NSI V2.0 Interop 2012

**DRAFT**

NSI version 2.0 is due to be out in draft form in July 2012. This document describes a series of interoperability tests and demonstrations among a number of NSI V2 implementations. The standards document and the new features of v2 will continue to go though some changes as the initial implementations are tested and provide feedback. The intent is to have a final v2 specification by the end of the 2012 calendar year, and a number of proven software implementations of V2 running continuously within a real global testbed network.

Despite the moving target of Version 2.0 specification, the basic feature set has been defined and the manner in which these features will function are generally understood. Thus, the document will be refining and resolving the details through the fall – not adding new features or dramatically changing the architecture. The initial implementers have been involved in the development of the spec, so there is little mystery in how the NSI V2 architecture will function.

**Timeline**

Therefore, in order to aid in the validation of new functional capabilities of v2, and to provide a structure approach to interoperability testing, a “Plugfest II” NSI v2 demonstration series is being crafted for presentation at a number of events over the fall and winter of 2012. The initial Plugfest II event will be held at the GLIF 2012 Workshop in Chicago in October 2012, followed by another at Supercomputing in Slat Lake City in November 2012. A third demonstration is tentatively scheduled for the Joint Techs/APAN meetings in Honolulu in January 2013.

This Interop schedule and process will resemble the NSI V1 Plugfest demonstrations performed through the fall of 2011. The initial V2 “Alpha” testing will be performed independently by each implementation to debug their code and to prove self consistency in each implementation. Phase 2 “beta” testing will be the first interoperability demonstrations between different implementations using a dummy data plane. The third phase of testing will incorporate the GLIF Automated GOLE testbed with real hardware data plane.

**Functionality**

There are a number of new features in NSI v2. This interop series is not intended to be a conformance test. It is intended to show that NSI – version 2 in particular – is moving forward and making tangible progress towards standardization, implementation, field deployment, and ultimately toward production availability.

Thus, the Plugfest II will identify key feature sets that provide key new capabilities in version2 that go beyond version1. These key feature sets are as follows:

1. Topology enhancements
   1. NML basic integration
   2. Scaling for realism.
   3. Topology state update and distribution
2. Path finding enhancements
   1. EROs
   2. Type-Value Pairs
3. Operational readiness
   1. Modify command
   2. Version detection and interoperability
   3. Authentication and Authorization.

This is not intended to be a comprehensive test of all NSI features. Nor does this list impose a priority ordering. These are simply the features that are deemed most important to move NSI V2 ahead and towards a global production deployment.

Each of these key features tests is described in more detail below:

**Topology Enhancements**

The topology files will contain pointers to each other. I.e. each file will define a single NSI domain, and each SDP in that nml config will include a name of the peer network and the

Basic Integration

The key topology enhancement for NSI V2 is the migration to NML. NML will be a moving target itself as it is a broad standard and has so far no formal specification. Thus, for NSI v2 we are adopting only a few key elements of NML for testing. These include 1) “topology” object, 2) “node” object, 3) “port” and “portGroup” objects, and the 3) “link” object.

Scaling for Realism

Topo files will be generated that will contain realistic and typical hardware configurations. For example, STPs containing 1000+ virtual lan endpoints.

TOpo update and distribution

NML topology files –probably in RDF/OWL form - will be generated for basic testing. The topology that will be defined will consist of a netwok of (n) NSI service domains, connected so as to form a high degree of connectivity – though not a full mesh.

**Path Finding**

EROs

Type-value pairs

**Operational Readyness**

Modify

Versioning

AAI

**The Interop Process**

Alpha testing.

In the Alpha test phase, self consistency is the primary objective. An implementation is expected to demonstrate that new NSI v2 features work within an inter-domain environment consisting solely of its own NSAs. Since some of the changes in V2 affect the messaging formats of version 1, it is imperative that all basic primitive functionality to move a Connection through its life cycle be thoroughly re-tested as part of V2 Alpha testing.

The basic functions to be tested should include:

1. Single domain Reserve, Auto-Start, test ping, auto-release and auto terminate.
2. …
3. …

The new topology formats will be a major thrust of Alpha testing. The intent is to show that NSI can process the NML form topology.

Beta Testing

In Beta, the software should be nearing production readiness. In the NSI v2 Interop series, the beta demos should be running on real hardware. We plan to demonstrate Beta software at Supercomputing in Salt Lake City.

V2 Final testing

At this stage, v2 implementations will be working out some corner cases that probably had not been anticipated. The venue for this demo will [hopefull] be the Joint Tech meeting in Honolulu in January 2013.

A set of test plans will be defined for each of the stages.

A score card will be maintained reflecting the implementation conformance. As each phase of testing is completed, the score card will be updated.