Converged Ethernet Services

Service Description

Gamma

Version	Date	Description
1.0	10/07/2017	Point to Point (Section 7) updated
1.1	24/08/2017	Updated version control and added version history to document title
1.2	08/09/2017	Amended document title as per PM to Converged Ethernet Services Service Description.
2.0	25/10/2017	Amended sections 17 - 18.5 and added section 19 cancellation charges.
2.1	30/11/2017	Revised "Resilience Options" as per George Neil. Full document review also undertaken by Sara Sheikh - confirmed all information up to date.
2.2	20/03/2018	Amended section 19 Cancellation charges
3.0	07/06/2018	Gamma CityFibre added as a carrier Availability and NTE Installation section updated
4.0	14/09/2018	Updated document format and reviewed content
5.0	23/01/2019	Wires-Only Routing section updated
6.0	21/02/2019	Cloud Exchange product release

Contents

Service Overview

Converged Ethernet Access is a high bandwidth, scalable, reliable and uncontended access service designed to connect customers to the internet and Gamma IP telephony platforms. Converged Ethernet Access delivers premium quality voice and Internet products over a consistently available transport service. Each service is protected by a Service Level Agreement covering service performance, availability and time to fix.

The service configurations available over Converged Ethernet Access comprise:

- **Internet access only:** a single Ethernet connection between the end-user and the internet
- **IP telephony only:** a single Ethernet connection between the end-user and Gamma IP telephony platform, where the Ethernet connection delivers IP telephony. This is limited to connections to Gamma SIP Trunks and Horizon
- **Converged internet and IP telephony (Converged Ethernet Service):** where a single Ethernet connection provides both connectivity to the internet and a Gamma IP telephony service (limited to connections to Gamma SIP Trunks and Horizon)

Note: All variants can be ordered with one of our resilient options detailed in Section 8.

General Information

Access Types

The service can be provided over the following bearers:

- 100Mbps Fibre
- 1Gbps Fibre (subject to planning)
- EFM (aggregated copper pairs)
- FTTC Ethernet (WLR3 line required)

Available Bandwidths

Fibre access can support the following port speeds:

BT Wholesale

- 1-10Mbps (1Mbps increments)
- 10-50Mbps (5Mbps increments)
- 50-100Mbps (10Mbps increments)
- 100-500Mbps (50Mbps increments)
- 1000Mbps

Gamma (Openreach & CityFibre)

- 10-50Mbps (10Mbps increments)
- 70Mbs
- 100-500Mbps (100Mbps increments)
- 1000Mbps

TalkTalk Business

- 10-50Mbps (10Mbps increments)
- 100-500Mbps (100Mbps increments)
- 1000Mbps

Virgin

- 2-10Mbps (2Mbps increments)
- 10-100Mbps (10Mbps increments)
- 100-500Mbps (50Mbps increments

EFM access can support the following bandwidths:

BT Wholesale

- 1-10Mbps (1Mbps increments)
- 10-35Mbps (5Mbps increments)

FTTC Ethernet access can support the following bandwidths:

BT Wholesale

- 1-10Mbps (1Mbps increments), 10, 15 and 20 (both downstream and upstream)
- Up to max available downstream in 10Mbps increments i.e. 20-70Mbps

Please note: bandwidth will only be delivered in the increments stated above. For example, where a customer requires 25 G711 voice channels, a bandwidth of 3Mbps will be provided not 2.5Mbps.

The available IP throughput will be lower than standard port speeds advertised owing to management and encapsulation overheads.

Availability

UK Coverage

Fibre Ethernet is available from four different carriers; Gamma on-net (Openreach and CityFibre), BT Wholesale, TalkTalk Business and Virgin.

Copper Ethernet or EFM and FTTC Ethernet are available via BT Wholesale, EFM from over 1700 nodes and FTTC Ethernet from over 3300 nodes across the UK.

Local Availability

Where available, Fibre Ethernet can be provided where the maximum radial distance from the node does not exceed 25km. The maximum supported route distance is 45km.

As EFM is delivered over aggregated copper pairs, and the availability in an area that is EFM enabled will depend on the distance from the exchange. As a rule, sites within 5km of an enabled exchange can receive service. Service speeds up to 35mbps are possible.

Mbps	Pairs							
	1	2	3	4	5	6	7	8
2	1450	2500	2950	3550	4050	4300	4300	4800
4	300	1450	2050	2500	2950	2950	3150	3550
6		950	1450	2050	2250	2500	2700	2950
8		300	1100	1450	1850	2050	2250	2500
10			750	1100	1450	1850	2050	2250
15				450	950	1100	1350	1550
20					300	750	1000	1100
25						250	550	950
30							100	450
35								100

**Distance possible in meters*

FTTC Ethernet Limitations

- The FTTC Ethernet service offers guaranteed symmetrical bandwidth of up to 20Mbps. Any downstream bandwidth available and purchased above this will be provided as best efforts and subject to network congestion. It is the Partners responsibility to ensure the end customer expectations are managed accordingly.
- FTTC Ethernet is rate adaptive from the cabinet to the End User site, and bandwidth speeds can vary due to a number of different factors. It is important to note, that the quality of the copper wire pair and the length of the copper wire between the cabinet and the premises will affect speeds achieved. This is not limited to cross talk, retrains or fluctuations in speed due to the underlying technology.
- As FTTC Ethernet requires a copper WLR3 line to be provided, the WLR3 service must be ordered and installed before an FTTC Ethernet order can be placed using the CLI. Charges for this WLR3 are not included in the FTTC Ethernet quote.
- It will be possible to generate a FTTC Ethernet quote from the Pricing Tool on the Gamma Portal using the full address but only orders for quotes generated against a CLI will be accepted
- WLR3 lines should be ordered with Care Level 4 to ensure any faults are resolved in the quickest possible manner. The 8 hour target resolution time for FTTC Ethernet does not include WLR fault resolution time and it is responsibility of the channel partner to arrange the WLR3 fault resolution with their WLR3 supplier.
- If the underlying WLR3 service is ceased then the FTTC Ethernet service will automatically be ceased however you will still be liable for the remainder of the FTTC Ethernet contract.
- As part of the quoting process a “dialogue services availability check” will be undertaken to confirm that provision of FTTC is possible at the customer’s postcode or CLI. The outcome of this check will be estimates for the customer’s line length & predictions for both Downstream and Upstream speeds. More accurate speed estimates are returned for quotes generated for a CLI.
- Full confirmation of available speed will not be confirmed until during the provisioning process; if the maximum upstream speed is lower than originally ordered the order will progress to the confirmed highest available downstream; for example: if a 20Mbps service is ordered but the maximum available upstream speed is 18Mbps, the order will progress as a 20Mbps service however the actual usable speeds will be 20Mbps in the downstream but only 18Mbps in the upstream.
- FTTC service, like ADSL, can involve occasional “retraining” of the line, which involves an outage of less than 2 minutes typically. This typically involves less than 1 retrain per month for each FTTC circuit.
- Internal shifts are not part of the Converged Ethernet Service and have to be ordered as part of the WLR3 service. Any shifts may result in having an impact on the FTTC Ethernet speed (in the form of either a slower or faster speed) and as such should be a consideration before moving the WLR3 line internally within the same building.

General Limitations

The following applied to all Ethernet services:

- The provision of services is strictly subject to availability and available Ethernet is available across the UK and Northern Ireland with the exception of Kingston upon Hull, Isle of Man, Isles of Scilly and the Channel Isles.
- Where available, the service is offered as 'subject to survey'; excess construction charges will apply if new access network build is required to serve a site.
- Converged Ethernet Access is a managed service designed for single sites and single customer connectivity. It is neither a VPN service designed to network sites over the Gamma infrastructure, nor will it provide interconnect (NNI) or IP transit services.
- Gamma only provides prioritisation of Gamma SIP and RTP (IP voice) – all other traffic is marked as default

Note: The service currently does not support point-to-point connectivity / private lines.

Internet Access Only

General

All internet connections are unlimited, uncontended and are subject to acceptable use.

Management Options

Services can be provided either as wires-only or as a managed service. For the latter, Gamma provides a managed Cisco Customer Premises Router which serves only as an access and routing device (not a security device) and is owned and fully managed by Gamma for the duration of the service.

Gamma will be responsible for:

- Configuration & dispatch
- Maintenance including replacements and upgrades
- Monitoring & alarming (see below)
- Fault diagnostics

The partner will be responsible for:

- Installation where on-site Router installation hasn't been selected
- On-site fault diagnostic work
- WLR3 line required for FTTC Ethernet service (including associated WLR fault diagnostics)

Where a customer chooses to use a wires-only service the partner or customer must supply a layer 3 router capable of supporting BGP. Gamma does not provide any guarantees that the non-Gamma supplied routers will work with the service. Gamma reserves the right to raise a charge of £850 a day for any work it does in assisting with third party router configuration.

