Multi-Technology Network Management support for a Naming Convention

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1 Objective

The objective of this document is to facilitate consistent naming of objects in the TMF MTNM interface. his document defines a mandatory naming convention for Equipments, CTPs and PMPs, as well as a recommendation for PTPs and FTPs.

2 General Rule

Wherever deterministic naming (or an indirect name) is used for a second class object, an attribute 'nativeEMSName' will be added. This is a string that describes what the object is called on the EMS.

3 NamingAttributes_T Structure

The NamingAttributes_T structure is used as a naming scheme between the NMS and EMS interface. NamingAttributes_T is used to define identifiers for managed entities that are not instantiated as first class CORBA objects and thus do not have object identifiers. The NamingAttributes represent "the hierarchical name structure" of an object. The structure of the name is hierarchical and reflects the containment relationship between objects in a simple way. The following convention is used for the field name:

If necessary, other strings may be defined by the NMS or any EMS on an as-needed basis. The Naming Hierarchy of names is as follows:

- EMS
  1. name="EMS";value="*CompanyName*/*EMSname*"

- Subnetwork (see also MLRA below)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MultiLayerSubnetwork";value="*SubnetworkName*"

- SubnetworkConnection (see also Connection below)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MultiLayerSubnetwork";value="*SubnetworkName*"
  3. name="SubnetworkConnection";value="*SubnetworkConnectionName*"

- ManagedElement
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="ManagedElement";value="*ManagedElementName*"

- TopologicalLink
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="TopologicalLink";value="*TopologicalLinkName*"

- PTP (see below for further detail)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="ManagedElement";value="*ManagedElementName*"
  3. name="PTP";value="*PTPName*"

- FTP (see below for further detail)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="ManagedElement";value="*ManagedElementName*"
  3. name="FTP";value="*FTPName*"

- CTP (see below for further detail)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="ManagedElement";value="*ManagedElementName*"
  3. name="PTP";value="*PTPName*"
  4. name="CTP";value="*CTPName*"

- GTP
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="ManagedElement";value="*ManagedElementName*"
  3. name="GTP";value="*GTPName*"

- PMP (see below for further detail)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="ManagedElement";value="*ManagedElementName*"
  3. name="PTP";value="*PTPName*"
  4. name="PMP";value="*PMPName*"

  OR

  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="ManagedElement";value="*ManagedElementName*"
  3. name="PTP";value="*PTPName*"
  4. name="CTP";value="*CTPName*"
  5. name="PMP";value="*PMPName*"

- TPPool
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MultiLayerSubnetwork";value="*SubnetworkName*"
  3. name="TPPool";value="*TPPoolName*"

- TransmissionDescriptor
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="TransmissionDescriptor";value="*TransmissionDescriptorName*"

- EquipmentHolder (see below for further detail)
    1. name="EMS";value="*CompanyName*/*EMSname*"
    2. name="ManagedElement";value="*ManagedElementName*"
    3. name="EquipmentHolder";value="*EquipmentHolderName*"

- Equipment (see below for further detail)
    1. name="EMS";value="*CompanyName*/*EMSname*"
    2. name="ManagedElement";value="*ManagedElementName*"
    3. name="EquipmentHolder";value="*EquipmentHolderName*"
    4. name="Equipment";value="*EquipmentName*"

- ProtectionGroup
    1. name="EMS";value="*CompanyName*/*EMSname*"
    2. name="ManagedElement";value="*ManagedElementName*"
    3. name="PGP";value="*ProtectionGroupName*"

- EquipmentProtectionGroup
    1. name="EMS";value="*CompanyName*/*EMSname*"
    2. name="ManagedElement";value="*ManagedElementName*"
    3. name="EPGP";value="*EquipmentProtectionGroupName*"

- TCAParameterProfile
    1. name="EMS";value="*CompanyName/EMSname*"
    2. name="ManagedElement";value="*ManagedElementName*"
    3. name="TCAParameterProfile";value="*TCAParameterProfileName*"

- AlarmSeverityAssignmentProfile
    1. name="EMS";value="CompanyName/EMSname"
    2. name="ASAP";value="AlarmSeverityAssignmentProfileName"

- FlowDomain
    1. name="EMS";value="*CompanyName/EMSname*"
    2. name="FlowDomain";value=" *FlowDomainName*"

- MatrixFlowDomain
    1. name="EMS";value="*CompanyName/EMSname*"
    2. name="ManagedElement";value="*ManagedElementName*"
    3. name="MatrixFlowDomain"; value= "*MatrixFlowDomainName*"

- FlowDomainFragment
    4. name="EMS";value="*CompanyName/EMSname*"
    5. name="FlowDomain";value=" *FlowDomainName*"
    6. name="FlowDomainFragment"; value="*FlowDomainFragmentName”*

- TrafficConditioningProfile
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="TCProfile";value="*TCProfileName*"

- MLRA (represented by and MLSN)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MLRA";value="*MLRAName*"

- MLSNPPLink
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MLSNPPLink";value="*MLSNPPLinkName*"

- MLSNPP
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MLSNPP";value="*MLSNPPName*"

- Call
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="Call";value="*CallName*"

- Connection (represented by an SNC)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MLRA";value="*MLRAName*"
  3. name="Connection";value="*ConnectionName*"

- SNPP in an MLSNPP (e.g. as an Endpoint of a Connection)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MLSNPP";value="*MLSNPPName*"
  3. name="RAid";value="*RA Identifier*"
  4. name="SNPPid";value="*SNPP Identifier*"

- SNP in an MLSNPP (e.g. as an Endpoint of a Connection)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MLSNPP";value="*MLSNPPName*"
  3. name="RAid";value="*RA Identifier*"
  4. name="SNPPid";value="*SNPP Identifier*"
  5. name="SNPid";value="*SNP Identifier*"

- SNPP in an MLSNPPLink (e.g. as an Endpoint of a Connection)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MLSNPPLink";value="*MLSNPPLinkName*"
  3. name="RAid";value="*RA Identifier*"
  4. name="SNPPid";value="*SNPP Identifier*"

- SNP in an MLSNPPLink (e.g. as an Endpoint of a Connection, or as a resourceName referenced by an ASAP instance)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="MLSNPPLink";value="*MLSNPPLinkName*"
  3. name="RAid";value="*RA Identifier*"
  4. name="SNPPid";value="*SNPP Identifier*"
  5. name="SNPid";value="*SNP Identifier*"

- Remote SNPP where the MLRA is not known
  1. name="RAid";value="*RA Identifier*"
  2. name="SNPPid";value="*SNPP Identifier*"

- Remote SNP where the MLRA is not known
  1. name="RAid";value="*RA Identifier*"
  2. name="SNPPid";value="*SNPP Identifier*"
  3. name="SNPid";value="*SNP Identifier*"

- Other Objects (for Alarm purposes)
  1. name="EMS";value="*CompanyName*/*EMSname*"
  2. name="ManagedElement";value="*ManagedElementName*"
  3. name="AID";value="*NameOfEntity*"

The strings used for the value field of the name-value pairs will be at most 1024 characters (from ISO8859) long with white space character allowed in the value but with no leading or trailing spaces. For instance, a value could be the string "the string splendid" but not " the string exquisite ". All name and value strings are case sensitive.

The value field is a free format string assigned by each EMS and is not standardized across this interface except for the EMS, CTP, EquipmentHolder, and Equipment names (see below for further detail).

