

- Class Diagram
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Based on ONF Core IM (https://3vf60mmveg1q8vzn48q2o71a-wpengine.netdna-ssl.com/wp-content/uploads/2018/01/TR-512_v1.3.1_OnfCoreIm-info.zip).

The diagram illustrates the relationships between the following classes:

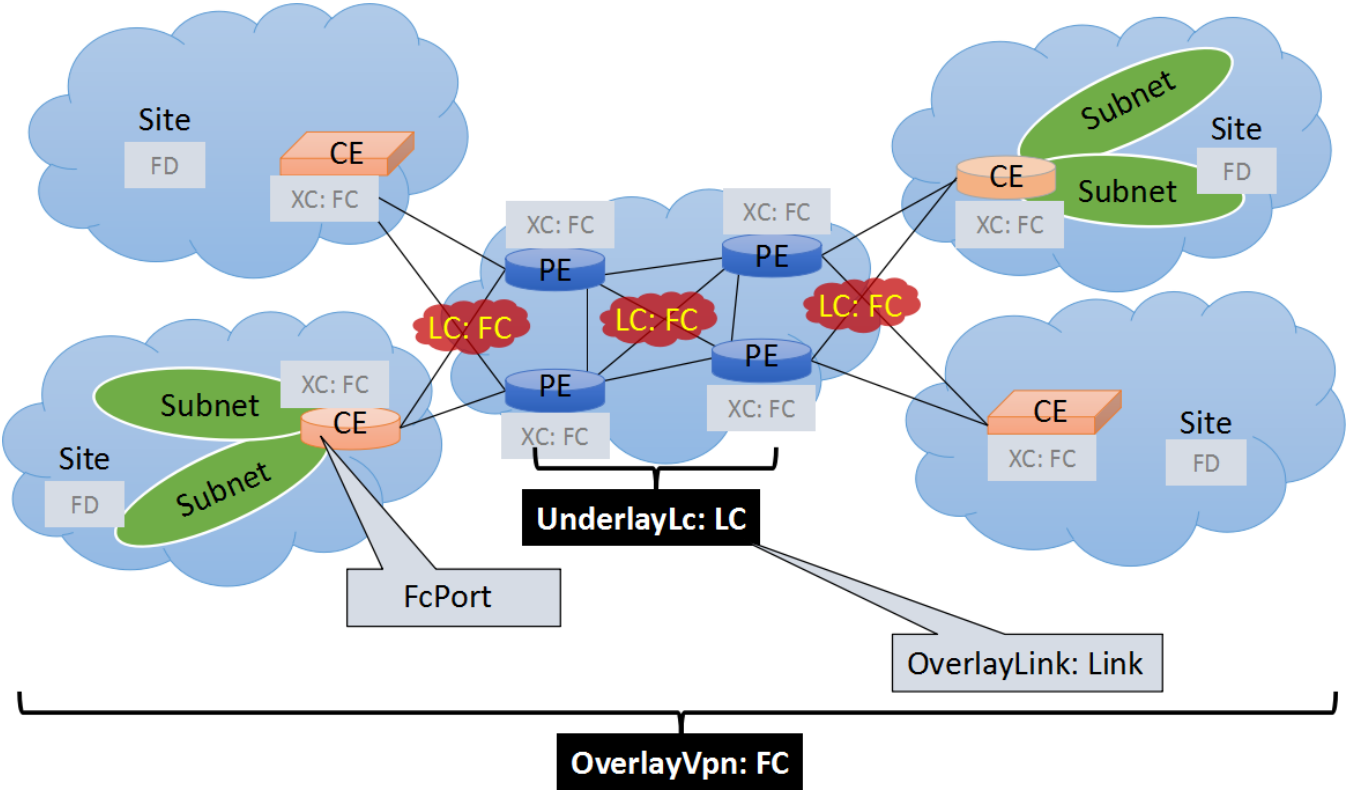
- «OpenModelClass» WanConnection**: The root class, associated with **ForwardingConstruct** (via **WanConnectionHasFcFs**), **FcPort** (via **WanConnectionHasFds**), and **Link** (via **WanConnectionHasLinks**).
- «OpenModelClass» ForwardingConstruct**: Associated with **FcPort** (via **FcHasFcPorts**), **FcRoute** (via **FcHasRoutes**), and **Link** (via **FcSupportsLink**).
- «OpenModelClass» FcPort**: Associated with **ForwardingDomain** (via **FcPortConnectedToLtp**) and **LogicalTerminationPoint** (via **LtpHasServerLtps**).
- «OpenModelClass» ForwardingDomain**: Associated with **LogicalTerminationPoint** (via **FdAggregatesLtps**) and **LinkPort** (via **HigherLevelFdEncompassesLowerLevelFds**).
- «OpenModelClass» FcRoute**: Associated with **Link** (via **FcRoutesDescribedByLinks**).
- «OpenModelClass» Link**: Associated with **LinkPort** (via **LinkHasLinkPorts**).
- «OpenModelClass» LogicalTerminationPoint**: Associated with **LinkPort** (via **LinkPortTerminatesOnLtps**).
- «OpenModelClass» LinkPort**: Associated with **LogicalTerminationPoint** (via **LtpHasClientLtps**).

