



OPENSTACK AU COEUR DE LA TRANSFORMATION NFV

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OpenStack-FR Meetup, Paris, Oct 2014



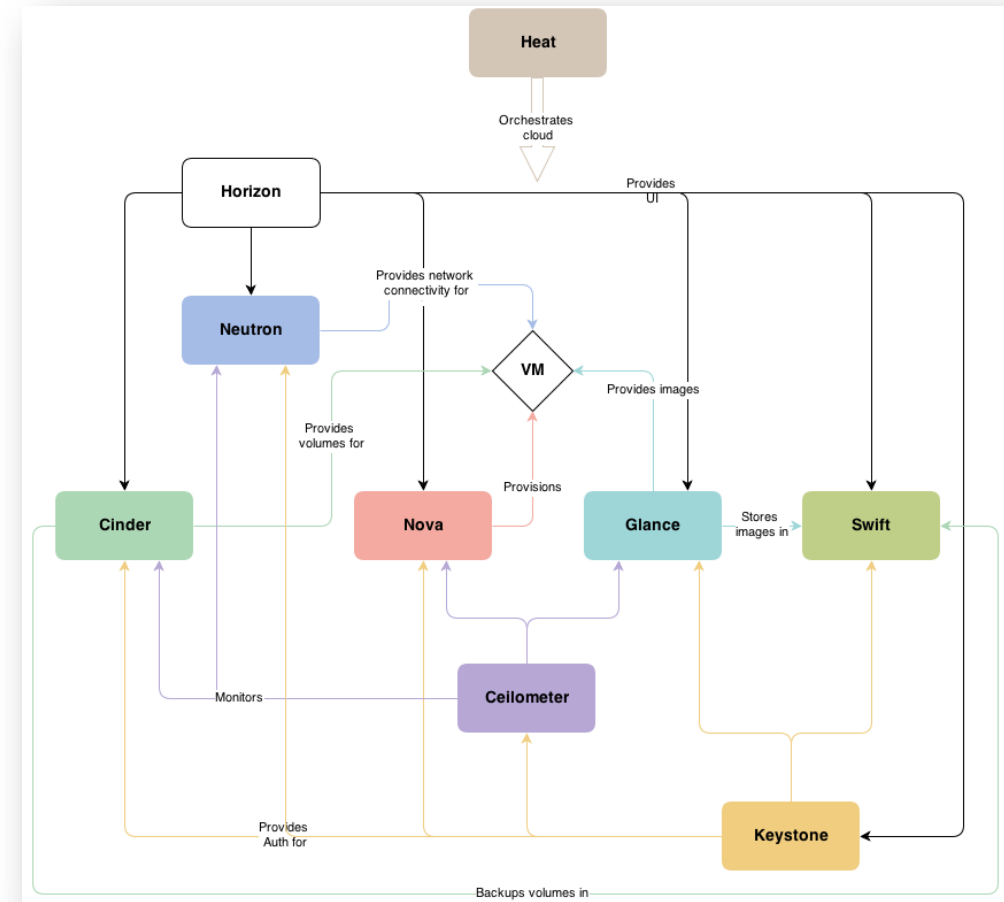
THE PLATFORM FOR NFV
CLOUDBAND™



Alcatel-Lucent 

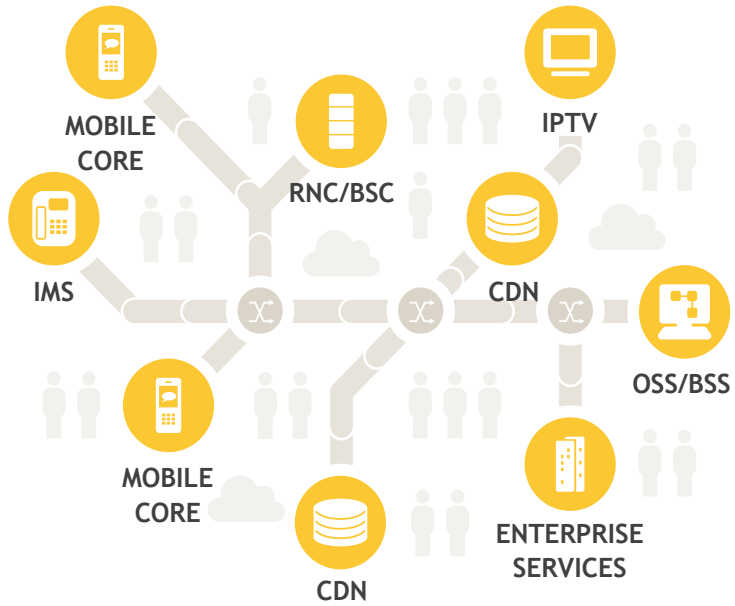
APERCU

- Quelles sont les spécificités de NFV ?
- Rôle d'OpenStack dans une plateforme NFV
 - Illustration: intégration d'OpenStack avec CloudBand™
- OpenStack/NFV: où en est-on en pratique ?
 - Illustration: quelques cas concrets rencontrés avec CloudBand™

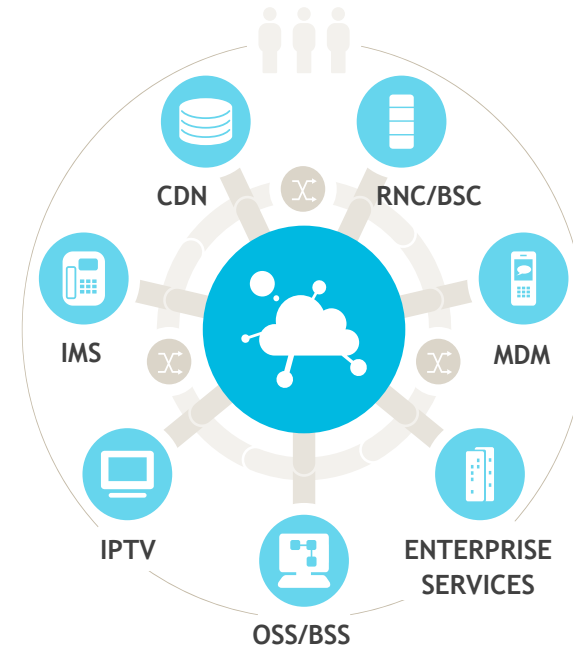


THE NFV TRANSFORMATION PROMISE

FROM THE CARRIER OF TODAY...



