



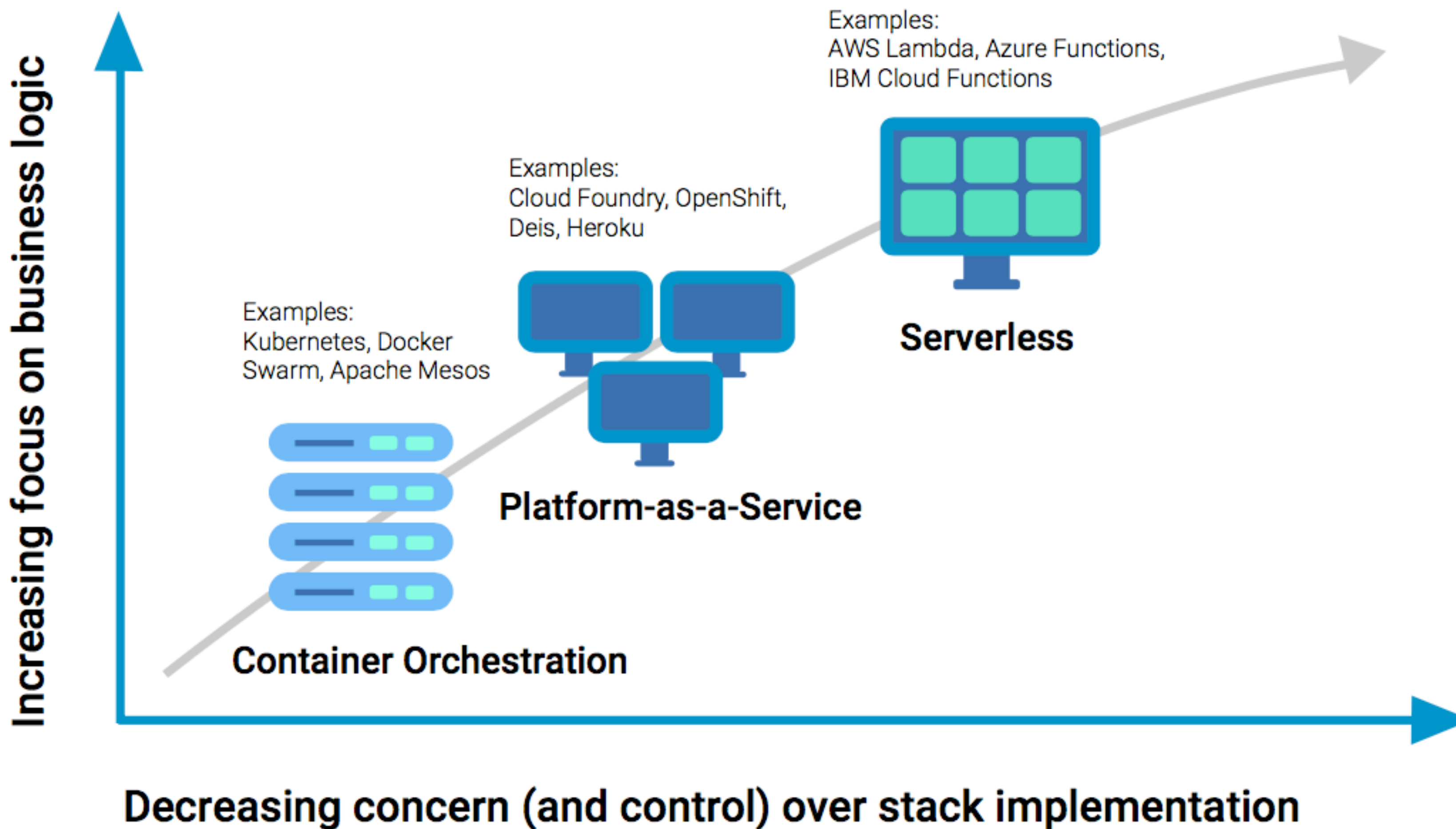
How to Implement FaaS in OpenStack for Public Cloud

Lingxian Kong
OpenStack Vancouver Summit

Agenda

- ❖ Qinling - Why another FaaS project?
- ❖ Design&Implementation challenges
- ❖ Demo

