



BNL NETWORK ACCESS GUIDELINES

VERSION 1

Guidelines for access to the BNL Network at designated access points
and an overview of the locations of access points

These Access Guidelines (including the locations and addresses for access points)
are subject to change from time to time.

DOCUMENT CONTROL

AUTHOR	VERSION	STATUS	COMMENT
P McCann	1.0	Issued as DRAFT	Pre-sales Document

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1. Introduction

The purpose of this document is to describe how customers will interconnect with the BwebwerikiNET Submarine Cable Network. It provides an overview of the access points where customers can connect to the capacity of the SX NEXT International submarine cable. It may be updated from time to time as the number of access points increase or change.

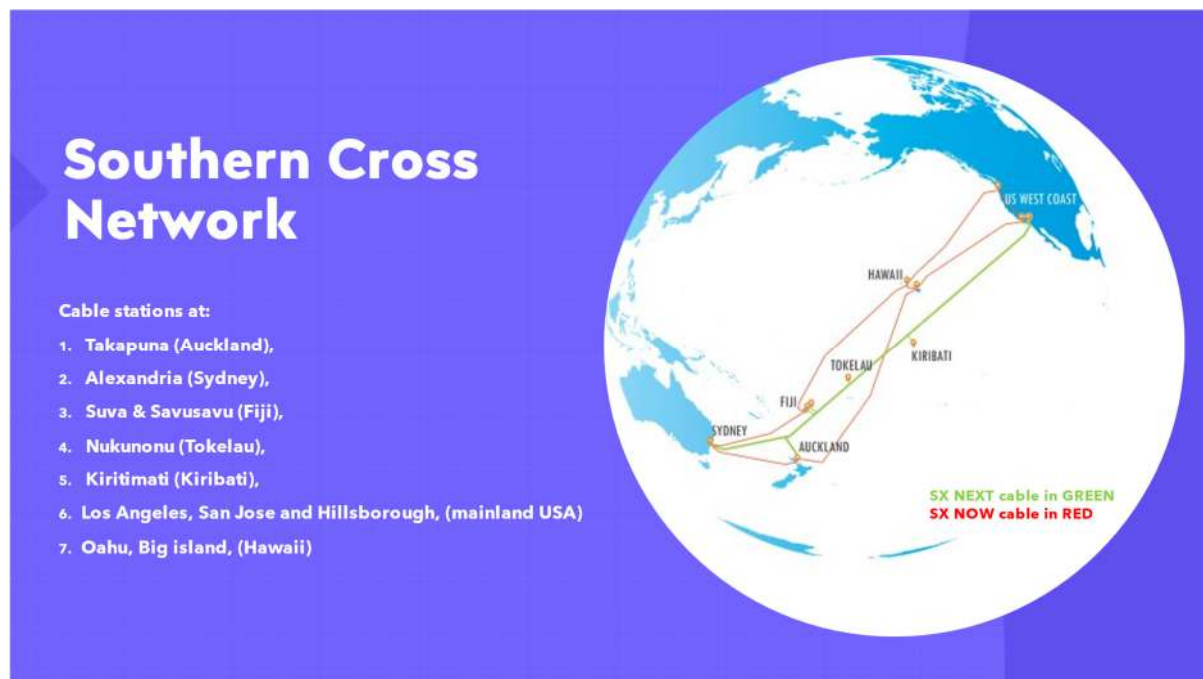
These Access Guidelines form part of BNL’s customer documentation which includes a Capacity Lease Agreement and Ethernet Transport Service Product Description.

2. BNL Kiritimati Network

The **BNL Ethernet Transport Service** (the Service) is a point-to-point Ethernet communications service offered by BNL between Kiritimati and specified locations on the Southern Cross network.

2.1 Southern Cross Network

With the addition of the Southern Cross NEXT (“SX NEXT”) cable, the Southern Cross Network consists of three separate submarine cable paths laid over diverse routes between Australia and the United States West Coast. High capacity, secure fibre optic connections link each of the cable landing stations in the common jurisdictions, such as Australia, New Zealand, Hawaii and the US West Coast. SX NEXT adds diverse landings in Fiji (Savusavu) and new cable landings in both Tokelau and Kiribati (Kiritimati Island).