All implementations of this interface have to comply to the naming scheme defined here. It is mandatory for conforming to this interface.

4 Equipment Naming – General Rules and Semantics

1. Components will be identified by a name=value syntax.
2. Components in a hierarchy will be separated by a ‘/’, the left most being the highest level of containment.
3. The general hierarchy identifies the equipment-holder class, and then the circuit-packs.
4. The names “rack”, “shelf”, “sub_shelf”, “slot”,”sub_slot” identify physical (not logical) equipment holders. The use of the “rack” and “sub_shelf” name strings is optional. The name “Equipment” is used to identify the circuit-pack.
5. The modeling of a “remote_unit” or “remote_subslot” is may be reported in case that an EMS manages remote equipment as an extension to the local equipment being modeled.

6. Even if a slot contains only one circuit-pack, the circuit pack is separately identified (as "Equipment")

The naming of the equipment holders always starts from left to right and top to bottom in that order, starting from 1 at the Top Left. An example is shown in Figure 4 in the SD1-10_EquipmentModel.pdf supporting document .

Many small MEs have a single shelf, which is mounted in a rack that can be shared by other MEs. Furthermore, MEs with a small number of shelves can be spread across multiple shared racks. When shared racks are used, the EMS does not usually know anything about the physical rack configuration because shared racks are entirely passive. As a consequence, reporting racks is optional.

Names for equipment holders have the following syntax:
[/remote_unit=<ru>][/rack=<r>][/shelf=<sh>[/sub_shelf=<ssh>][/slot=<sl>[/[remote_]sub_slot=<ssl>]]]] Where the rack is indicated only when a rack can be reliably reported

Examples of Equipment naming are shown in Table 1. The first two tuples, "EMS", and "ManagedElement" are not explicitly stated in the examples, but these always prefix the equipment tuples.

Equipment Type	Name	Value	Description
Bay or a Rack	"EquipmentHolder"	"/rack=<r>"	Describes the Bay.
Shelf in a Bay	"EquipmentHolder"	"/rack=<r>/shelf=<sh>"	Describes the shelf in a bay.
Shelf without Rack information	"EquipmentHolder"	"/shelf=<sh>"	Describes the shelf.
Remote shelf without Rack information	"EquipmentHolder"	"/remote_unit=<ru>/shelf=<sh>"	Describes the remote shelf
Equipment in a shelf	"EquipmentHolder"	"[/rack=<r>]/shelf=<sh>"	If the Equipment fits the entire shelf, then that equipment is named with respect to the shelf holder.
	"Equipment"	"1"	
Sub-shelf in a shelf	"EquipmentHolder"	"[/rack=<r>]/shelf=<sh>/sub_shelf=<ssh>"	Describes the sub-shelf.
Slot in a sub-shelf	"EquipmentHolder"	"[/rack=<r>]/shelf=<sh>/sub_shelf=<ssh>/slot=<sl>"	Describes the slot.
Slot in a Shelf	"EquipmentHolder"	"[/rack=<r>]/shelf=<sh>/slot=<sl>"	Describes the slot.

Equipment Type	Name	Value	Description
Circuit Pack in the slot	“EquipmentHolder”	“[/rack=<r>]/shelf=<sh>[/sub_shelf=<ssh>]/slot=<sl>”	Describes the circuit pack in the slot. Daughter boards have their own equipment holders that are named as sub-slots and the boards themselves are pieces of equipment in those holders.
	“Equipment”	“1”	
Holder for the daughter boards or sub-slots	“EquipmentHolder”	“[/rack=<r>]/shelf=<sh>[/sub_shelf=<ssh>] /slot=<sl>/sub_slot=<ssl>”	
DaughterBoard.	“EquipmentHolder”	“[/rack=<r>]/shelf=<sh>[/sub_shelf=<ssh>] /slot=<sl>/sub_slot=<ssl>”	
	“Equipment”	“1”	
Remote daughterboard	“EquipmentHolder”	“[/rack=<r>]/shelf=<sh>[/sub_shelf=<ssh>] /slot=<sl>/remote_sub_slot=<ssl>”	
	“Equipment”	“1”	

Table 1: Examples of Equipment Naming

5 Naming of Transmission and Performance Monitoring Objects

5.1 Naming of the PTP and FTP

The name of the PTP and/or FTP is with respect to the managed element as shown in Table 2.

Name	Value
“EMS”	<EMS Name>
“ManagedElement”	<ManagedElement Name>
“PTP”	<PTP Name>

Name	Value
“EMS”	<EMS Name>
“ManagedElement”	<ManagedElement Name>
“FTP”	<FTP Name>

Table 2: PTP and FTP Naming

The value part of the PTP and FTP tuple will be a free format string. This can be representative of the position of the PTP or FTP with respect to the equipment based on the implementation (e.g., "/rack=<r>[/shelf=<sh>[/sub_shelf=<ssh>][/slot=<sl>[/sub_slot=<ssl>]]]/port=<p>" or "/shelf=<sh>[/sub_shelf=<ssh>][/slot=<sl>[/sub_slot=<ssl>]]/port=<p>"), but no special constraints are imposed in this tuple.

5.2 Naming of the CTP

The CTP Naming will be relative to the PTP or FTP as shown in Table 3: CTP Naming

. This section identifies the containment of the transmission layer hierarchy of the CTP. In addition wherever a directionality is needed, the directionality is also specified of the CTP.

Name	Value
“EMS”	<EMS Name>
“ManagedElement”	<ManagedElement Name>
“PTP” or “FTP”	<PTP Name> or <FTP Name>
“CTP”	<CTP Name>

Table 3: CTP Naming

The model components that have been considered for this modeling are:
- direction
- ATM: VP/VC Index; ATM Interfaces
- WDM: Frequency
- SONET/SDH
- PDH: DSn, En
- Ethernet: VLAN tags (if applicable)
- IP (future)

5.2.1 Rules and Semantics

- CTP name refers to the name for a specific CTP that may encompass several layer rates to include the connectable layer rate and layer rate(s) of adaptations. As such, the pre-defined string names have been shortened to encompass the layer rates of interest in the CTP named.
- The CTP naming is intended to cover all common CTP layer rates for SONET/SDH/PDH. It is not exhaustive, and it is anticipated that new “pre-defined strings” will be added in future releases. New CTP name strings shall follow the conventions listed below. Not all layer rates have CTPs at that rate. If applications arise where a specific layer rate can provide a CTP, then these will have to be defined.
- CTP name hierarchy refers to the combination of all CTP names defining the CTP position relative to the PTP or FTP
- Order is determined by the relevant CTP containment as defined by the EMS.
- Notation order is higher to lower orders, from left to right.

- The CTP name for each layer is defined. Where-ever multiple layers are applicable to a particular CTP, the container layer is used.
- Layers (CTP Names) are combined to form the desired CTP name hierarchy
- A client layer CTP name is added to its server layer CTP name hierarchy to form the CTP name hierarchy
- Given server layer CTP /name1=value1 the addition of the a client layer would result in a CTP name hierarchy as follows /name1=value1/name2=value2
- The name and value are defined strings and there are no '/' , '=', '-' embedded.