... INTO THE CARRIER OF TOMORROW.



AGILITY

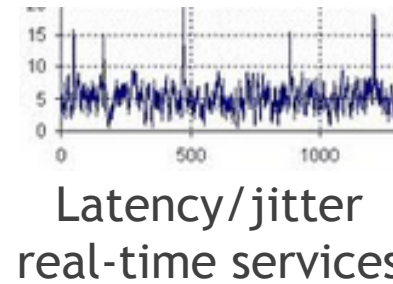
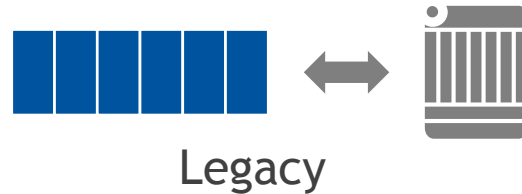
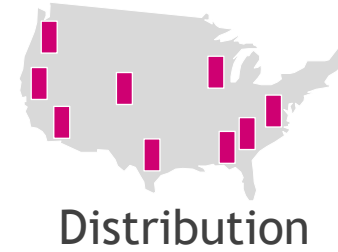
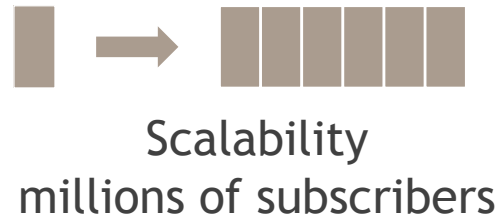
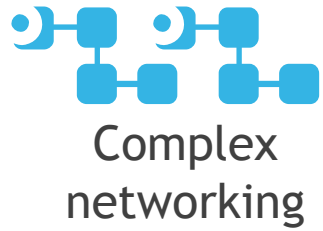
OPERATIONAL
SIMPLICITY

COST
EFFICIENCIES

NEW REVENUE
STREAMS



NFV BRINGS ADDITIONAL CHALLENGES COMPARED TO IT NETWORKING AND TELCO NETWORKING



NFV PLATFORM DESIGN PRINCIPLES

AUTOMATION EVERYWHERE

- VNF LIFE-CYCLE-MANAGEMENT
- INFRASTRUCTURE AUTOMATION
- NETWORK AUTOMATION (SDN)
- PROGRAMMABLE APIS

DISTRIBUTION

- ABSTRACTION OF RESOURCES
- POLICY DRIVEN PLACEMENT
- SEAMLESS NETWORK CONNECTIVITY
- PLACEMENT OPTIMIZATION

OPENNESS

- INTEGRATES BEST OF CLASS OPEN SOURCE SOFTWARE
- HW INDEPENDENT
- SHRINK-WRAP OR DECOMPOSABLE
- MULTI DOMAIN-SPECIFIC-LANGUAGE

CLouDBAND NFV PLATFORM

OPS

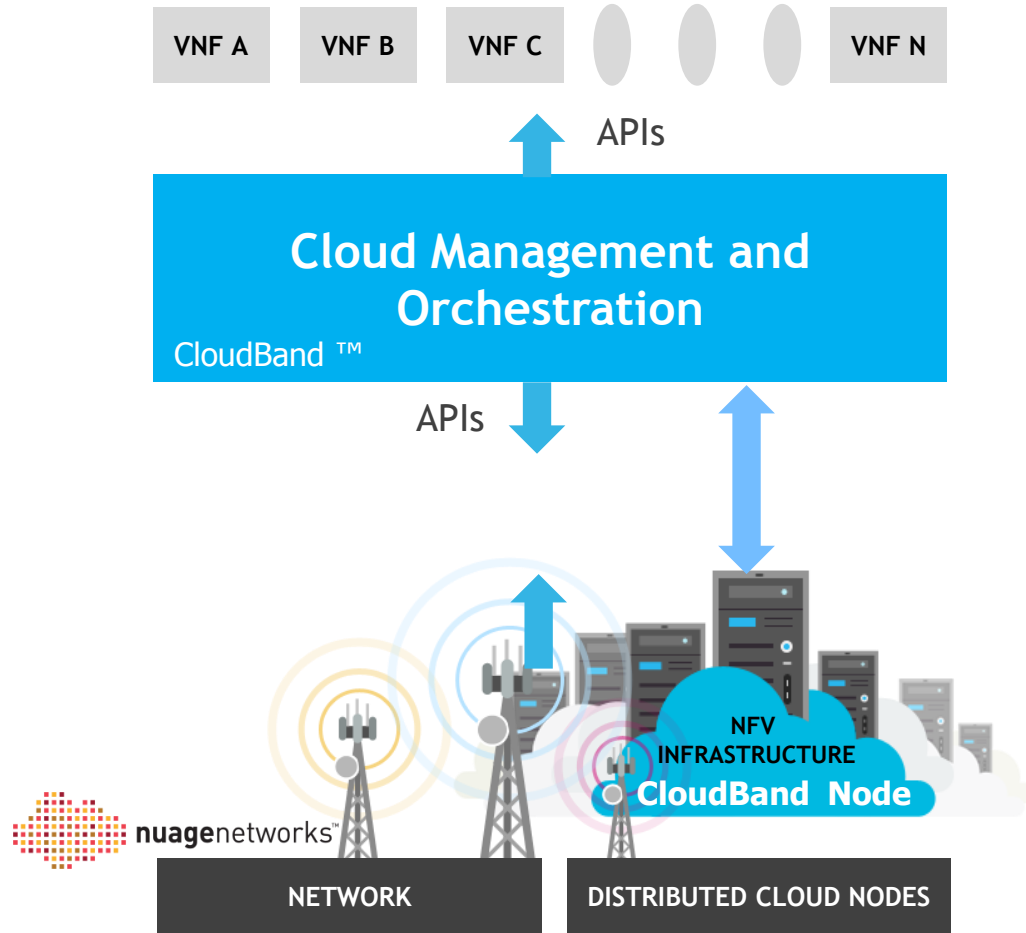
- ANALYTICS FOR OPERATIONS (ROOT-CAUSE-ANALYSIS, CAPACITY MANAGEMENT)
- VNF MODELLING: MOPS TO SCRIPTS
- NETWORK READY

