# Project NETN-COM

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# 1. Module NETN-COM

## Information

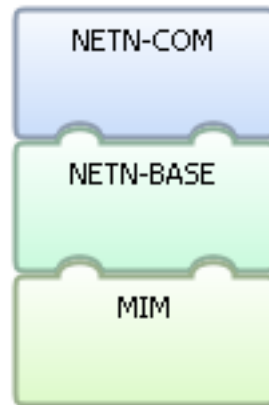| | |
|---|---|
| **Name:** | NETN-COM |
| **Type:** | FOM |
| **Version:** | 1.0 (Baseline MAR 2020) |
| **Modification Date:** | 2020-03-21 |
| **Security Classification:** | Not classified |
| **Purpose:** | Simulation, Training |
| **Application Domain:** | |
| **Description:** | NATO Education and Training Network (NETN) Communication Network (COM) Module.<br><br>This module is a specification of how to represent Communication Networks in a federated distributed simulation. The specification is based on IEEE 1516 High Level Architecture (HLA) Object Model Template (OMT) and primarily intended to support interoperability in a federated simulation (federation) based on HLA. An HLA OMT based Federation Object Model (FOM) is used to specify types of data and how it is encoded on the network. The NETN COM FOM module is available as a XML file for use in HLA based federations. |
| **Use Limitation:** | |
| **Other:** | Copyright © 2020 by NATO/OTAN. All rights reserved.<br>This work is licensed under a Creative Commons Attribution-NoDerivatives 4.0 International License.<br><br>Above license gives you the right to use and redistribute the NETN FOM Module (XML file and Documentation) in its entirety without modification. You are also allowed to develop your own new FOM Modules (in separate XML files and separate documentation) that build-on/extends the NETN module by reference. You are NOT allowed to modify the NETN FOM Module or its documentation without prior permission by the NATO Modelling and Simulation Group. |

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## References

| Dependency | NETN-BASE |
|---|---|

## Use History

| 1.0.0 - Initial version developed by MSG-164 and MSG-163 for NETN-FOM v3.0 |
|---|

## Dependencies

| NETN-BASE |
|---|

## *1.1. Object Classes*
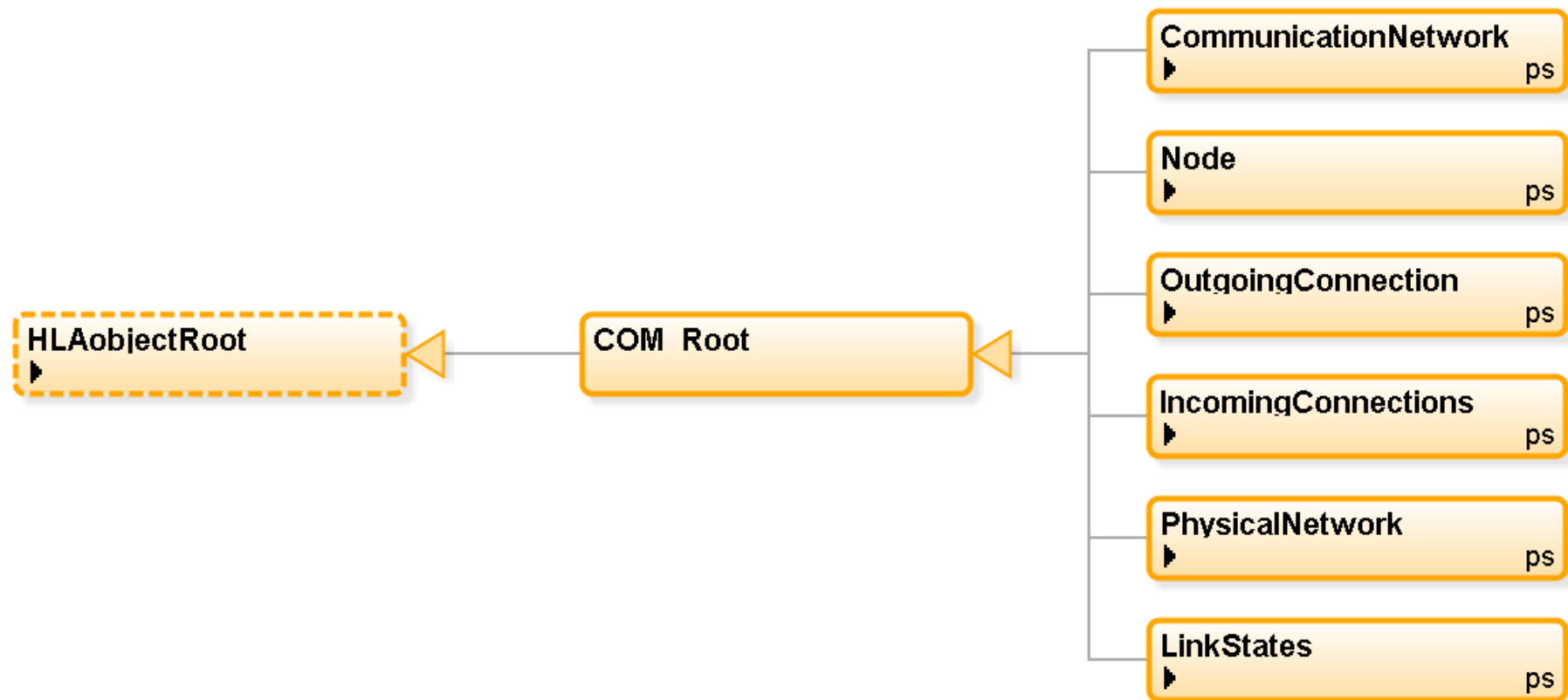


1.1.1. **COM_Root**

Full Name:     HLAobjectRoot.COM_Root
Sharing:
Semantics:
Attributes:

| **HLAprivilegeToDeleteObject** | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
|---|---|---|---|---|---|---|
| | HLAtoken | PS | DA | TS | HLAreliable | |
| | Update type | Update Condition | | | | |
| *Inherited from HLAobjectRoot in MIM* | Static | *NA* | | | | |
| | Semantics | | | | | |
| | | | | | | |

## 1.1.2. **CommunicationNetwork**

Full Name:     HLAobjectRoot.COM_Root.CommunicationNetwork

Sharing:        Publish/Subscribe

Semantics:     *Optional*

Attributes:

| **CommunicationNetworkId** | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
|---|---|---|---|---|---|---|
| | TextIdentifierArray64 | PS | | RO | HLAreliable | |
| | Update type | Update Condition | | | | |
| | Static | *NA* | | | | |
| | Semantics | | | | | |
| | *Required* | | | | | |
| **CommunicationNetworkType** | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | CommunicationNetTypeEnum | PS | | RO | HLAreliable | |
| | Update type | Update Condition | | | | |
| | Static | *NA* | | | | |
| | Semantics | | | | | |
| | *Optional* | | | | | |
| **CommunicationServiceType** | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | CommunicationServiceTypeEnum | PS | | RO | HLAreliable | |
| | Update type | Update Condition | | | | |
| | Static | *NA* | | | | |
| | Semantics | | | | | |
| | *Required* | | | | | |

| HLAprivilegeToDeleteObject<br><br>*Inherited from HLAobjectRoot in MIM* | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
|---|---|---|---|---|---|---|
| | HLAtoken | PS | DA | TS | HLAreliable | |
| | Update type | Update Condition | | | | |
| | Static | *NA* | | | | |
| | Semantics | | | | | |
| | | | | | | |

