Broadbanding
Australia

Access Seeker Interoperability Certification Test Program

NBNCo
Limited

NBN Co Limited

Information Paper – Access Seeker Interoperability Certification Test Program

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2   Document Purpose

This document details the Access Seeker Interoperability Certification Test Program. It provides an overview of the program and details the interoperability certification testing activities that are required to be undertaken by Access Seekers in order to gain certification to connect and provide services across the National Broadband Network (NBN). It is not the intention of this document to cover the details of pre-certification activities such as Access Seeker product development and integration testing.

3   Program Overview

Before an Access Seeker can connect to the NBN and provide services, it must undertake a number of interoperability certification tests and business process acceptance activities. The Access Seeker Interoperability Certification Test Program forms part of the Access Seeker Accreditation Program which enables Access Seekers to certify to connect to the NBN and to provide services to their End Users. The program has varying levels of certification covering areas such as the Network-to-Network Interface (NNI), product and service conformance, and Business-to-Business (B2B) systems. Certification testing is conducted in a model environment at the NBN Co National Test Facility (NTF) in Melbourne. Depending on the type of testing undertaken, the Access Seeker may not be required to be onsite and may be able to test remotely.

Before an Access Seeker can commence the certification program, it must complete the relevant pre-requisite activities. These include having commercial agreements in place and having completed all product development and integration activities. NBN Co will supply a Pre-Certification Test Plan that includes a list of test requirements, specifications and test cases that must be completed prior to the Access Seeker commencing interoperability certification testing at the NTF. The Access Seeker must demonstrate their readiness to certify by completing the relevant modules in the Pre-Certification Test Plan and providing the results in a report.

An Access Seeker's product development and integration is not part of the scope of this interoperability certification test program. Product development and integration is a pre-requisite and is considered part of the pre-certification phase. To assist with product development and integration, Access Seekers will be able to purchase basic test services at any of the first release Point of Interconnection sites.

The Interoperability Certification Test Program is modularised and contains a number of test domains which can be selected by the Access Seeker as required. Base modules must be completed by all Access Seekers with optional modules being selected based on the Access Seeker's product requirements.

The interoperability certification program is divided in to four phases to align with capability releases. This approach allows the Access Seekers to offer additional services as capability is progressively released.

Access Seeker – Interoperability Certification Test Program

Phase 1 – NNI(Basic), UNI-D(Basic) High Speed Internet AVC & Uni-V Voice ATA services – Manual Processes

Phase 2 – NNI(Protected) Diverse Chassis, UNI-D(Enhanced) Multicast AVC & port tagging– Semi-Automated B/OSS

Phase 3 – NNI(Protected) Diverse PoI, UNI-D(Enhanced) Additional traffic classes

Phase 4 – UNI-D, Very High Speed AVC, VLAN Transparency – Fully Automated via B2B systems

Table 1 shows the modules that are covered in each of the four phases.

	NNI Basic	NNI Protected Diverse Chassis	NNI Protected Diverse PoI	UNI-D Basic Data Service	UNI-D Enhanced	Traffic Conformance and Handling Tagging. CoS/QoS	UNI-V Voice ATA	Multicast Services	VLAN Transparent Services	WebPortal	B2B Interface	Business Readiness Testing
Phase 1	✓			✓		✓	✓					✓
Phase 2		✓			✓	*		✓		✓	✓	*
Phase 3			✓		*	*				*	*	*
Phase 4									✓	*	*	*

* If completed in previous phases, a reduced test set targeting the new functionality/changes will be executed

Table 1 – Interoperability Certification Test Program Phases

The test program is conducted by NBN Co in conjunction with the Access Seeker to certify that their solution conforms to NBN Co's criteria. The majority of this testing is automated and requires the Access Seeker to order and build test services exactly as specified in the NBN Co Certification Test Plan.

Once the required level of testing is successfully completed, and the Access Seeker has demonstrated their understanding and acceptance of NBN Co's business processes, the Access Seeker gains certification and is able to connect and provide services to their End Users across the National Broadband Network.

