Network Services Interface

Interface Discovery

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Discovery Service

The NSI Discovery Service is part of the NSF suite of protocols, and is a simple peer-to-peer flooding protocol for exchange and distribution data documents between NSA within the interconnected network or "document space".

It supports both polling and subscription based notification mechanisms for exchange of documents.

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What is a document?

A document is any piece of information that needs to be distributed to all peers participating in the Discovery Service. A document is rapped in meta-data within the space to allow for identification and maintenance.

The original document contents and associated meta-data are propagated untouched throughout the document space.

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Documents

A document's meta-data entry is composed of the following attributes:

nsa
The source NSA associated with the generation and management of the document within the network. This is assumed to be the NSA to which the document relates, however, there may be situations where this assumption is not true.

For example, if the document being generated is the NSA Discovery Document for NSA "*urn:ogf:network:example.com:2013:nsa:vixen*", then the *nsa* element should contain is the NSA identifier "*urn:ogf:network:example.com:2013:nsa:vixen*".

type
The unique string identifying the type of this document. A document type is defined by the type and release of a data document. For example, NSI Topology version 1.0 and a future NSI Topology version 2.0 would be considered two different document types:
  • org.ogf.nsi.topology.v1
  • org.ogf.nsi.topology.v2

id
The identifier of the document. This value must be unique in the context of the nsa and type values.

version
The version of the document, or more specifically, the date this version of the document was created. Any updates to the document must be tagged with a new version.

expires
The date this version of the document expires and should be deleted from document space and any clients caching the document. More information is provided in Section **Error! Reference source not found.**.

signature
An OPTIONAL digital signature of the document contents.

contents
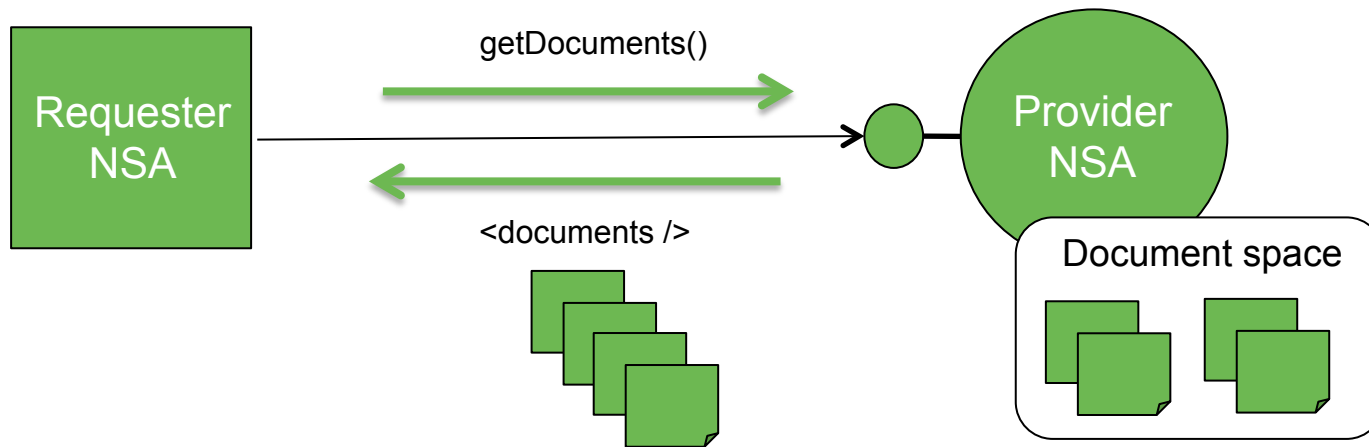The contents of the document modeled by this document meta-data.

Operations

getDocuments([nsa], [type], [id], [lastDiscoveredTime])

getLocalDocuments([type], [id], [lastDiscoveredTime])

getDocument(nsa, type, id, [lastDiscoveredTime])

addDocument(nsa, type, id, version, expires, [signature], contents)

updateDocument(nsa, type, id, version, expires, [signature], contents)
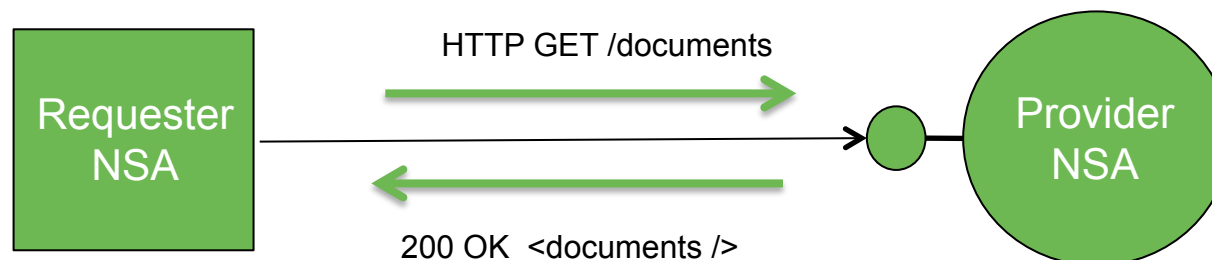

addSubscription(requesterId, callback, filter)

editSubscription(id, requesterId, callback, filter)

deleteSubscription(id)

getSubscriptions([requesterId], [lastDiscoveredTime])

getSubscription(id, [lastDiscoveredTime])