- The basic format constructors are.
  - / separates layers (rates) which represent actual CTPs
  - "=" separates name and values
  - Within a given layer, the modifiers are separated by '-'.
  - The basic format for a layer is /name=value
  - The basic format of combined layers (CTP names) to form the containment (hierarchy): /name1=value1/name2=value2 etc.
  - The basic format of components with in a layer is /name1=value/name2=value2 etc.
  - No spaces
  - No trailing /
  - The "name" and "value" in the "name=value" pair are lower case

The general format is as follows:

/name=value (/ ((modifier value *.(-name=value)(-name=value))*

In addition, whenever unidirectional CTPs are specified, the directionality is always prepended to the last tuple. In case of the Bidirectional CTP, the direction tuple must be omitted.

5.2.2 Pre-defined Name Strings:

See the SD1-17_LayerRates.pdf supporting document for a complete list of naming strings for each layerRate.

Qualifier strings:

- j - AUG index
- k - TUG-3 or AU-3 index
- l - TUG-2 index
- m - TU-12 or TU-11 index
- number - for tunable lasers
- remoteaddress - off-network CTP
- direction - allowed values are {src, sink}
- s – AU3 sliding concatenation offset
- t – AU4 sliding concatenation offset

5.2.2.1 Unidirectional CTP Naming

The following naming identifies the 1.3.2 TU12 CTP in the 4th AUGRP of an STMn:

- /sts3c_au4=4/vt2_tu12-k=1-l=3-m=2

The unidirectional ctp of the same type is identified as:

- /direction=src/sts3c_au4=4/vt2_tu12-k=1-l=3-m=2
- /direction=sink/sts3c_au4=4/vt2_tu12-k=1-l=3-m=2

5.2.2.2 Off-Network CTPs

TP Type	Value	Comments
Off-Network CTPs	"/remoteaddress=<remote address>"	remoteaddress.value where value is a string representation of the remote address. It is not a "true" CTP and may not be representable in the standard CTP containment hierarchy. Note the following for this CTP: EMS is an empty string ManagedElement is an empty string PTP is an empty string Off-network CTP name must be unique across all EMS's. Example: /remoteaddress=4539875455

Table 4: Off-Network CTP Naming

5.2.2.3 ATM Components

TP Type	Value	Comments
ATM Network Interface	/atmnetworkinterface=[1..n]	The ATM Network Interface TP.
Multiple E1s supported by IMA capable ATM NI	E1	/atmnetworkinterface=1/e1=[1-n]
Multiple E1s supported by IMA capable ATM NI mapped to VC12	VC12	/atmnetworkinterface=1/vt2_tu12=[1..n]
Vpi	/atmnetworkinterface=[1..n]/vpi=[1..n]	The vpi CTP with the vp index under the ATM network interface.
Vci	/atmnetworkinterface=[1..n]/vpi=[1..n]/vci=[1..n]	The VCI CTP.
A remote destination with	/remoteaddress=<remote address>/vpi=[1..n]/vci=[1..n]	Note the following for this CTP: EMS is an empty string

VPI,VCI specified.		ManagedElement is an empty string PTP is an empty string Example: /remoteaddress=4539875455/vpi=12/vci=13

Table 5: ATM Components Naming

5.2.2.4 SDH/SONET CTPs

The following represent the SONET/SDH Components:

- /line192_ms64=1 (MS CTP on regenerator for OC-192/STM-64)
- Contiguous (non-sliding) concatenation
  - /sts192c_vc4_64c=[1-n]
  - /sts48c_vc4_16c=[1-n]
  - /sts12c_vc4_4c=[1-n]
  - /sts3c_au4-j=<J>
  - /sts3*Xc_vc_Xc=[1-n] where X is currently defined as 1-16. For example n in an STM-N is n = N/S. S is the smallest number in {4, 16, 64} such that S>X.
  - Sliding concatenation
    - /sts3*Xc_vc4_Xc=[1-n]-s=[2-S]-t=[2-3] where sliding VC4 offset s is provided if s > 1 and sliding STS1 offset t is provided if t > 1. S is the next smallest number in the set {4, 16, 64} such that S > X.
  - High order (potentially server) CTPs
    - /sts3c_au4-j=<J>
    - /sts1_au3-j=<J>-k=<K>
  - Lower order CTPs, appended to the server modifiers;
    - /tu3_vc3, /vt6_tu2, /vt2_tu12, /vt15_tu11
    - -k=[1-3]
    - -l=[1-7]
    - -m=[1-4]
    - /tu_value-k=[1-3]-l=[1-7]-m=[1-4]
    - e.g. VC12 on STM-16 /sts3c_au4-j=5/vt2_tu12-k=1-l=5-m=2
    - e.g. VT1.5 on OC-12 /sts1_au3-j=2-k=2/vt15_tu11-l=1-m=2
  - SDH-PDH interface layers append to the PDH PTPs
    - /sts1_au3=1 (TU-3)
    - /tu3_vc3 (AU-3)
    - /vt6_tu2=1 (TU-2)
    - /vt2_tu12=1 (TU-12 from VC-12)
    - /ds1_vt15_vc11=1 (TU-12 from VC-11)
    - /vt15_tu11=1 (TU-11)
  - Inversely multiplexed encapsulated signal (e.g. Ethernet)
    - /encapsulation=1/sts3c_au4=[1-n]

Possible PTP/FTP	Layer Rate	CTP Tuple.	Comments
STM[n]_OC[3n]	Multiplex section	/line[3n]_ms[n]=1	n=[1,4,16,64]. MS CTP on regenerators
	Regenerator section	/section[3n]_rs[n]=1	n=[1,4,16,64]. RS CTP on Optical Physical STMn / OC3n
STM0_OC1	Multiplex section	/line1_ms0=1	MS CTP on regenerators
	Regenerator section	/section1_rs0=1	RS CTP on Optical Physical STM0 / OC1
STM64_OC192	sts192c_vc4_64c	/sts192c_vc4_64c=1	The number is sequential with respect to the layer rate within the PTP
	sts48c_vc4_16c	/sts48c_vc4_16c=[1..4]	
	sts45c_vc4_15c	VC4-15c on an VC4-16c boundary /sts45c_vc4_15c=[1-4]	When no sliding concatenation is supported. I.e. VC4-15c starts at normal VC4-16c boundary.
	sts45c_vc4_15c	/sts45c_vc4_15c=[1-4]-s=[2-16]-t[2-3]	t is provided when sliding concatenation is supported at a VC3 granularity. If only VC4 granularity is supported (i.e. t=1) then only s is provided as the VC4 slide index.
	sts21c_vc4_7c	/sts21c_vc4_7c=[1-4]-s=[2-16]-t=[2-3]	When sliding concatenation at the VC4_7c rate is supported at a VC3 granularity. When s=1 then it is not indicated. Similarly t is not provided when t=1.
	sts21c_vc4_7c	/sts21c_vc4_7c=[1-4]-s=[2-16]	Same as the above but sliding is only supported at the VC4 granularity.
	sts12c_vc4_4c	/sts12c_vc4_4c=[1..16]	
	sts3c_au4	/sts3c_au4-j=[1..64]	The layer rate represents the AUG numbering where the number of au4s is exactly 1.
	sts1_au3	/sts1_au3-j=[1..64]-k=[1..3]	The layer rate represents the AUG numbering where the number of au4s is exactly 1 and the number of au3s is 3 per AUG. For example, the 7th STS-1