NFV WORKLOADS

- DETERMINISTIC PERFORMANCE
- UNIQUE NETWORK REQUIREMENTS
- DATA-PLANE OPTIMIZATION



INTRODUCING: CLOUDBAND

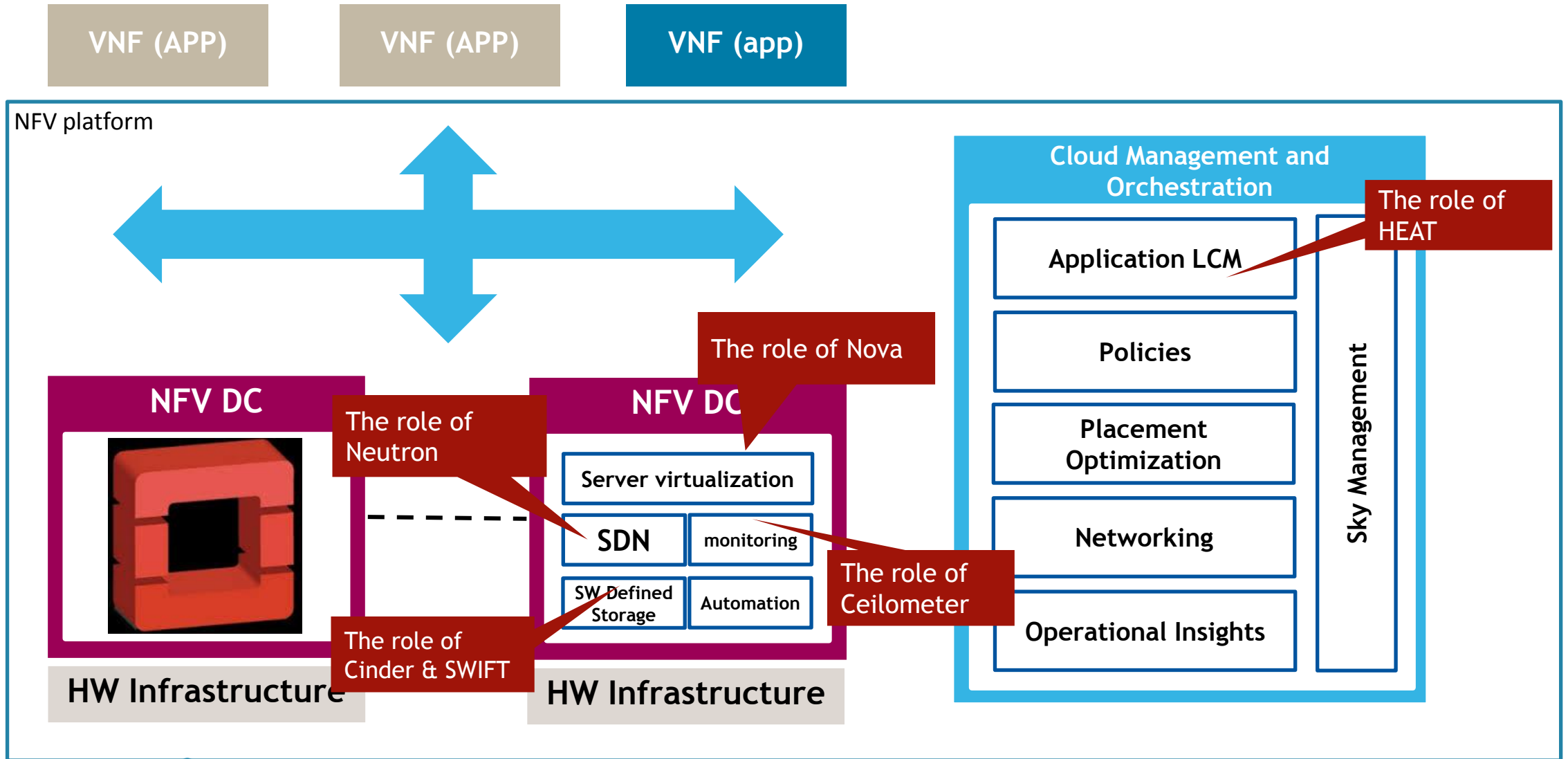


Provides everything a VNF needs:

- Compute, storage, networking resources
- Middle boxes: LBaaS, FWaaS, DNSaaS,...
- Lifecycle automation
- Smart placement
- Security, assurance, analytics