Why FaaS



Projects/Products/Platforms

Tools				
Framework				
Platform				

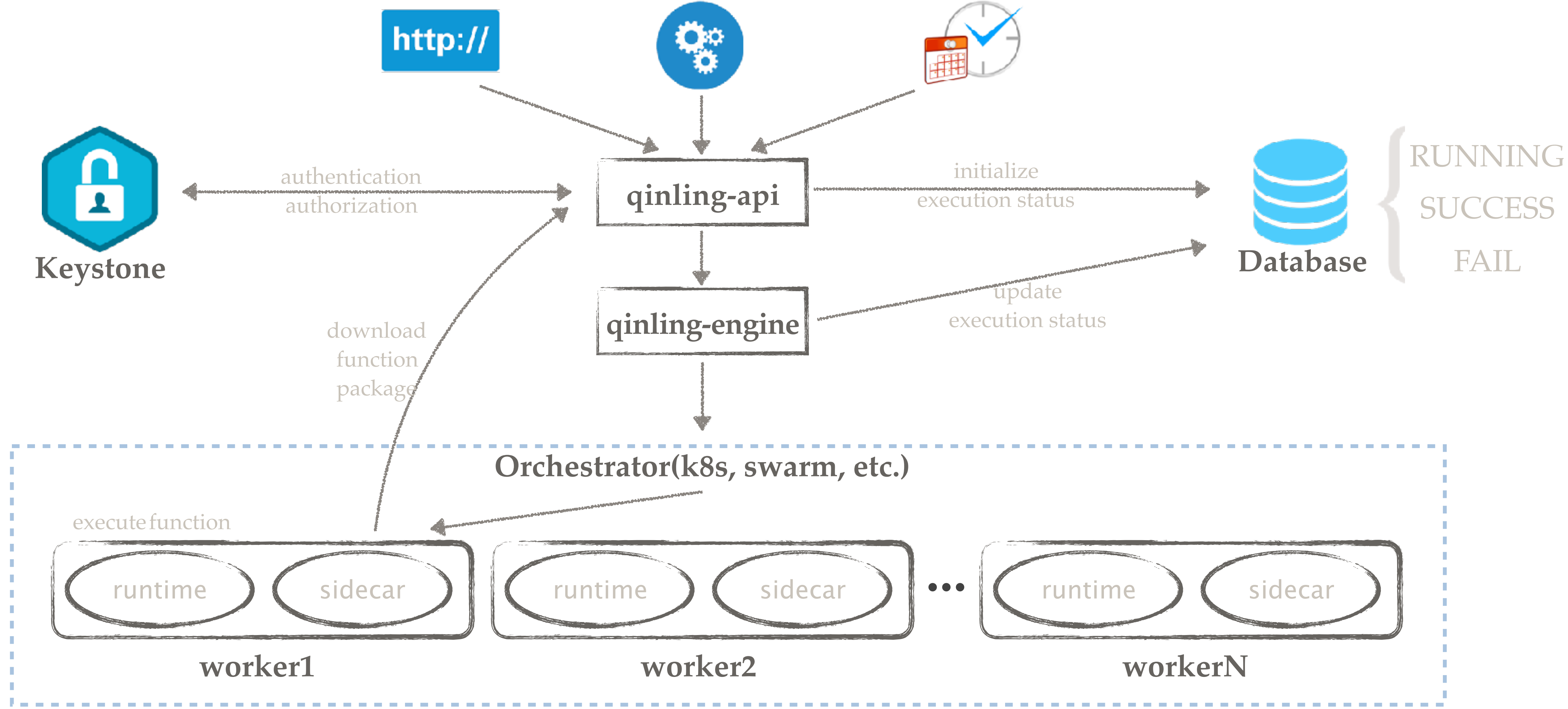


QINLING

an OpenStack Community Project

Security					
Installable					

