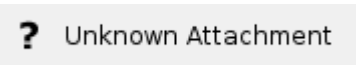


ENNI Attributes

For each instance of an ENNI, there are two sets of ENNI Service Attributes - one for each Operator - namely ENNI-N 1 and E-NNI-N 2. A given attribute in the set can have an identical value for each Operator while another attribute can have a different value for each Operator. The ENNIs are illustrated below:



1. Operator ENNI Identifier

A unique text string identifying this ENNI within the CEN to which it belongs. It can be up to 45 bytes long.

2. Physical Link

Each link in an ENNI **MUST** be one of the following physical layers in full duplex mode as defined in IEEE Std 802.3 – 2005 : 1000Base-SX, 1000Base-LX, 1000Base T, 10GBASE-SR, 10GBASE-LX4, 10GBASE-LR, 10GBASE-ER, 10GBASE-SW, 10GBASE-LW, 10GBASE-EW. Note that the physical layer at one ENNI supported by the Operator CEN can be different than the physical layer at another ENNI supported by the Operator CEN.

3. Frame format

Each ENNI Frame **MUST** have the standard Ethernet format (destination address through FCS) with one of the tag configurations specified in the table below. (Note, this is not a settable attribute).

1. Ethernet frame with no tags (no S-tag, no C-tag) - Usually only used for Provider L2CP frames
2. Ethernet frame with S-tag only (TPID=0x88a8)
3. Ethernet frame with S-tag (TPID=0x88a8) and C-tag (TPID=0x8100)

4. Number of Links

Specifies the number of physical links at the ENNI. The value can be 1 or 2.

2 are used when resiliency is implemented.

5. ENNI Resiliency

The Protection Mechanism defines the resiliency scheme at the ENNI. There are 3 alternatives:

- None - No protection, applicable only if Number of Links is 1.
- Link Aggregation – Performing LAG with exactly 2 links (Number of Links = 2). LAG configuration is at the Operator's discretion.
- Other – Any other resiliency mechanism agreed upon between the 2 Operators. This option is valid only when Number of Links = 2.

6. ENNI Maximum Transmission Unit Size

ENNI Max MTU Size specifies the maximum frame length allowed at the ENNI. It must be at least 1526 bytes (to support doubled-tagged frames) and recommended to be at least 2000 bytes in order to support other headers and encapsulations. Unlike UNI MTU, frames larger than ENNI MTU **must be discarded**. They may or may not consume tokens from the BWP. This is not specified. The ENNI MTU is recommended to be at least 4 bytes larger than any EVC MTU size crossing this ENNI.

7. Maximum Number of OVCs

The maximum number of OVCs allowed on this ENNI. An integer greater or equal to 1.

Status

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Source(s)

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8. Maximum Number of OVC End Points per OVC

An upper bound to the number of OVC end points that can be associated with an OVC at this ENNI. If set to 1, then Hairpin Switching cannot be supported at the ENNI, as it requires 2 OVC end points.

9. End Point Map

The End Point Map specifies how each S-Tagged ENNI Frame is associated with an OVC End Point within an Operator CEN. The End Point Map can be represented by a three column table. Column 1 contains S-VLAN ID values. Column 2 contains End Point Identifiers. Column 3 contains End Point types. Each row in this table maps the S-VLAN ID value to the End Point Identifier and End Point Type. End Point Type must be OVC. An S-VLAN ID value cannot appear more than once in the table. An example is shown at right.

Some rules apply:

1. When the ingress frame has S-VLAN ID that is NOT in the map, it must not be forwarded.
2. An S-VLAN ID value cannot appear more than once in the table.
3. Ingress frame with no S-Tag must not be mapped to an OVC end point.

10. End-Point Bundling

When multiple S-VLAN ID values are mapped to a single OVC end point, the End Point map is said to have Bundling. This is similar to UNI bundling of CE-VLAN IDs. When Bundling is enabled, S-VLAN ID Preservation and CE-VLAN ID Preservation MUST be Yes. Bundling is useful when multiple EVCs are tunneled via a single OVC transit tunnel. In such a case, different EVCs may use the same MAC address ranges and the Operator should provision for such a scenario.

ENNI Attributes

1. Operator ENNI Identifier
2. Physical Interface
3. Frame Format
4. Number of Links
5. ENNI Resiliency
6. ENNI Maximum Transmission Unit
7. Maximum Number of OVCs
8. Maximum Number of OVC Endpoints per OVC
9. End Point Map
10. End Point Bundling

Example(s)

End Point Map

? Unknown Attachment

Related and Further Reading

Categories