NFV BUILDING BLOCKS



ORCHESTRATION AND AUTOMATION

Orchestration and Automation

- Distributed cloud
- Resource allocation

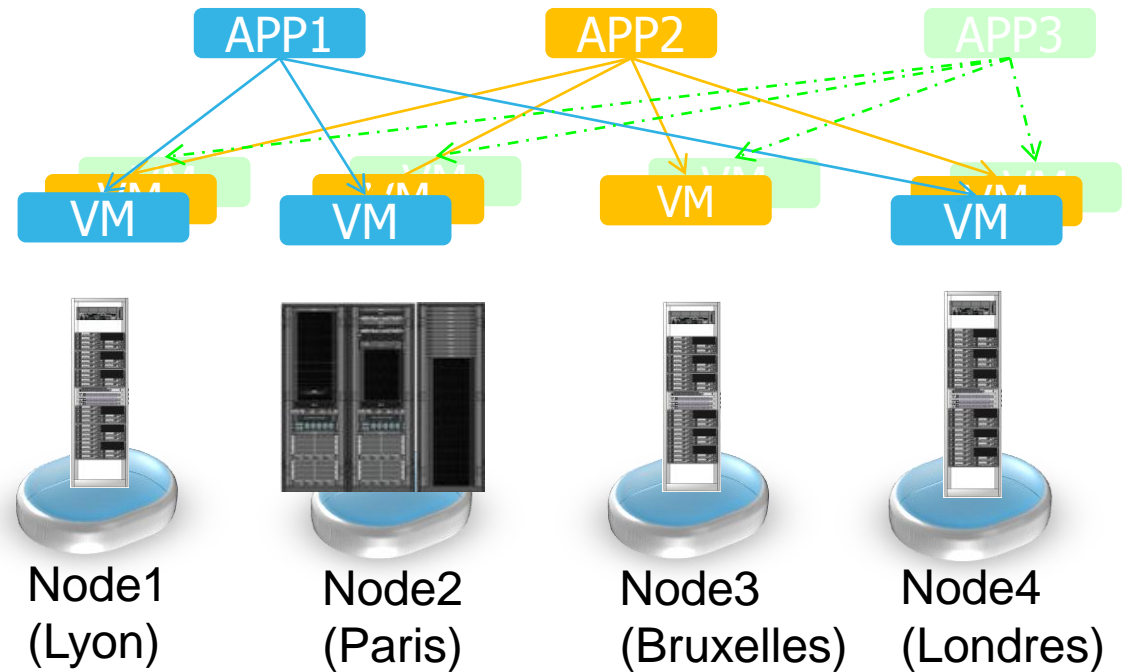
Holistic View

- Aggregated cloud
- Abstraction of resources

Advanced Placement

- Intelligent VM placement based on infrastructure, policies and application criteria

Operational Insights (capacity mgnt,...)



STANDARDIZED APPLICATION MODEL - TOSCA



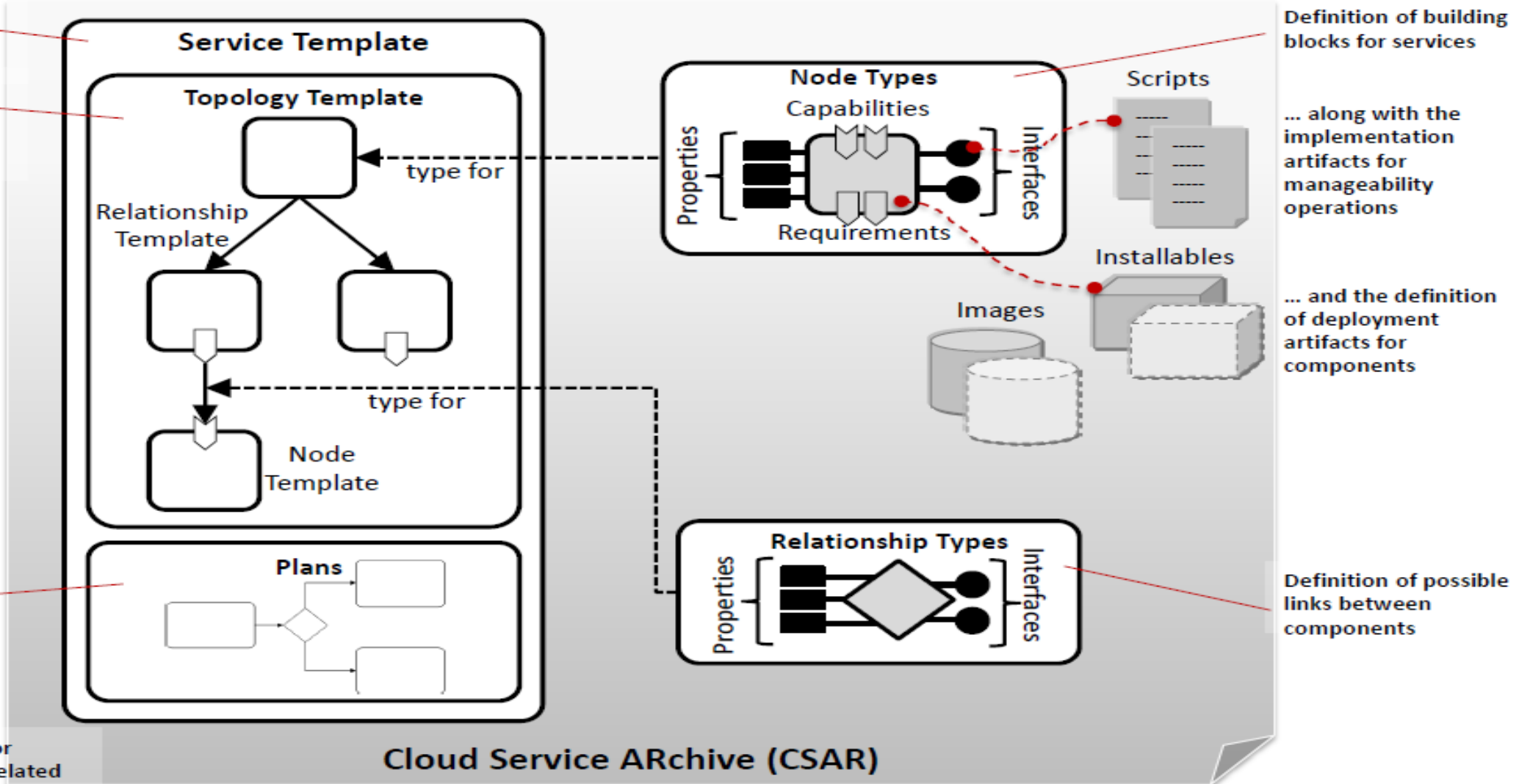
Topology and Orchestration Specification for Cloud Applications

A language for defining Service Templates ...

