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| Comment Resolution Proposals |
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Abstract

This document proposes solutions for issues found in document-15-0035-01.

This revision provides an amendment to the previous text proposal marked in red.

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# >> Network Reference Model

## Identifiers of functional entities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Access Technology | 802.3 | 802.11 | 802.16 | 802.22 |
| Terminal | TE-ID | EUI-48#2 | EUI-48#3 | EUI-48#4 | EUI-48#5 |
| Node of Attachment | NA-ID | EUI-48#2 | EUI-48#3 | EUI-48#4 | EUI-48#5 |
| Access Network | AN-ID | CHAR[511]#1 | CHAR[30]+ EUI-48#3 | EUI-48#4 | EUI-48#5 |
| Access Router | AR-ID | EUI-48 |
| TE Controller | TEC-ID |  |
| AN Controller | ANC-ID |  |
| AR Controller | ARC-ID |  |
| Backhaul | BH-ID |  |
| Subscription Service | SS-ID | FQDN |
| Coordination and Information Service | CIS-ID |  |

References:

#1) IEEE 802.1X-2010: IEEE Standard for Port-Based Network Access Control, Chapter 10

#2) IEEE 802.3-2012: IEEE Standard for Ethernet, Chapter 3

#3) IEEE 802.11-2012: IEEE Standard for Wireless LAN Medium Access Control and Physical Layer Specifications, Chapter 8

#4) IEEE 802.16-2012: IEEE Standard for Air Interface for Broadband Wireless Access Systems, Chapter 6

#5) IEEE 802.22-2011: IEEE Standard for Cognitive Wireless RAN Medium Access Control and Physical Layer Specifications: Policies and Procedures for Operation in the TV Bands, Chapter 7

# >> Functional Decomposition and Description

## Network Discovery and Selection

### Introduction

>> keep text<<

### Roles, and identifiers

#### User

User is the unique identification of a subscription, which represents the trust relationship between the owner of a terminal and a subscription service. A user belongs to a single subscription service; however, multiple users may reside on a single terminal.

Identifier:

* Unique subscription identifiers are created by an username concatenated with the FQDN of the subscription server.

#### Terminal (TE)

Terminal represents the physical device, which tries to discover an appropriate access network by searching the radio environment for messages indicating the existence of an access network and decoding announcement information received over the air with configuration and policy data stored locally.

Identifier:

* As defined in section 6.3

#### Node of Attachment (NA)

Node of attachment is the physical device at the edge of the access network sending out information over the air allowing terminals to detect the existence of an appropriate access network and node of attachment.

Identifier:

* As defined in section 6.5

#### Access Network

Access network provides information about its offered services and capabilities either by messaging over the air or by locally stored information at the terminal, which was loaded and updated prior to the connection attempt. Information provided by the access network for NDS comprises at least the identifier and name of the access network and the identifiers and names of the access router and subscription services, to which the access network is connected to.

Identifier:

As defined in section 6.3

### Use cases

>>keep text<<

### Functional requirements

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### NDS specific attributes

Each of the entities involved in the NDS process comprises information elements, which are helpful or required when processing the NDS procedures. The following list provides examples of these information elements[[1]](#footnote-1):

#### Terminal

* {1+} ***Subscription***
A subscription denotes the unique relationship between a terminal and a subscription service. A common method to identify a subscription is the Network Access Identifier [RFC4282]. In particular when multiple subscriptions exist at a Terminal, each subscription MAY be attributed by:
	+ {0+} ***Access policies***Access policies consist of a list of weighted NA-IDs and AN-IDs, which is evaluated for the detected AN-IDs and NA-IDs. The highest weighted NA-ID, or the best NA of the highest weighted AN-ID is chosen for the connection establishment.

#### Access Network

* {1+} ***Supported Subscription Service***
An Access Network MUST have relation with at least one entity of Subscription Service and MAY be able to handle multiple Subscription Services. For each of the Supported Subscription Services there may be additional information like
	+ {0-1} ***Cost information***
	Cost information describes the cost of using that Subscription Service. It may be a single value or a complex record of multiple cost issues.
	+ {0+} ***Supported roaming partners***
	A subscription service MAY act as agent for other subscription services. For appropriate routing of authentication messages, the Access Network requires information about Roaming Subscription Services available by a particular Subscription Service.
* {1+} ***Supported Access Router***
An Access Network MUST have connectivity to at least one Access Router for providing higher layer network functionality.
* {1} ***Certificate***
An Access Network MUST have a valid Certificate to enable the other entities to verify its identity.
* {1+} ***Access Network Capabilities***
An Access Network MUST have at least one set of attributes describing its capabilities. Multiple set of attributes MAY exist when different portions of an access network are built differently.
	+ {1+} ***Link Layer Capabilities***
	Link Layer capabilities are described by attributes like MTU, encryption capabilities, and others more.
	+ {1+} ***Link Layer Performance***
	Link Layer Performance can be described by attributes like throughput up/down, delay, jitter, residual error rates, either as list of parameters or by records representing different service classes.

#### Subscription Service

* {1+} ***Supported Access Router***
A Subscription Service MUST support connectivity to at least one Access Router and MAY support multiple Access Routers either depending on roaming arrangements or by choice of the user.
* {1} ***Certificate***
A Subscription Service MUST have a valid Certificate to enable others to verify its identity.

#### Access Router

* {1+} ***Network Layer Capability***
An access router MUST have at least one set, but can have multiple sets of network layer capabilities like IP address, size of IP network, IP version, IP configuration support, and service discovery capabilities.
* {1} ***Network Interface Performance***
An access router connected with a single link to the access network has a single set of parameters describing the performance of the network interface, e.g. supported service classes (throughput up/down, delay, jitter).
* {0+} ***Offered Application Services***
An access router MAY provide additional information about the application services reachable by its interfaces.

### NDS specific basic functions

>>keep text<<

### Detailed procedures

>>keep text<<

### Mapping to IEEE 802 technologies

#### Overview

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Access Technology | 802.3 | 802.11 | 802.16 | 802.22 |
| TE | Capabilities |  |  |  |  |
| NA | Capabilities |  |  |  |  |
| AN | Capabilties |  |  |  |  |

#### IEEE 802.3 specifics

#### IEEE 802.11 specifics

#### IEEE 802.16 specifics

#### IEEE 802.22 specifics

1. The following notation is used for indicating the occurrence of the information elements:
{0+} Zero or more instances of this attribute MAY be present.
{0-1} Zero or one instance of this attribute MAY be present.
{1} Exactly one instance of this attribute MUST be present.
{1+} One or more instances of this attribute MUST be present. [↑](#footnote-ref-1)