

NetApps in Smart5Grid

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Demonstration of 5G solutions for
SMART energy GRIDs of the future

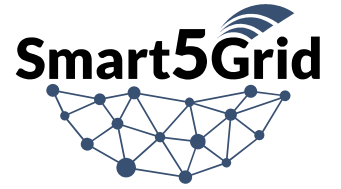
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Content summary

Alignment with the SN WG

- Project overview
- NetApp Information Model
- NetApp implementations for UCs

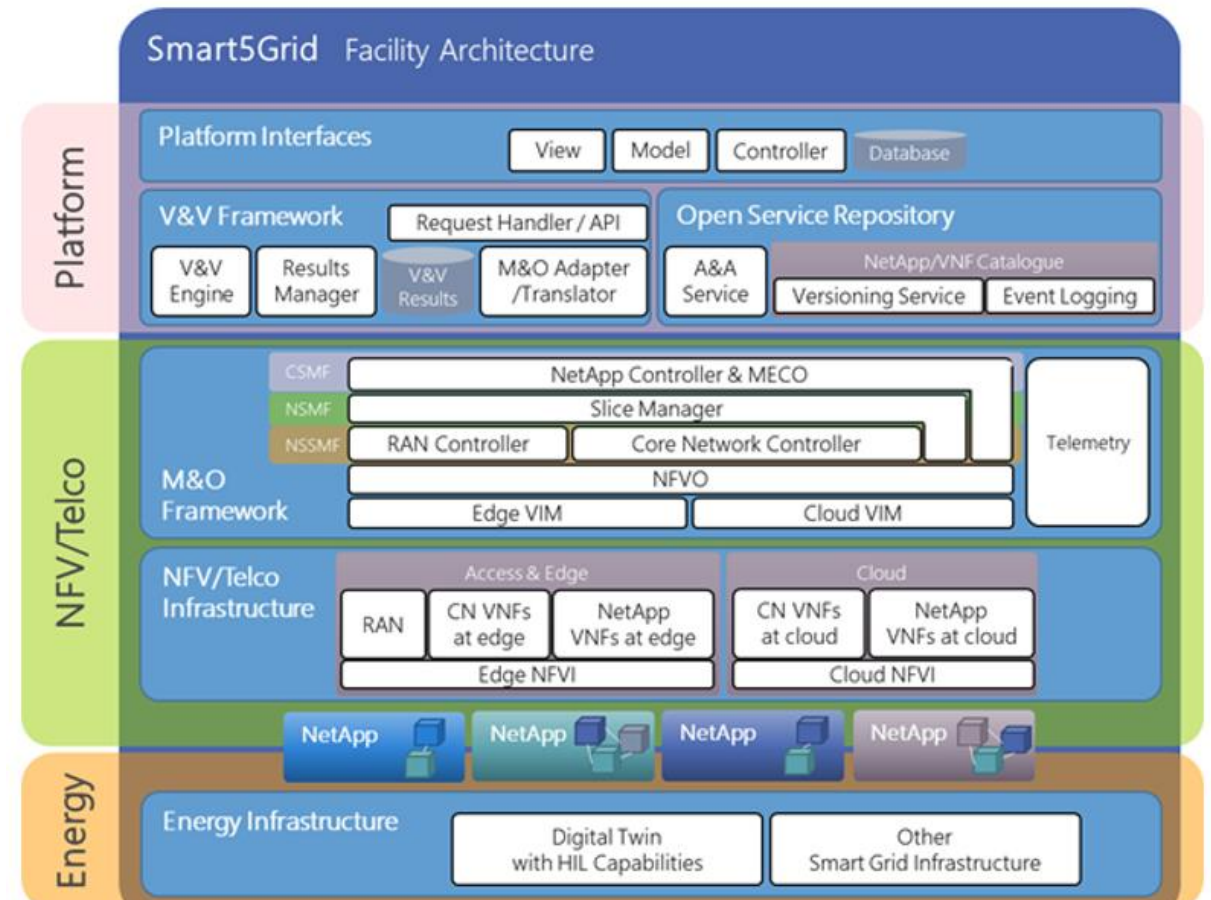


Project overview

Objectives and High Level Architecture



- Smart5Grid aims to revolutionize the Energy Vertical industry through the successful establishment of four fundamental functions of modern smart grids (realized through Use Cases): (i) automatic power distribution grid fault detection, (ii) remote inspection of automatically delimited working areas at distribution level, (iii) millisecond level precise demand-respond monitoring control, and (iv) real-time wide area monitoring in a creative cross-border scenario.
- The main innovations of Smart5Grid are the following:
 - Open experimental 5G network platform customized for Smart Power Grids.
 - Open Service Repository to develop and accommodate NetApps, providing rapid access and execution environment to developers from the energy vertical sector.
 - Validation and Verification framework for NetApp automatic testing, certification, and integration.
 - High-performance NetApps supporting the ambitious Smart5Grid energy-oriented use cases.

