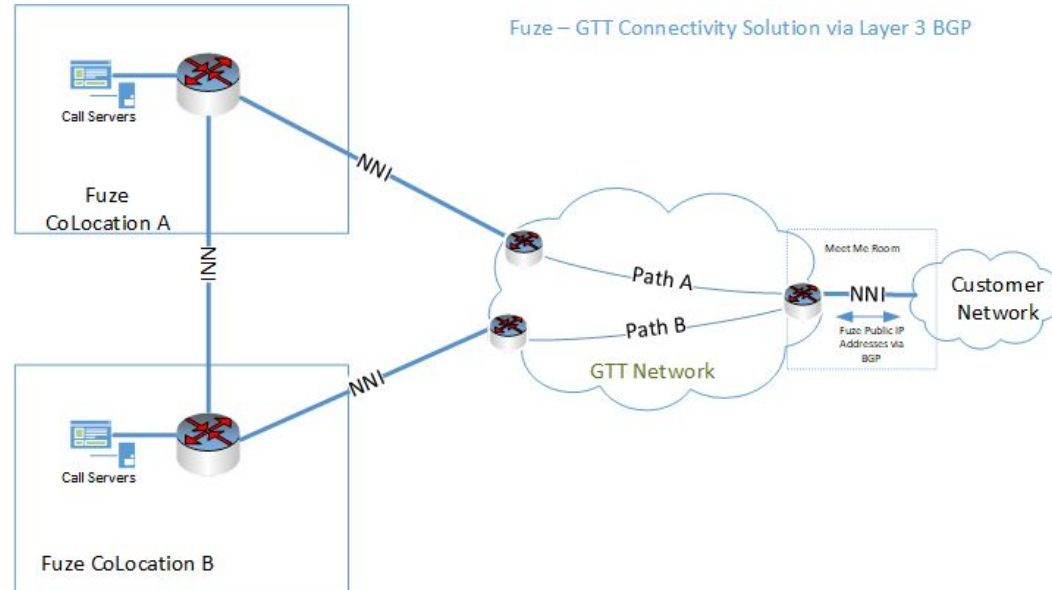
GTT - Circuit Connectivity

- Costs for private circuits are largely dependent on the last mile connection to the premise. If infrastructure is in place, this is relatively quick to provision and cost effective. If new infrastructure is required then delays and cost start to rise.
- GTT typically charge for the cabling/connection as well as the bandwidth required
 - This covers connecting the customer premise to GTT
- Fuze charge an Access Fee which covers access of the Fuze service of the NNIs between Fuze and GTT
 - This fee is charged at \$10USD/Mbps

GTT - Design

GTT Aggregation Model

- GTT have NNI with Fuze and offers aggregation of circuits at Layer-3
- GTT are a global services provider and are connected in many Data Centres increasing the footprint of Fuze Data Centre connectivity coverage
- GTT do not host managed devices on behalf of Fuze
- GTT offer customer premise circuits as well