Possible PTP/FTP	Layer Rate	CTP Tuple.	Comments
			on an OC-192 PTP would be called "/sts1_au3-j=3-k=1", and the 11th STS-1 would be called "/sts1_au3-j=4-k=2"
	tu3_vc3	/sts3c_au4-j=[1..64]/tu3_vc3-k=[1..3]	
	vt6_tu2	/sts3c_au4-j=[1..64]/vt6_tu2-k=[1..3]-l=[1..7]	
	vt2_tu12	/sts3c_au4-j=[1..64]/vt2_tu12-k=[1..3]-l=[1..7]-m=[1..3]	
	vt15_tu11	/sts1_au3-j=[1..64]-k=[1..3]/vt15_tu11-l=[1..7]-m=[1..4]	
STM16_OC48	sts48c_vc4_16c	/sts48c_vc4_16c=1	
	sts12c_vc4_4c	/sts12c_vc4_4c=[1..4]	
	sts9c_vc4_3c	/sts9c_vc4_3c=[1-4]	When VC4_3c is supported without sliding concatenation
	sts3c_au4	/sts3c_au4-j=[1..16]	The layer rate represents the AUG numbering where the number of au4s is exactly 1.
	sts1_au3	/sts1_au3-j=[1..16]-k=[1..3]	The layer rate represents the AUG numbering where the number of au4s is exactly 1 and the number of au3s is 3 per AUG
	tu3_vc3	/sts3c_au4-j=[1..16]/tu3_vc3-k=[1..3]	
	vt6_tu2	/sts3c_au4-j=[1..16]/vt6_tu2-k=[1..3]-l=[1..7]	
	vt2_tu12	/sts3c_au4-j=[1..16]/vt2_tu12-k=[1..3]-l=[1..7]-m=[1..3]	
	vt15_tu11	/sts1_au3-j=[1..16]-k=[1..3]/vt15_tu11-l=[1..7]-m=[1..4]	
STM4_OC12	sts12c_vc4_4c	/sts12c_vc4_4c=1	

Possible PTP/FTP	Layer Rate	CTP Tuple.	Comments
	sts3c_au4	/sts3c_au4-j=[1..4]	The layer rate represents the AUG numbering where the number of au4s is exactly 1.
	sts1_au3	/sts1_au3-j=[1..4]-k=[1..3]	The layer rate represents the AUG numbering where the number of au4s is exactly 1 and the number of au3s is 3 per AUG
	tu3_vc3	/sts3c_au4-j=[1..4]/tu3_vc3-k=[1..3]	
	vt6_tu2	/sts3c_au4-j=[1..4]/vt6_tu2-k=[1..3]-l=[1..7]	
	vt2_tu12	/sts3c_au4-j=[1..4]/vt2_tu12-k=[1..3]-l=[1..7]-m=[1..3]	
	vt15_tu11	/sts1_au3-j=[1..4]-k=[1..3]/vt15_tu11-l=[1..7]-m=[1..4]	
STM1_OC3	sts3c_au4	/sts3c_au4-j=1	
	sts1_au3	/sts1_au3-j=1-k=[1..3]	
	tu3_vc3	/sts3c_au4-j=1/tu3_vc3-k=[1..3]	
	vt15_tu11	/sts1_au3-j=1-k=[1..3]/vt15_tu11-l=[1..7]-m=[1..4]	
STM0_OC1_EC1	sts1_au3	/sts1_au3=1	There is no need for j and k as AU3 is not derived out of a AUG
	vt15_tu11	/sts1_au3=1/ vt15_tu11-l=[1..7]-m=[1..4]	
E4	VC-4	/sts3c_au4=1	This represents the SDH (G805 TTP) CTP contained in a E4 PTP. For PDH adapted to sdh/sonet. This is multilayer CTP for support of transmission parameters at more than 1 rate.
E3	Low order VC-3	/tu3_vc3=1	
DS3	High order VC-3	/sts1_au3=1	

Possible PTP/FTP	Layer Rate	CTP Tuple.	Comments
	Low order VC-3	/tu3_vc3=1	PDH adaptation; multilayer CTP
E2	VC-2	/vt6_tu2=1	8 Mbps PDH adapted to VC2. PDH adaptation; multilayer CTP
E1	VC-12	/vt2_tu12=1	2 Mbp/s PDH adapted to VC12
DS1	TU-12 from VC-11	/ds1_vt15_vc11=1	This CTP has two layer rates.
	TU-11 from VC-11	/vt15_tu11=1	DS1 PDH interface layers append to the PDH PTPs
Ethernet	encapsulation	/encapsulation=1	
	sts3c_vc4	/encapsulation=1/sts3c_au4=[1..n]	
	sts1_vc3	/encapsulation=1/sts1_au3=[1..n]	
	VC3	/encapsulation=1/tu3_vc3=[1..n]	
	VC12	/encapsulation=1/vt2_tu12=[1..n]	
	vt15_tu11	/encapsulation=1/vt15_tu11=[1..n]	
	sts3*Xc_vc4_Xc	/sts3*Xc_vc4_Xc=1	X = 1..64. For example a /sts21c_vc4_7c may be used to carry a Gig. Ethernet signal at full rate. (note that in this case the encapsulation is apart of the same CTP so it does not appear in the naming hierarchy).

Table 6: SDH/SONET CTP Naming

5.2.2.5 PDH CTPs

The following are the components for the PDH CTPs.

- ds[0-3]=[1-n]
- e[1-5]=[1-n]
- e.g. DS1 on DS3 card /ds1=4

Examples:

Possible PTP	Layer Rate	CTP Tuple.	Comments
STM16_OC48	ds3	/sts1_au3-j=[1..16]-k=[1..3]/ds3=1	
	DS1 extracted from DS3	/sts1_au3-j=[1..16]-k=[1..3]/ds3=1/ds1=[1..28]	
	DS1 extracted from VT-1.5	/sts1_au3-j-[1..16]-k=[1..3]/vt15_tu11-l=[1..7]-m=[1..4]/ds1=1	
STM4_OC12	ds3	/sts1_au3-j=[1..4]-k=[1..3]/ds3=1	
	DS1 extracted from DS3	/sts1_au3-j=[1..4]-k=[1..3]/ds3=1/ds1=[1..28]	
	DS1 extracted from VT-1.5	/sts1_au3-j=1-k=[1..3]/vt15_tu11-l=[1..7]-m=[1..4]/ds1=1	
STM1_OC3	ds3	/sts1_au3-j=1-k=[1..3]/ds3=1	
	DS1 extracted from DS3	/sts1_au3-j=1-k=[1..3]/ds3=1/ds1=[1..28]	
	DS1 extracted from VT-1.5	/sts1_au3-j=1-k=[1..3]/vt15_tu11-l=[1..7]-m=[1..4]/ds1=1	
DS3	DS3	/ds3=1	45M, 45Mbit/s async/PDH signal,
	DS1	/ds1=[1..28]	The number represents the DS1 CTP in a DS3. Naming for 28 DS1s on a DS3
	DS0	/ds1=[1..28]/ds0=[1..24]	
DS2	DS2	/ds2=1	6Mbit/s async/PDH signal
	DS1	/ds1=[1..4]	Represents DS1 on a DS2. Naming for 4 DS1s on a DS2
DS1	DS1	/ds1=1	1.5Mbit/s async/PDH signal
	DS0	/ds0=[1..24]	
E1	E1	/e1=1	2Mbit/s PDH signal
	DS0	/ds0=[1..31]	
E2	E2	/e2=1	8Mbit/s PDH signal

Possible PTP	Layer Rate	CTP Tuple.	Comments
E3	E3	/e3=1	34Mbit/s PDH signal
E4	E4	/e4=1	140 Mbit/s PDH signal
E5	E5	/e5=1	565 Mbit/s PDH Signal
ISDN	DS0	/ds0=[1..2]	
POTS	DS0	/ds0=1	

Table 7: PDH CTP Naming

5.2.2.6 WDM

The following components are used to represent the WDM management.

