1. ABOUT BT WHOLESALE ETHERNET
1.1 BTW Ethernet Service Overview
1.2 Key Features and availability
2 GENERAL CONNECTIVITY DESCRIPTION
2.1 VPN Scalability
2.2 Ethernet Bandwidth Support
2.3 Connection Mapping
2.4 Class of Service
2.5 Access Service Interface/Connectivity Options
2.6.1 Mesh Connections
2.6.2 Point-to-Point Connections
2.6.3 Point-to-Multipoint Connections
2.6.4 Customer Network (Ethernet Virtual Connection) Topologies
3 COMMERCIAL
3.1 BTW Ethernet Pricing
3.2 BT Wholesale Etherway Pricing (Access)
3.3 BT Wholesale Etherway Bandwidth Upgrades
3.4 BT Wholesale Etherflow (Ethernet Virtual Connection)
3.5 BT Wholesale Etherflow Bandwidth Re-grades
3.6 Discount Schemes
4 PROVISION
4.1 PLACING AN ORDER
4.2 Service Order Types Supported
4.4 Confirmation of Excess Construction charges (ECCs)
4.5 Provision Lead Times
4.6 Provision Service Level Guarantee
4.7 BTW Ethernet Forecasting
4.7.1 Forecast Submission Form
4.7.2 Forecast Submission Content
4.8 Support
5 MAINTENANCE

5.1 Self Diagnostics
5.2 Raising a Fault
5.3 Repair Portal
5.4 Performance
5.4.1 End-to-End Service Availability
5.4.2 Network End to End Service Latency
5.4.3 Network End to End Service Jitter
5.5 Fault Handling Timescales
5.6 Planned Engineering Works (PEW)
5.7 Repair Service Level Guarantee

6 TRAINING

7 BILLING

8 QUALITY OF SERVICE (QOS) REPORTING

9 CONTACT INFORMATION

10 GLOSSARY OF TERMS
1. ABOUT BT WHOLESALE ETHERNET

Ethernet is now the established and ubiquitous data interface and transport protocol used in the local and private network. With the increasing use of Ethernet as the origin and termination of data traffic across Local and Wide Area Networks (LAN and WAN), the cost of ownership is rising for customers using existing data product services. This is due to the high cost of interfacing LAN/WAN router and switch equipment using G703 or X21 data interfaces compared to that of a direct Ethernet connection, known as the adaptation cost.

BT Wholesale Ethernet (BTW Ethernet) meets the requirements of customers looking to provide an Ethernet option with full UK coverage for short, medium and long distance data applications. Future plans also involve connectivity to BT’s Global Ethernet platform.

1.1 BTW Ethernet Service Overview

BTW Ethernet is an access and backhaul service allowing connection into the customer’s core network Points of Presence.

Since its launch in 2008, the geographic coverage has grown from the 106 Metro (EEA) nodes being enabled, to 604 total nodes via deployment of Ethernet Edge Switches (EES). Additional nodes will be deployed through subsequent rollouts (as detailed in the 21CN Data Sets available from www.btwholesale.com. Click on Applications then Networks and enter the NIPP area). The ultimate aim is to have full geographical availability with the vision of ‘any time, any place, anywhere’.

The service provides transparent, symmetrical, un-contended or contended (at 5:1) bandwidth between two Ethernet ports in a point-to-point, point-to-multipoint or meshed configuration. It is a flexible bandwidth, connection-oriented Ethernet data service enabling customers to link two or more of their sites together across the UK for data applications at defined ‘Etherflow’ bandwidths from 1Mbit/s through to 1Gbit/s and ‘Etherway’ fibre access speeds of 10Mbit/s, 100Mbit/s and 1000Mbit/s.

‘Etherway Copper’ access speeds range from 1Mbit/s to 10Mbit/s.

A resilient access option, Etherway Protected 1, between the BT serving node and the customer NTE (single interface presentation) can also be provided for both 100Mb and 1000Mb access speeds at an additional cost.

Further enhancements will include 10Gb Etherway access speeds and Etherway Protected 2 based upon Openreach RO2 offering.

BTW Ethernet will be engineered for an end-to-end target availability of 99.93% a maximum one way latency of <10ms, a maximum jitter of <3ms, and will come with a maintenance package within tariff and be subject to BT standard terms and conditions for BTW Ethernet.

The core network will be engineered to meet the availability and Quality of Service (QoS) targets defined using automatic re-routing on failure as required. The target end-to-end availability for BTW Ethernet using Etherway Protected access is 99.97%.