4   Test Domains

The Interoperability Certification Test Program is segmented into Test Domains to provide a modularised approach, thereby giving the Access Seeker the flexibility to select the modules required to support their current and future product scope. Access Seekers may wish to gain the base level of certification immediately but may not be ready to offer other services such as Multicast and therefore opt to gain Multicast certification at a later date. This flexibility allows the Access Seeker to connect and provide basic services across the NBN upon successful completion of the base testing. Access Seekers can plan to complete other optional modules in line with the product development roadmap, gaining certification to provide these products and services to their customers when they become available. Initial testing will be conducted per the 4 phase approach detailed in Section 3 and Table 1.

Initial testing allows Access Seekers to take advantage of an accelerated accreditation for Basic High Speed Internet and Voice ATA Services, and then provides the opportunity to certify against new capability as it becomes available. Both the initial program and the ongoing Interoperability Certification Test Program give the Access Seeker the flexibility to select and certify against optional functionality as it becomes available. For example, if the Access Seeker currently provides only High Speed Internet services, then Voice-ATA and Multicast services modules would not need to be completed. However the NNI and UNI test modules must be completed along with service and product conformance for the basic data service offering. As product and service suites evolve Access Seekers may wish certify to against some of the optional modules. After completing the development and integration of their product, the modules required to gain certification to provide the selected services can be completed.

NBN Co's Pre-Sales team will work with Access Seekers to formulate product configuration templates and agree upon the testing to be executed during the certification phase.

Access Seekers must demonstrate their readiness to certify prior to commencing interoperability certification testing.   For each request to complete interoperability certification the Access Seeker will need to provide a test report detailing the results of the relevant testing as outlined in the Pre-Certification Test Plan. This test report will demonstrate that the Access Seeker has satisfied all of the pre-requisites and is ready to begin the interoperability certification process. The specific pre-requisites for each test domain are detailed in the subsections below.

Details on the network architecture and support protocols and standards can be found in the relevant NBN Co Product Technical Specifications documents, which are available on NBN Co's website.

4.1   Product Certification Groupings

The phases of testing described in Section 4 consist of mandatory and optional groups of test modules. Each group requires one or more 5 day test blocks in the National Test Facility, even if the Access Seeker does not wish to certify against some of the optional modules within the group. The total test window duration depends on the level of functionality that the Access Seeker requests.

Table 2 below shows the content for each group on a per phase basis. The duration specified for each activity is the test duration only – i.e. it does not include the set-up of the environment.

A detailed timing of the activities required prior to commencing certification testing is included in section 8.1 of this document.

Test Phase	Test Group	Certification Module	Duration	Document Section
Phase 1	Group 1 5 Days (Mandatory)	NNI - Basic	2	5.2.1.3
		UNI-D Ethernet Bistream- Basic Data Services	2	5.2.2.3
		Traffic Conformance & handling	1	5.2.2.2
	Group 3 10 Days (Optional)	UNI-V Voice ATA Services	10	5.2.2.5
Phase 2	Group 1 5 Days (Mandatory if not completing Group 2)	Web Portal - Interface Interoperability Testing	1	5.2.3.2
		Web Portal - Service Ordering & Fulfilment	1	5.2.3.3
		Web Portal - Assurance	1	5.2.3.4
		Web Portal - Billing	1	5.2.3.5
	Group2 5 Days (Mandatory if not completing Group 1)	B2B - Interface Interoperability Testing	1	5.2.4.2
		B2B - Service Ordering & Fulfilment	1	5.2.4.3
		B2B - Assurance	1	5.2.4.4
		B2B - Billing	1	5.2.4.5
	Group 3 5 Days (Optional)	UNI-D Enhanced (Port Tagging)	2	5.2.2.4
		NNI Protected Diverse Chassis	3	5.2.1.4
	Group 4 10 Days (Optional)	UNI-D Multicast Service Testing	10	5.2.2.6
Phase 3	Group 1 5 Days (Optional)	NNI Protected Diverse PoI	3	5.2.1.4
		UNI-D Enhanced Traffic Class 2 and/or 3	2	5.2.2.4
Phase 4	Group 1 5 Days (Optional)	VLAN Transparent Services	4	5.2.2.7

Table 2 – Certification Program Test Content

For Test Phase 1, the Access Seeker must complete all test modules Group 1. The Access Seeker can optionally select to complete Group 2 if they require this functionality.

For Test Phase 2, the Access Seeker must complete all test modules in either Group 1 or Group 2. The Access Seeker can select to complete any of the modules in Group 3 or Group 4.

Test Phase 3 is optional and is only required if the Access Seeker wishes to be certified to provide additional traffic classes or NNI POI Diversity.