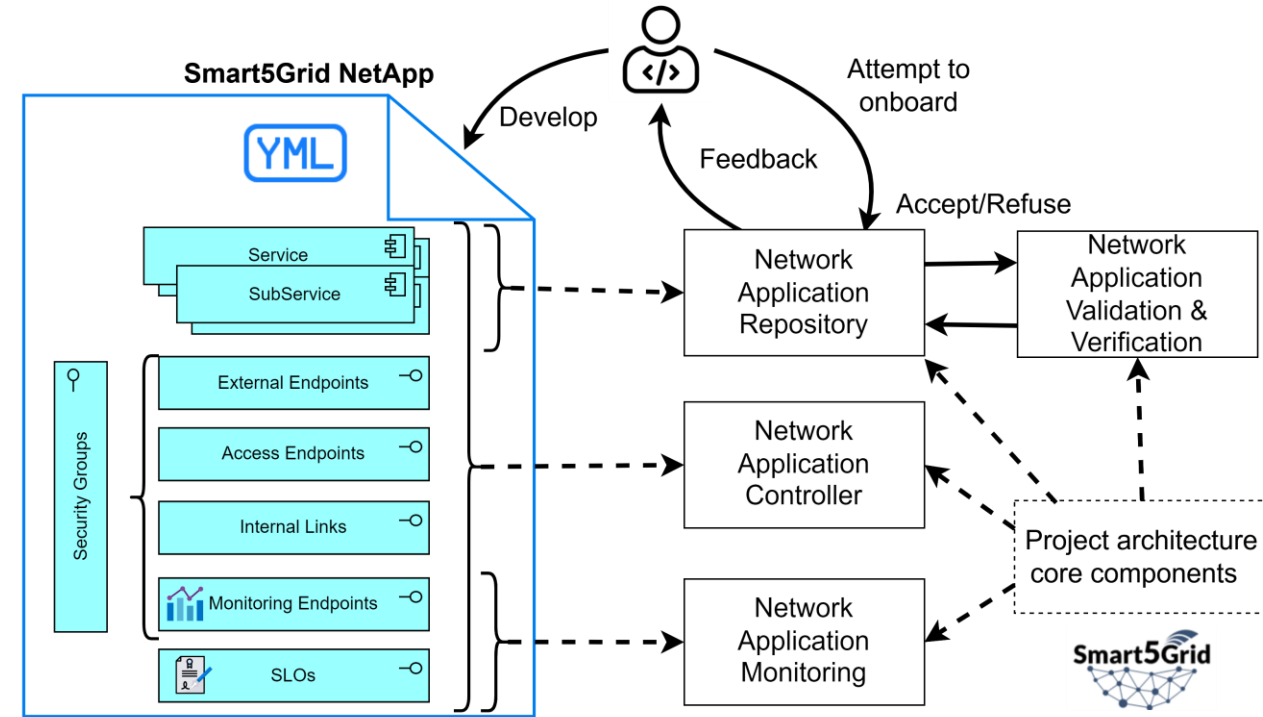


NetApp Information Model

Description and capabilities



- Declarative model (YAML)
- Abstracts the complexities of the network.
- Flexible to support different integration levels:
 - Hybrid integration between CSP and VSP domains
 - Coupled/Delegated integration into the CSP domain
- NetApp organized as collection of service + subservice.
 - Allows chain of services
 - Reusability of services and subservices by-design
- V&V and Monitoring frameworks using built from the contents of this IM
 - Development tools provided

