

Network Code (NC) Profiles

Release Notes 2.5

Document Version 1.0.0

ICTC approved on 10 September 2026

Release notes

ENTSO-E updated the CIM-based Network Code Profiles extensions and relevant artifacts—*Application Profiles* (RDFS and SHACL) available on the [CGMES Library](#)—to consider new use cases and correct identified bugs.

Release 2.5

Profile/Document	NCP 2.4.2	NCP 2.5	Changes/Scope
Assessed Element profile specification	2.4.0	2.4.1	Descriptions of 2 classes
Availability Schedule profile specification	2.3.1	2.4.0	See diff file.
Contingency profile specification	2.3.2	2.3.3	Description of 1 class.
Equipment Reliability profile	2.4.2	2.5.0	See diff file.
Grid Disturbance profile specification	1.1.2	1.1.3	See diff file.
Impact Assessment Matrix profile specification	2.4.0	2.4.1	Description of 1 class.
Monitoring Area profile specification	2.3.1	2.3.2	Description of 1 class.
Network Codes Canonical Extensions specification	2.4.2	2.5.0	See diff file.
Object Registry profile specification	2.2.2	3.0.0	See diff file.

Power Schedule profile specification 2.4.0 2.5.0 See diff file.

Power System Project profile specification	2.3.1	2.3.1	-
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Remedial Action profile specification 2.4.0 2.5.0 See diff file.

Remedial Action Schedule profile specification	2.4.0	2.4.1	Description of 1 class.
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Security Analysis Result profile 2.5.0 2.5.0 -

Sensitivity Matrix profile	2.3.1	2.3.1	-
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State Instruction Schedule profile specification 2.4.0 2.5.0 See diff file.

Steady State Hypothesis Schedule profile specification	1.1.0	1.1.1	Only one class changed to abstract.
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Steady State Instructions profile specification 2.4.0 2.5.0 See diff file.

The release 2.5 of the Network Code Profiles features the following main changes. For a complete and machine-readable list of the changes, please refer to the difference dataset (*DIFF file*) that ENTSO-E will publish on the [CGMES Library](#).

- Changes magnitude: minor.
 - Many functionalities are added in a backward compatible manner.
 - Nevertheless, some changes may be considered as breaking changes (not backwards compatible) like changes in attributes/classes names or addition of new ones.

The technical agreement is to tag the release as a minor release due to the fact that there is no real implementation of v2.4 of NC profiles at regional level and the expected impact of release 2.5 is not major.

- The structural part of the data does not change. However, there are new behaviours of the information model in comparison to the previous version.
- Addition of functionalities.
- Change in the way the classes attributes in the information model (UML) are used and interlinked.
- Addition of use cases: implementers add new reasons to use the standard.
- Addition of test use cases: implementers add/provide test models to showcase such functionalities.
- Object registry profile is significantly updated to implement the new model linked to the identity and designation. The old Name, NameType classes were deleted. Therefore this change is a major update.
- Changes nature: specifications, information model (UML) and Application Profiles (RDFS, SHACL) change.
- Change's description
 - Bug ResourceContainer does not have any parent
 - The attribute AvailabilitySchedule.isCancelled was added to the Availability Schedule profile as optional attribute in UML.
 - Created a new Availability Schedule profile which includes all content from former Availability Schedule profile and adds classes related to availability plan, and outage request. The name of the profile was kept the same as the content is enriched.
 - Made OutageDependency as specialisation of PeerTemporalDependency
 - Consolidated ExtOutageRequest into ExtAvailabilitySchedule and updated the package description.
 - all mRID shall be mandatory
 - all attribute are mandatory for RecordVersion with the exception of changeDescription
 - Assosiation RevisedBy is optional
 - OutageResponse.status [1..1]
 - OutageRequestResource.kind [1..1]
 - PeerTemporalDependency.constraintKind [1..1]
 - AvailabilityPlanResponse.status [1..1]
 - AvailabilityPlan.validTo [1..1]
 - AvailabilityPlan.validFrom [1..1]
 - Bug in RemedialAction profile RDFS having partial definition of Substation: Substation class deleted from RemedialActionProfile. The problem persisted from NCP v2.2. The cause was a human mistake.
 - Added technologyRef (optional and of data type URI) in the EnergyResourceType class
 - EnergyGroup class is renamed to EnergyResourceGroupCapacity and its definition changed:

- From: “EnergyGroup: An energy group is an aggregation of energy components which have the same energy characteristic, e.g. fuel type and technology. It can be used to allocate energy.”
- To: “EnergyResourceGroupCapacity: Energy resource capacity represents the installed, available, or effective capacity of energy-producing or energy-consuming group of resources. It supports both static snapshot values and dynamic time-series reflecting forecast, scheduled, actual, or hindcast availability under meteorological or hydrological conditions. The capacity value is associated with a specific energy kind and, where applicable, linked to weather information relevant for weather-dependent resources.”
- EnergyResourceGroupCapacity changed the following optional attributes and/or their definition (refer to the UML for attributes’ definition):
 - installedCapacityP
 - availableCapacityP
 - p
 - availabilityFactor
 - weatherDatasetRef
 - scenarioRef
- EnergyKind enumeration got a new definition:
 - Short: "Categorisation of energy sources and behaviours used to group generation, storage and consumption for scenario simulations and aggregated reporting."
 - Long: "Identification of the energy grouping used to classify generation, storage and consumption. EnergyKind provides a categorisation based on technologies, weather-dependent resources and consumption flexibility. It supports forecast simulation for scenario development and enables consistent aggregated reporting."
- In ER profile, the cardinality of the SchedulingArea-BiddingZone classes’ association was changed from “1” to “0..1” in the BiddingZone class side of the association.
- Revision of the associations of BiddingZoneBorder and BiddingZone classes in ER profiles.
 - In order to be more aligned with CIM for market (ESMP) there are now two BiddingZoneBorder association with BiddingZone classes, one for each direction
 - Name of the association BiddingZoneBorder.BiddingZoneOne was changed to BiddingZoneBorder.FromBiddingZone.
 - Name of the association BiddingZoneBorder.BiddingZoneTwo was changed to BiddingZoneBorder.ToBiddingZone.
- Further alignment of this profile might be necessary later on.
- Attributes added in SIS for HVDC Controls
- Additional HVDC equipment added such as valves, converters based on the SV-IOP discussions. For details check the difference of ER profile or the diagrams DCValvesAndConverters and DCEquivalent in the extensions.
- Added GateInputPin to the SIS profile to allow a definition for ‘GateInputPin .enabled’ within the schedule instructions.
- ResourceContainer does not have any parent - specialization of cim:PowerSystemResource.
- Change the cardinality of the association GeneratingUnit.EnergyComponent from 0..1 to 0..* on the side of EnergyComponent in the canonical and also in the ER profile

- ScheduleResource.normalParticipationFactor and GeneratingUnit.normalParticipationFactor have been added as optional attributes in ER.
- HVDC Control
 - Removed P from DCTieCorridor and update the description and move it to DC Pole
 - p: "Active power flow for the pole. The attribute is a positive value. The direction is given by the DCTieCorridor association with BiddingZoneBorder."
 - Updated the association between SchedulingArea and DCTieCorridor
 - Added q to DCPole
 - q: "Reactive power flow for the pole. The attribute is a positive value. The direction is given by the DCTieCorridor association with BiddingZoneBorder."
 - Added new association DCTieCorridor and BiddingZoneBorder (call it source bidding zone) to indicate the direction.
 - Updated the description of DCTieCorridor
 "A collection of one or more direct current poles that connect two different control areas.
 DCTieCorridor is linked to its own SchedulingArea. The active and reactive power is given by the SchedulingArea"
 - Added q in "SSI and SSI"
 - Added q in Direct and SSI for SchedulingArea and update the description of the SchedulingArea with the following text:
 - SchedulingArea: "It includes active power, reactive power and participation factor to be able to schedule top down (using DCTieCorridor and participation factor to provide schedule on the DCPole) and bottom up (aggregation of DCPole to DCTieCorridor). Only one approach can be used at a time."
 - Added association between SchedulingArea and PowerShiftKeySchedule
 - Added new diagram (ExtDCPoleSchedule) under the package ExtSchedule
 - New Class DCTieCorridorDirectionTimePoint (and optional attribute atTime) and association with DCTieCorridor, PowerSchedule, and BiddingZoneBorder
 - A constraint between two TimePoints (DCTieCorridorDirectionTimePoint and PowerTimePoint) was added
 - 3 association 1. between Power Schedule and DCTieCorridorDirectionTimePoint; 2 BiddingZoneBorder and DCTieCorridorDirectionTimePoint 3 . DCTieCorridorDirectionTimePoint and DCTieCorridor.
- Deleted the InfeedLimitSchedule and InfeedLimitTimePoint classes as they were duplicated and not used in profiles. There is still a pair of used classes that remained in the profiles. This was a modelling bug.
- Updated description for RangeConstraint.normalValue, RangeConstraint.value, and GenericPointTime.value.
 - RangeConstraint.normalValue
 - Old: "The normal (initial) value. The meaning of the value is defined by the attribute referenced by the PropertyReference. The attribute value can be integer, float or boolean. In case of boolean 1 equals true and 0 equals false. If the valueKind is incremental or incrementalPercentage, then the attribute value shall be positive (greater than zero).

