

Nephio Project  
MINUTES OF THE TECHNICAL STEERING COMMITTEE  
April 13, 2023  
10:00 am Pacific Time

Voting Representatives

\*\*\*Please add + after your name if you are attending\*\*\*

Google

-Kandan Kathirvel (Chair) +

Wind River

-Bin Yang

-Seshu Kumar Mudiganti +

Nokia

-Timo Perala +

Wim Henderickx (Nokia) for Timo +

Deutsche Telekom

-Bernard Tsai +

Vodafone

-Iain Wilkinson +

-Riccardo Gasparetto Stori

Equinix

-Oleg Berzin

Intel

-Sundar Nadathur +

TIM

-Fabrizio Moggio

Ericsson

-Ciaran Johnston +

-Peter Woerndle

Casa Systems

-Eric Gaudet

Mavenir

-Jane Shen +

Bell Canada

-Daniel Bernier

-Marc-Alexandre Choquette

TELUS

-Sana Tariq +

Aarna Networks

-Sandeep Sharma

Orange

-Eric Debeau

VMware

-Hunor Demeter: present

-Padma Sudarsan

Argela

-Erhan Lokman

Capgemini

-Sandip Sarkar

-Chandra Thakare

F5

-Sanju Abraham

-Ravi Ravindran

Kubernatic

-Sebastian Scheele

Verizon

-Gene Bagwell

Attending

\*\*\*Please add yourself here if you are not a voting representative\*\*\*

Lucy Hyde (LF)

Sunny Cai (LF)

Balaji Varadaraju

Charles Eckel +

John Belamaric

Alexis de Talhouet

Ranny Haiby

Vishwanath Jayaraman (Red Hat)

Tal Liron  
Reden Martinez  
Stephen Wong

### **Call to Order**

Kandan Kathirvel (KK) called the meeting to order at 10:04 am. Lucy Hyde (LH) assisted in recording the minutes. LH reviewed the antitrust policy notice.

### **Agenda/Action Items**

Kandan Kathirvel (KK) reviewed the agenda for the meeting. There were no changes or additional topics added.

### **Blog Posts**

Sunny Cai (SC) gave an update regarding Nephio blog posts; there are several upcoming blogs for Nephio R1 update (SIG Release) and pending blogs from SIG Automation and SIG NetArch. If you are interested in submitting a blog, please reach out to Sunny Cai at [scai@linuxfoundation.org](mailto:scai@linuxfoundation.org). SC additionally shared a QR code for members to share a social post/campaign celebrating Nephio's one year anniversary of transition to the Linux Foundation.

### **Nephio One Year Anniversary**

Sunny Cai (SC) gave an update regarding Nephio's One Year Anniversary at the Linux Foundation social campaign and provided links to share on social media platforms.

### **Wiki**

Lucy Hyde (LH) shared updates to the Nephio Wiki. Wim Henderickx (WH) will be presenting Nephio at KubeCon 2023 and will share content. John Belamaric (JB) stated that there was past content from KubeCon as well.

### **R1 Contributor Awards**

Kandan Kathirvel (KK) stated that Tal Liron suggested R1 Contributor Awards for the top three contributors. KK stated that there would be a gift certificate and trophy for awardees and encouraged suggestions from the community. KK also stated that Google would excuse themselves from nomination, and that awards would continue for each release.

### **SIG Updates**

NetArch: Sana Tariq (ST) provided an update for the SIG, stating that the last meeting centered around agenda planning for the next three to four SIG meetings.

- April 17th: review Helm Proposal; as a result of the presentation, SIG NetArch would like to produce a requirements document with service providers/consumers to highlight requirements and expectations for support for Helm in Nephio.
- Next Meeting: Will create other document which will present interaction of Nephio with the rest of standard bodies etc.

- Following Week: additional working groups to be created within SIG 1; will release a document to community (May 17th presentation to SIG1). ST stated that roles/responsibilities within Nephio is also on the agenda (proposed by Bernard). For each proposal, drafts are created for initial proposal documents and will be likely released this afternoon. The blog is in draft stage and will be able to submit to Sunny soon.