Relationships are indicated by directed lines with role names and multiplicity values at each end.

- ONF CIM reference:

Class Name	SDO Concept
Forwarding Construct	TR-512.2_OnfCoreIm-ForwardingAndTermination.pdf 3.2.3 ForwardingConstruct (FC)
FC Port	TR-512.2_OnfCoreIm-ForwardingAndTermination.pdf 3.2.2 FdPort
Forwarding Domain	TR-512.2_OnfCoreIm-ForwardingAndTermination.pdf 3.2.1 ForwardingDomain (FD)
FC Route	TR-512.5_OnfCoreIm-Resilience.pdf 3.2.5 FcRoute
Link	TR-512.2_OnfCoreIm-ForwardingAndTermination.pdf 3.2.5 Link
LinkPort	TR-512.2_OnfCoreIm-ForwardingAndTermination.pdf 3.2.6 LinkPort
LTP	TR-512.2_OnfCoreIm-ForwardingAndTermination.pdf 3.1.1 LogicalTerminationPoint (LTP)

The wan connection application for general scenario is shown as below diagram:



Notice:

XC: Cross-Connect (TMF513_v3.1_070314.pdf 4.1.17 Cross-Connect), A Cross-Connect (XC) object shall represent a FC within a Network Element (NE).

LC: Link Connection (T-REC-G[1].805-200003-III-DOC-E.doc 5.2.2.1 Link connection), A link connection is capable of transferring information transparently across a link. It is delimited by ports and represents the fixed relation between the ends of the link. A link connection represents a pair of adaptation functions and a trail in the server layer network. LC is FC (TR-512.TM_OnfCoreIm-TerminologyMapping.pdf page 7)

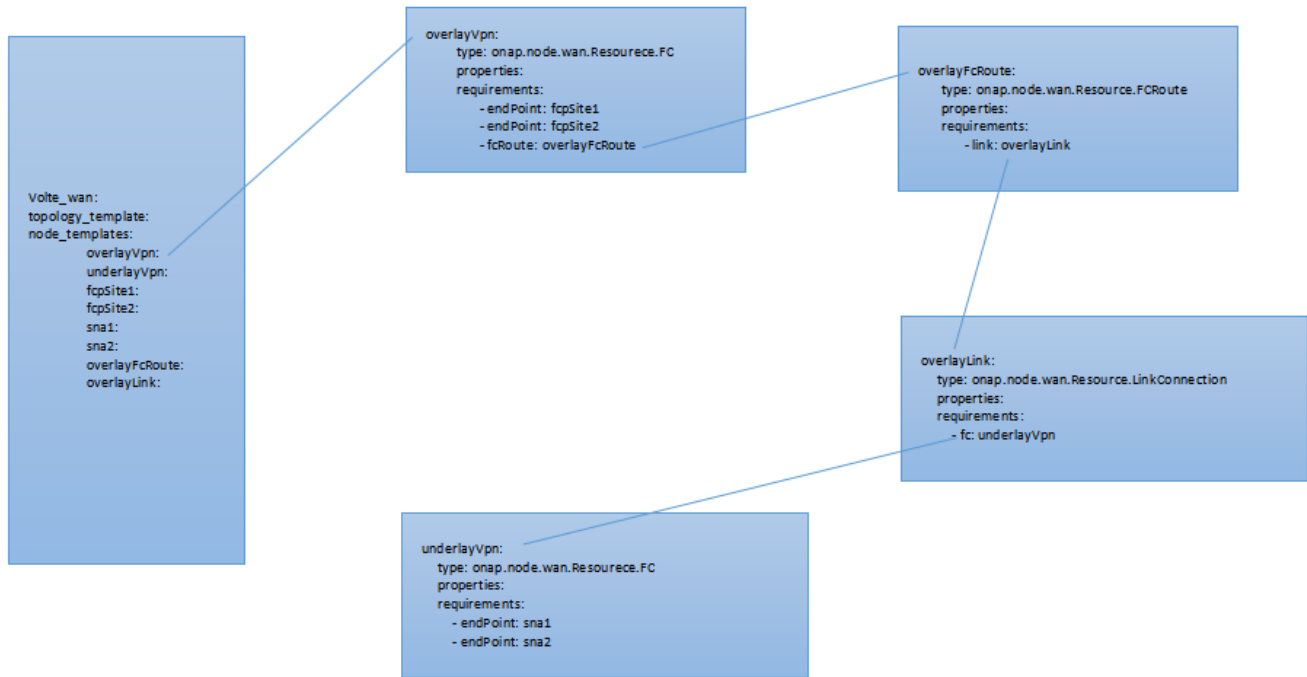
There is a special resource class not shown in the class diagram above, that is specification. The classes of wan shown above are abstract, we could use them to describe any wan scenario with specify specification which has the specify parameters for the scenario. For example, we could use overlay vpn specification an FC to describe overlay vpn. All specify specification classes are derived from specification base class which is shown as below diagram:



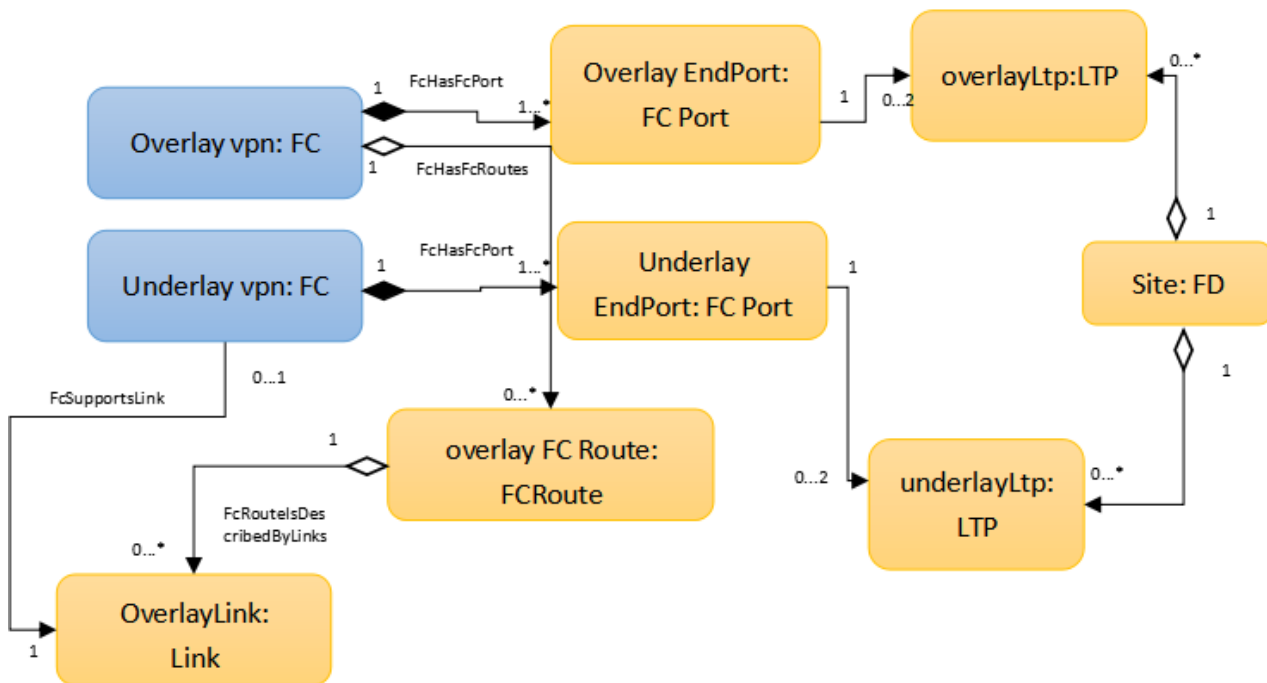
The specify specification class will be consumed by specify Direct Graph in SDN-C. As we could import specification class in SDC and import DG in SDN-C dynamically, new wan scenario could be taught to ONAP after version release.

Use Case Example

Take the ONAP R1 VoLTE use case as an example. Volte wan contains overlay vpn and underlay vpn, both of them could be described as a FC. And the relationship between overlay vpn and underlay vpn could be described by FCRout and LinkConnection.



The class diagram of ONAP R1 VolTE use case shown as below:



Wan descriptor node type definition example: [WAN_type_definition.yaml](#)

Volte Wan configuration node type definition example: [WAN_Volte_wan_configuration_definition.yaml](#)

Volte Wan template example: [VoLTE_WAN_template.yaml](#)

Class Dtail

- [Wan Design Time Information Model](#)
- [Wan Run Time Information Model](#)
- [Wan Design Time Data Model](#)