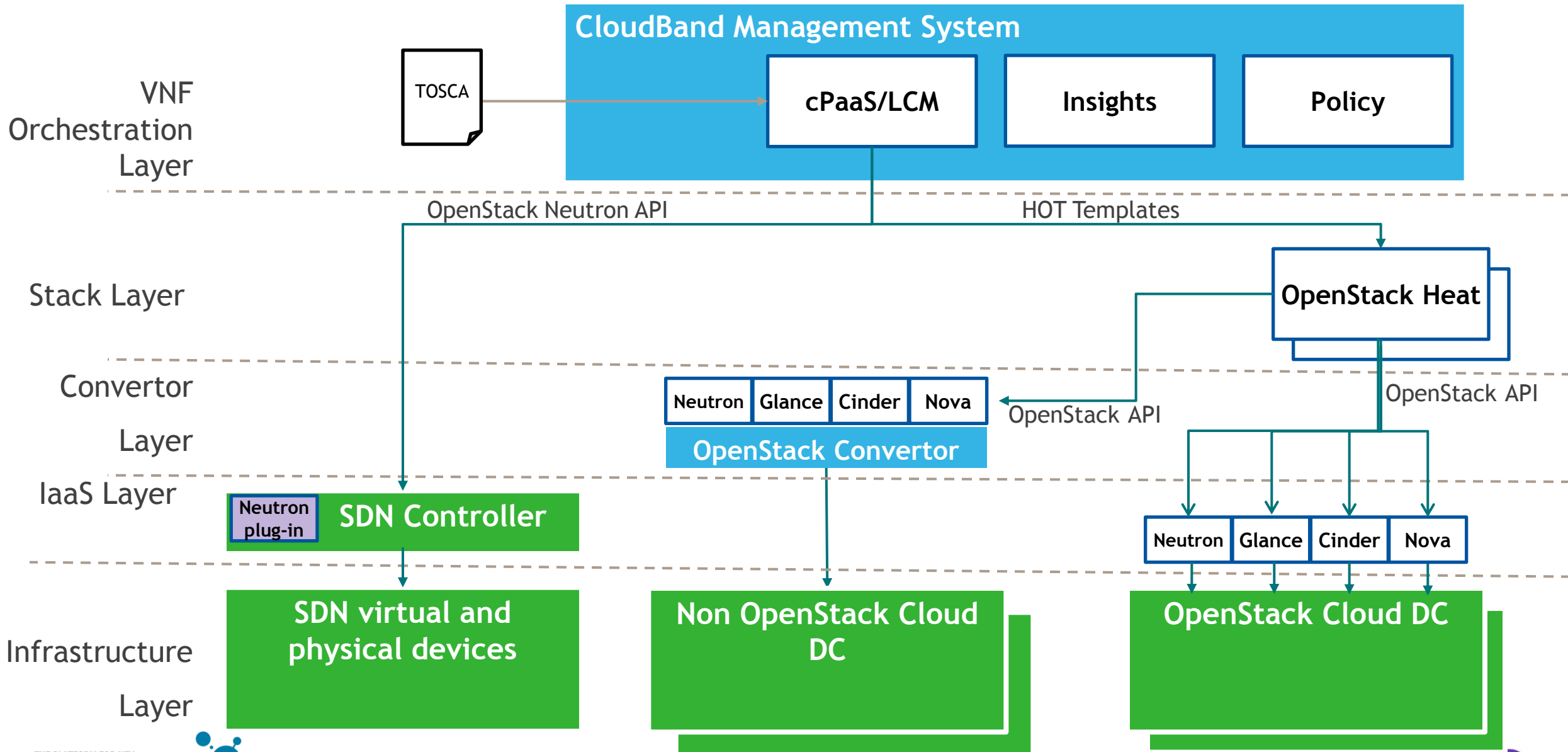
... including a Topology Template describing the structure of a service