- Och – optical channel: Frequency – derived either from the OMS or from the drop side.
  - /frequency=nnn.nn is a decimal representing the frequency in Tera Hertz (THz)
  - e.g., /frequency=nnn.nn
- digital signal rate
  - e.g. /dsr=1
- OMS CTP in an optical amplifier
  - /oms=1
- ODU CTP in a G.709 OMS port with TDM and optical multiplexing
  - /frequency=nnn.nn/odu2=1/odu1=[1-4]

Examples:

Possible PTP/FTP	Layer Rate	CTP Tuple.	Comments
OTS	oms	/oms=1	Number, meant for Optical amplifiers
OMS, OS/DSR	optical channel	/frequency=nnn.nn	Frequency Number , decimals in THz i.e., /frequency=191.90
	odu1	/frequency=nnn.nn/odu1=1	
	odu2	/frequency=nnn.nn/odu2=1	
	odu1	/frequency=nnn.nn/odu2=1 /odu1=[1-4]	odu1 in odu2
PHYSCIAL_ELECTRICAL, OS	dsr	/dsr=1	For digital signal connectivity (unspecified rate)
PHYSICAL_OPTICAL, OS	optical channel	/frequency=nnn.nn	Frequency number, decimals in THz, for optical connectivity i.e., /frequency=191.90

OCH_Data_Unit_2	odu2	/odu1=[1-4]	

Table 8: WDM CTP Naming

5.2.2.7 Tunable Lasers

Characteristics of the tunable lasers are such that they are a few in number and each one of them can be tuned to some variable frequency ranges, starting at some frequency and with some specified spacing. To achieve that the following scheme is named:

Name = "CTP"
Value = "/frequency=tunable-number=<n>
where n identifies the tunable lasers number with respect to a PTP. If a PTP has only one tunable laser, the CTP Tuple will be

Possible PTP	Layer Rate	CTP Tuple.	Comments
OS/DSR, OS	optical channel	/frequency=tunable-number=[1..n]	The number represents the laser number within a group of tunable lasers. This is invariant through the life of the CTP. The tuned frequency, expressed as a Transmission Parameters is represented as the variant.

Table 9: Tunable Laser Port CTP Naming

To identify the ranges for which the laser may be tuned, the following may be added to the parameter list for the OCH CTP of the PTP:

- TUNABLE_BASE_FREQUENCY // value in nnn.nn THz
- TUNABLE_FREQUENCY_SPACING // nn GHz
- NUMBER_OF_TUNABLE_FREQUENCIES /nn

The Tunable Base Frequency starts with the lowest frequency that is applicable (in THz) and increases by a Tunable Frequency Spacing (in GHz) and repeats in such a way to make available a Number of Total Tunable Frequencies.
Once the tunable frequency is tuned by setTPData() or via createAndActivateSNC() , the value of the Frequency is set and a new Transmission Parameter is set:

- TUNED_FREQUENCY //nnn.nn frequency.

5.2.2.8 Ethernet "Flow Point" CTPs

Ethernet Flow Points are represented by CTPs. The naming rule depends on the properties of the Matrix Flow Domain (also known as a Bridge) that connects them.

Type of MFD	Value	Comments
VLAN unaware	/eth=1	Only one Flow Point is present
VLAN aware with single VLAN tag	/ethvid=n	Can be used either for C-VID or for S-VID in MFDs that only process a single VLAN tag.
VLAN aware with one or two VLAN tags	[/ethsvid=n][/ethcvid=m]	Either S-VID or C-VID or both may be present. (The square brackets “[“ and “]” indicate optionality.)
Proprietary	/eth=P<string>	

Table 10: Ethernet “Flow Point” CTP Naming

5.2.3 Pictorial Depiction of the CTP Hierarchy.

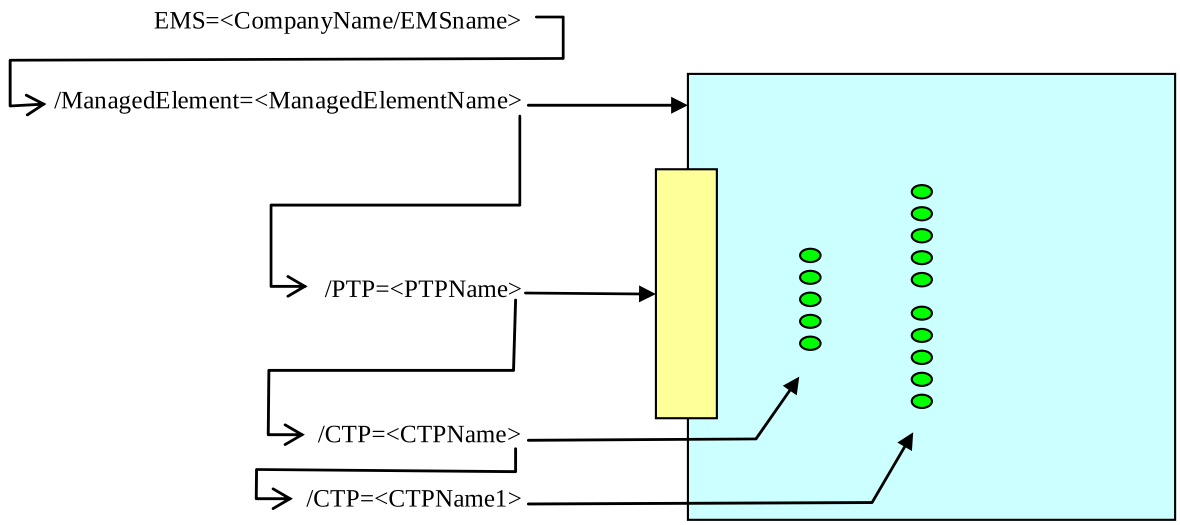

Figure 1: Bi-directional CTP Model

Figure 1 represents the relation between the tuples of a CTP. The figure describes a completely bidirectional model.

