



WHOLESALE REFERENCE OFFER*

CABINET INFRASTRUCTURE PRODUCT SPECIFICATION

31st MARCH 2021



*Fibrus offer wholesale access in areas where public funding has been used to build the Network. Fibrus Networks is currently building the Network to achieve optimal performance and to support future Services. Fibrus Networks will inform you of product availability during the onboarding and ordering process.



Fibrus Wholesale Cabinet Infrastructure Product Specification

Version Control

Version	Date	Description	Author
1.0	03/05/2020	Version first published on website on 1/6/2020	P. Doyle
1.1	30/03/2021	Minor cosmetic edits and updating cross references.	S. Best



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Introduction

Fibrus offers wholesale access in areas where public funding has been used. This is the Product Specification for Fibrus Cabinet Infrastructure Wholesale products as defined in the table below. The document defines a set of processes that encompasses Network Deployment, Order Handling, Wholesale Billing and Service Management. Fibrus Wholesale facilitates Communication Providers (CPs) with access to Cabinet space in the Optical Fibre network where public funding has been taken¹. Typically, Fibrus Wholesale deploys roadside cabinets for active equipment and does not have exchange buildings.

Wholesale Passive Infrastructure	Description
Active Cabinet Space	1U Active Cabinet Space in existing active cabinet (where available).
Adjacent Cabinet Space	1U Space in Cabinet Adjacent to Fibrus Active Cabinet
Cabinet Power	48V Power Supply
Battery Backup, Rectifier/Regulator	Battery back-up to support short term power outages e.g. up to 4 hours, depending on environment and power usage in cabinet.

The use of Cabinet Access Wholesale products may require the use of other Fibrus or Third Party passive Infrastructure products e.g. Junction Box access and/or hosting. The Fibrus Passive Infrastructure Product Specification defines the range of products provided by Fibrus Wholesale and is available at <https://hyperfastni.com/wholesale-partners>. For the avoidance of doubt, all access to Third Party passive infrastructure and related charges are the responsibility of the Communications Provider (CP).

¹ CPs should note that this product set has been specifically designed to meet the requirements of the 2016 Commission Decision with reference number C(2016) 3208 (as amended by the European Commission modification decision with reference number C(2018) 229) (“the Decision”) in the relevant locations required under the Decision. Fibrus will consider requests to provide such products as a commercial offer in other geographic locations where requested by a CP.



This handbook is designed for use by Communications Providers (CPs) as Wholesale customers of Fibrus. For information on how to become a Wholesale customer with Fibrus please see our guide *How to Become a Wholesale Customer* available at <https://hyperfastni.com/wholesale-partners>.

This document should be read in conjunction with the Fibrus' current Fibrus Networks Wholesale Access Services Wholesale Provider Agreement, Wholesale Price List and Service Level Agreement, which are available on the Hyperfast website at: <https://hyperfastni.com/wholesale-partners>.

Fibrus' approach is to enable our wholesale customers to self-serve via direct digital access to the systems capability required for high volume transactions alongside dedicated relationship management to assure your needs are met and to deal with specific requirements. The Operator Wholesale Gateway (OWG) is the ordering and fault management system for Fibrus Wholesale products and services.

Wholesale Cabinet Infrastructure Product

Overview

Communication Providers (CPs) will be provided access to Cabinet space in or adjacent to Fibrus Wholesale's active cabinets in the Optical Fibre network where public funding has been taken.

Fibrus Wholesale deploys roadside cabinets that are not temperature controlled and are limited in size to limit the impact on the environment and meet the requirements of authorities and communities. We deploy these cabinets at hub locations within our coverage areas in a network configuration that supports our access network serving customers and to house backhaul equipment providing connectivity to our core sites.



Cabinet Access Product Features

Communications Providers' Equipment may be accommodated within Fibrus' existing cabinets, subject to survey and quote. Because of the limited size of cabinets, third-party access to space inside cabinets may require the deployment of a second cabinet nearby to the desired cabinet, which Fibrus Wholesale will facilitate. This process is dependent on the agreement of local stakeholders, including landowners where the cabinet is on private land, local Parish and County councils, and local highways bodies and as such could take several months. In providing additional cabinet space, Fibrus will also provide enough duct/cable capacity to this cabinet from our existing cabinet as well as power if required.