## 1.1.3. **Node**

Full Name: HLAobjectRoot.COM_Root.Node
Sharing: Publish/Subscribe
Semantics:
Attributes:

| OwnerId | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
|---|---|---|---|---|---|---|
| | UuidArrayOfHLAbyte16 | PS | | RO | HLAreliable | |
| | Update type | Update Condition | | | | |
| | Static | *NA* | | | | |
| | Semantics | | | | | |
| | | | | | | |
| **NetworkDevices** | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | NetworkDeviceArray | PS | | RO | HLAreliable | |
| | Update type | Update Condition | | | | |
| | Conditional | *OnChange* | | | | |
| | Semantics | | | | | |
| | | | | | | |
| **Connections** | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | RequestedConnectionArray | PS | | RO | HLAreliable | |
| | Update type | Update Condition | | | | |
| | Conditional | *OnChange* | | | | |
| | Semantics | | | | | |
| | | | | | | |

| HLAprivilegeToDeleteObject<br><br>*Inherited from HLAobjectRoot in MIM* | **Datatype** | **Sharing** | **Ownership** | **Order** | **Transportation** | **Dimensions** |
|---|---|---|---|---|---|---|
| | HLAtoken | PS | DA | TS | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Static | *NA* | | | | |
| | **Semantics** | | | | | |
| | | | | | | |

## 1.1.4. **OutgoingConnection**

Full Name:    HLAobjectRoot.COM_Root.OutgoingConnection
Sharing:      Publish/Subscribe
Semantics:
Attributes:

| | **Datatype** | **Sharing** | **Ownership** | **Order** | **Transportation** | **Dimensions** |
|---|---|---|---|---|---|---|
| **ConnectionId** | UuidArrayOfHLAbyte16 | PS | | RO | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Static | *NA* | | | | |
| | **Semantics** | | | | | |
| | *Required* | | | | | |
| **CommunicationNetworkId** | **Datatype** | **Sharing** | **Ownership** | **Order** | **Transportation** | **Dimensions** |
| | TextIdentifierArray64 | PS | | RO | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Static | *NA* | | | | |
| | **Semantics** | | | | | |
| | *Required* | | | | | |
| **SenderId** | **Datatype** | **Sharing** | **Ownership** | **Order** | **Transportation** | **Dimensions** |
| | UuidArrayOfHLAbyte16 | PS | | RO | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Static | *NA* | | | | |
| | **Semantics** | | | | | |
| | *Required* | | | | | |

| Receivers | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
|---|---|---|---|---|---|---|
| | ConnectionReceiverArray | PS | | RO | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Conditional | *OnChange* | | | | |
| | **Semantics** | | | | | |
| | *Required* | | | | | |
| **HLAprivilegeToDeleteObject**<br><br>*Inherited from HLAobjectRoot in MIM* | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | HLAtoken | PS | DA | TS | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Static | *NA* | | | | |
| | **Semantics** | | | | | |
| | | | | | | |

## 1.1.5. IncomingConnections

Full Name:     HLAobjectRoot.COM_Root.IncomingConnections
Sharing:         Publish/Subscribe
Semantics:
Attributes:

| ReceiverId | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
|---|---|---|---|---|---|---|
| | UuidArrayOfHLAbyte16 | PS | | RO | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Static | *NA* | | | | |
| | **Semantics** | | | | | |
| | *Required* | | | | | |
| **Connections** | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | IncomingConnectionArray | PS | | RO | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Conditional | *OnChange* | | | | |
| | **Semantics** | | | | | |
| | *Required* | | | | | |

| HLAprivilegeToDeleteObject | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
|---|---|---|---|---|---|---|
| | HLAtoken | PS | DA | TS | HLAreliable | |
| | Update type | Update Condition | | | | |
| *Inherited from HLAobjectRoot in MIM* | Static | *NA* | | | | |
| | Semantics | | | | | |
| | | | | | | |

## 1.1.6. **PhysicalNetwork**

Full Name:   HLAobjectRoot.COM_Root.PhysicalNetwork
Sharing:      Publish/Subscribe
Semantics:   *Optional*
Attributes:

| PhysicalNetworkId | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
|---|---|---|---|---|---|---|
| | HLAASCIIstring | PS | | RO | HLAreliable | |
| | Update type | Update Condition | | | | |
| | Static | *NA* | | | | |
| | Semantics | | | | | |
| | *Required* | | | | | |
| Description | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | PhysicalNetworkDescriptionVariant | PS | | RO | HLAreliable | |
| | Update type | Update Condition | | | | |
| | Static | *NA* | | | | |
| | Semantics | | | | | |
| | *Required* | | | | | |
| HLAprivilegeToDeleteObject | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | HLAtoken | PS | DA | TS | HLAreliable | |
| | Update type | Update Condition | | | | |
| *Inherited from HLAobjectRoot in MIM* | Static | *NA* | | | | |
| | Semantics | | | | | |
| | | | | | | |

### 1.1.7. **LinkStates**

Full Name:    HLAobjectRoot.COM_Root.LinkStates
Sharing:       Publish/Subscribe
Semantics:
Attributes:

| | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
|---|---|---|---|---|---|---|
| **PhysicalNetworkId** | HLAASCIIstring | PS | | RO | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Static | *NA* | | | | |
| | **Semantics** | | | | | |
| | | | | | | |
| **Links** | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | LinkStatusArray | PS | | RO | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Conditional | *OnChange* | | | | |
| | **Semantics** | | | | | |
| | | | | | | |
| **HLAprivilegeToDeleteObject** *Inherited from HLAobjectRoot in MIM* | Datatype | Sharing | Ownership | Order | Transportation | Dimensions |
| | HLAtoken | PS | DA | TS | HLAreliable | |
| | **Update type** | **Update Condition** | | | | |
| | Static | *NA* | | | | |
| | **Semantics** | | | | | |
| | | | | | | |

## *1.2. Datatypes*

## *1.2.1. Simple Datatypes*

### TimeMillisecondsFloat32

Representation:    HLAfloat32BE
Units:    Milliseconds (ms)
Resolution:    NA
Accuracy:    NA
Semantics:

### Integer16

Representation:    HLAinteger16BE
Units:    NA
Resolution:    1
Accuracy:    perfect
Semantics:

### Integer32

Representation:    HLAinteger32BE
Units:    NA
Resolution:    1
Accuracy:    perfect
Semantics:

### MeterFloat32

Representation:    HLAfloat32BE
Units:    NA
Resolution:    NA
Accuracy:    NA

Semantics:

## BitsPerSecond

Representation:   HLAinteger64BE
Units:            NA
Resolution:      1
Accuracy:       perfect
Semantics:

# 1.2.2. Enumerated Datatypes

## NetworkTypeEnum

Representation:    HLAoctet
Semantics:

| Enumerator | Value |
|---|---|
| NoNetwork | 0 |
| Generic | 1 |
| Radio | 2 |
| Cable | 3 |
| Laser | 4 |
| Sound | 5 |

## CommunicationNetTypeEnum

Representation:    HLAoctet
Semantics:

| Enumerator | Value |
|---|---|
| OTHER | 0 |
| COMMAND_NET | 1 |
| OPERATIONS_INTELLIGENCE_NET | 2 |
| ADMIN_LOGISTICS_NET | 3 |
| FIRE_SUPPORT_NET | 4 |

## CommunicationServiceTypeEnum

Representation:    HLAoctet
Semantics:

| Enumerator | Value |
|---|---|
| DATTRF | 0 netn-com_3 |

| Enumerator | Value |
|---|---|
| FAX | 1 <sup>netn-com_4</sup> |
| IIF | 2 <sup>netn-com_5</sup> |
| IMAGE | 3 <sup>netn-com_6</sup> |
| MCI | 4 <sup>netn-com_7</sup> |
| MHS | 5 <sup>netn-com_8</sup> |
| TDL | 6 <sup>netn-com_9</sup> |
| VIDSVC | 7 <sup>netn-com_10</sup> |
| VOCSVC | 8 <sup>netn-com_11</sup> |
| NOS | 9 <sup>netn-com_12</sup> |

## RequestConnectionTypeEnum

Representation:   HLAoctet

Semantics:

| Enumerator | Value |
|---|---|
| BroadcastTransceiver | 0 |
| BroadcastTransmitter | 1 |
| BroadcastReceiver | 2 |
| PeerToPeer | 3 |
| Unidirectional | 4 |
| Multicast | 5 |
| Intercept | 6 |

## *1.2.3. Array Datatypes*

**LinkStatusArray**

Element Type:   LinkStatusStruct
Cardinality:     Dynamic
Encoding:        HLAvariableArray
Semantics:

**NetworkDeviceArray**

Element Type:   NetworkDeviceStruct
Cardinality:     Dynamic
Encoding:        HLAvariableArray
Semantics:

**RequestedConnectionArray**

Element Type:   RequestedConnection
Cardinality:     Dynamic
Encoding:        HLAvariableArray
Semantics:

**TextIdentifierArray64Array**

Element Type:   TextIdentifierArray64
Cardinality:     Dynamic
Encoding:        HLAvariableArray
Semantics:

**UuidArray**

Element Type:   UuidArrayOfHLAbyte16
Cardinality:     Dynamic
Encoding:        HLAvariableArray

Semantics:

## TextIdentifierArray64

Element Type: HLAASCIIchar
Cardinality: [0..64]
Encoding: HLAvariableArray
Semantics:

## ConnectionReceiverArray

Element Type: ConnectionReceiverStruct
Cardinality: Dynamic
Encoding: HLAvariableArray
Semantics:

## IncomingConnectionArray

Element Type: IncomingConnectionStruct
Cardinality: Dynamic
Encoding: HLAvariableArray
Semantics: *Required*

## *1.2.4. Fixed Record Datatypes*

### LinkStatusStruct

Encoding:    HLAfixedRecord

Semantics:

| Name | Type | Semantic |
|---|---|---|
| TransmitterDeviceId | UuidArrayOfHLAbyte16 | *Required* |
| ReceiverDeviceId | UuidArrayOfHLAbyte16 | *Required* |
| Latency | TimeMillisecondsFloat32 | |
| Bandwidth | BitsPerSecond | |
| Reliability | PercentFloat64 | *Required* |
| IsBidirectional | HLAboolean | *Optional, default is false* |

### NetworkDeviceStruct

Encoding:    HLAfixedRecord

Semantics:    *Describes the type and capability of a network device. Each device must have at least a transmitter (TX) or receiver (RX). Transceivers should define both.*

| Name | Type | Semantic |
|---|---|---|
| NetworkDeviceId | UuidArrayOfHLAbyte16 | *Required* |
| CommunicationNetworkIds <sup>netn-com_1</sup> | TextIdentifierArray64Array | *Required* |
| PhysicalNetworkId | HLAASCIIstring | *Optional* |
| TX | NetworkDeviceTransmitterCharacteristicsVariant | *Optional* |
| RX | NetworkDeviceReceiverCharacteristicsVariant | *Optional* |
| IsRelay | HLAboolean | *Optional, defaults to true* |

### PhysicalGenericNetworkStruct

Encoding:    HLAfixedRecord

Semantics:

| Name | Type | Semantic |
|------|------|----------|
| MaxHopCount | Integer32 | |
| DefaultMaxLinkRange | MeterFloat32 | |
| Latency | TimeMillisecondsFloat32 | |
| Bandwidth | BitsPerSecond | |
| Reliability | PercentFloat64 | |

## PhysicalRadioNetworkStruct

Encoding:     HLAfixedRecord
Semantics:

## PhysicalCableNetworkStruct

Encoding:     HLAfixedRecord
Semantics:

| Name | Type | Semantic |
|------|------|----------|
| TTL | Integer16 | |

## PhysicalSoundNetworkStruct

Encoding:     HLAfixedRecord
Semantics:

## PhysicalLaserNetworkStruct

Encoding:     HLAfixedRecord
Semantics:

## RequestedConnection

Encoding:     HLAfixedRecord
Semantics:

| Name | Type | Semantic |
|------|------|----------|
| CommunicationNetworkId | TextIdentifierArray64 | *Required* |

| Name | Type | Semantic |
|------|------|----------|
| RequestedConnectionType | RequestConnectionTypeEnum | *Required* |
| ConnectionId | UuidArrayOfHLAbyte16 | *Optional* |
| DestinationEntitytIds [netn-com_14] | UuidArray | *Optional* |
| NetworkDeviceId [netn-com_15] | UuidArrayOfHLAbyte16 | *Optional* |

## ConnectionReceiverStruct

Encoding:     HLAfixedRecord
Semantics:

| Name | Type | Semantic |
|------|------|----------|
| ReceiverId | UuidArrayOfHLAbyte16 | *Required* |
| Latency | TimeMillisecondsFloat32 | *Required* |
| Bandwith | BitsPerSecond | *Required* |
| Reliability | PercentFloat64 | *Required* |
| HopCount | Integer16 | *Optional, defaults to 0 (=not specified)* |