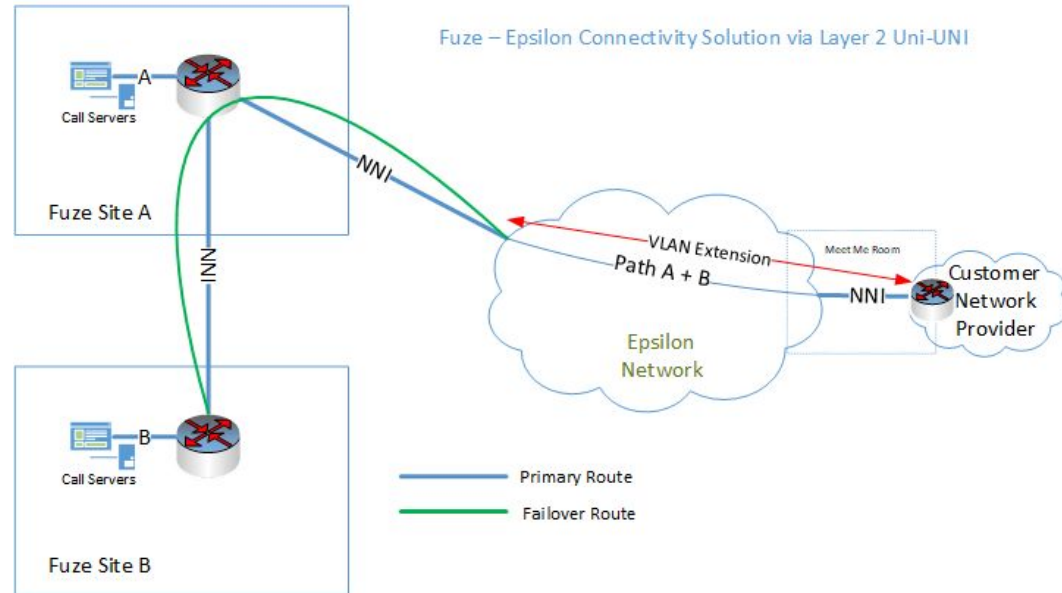
Epsilon - BYOB

- Customers can connect to Epsilon at any of their global PoPs
- Customer will access common NNI between Epsilon & Fuze
- Costs to bring a customer network to Epsilon consists of two parts, cabling to an Epsilon PoP and the port (bandwidth) on the Epsilon network
 - Cabling charges often incur an NRC & MRC component
 - Port charges are based on bandwidth so are variable
- Fuze charge an Access Fee which covers access of the Fuze service of the NNIs between Fuze and GTT
 - This fee is charged at \$10USD/Mbps

Epsilon - Design

Epsilon Aggregation Model

- Epsilon offers Fuze aggregation of circuits using their E-NNI service which is a Layer-2 connectivity product
- Epsilon are present in many [Data Centres](#)
- The service allows for VLAN translation
- Epsilon are able to host managed devices in most of their locations on behalf of Fuze
- Epsilon can also provide customer sited circuits if required like DIA and MPLS



Referral Process

Referral Process

- As Fuze **no longer** sells/resells connectivity, all customers are referred to the connectivity partner of choice
- Fuze will facilitate the introduction/referral however the customer must engage/contract direct with the partner
- Fuze **does** charge an Access Fee to access the Fuze service (like all other cloud providers). This is based on bandwidth and is currently set to \$10/Mb/s USD. **This is billed direct by Fuze**
- Prior to any meetings, customers should prepare network diagrams showing their existing network including all PoPs
- Often when extending existing networks, carriers/NSPs will need to be brought into conversations with Epsilon to discuss PoP locations. Customers should prep their MPLS provider and have them attend all calls with Epsilon/Fuze

Referral Process

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- Fuze has a central account management team for both GTT & Epsilon
 - GTT
 - Account Manager: Kimberley Medina - Kimberley.medina@gtt.net - +1-512-241-7633
 - Sales Support: Michael Rederscheid - michael.rederscheid@gtt.net - +1-646-254-6814
 - Sales Engineer: Mike Vader - Mike.Vader@gtt.net - +1-530-410-6094
 - Epsilon
 - Account Manager: Alex Walker - a.walker@epsilonintel.com - +44-203-370-3595
 - Sales Support: Kavita Makwana - k.Makwana@epsilonintel.com - +44-207-096-9613
 - Sales Engineer: Kamil Kwinta - k.kwinta@epsilonintel.com - +44-207-096-9607

Ordering Process

- Once a quote/order has been processed, the connectivity partner will work direct with customer
- The customer is the official 'Customer of Record', Fuze is not referenced or given access to the customer account
- The connectivity partner will contact fuze to complete configuration of the connection, this will require Fuze/partner to agree on VLAN assignments & any IP addressing
 - Fuze will only configure this once the Access Charge quote has been signed/approved
- Once configuration is complete, customer testing will begin, involving all parties (partner, customer & Fuze)

Support Process

- Customers will be notified directly from the partner about any maintenance work or outages
- Naturally customers will call Fuze when they experience any issues with their Fuze clients/endpoints
 - The Fuze support team will always do their best to ensure customers get the support they need
 - When a network related issue has been identified, it will be the customer's responsibility to raise this with their connectivity partner(s). Fuze has no authority to obtain support for a customer circuit/connection
- A customer would rarely ever be directly connected with Epsilon, it is typically their MPLS provider that is connected to Epsilon. As such, the first port of call should be to their network provider, assuming Epsilon have not been identified as experiencing problems.

General Q&A

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Q: Why can't I connect directly to Fuze anymore?

A: In an effort to reduce our DC footprint and migrate services into AWS, Fuze EOL direct connections in late 2018. Fuze refers customers to select carriers to which Fuze maintains NNIs with, to support private connectivity.

Q: I have direct connections to Fuze today, will these be going away?

A: Fuze will continue to support customers to have existing direct connections.

Q: I have equipment in a Fuze DC today, will these be going away, what if i need to add more?

A: Fuze will continue to support customers who are hosting equipment in a Fuze DC today. In the future we will be contacting customers to offer external hosting services and/or whether equipment truly is needed.

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GTT Q&A

General Q&A

Q: Who do I talk to at GTT to discuss my connectivity needs?

A: The GTT Account team are:

Account Manager: Kimberley Medina - Kimberley.medina@gtt.net - +1 512-241-7633

Client Manager: Michael Rederscheid - michael.rederscheid@gtt.net - +1 646-254-6814

Sales Engineer: Mike Vader - Mike.Vader@gtt.net - +1 530-410-6094

Q: Who will I contract with for my connectivity service(s)?