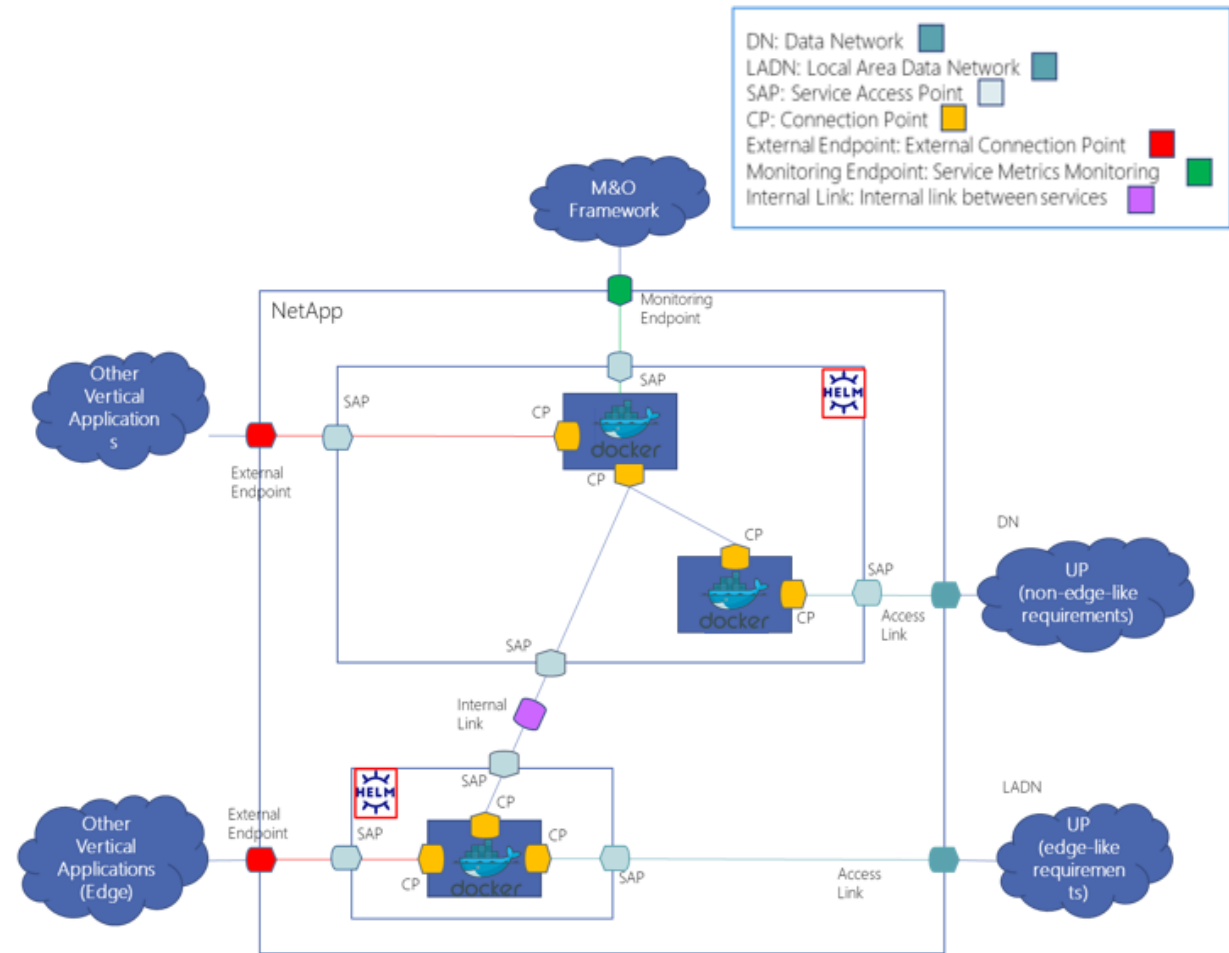
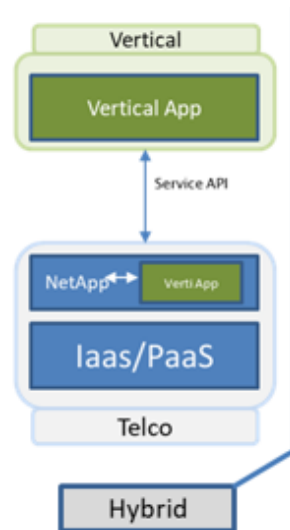


Project implementation (1/2)

Cloud-Native Applications in the Energy Vertical Industry



- UC1, UC3 and UC4
 - Commercial orchestrator over K8s
- Hybrid NetApp deployments.
 - CSP provides access to the VSP to the Edge
 - Smart5Grid platform acts as the VSP and has limited access to the 5G network.
- NetApp
 - Helm-based
 - Fields not required:
 - Subservices
 - Internal-links
 - Security Groups
 - Fields not supported
 - Access Endpoints