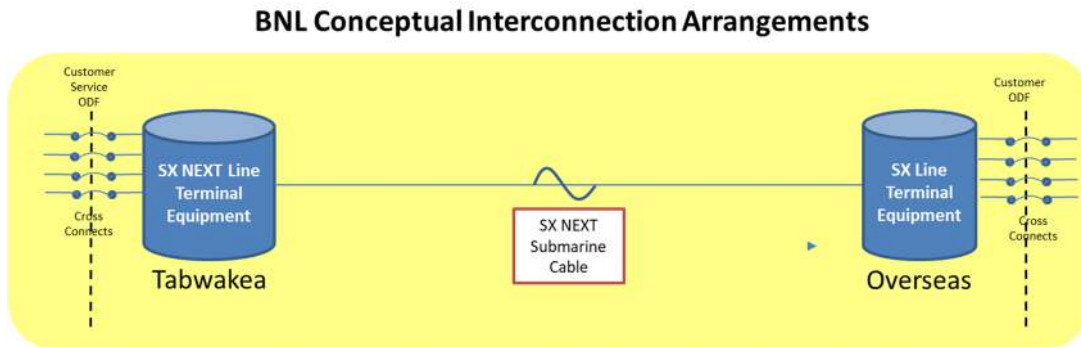


For the Operators in Kiritimati, BNL now offers international Ethernet transport to anywhere on the

Access to the SX NEXT cable network is provided via the Meet-Me-Room (MMR) facilities located at the BNL Cable Landing Station (CLS) located in Tabwakea, Kiritimati. From this point, BNL offers ethernet capacity access to multiple overseas destinations (refer to the BNL Ethernet Transport Service Description).

3. BNL Access

BNL provides equal and open access to its networks for all Licensed Operators in the Republic of Kiribati.



In Kiritimati, BNL will interface with the Operators at the Customer Service Optical Distribution Frame (CSODF) within the BNL MMR. Connection at the CSODF will be via standard optical interface. Operators are required to follow the processes and procedures for requesting and being granted access to the Kiritimati BNL MMR facility, as contained in BNL document **CLS Access Policies & Procedures**.

Overseas, BNL International Ethernet Transport services will be delivered by Southern Cross at the requested overseas SX Point-of-Presence (POP). BNL Customers are required to make their own arrangements for any further extension of services by licensed services providers available at each SX POP. Further details are provided in Section 8 of this document.

4. Product Summary

All products are described in detail in the relevant product description provided by BNL.

The Current BNL Product comprises:

- Ethernet Transport Service

BNL Ethernet Services may be ordered with one of the following standard interface types for the Access Port at each end of the Service (in Kiritimati and the overseas destination):

Interface Type	Nominal Interface Rate	Carriage Format	Applicable Configurations
Layer 1 Ethernet			
10G Ethernet: 10GBASE-LR	10 Gbps	OTN (ODU2e)	Full Rate (10Gbs) Only
Layer 2 Ethernet			
Gigabit Ethernet: 1000BASE-LX	1 Gbps	Ethernet-over-MPLS	Sub-rate CIR supported (see Table X below)
10G Ethernet: 10GBASE-LR	10 Gbps	Ethernet-over-MPLS	Sub-rate CIR supported (see Table X below)

For all physical interface options, the Customer's Equipment will connect to BNL's ODF via Customer Cables connected to the ports designated by BNL on the appropriate Optical Distribution Frame using single-mode optical fibre cables.



The photo above is an example of the type of ODF deployed at BNL MMR.

Make: Nexans
Model: OPTEASTAR
LC/UPC on input
SC/APC on ODF customer side

BNL supports customer access connections via intra-office and short-haul applications (up to 10km design distance, as defined in G.959.1 OTN Physical layer interfaces) as standard and may support long-haul applications for customer connections following a special design request.