A: Customer will contract direct with GTT

Q: Who do I call to discuss my connectivity installation?

A: Customer will be assigned a project manager who will be your point of contact for the installation

Q: Who do I call for support when i have network related issues?

30 A: Customer will need to contact GTT for support

Epsilon Q&A

General Q&A

Q: Who do I talk to at Epsilon to discuss my connectivity needs?

A: The Epsilon Account team are:

Account Manager: David Ebsworth - d.ebsworth@epsilonintel.com - +44 20 7096 9618

Sales Support: Kavita Makwana - k.Makwana@epsilonintel.com - +44 20 7096 9613

Sales Engineer: Kamil Kwinta - k.kwinta@epsilonintel.com - +44 20 7096 9607

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Other Q&A

General Q&A

Q: My MPLS network is provided by X, do you have an NNI with them?

A: Fuze has a number of NNI with carriers, the only ones available to customers are with GTT, Epsilon & Centurylink

Q: Is Fuze connected to any Internet Exchanges (IXs)?

A: Fuze is connected to the following IXs:

Equinix Ashburn & San Jose, Markley Group in Boston, London Internet Exchange (LINX) in London, DE-CIX in Frankfurt, Equinix & Megasport in Sydney.

Q: Does Fuze support SD-WAN?

A: Fuze is working with a number of SD-WAN vendors as well as existing Carriers which provide SD-WAN solutions. GTT & Epsilon provide SD-WAN solutions, allowing customers to also utilise existing NNIs to Fuze. Fuze is defined in the Aryaka SD-WAN solution and Fuze is working on certification on the Velocloud SD-WAN solution.

Resources

Epsilon Portal

Cloud LX / Infiny Portal


- Epsilon offer a portal by which customers can order ports/services as well as see the status of their service(s)
- For any port you can see the service state and a summary of the connectivity providers involved.
- Contract summary shows the speed as well as key contract dates

Services / Manage Services / View Service


View Service

Fuze_FRA-██████████_Telehouse
Service Name
Unprotected Service


Options ▾


EQUINIX
██████████
Port: In Service
Speed: 1Gbit
Owner: Fuze Europe B.V.

.....


Interport Service
Service: In Service
C-VLAN ██████████ translated to ██████████

.....


London - Telehouse North - P5 (1Gbit) - L...
Port: In Service
Speed: 1Gbit
Owner: Fuze Europe B.V.

50Mbps
Ordered Speed

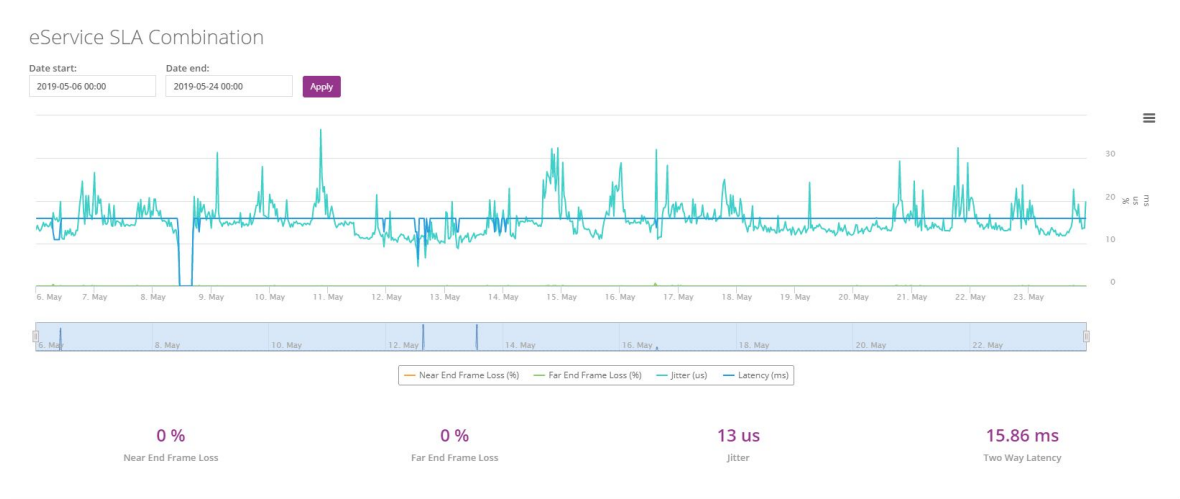
Sep 10, 2019
Renewal (1 Year)

Enabled
Auto Renewal

In 3 months
Time Until Renewal

Cloud LX / Infiny Portal

- Historical performance data showing Latency, Jitter & Loss can be seen



Cloud LX / Infiny Portal

- Historical usage can also be seen as well as the ability to specify timeframes