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Basic Request/Response

Requester NSA → getDocuments() → Provider NSA

Requester NSA ← <documents /> ← Provider NSA
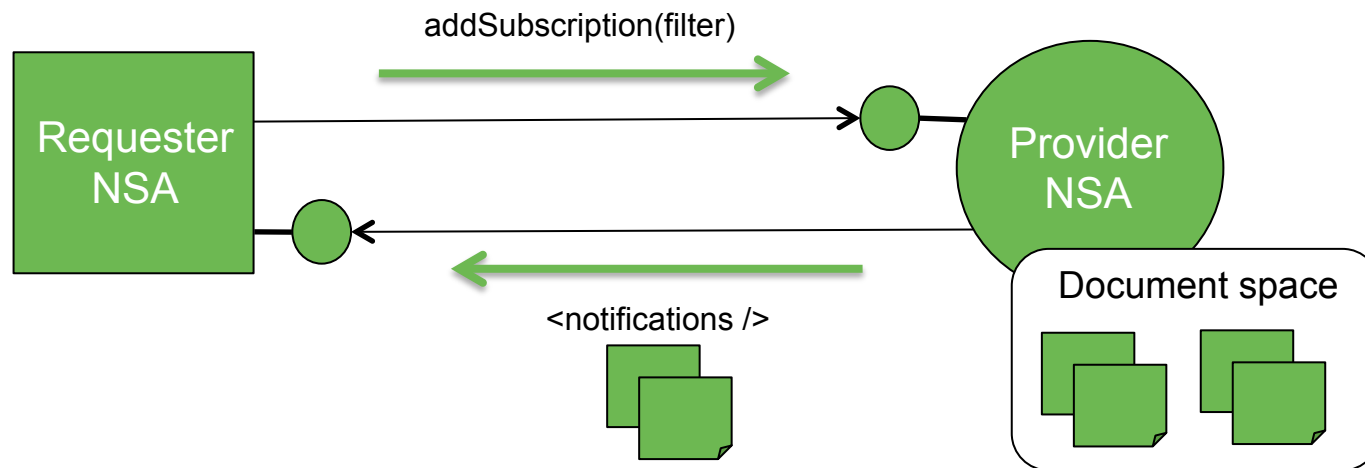
Document space