SIG Automation and SIG Release: John Belamaric (JB) stated that SIG Automation is in execution phase and has finished sprint one.

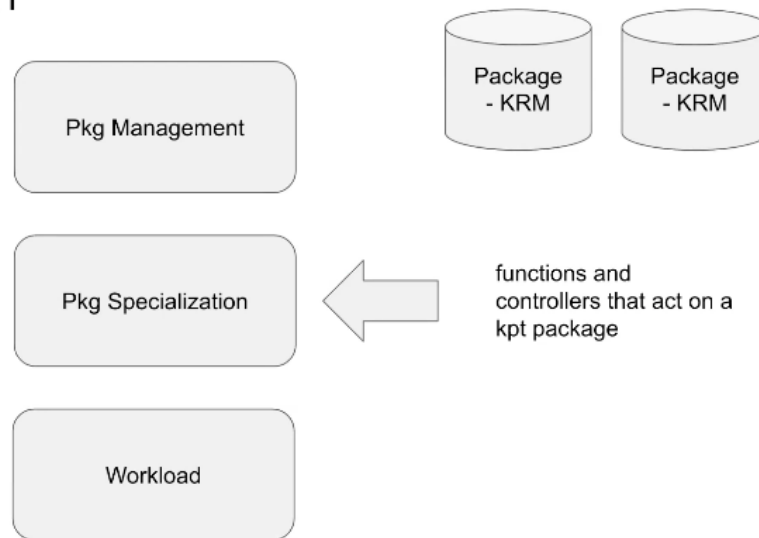
- Balaji Varadaraju (BV) gave update for SIG Automation and SIG Release. BV stated that they just concluded the first sprint where the goal was to perform bootstrapped execution cycle. The SIG wanted to bootstrap process mgt and build tools; basic software artifacts (main goals for R1).
- Process Management: defined/understand process; set up GitHub boards, formulated workflows and have regular scrum meetings each week.
- Build Tools: set up build pipelines with pro jobs including build tests and validations, owners for each report, and build tests as well.
- Software artifacts: foundation pieces to test/use for development in R1 and beyond; common areas used in controllers/functions etc. (common function runtime). Want to develop those foundational artifacts as common code across the project and created CRDs for free5gc functions.
- Main three goals in sprint one: exec of process management, basic software artifacts, and execute build pipeline. Sprint two just began (11 Apr). Objectives are a complete workup of sprint one objectives; free5gc controllers and operators; testbed of Nephio deployment (deployment of management clusters and fundamental use cases). The ultimate objective is to be ready for integration and testing in sprint three.
- John Belamaric (JB) stated that they also performed setup of tooling; design work; programming. In sprint two, the goal is to get to a state where there is a running end to end integration test environment and integration test running against a partial/initial release. BV stated that they also identified some dependencies and how they will deploy in sprint two and three. Tal Liron (TL) stated that from the workload subproject initial draft of free5gc UPF controller/operator; iterating so that other operators can build from there.

### *Presentation*

Towards a Nephio SDK:

Wim Henderickx (WH) gave a presentation "Towards a Nephio SDK".

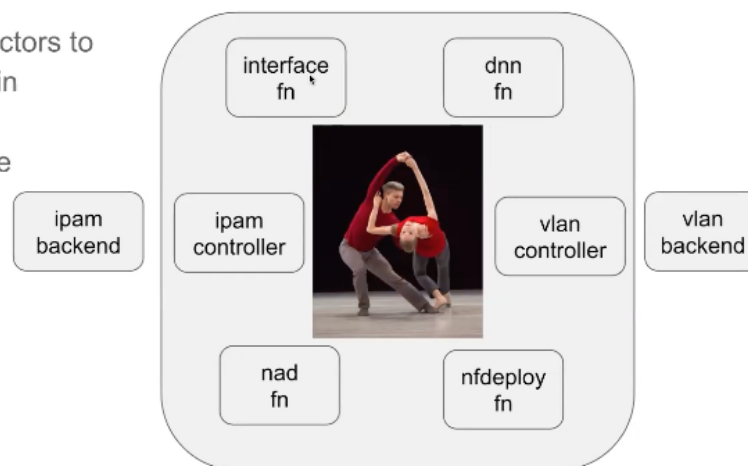
## Nephio R1



- Set of packages that contain set of resources; (three subgroups in SIG: pkg mgt, pkg specialization, and workload)