## NetworkDeviceGenericTransmitterCharacteristicsStruct

Encoding:     HLAfixedRecord
Semantics:

| Name | Type | Semantic |
|------|------|----------|
| MaxLinkRange | MeterFloat32 | *Optional, defaults to 0 (=use default value from physical network)* |

## IncomingConnectionStruct

Encoding:     HLAfixedRecord
Semantics:

| Name | Type | Semantic |
|------|------|----------|
| CommunicationNetworkId | TextIdentifierArray64 | *Required* |
| Latency | TimeMillisecondsFloat32 | |

| Name | Type | Semantic |
|------|------|----------|
| Bandwidth | BitsPerSecond | |
| Reliability | PercentFloat64 | |
| HopCount | Integer16 | |
| SenderId | UuidArrayOfHLAbyte16 | *Required* |

## NetworkDeviceEmptyCharactersticsStruct

Encoding:     HLAfixedRecord
Semantics:

## *1.2.5. Variant Record Datatypes*

### NetworkDeviceTransmitterCharacteristicsVariant

Encoding:        HLAvariantRecord
Discriminant name:  Type
Discriminant type:   NetworkTypeEnum
Semantics:

| Name | Enumerator | Type | Semantics |
|---|---|---|---|
| NoNetwork | NoNetwork | NetworkDeviceEmptyCharactersticsStruct | |
| Generic | Generic | NetworkDeviceGenericTransmitterCharacteristicsStruct | |
| Radio | Radio | NetworkDeviceEmptyCharactersticsStruct | |
| Cable | Cable | NetworkDeviceEmptyCharactersticsStruct | |
| Laser | Laser | NetworkDeviceEmptyCharactersticsStruct | |
| Sound | Sound | NetworkDeviceEmptyCharactersticsStruct | |

### NetworkDeviceReceiverCharacteristicsVariant

Encoding:        HLAvariantRecord
Discriminant name:  Type
Discriminant type:   NetworkTypeEnum
Semantics:

| Name | Enumerator | Type | Semantics |
|---|---|---|---|
| NoNetwork | NoNetwork | NetworkDeviceEmptyCharactersticsStruct | |
| Generic | Generic | NetworkDeviceEmptyCharactersticsStruct | |
| Radio | Radio | NetworkDeviceEmptyCharactersticsStruct | |
| Cable | Cable | NetworkDeviceEmptyCharactersticsStruct | |
| Laser | Laser | NetworkDeviceEmptyCharactersticsStruct | |
| Sound | Sound | NetworkDeviceEmptyCharactersticsStruct | |

## PhysicalNetworkDescriptionVariant

Encoding:              HLAvariantRecord
Discriminant name:  Type
Discriminant type:    NetworkTypeEnum
Semantics:

| Name | Enumerator | Type | Semantics |
|---|---|---|---|
| Generic | Generic | PhysicalGenericNetworkStruct | |
| Radio | Radio | PhysicalRadioNetworkStruct | |
| Cable | Cable | PhysicalCableNetworkStruct | |
| Laser | Laser | PhysicalLaserNetworkStruct | |
| Sound | Sound | PhysicalSoundNetworkStruct | |

## *1.3. Notes*

**netn-com_1**

Semantics:     *In case no network name is given and the device is an intercepter it will intercept all transmissions to all networks of the physical network.*

**netn-com_3**

Semantics:     *Data transfer*

**netn-com_4**

Semantics:     *Facsimile*

**netn-com_5**

Semantics:     *Identify Friend or Foe*

**netn-com_6**

Semantics:     *Image*

**netn-com_7**

Semantics:     *Multilateral Interoperability Programme (MIP) Common Interface Service*

**netn-com_8**

Semantics:     *Message Handling Service*

**netn-com_9**

Semantics:     *Tactical Data Link*

**netn-com_10**

Semantics:     *Video Service*

## netn-com_11

Semantics:     *Voice Service*

## netn-com_12

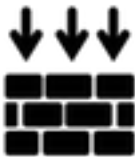Semantics:     *Not Otherwise Specified*

## netn-com_14

Semantics:     *Defines the destination units of the communication in case of peer-to-peer connections. If multiple receivers are specified it is assumed that messages will be sent sequentially to all recipients. Leave empty in broadcast / multicast cases.*

## netn-com_15

Semantics:     *Specifies which device of the Node should be used for the connection. The device must be bound to the communication network.  If not set a suitable device is selected automaticly.*

# 2. Module NETN-BASE



## Information

| | |
|---|---|
| **Name:** | NETN-BASE |
| **Type:** | FOM |
| **Version:** | 2.0 (Baseline MAR 2020) |
| **Modification Date:** | 2020-03-23 |
| **Security Classification:** | Not Classified |
| **Purpose:** | |
| **Application Domain:** | Training |
| **Description:** | Base module for NETN FOM modules. Mainly datatypes for use in other NETN FOM modules |
| **Use Limitation:** | |
| **Other:** | Copyright © 2019 by NATO/OTAN. All rights reserved.<br>This work is licensed under a Creative Commons Attribution-NoDerivatives 4.0 International License.<br><br>Above license gives you the right to use and redistribute the NETN FOM Module (XML file and Documentation) in its entirety without modification. You are also allowed to develop your own new FOM Modules (in separate XML files and separate documentation) that build-on/extends the NETN module by reference. You are NOT allowed to modify the NETN FOM Module or its documentation without prior permission by the NATO Modelling and Simulation Group. |

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## References

| Dependency | RPR-Base |
|---|---|

## Use History

| v1.0.2 - Initial version developed by MSG-106 and MSG-134. Release included in NETN-FOM v2.0 |
|---|
| v2.0.0 - Updated version developed by MSG-163. Release included in NETN-FOM v2.0 |

## *2.1. Datatypes*

## *2.1.1. Simple Datatypes*

### EpochTimeSecInt64

| | |
|---|---|
| Representation: | HLAinteger64BE |
| Units: | Second |
| Resolution: | 1 |
| Accuracy: | NA |
| Semantics: | The number of seconds since 1 Jan 1970 (wallclock time) or since the start of the simulation (logical time). |

### CounterInt32

| | |
|---|---|
| Representation: | HLAinteger32BE |
| Units: | NA |
| Resolution: | 1 |
| Accuracy: | NA |
| Semantics: | A counter |

### QuantityFloat32

| | |
|---|---|
| Representation: | HLAfloat32BE |
| Units: | NA |
| Resolution: | NA |
| Accuracy: | NA |
| Semantics: | A generic floating-point quantity. |

### QuantityFloat64

| | |
|---|---|
| Representation: | HLAfloat64BE |
| Units: | NA |
| Resolution: | NA |
| Accuracy: | NA |

Semantics:    A generic floating-point quantity.