Each BTW Ethernet service will consist of two local access ends and a core link between BT nodes where required. A Service Reference will be used to identify each component including the customer’s end-to-end Ethernet Virtual connection.

The number of remote sites connected to a single aggregate presented site will be limited for practical reasons to 120 connections for 10BaseT and FE (100Mb) access and 400 sites for Gigabit Ethernet fibre access and interface presentation. Up to 10,000 components can be allocated to any single network structure. A component is considered to be an Etherway or Etherflow.
1.2 Key Features and availability

- Competitive lead times
- Competitive ‘wholesale’ pricing
- Secure transmission of data across BT’s core and access networks.
- Enhanced Customer Experience
  - Customer automated portal
  - On line pricing
- Support for the following order types at launch: provide and cease.
- Etherflow customers will have the ability to cancel orders or amend certain attributes, e.g. contact name or bandwidth. Improved functionality is planned for future releases.
- Support for port-to-port, port-to-VLAN and VLAN to VLAN connections

BTW 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.

BTW Ethernet will be offered as ‘subject to survey’ and excess construction charges will apply where appropriate.

Stand-by power (battery back-up) is not available for BTW Ethernet; the customer can use their own UPS if desired.
2. GENERAL CONNECTIVITY DESCRIPTION

The service is based on Ethernet Virtual connections between customer sites and delivered over BT's 21C Network through the current 604 nodes deployed throughout the UK. Future service releases will extend out to additional nodes and so provide greater coverage.

The switching of customer traffic into these Ethernet Virtual connections will be based upon SVLANs applied by the customer.

A full or partial mesh of Ethernet Virtual connections will be possible as outlined in section 2.6.4.

Where a customer access only requires a single Ethernet Virtual connection (i.e. connectivity to a single destination), it is possible to map the entire port into a Ethernet Virtual connection so that the customer does not have to apply SVLANs to traffic from that site.

The minimum frame size is 64 bytes and the maximum is 1548 Bytes, anything outside of this range will be discarded leading to data loss. Ability to accept frame sizes above 1548 Bytes will be available in a future release.

There is a published list of Layer 2 protocols which are tunnelled end to end, as detailed in SIN476 which can be located at www.sinet.bt.com

The service will present full duplex mode only.

Link Loss Forwarding (line monitoring) is available for 10Mbit/s, 100Mbit/s Access, as default, and 1000Mbit/s Access currently using C1/C2 auto negotiate to signal this. This facility is not available for Etherway Copper access.

2.1 VPN Scalability

The service scalability will be limited to an Ethernet VPN with up to 400 sites.

Depending on the physical interface presented to the customer, the following restrictions will be enforced for the number of connections supported by the physical interface within the overall 400 site limit:

- 120 connections – this is offered the 10BaseT interface option.
- 120 connections – this is offered the 100BaseT interface option.
- 400 connections - this is offered on the 1000Base-SX and 1000Base-LX interface options.

2.2 Ethernet Bandwidth Support

The service will be restricted to the rate that the customer has purchased, i.e. the Ethernet Service Bandwidth (Etherflow) of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 350, 400, 450, 500, 1000Mbit/s.

It is possible to provide any combination of bandwidth sizes up to a maximum of 400 Ethernet Virtual connections on a single access link.
2.3 Connection Mapping

The service will offer the customer the option to construct their service as a:

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meshed service</td>
<td>The service will use VLAN mapping on the Ethernet Switch.</td>
</tr>
<tr>
<td></td>
<td>This will require the customer to control switching through the application of VLAN tags.</td>
</tr>
<tr>
<td></td>
<td>Note that although this will allow an Any-to-Any type service, it will be connection oriented within the Core, this is because Ethernet Virtual connections will need to be configured between all the end points.</td>
</tr>
<tr>
<td></td>
<td>A future release of this service will enable true Any-to-Any connectivity using connectionless mechanisms.</td>
</tr>
<tr>
<td></td>
<td>It should be noted that port-based and VLAN-based mappings cannot co-exist on the same port.</td>
</tr>
<tr>
<td>Point-to-Point service</td>
<td>The service will use port mapping on the Ethernet switch.</td>
</tr>
<tr>
<td></td>
<td>The customer in this case will not need to apply VLAN tags.</td>
</tr>
<tr>
<td>Point-to-Multipoint service</td>
<td>The service will use a combination of Port and VLAN mapping on the Ethernet Switch.</td>
</tr>
<tr>
<td></td>
<td>This will require the customer to control switching through the application of VLAN tags.</td>
</tr>
<tr>
<td></td>
<td>The spoke site will use port mapping or VLAN mapping</td>
</tr>
<tr>
<td></td>
<td>The hub site will use only VLAN mapping</td>
</tr>
</tbody>
</table>

