



Developer Summit

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SIG: Architecture and Requirements Update

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Nephio SIG-arch: Community participation



Nephio Design Principles and Goals ([doc](#))

- Presented to SIG Architecture - Sep 19

Kaushik Bhandankar (Google)
Bernard Tsai (Deutsche Telekom)



Community Driven Requirements ([doc](#))

- Presented to SIG Architecture - Oct 3
- 8 companies contributed to the requirements

Sana Tariq (TELUS)



R1 User Stories ([doc](#))

- Consolidated the requirements into a unified theme and presented to SIG Architecture - Oct 12
- User stories refined per community inputs

Kaushik Bhandankar (Google)

Nephio: Design Principles and Goals

Nephio Design Principles

- KRM and CaD-based common & consistent automation framework with vendor extensibility for life-cycle management of Infrastructure (IaaS), Network Functions and Network Function configuration
- Inter-NF and NF to Infrastructure dependency management using declarative techniques to specify and enforce dependencies
- Distributed actuation and reconciliation of Intent as a scalable approach for large-scale edge cluster deployments
- User friendliness of deployment and management

Nephio Design Goals

1. Standardize Custom Resource Definitions (CRDs) for Infrastructure and NF deployment, while allowing ***flexibility for vendor extensions***
2. Define ***interfaces and pluggability*** for Kubernetes Operators that operate on the Nephio CRDs
3. Define an end-to-end automation framework for infrastructure orchestration, NF deployment and configuration in ***declarative manner***

Nephio R1: User Stories



User Story 1

Deploy free5GC
Network Functions for
5G Core user-plane and
control-plane



User Story 2

Horizontal & vertical scaling
of user-plane (UPF)

- Upgrade the resources of an existing UPF
- Deploy a new UPF



User Story 3

Horizontal & vertical scaling
of control-plane (SMF)

- Upgrade resources of an existing SMF
- Scale the number of PDU sessions, by deploying an additional SMF

Nephio: Looking beyond R1



User Stories

- Multi-cloud
- Multi-vendor NFs
- Multi-domain (RAN, Wireline, Transport)
- Day 0 focus
- Higher-level constructs (e.g. LCM for slices)
- Scalability (large scale deployments)



CRD/Operators

- Establish CRD schema
- Operators SDK
- Helm & YANG/TOSCA to Nephio CRD converter
- Compliance and certification program



Control-Plane

- SDK for building Operators
- Operators of operators
- UI: GUI & APIs
- UI: Design Studio
- Integration APIs to MSO, Inventory systems, BSS