... including the definition of plans for orchestrating the application

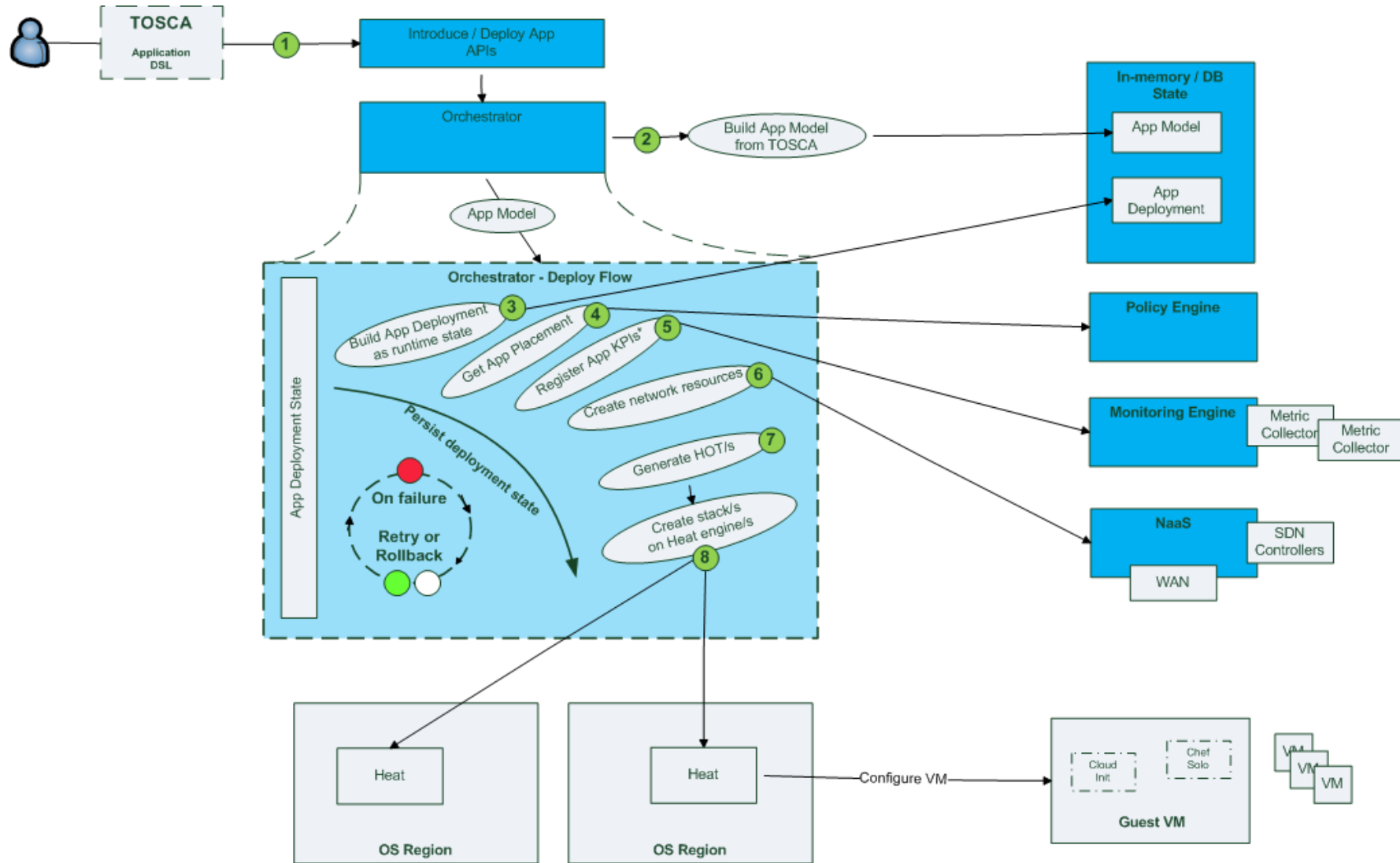
Packaging format (CSAR) for packaging models and all related artifacts.