Basic Request/Response

- Discovery Service uses a basic request/response messaging model with an HTTP binding:
  - HTTP GET carries the discovery request operation
  - HTTP 200 OK response carries result of the operation
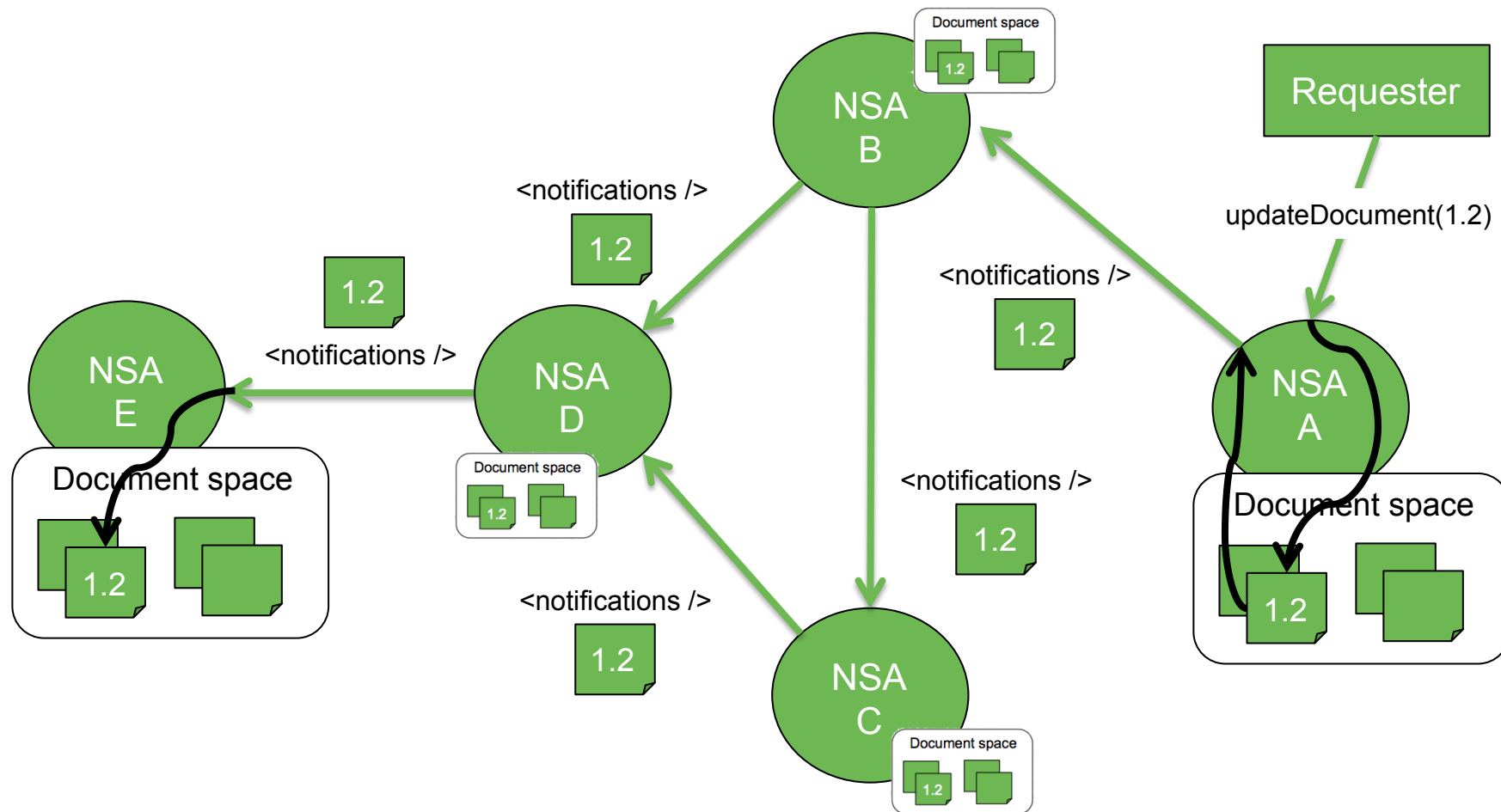 - HTTP socket blocks until result it returned (synchronous)

HTTP GET /documents

| Requester NSA | | Provider NSA |

200 OK

Subscriptions

addSubscription(filter)

Requester NSA

Provider NSA

Document space

Flooding through notifications

Resource Model

Resource	Methods	Description
collection	GET	This root resource contains a collection of zero or more subscriptions and documents held within the NSA.
subscriptions	GET, POST	This resource represents a group of zero or more subscription instances.
subscription	GET, PUT, DELETE	This resource represents a single subscription instance.
documents	GET, POST	This resource represents a group of zero or more document instances.
document	GET, PUT, DELETE	This resource represents a single document instance.
local	GET	This resource represents a group of zero or more document instances associated with the local NSA.

URI definitions

Resource	URI	Description
collection	/	Using root URI with a GET operation will return a collection of zero or more subscriptions and documents held within the NSA.
subscriptions	/subscriptions	Using this URI with a GET operation will return a group of zero or more subscription instances. Using this URI with a POST operation will create a new subscription with the supplied criteria.
subscription	/subscriptions/{subscriptionId}	Use this URI template to access a single subscription instance based on subscription identifier. Using a GET operation will get the subscription identified by {*subscriptionId*}. Using a PUT operation will update the subscription identified by {*subscriptionId*} with the values supplied in the PUT body (*subscriptionRequest* element). Using a DELETE operation will remove the subscription identified by {*subscriptionId*}.

URI definitions

documents	/documents	Using this URI with a GET operation will return a group of zero or more document instances. Using this URI with a POST operation will create a new document with the supplied values (*document* element).
documents	/documents/{nsaId}	Use this URI template to access a list of document instances associated with an NSA identifier. Using this URI with a GET operation will return a group of zero or more document instances associated with the NSA identified by {*nsaId*}.
documents	/documents/{nsaId}/{type}	Use this URI template to access a list of document instances associated with an NSA identifier and specific document type. Using this URI with a GET operation will return a group of zero or more document instances of the document type {*type*} associated with the NSA identified by {*nsaId*}.

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URI definitions

| *document* | /documents/{nsaId}/{type}/{id} | Use this URI template to access a single document instance associated with an NSA identifier, document type, and document identifier.

Using this URI with a GET operation will return a single document instance (*document* element) associated with the document identifier *{id}*, the type *{type}, and* the NSA identified by {*nsaId}*.

Using a PUT operation will update the document identified by *{id}* with the values supplied in the PUT body (*document* element). This can only be done by an authorized entity.

Using a DELETE operation will remove the document identified by {*Id}*. This can only be done by an authorized entity. |
|------------|-------------------------------|-----|
| *local* | /local | Using this URI with a GET operation will return a group of zero or more document instances associated with the local NSA. |

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