



Ethernet resilience and diversity

Protect your connectivity with
our end-to-end solutions

The importance of connectivity

Data connectivity is the lifeblood of any business. A loss of service due to an unforeseen incident or outage can lead to a corresponding loss of business and revenues. That's why you and your customers need a connectivity solution that's totally reliable. And that's where our expertise can make a real difference.



Connectivity challenges and solutions

So what situations could disrupt your connectivity?

Examples include:

- cables being cut or damaged by third parties or road works
- fires, floods and other natural disasters
- issues within our network or exchanges
- planned engineering works across our platform.

But that's not the whole picture. Your connectivity can be protected by using a network that incorporates resilience and diversity. Resilience ensures that a reliable service can continue to be supplied even when one line is out of action. And diversity increases reliability by providing two or more different channels of communication.

Getting to grips with resilience

Establishing a resilient and diverse network

Over the years, we've developed a truly resilient and diverse network. And with our nationwide reach, we can offer you various options so that you can incorporate resilience and diversity into your network design. A key way of achieving this is through our Wholesale Ethernet portfolio. This includes our layer 2 (Etherflow Connected and Etherflow Dynamic) and layer 3 (Direct Internet Access or DIA) services.

These solutions can create truly resilient routing and connectivity. They include a range of Etherway Diverse access options, which will give you complete protection from any unexpected situations. Our solutions are ideal for:

- any business-critical connections
- protecting you from any risk of downtime
- preventing past issues from happening again and causing outages.

Our Diverse Plus Ethernet services have a target availability of

99.9996%

Our core network has a highly resilient architecture, with double and triple resilience that protects both our platform and your services.



How to create resilience

So where do you start when you're thinking about creating resilience for your connectivity? First, you need to understand which part of your service needs diversity. We can help you to create suitable solutions by providing dual circuits to your site, along with a range of different resilient options.

Local site routing

Separation of routes can be achieved through the provision of two circuits, diversely routed into your premises through different ducting and cabling. The level of circuit diversity may depend on the local infrastructure, pathways into the building and your delivery preferences.

- It isn't possible to predict lead times for diversely routed circuits. A secondary circuit routed in a diverse way will always need a site survey.
- Separate routes often require new ducting and cabling and will commonly attract excess construction charges (ECCs). However, we can't predict the ECC for a resilient leg of a service when quoting/ordering, only when a survey has been carried out.

Benefits: This option provides protection against access circuit failure or damage, and it's the most common area where our customers look to create diversity in their services.

Access nodes

Two circuits can be provided from two different access nodes (enabled exchanges) in our network. Availability depends on the site location and the proximity of serving exchanges, but this isn't usually a problem, due to our extensive UK coverage.

Benefits: This option protects against exchange faults or failures. It also creates some network-level diversity at the edge but when selected on its own it doesn't necessarily include full diversity elsewhere within our core network.

Core network

Do you also want your service to have diverse and resilient routing within the provider's core network and across its Ethernet platform? With our Ethernet, this is included as standard, with intelligent, diverse routing and baked-in network-level resilience.

Benefits: This addition can provide protection against any problem within our backbone and platform.

Customer site

Our dual circuits can even be delivered to two different customer sites.

Benefits: This provides a further level of protection and resilience geographically.

Different resilience strategies

So, we've seen examples of how resilience can be created. But what are some of the different ways of incorporating resilience into a service, and why do we think our way is best?

✘ The DIY approach

A do-it-yourself approach might sound attractive, but in reality it rarely creates true resilience. There are several reasons for this.

- You can't ask for two independent, single access circuits to be provided separately or with diverse local routing. Openreach always delivers both using the shortest and simplest route to the site, so they'd share the same routing. Even if you offered to pay for a new route, this wouldn't be supported. To get diversity between two circuits, they must be ordered as a dual-circuit package, referred to by Openreach as Resilient Option 2 (RO2).
- Even if it's possible to request for two single, individual circuits to be routed to different access nodes with a provider, this is not creating true resilience. The circuits would still share the same local site routing and ducting, for instance. And although the access nodes in the network for the service itself might be different to one another, the circuits will likely route through the same local serving exchange to get onto the network in the first place.