The SLA for managed and wires-only services is provided later in this document – a reduced SLA is provided for wires-only.

Service Demarcation Boundary

For managed internet access, the service demarcation boundary is the Customer-side port of the Gamma-supplied Customer Premises Router. The customer's local area network, its configuration and management is the responsibility of the end-user or the serving partner.

For the wires-only service, the Service Demarcation boundary is the customer-side port of the Network Terminating Equipment.

Monitoring & Alerting

Gamma will monitor all managed internet access circuits and will alert the partner's appointed contact in the event that a circuit becomes unavailable / unreachable (only).

Monitoring and alerting for wires-only services is the partner's responsibility.

SNMP access to Gamma routers (read-only or otherwise) is not provided to the partner or the customer.

IP Addressing

Gamma will provide a subnet for the customers use - a /30 will be allocated as standard. Larger allocations can be made upon request and justification. A charge will be made for non-standard subnets.

Please note that customer-own public addressing is not supported.

Wires-Only Routing

Static routing is used as standard where a customer has purchased a wires-only service.

Note: Ethernet resilience options are not available on Wires Only services.

Speed and Full Duplex Settings

For Wires only FTTC Ethernet solutions, partners should configure their End User CPE to AUTO for Speed to allow synchronisation at the highest possible rate. The Ethernet ports on the NTE are left at their default setting of auto-negotiation for duplex mode.

Security

Connections to the internet (which are, by design, public-facing) are not provided with any security or security features; the end-user or the partner is responsible for all security (for example, firewall services) and to ensure the connection feed is 'cleaned'. This is also the case where Gamma provides a managed service and router.

Gamma SIP Trunks Only Access

General

This describes the use of Gamma Ethernet dedicated to the delivery of Gamma SIP Trunks. This service is provided as a managed layer 3 service that delivers a guaranteed number of channels of IP voice. An end-to-end service design is provided in order to guarantee the performance of SIP and RTP data streams. QoS is used across the service from the Gamma provided router through to serving SBCs, configured specifically to support the number of channels and codec as provided in the customer order.

Service Configuration (No Broadband Backup or Ethernet Backup)

Gamma SIP Trunks are provided on RFC 1918 IP (private IP) addresses and is delivered as a private connection in to the Gamma network. Connection will be made via a routed port, as standard, but the use of dot1q trunks is also supported.

A /29 subnet will be allocated by Gamma. One address out of the range is to be used by the customer for their PBX or SBC. Another address will be used as default gateway.

The customer should configure their PBX to use the default gateway to route the Gamma signalling IP address that is provided as a part of setting up the service (from a separate subnet).

If a customer has a specific requirement for their Gamma SIP Trunks subnet (i.e. a subnet that does not overlap with an existing private subnet they have in use) this should be highlighted in the Customer Requirements Form (CRF).

Below is an example of a subnet allocation for Gamma SIP Trunks:

Voice Subnet:	10.60.34.64/29
Signalling:	10.128.0.17
Gateway IP:	10.60.34.65
PBX IP:	10.60.34.66
Media:	10.128.0.18

Service Configuration (with Broadband backup)

Where a backup solution is taken, Public Gamma SIP Trunks are provided on non RFC 1918 IP (public IP) addresses and is delivered as a public connection across an internet link in to the Gamma network. Connection will be made via a routed port, as standard, but the use of dot1q trunks is also supported.

A /29 subnet will be allocated by Gamma. One address out of the range is to be used by the customer for their PBX or SBC. Another address will be used as default gateway.

The customer should configure their PBX to use the default gateway to route the Gamma signalling IP address that is provided as a part of setting up the service (from a separate subnet).

Only non RFC 1918 address space are to be used.

Below is an example of a subnet allocation and Media/Signalling IP addresses for Gamma SIP Trunks:

Voice Subnet:	88.215.63.208/29
Signalling:	88.215.61.195
Gateway IP:	88.215.63.209
PBX IP:	88.215.63.210
Media:	88.215.61.196

Internet & External Access

Internet access is not provided with this service (if required, Converged Ethernet Access should be used). External access to a Gamma SIP Trunks only end-point is also not provided. Third party access to voice equipment, such as PBX, must be provided via another connection. The partner will need to consider how remote users to the PBX are being serviced, as this is not supported via the Gamma Ethernet connection.

Management Options

All access for Gamma SIP Trunks is provided as a managed service. Gamma provides a managed Cisco Customer Premises Router which serves only as an access and routing device (not a security device) and is owned and fully managed by Gamma for the duration of the service. The partner is liable for the cost of replacing the router during the term of the contract should the need arise, except where the device has been confirmed as having a fault.

Gamma will be responsible for:

- Configuration & dispatch
- Maintenance including replacements and upgrades
- Monitoring & alarming (see below)

- Fault diagnostics

The partner will be responsible for:

- Installation
- On-site fault diagnostic work

Service Demarcation Boundary

The service demarcation boundary is the customer-side port of the Gamma-supplied Customer Premises Router. The partner or end-user will be responsible for the configuration and management of the LAN environment, including, but not limited to the connection of any voice equipment, such as a PBX, to the service.

Monitoring & Alerting

Gamma will monitor all Gamma SIP Trunks only circuits and will alert the partner's appointed contact in the event that a circuit becomes unavailable / unreachable (only). SNMP access to Gamma routers (read-only or otherwise) is not provided to the partner or the customer.

Security

When deploying a SIP Trunking solution, in line with deploying any service for a customer, security and fraud management should be considered and is the responsibility of the partner. The basics of ensuring that the PBX and associated Voicemail are set with the correct levels of password, and those passwords are regularly maintained, are essential to protecting against the most common fraud.

The Gamma service is provided as a private connection, it is not publically routable, which, in addition to the above, will help minimise the risk of fraud.

Horizon Only Access

General

This describes the using Gamma Ethernet dedicated to the delivery of Horizon. This service is provided as a managed layer 3 service that delivers a guaranteed number of channels of IP voice. An end-to-end service design is provided in order to guarantee the performance of relevant SIP and RTP streams. QoS is configured across the service from the CPE through to the core platform, dimensioned to support to the number of channels and codec required.

Management Options

All access for Horizon is provided as a managed service. Gamma provides a managed Cisco Customer Premises Router which serves only as an access and routing device (not a security device) and is owned and fully managed by Gamma for the duration of the service

The partner is liable for the cost of replacing the router during the term of the contract should the need arise, except where the device has been confirmed as having a fault.

Gamma will be responsible for:

- Configuration & dispatch
- Maintenance including replacements and upgrades
- Monitoring & alarming (see below)
- Fault diagnostics

The partner will be responsible for:

- Installation
- On-site fault diagnostic work

Service Configuration

The Horizon only services with or without Broadband backup, which require NAT and DHCP to drive the IP phones, can be configured in 2 ways:

- Where a separate physical network is installed for Horizon:

  One customer-side router port will be provided with a NAT configuration and the DHCP will be provided by the Gamma router

- For a converged voice and data LAN environment:

  A routed port will be provided, as standard, with a non-NAT configuration. Here the customer LAN provides the NAT and DHCP needed for Horizon.

Internet & External Access

Internet access and external access are not provided with this service (if required, Converged Ethernet Access should be used).

Service Demarcation Boundary

The service demarcation boundary is the Customer-side port of the Gamma-supplied Customer Premises Router. The partner or end-user will be responsible for the configuration and management of the LAN environment, including, but not limited to the connection of any voice equipment to the service.

Monitoring and Alerting

Gamma will monitor all Horizon circuits and will alert the partner's appointment contact in the event that a circuit becomes unavailable / unreachable (only).

SNMP access to Gamma routers (read-only or otherwise) is not provided to the partner or the customer.

Security

When deploying a Hosted solution, in line with deploying any service for a customer, security and fraud management should be considered and is the responsibility of the partner. The basics of ensuring that system and voicemail passwords are set with the appropriate levels of security, and those passwords are regularly maintained should always be observed.

Converged Access

General

This describes the provision of a single Ethernet circuit to deliver both IP telephony services and internet connectivity to an end customer. This service is provided as a managed layer 3 service that delivers a guaranteed number of channels of IP voice and internet bandwidth. An end-to-end service design is provided in order to guarantee the performance of relevant SIP and RTP streams. QoS is configured across the service from the CPE through to core platforms, dimensioned to support to the number of channels and codec required, as well as internet bandwidth.