Test Phase 4 is optional and is only required if the Access Seeker wishes to be certified to provide CE-VLAN Transparent Services.

4.2   Certification Modules

4.2.1   Network-to-Network Interface

NNI Certification must be completed before an Access Seeker is able to connect to the NBN. The NNI module forms part of the base interoperability certification. There are two levels of NNI certification available:

- NNI Basic
- NNI Protected

External Network to Network Interface (as defined in MEF 26), modes of connection include single port, multiport LAG and diverse chassis or diverse site protected NNI for both variants. The level of testing conducted by NBN Co will vary according to the Access Seekers projected NNI connection requirements.

4.2.1.1   Pre-Requisites

The Access Seeker must complete the following list of pre-requisites prior to undertaking the NBN Co NNI Interoperability Certification Testing.

- Access Seeker's pre-certification test report must be submitted to and approved by NBN Co;
- Established NNI Link Layer Connectivity into the NTF must be established; and
- Connectivity from Access Seeker's core network to the internet (for return test traffic) must be established.

4.2.1.2   Co-Requisites

NNI certification must be completed in conjunction with one of the UNI product test modules. Generally, NNI and the high speed internet services/Ethernet bit-stream test modules are completed together as there is a requirement to test some functionality which requires an end-to-end service build.

At least one of the following product modules must be tested in conjunction with the NNI certification testing:

- UNI-D Ethernet Bit-stream/ High Speed Internet Services;
- UNI-V Voice-ATA Services;
- UNI-D Multicast Services; and

- Point-to-Point Services.

As part of NBN Co's Pre-Sales activities, the NNI modes of operation required for use in production will be identified and captured in the configuration templates.

Some features of the NNI are tested as part of the end-to-end service conformance testing such as 802.1p marking and 802.1ad QinQ capabilities.

4.2.1.3 NNI - Basic

The basic NNI test module is mandatory for all Access Seekers. The basic NNI connection is unprotected and supports only a single Gigabit or 10 Gigabit Ethernet connection. Items tested in this module include:

- Basic Layer 2 interoperability including connectivity & alarming
- QinQ tagging
- Maximum Transmission Unit.

4.2.1.4 NNI – Protected (Diverse Chassis and Diverse Site)

Access Seekers who require link capacity augmentation, diverse chassis or diverse site NNI connectivity are required to complete the NNI Protected test module. Items tested in this module include:

- Link Aggregation protocol support & failover / resiliency functionality
- QinQ tagging
- Maximum Transmission Unit
- Basic Layer 2 interoperability testing including connectivity & alarming.

4.2.2 Product and Service Conformance

Before an Access Seeker can provide services to End Users, they first must complete Product and Service Conformance Test Certification. This consists of the Traffic Conformance and handling module as well as at least one of the product modules.

4.2.2.1 Pre-Requisites

- Access Seeker's pre-certification test results submitted to and approved by NBN Co
- Completion of NNI certification module[1]
- Completion of all product development & integration testing
- NNI connectivity established to NBN Co's NTF
- Connectivity from the Access Seeker's core network to internet (for return test traffic) established.

4.2.2.2 Traffic Conformance and Handling

This module validates that the Access Seeker is correctly handling the Cos/QoS markings and associated traffic management. The tests are conducted across end-to-end services, and therefore this module must be tested in conjunction with one of the product modules set out below.

Prior to testing, NBN Co will provide the Access Seeker with a list of services and parameters that are required for the selected test modules. As part of the initial business readiness testing, the Access Seeker must place service orders for these services as per the

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[1] May be completed in conjunction with the product and service conformance testing

NBN Co business processes. Due to the nature of the testing undertaken, it is imperative that the services are ordered exactly as directed, otherwise it will fail testing of this module.

Items tested in this module include:

- Conformance to the service addressing scheme as defined in the relevant Product Technical Specification
- CoS conformance, 802.1p mapping, marking and handling
- Bandwidth specification models & traffic management.

4.2.2.3   UNI-D Ethernet Bitstream – Basic Data Services

This module validates that the Access Seeker is able to provide and support an Ethernet bitstream data service over the NBN to their customers. As part of the initial business readiness testing, the Access Seeker must place service orders for these services as per the NBN Co business processes. Due to the nature of the testing that will be undertaken, it is imperative that the services are ordered exactly as directed, otherwise the Access Seeker will fail the testing of this module.