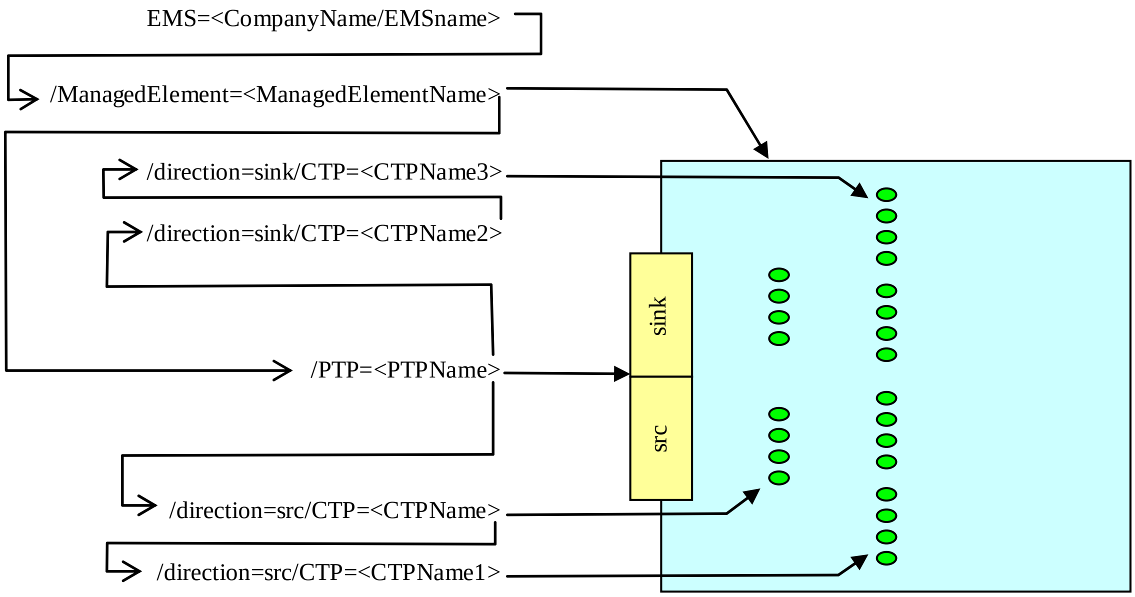

Figure 2: Uni-directional CTP Model

Figure 2 represents a unidirectional model, where the SINK PTP contains src CTPs which in turn may contain other src CTPs.

5.3 Naming of the PMP

The value of the PMP name is "*layer rate-location-granularity*" where

- *layer rate* are the digits as defined in LayerRate_T, e.g. 15 for LR_STS3c_and_AU4_VC4
- *location* is the string defined in PMLocation_T, e.g. PML_NEAR_END_Rx
- *granularity* is the string defined in Granularity_T, e.g. 15min

A complete example thus looks like “15- PML_NEAR_END_Rx-15min”.

5.4 Naming of Objects for Connectionless Transmission Management

5.4.1 Note on FPs and CPTPs

Although flow points (FPs) and connectionless port termination points (CPTPs, also known as bridge ports) are mentioned in the model (e.g., in the names of some operations), these objects are not explicitly modeled across the interface.

Instead,

- Flow Points are represented by CTPs. See section 5.2.2.8.

- CPTPs are represented by either:
  - PTPs - if the port does not support encapsulation or link aggregation or
  - CTPs - if the port does provide encapsulation but not link aggregation or
  - FTPs - if the port does provide encapsulation or link aggregation.

5.4.2 Flow Domain

The name of a Flow Domain is with respect to the EMS as shown in Table 11.

Name	Value
“EMS”	<EMS Name>
“FlowDomain”	<FlowDomain Name>

Table 11: Flow Domain Naming

The value part of the Flow Domain tuple will be a free format string.

5.4.3 Matrix Flow Domain

The name of a Matrix Flow Domain is with respect to the Managed Element as shown in Table 12.

Name	Value
“EMS”	<EMS Name>
“ManagedElement”	<ManagedElement Name>
“MatrixFlowDomain”	< MatrixFlowDomain Name>

Table 12: Matrix Flow Domain Naming

The value part of the Matrix Flow Domain tuple will be a free format string.

5.4.4 Flow Domain Fragment

The name of a Flow Domain Fragment is with respect to the Flow Domain as shown in Table 13.

Name	Value
“EMS”	<EMS Name>
“ManagedElement”	<ManagedElement Name>
“FlowDomainFragment”	< FlowDomainFragment Name>

Table 13: Flow Domain Fragment Naming

The value part of the Flow Domain Fragment tuple will be a free format string.

5.4.5 Traffic Conditioning Profile

The name of a Traffic Conditioning Profile is with respect to the EMS as shown in Table 14.

Name	Value
“EMS”	<EMS Name>
“TCProfile”	<TCProfile Name>

Table 14: TC Profile Naming

The value part of the TC Profile tuple will be a free format string.

5.5 Naming Objects for the ASON Control Plane

This section provides the naming rules for the following objects:

- MLSN when used in the context of the Control Plane to represent a Multi-Layer Routing Area.
- MLSNPPLink.
- MLSNPP.
- Call.
- SNC when used in the context of the Control Plane to represent a Connection

This section also provides rules for identifying:

- SNPP as a component of an MLSNPP or MLSNPPLink.
- SNP as a component of an MLSNPP or MLSNPPLink.
- SNPP as a remote component where the MLSNPP/MLSNPPLink is not known.
- SNP as a remote component where the MLSNPP/MLSNPPLink is not known.

5.5.1 MLSN when used to represent an ASON Control Plane Multi-Layer Routing Area

The Control Plane Routing Areas are grouped into MLRAs. An MLRA is represented by an MLSN over the interface. The naming rule depends on the position of the MLRA in the routing area hierarchy. All MLRAs have a two element name, i.e. the name does not reflect the routing area hierarchy, as shown in Table 16.

Name	Value
“EMS”	<EMS Name>
“MLRA”	<MLRA Name>

Table 15: MLRA Naming

- Built from two components “EMS Name” and “MLRA Name”
  - Name value for the “MLRA Name” component will be obtained from the control plane for all routing areas other than the top level and will be the value of the full name from the control plane perspective (see below).
  - The “EMS Name” component can be readily identified by the NMS and removed leaving the raw Control Plane name. The “EMS Name” component has been included to ensure a guaranteed indication at the NMS of the source of the information, as shown in Table 16.

Possible MLRA	MLRA Name	Comments
Top level MLRA	“TLRA”	The top level Routing Area is not a named entity in the ASON Control Plane as a consequence the EMS must fabricate a name
Intermediate MLRA	<MLRA Name>	See rules in text below.
Routing Node	<MLRA Name>	See rules in text below.

Table 16: MLRA Level Naming

5.5.1.1 Top Level MLRA

The following considerations need to be taken into account when dealing with a Top Level MLRA:

- It is potentially possible that there may be more than one top level routing area[1] where at least in one case in the network both top level routing areas are under the control of a single EMS (this is NOT advised) then:
  - It is the responsibility of the EMS to do the appropriate partitioning based upon the underling ASON network
  - It is the responsibility of the network operator to ensure that all resources in the separate ASON control plane spaces are named as if they are in one name space.
    - This strategy is highly beneficial when considering the possibility of future merge of two separate ASON control plane instances to form one[2].

5.5.1.2 Routing Node

The following considerations need to be taken into account when dealing with naming of a Routing Node:

- The lowest level Routing Area (Routing Node) ”MLRA Name” value:
  - Should be obtained from the control plane via discovery[3]

[1] Where the operator has two or more isolated control plane instances.
[2] Merging ASON control plane instances is outside the scope of this specification. Clearly as a result of the merge it will be necessary for all resources to be named uniquely within the new name space. Necessary name changes will cause objects to be deleted and recreated as noted.
[3] Note that as several EMSs may have visibility of a single lowest level routing area but only one EMS may have visibility of the Managed Element itself an EMS based mapping scheme does not appear appropriate

- In simple network deployments the operator may choose to name the Routing Node to be the same as the value of the name of the Managed Element (or have a component of the Managed Element name present - providing greater stability)
  - This is possible as a result of the restriction in this release (see Appendix A.7.4 of SD1-45_ASONControlPlaneManagement-Primer.pdf).
  - This does rely upon appropriate control plane administration
    - More complex scenarios where for example the lowest level Routing Area is a network structure (e.g. a BLSR ring) rather than a Managed Element are not covered by this release.