Management Options

All converged is provided as a managed service. Gamma provides a managed Cisco Customer Premises Router which serves only as an access and routing device (not a security device) and is owned and fully managed by Gamma for the duration of the service.

The partner is liable for the cost of replacing the router during the term of the contract should the need arise, except where the device has been confirmed as having a fault.

Gamma will be responsible for:

- Configuration & dispatch
- Maintenance including replacements and upgrades
- Monitoring & alarming (see below)
- Fault diagnostics

The partner will be responsible for:

- Installation
- On-site fault diagnostic work

Service Configuration

Gamma SIP Trunks Converged Access (No Backup or Ethernet Backup)

The converged Gamma SIP Trunks service will be provided on two routed ports, as standard. One customer-side port will be provided for a dedicated Gamma SIP Trunks VLAN and a second port for a dedicated internet access VLAN. The use of dot1q trunks on a single physical port is also supported, if required.

The Gamma SIP Trunks VLAN will be provided on RFC1918 (private IP range) addressing. For the internet VLAN, Gamma will provide a subnet for the customers use - a /30 will be allocated as standard. Larger allocations can be made upon request and justification. A charge will be made for non-standard subnets. Public routed SIP is available without Broadband backup.

Gamma SIP Trunks Converged Access (Broadband Backup)

The converged Gamma SIP Trunks service will be provided on two routed ports, as standard. One customer-side port will be provided for a dedicated Gamma SIP Trunks VLAN and a second port for a dedicated internet access VLAN. If the internet VLAN already exists, this will be utilised to provide the service. The use of dot1q trunks on a single physical port is also supported, if required.

The Gamma SIP Trunks VLAN will be provided on non RFC1918 (public IP range) addressing only. For the internet VLAN, Gamma will provide a subnet for the customers use - a /30 will be allocated as standard. Larger allocations can be made upon request and justification.

Please note that customer own public addressing is not supported.

Horizon Converged Access

Two configurations are available for Horizon with Internet Access:

- One customer-side port will be provided for a dedicated Horizon VLAN. This will be configured with NAT and the Gamma router will provide the DHCP. The second port, a routed port, will be provided for a dedicated internet access VLAN. A subnet for the customers use will be allocated - a /30 as standard. Larger allocations can be made upon justification. A charge will be made for non-standard subnets. Please note that customer own public addressing is not supported.
- A single customer-side port will be provided for both Horizon and internet, presenting a separate dot1q trunk for each. The Horizon trunk will be configured with NAT and the Gamma router will provide DHCP. For the internet trunk, a subnet for the customers use will be allocated - a /30 as standard. Larger allocations can be made upon justification. A charge will be made for non-standard subnets. Please note that customer own public addressing is not supported.

Service Demarcation Boundary

The service demarcation boundary is the customer-side port of the Gamma Customer Premises Router. The partner or end-user will be responsible for the configuration and management of the LAN environment, including, but not limited to the connection of any voice equipment to the service.

Monitoring & Alerting

Gamma will monitor all managed circuits and will alert the partner's appointment contact in the event that a circuit becomes unavailable / unreachable (only). SNMP access to Gamma routers (read-only or otherwise) is not provided to the partner or the customer.

Security (where Backup is not taken)

When deploying a SIP Trunking solution, in line with deploying any service for a customer, security and fraud management should be considered and is the responsibility of the partner. The basics of ensuring that the PBX and associated Voicemail are set with the correct levels of password, and those passwords are regularly maintained, are essential to protecting against the most common toll fraud.

The Gamma service is provided as a private connection, it is not publically routable, which in addition to the above will help minimise the risk of fraud.

Security (where Backup is taken)

The Gamma service is provided as a public connection, it is publically routable which will increase the risk of fraud. Gamma will not be held responsible for fraud occurring due to customers maintaining inappropriate password standards.

Gamma has systems and processes setup to detect fraudulent registrations to our gateways, in the event that partners customers are fraudulent registering due to their service being compromised, Gamma will block that customers service.

Cloud Exchange

Cloud Exchange provides customers with secure dedicated access to Microsoft's Azure and to Amazon's AWS platforms.

Using Cloud Exchange, the customer can ensure they have a resilient, high performance secure connection to their cloud provider. Customers will benefit from using a secure and geographically resilient connection and avoid the need to invest in a dedicated circuit or using public internet services for key application access.

Gamma offers public and private connections to Microsoft Azure and to Amazon AWS:

Microsoft Azure the public and private peering is provisioned using separate routing domains over a single ExpressRoute connection

Amazon AWS; all services are treated as private via AWS Direct Connect through which the customer can establish VPN tunnels to access public AWS services.

A resilient service is established by connecting to dual Gamma Cloud Exchange gateways over which Virtual Circuits are created to enable connectivity from office locations to the Cloud Service Provider. Each customer will be assigned a Primary and a Secondary gateway on Cloud Exchange depending upon location.

Microsoft Azure

Private peering domain is a trusted extension of the customer's core network into Microsoft Azure. Gamma will set up bi-directional connectivity between the customer's core network and their Azure Virtual Networks. This will allow customers to connect to virtual machines and to cloud-hosted services from within their own routing domain.

The customer can privately connect to services hosted on public IP addresses, including the VPNs of their Cloud Service Provider, through the public peering routing domain. If the customer wishes to access Public Azure services over the internet they can use their own Public IP addresses, or they can implement a NAT using the Gamma-provided address which connects the Cloud Interface on their border Firewall to their Gamma CPE.

Connectivity is always initiated from the customer's site to Public Microsoft Azure services. Public Microsoft Azure services will not be able to initiate connections into customer's site through this routing domain.

AWS

In Cloud Exchange AWS services are provided via a single 'Amazon Direct Connect' connection that may contain public and private services. AWS Private Services can be connected directly. However, AWS Public Services require a further step during service establishment.

Customers requiring access to AWS Public Services will need to create a VPN tunnel inside their Private AWS connection.

Connectivity speeds

Gamma Cloud Exchange services are offered with the following connectivity speeds:

Throughput	50 MB	100MB	200MB	300MB	400MB	500MB	1GB
AWS	Y	Y	Y	Y	Y	Y	N
Azure	Y	Y	Y	N	N	Y	Y

Ordering and Provisioning

Customer Pre-Requisites

To connect to Cloud Exchange services via Gamma, the customer must have:

Azure	AWS
An active account is required to set up the ExpressRoute circuit. ExpressRoute circuits are resources within Azure subscriptions. An Azure subscription is a requirement even if connectivity is limited to non-Azure Microsoft cloud services, such as Office 365 services and CRM online, Gamma only guarantees access to Azure	An active account is required to set up an AWS Direct Connect account

Customer Journey

Quotes can be generated using the Ethernet pricing tool using the Gamma Portal.

In confirming service requirements to Gamma, the channel partner must provide their customer's S-Key issued by Azure or Access Key ID issued by AWS. This being the way in which access to their services is associated.

For customers using Azure. This will mean that they must notify Microsoft of the following detail to be provided with the S-Key:

1. Provider = Equinix
2. Peering location = London

For customers using AWS this additional step does not apply as the Access Key ID is already known by the customer.

Gamma will produce a solution design for the requirements given.

Gamma will confirm requirements with the channel partner and, subject to acceptance, will initiate ordering process.

Gamma Provisioning will create the Virtual Connection (VC) using the service key provided.

The provision team will complete the handover and inform the channel partner of the required detail they need to complete the customer set-up with the service provider.

Monitoring and Alerting

Gamma monitors the physical interconnection using the Highlight monitoring platform. Highlight monitors both the Cloud Exchange connections as well as each customer's individual connections. Monitoring is at the (Ethernet Flow Point) exit from our network.

The channel partner can define who will receive Highlight reporting on the Availability and Throughput of each of their Cloud Exchange connections. The customer will see an additional Highlight watch for each of the primary and secondary links to the Cloud Exchange Gateways and for each of their possibly multiple Cloud Service connections. For a customer who has one Cloud Exchange connection, Highlight will show two watches for a customer with two, it will show four, etc.

For more information on using the Highlight Monitoring service please see the Gamma Academy courses.

Cloud Service Provider Service Levels and Support

Gamma does not provide the Cloud Services or support of AWS or Azure services as part of the Gama Cloud Exchange product.

Support of any Microsoft Azure is provided to the customer by Microsoft as part of a separate customer relationship with Microsoft (or other third party). Service availability levels and response times must be requested from Microsoft.