If the valueKind is absolute, it does not constraint attribute value to be positive.

If the valueKind is incrementalPercentage, then the attribute value “100” shall represent 100%. However, the attribute value can be greater than 100 but not negative.”

- New: “The normal (initial) value. The meaning of the value is defined by the attribute referenced by the PropertyReference. The attribute value can be integer, float or boolean. In case of boolean 1.0 equals true and 0.0 equals false. In case of integer the 0 should be included as a decimal, e.g. 2.0.

If the valueKind equals incremental or incrementalPercentage, then the attribute value shall be positive (greater than zero).

If the valueKind equals absolute, it does not constraint attribute value to be positive.

- RangeConstraint.value

- Old: “The value at the time. The meaning of the value is defined by the attribute referenced by the PropertyReference. The attribute value can be integer, float or boolean. In case of boolean 1 equals true and 0 equals false. If the valueKind is incremental or incrementalPercentage, then the attribute value shall be positive (greater than zero).

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If the valueKind equals incrementalPercentage, then the attribute value “100.0” shall represent 100%. The attribute value shall be positive float (0.0 value is not allowed) and can exceed 100.0.”

- GenericPointTime.value

- Old: ““The value at the time. The meaning of the value is defined by the derived type of the associated schedule. The value can be integer, float or boolean. In case of boolean 1 equals true and 0 equals false.”

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- If the valueKind equals incrementalPercentage, then the attribute value “100.0” shall represent 100%. The attribute value shall be positive float (0.0 value is not allowed) and can exceed 100.0.” Fixed typos (role name) of association between TapChangerController and TapChanger.

- Renamed the attribute `targetDeadband` to `targetValueDeadband` and changed its type from Float to Percent in the ER profile.
- Changed `BaseIrregularTimeSeries` from concrete- to abstract-class.
- Fixed association `CsConverter.CsConverterSchedule` and `EnergyConnection.EnergyConnectionSchedule`.
- Implemented new SHACL constraints related to the issues
- Implemented modification of SHACL constraints based on the feedback in the Application profile library in github.
- To support common hydro plant operational use cases without introducing the full hydraulic network model, two aggregate optional attributes are introduced into `HydroPowerPlant`:

`numberOfPenstocks`: "Number of penstocks hydraulically serving the hydro generating units and hydro pumps of the hydro power plant. When the value is one, the hydro generating units and hydro pumps are assumed to share a common penstock unless a detailed hydraulic network model specifies otherwise." `simultaneousPumpAndGeneration`: "Indicates whether at least one hydro pump and at least one hydro generating unit of the hydro power plant may operate simultaneously." **Change name from `AreaDispatchableUnit` to `AreaReserveResource` and updated the description:** "A resource representation for a specific balancing reserve product, associated with either a scheduling area or a tie corridor, and used to represent reserve capability made available to a control area for market and operational purposes.

Note: An `AreaReserveResource` shall be associated with either a `SchedulingArea` or a `TieCorridor`, but not both.

When associated with a `SchedulingArea`, the resource represents reserve capability made available within that area context.

When associated with a `TieCorridor`, the resource represents reserve capability provided across an inter-area connection to support a control area other than the one in which the underlying resource is located.

A single physical or logical resource (for example a `GeneratingUnit`, `HydroPump`, `PowerElectronicsUnit`, or equivalent) may be represented by multiple `AreaReserveResource` instances, each corresponding to a different balancing reserve product (e.g. FCR, aFRR, mFRR)."

- The class `CapacitySchedule` is renamed to `GridPowerCapacitySchedule`
- The association `PowerCapacity.BiddingZone` is changed from `[0..n]` to `[0..1]`
- New constraints related to `CombinedCyclePlant` and updates on `ThermalPowerPlant` model