These services may also be used to facilitate some components of the traffic conformance and handling, NNI and systems interoperability certification testing including fulfilment, assurance and billing.

Items tested in this module include:

- UNI-D Port modes (line rates & negotiation)
- Conformance to the service addressing scheme as defined in the relevant Product Technical Specification
- Ingress 802.1p mapping and marking
- Bandwidth profiling
- Throughput and user experience[2]

Basic interoperability testing with common CPE will be conducted by NBN Co. At the discretion of NBN Co, this testing may also be conducted using the Access Seekers chosen residential gateway devices. It is recommended that Access Seekers who will be providing VoIP services across the UNI-D port use their existing CPE for some areas of this testing.

4.2.2.4   UNI-D Ethernet Bitstream - Enhanced Options

There are a number of enhanced options for the UNI-D which become available in Phases 2 and 3. To provide additional service to their End Users, Access Seekers may wish to certify against these options as they become available. The options include UNI-Data port tagging and additional traffic classes. Access Seekers can select any valid combination of these options.

Testing will be specific to the options selected.

4.2.2.5   UNI-V Voice-ATA Services

In order for the Access Seeker to offer a voice service terminating on the NTU ATA port, interworking and conformance must be tested between the Access Seeker's softswitch and the ATA port on the NTU. The Access Seeker must be able to support the minimum requirements and feature set as defined by NBN Co.

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[2] User Experience will be measured in a quantitative manner using tools such as NBN Co Speetest and iperf type applications

Minimum requirements and supported features for each UNI-V ATA variant can be found in relevant NBN Co Product Technical Specification. The Access Seeker must have completed the UNI-V ATA integration testing as outlined in the Pre-Certification Test Plan prior to commencing certification testing.

The Access Seeker must demonstrate the capability to provide the following functions:

- Access to the Emergency Call Service (ECS) (Triple Zero)
- Local Number Portability
- Lawful Intercept.

Items tested in this module include:

- SIP Configuration
- SIP Authentication
- SIP Signalling
- SIP feature support and compatibility
- Dial Plan configuration
- Call management and user experience[3]
- Digit Recognition
- 802.1p mapping and marking (NNI Ingress).

POTS handsets will be provided for the purpose of testing.

4.2.2.6 UNI-D Multicast Services

To be able to offer Multicast based services to their End Users, Access Seekers must first complete the Multicast Services certification module. This module tests interworking and conformance to NBN Co's multicast product specifications. The Access Seeker will be provided with a detailed list of service parameters that are required in order to complete this testing.

Items tested in this module include:

- IGMP interoperability over the NNI
- IGMP Performance (join times etc)
- Conformance to addressing schemes.

4.2.2.7 VLAN Transparent Services

This module validates that the Access Seeker is able to configure and support VLAN Transparent Services. This product is provided as an option for business services that require the ability to utilise VLAN operation across a WAN. The CE-VLAN Transparent mode allows the Access Seeker to use the C-TAG for its own purposes, within an End User's service. For more information on this mode of operation and the associated implications please refer to the Fibre Access Services Product Technical Specification.

Items tested in this module include:

- UNI-D Port modes (line rates & negotiation)
- Conformance to the service addressing scheme as defined in the Fibre Access Services Product Technical Specification
- Ingress 802.1p mapping and marking

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[3] User Experience will be measured using traffic & call generators/analysers

- Bandwidth profiling
- Throughput and user experience[4]

4.2.3 Web Portal

Access Seekers that elect not to utilise the NBN Co B2B Systems Interface will be required to manage and operate services via the Web Portal. The Web Portal is available from Phase 2 onwards. The areas requiring testing include interface connectivity, security, service ordering/provisioning and billing. Tests will be conducted to validate that the Access Seeker is correctly sending and responding to transactions from NBN Co's systems.

For Phase 1 testing, all service ordering for the network layer certification modules must be completed through manual processes.

The majority of Web Portal certification testing can be conducted remotely, therefore the Access Seeker will not be accommodated at the NTF. An established NNI connection is not required unless the Access Seeker is certifying for a new network level feature at the same time, or requires end to end connectivity to validate service builds.