## QuantityInt32

Representation:  HLAinteger32BE

Units:        NA

Resolution:    NA

Accuracy:      NA

Semantics:    A generic discrete quantity.

## DirectionDegreesFloat32

Representation:  HLAfloat32BE

Units:        Degree of arc

Resolution:    NA

Accuracy:      NA

Semantics:    Compass direction measured clockwise relative to an origin. If not stated elsewhere, the origin is true north. Value may be outside the interval [0, 360), and should then be interpreted as the corresponding value modulo 360 within the interval.

## LatLongDegreesFloat64

Representation:  HLAfloat64BE

Units:        Degree of arc

Resolution:    NA

Accuracy:      NA

Semantics:    Represents a measure of either latitude or longitude.

## ConcentrationKgPerMeterCubedFloat32

Representation:  HLAfloat32BE

Units:        Kg/m3

Resolution:    NA

Accuracy:      NA

Semantics:    Concentration measured as Kg per cubic meter.

## PercentFloat64

| | |
|---|---|
| Representation: | HLAfloat64BE |
| Units: | Percent (%) |
| Resolution: | NA |
| Accuracy: | NA |
| Semantics: | A percentage (0-100). |

## TimeSecInt32

| | |
|---|---|
| Representation: | HLAinteger32BE |
| Units: | Second (s) |
| Resolution: | NA |
| Accuracy: | NA |
| Semantics: | A time interval in seconds. |

## MIDType

| | |
|---|---|
| Representation: | HLAinteger16BE |
| Units: | NA |
| Resolution: | NA |
| Accuracy: | 3 decimal digits |
| Semantics: | The Maritime Identification Digits (MID) for an individual vessel is a three digits code. See https://www.itu.int/en/ITU-R and also https://en.wikipedia.org/wiki/Maritime_identification_digits. |

## IMOType

| | |
|---|---|
| Representation: | HLAinteger32BE |
| Units: | NA |
| Resolution: | NA |
| Accuracy: | 30 bits |

| | |
|---|---|
| Semantics: | The International Maritime Organization (IMO) number is a unique identifier for vessels. See https://www.itu.int/en/ITU-R. |

The IMO number is made of the three letters "IMO" followed by a seven-digit number. This number consists of a six-digit sequential unique number followed by a check digit. The integrity of an IMO number can be verified using its check digit.This is done by multiplying each of the first six digits by a factor of 2 to 7 corresponding to their position from right to left. The rightmost digit of this sum is the check digit. For example, for IMO 9074729: $(9\times7) + (0\times6) + (7\times5) + (4\times4) + (7\times3) + (2\times2) = 139$.

This attribute represents the 7 digits value of the IMO number. The value shall be zero for not available (default). The value shall also be zero for inland vessels.

## ShipTypeType

| | |
|---|---|
| Representation: | HLAoctet |
| Units: | NA |
| Resolution: | NA |
| Accuracy: | 8 bits |
| Semantics: | The type of ship and cargo. See https://www.itu.int/en/ITU-R. |

## DegreesPerSecondFloat32

| | |
|---|---|
| Representation: | HLAfloat32BE |
| Units: | Degrees/second |
| Resolution: | NA |
| Accuracy: | NA |
| Semantics: | The turn rate in degrees per second, where: (a) zero value: not turning; (b) positive value: turning right; (c) negative value: turning left. |

## AltitudeMeterFloat64

| | |
|---|---|
| Representation: | HLAfloat64BE |
| Units: | meters |
| Resolution: | NA |
| Accuracy: | NA |

Semantics:      The altitude in meters. The type of height is defined by the context of use (i.e. height Above Mean Sea Level, height Above Ground Level).

# DraughtMeterFloat32

Representation:    HLAfloat32BE
Units:         meters
Resolution:      NA
Accuracy:        NA
Semantics:      The draught in meters.

## *2.1.2. Enumerated Datatypes*

### ActiveStatusEnum8

Representation:   HLAoctet

Semantics:   *An inactive object should not be shown on C4I systems and can not move or interact with other objects.*

| Enumerator | Value |
|---|---|
| Other | 0 |
| Active | 1 |
| Inactive | 2 |

### AggregateMissionEnum16

Representation:   HLAinteger16BE

Semantics:   *The specific value that represents the general class or nature of activity (from JC3IEDM action-event-category-code)*

| Enumerator | Value |
|---|---|
| Abdication | 1 |
| Accident | 2 |
| AccidentAircraftGround | 3 |
| Accident_Mine | 4 |
| Accident_Traffic | 5 |
| Accident_Weapon | 6 |
| Accident_Workplace | 7 |
| Advancing | 8 |
| AerialEngagement | 9 |
| AerialShootDown | 10 |
| AirAssault | 11 |
| AirborneAssault | 12 |
| AircraftCrash | 13 |

| Enumerator | Value |
|---|---|
| AircraftLanding | 14 |
| AircraftLaunchActivity | 15 |
| AircraftLoss | 16 |
| AirspaceViolation | 17 |
| AlertCancellation | 18 |
| Ambush | 19 |
| AmphibiousOperation | 20 |
| ArmsProduction | 21 |
| ArmsTrade | 22 |
| Arresting_Legal | 23 |
| ArrestingOrObstructing | 24 |
| Arson | 25 |
| ArtilleryFire | 26 |
| Assassination | 27 |
| Assembling | 28 |
| AssistingACriminal | 29 |
| AtmosphericPollution | 30 |
| Attack_Deliberate | 31 |
| Attack_Diversion | 32 |
| Attack_Electronic | 33 |
| Attack_Hasty | 34 |
| Attack_Main | 35 |
| Attack_NotOtherwiseSpecified | 36 |
| Attack_Supporting | 37 |
| AttemptedMurder | 38 |
| AttemptedRape | 39 |
| AttemptedRobbery | 40 |

| Enumerator | Value |
|---|---|
| AttemptedSuicide | 41 |
| Avoiding | 42 |
| BellyLanding | 43 |
| Blocking | 44 |
| Bombing | 45 |
| Bombing_Accidental | 46 |
| Bombing_Deliberate | 47 |
| BoobyTrapDiscovery | 48 |
| BorderCrossing_Escorted | 49 |
| BorderCrossing_Forced | 50 |
| BorderCrossing_Illegal | 51 |
| BorderCrossing_Not-Planned | 52 |
| BorderCrossing_Planned | 53 |
| BorderCrossing_Surveilled | 54 |
| BorderIncursion | 55 |
| BorderRaid | 56 |
| Breaching | 57 |
| Build-Up | 58 |
| BurnedOutObject | 59 |
| Bypass | 60 |
| Canalise | 61 |
| Capture | 62 |
| CarrierLaunch | 63 |
| CarrierRecovery | 64 |
| CBRN-EVENT | 65 |
| CeremonyOrParade | 66 |
| CivilDemonstration_Illegal | 67 |