5.5.1.3 Multi-Layer aspect of MLRA

For an MLRA that represent more than one layer it is assumed that the name will have been determined by the EMS as the control plane does not deal with multi-layer routing entities. The network operator would need to choose one of the following schemes:

- The EMS looks the name up in a directory that provides a mapping from a set of Routing Area names/identifiers identified by the Control Plane to a single MLRA name used on the NML-EML interface
  - The directory scheme is not specified here and is beyond the scope of the interface
  - Any directory used for this purpose will need to be available network wide to all EMSs[4] dealing with the control plane so that the same name translation can be performed at any point.
- The EMS uses an algorithm to determine the mapping from the Routing Area names identified by the control plane to the MLRA name used on the NML-EML interface:
  - The naming proposed is to use a delimited string with a common name component and a layer name component
    - Two separate control plane Routing Areas “London-HighOrder@VC4” and “London-HighOrder@VC4-4c” would become a singe Multi-Layer Routing Area (MLRA) supporting both VC4 and VC4-4c with the ”RoutingArea_name” component “London-HighOrder”)
  - Clearly the EMSs that manage these Routing Areas will need to deal with the addition of another Routing Area “London-HighOrder@VC4-16c” to the control plane by adding another layer to the MLRA etc
  - Each EMS[5] must use the same translation method
  - The naming approach in the Control Plane is beyond the scope of the MTNM team responsibility.
- The MLRA represents only a single layer and the name value is derived directly from the Control Plane routing area

It is necessary for each EMS in the network to manage the name generation in a consistent and singular fashion so that any access to the network yields the same results

[4] This is potentially a multi-vendor environment.
[5] This is potentially a multi-vendor environment

To determine the grouping that may take place to form MLRAs the following guidelines have been constructed:

- The lowest level MLRA is a Multi-Layer Routing Node (MLRN)
    - In a simple network a MLRN represents all the resources in the Managed Element that are available to the control plane in each layer of the MLRN
        - A Managed Element cannot be represented by two RNs for the same layer (see section A.7.4 Routing Node in supporting document: SD1-45_ASONControlPlaneManagement-Primer.pdf), i.e. all the SNPs/SNPPs for a layer belongs to the same RN.
    - The MLRN representing a Managed Element for one particular layer need not be the same as the MLRN representing the same Managed Element for another layer
    - The partition of layers between MLRNs for one particular Managed Element need not be the same as the partition of layers for another Managed Element
        - However maintaining the same layer partitioning rules across the network is probably of significant benefit to the network operator (e.g. all High Order layers are in the same RN).
- Each Routing Area in the network must be represented by one and only one MLRA
    - There is no change in partitioning as a result of creation of MLRAs.

It is assumed that all EMSs in the network will manage this in a consistent and singular fashion so that any access to the network yields the same results

5.5.2 MLSNPPLink

The Control Plane SNPP Link is represented by an MLSNNPPLink. All MLSNPPLinks have a two element name, i.e. the name does not reflect the routing area or SNPP Link hierarchy, as shown in Table 17.

Name	Value
"EMS"	<EMS Name>
"MLSNPPLink"	<MLSNPPLink Name>

Table 17: MLSNPPLink Naming

Built from two components "EMS Name" and "MLSNPPLink Name". The "EMS Name" component can be readily identified by the NMS and removed leaving the raw Control Plane name. The "EMS Name" component has been included to ensure a guaranteed indication at the NMS of the source of the information

The value of final DN, i.e. the "MLSNPPLink Name", will be obtained from the control plane.

- Note that the ASON SNPPLinks are named by a concatenation of SNPP names

For an MLSNPPLink that represent more than one layer it is assumed that the name will have been determined by the EMS as the control plane does not deal with multi-layer entities.

The network operator would need to choose one of the following schemes for generation of the name for MLSNPPLinks:

- The EMS looks the name up in a directory for a set of SNPPLink identifiers identified by the Control Plane
  - The directory scheme is not specified here and is beyond the scope of the interface
    - Any directory used for this purpose will need to be available network wide to all EMSs dealing with the control plane so that the same name translation can be performed at any point
- The EMS uses an algorithm that works on the various single layer routing area names (e.g. two separate control plane SNPPLinks “London-Brighton@VC4” and “London-Brighton@VC4-4c” would become a singe MLSNPP supporting both VC4 and VC4-4c with the “MLSNPPLink Name” component “London-Brighton”)
  - Each EMS that manages the SNPPLinks must use the same translation method
- Have only single layer MLSNPPLinks and allow direct naming from the Control Plane
- The naming approach in the Control Plane is beyond the scope of the interface
  - Note that in more sophisticated networks the MLSNPPLink may represent a concatenation of SNPPLinks at the same layer.

It is assumed that all EMSs in the network will manage this in a consistent and singular fashion so that any access to the network yields the same results

Note that the MLSNPPLink will convey the names/identifiers of:

- All associated SNPP, know to the reporting EMS, at each end. For a particular end this will include:
  - The name/identifier of the SNPP in the context of the routing area to which the Link is joined
  - Optionally, the identifiers of the SNPP in the context of each of the subordinate RAs, including the RN
    - An SNPP at one level may be represented by amalgamation of several SNPPs at the next level down and hence there may be a list of SNPP names/identifiers at each subordinate level

5.5.3 MLSNPP

The Control Plane SNPP is represented by an MLSNPP, MLSNPP naming is shown in Table 18.

Name	Value
“EMS”	<EMS Name>
“MLSNPP”	<MLSNPP Name>

Table 18: MLSNPP Naming

The “EMS Name” component can be readily identified by the NMS and removed leaving the raw Control Plane related name. The “EMS Name” component has been included to ensure a guaranteed indication at the NMS of the source of the information

- The final value of the DN, i.e. the “MLSNPP Name”, will be obtained from the control plane
  - This value is derived from the names of the SNPPs from which it is built. The Control Plane SNPP name is a concatenation of:
    - One or more nested routing area names.[6]
      - Each nested routing area name values would need to be adjusted using the approach defined in the MLRA naming section above to form a coherent MLSNPP name.
    - An optional subnetwork name within the lowest routing area level. This can only exist if the containing RA names are present
      - The subnetwork name can be the name of NE or part of the NE if it is a Routing Node
    - One or more nested resource context names
      - Note: Each of the resource context name assembly is required to be the same for all instances of SNPP that are to be assembled to form the MLSNPP.

For an MLSNPP that represent more than one layer it is assumed that the name will have been determined by the EMS as the control plane does not deal with multi-layer entities. The network operator would need to choose one of the following schemes::

- The EMS looks the name up in a directory for a set of SNPP identifiers identified by the Control Plane
  - The directory scheme is not specified here and is beyond the scope of the MTNM team responsibility.
  - Any directory used for this purpose will need to be available network wide to all EMSs dealing with the control plane so that the same name translation can be performed at any point
- The EMS uses an algorithm that works on the various single layer SNPP names (e.g. two separate control plane SNPPs “London-EthernetServer@VC4” and “London-EthernetServer@VC4-4c” would become a singe MLSNPP supporting both VC4 and VC4-4c with the “MLSNPP Name” component “London-EthernetServer”)
  - Each EMS that manages the SNPPs must use the same translation method
- Have only single layer MLSNPPs and allow direct naming from the Control Plane
- The naming approach in the Control Plane is beyond the scope of the interface

It is assumed that all EMSs in the network will manage this in a consistent and singular fashion so that any access to the network yields the same results.