BNL will provide the Operator with access to the MMR for the purpose of the testing the capacity, and installing, testing, operating and maintaining the Operator interconnection equipment, or for any other reasonable purpose related to the Operator's use of the capacity.

In general, and unless agreed otherwise, BNL will deliver product to the CSODF and provide the ODF allocations and the fibre patch, the Operator will be responsible for all further costs in accessing the MMR domestically up to the CSODF.

BNL will facilitate access via Radio Microwave Access at the CLS (using a BNL-provided Radio Tower).

Detail of the access facilities provided by BNL are identified in section 5 below.

5. Access Facilities

a. Radio Microwave Access:

For Operators seeking to access the BNL MMR facilities via Radio Microwave, BNL tower facilities have been deployed at Tabwakea. At this location BNL has installed appropriate overhead cable rack facilities from the tower into the MMR.

BNL manage the allocation of space on the tower and will allocate to Operators and appropriate tower slot for use in accessing BNL product. Operators requiring access to additional slots or top-level tower allocations are required to negotiate these separately with BNL.

It is the Operators responsibility to design and have approved by BNL the plans, equipment and installation of equipment on the tower and within the MMR. All installations will be done under the supervision of BNL.

The Operator will also be required to provision (install) services from the tower to the MMR. Such provisioning shall also be made under BNL supervision. BNL anticipate Operators will require Heliac coaxial, fibre or ethernet connectivity between the Operator tower-based equipment and the MMR.

The Operator will then be required to terminate the services onto the appropriate rack space, extending the service to the allocated ODF termination locations as nominated by BNL. The Operator can then test from the allocated ODF point back into their network to verify performance of their radio microwave system.

Once extension is verified by the Operator, a direct fibre optic patch between the Operators radio microwave interconnection appearance to the BNL network will be installed and patched by BNL.

In most instances it is expected that the Operator may require the installation of technical equipment within the MMR for their connection. A maximum 10RU allocation in BNL Operator-only Racks will be allocated for use by each Operator.

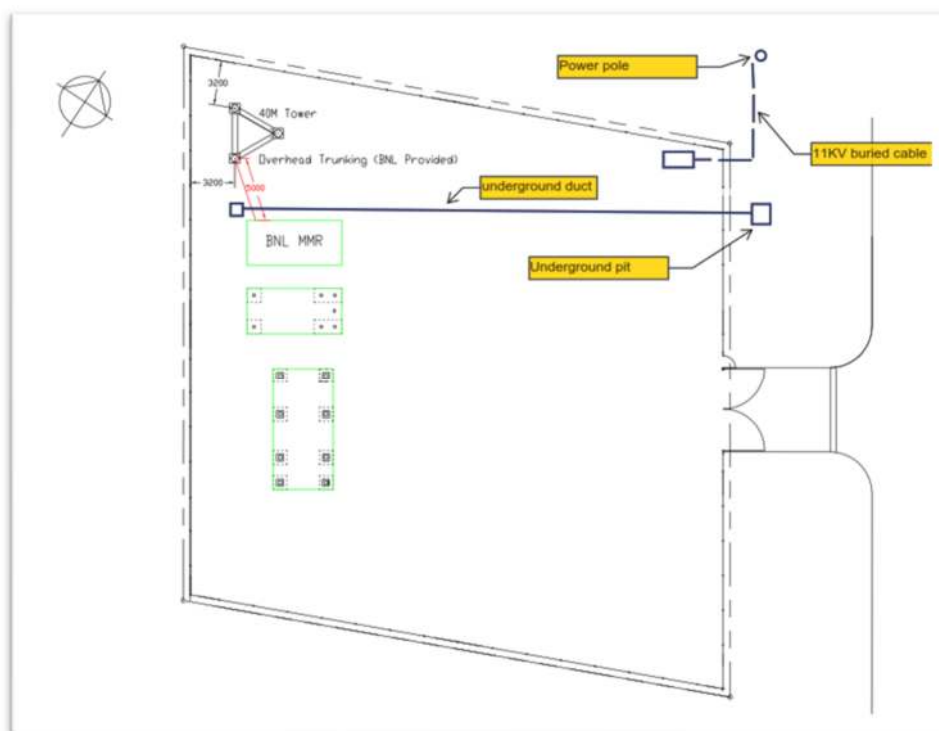
In all cases, BNL will be required to oversee and coordinate the installation of all such equipment, cables, or terminations. Full specs of the proposed RF system will need to be supplied for approval. All power, ethernet or fibre cabling within the MMR facility will be undertaken by BNL. It will be the Operators responsibility to cover the costs associated with BNL extending cabling connections within the MMR between the Operators equipment and CSODF.