Figure 1 shows a typical cabinet installation within Fibrus' network:

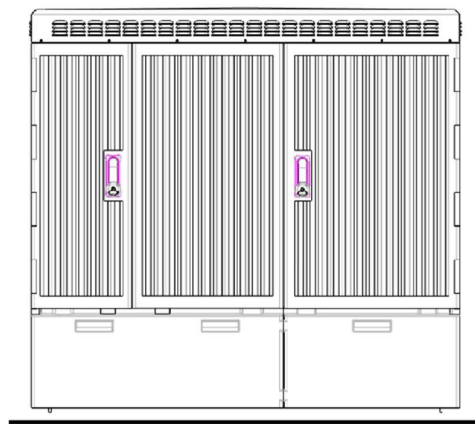


Figure 1 – Cabinet Overview

All Cabinet Access products are subject to survey and quote due to the unique nature of each site.



Technical Specification

The picture below shows a typical Fibrus cabinet rack, populated with equipment.

Where an additional cabinet is provided for third parties it will be empty of all equipment except for a 13A mains power splitter and a 1U fibre patch panel.

Our cabinets can provide (per provider on an assumed 3-way sharing scenario) **up to:**

- 5U of equipment (in a typical existing cabinet)
- 5U of equipment (in a typical new-build cabinet for third-party use)

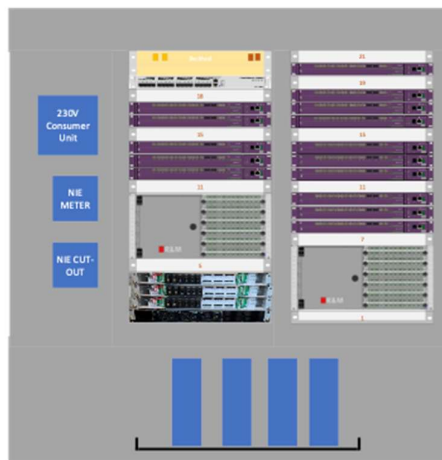


Figure 2: Typical Cabinet Configuration

The following dimensions apply:

- The rack is a standard 19" rack and has a minimum 300mm depth.
- Space in front of the rack is limited to 100mm.

Cable management is shared between all cabinet users. DC power cable management is via cable retention rings and trays for DC power. Fibre cable management utilises fibre guide loops on the.



Environmental

The interior environment is designated to, but does not guarantee, compliance with ETSI EN 300 019-1-3.

Forced air cooling is provided and equipment should draw cool air from the front of the rack and exhaust to the rear. (The cabinets are not temperature controlled).

Ambient air temperatures are typically between -5°C and $+60^{\circ}\text{C}$ in extremes.

Relative humidity can vary between 10% and 100%, and so conformal coated components are recommended where possible.

[**Note:** Commercial grade parts often fall short of maximum temperature requirements and may fail. Fibrus recommends industrial temperature hardened parts.]

Power

Fibrus cabinets take their power from the local AC power grid. A DC 48V power system is used to provide power to telecoms equipment. Communications Providers seeking cabinet access will be required to specify their power requirements at time of order. All equipment is grounded through chassis connections or grounding point connections to the rack or cabinet bonding points, which are connected to a ground electrode installed by Fibrus.

Additional power and Battery back-up may be available on request and subject to survey, design and quote. Battery back-up aims to support short term power outages e.g. up to 4 hours, depending on environment and power usage in each cabinet.

Electrical safety of equipment is the responsibility of the Communications Provider. Fibrus maintains exclusive responsibility for making connections to the cabinet. The Provider will provide and connect their equipment side using appropriate DC power cables, providing enough cable to terminate on the DC power clamps. A Fibrus engineer will check the connection, make the final connection to the DC supply, and energise the power breakers.

No guarantees can be made as to the quality or stability of AC power supplies within the cabinet.



Cable Ingress/Egress

Cable ingress and egress is managed via ducts which terminating in Fibrus' underground chamber(s) adjacent to the cabinet. A Provider may bring in cables with a combined diameter that does not exceed 25mm (e.g. an entire bundle of cables could fit within a 25mm duct).

Cable termination must be accomplished within the Provider's rack space or within a small portion of the provided cable termination space (subject to agreement). All cables must be clearly labelled with the service reference number provided by Fibrus.

Wholesale Cabinet Access Ordering

Overview

This product set has been specifically designed to meet the requirements of the 2016 Commission Decision with reference number C(2016) 3208 (as amended by the European Commission modification decision with reference number C(2018) 229) ("the Decision") in relevant locations required under the Decision.

