SDN / NFV
OPNFV on ARM® Reference Platform

Features Open Source SDN Software
In partnership with ARM and Enea, Freescale is showcasing the first ARM®-based reference platform for Open Platform for Network Function Virtualization (OPNFV)
1. Core Agnostic (ARM, Power Arch)
   - ARM V8 Product Roadmap
   - Small / Large footprints

2. Scalable Acceleration Elements
   - Sized to Application Needs
   - Turn key or C-programmable
   - Wire rate I/O switching & TM

3. Ease of Use
   - Real Time Monitoring / Debug
   - SW Management utility
   - I/O virtualization

4. Turn-key Software
   - Fast path modules
   - Linux / BSP
   - Hypervisor: KVM
   - Eclipse-based Tools
Freescale’s ARM-based QorIQ processor series is based on the highly integrated QorIQ LS2085A multicore SoC. It leverages high performance 64-bit ARM Cortex-A57 cores plus large cache memory subsystem.
Initially, OPNFV is focused on NFVI and VIM portions of the overall solution. A strong foundation for OPNFV baseline platform is essential to ensure that the industry has a solid base to move forward.
This platform will support flexibility, greater automation and scalability that is required for future network infrastructures while enabling underlying processing efficiency.
The three compute nodes exist on OpenStack and OVS database with Enea Linux OS as the common thread among them.
Simple Orchestration helps to create service chains. Predefined service chains describe how to connect different Virtual machines and what Virtual Images to use.
Different sources of data and traffic flow are established through the three different types of VNFs:
1. Simple Packet Forwarding
2. Layer 7 FW/QOS vCPE
3. Video server running light web server
OPNFV on ARM: Software Components

**VNFs**
- **VNF – Simple Forwarding**
  - Linux: Enea Linux ✓
- **VNF – L7 FW/QOS vCPE**
  - Qosmos L7 FW/QOS App
  - Qosmos DPI iXEngine
  - Linux: Enea Linux ✓
- **VNF – Content Server**
  - VLC Video Server
  - Lighttpd Web Server
  - Linux: Enea Linux ✓

**NFVI (NFV Infrastructure)**
- **OpenStack (Juno)**
  - KVM
  - OVS
  - Linux: Fedora21/Centos 7
  - Ubuntu ✓
  - OpenSUSE
- **OpenStack (Juno)**
  - KVM
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- **OpenStack (Juno)**
  - KVM
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  - Linux: Fedora21/Centos 7
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  - OpenSUSE

**OpenStack REST APIs**
- Internal OpenStack OVSDB

**VIM (Virtual Infra Mgr)**
- **OpenStack (Juno)**
- OpenDaylight (Lithium)
- Linux:
  - Fedora21/Centos 7
  - Ubuntu ✓
  - OpenSUSE
- **Applied Micro X-Gene**
  - 8 cores

**Simple Orchestrator**
- "create service chain..."
Open Daylight GUI

- Illustration of ODL as controller in the system
- Putty Console shows Freescale identity information related to bold faced node in topology
Linaro Open Datapath (ODP) – Accelerating the Dataplane

Open standard for multicore processing with flexibility to apply hardware acceleration to networking workloads.
Linaro Open Datapath (ODP) – Accelerating the Dataplane

Freescale QorIQ platform in solid alignment with Linaro ODP approach

QorIQ Datapath Acceleration Architecture
Fulfilling promise of NFV requires “compute” ecosystem diversity

ARM64 brings diverse new offerings from networking market incumbents

Demonstrated ability to fully support OPNFV software for NFVI and VIM solutions

Open systems standards for OPNFV on ARM64 address software stack, with performance enhancements to leverage greater efficiency of ARM-based networking SoCs

Allows SoC vendors to focus on areas of competitive differentiation creating vibrant ecosystem to drive innovation