It should also be noted that switching based on MAC learning is initially not supported.
### 2.4 Class of Service

<table>
<thead>
<tr>
<th>Premium</th>
<th>This is an un-contended end to end service, which may be suitable for time critical applications. Bandwidth offered will be in terms of Etherflow bandwidth (where Committed Data Rate (CDR)=Peak Data Rate (PDR)) Customer traffic above the Etherflow bandwidth will be policed out and discarded.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>This is contended 5:1 Bandwidth offered will be in terms of ESB (where ESB=Peak Data Rate) CDR = 0.2 x ESB CDR is the guaranteed rate offered to the customer Standard traffic above CDR will be carried at risk of discard under congestion. Only traffic above the Etherflow rate will be automatically filtered out and discarded. There is a restriction on the amount of Standard traffic which can be added. Only 80% of the spare access bandwidth (after Premium accounted for) can be given to Standard Etherflow. It should be noted that the CoS will be configurable on a per connection basis, and is not specific to the physical access, i.e. one connection on an access could have a Premium CoS, and another Standard. SLA/SLGs will not be offered on specific Round Trip Delay (RTD) and latency figures, i.e. will not form part of the BT standard terms and conditions for BTW Ethernet. Only the expected performance targets will be specified.</td>
</tr>
</tbody>
</table>
2.5 Access

The customer will be offered an access based on two components:

| Fibre physical presentation | 10BaseT  
|                           | 100BaseT  
|                           | 1000Base-SX  
|                           | 1000Base-LX  
| Copper physical presentation | 10BaseT  

The maximum radial distance for the Etherway fibre access is 25km, extending to 35Km for 1000Mb access.

A resilient access option, Etherway Protected, between the BT serving node and the customer NTE (single interface presentation) can also be provided for both 100Mb and 1000Mb fibre access speeds at an additional cost.

Etherway Copper is currently limited to the exchange area where the serving Wholesale Ethernet node is situated. Where Etherway Copper is requested within these areas, BTW will determine the number of Openreach MPF required to meet the required bandwidth at the customer site. The number of MPF required will vary depending on the distance from the customer site to the serving node and the bandwidth required. A maximum of 8 MPF can be used to provide Etherway Copper, as a result it may only be possible to provide limited bandwidth at some customer sites and occasionally it may not be possible to provide it all together.

The number of MPF required for Etherway Copper will be determined from line characteristics obtained from Openreach sufficient MPF will then be ordered to meet the required bandwidth. It is recognised that line characteristics vary in practice and so the number of MPF is designed to ensure that the required bandwidth is met. The bandwidth will also be checked prior to handover.

Service Interface/Connectivity Options

There are several options available to the customer depending on the overall network topology required. Essentially the customer has a choice of either a port-based interface or a VLAN interface; the physical connections are via ADVA NTE as provided by Openreach standard WES products.
2.6.1 Mesh Connections

If there is a decision required on where to forward the traffic then the customer needs to provide VLANs to this interface to determine where the frames are to be forwarded to.

There will be no MAC learning initially within the network to provide frame forwarding decisions.

If the customer requires a dual spoke or any meshing (as per the example below), then the customer must use the VLAN mapping solution.

There is no constraint on the number of hubs in a network.

2.6.2 Point-to-Point Connections

If the customer only requires a single point-to-point connection from one access to another then a port-to-port connection can be used. This is only applicable for point-to-point connections where no forwarding decisions are required.

Customer Sites

Connected using 10, 100 or 1000Mbit/s access or 1-10Mbit/s Etherway Copper

CPE not required to apply VLANs to determine destination
2.6.3 Point-to-Multipoint Connections

If the customer is implementing a Hub / Spoke architecture then they can opt to use a mixture of VLAN and port mappings. A VLAN configuration at the Hub end where forwarding decisions are made is required. A port-based mapping at the spoke ends where traffic will only ever be forwarded to the Hub sites. This reduces the complexity of the CPE required at the spoke end.

Note: Spokes may also be connected using 10Mbit/s fibre access or 1-10Mbit/s Etherway Copper access.
2.6.4 Customer Network (Ethernet Virtual Connection) Topologies

The following diagram illustrates some of the possible Ethernet Virtual connection topologies which a customer could request between 5 sites (a, b, c, d, and e). The diagram shows connectivity across the core network between the customer ports on the Ethernet Switches. Customer access circuits are not shown.