Support of Amazon Web Services is provided to the customer by AWS as part of a separate customer relationship with AWS (or other third party). Service availability levels and response times must be requested from AWS.

AWS and Azure services are billed directly to the customer by the Vendor. This includes any charging for data downloaded over this connection that may be part of the customer's contract with the vendor(s).

Point to Point

Gamma will provide managed and wires only Point to Point access circuit via BT Wholesale and Virgin.

The managed option will be supplied with a switch at each end of the circuit and an ADSL line at one of the sites for the monitoring and support of the service.

The circuit will be provided as Layer 2 service, should Layer 3 functionality be required then the customer would be required to deploy a routed overlay independent of this solution.

IP Telephony and Internet Services

Should a customer wish to route either internet access or one of Gamma's IP Telephony services to either site of the Point to Point connection then a separate access service will be required in to at least one of the two sites. This can be shared with the other site across the Point to Point link. The configuration of any layer 3 routing and additional layer 2 requirements across the Point to Point circuit are not the responsibility of Gamma and will have to be setup and managed by the Partner.

Ethernet Resilience Options

A resilient backup solution offers your end customer the assurance of enhanced service availability levels for the onward support of business-critical applications and high protection against unforeseen network incidents meaning they can focus on running their business.

We have a range of backup options for increasing the resiliency of your primary service. The available primary and secondary access types are detailed within this section.

Where voice is taken, we will choose the most suitable form of backup and offer backup of all calls from the primary. Internet access will be supplied as best efforts until the primary service is restored.

Please note: All resiliency solutions must be taken as part of a managed service and as such are not available as a wires only service.

Backup Access Options

Primary Access Service	Secondary Access Service	Availability % (Internet Only)	Availability % (Inc. SIP Trunks)
Ethernet	None	99.9%	99.94%
Ethernet	Broadband	99.93%	99.97%
Ethernet	Ethernet	99.99%	99.99%

Note: FTTC Ethernet is not currently available as a backup to either Fibre Ethernet or EFM.

Broadband Backup

Broadband backup is a simple means of providing resilience to your Ethernet circuit. This includes the automatic backup of voice and data traffic from the primary to the secondary in the event of a primary link failure. Broadband backup is only available where the primary Ethernet connection is Fibre.

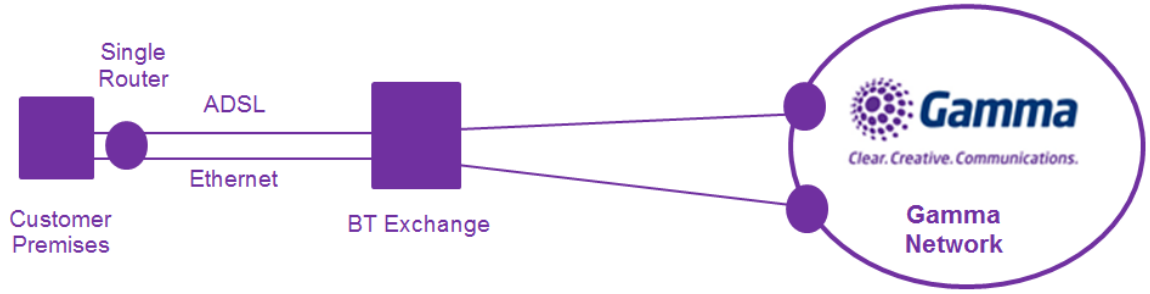
The broadband line will terminate into the same router and if the Ethernet circuit drops then the broadband access will provide data to devices connected to the router's LAN (Local Area Network) ports.

Gamma offer two variants of Broadband backup FTTC (Fibre to the Cabinet) or DSL (Digital Subscriber Line), this is dependent on your preference and availability to your customer's premise.

Note: Broadband back up for EFM (Ethernet for the First Mile) or FTTC GEA (Fibre to the Cabinet Generic Ethernet Access) is no longer available as they will use the same underlying infrastructure.

FTTC is available in 40/10Mb or 80/20Mb variants and DSL is 24/1.3Mb, these are maximum possible download/upload speeds and the connection of your speed will vary depending on a number of factors including distance from the exchange.

It should be noted that if your Ethernet circuit has a bandwidth usage that is greater than your download/upload speeds of your broadband circuit and your Ethernet circuit drops connection some of the demands of your customer's network may not be met.



Ethernet Backup

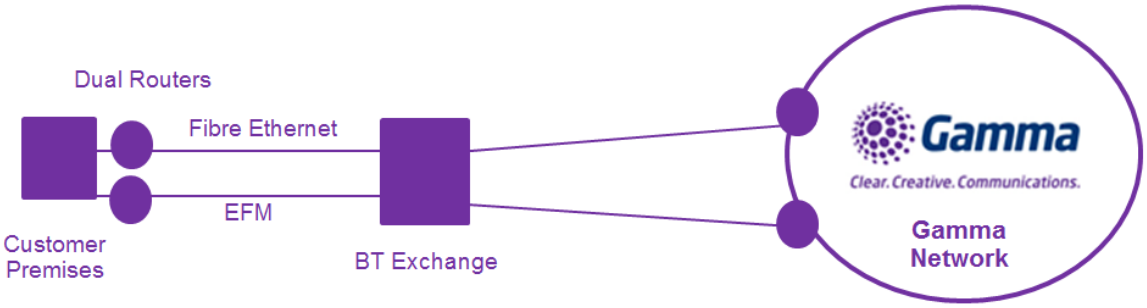
There are three forms of standard Ethernet Backup available for our 100Mb and 1Gb Fibre services. These are an EFM or separate Fibre Ethernet service terminating into a secondary router onsite or at a nearby site (150m max radial distance).

If you decide to install a secondary Ethernet circuit which is EFM to provide backup to your Fibre service this is a separate technology type and may use separate infrastructure back to our supplier's networks (but this cannot be guaranteed).

If you decide to Ethernet Fibre service to your customer's premise(s) there are two further variations Gamma offer which can provide an additional layer of resilience for your end user.

EFM as a backup

This option offers two Gamma routers, two NTE's (Network Termination Equipment), a Fibre Ethernet and an EFM service routed to the same exchange with termination on to separate Ethernet switching equipment. This includes the automatic backup of voice and data traffic from the primary to the secondary in the event of a primary link failure. The service is terminated into two geographically separated network nodes on Gamma's network.



Carrier Diversity

This is where one of the Ethernet circuits is provided by Virgin or Gamma CityFibre and one is provided by one of our other suppliers (BT Wholesale, TalkTalk Business or Gamma Openreach) where the underlying carrier is Openreach. Due to Virgin and CityFibre having their own National Ethernet Network (MetroNet) this means Virgin and CityFibre's own network is diverse to that of a supplier which use Openreach, additionally Virgin and CityFibre have their own local exchanges (MetroNodes) which are diverse to Openreach.

Please note: Virgin, CityFibre and Openreach can utilise the same external infrastructure (ducting etc) and lead in points to sites. As Gamma order these circuits separately via separate suppliers we have no control over the routing of the circuits themselves and cannot obtain information about external routes (from the customer premises) which your circuits take from the customer premise to our suppliers exchanges.

RAO2 Diverse Plus

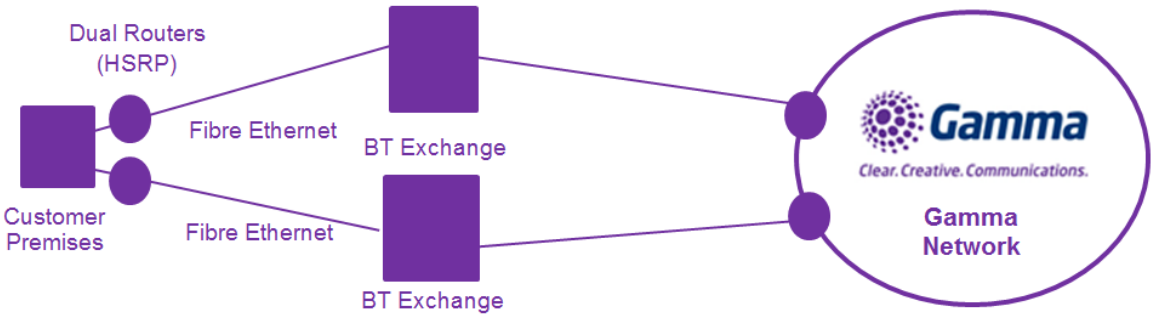
This is where Gamma order two resilient Ethernet Fibre services from BT Wholesale (RAO2). Our suppliers will attempt to deliver the services as diversely as possible to your customer(s) site(s). Additionally we will request a route map as default at the point of order so that we can physically see how the service is planned back to the exchange(s). Our suppliers will always attempt to use separate exchanges, ducting and leads in however where this is not possible Gamma will provide detail of where the "pinch point" is and we will ask you and your customer to review and accept/reject the outlined pinch point.

