NSA Functional Components

# Introduction

The objective of this document is to identify functional components that are required by a Network Service Actor (NSA). Some for the components may be implemented within the framework of the NSA proper, while others may be external services. This document is driven from a functional design perspective and not an implementation specification. At this juncture in time, eight components have been identified (see Figure 1); Provider Agent, Authentication, Authorization, Topology, NSA Lookup, Path Finding, Coordination Agent, Local Resource Management, Requestor Agent(s), and Notifications. *It should be noted that only the Provider Agent and Requester Agent(s) are part of the NSI and will utilize the NSI protocol.*

Figure 1\*. NSA Functional Components

*\*Figure 1 is a generic diagrammatic representation of an NSA and does not imply any implementation designs*

# Provider Agent

The Provider Agent is the external service interface for the NSA that receives service requests from requesting actors. It is essentially the server side interface of the NSI.

# Authentication

Authentication is necessary to prove the validity of the requester, and that the request is genuine. The authenticated identity is subsequently used for other functions such as authorization and accounting. The authentication function is not only used by the provider agent to process requests, but by other components such as the Requester Agent to initiate requests.

# Authorization

Authorization is the process to determine if a request has the appropriate permissions to be granted. The need for authorization may be ubiquitous to the other functions in the NSA.

# Topology

The topology essentially comprises the necessary information for the inter-domain path finding process. The topology information may be as detailed as a physical layout of a network, or as abstract as a single node representing an entire network.

# NSA Lookup

The NSA lookup determines the appropriate set of NSAs to contact based on its relationship to a set of topology elements. This function essentially serves as a topology element to NSA contact information (e.g. service address) mapping.

# Path Finding

Path finding is responsible for determining the inter-domain path that corresponds to a portion of the reservation, or the entire end-to-end route. This function is traditionally attributed to a Path Computation Engine (PCE). The path is computed according to information stored in the topology and MUST respect constraints requested by the user (e.g. bandwidth, delay, etc.).

# Coordinator Agent

The Coordinator Agent is responsible for coordinating requests for resources as well as services that span multiple NSAs.

# Local Resource Management

Local resource management denotes the ability to control, provision, and manage local network resources. This constitutes the manipulation of the local network domain’s data plane.

# Requester Agent(s)

The Requester Agent is the external service interface for the NSA that makes service requests to provider actors. It is essentially the client side interface of the NSI.

# Notifications

Notifications disseminate information related to the state of NSA and the resources under its management to elements external to the NSA. This function is traditionally attributed to a notification broker.