Customers are not expected to order a specific type of topology, instead it is likely that they will order their accesses and Ethernet Virtual connections independently. Accesses should be ordered with consideration to required topology (i.e. the order should specify port or VLAN mapping) and then Ethernet Virtual connections will then be ordered to provide the required topology. Customers can order subsequent accesses and Ethernet Virtual connections at any time.
| Topology 1 | Each access could be either port mapped or VLAN mapped.  
› If the customer knows that no further sites or Ethernet Virtual connections will be required, then it would be simplest for both sites to be port mapped.  
› If the customer is planning on evolving towards a topology such as that in 4, then site A should be VLAN mapped from day 1.  
› If the customer is planning on evolving towards a topology such as that in 2 or 5, then both sites should be VLAN mapped from day 1. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Topology 2</td>
<td>Both sites need to be VLAN mapped, however there will not be a diverse route between the two Ethernet Virtual end points.</td>
</tr>
<tr>
<td>Topology 3</td>
<td>All sites could be port mapped, but where evolution to other topologies is planned, consideration should be given towards starting some sites as VLAN mapped.</td>
</tr>
<tr>
<td>Topology 4</td>
<td>Site ‘a’ needs to be VLAN mapped. Other sites could be port mapped, but where evolution to other topologies is planned, consideration should be given towards starting some sites as VLAN mapped. A maximum of 400 sites could be included in this topology.</td>
</tr>
<tr>
<td>Topology 5</td>
<td>All sites need to be VLAN mapped. A maximum of 400 sites could be included in this topology. Note that the diagram describes the service topology which will be fully meshed. However the metro sites supporting the services will not be fully meshed but will have full connectivity between them through fully interconnected core nodes.</td>
</tr>
<tr>
<td>Topology 6</td>
<td>Sites ‘a’, ‘b’, and ‘d’ need to be VLAN mapped. Sites ‘c’ and ‘e’ could be port mapped, but where evolution to other topologies is planned, consideration should be given towards starting some sites as VLAN mapped. A maximum of 400 sites could be included in this topology.</td>
</tr>
</tbody>
</table>
2.6.5 VLAN configuration guidance

The VLAN IDs valid for use over BTW Ethernet are in the range 1 to 4095. The customer may allocate their own VLANs or have BT apply them as part of the order journey.

The VLAN IDs are locally significant; there is no relationship between the VLAN IDs used at either end of an Etherflow connection. Therefore in a Hub and Spoke topology all spokes can use the same VLAN ID so long as different ones are used at the hub end, as shown in the diagram below.

![Diagram showing VLAN IDs](image)

The same VLAN ID cannot be used on any one port (Etherway access circuit). The VLAN IDs, shown in red below, are invalid as they are duplications on the same port.

![Diagram showing invalid VLAN IDs](image)
3. COMMERCIAL

BTW Ethernet is available to BT Wholesale customers only.

BTW customers must have signed the terms and conditions for BTW Ethernet.

BTW customers should address any queries regarding the BTW Ethernet terms and conditions to their nominated BT Commercial or Account Manager in the first instance.

3.1 BTW Ethernet Pricing

The pricing model for BTW Ethernet consists of three components, with each Ethernet Virtual connection (Etherflow) comprising of two local ends (Etherway), and a main link between BT Nodes.

The customer will specify the access speed and interface type required at each site and the Ethernet Virtual connection bandwidth required between the two sites.

3.2 BT Wholesale Etherway Pricing (Access)

BT Wholesale Etherway pricing will be dependant upon the access speed required and whether fibre or copper pair/s is provided.

For fibre, pricing is dependent on access speed required and radial distance from the BT Network entry point. The radial distance from the customer site to the node is calculated on a per km (rounded up) rental charge.

For “Etherway Copper”, the price will depend on the number of MPF required to provide the required bandwidth. Etherway Copper is only available in exchange areas containing a serving node and so no additional radial distance charge is applicable.

Each local end will incur Connection and Annual Rental charges.

The radial distance from the customer site to the node is calculated on a per km (rounded up) rental charge for fibre based delivery, and upon volume of copper pairs consumed for Etherway Copper.

Excess Construction Charges may also apply.

3.3 BT Wholesale Etherway Bandwidth Upgrades

Currently upgrades are not available. In the interim a cease and re-provide option is available but will be subject to minimum term conditions for the original Etherway.

3.4 BT Wholesale Etherflow (Ethernet Virtual Connection)

Each BT Wholesale Etherflow will incur Annual Rental charges. No connections charges apply.
3.5 BT Wholesale Etherflow Bandwidth Re-grades

Re-grading of BT Wholesale Etherflow bandwidth will be allowed at any time and is subject to a one-off charge of £50.