| Enumerator | Value |
|---|---|
| CivilDemonstration_Legal | 68 |
| CivilDisobedience | 69 |
| CivilUnrest | 70 |
| CivilWar | 71 |
| Clearing_Air | 72 |
| Clearing_LandCombat | 73 |
| Clearing_Obstacle | 74 |
| Clearing_RadioNet | 75 |
| CodewordExecution | 76 |
| Collision_Mid-Air | 77 |
| Collision_Obstacle | 78 |
| CommunicationsActivation | 79 |
| CommunicationsDeactivation | 80 |
| CommunicationsDisruption | 81 |
| CommunicationsInterception | 82 |
| CommunicationsOutage | 83 |
| CommunicationsRestoration | 84 |
| ConductingConference | 85 |
| ConductingForwardPassageOfLines | 86 |
| ConductingMediaInterview | 87 |
| ConductingPreparatoryFire | 88 |
| ConductingRearwardPassageOfLines | 89 |
| ConductingRecreationalActivities | 90 |
| ConductingRoadService | 91 |
| ConductingSocialEvents | 92 |
| ConductingSportingEvents | 93 |
| Confiscation | 94 |

| Enumerator | Value |
|---|---|
| ConsolidatingOfAPosition | 95 |
| Constructing | 96 |
| Containing | 97 |
| Cooperating | 98 |
| CounterAttack | 99 |
| CounterAttackByFire | 100 |
| Counter-BatteryFire | 101 |
| CoupDetat | 102 |
| Covering | 103 |
| CrimeAgainstHumanity | 104 |
| CriminalIncident | 105 |
| Crossing | 106 |
| Dazzle | 107 |
| Death_NaturalCauses | 108 |
| DeathOfChiefOfState | 109 |
| DeathOfSpiritualLeader | 110 |
| Deception | 111 |
| Deception_Electronic | 112 |
| Defeat | 113 |
| Defending | 114 |
| Deflecting | 115 |
| Delaying | 116 |
| Demolition | 117 |
| Demonstration | 118 |
| Denying | 119 |
| Deploying | 120 |
| Destroying | 121 |

| Enumerator | Value |
|---|---|
| Disease | 122 |
| Disengaging | 123 |
| Disrupting | 124 |
| Distributing | 125 |
| Diversion | 126 |
| Drive-ByShooting | 127 |
| Drought | 128 |
| DrugConsumption_Illegal | 129 |
| DrugDistribution_Illegal | 130 |
| DrugManufacturing_Illegal | 131 |
| DrugOperation | 132 |
| DrugStorage | 133 |
| DrugTransportation | 134 |
| EarlyWarningAlert | 135 |
| Earthquake | 136 |
| ElectionAssociatedViolence | 137 |
| ElectronicEmission | 138 |
| ElectronicWarfare | 139 |
| EnemyContact | 140 |
| Engaging | 141 |
| Enveloping | 142 |
| Epidemic | 143 |
| EquipmentFailure | 144 |
| Escaping | 145 |
| Escorting | 146 |
| Evacuating | 147 |
| Execution | 148 |

| Enumerator | Value |
|---|---|
| Exploitation | 149 |
| Explosion | 150 |
| Famine | 151 |
| Fire | 152 |
| Firefighting | 153 |
| Fix | 154 |
| Fix_Acoustic | 155 |
| Fix_Electromagnetic | 156 |
| Fix_Electro-Optical | 157 |
| Flood | 158 |
| FollowingAndAssuming | 159 |
| FollowingAndSupporting | 160 |
| ForcedLanding | 161 |
| FriendlyFire | 162 |
| GeneratingChemicalSmoke | 163 |
| Genocide | 164 |
| GovernmentalCollapse | 165 |
| Guarding | 166 |
| Gunnery_Air-To-Air | 167 |
| Harassing | 168 |
| Hiding | 169 |
| Hijacking_Boat | 170 |
| Hijacking_LandVehicle | 171 |
| Hijacking_NotOtherwiseSpecified | 172 |
| Hijacking_Plane | 173 |
| Hold_Defensive | 174 |
| Hold_Offensive | 175 |

| Enumerator | Value |
|---|---|
| HostageTaking | 176 |
| HumanRightsViolation | 177 |
| Hunting | 178 |
| Identifying | 179 |
| Illumination | 180 |
| IndirectFire | 181 |
| IndiscriminateShooting | 182 |
| IndustrialEspionageIncident | 183 |
| Infiltration | 184 |
| Interception | 185 |
| Interdiction | 186 |
| Intimidation | 187 |
| Invasion | 188 |
| Isolation | 189 |
| IssuingMediaArticle | 190 |
| IssuingMediaDocumentary | 191 |
| IssuingPressRelease | 192 |
| Jamming | 193 |
| Kidnapping | 194 |
| LabourStrike | 195 |
| Leaguer | 196 |
| LetterBombExplosion | 197 |
| LetterBombIncident | 198 |
| LocalElection | 199 |
| Locating | 200 |
| Looting | 201 |
| Maintaining | 202 |

| Enumerator | Value |
|---|---|
| Marking | 203 |
| MartialLawImplementation | 204 |
| MassingOfForces | 205 |
| MassiveDeportationOrBanishment | 206 |
| MedicalEvacuation | 207 |
| MilitaryMobilisation | 208 |
| Mine-Laying | 209 |
| MissingIndividual | 210 |
| MissionStaging | 211 |
| MortarFire | 212 |
| Moving | 213 |
| Murder | 214 |
| MutualAssistancePactAgreement | 215 |
| NationalElection | 216 |
| NationalHoliday | 217 |
| NationalStateOfEmergency | 218 |
| NaturalDisaster | 219 |
| NavalGunFire | 220 |
| NavalPlatformFlightOperations | 221 |
| NetworkSeizure | 222 |
| Neutralize_Chemical | 223 |
| Neutralize_Combat | 224 |
| Neutralize_Explosive | 225 |
| Obscure | 226 |
| Observing | 227 |
| Occupying | 228 |
| Oceans_SeasOrWaterPollution | 229 |

| Enumerator | Value |
|---|---|
| OffensiveOrCounteroffensive | 230 |
| OrganisedCrime | 231 |
| OutbreakOfRacialOrTribalOrEthnicWarfare | 232 |
| Patrolling | 233 |
| PeaceConference | 234 |
| PeaceTreatyAgreement | 235 |
| Penetrating | 236 |
| Pestilence | 237 |
| PetroleumProductSpills | 238 |
| Picketing | 239 |
| Poisoning | 240 |
| PoliticalDemonstration | 241 |
| PoliticalExecution | 242 |
| POWReturn | 243 |
| PrisonerExchange | 244 |
| Procuring | 245 |
| Protection_Electronic | 246 |
| ProvidingAccommodation | 247 |
| ProvidingAgriculturalSupport | 248 |
| ProvidingBedding | 249 |
| ProvidingCamps | 250 |
| ProvidingConstructionServices | 251 |
| ProvidingDecontaminationServices | 252 |
| ProvidingEducationServices | 253 |
| ProvidingHealthcareServices | 254 |
| ProvidingHostNationSupport | 255 |
| ProvidingInfrastructure | 256 |