Resilience Presentation

Gamma offer two types of resilience presentation; Active/Active or Active/Standby (Passive), the option you choose will depend on your customers' requirements and how you/they want to set up their LAN.

Active/Standby (Passive) Backup

This is where the customer has two routers onsite and one Ethernet service acts as the primary active Ethernet circuit and in the event that there is a connectivity issue then the secondary circuit will provide temporary access. The two Gamma routers will connect via a LAN cable (customer provided) and will operate in HSRP (Hot Standby Routing Protocol) mode facilitating the automatic backup of voice and data traffic from the primary to the secondary in the event of a primary circuit failure.

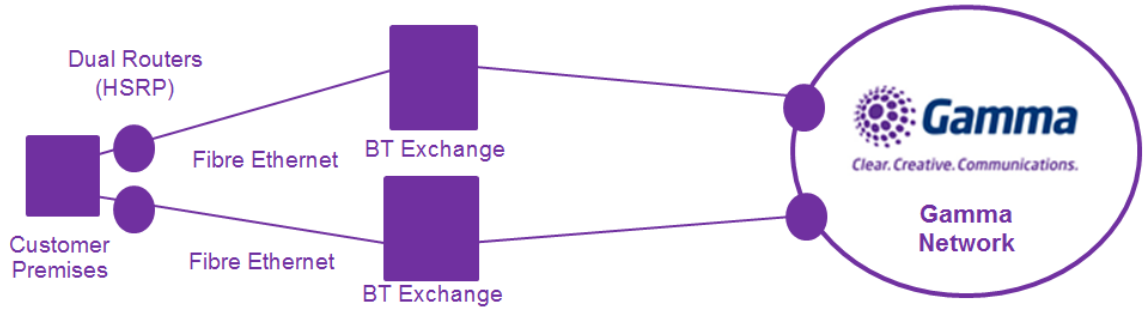


Active/Active Backup

This is using two diversely routed Fibre Ethernet connections (RAO2/Diverse Plus) of same speed, routed via different exchanges terminating on two NTEs. This uses two routers on customer site and traffic is split across them. The two routers will be connected via a LAN cable (customer provided) and will operate in MHSRP (Multigroup Hot Standby Routing Protocol).

In the event that one circuit goes down then the secondary router has the capability to provide connectivity between Gamma's network and your customer's LAN in the same manner as the two circuit connection.

Please note: Broadband Backup cannot be setup on an Active/Active basis.



Call Limits for the backup of voice calls (SIP and Horizon)

The table below displays the number of calls that will be prioritised upon backup to the secondary service. The service is configured so that all calls will automatically backup from the primary to the secondary connection.

Backup Option	Voice Only or Converged Primary	Max Channels
ADSL 2+ / Max	Converged	5
ADSL 2+ / Max	Voice only	10

Backup Option	Voice Only or Converged Primary	Max Channels
ADSL - Annex M	Converged	10
ADSL - Annex M	Voice only	15
FTTC Broadband	Voice only & Converged	60
EFM	Voice only & Converged	60+
Fibre Ethernet*	Voice only & Converged	60+

* Fibre Ethernet backup is currently only available where the service is supplied by BT Wholesale.

Gamma SIP Trunks backup details

Where Gamma SIP Trunks over Ethernet is taken with a Broadband based secondary service, the Gamma SIP Trunks are built using the standard design.

SIP trunks built in either 'Active/Standby', 'Load share' or 'Resilience+' mode are available only where both the primary and secondary services are Ethernet based.

Addition of Resiliency to live Services

It is possible to add a secondary service as a resilient backup to an existing primary service. There will be a combination of a one off cost and ongoing rental charges. As there are a number of variables involved including primary access type, availability of secondary service types, existing router and additional router requirements, please view the price list on Knowledge base. An appointment will also need to be confirmed by our Delivery team upon receipt of your request.

Please submit your request to EthernetOrders@gamma.co.uk using the Ethernet Service Change Form.

Pricing

New orders

Pricing for the following options is obtained via the Ethernet Pricing Tool on the Gamma Portal;

- Any Ethernet with or without ADSL2+ (inc. Annex M and MAX) or FTTC Broadband backup
- Fibre Ethernet with EFM backup (quote each service individually and add both costs together)

The below options should be requested via email to quote@gamma.co.uk;

- Fibre Ethernet with Fibre Ethernet backup (Active / Passive) currently only available via BT Wholesale.
- Fibre Ethernet with Fibre Ethernet backup (Active / Active) currently only available via BT Wholesale.

Increasing the number of calls to an existing voice enabled Ethernet service

Where an existing service includes a secondary backup connection, there will be a combination of a one off cost and ongoing rental charges in order to increase the number of calls. Such changes may require an upgrade of the secondary link to accommodate the increase in calls. This will be subject to availability and confirmed at the submission of the upgrade. Pricing should be obtained via email to quote@gamma.co.uk.

Limitations of Ethernet Resilience options

ADSL2+, Annex M, MAX and FTTC Broadband Backup

The following limitations apply to the provisioning of these backup services;

- Simultaneous provide is not supported
- The WLR line over which the backup service will operate must already be installed
- The WLR line must be within two metres of the router and primary service installation point
- Where this backup is taken as a secondary service to EFM, it is likely that both services will share the same route to the local exchange. This is because both services operate over copper that is provided within the same duct. FTTC backup will however terminate on different equipment in the exchange and across Gamma's network.
- These services are only available on Fibre Ethernet 100Mb not 1Gbps Fibre Ethernet for performance suitability reasons. Any service operating at over 100Mb and/or running over a 1Gbps services should be backed up using an Ethernet based secondary circuit.
- This backup option is based on underlying Broadband technology and as such does not come with the same guaranteed service levels as Ethernet. If the requirement is for a guaranteed secondary service then a secondary Ethernet service should be considered.

Fibre Ethernet with EFM Backup

The following limitations apply to the provisioning of these backup services;

- Both services will terminate in the same exchange as it is not possible to route to different exchanges (please use Fibre with Fibre backup for this requirement)
- This solution is currently not supported on the order portal so must be ordered via CRF.

Fibre Ethernet with Fibre Ethernet Backup

The following limitations apply to the provisioning of these backup services;

- Actual achievable diversity of both Fibre connections will only be confirmed following a site survey.

- Customer will have option not to proceed if a shared route (or partial shared route) without incurring any cost.
- This solution is currently not supported on the order portal so must be ordered via CRF.

Note: FTTC Ethernet is not currently available as a backup to either Fibre Ethernet or EFM.

MTU Sizes

The maximum IP MTU packet that is supported is 1500 bytes. The minimum MTU packet size is 64 bytes.

Pricing Tool

Gamma provides an online pricing tool as a part of the Gamma Portal. The pricing tool gives instant quotes for single site solutions which include both the Ethernet and voice components. Pricing from all available carriers is displayed that meet the requirements defined by the user. With regards to Broadband Backup, the pricing tool selects the most suitable backup option based on your voice and data requirements.

ADSL/FTTC Broadband Backup pricing is subject to availability which will be displayed separately. All quotes can be stored and downloaded (excluding manually generated quotes requested via the quote@gamma.co.uk email address).

Ordering Service

All Ethernet Services are ordered online by logging on to the Gamma portal and raising an order against any existing quote reference. The portal captures all the information needed to place an order – all received portal orders are reviewed and validated before services are ordered with our supplier.

Before submitting an order you will be required to confirm acceptance of the Gamma Ethernet and Broadband (where Broadband backup is taken) Terms and Conditions.

Exclusions to this are services to Data Centres, Resilient Ethernet (diversely routed Fibre to Fibre and Fibre to EFM) and any bespoke orders which must be quoted by emailing quote@gamma.co.uk and ordered by sending the CAE quote reference for the required service to EthernetOrders@gamma.co.uk.

Resilient SIP Trunk builds, SIP Trunks for Hosted Providers (IPHC) or any non-standard SIP builds must be ordered using our Excel based Customer Requirements (CRF) which must be requested from our IP Orders Team.

Once an order has been validated and accepted, ordering activities will follow the target as set out in the Service Level Agreement below.

NTE Installation

Site Visits

We will contact your nominated contact in order to agree a date for the initial site survey. On the agreed date, an Openreach engineer will visit the customer site to conduct the survey.

