# µONOS Project Overview

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# What is μONOS?

- μONOS is the next generation architecture of ONOS

- Complimentary to the existing ONOS platform

- Aims to provide a comprehensive platform for operations
  - configuration, control, monitoring, verification, live update, diagnostics

- Aims to provide first-class support for 5G RAN edge

- Based on μ-services, gRPC interfaces, next-gen SDN interfaces
  - e.g. gNMI, gNOI, P4Runtime, gRIBI, etc.

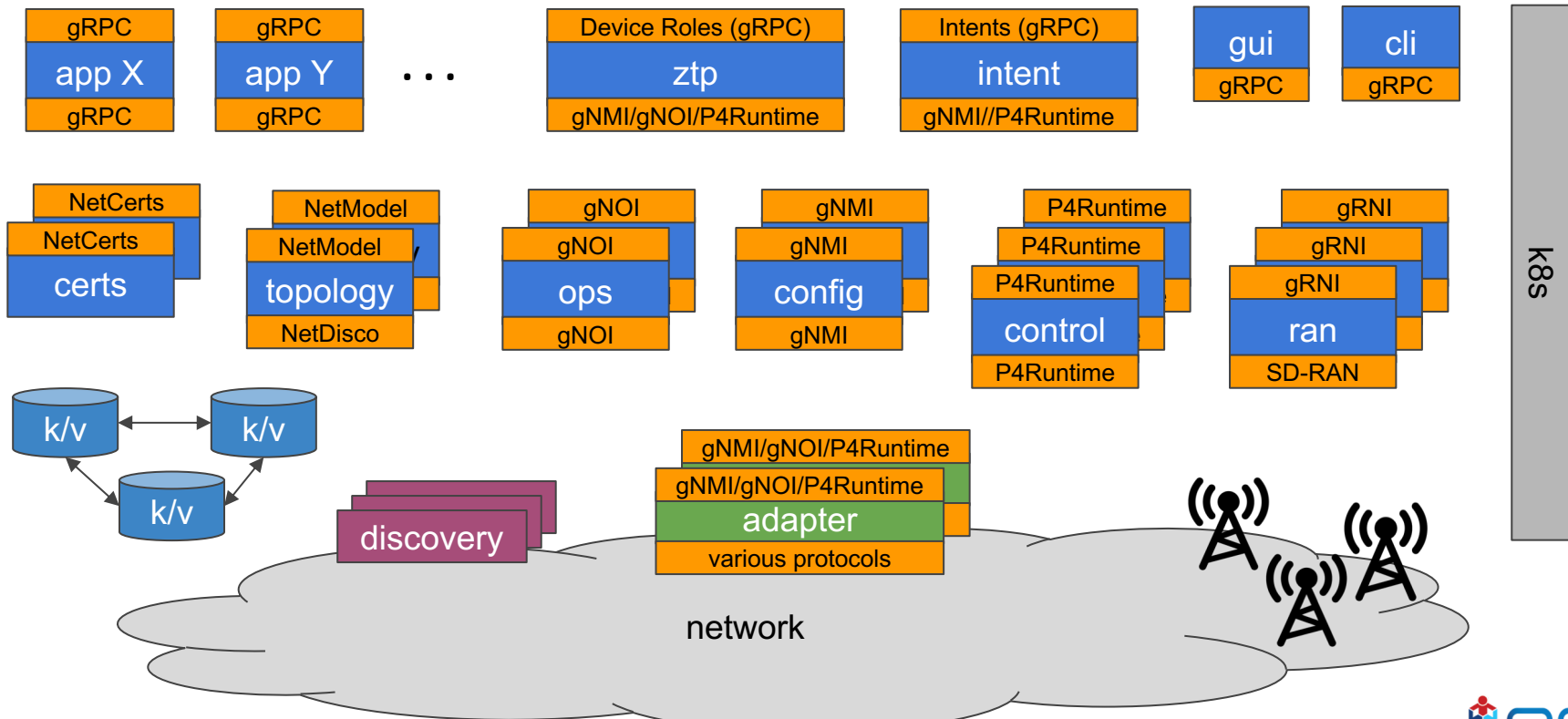- Cloud-native (Kubernetes) and aimed at edge-cloud deployment

# μONOS Architectural Tenets

- Must be modular, easy to scale down, scale out and to adapt to operators' needs
- Use state of the art toolchain for development and deployment
- Provide native support for standard interfaces and standard models
  - P4, OpenConfig
- Continue high-performance, high-availability and scalability legacy of ONOS
  - built on next-generation of Atomix

# µONOS Deployment

gRPC
**app X**
gRPC

gRPC
**app Y**
gRPC

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Device Roles (gRPC)
**ztp**
gNMI/gNOI/P4Runtime

Intents (gRPC)
**intent**
gNMI//P4Runtime

**gui**
gRPC

**cli**
gRPC

NetCerts
NetCerts
**certs**

NetModel
NetModel
**topology**
NetDisco

gNOI
gNOI
**ops**
gNOI

gNMI
gNMI
**config**
gNMI

P4Runtime
P4Runtime
P4Runtime
**control**
P4Runtime

gRNI
gRNI
gRNI
**ran**
SD-RAN

**k8s**

k/v  k/v  k/v

**discovery**

gNMI/gNOI/P4Runtime
gNMI/gNOI/P4Runtime
**adapter**
various protocols

**network**

# μONOS Tool Chain

- *Golang* using Go modules

- *Angular 7* for GUI components

- *Protoc* to generate Go and JavaScript from models

- *Docker* for container management

- *Kubernetes* for deployment

# µONOS GitHub Repositories

- Multiple repos that reflect the component architecture
- Components built/packaged independently
- Current repos include:

  *onos-config, onos-topo, onos-control,*

  *onos-gui, onos-cli, onos-test*
- More refactoring to follow
- Everything hosted under https://github.com/onosproject

# µONOS CI Tooling

- Cloud and GitHub based strategy - nothing self hosted
- *GitHub* for source code control, code review, documentation
- *golangci-lint* for built in linting of Go source
- *Docker Hub* to host container images
- *Travis CI* for continuous integration
- *Coveralls.io* for test coverage analysis

# µONOS Status Update

- *onos-config*
  - implemented gNMI n/b and s/b APIs
  - multi-device configuration transactions
  - model driven, multi version support
  - rollback to previous points in time
  - device updates through subscription
  - flat storage of configuration data in k/v store
  - configuration validation against YANG models

- *onos-gui*
  - interactive configuration views
  - uses same framework as GUI2 in ONOS 2.2

- *onit*
  - integration tests suite and deployment

- *onos-topo*
  - device inventory and topology APIs
  - API design still work-in-progress

- *onos-ztp*
  - basic role-based configuration via gNMI to *onos-config*
  - basic table pipeline setup of devices via REST API to ONOS 2.2

- *atomix-go*
  - Go APIs for distributed primitives

# μONOS Project Plans

- Continue expanding features in *onos-config*

- Begin implementation of *onos-control* to allow direct creation of flows

- Continue implementation of 5G RAN support

- Continue to track *Stratum* development

# Get engaged with µONOS

- Join *#micro-onos* channel on *onosproject.slack.com*

- Attend ONOS TST meetings
  - bi-weekly Wednesdays at 9:00 PST/PDT

- Fork and send pull-requests to https://*github.com/onosproject* repositories

- Participate in *onos-dev@onosproject.org* mailing list