Once the Access Seeker has demonstrated their readiness to certify, NBN Co will allocate a number of UNI ports, in addition to those allocated for network layer interoperability certification testing on the NTF environment. These ports are to be used for the duration of the test window. Ports will be spread across both dedicated and shared NTUs to provide a production-like representation. In cases where the Access Seeker wishes to validate their end-to-end service builds, a test room will be made available at the NTF and the NTU ports will be terminated in that room.

To avoid testing conflicts and interruptions it is essential that Access Seekers only provision services on their allocated ports.

Please note that failure to adhere to this requirement will result in the termination of access to the NTF and the certification testing being undertaken.

4.2.3.1 Pre-requisites

In order for the Access Seeker to be granted permission to begin B2B Certification Testing, the Access Seeker must have completed the following pre-requisites:

- Access Seeker's pre-certification test report submitted to and approved by NBN Co
- Successful completion of all development testing against NBN Co provided Web Portal stub
- Successful completion of pre-certification activities
- Established connectivity to NBN Co's Test Facility Web Portal B2B Interface

As the majority of this testing will be conducted remotely, Access Seekers must ensure that the required connectivity is in place prior to commencing the testing program.

4.2.3.2 Web Portal Connectivity

Connectivity to the Web Portal must be established before Access Seekers can make use of the functionality. This includes configuring their account and security parameters required to establish the connection. The communications between the NBN Co systems and the Access Seekers systems is then required to be tested.

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[4] User Experience will be measured in a quantitative manner using tools such as NBN Co Speed test and iperf type applications

4.2.3.3   Service Ordering and Provisioning

The Access Seeker will be required to generate service orders for the various services and product sets that are being offered. These will be based on the configuration templates defined during the pre-certification activities. NBN Co will provide the Access Seeker with a list of services and parameters to provision as well as a list of actions that need to be executed in order to complete testing. This testing focuses on the following areas:

- Correct format of information being sent to NBN Co via Web portal
- Correct handling of responses from NBN Co
- New Service provisioning
- Service Modifications and Changes
- Service Churn/Migration
- Service Termination.

4.2.3.4   Assurance

Access Seekers will need to demonstrate their ability to manage and operate their services on the NBN. This testing will focus on various operational and support functions available through the Web Portal. This testing focuses on the following areas:

- Raising and managing trouble/fault tickets
- Handling of alarms sent via the B2B Interface
- Ability to use the diagnostic functionality provided via the Web Portal

4.2.3.5   Billing

Access Seekers must demonstrate the capability to correctly handle and process the billing information sent from the NBN Co Billing System and to raise and respond to trouble tickets for billing enquiries and disputes.

4.2.4   B2B Interface

Access Seekers may wish to take advantage of the NBN Co B2B Interface to order, manage and operate services. The B2B Interface will become available from Phase 2, and Access Seekers wishing to utilise it will be required to certify. The key areas requiring testing include connectivity to the systems interface, including configuration of the secure connection, service ordering and provisioning, assurance and billing. Tests will be conducted to validate that the Access Seeker is sending correctly formatted data and responding to transactions from the NBN Co systems.

NBN Co will provide the Access Seekers with an Industry Interface Specification as well as a B2B Stub environment to allow the Access Seekers to develop their B2B Interface prior to placing the request for certification testing through the NTF. In most cases B2B Interface certification testing can be conducted remotely, and therefore the Access Seeker will not be provided with accommodation at the NTF, unless it is being tested in conjunction with modules from the network layer interoperability certification suite. An established NNI connection will not be required unless the Access Seeker is certifying for a new network level feature at the same time, or requires end to end connectivity to validate service builds. Access Seekers will require an established systems connection to the NTF B2B Interface.

Once the Access Seeker has demonstrated their readiness to certify, NBN Co will allocate a number of UNI ports, in addition to those allocated for network layer interoperability certification testing on the NTF environment. These ports are to be used for the duration of the test window. Ports will be spread across both dedicated and shared NTUs to provide a production-like representation. In cases where the Access Seeker wishes to validate their

end-to-end service builds a test room will be made available at the NTF and the NTU ports will be terminated in that room.

To avoid testing conflicts and interruptions it is essential that Access Seekers only provision services on their allocated ports.

Please note that failure to adhere to this requirement will result in the termination of access to the NTF and the certification testing being undertaken.