This approach is unlikely to provide an end-to-end resilience solution.

✘ The dual-provider approach

Another alternative is to try and have two circuits from different service providers and networks.

- The idea is that this would offer you full diversity, even in the event of the total failure of one provider's network and platform. It's common to consider one circuit delivered by Openreach and one by another service provider with their own network infrastructure. Although this might initially sound like a good idea, the routing of those circuits may be far from the resilient solution you want.
- For instance, if only a single circuit is being ordered from Openreach, they'll only install it via the main route into your site. So it's likely to share the same route into your site as the other provider's circuit. Openreach won't create a separate route unless it's ordered as part of an RO2 dual-circuit package.
- Different providers might have different access nodes and exchanges. Or it might be possible to manually select an alternative exchange location for one of the circuits. However, this is unlikely to create any separation at the network level. The routing might share a pinch point via your same local serving exchange, or once it hits a provider's network and platform, several parts of the routing might be shared.

Again, this option won't offer you true end-to-end resilience.

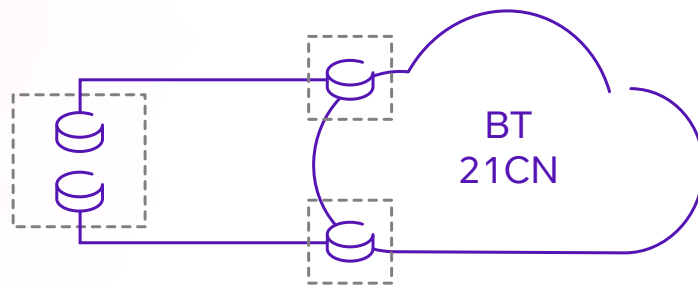


Our approach

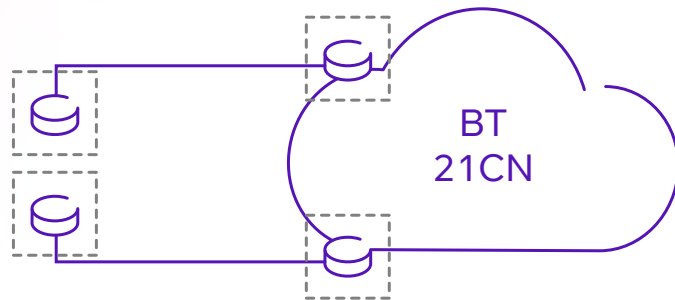
We've developed several solutions that can meet your resilience requirements, whatever they are. They provide different tiers of separation and diversity between two access circuits. In each case, both circuits can be used at the same time via two independent Etherflow connections.



- **Diverse Plus – Our recommended option for maximum resilience** Two circuits with separate local site routing, connected back to two different access nodes in our network. From there, the routing and service is also resilient in our network as standard. **This creates a true end-to-end resilience solution.** If you have two different customer sites, you can even add site resilience through our Diverse Plus – Split Site option.

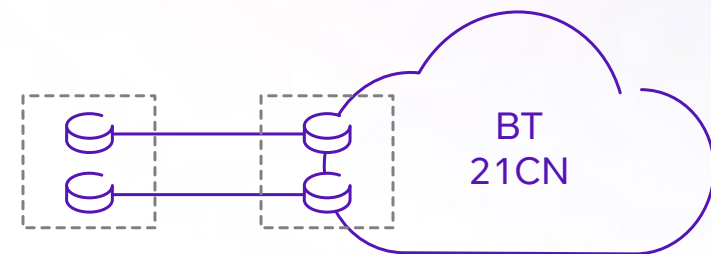


Etherway Diverse Plus

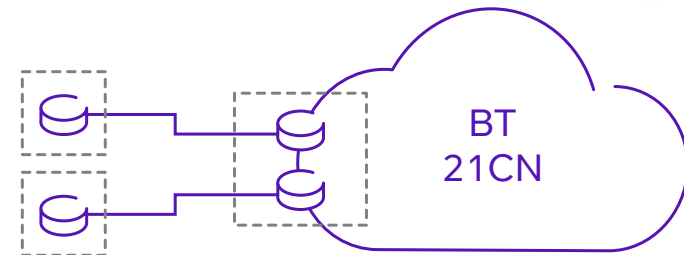


Etherway Diverse Plus - Split Site

- **Diverse** – Two circuits with separate local site routing but connected to a single access node in our network. This might be necessary if a secondary node is unavailable, too far away or pricing is prohibitive. If a single access node is selected, we'll do what we can to provide as much seperacy within that node between the two circuits in the Diverse package, via different switches, equipment and so on. If you have two customer sites available, it's possible to add site diversity, and the equivalent 'Diverse – Split Site' solution would again route back to a single access node.