| Enumerator | Value |
|---|---|
| ProvidingLaundryServices | 257 |
| ProvidingRepairServices | 258 |
| ProvidingSecurityServices | 259 |
| ProvidingShelter | 260 |
| ProvidingStorageServices | 261 |
| ProvidingTranshipmentServices | 262 |
| Proxy-Bombing | 263 |
| PsychologicalOperation | 264 |
| PublishingMediaArticle | 265 |
| PublishingMediaDocumentary | 266 |
| PublishingPressRelease | 267 |
| Pursuing | 268 |
| Rape | 269 |
| Reconnaissance | 270 |
| ReconnaissanceInForce | 271 |
| Reconstituting | 272 |
| Recovering | 273 |
| Recuperating | 274 |
| Redeployment | 275 |
| RefugeeMovement | 276 |
| Reinforcing | 277 |
| ReliefInPlace | 278 |
| ReligiousDemonstration | 279 |
| ReligiousViolence | 280 |
| ReligiousWarfare | 281 |
| Rendezvous | 282 |
| Reorganising | 283 |

| Enumerator | Value |
|---|---|
| Repairing | 284 |
| Resting | 285 |
| Resupplying | 286 |
| Retain | 287 |
| Retire | 288 |
| Revolution | 289 |
| Riot | 290 |
| Robbery | 291 |
| RocketFire | 292 |
| Sabotage | 293 |
| Screening | 294 |
| SecessionOfPortionOfCountry | 295 |
| Securing | 296 |
| SecurityCompromise | 297 |
| SecurityViolation | 298 |
| Seizing | 299 |
| ServingAsABreakoutForce | 300 |
| ServingAsABridgeheadForce | 301 |
| ServingAsAFlankGuard | 302 |
| ServingAsAMainBody | 303 |
| ServingAsAnAdvanceGuard | 304 |
| ServingAsAnIn-PlaceForce | 305 |
| ServingAsARearGuard | 306 |
| ServingAsAReserve | 307 |
| SettingUp | 308 |
| Shooting | 309 |
| SniperAttack | 310 |

| Enumerator | Value |
|---|---|
| SpaceAccident | 311 |
| Spying | 312 |
| StateOfWar | 313 |
| Strafing_Aerial | 314 |
| Strike | 315 |
| Suicide | 316 |
| Supporting | 317 |
| Suppressing | 318 |
| Surrender | 319 |
| Surveillance_Electronic | 320 |
| SuspensionOfHostilities | 321 |
| Terrorism | 322 |
| Threaten | 323 |
| Torture | 324 |
| Transporting | 325 |
| Traversing | 326 |
| TreatyViolation | 327 |
| Troublemaking_Agitating | 328 |
| Troublemaking_Bullying | 329 |
| Troublemaking_Harassing | 330 |
| Troublemaking_Hooliganism | 331 |
| Troublemaking_Inciting | 332 |
| Troublemaking_Intimidating | 333 |
| Turning | 334 |
| UnexplodedOrdnanceDiscovery | 335 |
| VandalismOrRapeOrLootOrRansackOrPlunderOrSack | 336 |
| Verifying | 337 |

| Enumerator | Value |
|---|---|
| VesselSinking | 338 |
| VolcanicEruption | 339 |
| WarOrCrisisAlert | 340 |
| WarOrMilitaryConference | 341 |
| WarCrime | 342 |
| WeaponFiring | 343 |
| Withdrawal | 344 |
| WithdrawalUnderPressure | 345 |
| Witnessing | 346 |
| NotOtherwiseSpecified | 347 |

## DamageStatusEnhancedEnum32

Representation:    HLAinteger32BE

Semantics:        *The damage status of an object*

| Enumerator | Value |
|---|---|
| NoDamage | 0 |
| SlightDamage | 1 |
| ModerateDamage | 2 |
| SignificantDamage | 3 |
| Destroyed | 4 |

## CancellationReasonEnum32

Representation:    HLAinteger32BE

Semantics:        *Describes the reason for the cancellation*

| Enumerator | Value |
|---|---|
| Other | 0 |
| TimeOut | 1 |

## PointTypeEnum32

Representation:    HLAinteger32BE

Semantics:    *Specifies if the point is the actual location or if it is a reference to registred NETN_GeoObject.Point through a UUID.*

| Enumerator | Value |
|---|---|
| Location | 0 |
| UuidReference | 1 |

## PathTypeEnum32

Representation:    HLAinteger32BE

Semantics:    *Specifies if the path is the actual path with waypoints or if it is a reference to registred NETN_GeoObject.Path through a UUID.*

| Enumerator | Value |
|---|---|
| PathObject | 0 |
| UuidReference | 1 |

## AreaTypeEnum32

Representation:    HLAinteger32BE

Semantics:    *Specifies if the area is a polygon or a circle.*

| Enumerator | Value |
|---|---|
| Polygon | 1 |
| Circle | 2 |

## AltitudeTypeEnum8

Representation:    HLAoctet

Semantics:    *AMSL = Above Mean Sea Level*
*AGL = Abve Ground Level*

| Enumerator | Value |
|---|---|
| AMSL | 1 |

| Enumerator | Value |
|---|---|
| AGL | 2 |

## *2.1.3. Array Datatypes*

### Callsign

Element Type: HLAunicodeChar

Cardinality: Dynamic

Encoding: HLAvariableArray

Semantics: *Unique identifier for an entity. A more user friendly identifier than UUID, used in Logistics protocol for Consumer and Provider.*

### NETN_ArrayOfEntityTypeStruct

Element Type: EntityTypeStruct

Cardinality: [1..2147483647]

Encoding: HLAvariableArray

Semantics: *One or more entity types.*

### UuidArrayOfHLAbyte16

Element Type: HLAbyte

Cardinality: 16

Encoding: HLAfixedArray

Semantics: *16 bytes in the UUID.*

*A universally unique identifier (UUID), standardized by the Open Software Foundation (OSF) as part of the Distributed Computing Environment (DCE).*

*A UUID is a 16-byte (128-bit) number. In its canonical form, a UUID is represented by 32 hexadecimal digits, displayed in five groups separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters (32 digits and four hyphens). For example: 550e8400-e29b-41d4-a716-446655440000*

### ArrayOfUuid

Element Type: UuidArrayOfHLAbyte16

Cardinality: Dynamic

Encoding:       HLAvariableArray

Semantics:      *Array of Unique Identifiers expressed as UUIDs.*

## GeocentricPolygon

Element Type:   WorldLocationStruct

Cardinality:    [3..2147483647]