Once an Etherflow bandwidth upgrade has been completed there will be a minimum 1-month period during which no further downgrade to that same Etherflow will be allowed.

Each BTW Etherway order is subject to a 12 month minimum period from when the service is delivered.

Upgrades from Standard to Premium contention service will be available in a future release.

3.6 Discount Schemes

The only discount scheme available on Wholesale Ethernet is the Hub and Spoke discount scheme as outlined below.

<table>
<thead>
<tr>
<th>Hub</th>
<th>Spokes</th>
<th>Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>100Mbit/s</td>
<td>5 - 9</td>
<td>50%</td>
</tr>
<tr>
<td>100Mbit/s</td>
<td>10 or more</td>
<td>100%</td>
</tr>
<tr>
<td>1000Mbit/s</td>
<td>10 - 19</td>
<td>50%</td>
</tr>
<tr>
<td>1000Mbit/s</td>
<td>20 or more</td>
<td>100%</td>
</tr>
</tbody>
</table>
4.1 Placing an Order
The preferred mode of submitting orders will be through BT’s eCo Plus customer portal. A CRF is available to capture the details required for completing the portal journey or, in the event of system failure, can be used to log the order with BT.

In order for BT to accept and progress orders, the customer must provide all relevant information; customer details, fibre access and Ethernet Virtual connection bandwidth requirements including existing connection IDs.

It is the customer’s responsibility to ensure accuracy of the CRF and keep End Users informed of progress.

4.2 Service Order Types Supported
Initially the Service will support order types:

- Provide*
- Cease*
- Modify (Etherflow only)

The option to modify other product features will be introduced as part of the ongoing development of service functionality.

*Once submitted these order types can be amended, i.e. changes to in-flight orders, or cancelled.

4.3 Order Progress
Once the eCo Plus customer portal is launched, order progress can be tracked via the customer portal. When placing an order the customer can choose their preferred medium of communication from a pick list. Information will be provided to the customer via the requested method at key milestone points known as Keep Customer Informed (KCI) points and also at other times during the order journey, as and when relevant.

At launch the KCI points will be managed through the account teams via email as agreed with each customer.

KCI Timeline for Wholesale Ethernet (fibre)

Auto KCIs are shown in blue
These KCIs can happen at any time - C11, C13, C16, C17, C18

The ‘C’ codes are internal BT references and will not appear on the customer KCIs.
# KCI Code Table

<table>
<thead>
<tr>
<th>KCI Code</th>
<th>KCI Title</th>
<th>Description</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Order Acknowledge</td>
<td>Confirmation of order acceptance from BT Wholesale. Order is progressing as normal. No customer action is required.</td>
<td></td>
</tr>
<tr>
<td>C5 (version 1)</td>
<td>Excess Charges- Acceptance Required</td>
<td>Confirmation Excess Charges are applicable. Customer acceptance is required before the order can be progressed. Customer rejection would result in Order Cancellation.</td>
<td></td>
</tr>
<tr>
<td>C5 (version 2)</td>
<td>Excess Charges Notification</td>
<td>Confirmation Excess Charges are applicable. Order is progressing as normal. No customer action is required.</td>
<td></td>
</tr>
<tr>
<td>C5 (version 3)</td>
<td>No Expected Excess Charges Notification</td>
<td>Confirmation No Excess Charges have been identified at this time. Order is progressing as normal. No customer action is required.</td>
<td></td>
</tr>
<tr>
<td>C6</td>
<td>Customer Promised Date</td>
<td>Confirmation of Customer Promised Date &amp; Contractual Delivery Date. Order is progressing as normal. No customer action is required.</td>
<td></td>
</tr>
<tr>
<td>C4</td>
<td>Early Promised Date</td>
<td>Notification an earlier Delivery available. Customer is required to Accept/Reject early delivery. If customer accepts early delivery then service will be on date provided in this KCI. If customer rejects Early Delivery the circuit will be delivered according to standard lead times.</td>
<td></td>
</tr>
<tr>
<td>C8 (version 1)</td>
<td>Service Handover</td>
<td>Confirmation your service has been successfully commissioned and is ready for handover. Customer Acceptance/Rejection is required before the order can be progressed. Customer Acceptance will result in order progression to Order closure. If customer Reject Handover a Trouble Report will be created for further investigation.</td>
<td></td>
</tr>
<tr>
<td>C8 (version 2)</td>
<td>Service Handover</td>
<td>Confirmation your service has been successfully commissioned and is ready for handover. Customer Acceptance/Rejection is required before the order can be progressed. Customer Acceptance will result in order progression to Order closure. If customer Reject Handover a Trouble Report will be created for further investigation.</td>
<td></td>
</tr>
<tr>
<td>C9</td>
<td>Order Closed</td>
<td>Confirmation of order Completion by BTW. Provide Order is now Closed. No customer action is required.</td>
<td></td>
</tr>
<tr>
<td>C13 Cancel</td>
<td>Cancellation Accepted</td>
<td>Confirmation of Acceptance of your request for cancellation of your Service by BTW. BTW will now proceed with your Cancellation. Cancellation order is now Open. No customer action is required.</td>
<td></td>
</tr>
<tr>
<td>C11</td>
<td>Cancelled</td>
<td>Confirmation of Cancellation of your Service by BTW. Cancellation Order is now Closed. No customer action is required.</td>
<td></td>
</tr>
<tr>
<td>C13 Amend</td>
<td>Amendment Acknowledged</td>
<td>Confirmation of Amend order acceptance from BT Wholesale. Order is progressing as normal. No customer action is required.</td>
<td></td>
</tr>
</tbody>
</table>