Etherway Diverse



Etherway Diverse - Split Site

Diversity solution name	Local site routing resilience	Access node resilience	Core routing resilience	Site resilience	Full end-to-end resilience solution
Diverse	•		•		
Diverse – Split Site	•		•	•	
Diverse Plus	•	•	•		•
Diverse Plus – Split Site	•	•	•	•	•

Dual-diverse connections between different services

We can also create dual-diverse configurations, using the diversity and resilience options above but split between different solutions. For example, one access circuit could be used for a layer 2 Etherflow Connected service (E-Line) while the other circuit is used for a layer 3 DIA service. This is a great option for SDWAN networks, for instance.



Planning and preparation

Planning your site resilience solutions

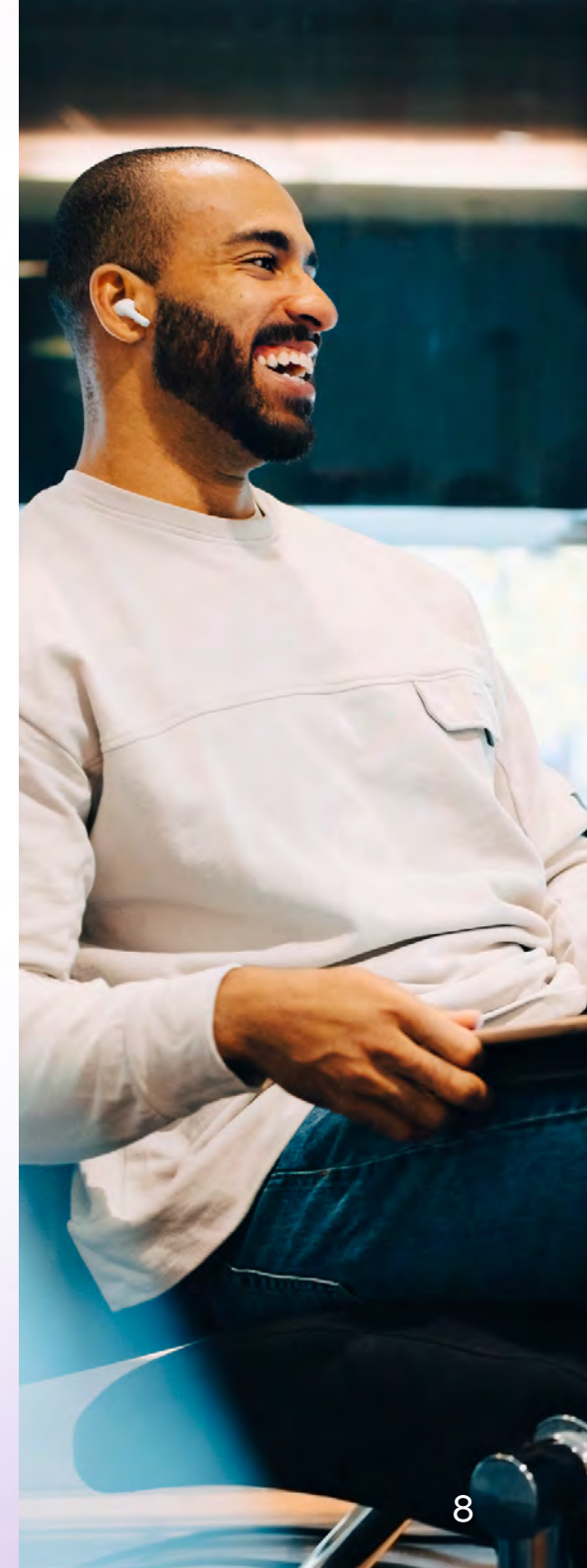
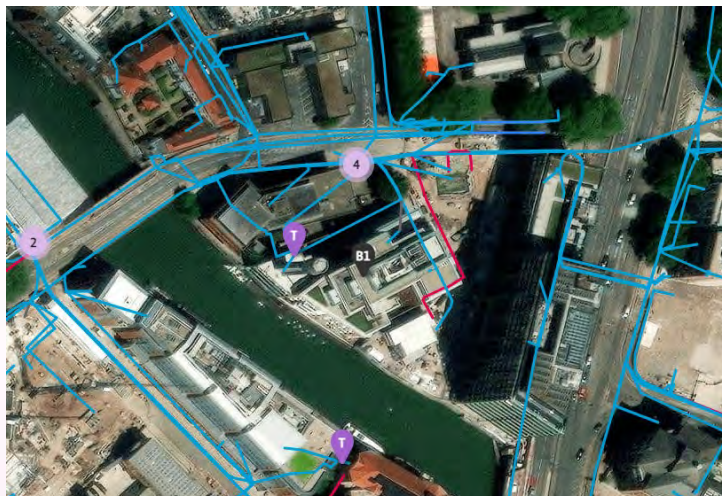
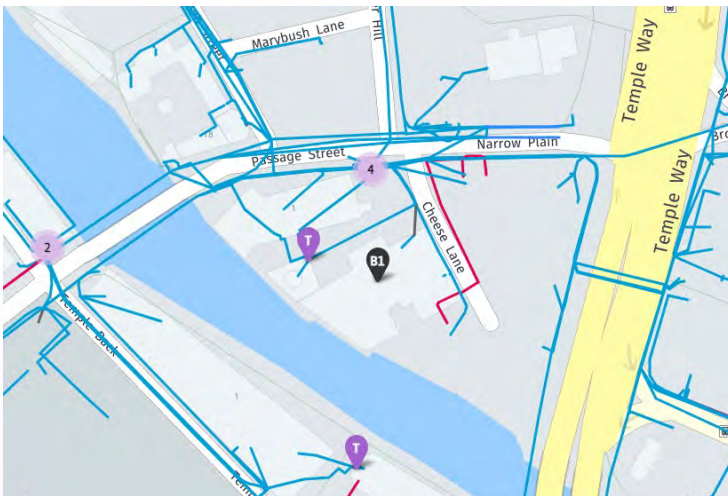
This might all seem a lot to take in, but don't worry. We've developed interactive route maps and digital tools that will help you to plan your circuit delivery and the possible resilience solutions you'll need. Our Ethernet Pricing Tool enables you to search by location. You can then view a range of infrastructure and network maps. It shows you a breakdown of charges and exchanges for your solution and also includes:

- current physical connections to the site
- built and planned ducting routes
- the location of fibre junction boxes
- the location of serving exchanges and access nodes to our network
- a selection of interactive map views and layouts.

Because our Diverse and Diverse Plus packages need to deliver two separate circuits with resilience included, all orders require a site survey. You can get an estimate of the expected lead time for the primary circuit from our Ethernet pricing tools and APIs, but the secondary circuit will always need a site visit.

Excess construction charges are also likely to apply, especially for the delivery of the secondary circuit. You'll be told what they are at the end of the site survey.

Here are examples from one location:



Why choose us?

Ask yourself the following questions:

- Although other providers may offer elements of resilience (such as separate site routing), what separation is provided once it hits their network?
- Can they guarantee end-to-end resilience? We can.
- Can they offer a true RO2 service to give you full peace of mind? We can.

We offer a completely reliable connectivity solution

- Openreach uses RO2 to deliver truly resilient and separate services. Unlike many service providers, we can provide RO2 delivery and service.
- This means full end-to-end resilience and diversity - not only at your site, but also when connecting into and across our network and platform.
- This is maintained throughout the life of the product, ensuring your service always has end-to-end diversity.



Delve a little deeper

Visit our Wholesale Ethernet page for more product details. For further information, talk to your account manager or specialist.

Visit btwholesale.com/ethernet



Offices Worldwide

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