Encoding:       HLAvariableArray

Semantics:      *A polygon in world locations.*

## NETN_ArrayOfSupplyStruct

Element Type:   NETN_SupplyStruct

Cardinality:    Dynamic

Encoding:       HLAvariableArray

Semantics:      *Array with NETN SupplyStructs*

## FederateName

Element Type:   HLAunicodeChar

Cardinality:    Dynamic

Encoding:       HLAvariableArray

Semantics:      *HLA Federate Name*

## GeocentricPath

Element Type:   WorldLocationStruct

Cardinality:    [2..2147483647]

Encoding:       HLAvariableArray

Semantics:      *An array of geocentric world locations with at least two elements.*

## GeodeticPath

Element Type:   GeodeticLocation

Cardinality:    [2..2147483647]

Encoding:       HLAvariableArray

Semantics: *A list of lat, lon coordinates in WGS84 reference system specifying a path where each segment is a great circle between locations.*

## GeodeticPolygon

Element Type: [GeodeticLocation](GeodeticLocation)

Cardinality: [3..2147483647]

Encoding: HLAvariableArray

Semantics: *A geographical area bounded by a path where the first and last point in the path are closed. Each point is a geodetic coordinate in WGS84 on the earth surface. Each segment is a great circle between locations.*

## ArrayOfWorldLocationStruct

Element Type: WorldLocationStruct

Cardinality: Dynamic

Encoding: HLAvariableArray

Semantics: *A polygonal chain with geocentric points, may be empty.*

## SymbolIdentifierArray30

Element Type: HLAASCIIchar

Cardinality: 30

Encoding: HLAfixedArray

Semantics: *MIL-STD-2525D symbol code.*

## SymbolIdentifierArray15

Element Type: HLAASCIIchar

Cardinality: 15

Encoding: HLAfixedArray

Semantics: *MIL-STD-2525C symbol code.*

## *2.1.4. Fixed Record Datatypes*

### NETN_EventIdentifier

Encoding:    HLAfixedRecord

Semantics:    *Uniquely identifies an event from an entity.*

| Name | Type | Semantic |
|---|---|---|
| EventCount | CounterInt32 | *EventCount shall be set to one for each exercise and incremented by one for NETN event. In the case where all possible values are exhausted, the numbers may be reused beginning again at one.* |
| IssuingObjectIdentifier | Callsign | *Callsign for the  entity which issued the event.* |

### TransactionId

Encoding:    HLAfixedRecord

Semantics:    *Unique identifier for a transaction.*
*Used for Tasks, ManagementTasks and Reports.*
*The combination of FederateHandle and a counter gives a unique TransactionId in the Federation Execution*
*even if a federate should resign (for some reason) and then join again.*

| Name | Type | Semantic |
|---|---|---|
| Counter | CounterInt32 | *This value shall be incremented by 1 for each new TransactionId.* |
| FederateHandle | HLAhandle | *The handle that the federate get when joining the federation. Required* |

### NETN_SupplyStruct

Encoding:    HLAfixedRecord

Semantics:    *Same encoding as RPR2 SupplyStruct.*

| Name | Type | Semantic |
|---|---|---|
| SupplyType | EntityTypeStruct | *The type of supply (as described in the Bit Encoded Values for Use with Protocols for Distributed Interactive Simulation Applications)* |

| Name | Type | Semantic |
|------|------|----------|
| Quantity | QuantityFloat32 | *The number of units of the supply type. The unit measure depends on the supply type and shall use the SI units of measurement used for such supplies.* |

## GeodeticCircle

Encoding:     HLAfixedRecord

Semantics:    *A geodetic point and radius specifying a circle on the surface of the earth WGS84 where radius is a great circle distance on the surface.*

| Name | Type | Semantic |
|------|------|----------|
| CenterPoint | GeodeticLocation | *The center of the circular area. Lat, Long on WGS84.* |
| Radius | MeterFloat32 | *The radius of the circular area.* |

## GeodeticLocation

Encoding:     HLAfixedRecord

Semantics:    *A geodetic point, specified by latitude and longitude, with unspecified altitude. WGS84*

| Name | Type | Semantic |
|------|------|----------|
| Latitude | LatLongDegreesFloat64 | *The latitude in degrees.* |
| Longitude | LatLongDegreesFloat64 | *The longitude in degrees.* |

## GeodeticQuadrangle

Encoding:     HLAfixedRecord

Semantics:    *A latitude-longitude quadrangle is a region bounded by two meridians and two parallels.*

| Name | Type | Semantic |
|------|------|----------|
| Point1 | GeodeticLocation | *Lat, Long on WGS84* |
| Point2 | GeodeticLocation | *Lat, Long on WGS84* |

## GeocentricCircle

Encoding:     HLAfixedRecord

Semantics:    *Circle*

| Name | Type | Semantic |
|------|------|----------|
| Location | WorldLocationStruct | *Origo.* |
| Radius | MeterFloat32 | *The radius of the circle.* |

## *2.1.5. Variant Record Datatypes*

### AreaVariantStruct

| | |
|---|---|
| Encoding: | HLAvariantRecord |
| Discriminant name: | AreaType |
| Discriminant type: | AreaTypeEnum32 |
| Semantics: | *Defines the BaseStruct.* |

| Name | Enumerator | Type | Semantics |
|---|---|---|---|
| Polygon | Polygon | GeocentricPolygon | *A closed polygonal chain that defines the area. The first and last point coincides.* |
| Circle | Circle | GeocentricCircle | *A circle that defines the area.* |

### PathVariantStruct

| | |
|---|---|
| Encoding: | HLAvariantRecord |
| Discriminant name: | PathType |
| Discriminant type: | PathTypeEnum32 |
| Semantics: | *Defines the path, either as a polygonal chain or a UUID that refers to a in the federation execution registred NETN_GeoObject.Path.* |

| Name | Enumerator | Type | Semantics |
|---|---|---|---|
| Waypoints | PathObject | ArrayOfWorldLocationStruct | *The path defined by waypoints, not necessarily registered in the federation execution as a NETN_GeoObject.Path.*<br><br>*The array can be empty (size=0).* |
| UUID | UuidReference | UuidArrayOfHLAbyte16 | *A UUID that referes to a NETN_GeoObject.Path that is registred iin the federation execution.* |

### PointVariantStruct

| | |
|---|---|
| Encoding: | HLAvariantRecord |
| Discriminant name: | PointType |
| Discriminant type: | PointTypeEnum32 |

Semantics:        *Defines the point, either a Location or a UUID reference to a NETN_GeoObject.Point.*

| Name | Enumerator | Type | Semantics |
|---|---|---|---|
| Location | Location | WorldLocationStruct | *The geocentric location.* |
| UUID | UuidReference | UuidArrayOfHLAbyte16 | *A UUID that refers to a NETN_GeoObject.Point.* |