Note that the MLSNPP will convey the names of:

- All associated SNPP, known to the reporting EMS related to the MLSNPP. This will include:

[6] The MTNM name also includes an explicit MLRA_name“ which may be different from the routing area name derived directly from the control plane used in the MLSNPP_name value.

- The name/identifiers of the SNPP in the context of the routing area in which the SNPP is found
- Optionally, the identifiers of the SNPP in the context of each of the subordinate RAs including the RN
  - An SNPP at one level may be represented by amalgamation of several SNPPs at the next level down and hence there may be a list of SNPP names/identifiers at each subordinate level

5.5.4 Call

Call naming is shown in Table 19.

Name	Value
“EMS”	<EMS Name>
“Call”	<Call Name>

Table 19: Call Naming

The “EMS Name” component can be readily identified by the NMS and removed leaving the raw Control Plane related name. The “EMS Name” component has been included to ensure a guaranteed indication at the NMS of the source of the information

The value of the ”Call Name” may be supplied by the NMS or obtained from the control plane. When obtained from the control plane it will be equal to the control plane Call ID

Note: the control plane Call ID must be the same throughout the control plane. The Call ID must be:

- Unique in the entire network
- Same regardless of where viewed
- Same for the entire duration of the actual call in the network regardless of failures and/or rearrangements of the control plane infrastructure
  - The naming approach in the Control Plane is beyond the scope of the interface

5.5.5 SNC when used to represent an ASON Control Plane Connection

The Control Plane Connection is represented by an SNC. The Control Plane Connection Segment is represented by an SNC. Connection naming is shown in Table 20.

Name	Value
“EMS”	<EMS Name>
“MLRA”	<MLRA Name>
“Connection”	<Connection Name>

Table 20: Connection Naming

The “EMS Name” component can be readily identified by the NMS and removed leaving the raw Control Plane related name. The “EMS Name” component has been included to ensure a guaranteed indication at the NMS of the source of the information and to maintain consistency with existing naming.

The value of the name of the connection will be obtained from the control plane

- Note: Connection Segments do not actually exist as named entities in the ASON control plane network will only exist where they conceptually exist in the Control Plane. This is where the routing area offers a Routing Performer at its boundary, i.e. where there is a Network Interface that does not provide visibility of the internals of the Routing Area.
- A connection/connectionSegment can only exist in the context of a call. The “Connection Name” must be:
  - Unique in the entire network
  - The same regardless of where viewed
  - The same for the entire duration of the actual connection in the network regardless of failures and/or rearrangements of the control plane infrastructure

- The Call ID is provided by the control plane and its value is available (as a result of signaling) to all control plane entities that deal with the call (i.e. control plane entities at the top level of the routing hierarchy) or that deal with connectionSegments that form its route (i.e. at subordinate levels).
  - The “Connection Name” could be generated by the control plane based upon a number of approaches. The choice of method for generation of “Connection Name” is not mandated. Considering the “Connection Name” for Connection Segments
    - It is assumed that there will be one and only one connectionSegment in any particular routing area supporting a specific superior connection (e.g. the route of a connection will not weave in and out of the same Routing Area).
    - As a consequence it is proposed that the “Connection Name” component of the name of the connectionSegment be the same as the “Connection Name” but no special constraints are imposed in this.

5.5.6 Providing the identifiers of the SNP and SNPP

The control plane provides a signaling mechanism to convey the identifiers of its native components (SNP and SNPP). The control plane does not support multi-layer constructs. In some cases it is necessary to provide the identifier of a control plane component as a further qualification of the name of a multi-layer control plane object available over the interface (e.g. when a specific channel is to be selected or is being used – there is no multi-layer object that represents the channel).

To support this in the interface it has been chosen to use the naming structure and to add contents to this structure in the same way as the levels of naming hierarchy are added. There are a number of options for naming depending upon the available information and the depth of resolution required in the name.

In some cases remote a SNPid and/or the SNPPid will need to be passed to the EMS (i.e. where there is no encapsulating MLSNNPPLink or MLSNPP). These cases are also supported below.

In all cases the values of the SNPid and SNPPid are those that have been derived from the control plane as a result of inventory retrieval of MLSNPPLinks and MLSNPPs. These values are the ones signaled by the control plane.

5.5.6.1 SNPP in an MLSNPP (e.g. as an Endpoint of a Connection)

Name	Value
“EMS”	<EMS Name>
“MLSNPP”	<MLSNPP Name>
“RAid”	<RA Identifier>
“SNPPid”	<SNPP Identifier>

Table 21: SNPP Naming in an MLSNPP

5.5.6.2 SNP in an MLSNPP (e.g. as an Endpoint of a Connection)

Name	Value
“EMS”	<EMS Name>
“MLSNPP”	<MLSNPP Name>
“RAid”	<RA Identifier>
“SNPPid”	<SNPP Identifier>
“SNPid”	<SNP Identifier>

Table 22: SNP Naming in an MLSNPP

5.5.6.3 SNPP in an MLSNPP Link (e.g. as an Endpoint of a Connection)

Name	Value
“EMS”	<EMS Name>
“MLSNPPLink”	<MLSNPPLink Name>
“RAid”	<RA Identifier>
“SNPPid”	<SNPP Identifier>

Table 23: SNPP Naming in an MLSNPP Link

5.5.6.4 SNP in an MLSNPP Link (e.g. as an Endpoint of a Connection)

Name	Value
“EMS”	<EMS Name>
“MLSNPPLink”	<MLSNPPLink Name>
“RAid”	<RA Identifier>
“SNPPid”	<SNPP Identifier>
“SNPid”	<SNP Identifier>

Table 24: SNP Naming in an MLSNPP Link

5.5.6.5 Remote SNPP

Name	Value
“RAid”	<RA Identifier>
“SNPPid”	<SNPP Identifier>

Table 25: Remote SNPP Naming

5.5.6.6 Remote SNP

Name	Value
“RAid”	<RA Identifier>
“SNPPid”	<SNPP Identifier>
“SNPid”	<SNP Identifier>

Table 26: Remote SNP Naming

Revision History

Version	Date	Description of Change
3.0	April 2005	
3.0	June 2005	Reference updated
3.1	December 2005	Version in names of referenced supporting documents deleted
3.2	June 2006	Rest Restructuring of document. Addition of Connectionless objects for Ethernet: • Ethernet CTP (also known as a “Flow Point”) • Flow Domain • Flow Domain Fragment • Matrix Flow Domain • Traffic Conditioning Profile.
3.2	December 2006	Restructuring of document. Addition of Connectionless objects for Ethernet: • Ethernet CTP (also known as a “Flow Point”) • Flow Domain • Flow Domain Fragment • Matrix Flow Domain • Traffic Conditioning Profile Addition of ASON Control Plane objects: • MLRA represented by MLSN • MLSNPPLink • Call • Control Plane Connection represented by SNC
3.3	December 2007	Updates following MTNM R3.5 Member Evaluation comments. Fixed table 11 to remove Managed Element from Flow Domain naming hierarchy.

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How to comment on the document

Comments and requests for information must be in written form and addressed to the contact identified below:

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Please be specific, since your comments will be dealt with by the team evaluating numerous inputs and trying to produce a single text. Thus we appreciate significant specific input. We are looking for more input than “wordsmith” items, however editing and structural help are greatly appreciated where better clarity is the result.