Where an appointment is made for the site survey and the visit cannot be successfully completed due to lack of access to the site or the appointment being broken by the end customer, an aborted site visit charge will be raised.

When issued with the site survey date, it must be agreed by the partner within 2 days of notification by Gamma. If not, the offered date will automatically be fixed and in the event that the appointment is broken, a charge will be made for an aborted site visit.

Site visits do not apply to FTTC Ethernet.

Fibre Ethernet NTE

The Fibre Ethernet Network Terminating Unit, installed by Openreach, has the following specification:

- It may stand alone, be wall mounted or be rack mounted in a standard 19" cabinet and is 1U high.
- Dimensions: 439mm x 44mm x 270mm (W x H x D)
- Power Supply: Choice of 48V DC or
- 2 * 50Hz AC 13amp power sockets are required running off the same phase
- Power Consumption 50 Watts

The temperature and humidity range of the environment used to house the NTE must not exceed the following:

- 0 to 40 degrees Celsius and humidity range of 0 to 90% non-condensing

For installation a minimum of two 13 amp AC outlets will be required for each NTE. The installing engineer will require access to further sockets for test equipment and commissioning. The customer is responsible for the power supply and arranging alternative power supplies if any temporary supply fails. The customer may be liable for payment of abortive visit charges if an engineer is required to attend site as a result of a failure of a power supply. Installing engineers may refuse to install equipment if they perceive a hazard or risk.

The Fibre Ethernet Network Terminating Unit, installed by CityFibre, the following is required for installation:

- Sufficient space for a 2U NTE with 230v mains power (applies only to 1Gb bearer)
- Sufficient space for an ONT with 230v mains power

Copper (EFM) NTE

- It may stand alone, be wall mounted or be rack mounted in a standard 19” cabinet and is 1U high
- Dimensions: 216mm x 35mm x 197mm (W x H x D)
- Power Supply: 1 * 50Hz AC 13amp power socket is required
- Power Consumption 12 Watts

The temperature and humidity range of the environment used to house the NTE must not exceed the following:

- 0 to 40 degrees Celsius and humidity range of 0 to 90% non-condensing

For installation only one 13 amp AC outlet will be required for EFM NTE. The installing engineer will require access to further sockets for test equipment and commissioning. The customer is responsible for the AC power supply and arranging alternative power supplies if any temporary supply fails. The customer may be liable for payment of abortive visit charges if an engineer is required to attend site as a result of a failure of a power supply. Installing engineers may refuse to install equipment if they perceive a hazard or risk.

Gamma-Provided Router Installation

Gamma will always supply a router for services requiring Gamma SIP Trunks or Horizon, and all managed internet access circuits - we will use the Cisco ISR series of routers. The actual router model provided will vary according to the service ordered and will be shipped to the installation site in advance of the circuit installation.

The partner is responsible for the installation of this router and must have the necessary installation skills.

Typically the router:

- May stand alone, be wall mounted or be rack mounted
- Dimensions will vary according to model
- Power supplies will vary according to model (either 1 or 2 x AC, not all models will accept DC)
- Power Consumption will vary according to model

The temperature and humidity range of the environment used to house the NTE must not exceed the following:

- 0 to 40 degrees Celsius and humidity range of 0 to 90% non-condensing

For installation, two 13 amp AC outlets and three 13 amp AC outlets for routers with a resilient power supply will be required. The customer is responsible for the AC power supply and arranging alternative power supplies if any temporary supply fails. The customer may be liable for payment of abortive visit charges if an engineer is required to attend site as a result of a failure of a power supply. Installing engineers may refuse to install equipment if they perceive a hazard or risk.

Onsite Router Installation Service (Optional)

This service enhancement is optional and can be chosen to eliminate the challenges you face due to limited IT resources, geographic location and expertise. All installs are conducted by Cisco accredited engineers, who configure, connect and ensure your connectivity is fully operational before leaving site.

The Onsite Router Installation is a chargeable and optional extra service feature that can be selected during the order stage on both the Gamma Portal for Internet Access or Converged orders and within the CRF for Data Centre, Resilient or any bespoke services.

The Installation Service is available within the UK and Northern Ireland with the exception of Kingston upon Hull, Isle of Man, Isles of Scilly and the Channel Isles.

The Installation Service shall be performed between the hours of 09:00 to 17:30, Monday to Friday excluding public holidays. Any installations outside of these hours will be subject to an out of hours charge. Charges are generated on a per visit basis and will also apply to visits made to add or replace a new router to a live Ethernet service for e.g. where ADSL Backup is added to a live Ethernet service.

The Partner is responsible for connecting the Gamma engineer installed router to the end users Local Area Network (LAN).

The installation tasks will include:

- Configuration of the router by default to act as a terminating device to the Ethernet Service.
- the installation and configuration of the proposed router appliance(s)
- the allocated installation period is up to 3.75 hours
- any bespoke requests as agreed in a Project Managed delivery
- connect cable between Gamma CPE and Gamma NTE
- the performance of operational tests to check connectivity between the Gamma network and the router
- contact Gamma TSC Data Team to check connectivity and management, monitoring exist setup
- where appropriate, the setup of additional resilience (dual routers)
- labelling of the router, power lead and cat-5 cable to the Gamma NTE
- Remove all packaging and ensure site is left as found

Out of scope;

- Connection of Gamma supplied router to the End User Local Area Network (LAN)
- Any work or support of devices on the End User LAN

Support & Business Hours

Please refer to the Gamma Customer Services Plan, held on the Gamma Portal under Partner Info.

Contract Options & Invoicing

Three term contract options are available to all partners: one year, three year and five year. All three and five year contracts are provided with a free installation and with a discounted monthly charge.

Gamma invoices for all services one month in advance and from the 1st of every month. For services installed mid-month, a pro-rated rental charge is raised to cover the date of install to the end of the month. We will invoice you as a part of the main, monthly invoice and a separate electronic back up file will also be issued.

End-user Insolvency

Gamma no longer provides an End-user Insolvency Promise.

Service Level Agreement

Gamma will use reasonable endeavours to comply with the Service Levels set out in this section. Gamma shall not be liable for any failure to achieve this Service Level Agreement save for the scenarios explicitly referred to herein.

Service Demarcation

For all services, with the exception of wires-only internet access, the service demarcation point is the LAN-side port/ports of the Gamma customer premises router. For wires-only, the service demarcation point is the customer port of the Network Terminating Equipment ("NTE").

Service Levels

Availability

The Ethernet Service can be used to deliver internet access and/or IP telephony services. Different network architectures are used to deliver each of these services.

- When provisioned as or regraded as internet access only each Ethernet circuit will be available for 99.9% of any given calendar month;
- When any Ethernet circuit is provisioned as or regraded with an Ethernet backup circuit, the service will be available for 99.99% of any given calendar month
- When any Ethernet circuit is provisioned as or regraded with an xDSL or FTTC Broadband backup, the service will be available for 99.93% of any given calendar month
- When any Ethernet circuit is provisioned as or regraded for IP telephony services only or Converged internet and IP telephony each Ethernet circuit will be available for 99.94% of any given calendar month as standard or 99.97% (with Broadband Backup).
- When any Ethernet circuit is provisioned as or regraded for Cloud Exchange each Ethernet circuit will be available for 99.94% of any given calendar month as standard or 99.9%.

The following shall not be included when calculating the above service level(s):

- Outages or delays which are deemed by Gamma, in its sole opinion acting reasonably, to be the result of matters outside its direct control
- Outages or delays which are a result of a WLR3 fault that affects the availability of the FTTC Ethernet/Broadband service
- Planned or notified maintenance whether in response to an emergency or otherwise.
- Support of any AWS and Azure services are provided directly by the vendor and as part of their existing relationship with the customer. Service availability levels and response times must be requested from the vendors

Availability is calculated as:

(Total number of minutes in the measurement period – Unplanned Downtime) x 100

Total number of minutes in the measurement period

Performance

The performance measures below are for the end-to-end primary Ethernet service, from the Gamma core network (source) to the service demarcation point. The performance is specific to the Ethernet Carrier.