b. Terrestrial Cable Access:

(Reserved for future use)

6. Site Access Facilities

At Tabwakea, BNL has provided duct access for fibre cable entry from the street and the MMR. Tabwakea is also equipped with a 40m radio tower.



7. Customer Equipment Rack Space & Service Back-haul

If requested by an Operator, BNL will seek to provide to the Customer a reasonable amount of rack-space, connection facilities and power at the MMR only for the purpose of the Operator accessing its capacity on the BNL Network.

- Each BNL Operator will initially be allocated a number of RU of space in a 19-inch equipment rack, free of charge and including AC power up to a level to be agreed with BNL, for locating its equipment.
- BNL Operator racks are equipped with 240V AC power (backed up by generator). DC power is not provided. In the event of mains failure, the genset will restore power after approximately 3-5 minutes. The Customer can install inverters should they seek to maintain service whilst the generators assume the station load.
- Installation of equipment and Cabling must be pre-arranged and supervised by BNL.

All customer cabling within the MMR will be performed by the Operator under the supervision of BNL. Cabling work must comply with the industry standard AS/CA S009:2013 Installation requirements for customer cabling (wiring rules). The wiring rules detail the minimum requirements for cabling installations to ensure that network integrity and the health and safety of end-users, other cablers and carrier personnel is protected.

8. Overseas Hand-off Points

BNL International Ethernet Transport services will be delivered by Southern Cross at the requested overseas SX Point-of-Presence (POP). BNL Customers are required to make their own arrangements for any further extension of services by licensed services providers available at each SX POP.

At the overseas end, Operators will require additional services to be able to efficiently interconnect to and utilise the BNL Southern Cross cable capacity. This section provides information to help identify a range of Service Providers who may be able to provide necessary support.

BNL can offer Customers access via any of the Southern Cross access points across the provides access via two cable stations in each of Sydney, Auckland, Hawaii and the US mainland, and two in Fiji (upon the completion of NEXT). Access is also available via the CoreSite Market Post Tower facility in San Jose, California, the Westin Building (WBX), Seattle, Equinix in San Jose, Coresite 1 and 2 in Los Angeles, Equinix 1 in Los Angeles, Hillsboro and Equinix SY1 and Global Switch in Sydney. It is Operator choice where to egress or interconnect at the distant end, though some off-net locations (refer Table 2 below) may incur an incremental backhaul extension charge, and in most overseas countries on the SX network Operators can connect either directly at the SX Network Interface Point within a cable station or an access point, or obtain access via a Backhaul Provider.

Backhaul Providers provide the connection between BNL's Southern Cross capacity and the respective distant-end domestic network by providing access to relevant Southern Cross cable stations.

Backhaul capacity is available on a competitive basis in terms of pricing, provisioning and operational performance at all destinations on the SX network. Multiple backhaul providers are available in the US mainland, Australia, New Zealand and Hawaii.

Southern Cross provides this list of potential backhaulers to all on-net locations to assist Operators in obtaining services they require. Please go to the following link:

<https://southerncrosscables.com/home/network/backhaulers>

However, all commercial arrangements for obtaining the backhaul services offered are a matter between each Operator and their selected backhauler. Should you have any queries about the provision of service, please contact the appropriate provider directly.

End of Access Guidelines