Ordering and delivering Cabinet Access products is a complex process unique to each site, requiring interaction between the ordering Communications Provider and Fibrus Wholesale for enquiry, definition, pricing offer, acceptance before product design and build. Small or single requests will be managed via email; larger requests will require an agreed project plan. Fibrus has defined a standard approach summarised below:

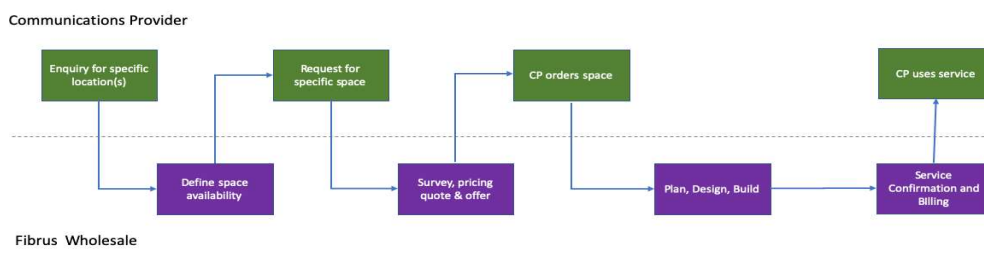


Figure 2 – Cabinet Space Ordering
Process Flow



Enquiry and Availability

CP contacts Fibrus Wholesale to register interest in Cabinet Access products in specific location(s). Fibrus review enquiry and subject to clarification will provide a list of availability to the CP in the sites of interest if applicable.

Pricing

Based on the information required the CP may request pricing for Cabinet Access at specific locations. In this case the CP should specify the sites to be priced by Fibrus Wholesale.

Fibrus will survey these sites, calculate pricing against the CP requirements and return it to the CP as an offer letter with relevant standard business terms.

(Note: there is a cost to Providers for survey which is defined in Fibrus Wholesale Pricing document at <https://hyperfastni.com/wholesale-partners>.)

Acceptance and Order

If the CP accepts the offer, terms and conditions, the CP places an order and agreements are signed. Fibrus Wholesale will process the request as an order to fulfil the individual CP requirements.

Plan to Build

Fibrus Wholesale on receipt of the order will commence planning and design activity, leading to network build and inventory recording.

Confirmation and Billing

Fibrus Wholesale will confirm the service to the CP as it is completed and commence the generation of billing for the service.

Escalation Process

Where a CP requires to escalate a service order it must contact the Relationship Manager. Orders may only be escalated where they are beyond SLA parameters.



Cabinet Service Management

Fibrus Wholesale operates to a principle of enabling CPs to manage their network and customers directly. As such, it is a fundamental principle that a CP must prove any service issues or faults are outside its own network and equipment before raising a trouble ticket.

Where a CP cannot identify and remediate the issue, a trouble ticket can be raised within OWG for the attention of Fibrus Wholesale. Each trouble ticket should contain the following information:

- Site(s) affected as defined in inventory
- Geographic location of site(s)
- Nature of trouble e.g. failure, deterioration
- Time of first alarm or notification

Trouble Ticket Resolution Process

Trouble tickets should only be raised when the CP has identified the trouble as being within the Fibrus network or cannot localise the source of the trouble. The five key steps in trouble ticket resolution are:

- Trouble ticket reported – CP
- Trouble diagnosis and isolation – Fibrus
- Trouble repair - Fibrus
- Trouble ticket updated and closed – Fibrus
- Customer updated - CP

To complete diagnosis and repair Fibrus Wholesale may be required to work in conjunction with CP personnel. CP will be responsible for the availability and capability of such personnel and any resultant impact on fault duration.



Escalation Process

Where a CP requires to escalate a trouble ticket for resolution it must contact the Wholesale Relationship Manager. Trouble tickets may only be escalated where they are beyond SLA parameters.

Outages

Planned Outages

It is recognised that Planned Outages are a necessary, normal and regular occurrence. Where a Planned Outage will impact on the Cabinet Access services provided to a CP, the CP will be notified by email, including a description of the outage, customer impact, date, time and expected duration. Fibrus will endeavour at all times to carry out Planned Outages during the preferred hours of 00:00 to 06:00.

Unplanned Outages

Where an outage occurs that impact on multiple end-customers, Fibrus Wholesale will inform CPs to enable them manage operations and customer expectations effectively.

Billing

All connection, usage and recurring charges associated with the provision of the Cabinet Access product are charged on the next billing cycle following completion of an order. All charges are as defined in the contractual agreement with the CP and/or as published where appropriate.

Queries regarding billing and charges must be raised with the Wholesale Relationship Manager for resolution.