4.2.4.1 Pre-requisites

In order for the Access Seeker to be granted permission to begin B2B Certification Testing, it must first complete the following pre-requisites:

- Access Seeker has built their B2B systems to interface to NBN Co in accordance with the published NBN Co B2B Technical Specifications
- Access Seeker's pre-certification test report submitted to and approved by NBN Co
- Successful completion of all development testing against NBN Co provided B2B Stubs
- Successful completion of pre-certification activities
- Established connectivity to NBN Co's Test Facility B2B Interface.

As the majority of this testing will be conducted remotely, Access Seekers must ensure that the required connectivity is in place prior to commencing the testing program.

4.2.4.2 B2B Interface Interoperability Certification

Before Access Seekers can use the NBN Co B2B Interface, their system must first be configured to make the connection. This includes configuring the account and security parameters required to establish the connection. The communications between the NBN Co systems and the Access Seekers systems will then require testing. Items under test in this module include:

- B2B Interface connectivity and security
- Correct format of information being sent to NBN Co B2B Interface
- Correct handling of responses from NBN Co B2B Interface.

4.2.4.3 Service Ordering and Provisioning

The Access Seeker will be required to generate service orders for the various services and product sets that are being offered. These will be based on the configuration templates defined during the pre-certification activities. NBN Co will provide the Access Seeker with a list of services and parameters for provisioning as well as a list of actions that need to be executed in order to complete testing. This testing focuses on the following areas:

- Correct format of information being sent to NBN Co B2B Interface
- Correct handling of responses from NBN Co B2B Interface
- New Service provisioning & management of orders
- Service Modifications and Changes
- Service Churn/Migration
- Service Termination.

4.2.4.4 Assurance

Access Seekers will need to demonstrate their ability to manage and operate their services on the NBN. This testing will focus on various operational and support functions available through the B2B Interfaces. This testing focuses on the following areas:

- Raising and managing trouble/fault tickets
- Handling of alarms sent via the B2B Interface
- Ability to use the diagnostic functionality provided via the B2B Interface

4.2.4.5 Billing

Access Seekers will need to demonstrate that their B2B Interface will function correctly. This will involve demonstrating that their B2B Interface can properly handle and process the billing information sent from the NBN Co Billing System, and to raise and respond to trouble tickets for billing enquiries and disputes.

5   Test Environment

The National Test Facility, located in Melbourne, consists of a number of production-like model environments which will support all levels of testing. The NTF provides Access Seekers the opportunity to gain certification to connect to and provide services over the NBN.

Depending on the types of certification testing being undertaken, the Access Seeker may require to work on site at the NTF. In these cases the Access Seeker will be provided with a secured test room. Facilities available in the secured test rooms include telephones, internet connectivity for VPN access back to the Access Seeker's VPN gateways, fibre and copper connectivity to the test line and a television.

5.1   Test Lines

The test line configurations will provide Access Seekers with a mix of dedicated and shared NTUs across the model. Dedicated NTUs will be located in the secured test rooms, whereas shared NTUs will be located in the lab and will be broken out on a port basis into the secured rooms over CAT6a patching.

For all product and service certification testing, Access Seekers will be required to have an established connection from the NTF test model NNI back to their network infrastructure. NBN Co staff will be available to support the connectivity within the NTF environment.

The below diagram provides an overview of the Access Seeker On Boarding test line.
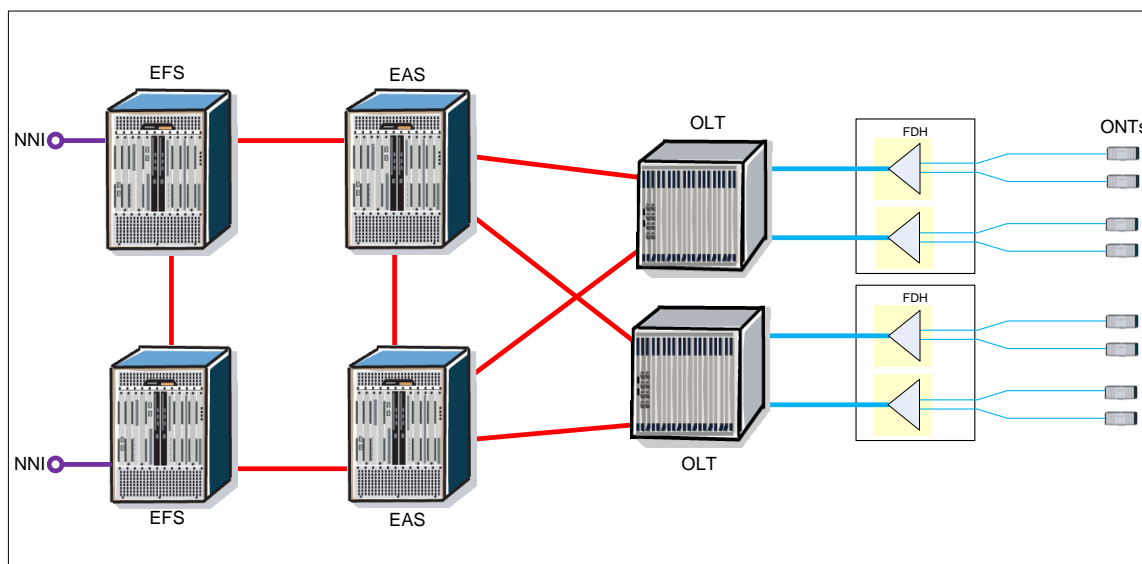
Diagram 1 – NTF Access Seeker On Boarding test line overview