A table of the KCI points and descriptions can be found below.
For Etherway Copper delivery the following table represents the KCI timeline.

<table>
<thead>
<tr>
<th>Day</th>
<th>KCI number</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 0</td>
<td>C1</td>
<td>Order acknowledged</td>
</tr>
<tr>
<td>Up to day 4</td>
<td>C5</td>
<td>Excess construction within limit</td>
</tr>
<tr>
<td>Up to day 4</td>
<td>C5</td>
<td>Excess construction exceeds limit</td>
</tr>
<tr>
<td>Up to day 4</td>
<td>C6</td>
<td>Design complete and CPD</td>
</tr>
<tr>
<td>Up to day 6</td>
<td>C7</td>
<td>NTE and MPF appointment dates Confirmation of Appointment Dates for Metallic Path Facility (MPF) (Openreach Engineer) and Network Terminating Equipment (NTE) (Bt Operate Engineer). This also provides a Delivery date for the Network Terminating Equipment (NTE) to be installed by BT Operate Engineer. Order is progressing as normal. No customer action is required unless customer is unavailable on either</td>
</tr>
<tr>
<td>Up to day 21</td>
<td>C10</td>
<td>Request customer confirmation of NTE delivery</td>
</tr>
<tr>
<td>Up to day 25</td>
<td>C8</td>
<td>Service ready for handover</td>
</tr>
<tr>
<td>Up to day 28</td>
<td>C9</td>
<td>Order close</td>
</tr>
</tbody>
</table>
The following diagram indicates the various prefixes associated with each orderable component.

4.4 Confirmation of Excess Construction charges (ECCs)
By day 10, following acceptance of the order, BT aims to provide an estimate of Excess Construction Charges payable (if any). By day 16, BT aims to confirm the amount of Excess Construction Charges payable (if any) as well as the Contractual Delivery Date (CDD)/Customer Promise Date (CPD) for a Service.
4.5 Provision Lead Times

The following lead times apply for BTW Ethernet:

<table>
<thead>
<tr>
<th></th>
<th>Lead Time (working days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New site - Fibre Standard or Protected Etherway - Etherway Copper</td>
<td>60 days 25 days</td>
</tr>
<tr>
<td>Etherflow on existing Etherway</td>
<td>1 day</td>
</tr>
</tbody>
</table>

NOTE: All BTW Ethernet services are offered subject to survey.

Standard lead-times will not apply by default to large orders (those containing >10 Etherway access circuits). Such orders will be project managed and delivery dates will be agreed independently with the customer. Where planning activity confirms that standard lead times are feasible, the business rules should allow them to be applied to the orders at this stage.

4.6 Provision Service Level Guarantee

Full details of the Provision Service Level Guarantee can be found in Schedule 3 of the Contract, which remains the authoritative document in all service level matters.

4.7 BTW Ethernet Forecasting

The purpose of forecasting is to enable BT to resource adequately to meet forthcoming order volumes for new provisions and to provide BT’s suppliers with forecasts and advance orders. In turn, this gives customers the confidence that BT will be able to provide them with the service in a timely manner.

The new proposal addresses the objectives of forecasting on two fronts; it provides BTW customers the opportunity to declare anticipated order volumes and it provides BT with information so that it can aim to deliver Ethernet Virtual connections to Contractual Delivery Date (CDD).