## Conditional dance/choreography

- a set of independent actors to reach together a certain outcome
- actors have roles in the choreography
- Lots of analogy to a controller
  - lifecycle handling
  - parent resource
  - child resources
  - adjacent resources

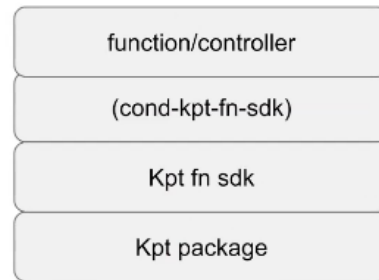


- Goal to improve initial process
  - Set of independent functions or controllers that work in harmony to achieve an outcome
  - Some controllers call out to external systems such as ipam or vlan backend (not just purely within Nephio)
  - Can we build system that handles operations and optimizes in an SDK?
    - Each controller is an independent building block that have overlap; only need a subset of resources

- Did not look at lifecycle of pkgs in R1; need to take into account lifecycle operations.
- There are many commonalities between functions; can we abstract away from them (beginning of SDK)? How can we simplify for user and abstract away, but still perform all operations?
- Goal: lower barrier of entry for people to write punctions as part of the conditional - abstraction; avoid building independent lifecycle code; present in declarative way;

## Introducing the (kpt-fn-cond-sdk)

- Goal:
  - Lower the barrier of entry for people to write fn(s) as part of the conditional dance/choreography -> Abstraction
  - Avoid building lifecycle code independently in each function
  - Present a declarative interface to the fn developer
  - 'Ultimately' -> (Generate code by chat GPT - if we trust it)
- Remark:
  - Is this the only way to write kpt fn -> No, all existing methods exist
  - Used in pkg specialization for Nephio R1 (other usages TBD)



## (cond-kpt-fn-sdk)

[For/Own/Watch info](#)

	controller	cond-kpt-fn-sdk
reconcile trigger	controller runtime	porch
For	KRM resource the controller acts upon	KRM resource the fn acts upon
Own	child KRM resource	child KRM resource
Watch	reconcile trigger based on extra KRM events or external events	extra KRM
Garbage collection	Owner reference	annotation (Why? owner reference not exposed in fn sdk, we dont want this to end up in workload cluster)
Delete	Delete TSTP/finaliser	annotation (Why? tstp not exposed and more difficult to lookup)
Condition	status and signalling work	status and signalling work

Bernard Tsai (BT) asked if they would standardize the status and signaling in the context of the SDK; WH confirmed.

## let's look at an example

- Interface Fn
  - What are you responsible for + what are you interested in ?
    - For: Interface
    - Own:
      - IP Allocation
      - VLAN Allocation
      - NAD
    - Watch: Cluster
  - Fn to implement

Tal Liron (TL) stated that a lot of code is pretty straightforward and if we could use other languages (i.e. Python, Java etc)? WH confirmed that it should be lang agnostic, and that they started with Go.

Sana Tariq (ST) inquired if the SDK would open source? WH stated that it was open source and would be part of R1.

John Belamaric (JB) also included that there will be more SDKs; this is the beginning of a journey.

Further discussion ensued in that workload operators has not been an emphasis and that the SDK will make it easy to create operators for vendors to wrap network functions. TL stated that Helm is one way to package network functions, and Nephio as a whole will generally want to move to a more cloud native approach. ST provided that there were many questions from community and momentum withing SIG1. TL has extensive research on the topic and will help design for R2.

Kandan Kathirvel (KK) adjourned the meeting at 10:46am PT.