5.2   Resources

The Access Seeker is required to provide both technical and non-technical staff with relevant expertise to support their own testing. While NBN Co will provide the resources required to execute the certification testing modules, the ordering of the products/services required for testing must be initiated by the Access Seeker as per the current business processes. This must be done via the test facility web portal or B2B as it would be for a production service.

5.3   Connectivity Requirements

NBN Co will manage all on-site patching and connectivity, with the demarcation point being the ODF. This includes the patching of the NNI from the NTF EFS to the ODF, the connection between fibre ports on the ODF, the patching of the NTUs to OLTs, and/or the Cat6a break-out patching from the shared NTUs into the secured test rooms.

5.3.1   NNI Connectivity

There are two options available to Access Seekers for connecting to the NTF EFS NNI for testing. Depending on their requirements, Access Seekers can either provision their own service to the NBN Co West Melbourne POI or co-locate their NNI equipment in the NTF. Multiple services are required for Access Seekers who wish to test link aggregation or resiliency.

NBN Co's NTF will have an EFS pair located at the West Melbourne POI allowing Access Seekers to gain connectivity into the Certification Test line from the POI. The Access Seeker will need to provision a service into the POI and this may be the same service that is intended for use as their production NNI once certified. Alternatively it could be a service that the Access Seeker uses between the pre-certification development/integration test services they have purchased, and the Certification test line for ongoing staged development and certification. The Access Seeker can request, via their Account Manager, to have the interconnect moved between test lines when required.

Where the Access Seeker chooses to co-locate their network edge equipment in the NTF, secure facilities will be provided to house their equipment. Their equipment can be connected via direct fibre to the NTF NNI. Access Seekers who wish to utilise LAG or NNI protection may take this option to reduce upfront provisioning costs. It is not deemed

practical to co-locate Access Seekers' network core infrastructure (e.g. BRAS/BNG, SIP Server/Gateways etc) and therefore co-location may be limited to NNI interoperability certification testing only.

5.4 Hardware Requirements

NBN Co will provide a production representative model and will present the Access Seeker with UNI ports on the NTUs and NNIs on the EFS. The NTUs are located in the secured test rooms and in the lab. In addition to the test model, NBN Co will provide a television in each secured room should the Access Seeker wish to use it for their product/service testing.

The Access Seeker will need to provide their own CPE (e.g. residential gateways, set top boxes, and laptops/PCs).

6 National Test Facility Engagement Process

Test facility engagement will be managed as part of the overall accreditation program by the Pre-Sales team.

7 Test Program Management

There are many tasks that must be completed, and deliverables to be submitted prior to entering the interoperability certification test phases in the NTF. The timing of these tasks and deliverables are crucial to the successful outcome of the test program. Testing cannot commence if the Access Seeker has not met all of the entry criteria, including the completion of all relevant testing as detailed in the Pre-Certification Test Plan.