	BT Wholesale/Gamma	Virgin Media
Latency (Source to Destination)	<15ms	<30ms
Packet Loss	<0.2%	<0.1%
Jitter (Source to Destination)	<5ms	<8ms

Provisioning

Gamma will use reasonable endeavours to:

- Notify the Company within 2 working days after the receipt of a CRF and Order Form as to the acceptance or rejection of the CRF and Order Form;
- Notify the Company within 16 working days after the acceptance of a CRF and Order Form of the results of the site survey, whether or not service can be delivered and advise of any Excess Construction Charges;
- Notify the Company within 18 working days after the acceptance of a CRF and Order Form of the amount of Excess Construction Charges payable (if any), the Contractual Delivery Date (24 working days) and the preferred installation date for the circuit;

To make services (Ethernet and chosen backup option) live:

- For FTTC Ethernet, within 20 working days after the acceptance of a CRF and Order Form
- For copper Ethernet, within 30 working days after the acceptance of a CRF and Order Form
- For Fibre Ethernet, within 60 working days after the acceptance of a CRF and Order Form; and
- Terminate a service on the date requested by the Company provided that the Company has given Gamma no less than 60 days written notice.

Service Level Guarantee

Provisioning

Gamma will activate the service by 23:59 on the Installation Date.

For managed internet access and services supporting Gamma IP telephony, the installation of a Gamma router is required for the full connectivity to the Gamma network. This installation occurs on or after the Installation Date.

If Gamma does not activate the service by 23:59 on the Installation Date, then the Company shall be eligible to claim compensation (subject to the exclusions in Section 17.4 below) in accordance with the following table:

Number of working days or part thereof activation is beyond the Installation Date	Compensation Entitlement - reduction in the connection charge for the circuit
1-10	5%
11-15	10%
16-20	15%
More than 20	20%

Connection charges for any other Gamma product associated with the service are be excluded from the calculation of the compensation entitlement.

Fault Handling

Gamma will make available this fault handling service 24 hours a day and 7 days a week including Public and Bank Holidays for Converged Ethernet Services (excluding any Wires Only Services which shall have the service outlined in Section 17.5)

All faults will be validated when reported and subsequently classified as below by Gamma:

- **Priority 1** - Total loss of service (hard down or no transmission in one or both directions)
- **Priority 2** – Service is available, but either reduced functionality or degradation is creating a significant business impact for the End User
- **Priority 3** - Service is available, but either reduced functionality or degradation is being experienced by the End User without any significant business impact for the End User

For Priority 1 faults Gamma will resolve the fault within 6 Clock Hours (as defined below) from a validated fault, or, for Copper Ethernet and FTTC Ethernet, 8 Clock Hours from a validated fault.

For Priority 2 faults Gamma will resolve the fault within 1 working day from a validated fault.

For Priority 3 faults Gamma will resolve the fault within 3 working days from a validated fault.

Clock Hours are defined as the time between the Start Time and Stop Time, excluding Parked Time, where:

- Start Time means the time a fault has been validated and categorised by Gamma as a Priority 1 fault
- Stop Time means the time Gamma deems that a fault has been resolved
- Parked Time means the time during which the resolution of a fault is outside of Gamma's control

For Priority 1 faults only, if Gamma does not resolve a fault on a circuit within the relevant timeframe set out above, then the Company shall become eligible (subject to any exclusions in Section 17.4 below) to claim compensation in accordance with the following table:

Measurement	Compensation Entitlement - reduction in monthly circuit rental
Each hour or part hour beyond the target fault clearance time	10% of the monthly rental for the Ethernet circuit affected only

Credits will be applied on a per fault basis and will be capped at an aggregate of 100% of the monthly circuit rental in any given calendar month.

Where a backup service is taken and in the unlikely event that both the primary and secondary services are not working the focus of the support team will be to get the primary link back in to service. Effort will therefore be applied to this and not to fixing the secondary service. The ADSL/FTTC backup circuit comes with a Standard Care level of support. For the avoidance of doubt, this means that Gamma will deem the Stop Time in accordance with the above definition to be calculated with reference to the availability of the Primary Circuit only.

Bandwidth utilisation graphs are not available for the secondary Broadband connections.

Claiming Compensation

Compensation can be claimed by raising a billing query in the manner outlined on the Gamma portal from time to time against the invoice to which the Company considers such compensation is due.

Exclusions from Service Levels and the Service Level Guarantee

The Company shall not be entitled to claim compensation under this Service Level Agreement or Service Level Guarantee if:

- the failure by Gamma is due to the Company's, its Customer's or its End User's own network or equipment or any other third party network or equipment (including but not limited to the internet)

- the Company is in breach of any part of its Supply Agreement and such breach affects Gamma's ability to comply with the service level and/or service level guarantee or if Gamma's underlying service provider suspends the service or any part of it as a result of any such breach;
- through no fault of its own or because of circumstances beyond its reasonable control, Gamma is unable to carry out any necessary work at, or gain access to the Company's, its Customer's or End User's site or the Company fails to agree an appointment date or planned work is aborted (save at Gamma's request);
- reasonable assistance is required or information is reasonably requested by Gamma from the Company, its Customer or End User or a third party and such assistance or information is not provided or is not provided in a timely fashion;
- through no fault of its own, Gamma is unable to obtain any necessary permissions or consents required in connection with the performance of a particular service level or service level guarantee;
- the failure is due to Force Majeure or some other event outside Gamma's reasonable control;
- the failure is due to a planned or emergency service interruption;
- the failure is due to an inaccurate Order Form having been submitted;
- a fault is not reported in accordance with the fault reporting procedures contained in the prevailing Gamma Customer Service Plan; or
- The Company, its Customer or End User has failed to implement any reasonable and explicit instructions issued by Gamma in relation to the service.
- The fault handling resolution times for FTTC Ethernet do not include any time taken to first resolve any WLR3 faults affecting the availability or performance of the FTTC Ethernet service. The Start Time will commence from the time that it is established by Gamma that the WLR3 line is in working order and is not affecting the FTTC Ethernet service.
- FTTC Ethernet downstream speed related claims will only be accepted for speeds performing slower than the purchased speed where the purchased speed is 20Mbps or less. Upstream claims will only be accepted for speeds performing lower than the purchased speed up to a maximum of 20Mbps.

Wires-Only Service

Services provided to the reseller without a Gamma-supplied and managed customer premises routers are known as 'wires-only' services. These services are subject to the exclusions set out in section 15.4 and in addition to this, as they are not provided as managed services and therefore have a reduced Service Level Agreement, as set out below:

- For a wires-only service, the service demarcation point is the customer port of the Network Terminating Equipment ("NTE");
- The service levels set out in paragraphs 17.2.1 and 17.2.2 above apply to the Gamma core network only;

- In the event of a fault it is incumbent on the Company to demonstrate that the fault lies with the Gamma Ethernet Service and not externally. If both parties agree this to be the case the fault is deemed to be validated and Gamma will resolve the fault within the timescales set out in paragraph 17.3.2 above. The compensation entitlement set out in that paragraph (subject to any exclusion in 17.4) will apply to any failure by Gamma to resolve the fault within such timescales.

Cancellation charges

Cancelling a circuit prior to installation will incur charges outlined in the following section. These vary depending on the access type, underlying carrier and stage of the installation process excluding any terminated due to Excess Construction Charges.

FTTC Ethernet

Flat rate of 11.5% of Connection Charge

EFM

Working days before Contractual Delivery Date	% of Connection Charge on a one year term
6 or less	91.5%
7 - 10	76.5%
10 - 12	61.5%
13 - 14	31.5%
15+/No CDD	11.5%

Fibre

	% of Connection Charge on a one year term
Less than and not inclusive of KCI 2	10%
KCI 2 to KCI 3	50%
greater than KCI 3 (e.g. KCI+1day)	100%

Support & SLA's

We know that there are times when you will need to contact our support teams, with that in mind we have created a digital customer service plan. This has been designed to be able to give you an easy way of getting the contact information you need for the relevant team, so by selecting the query and then the product you will be presented with all the contact details you should need.

The digital customer service plan can be accessed via the landing page of the Gamma Portal, the digital customer service plan is dynamic and will give you the correct contact details for the team you need dependant on the time of the day.

The Gamma Academy helps our partners maximise their knowledge of Gamma's products and deliver the most effective service to customers. Features include:

- Interactive online training hub with bite-sized material
- Video tutorials, eLearning courses, step-by-step training guides
- Allows partners to create learning plans and monitor their teams progress
- Intelligently recommends relevant training to individual users
- Allows partners to earn badges for successful completion of training courses

The Gamma Academy can be accessed from the Landing page of the portal using the Tagged Links section.

SLAs

We have included the SLAs for all our products as for ordering and fault you may have dependencies for your customers.

Ordering

All timelines are from receipt of a fully validated order from the Channel partner via the Gamma portal. Time lines exclude any activity that requires site survey, non-gold addresses or installations that require additional line plant. Timelines are subject to supplier engineer availability, failure to meet the guidelines below will not result in any financial compensation. All timelines are in business days.