4.7.1 Forecast Submission Form

It is the responsibility of each BTW customer purchasing BTW Ethernet to provide BT with a twelve month forecast of requirements.

The forecast must be submitted on the Forecasting Submission Form, which is available online. You can submit this via your Account Team.

Forecasts should be refreshed quarterly.
4.7.2 Forecast Submission Content

- BTW customers are requested to provide a 12 month forecast which is to be updated on a quarterly basis.
- The first 3 months forecast is fixed at the time of submission and must be as accurate as possible.
- The remaining 9 months forecast is to be indicative. Volumes can be amended without cost on the next forecast submission.
- The forecast submission dates are fixed and are irrespective of when the BTW customer sign the BTW Ethernet standard terms and conditions contract.
- New customers will be required to submit a forecast on the next due forecast date shown above.
- Openreach may use BTW customer forecasts to assess the forecast accuracy against actual sales over the period.

4.8 Support

Any unresolved technical queries and other reports of provisioning difficulties should be directed to the 21CN Data Services Team in the first instance.

5. MAINTENANCE

A maintenance package will apply to BTW Ethernet services within tariff and provides the description and terms and conditions of the repair service offering fault repair work carried out during 24 hours per day, 7 days per week including public/bank holidays.

5.1 Self Diagnostics

A self diagnostic capability shall be available via BT’s eCo Plus customer portal. This will enable the customer to log onto eCo Plus enter the Service Reference of the Ethernet Virtual connection (the ETHC) and will send return a message to confirm that BT is aware of a network fault. It will also initiate a check for any alarms occurring at the time.

5.2 Raising a Fault

The preferred mode of reporting faults by the customer will be through BT’s eCo Plus customer portal. In order for BT to accept faults, the customer must provide BT with fault information and it is the customer’s responsibility to keep end-users informed.

The 21CN Data Services Team will receive faults proven to BT network from the customer

- The 21CN Data Services Team will be responsible for logging the fault details and handling of faults on the BT network and will be responsible for fault clearance notifications.
- A Manual Back-up is also available via the 21CN Data Services Team on 0800 0323 888, however, this method should only be used when the portal is not available.

5.3 Repair Portal

Once launched, BTW’s eCo Plus customer portal is the preferred method for customers to report faults, raise issues and view/track any reports on the system.

For Access to the portal go to www.btwholesale.com
5.4 Performance

5.4.1 End-to-End Service Availability

The end to end service availability are:

<table>
<thead>
<tr>
<th>Access Type</th>
<th>10M Standard (inc Etherway Copper)</th>
<th>100M Standard</th>
<th>1000M Standard</th>
<th>100M ETHERWAY PROTECTED</th>
<th>1000M ETHERWAY PROTECTED</th>
</tr>
</thead>
</table>

5.4.2 Network End to End Service Latency

Target performance for the Premium service is a maximum one way latency of <10ms

Standard traffic will be dropped first and therefore has no latency target.

5.4.3 Network End to End Service Jitter

Target performance for the Premium service is a maximum jitter of <3ms

5.5 Fault Handling Timescales

On the receipt of a fault BT issues a unique reference number to acknowledge the fault.

<table>
<thead>
<tr>
<th>Performance Target</th>
<th>Operational Hours</th>
<th>Target Restore Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>24/7</td>
<td>Fibre 5 Hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Etherway Copper 24 hours</td>
<td></td>
</tr>
</tbody>
</table>

5.6 Planned Engineering Works (PEW)

5.6.1 Introduction

Planned Engineering Works is a known programme of network engineering work within BT’s control.

BT will inform the customer of any foreseen work it finds necessary to carry out within its own network which may affect the BTW Ethernet service or standards of performance as perceived by the customer. The request for deferment of a planned outage by the customer will be subject to negotiation and agreement with each case considered on its own merits.

5.6.2 Notification

BT’s notification contact points are identified in the Customer Service Plan (CSP). The method to be used and target timescales will be discussed, and documented if required, between the BT Customer Relationship Manager (CRM) and the customer.
5.6.3 Timescales

Timescales for notifying the customer of work on transmission line plant, which will have a direct bearing on the perceived performance of BTW Ethernet, is a minimum of 3 working days.

Such work may take one of the following forms: -

a) Change over from MAIN to STANDBY working by the use of high speed switching equipment.

b) Momentary Interruptions (MI), which may be of maximum duration of 1 minute during 'preferred' hours.

c) Out of service interruptions. Where it is necessary to carry out work and where a 'make good' route does not exist a 'Scheduled Outage' will be necessary.