CLOUDBAND EVOLVED ARCHITECTURE

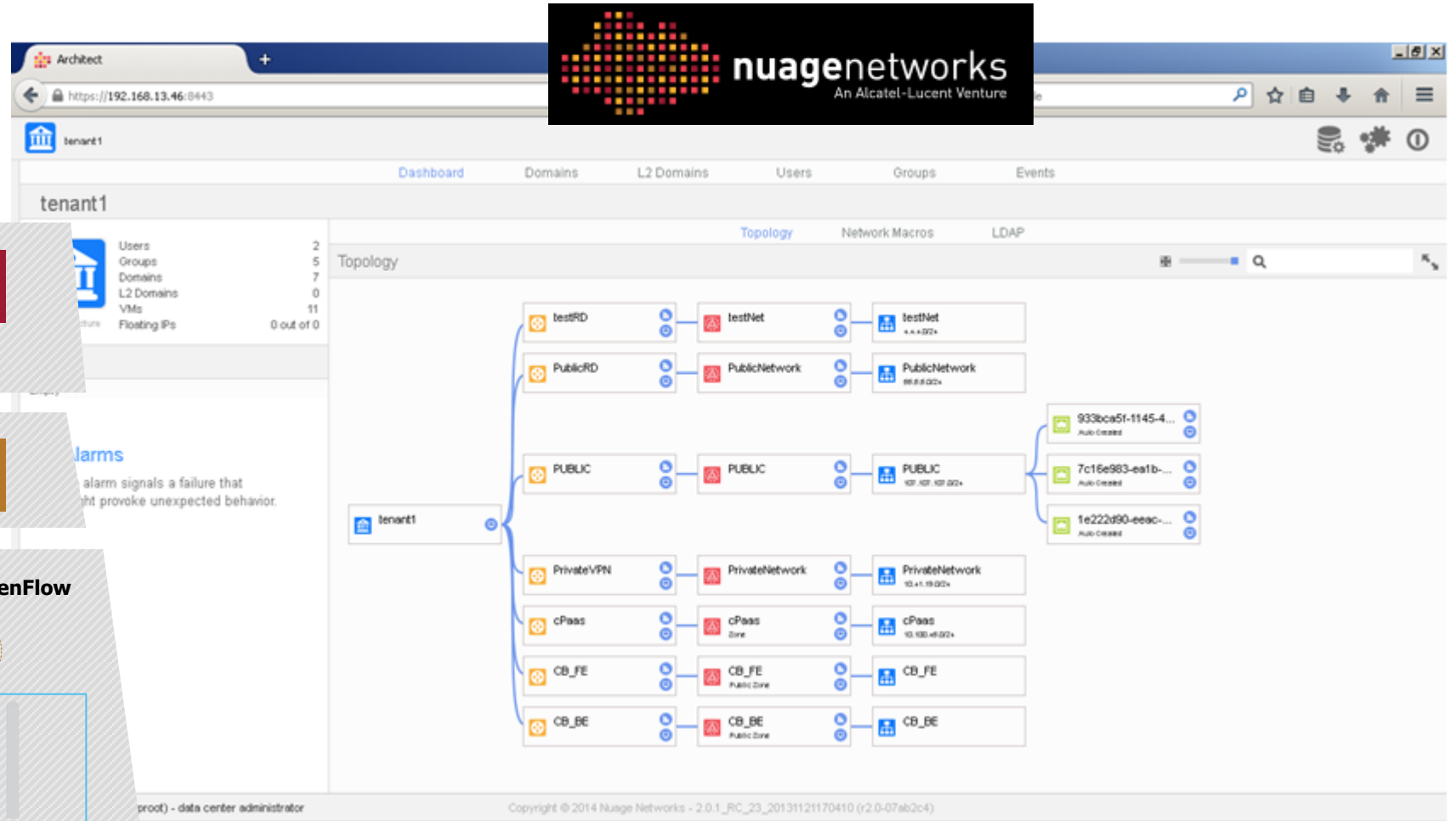
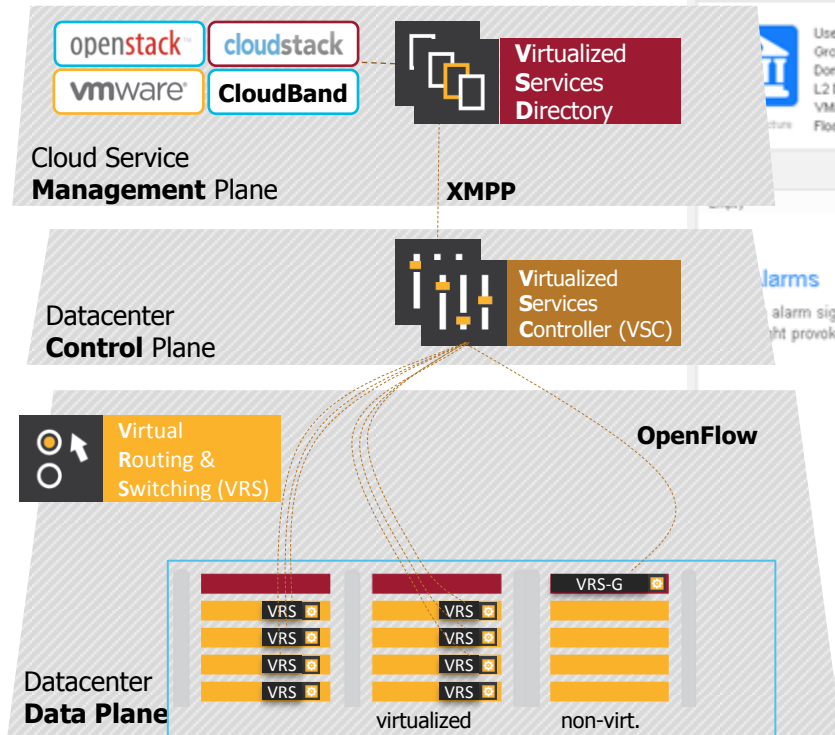