Product	Order or Change Type	Target Provision Timeline
CPS	CPS only	10 days
CPS	WLR & CPS	48 hours
WLR	PSTN installation	5 days
WLR	PSTN with simultaneous broadband	7 days
WLR	ISDN2	10 days

Product	Order or Change Type	Target Provision Timeline
WLR	ISDN30	20 days
Horizon		5 days
IPDC – automated orders	V 2	24 hours
Voicemail to email		5 days
IPDC – automated orders		24 hours
New IPDC Resilient endpoint build		10 Days *
New IPIC Build		5 Days *
Single SIP with Gamma Ethernet		5 Days **
Broadband		10 days
Router replacement (due to fault)		1 day (if received before 2pm)
Reseller to reseller migrations	All bar broadband which follows standard product provision lead times	10 days (3 days' notice provided to losing reseller)
Product to product migrations	All bar broadband (N/A)	3 days
Ethernet	Copper Ethernet	Within 30 days after the acceptance of a Customer Requirements Form and Order Form
Ethernet	100Mb Fibre Ethernet (BT Wholesale supplied)	Within 60 days after the acceptance of a Customer Requirements Form and Order Form
Ethernet	100Mb Fibre Ethernet (Virgin Media supplied)	Within 80 days after the acceptance of a Customer Requirements Form and Order Form
Ethernet	1Gb Fibre Ethernet (BT Wholesale supplied)	Within 80 days after the acceptance of a Customer Requirements Form and Order Form
Ethernet	1Gb Fibre Ethernet (Virgin Media supplied)	Within 90 days after the acceptance of a Customer Requirements Form and Order Form
Ethernet	FTTC	Within 20 days after the acceptance of a Customer Requirements Form and Order Form
Converged Private Networks - Firewalls	Firewall - Access Rules	2 days
Converged Private Networks - Firewalls	Firewall - Client VPN (SSL VPN/IPsec VPN)	5 days
Converged Private Networks - Firewalls	Firewall - URL Filtering (blacklist / whitelist)	2 days
Converged Private Networks - Firewalls	Firewall - Anti-Virus	2 days

Product	Order or Change Type	Target Provision Timeline
Converged Private Networks - Firewalls	Firewall - Malware Protection	2 days
Converged Private Networks - Firewalls	Firewall - File Blocking	2 days
Converged Private Networks - Firewalls	Firewall - Emergency Changes (those deemed to prevent a critical impact to service)	***4 hours
Mobile – 8am – 6pm Mon – Fri (excluding public holidays)	MSISDN Port in	Next working day (once PAC provided)
Mobile – 8am – 6pm Mon – Fri (excluding public holidays)	Request PAC	24 hours
Mobile – 8am – 6pm Mon – Fri (excluding public holidays)	Tariff or Bundle change	24 hours
Mobile – 8am – 6pm Mon – Fri (excluding public holidays)	Replacement SIM	Next Working day (if reported by phone within standard UK business hours before Mid-day)
Mobile – 24/7	Request PAC	4 hours
Cloud Compute	Self-Serve Budgetary Quote	N/A
Cloud Compute	New Service Build Request	5 Working Days****
Cloud Compute	Standard Service Request	2 Working Days
Cloud Compute	Standard Change Request	2 Working Day
Cloud Compute	Non-Standard Change Request	5 Working Days
Cloud Compute	Emergency Change Request	4 Clock Hours

*Number of working days from the CRF being accepted and approved by Gamma Solutions Delivery.

** SLA is to deliver the SIP trunks once the Ethernet service has been delivered, fully tested and live.

*** Emergency changes should be raised by telephone in to our Firewall Engineering Team and are performed at customers own risk.

**** Dependent on complexity and any 3rd Party Requirements

Faults

Please note that the following table excludes service requests and is based on the assumption that the incident has been successfully reported by telephone to the appropriate Gamma department. There are some exceptions to this model, for example WLR and Broadband faults are logged on the WLR or Gamma portal direct by the Channel Partner. In this scenario, only escalations would be reported by telephone to the service desk.

All resolution timescales are based on delivery of either full resolution or workaround, and any issue requiring significant product development will follow service request principles. For faults that

Gamma need to hand off to external suppliers, the following SLAs may not apply, although the target resolution timeline will still be our aim. Failure to meet the guidelines below will not result in any financial compensation with the exception of Gamma Converged Private Networks (CPN). For details of CPN service level guarantees and associated service credits please see the service description available on the Gamma Academy Knowledgebase. All timelines are in working days, unless otherwise stated.

Product	Priority/Care Level	Target Resolution Timeline
CPS	CPS only	2 days
CPS	WLR & CPS	Dependant on WLR care level, see below
WLR	Care level 1	Close of play next working day +1, Mon - Fri
WLR	Care level 2+	Clear by end of next working day Mon – Sat
WLR	Care level 3	Cleared within 24 hours Mon – Sun including holidays
WLR	Care level 4	6 hour repair, 24 hours a day 365 days per year
Mobile	Critical - Total loss of service across entire mobile operator base	8 hours
Mobile	High - Total loss of service >200000 subscribers	10 hours
Mobile	Medium - Total loss of service 2000 – 199000 subscribers	26 hours
Mobile	Total loss of service/degraded service < 2000 subscribers	74 hours
Mobile	Service request	5 days
Mobile – 24/7	Critical - Total loss of service across entire mobile operator base	8 hours
Mobile – 24/7	High - Total loss of service >200000 subscribers	12 hours
Mobile – 24/7	Medium - Total loss of service 2000 – 199000 subscribers	24 hours
Mobile – 24/7	Total loss of service/degraded service < 2000 subscribers	72 hours
Mobile – 24/7	**Loss of voice or data service within the UK	*72 hours
Mobile – 24/7	**Intermittent disruption to voice or data service within the UK	*72 hours
Mobile – 24/7	Loss of voice or data service outside of the UK	N/A
IP Telephony (includes Horizon, Inbound (Business Continuity), SIP/IPDC, Communicator)	Critical Fault - Loss of service - Multiple resellers/services affected	4 clock hours
IP Telephony (includes Horizon, Inbound (Business Continuity), SIP/IPDC)	High - Loss of service - single reseller or service	8 clock hours

Product	Priority/Care Level	Target Resolution Timeline
IP Telephony (includes Horizon, Inbound (Business Continuity), SIP/IPDC)	Medium - Disrupted service - multiple or single reseller or service	3 working days
IP Telephony (includes Horizon, Inbound (Business Continuity), SIP/IPDC)	Low - Single number destinations/QOS	7 working days
Broadband	Business Care (and all Assured)	22 clock hour fix. This is a chargeable option and operates 24 hours a day, 7 days a week (including UK Public and Bank Holidays). Please note that clock hours run during the time the fault is in Gamma's control. Where a fault is with the partner the clock stops and only restarts when passed back to Gamma. Broadband services that have purchased Enhanced Care service must be aware that 'out of hours' (see above) Engineering visits may be used to complete a repair if unrestricted access is available
Broadband	Standard Care	42 clock hour fix. This care level operates during business hours only. If an engineering visit to a site is required, then Gamma will respond during business hours. Engineering visits are available during normal working hours, Monday to Friday, 08.00 – 18.00 (excluding UK Public and Bank Holidays).
Ethernet (including support for The Loop)	Fibre Ethernet (10,100 and 1,000Mb)	For Priority 1 faults 6 clock hours (from a validated fault). Clock hours are calculated and are defined as the time between the Start Time and Stop Time, excluding Parked Time: Start Time: the time a fault has been validated and categorised as a Priority 1 fault Stop Time: the time a fault has been cleared

Product	Priority/Care Level	Target Resolution Timeline
		Parked Time: the time during which the clearance of a fault is outside of Gamma's control For Priority 2 faults Gamma will resolve the fault within 1 working day from a validated fault. For Priority 3 faults Gamma will resolve the fault within 3 working days from a validated fault.
Cloud Compute – Priority 1	Critical Fault - Loss of service - Multiple resellers/services affected	4 Clock Hours
Cloud Compute – Priority 2	High - Loss of service - single reseller or service	6 Clock Hours
Cloud Compute – Priority 3	Medium - Disrupted service - multiple or single reseller or service	2 Working Days
Cloud Compute – Priority 4	Non-critical operational impact that does not restrict user from performing key tasks.	7 Working Days

*Mobile - 24/7 Target Resolution time starts from the point a fault is reported to our Service Desk. All faults should be reported by phone to our Service Desk as emails are not monitored 24/7.

**Mobile - 24/7 Loss of voice or data services will be classified as a fault by our Service Desk where loss of services is deemed out of the norm within areas of reasonable signal coverage.

Feedback

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