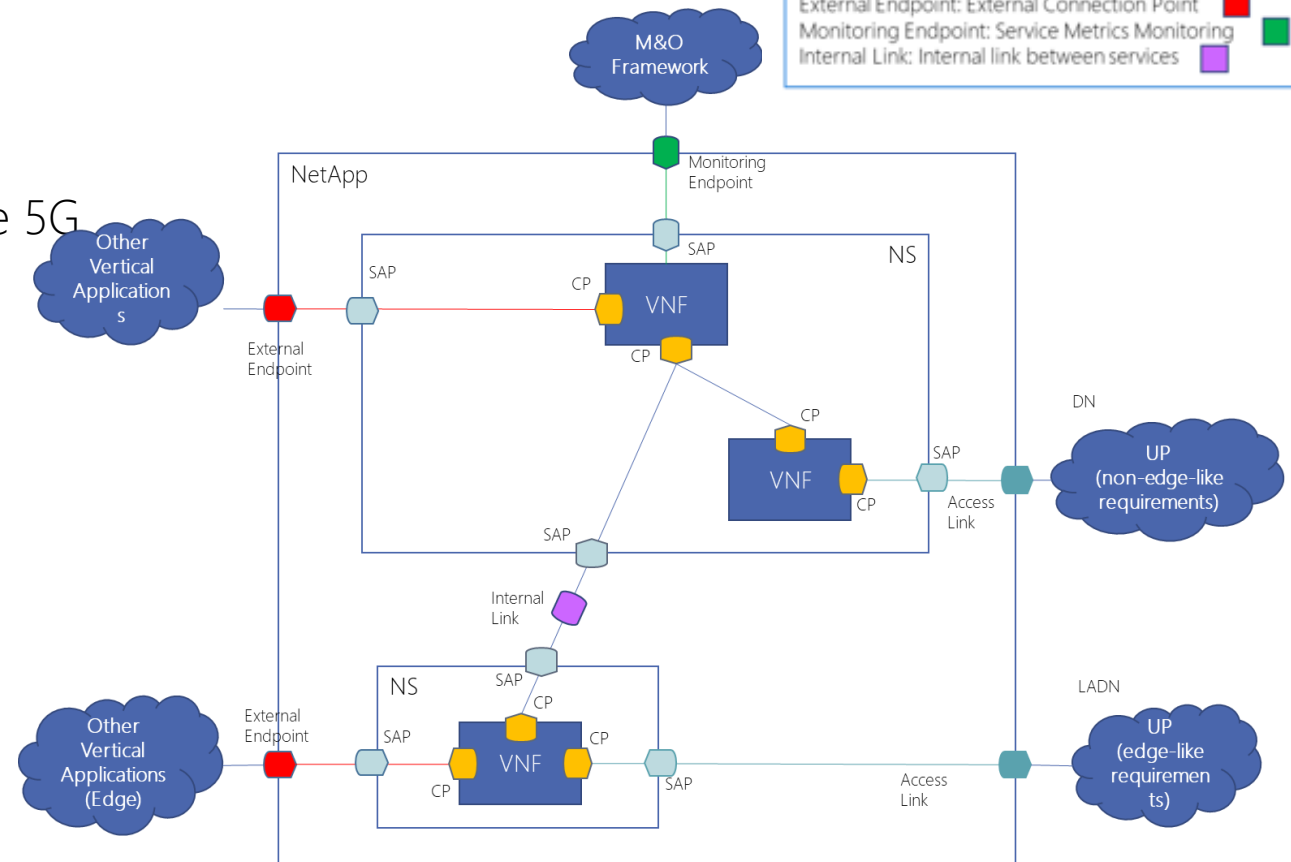
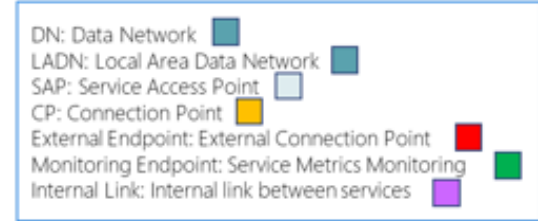
Project implementation (2/2)

Telco Applications in the Energy Vertical Industry



- UC2
 - Commercial orchestrator over ETSI OpenSource MANO (OSM)
- Coupled/Delegated NetApp deployments.
 - CSP manages the NetApp
 - Smart5Grid platform acts as the CSP and has full access to the 5G network (as a private 5G network).

- NetApps:
 - NS Services
 - VNF* or CNF subservices
 - Usage of the full descriptor details
 - Services and Subservices are OSM rel >= 9 NFs.



*Possible but not used

Thanks!



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