7.1 Test Program Timeline

The Access Seeker must notify their NBN Co Pre-Sales team of their readiness to commence certification no later than 6 weeks prior to their preferred commencement date. The NBN Co Pre-Sales team will then engage the NTF to arrange the Certification Program. The NBN Co Pre-Sales in conjunction with the NTF Environment Manager will confirm if the facility is available for the requested period, and will provide alternate dates if the facility is not available.
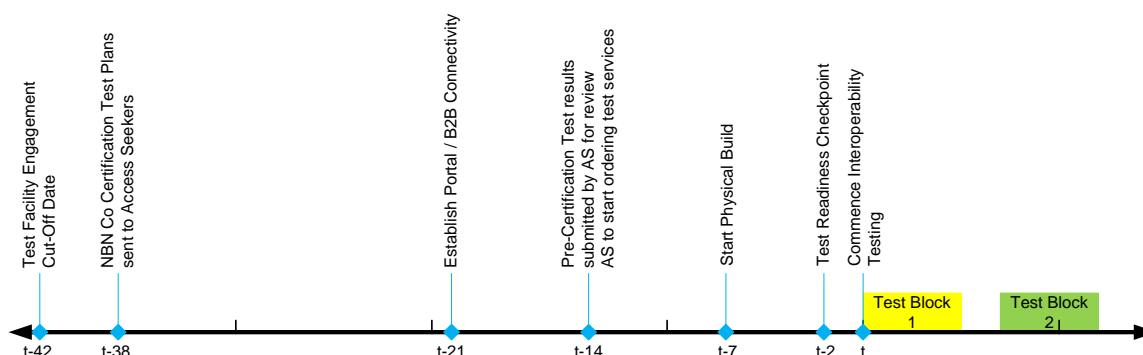

Diagram 2 – Interoperability Certification Program Timeline

Access Seeker – Interoperability Certification Test Program

The above diagram provides a brief overview of the program timeline. Timings are given in days where t=0 is the day interoperability certification is to commence. A description of each milestone marker is given below.

- t-42: The Access Seeker must notify their NBN Co Pre-Sales team of their intention to conduct certification testing no later than 6 weeks (42 days) prior to their preferred test commencement date. Upon receiving the request, NBN Co will review the request and advise if the preferred dates are available. In the case that the facility is not available for the requested dates, NBN Co will provide details of the next available slots.
- t-38: NBN Co will send the Access Seeker the Certification test Plan. This test plan details the testing that NBN Co will conduct on the services ordered by the Access Seeker. This test plan also provides details such as the NNI port allocation, NTU port allocations and service parameters, including connectivity VC requirements and Access VC requirements.
- t-21: NBN Co will begin work with the Access Seeker to establish connectivity to the test facility Web Portal or B2B Interface. The Access Seeker will be given their account details and any other required information.
- t-14: The Access Seeker must present the results of the pre-certification testing that was detailed in the Pre-Certification Test Plan that they received when the qualification stage was passed. In order to proceed, all required testing from the Pre-Certification Test Plan must be successfully completed. Upon NBN Co's acceptance of the Access Seeker's test results, the Access Seeker will be granted the required permissions to begin ordering their certification test services via the Web portal or B2B Interface. Access Seekers must place orders for these services as directed. If the services are not ordered exactly as described in the interoperability certification test plan, the testing will fail. The interoperability certification test case suites require the correct parameters to be configured on the end-to-end services.
- t-7: NBN Co NTF staff will patch the NNI connection and work with the Access Seeker to resolve any physical connectivity issues.
- t-2: NBN Co will conduct a test readiness review to ensure that all pre-requisite work has been successfully completed. Items included in the review are:
  o Established NNI connectivity
  o Established Web portal access / B2B Interface
  o Service ordering is complete and End-to-End service build has been completed and is configured as per the details in the interoperability certification test plan
  o All pre-requisites as detailed in the interoperability certification test plan have been completed.
- t: Interoperability Certification testing commences.

As detailed in earlier sections of this document, the interoperability certification testing will be conducted over one or more five day blocks, based on the certification group selections made by the Access Seeker.

NBN Co will provide the Access Seeker with a test report that details the results of the interoperability certification testing undertaken. This report gives a Pass or Fail result based on the pre-determined test criteria.

In the case that testing fails and the Access Seeker can resolve the defects or issues within the remaining time booked for testing, NBN Co, at their discretion, may re-run the failed test cases.

7.2   Failed Test Windows

If the Access Seeker is unable to successfully resolve any issues or defects that have resulted in the interoperability certification testing failing, then the will need to retest at a later date. Once the Access Seeker has resolved the outstanding issues or defects, they will need to rebook the test window in order to repeat interoperability certification testing.