If the customer is unable to agree to the interruption to service, they must promptly contact BT to discuss and agree an alternative date and time.

If interruption of service cannot be agreed, BT will contact the relevant escalation contact point. The escalation contact points for both BT and the customer will be identical to those identified for resolving BTW Ethernet escalations (see CSP).

Unless advised otherwise BT, the customer should assume that the work has been completed as planned; appropriate checks should be made by the customer before attempting to resume service.

5.6.4 Preferred Hours for Planned Works

The times when change-overs, M.I. (Major Incident) Restorations and out of service interruptions may be scheduled will be discussed between the BT Service Manager (SM) and the customer contact point. The may also be documented in the CSP, if required.

BT's preferred hours for planned works is after 00:00 hrs and before 06:00 hrs.

5.7 Repair Service Level Guarantee

Full details of the Repair Service Level Guarantee can be found in Schedule 3 of the Contract, which remains the authoritative document in all service level matters.
6 TRAINING
A training guide will be provided when the customer signs up for the service

7 BILLING
Monthly and quarterly billing is available; the customer will choose the preferred option when setting up their billing account.
For Quarterly billing BT’s billing cycle is April/July/October/January. Connection is charged in arrears and rental in advance.
Billing will be via the Geneva billing system used for BT Wholesale Products.

8 QUALITY OF SERVICE (QoS) REPORTING
There are no customer reports available in release 1; this functionality is intended for future releases.

9 CONTACT INFORMATION
Enquiries about BTW Ethernet should firstly be addressed to your BT Account Team or the client reception team on 0800 671 045.
Information about BTW Ethernet and BT Wholesale products and services is available from the BT Wholesale website available at the following URL: www.btwholesale.com
## 10 GLOSSARY OF TERMS

<table>
<thead>
<tr>
<th>Abbreviation or term</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>21CN</td>
<td>21st Century Network</td>
</tr>
<tr>
<td>BTW</td>
<td>BT Wholesale</td>
</tr>
<tr>
<td>CDD</td>
<td>Contractual Delivery Date</td>
</tr>
<tr>
<td>CDR</td>
<td>Committed Data Rate</td>
</tr>
<tr>
<td>CoS</td>
<td>Class of Service</td>
</tr>
<tr>
<td>CP</td>
<td>Communications Provider</td>
</tr>
<tr>
<td>CPD</td>
<td>Customer Promised Date</td>
</tr>
<tr>
<td>CPE</td>
<td>Customer Premises Equipment</td>
</tr>
<tr>
<td>CRF</td>
<td>Customer Requirement Form</td>
</tr>
<tr>
<td>CSP</td>
<td>Customer Service Plan</td>
</tr>
<tr>
<td>ESB</td>
<td>Ethernet Service Bandwidth</td>
</tr>
<tr>
<td>FE</td>
<td>Fast Ethernet</td>
</tr>
<tr>
<td>KCI</td>
<td>Keeping Customers Informed — Customer reporting process for provision and repair progression.</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Networks</td>
</tr>
<tr>
<td>MAC</td>
<td>Medium Access Control</td>
</tr>
<tr>
<td>MI</td>
<td>Momentary Interruptions</td>
</tr>
<tr>
<td>MPLS</td>
<td>Multi-Protocol Label Switching</td>
</tr>
<tr>
<td>NTE</td>
<td>Network Termination Equipment</td>
</tr>
<tr>
<td>eCo Plus</td>
<td>BT’s Portal — provides order placement, tracking, fault reporting &amp; tracking direct with the customer</td>
</tr>
<tr>
<td>PDR</td>
<td>Peak Data Rate</td>
</tr>
<tr>
<td>PEW</td>
<td>Planned Engineering Works</td>
</tr>
<tr>
<td>QoS</td>
<td>Quality of Service</td>
</tr>
<tr>
<td>RTD</td>
<td>Round Trip Delay</td>
</tr>
<tr>
<td>SLA</td>
<td>Service Level Agreement</td>
</tr>
<tr>
<td>SLG</td>
<td>Service Level Guarantee</td>
</tr>
<tr>
<td>SM</td>
<td>BT Service Manager</td>
</tr>
<tr>
<td>SVLAN</td>
<td>Service Virtual Local Area Network</td>
</tr>
<tr>
<td>VLAN</td>
<td>Virtual Local Area Network</td>
</tr>
<tr>
<td>VPN</td>
<td>Virtual Private Network</td>
</tr>
<tr>
<td>WAN</td>
<td>Wide Area Networks</td>
</tr>
</tbody>
</table>