Function execution flow in Qinling

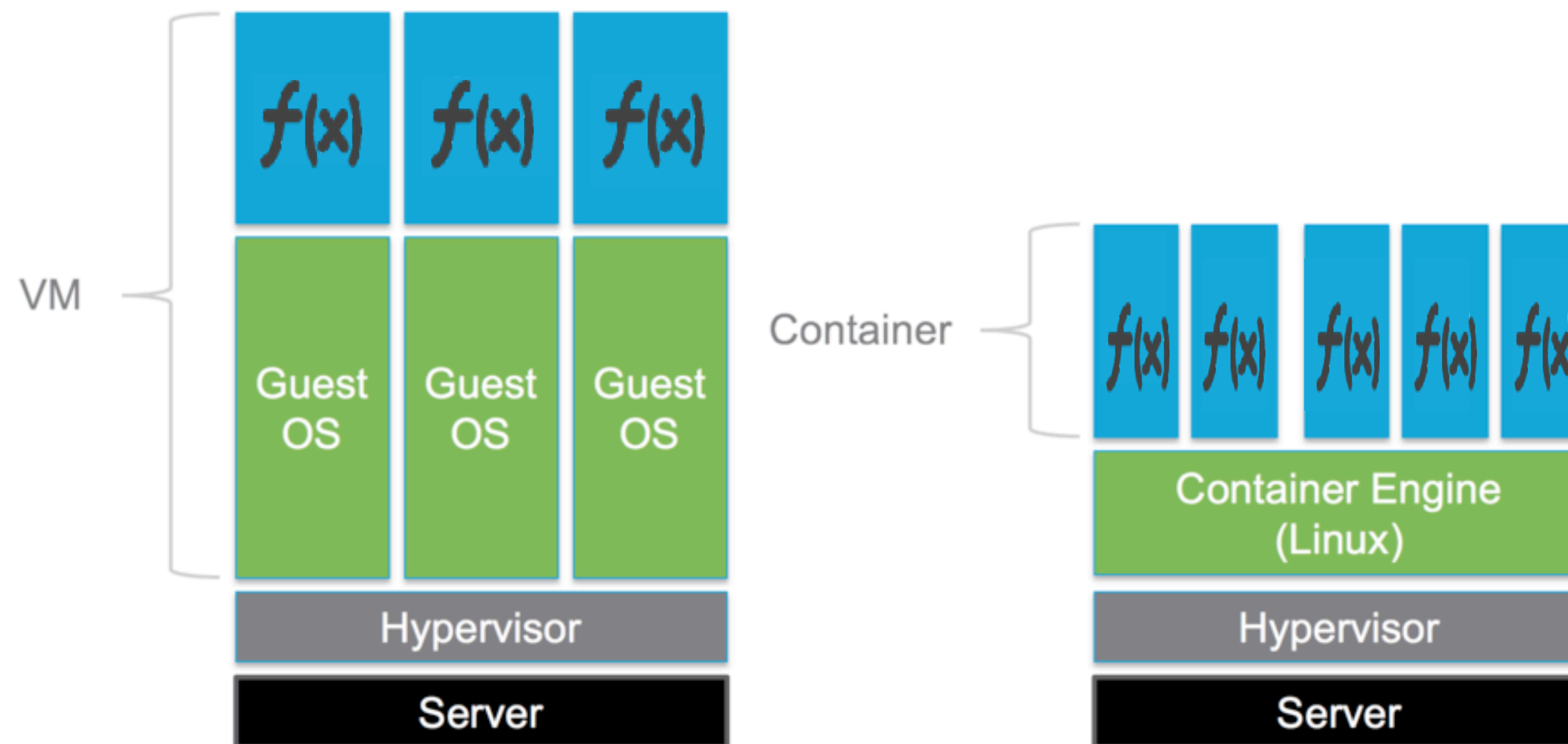


Qinling - FaaS in OpenStack

- ❖ VM? Container?
- ❖ Autoscaling
- ❖ Security
- ❖ OpenStack matters
- ❖ Orchestration tooling
- ❖

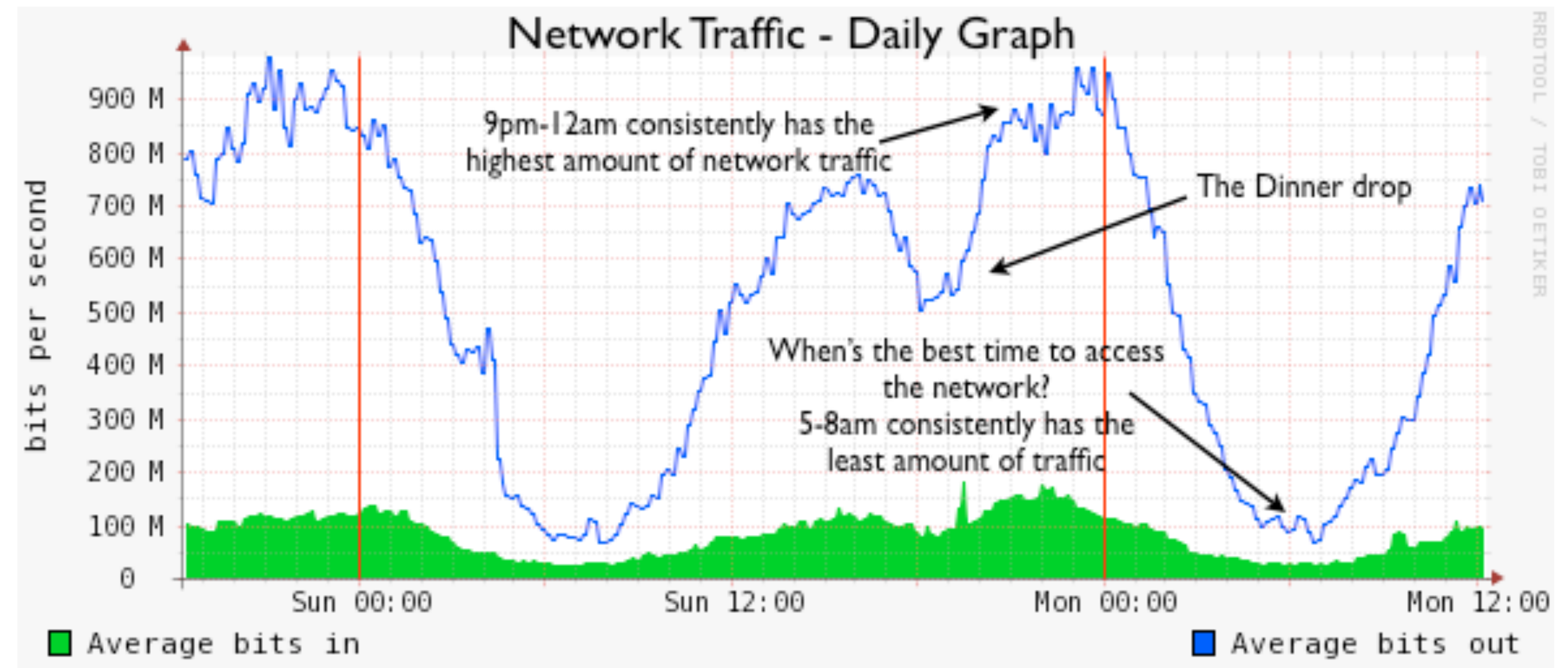
Where the function is running

- ❖ Container orchestrator, Kubernetes
- ❖ Kubernetes cluster on top of VMs(Magnum)



How the function execution scales

- ❖ Request rate / container load / container IO...
- ❖ Limit the concurrency
- ❖ Re-use the orchestrator autoscale ability
- ❖ Scale up / scale down API



Function can not be trusted

- ❖ Be cautious to support image type functions
- ❖ Container has its own weakness(Enforce Least Privileges)
- ❖ Kubernetes RBAC / Resource Quota / Network Policy / Pod Security
- ❖ Container isolation with virtualization
- ❖ Will Kata containers / gVisor save the world?

Function execution monitoring/debugging

- ❖ Monitoring CPU & memory usage
- ❖ Function execution counts
- ❖ Code level performance
- ❖ 3rd party APMs: X-Ray for AWS Lambda, Retrace for Azure Functions, IBM Cloud shell for IBM Cloud Functions...
- ❖ Running and debugging function locally

Qinling is part of OpenStack

- ❖ Mistral
- ❖ Aodh
- ❖ Swift
- ❖ Magnum



- ❖ **Function execution autoscaling**
- ❖ **Function versioning**

Are we done yet?

- ❖ Logs / Billing
- ❖ Event standardization
- ❖ Stateful functions
- ❖ Function orchestration
- ❖ ...

Get involved in Qinling

- ❖ IRC: #openstack-qinling (@lxkong)
- ❖ StoryBoard: <https://storyboard.openstack.org/#!/project/927>
- ❖ Doc: <https://docs.openstack.org/qinling/latest>

Qinling - Project Update

10:15am-10:35am

Level Two - Room 212

Qinling - Project Onboarding

11:00am-11:40am

Level Two - Room 223