CLOUDBAND EVOLVED ARCHITECTURE – DEPLOY FLOW



NUAGE NETWORKS SDN INTEGRATION

NFV Platform and SDN Framework Translate App requirements into network features



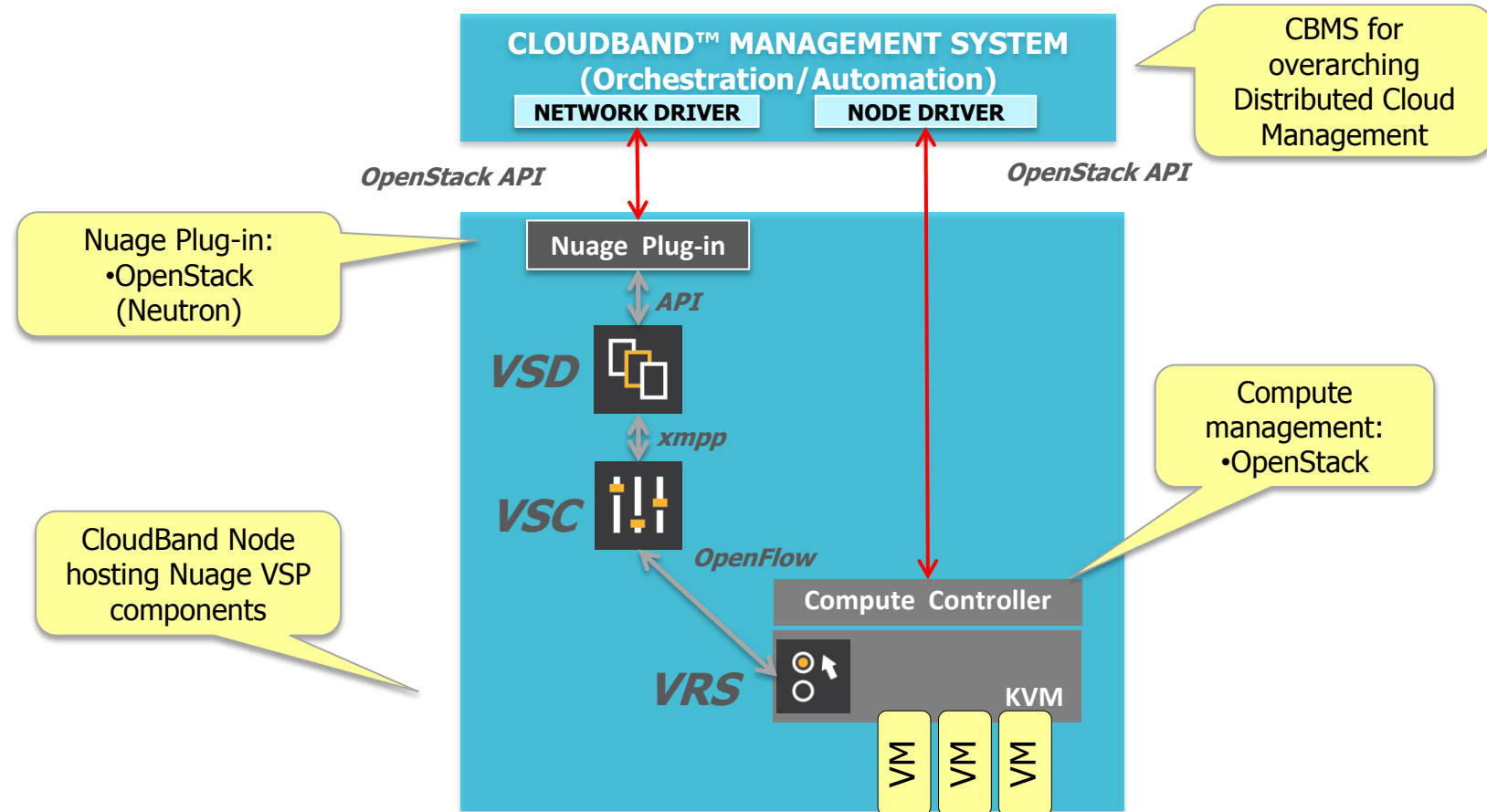
CLouDBAND - NuAGE INTEGRATION

Solves some inherent maturity/scaling/performance issues

- Fully distributed data-plane
- VRS performs all routing and switching functions on the compute node preventing choke points and providing consistent performance.
- Scalable control plane based on BGP signaling – no central brain with lots of messages

Provides advanced capabilities only available with Nuage VSP

- Templated network designs
- Routing Flexibility: aligned per project or inter-project, with or without Floating IP
- External access without gateways
- Service Chaining for FWs/ADCs/... (PBR)
- High-Throughput connectivity options to non-virtualized servers
- Operational toolkit built around SAM-NV
- Enables hybrid cloud – Openstack can coexist with other CMS



GAPS STILL REMAIN



ETSI NFV requirements

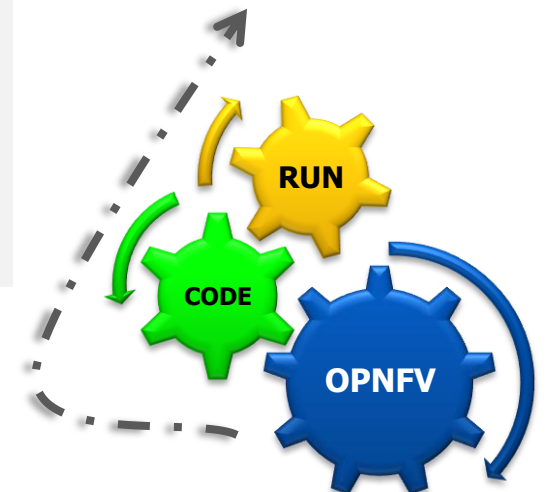
- INFrastructure Working Group
- PERformance Working Group
- RELiability Working Group
- SECurity Working Group
- MANagement Working Group
- SoftWare Architecture Working Group

Upstream work items (Gaps)

- OpenStack Resource Management
- Direct Management of any hypervisor on OpenStack
- NFVI Fault Management/NFVI Maintenance
- Infrastructure Policy Engine
- IPV6 support
- Metro Ethernet service definitions
- Network Provisioning
- Network Controller
- Network considerations in Nova scheduler
- SR-IOV, NUMA pinning,...
- NFVI Cloud HA and IPsec Acceleration
- Etc...

<https://wiki.openstack.org/wiki/Teams/NFV>

Open Platform NFV Linux Foundation Open Source Project



Telefonica



Alcatel-Lucent 

OPENSTACK IS PART OF NFV TRIALS WORLDWIDE



Architecture and Design NFV projects

- Node blueprint definition and design
- Disaster recovery design
- Global Virtualization
- Distributed data-center with SDN
- Application onboarding
- NFV transformation
- NFV Infrastructure



POC with specific applications

- vDNS
- vAAA
- vSBC
- vEPC
- vCDN
- vIMS
- vCPE
- ...



50 CLOUDBAND ECOSYSTEM PARTNERS (AND MORE TO JOIN SOON)

GET TO NFV FASTER WITH AN ECOSYSTEM OF PARTNERS

SERVICE PROVIDERS:
LEVERAGE BEST-IN-BREED NFV VENDORS TO MEET STRATEGIC GOALS

Service Providers



NTT & Telefonica held a joint session, initiated by their ecosystem collaboration, at ETSI NFV in Okinawa

VIRTUAL NETWORK FUNCTION VENDORS:
CONNECT AND COLLABORATE WITH THE KEY PLAYERS IN THE SERVICE PROVIDER INDUSTRY.

Virtual Network Function Vendors



NFV PLATFORM PARTNERS:
FULFILL SERVICE PROVIDER NEEDS WITH INFORMED, TARGETED NFV-COMPATIBLE OFFERINGS.

NFV Solution Partners



EN RESUME

NFV is truly on the move to production with major investments on all industry fronts moving focus to operations

OpenStack is clearly the preferred VIM (Virtualized Infrastructure Manager) by most telco's worldwide

Gaps in OpenStack for NFV are identified. Some will be addressed in future releases; some will depend on the ambition of OpenStack

Nuage Networks SDN solution with its Neutron plug-in provide a scalable solution for networking

Collaboration between vendors / telcos and open ecosystem are important to progress quickly

OpenStack is definitively at the core of the NFV transformation



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CLouDBAND NFV MARKET TRACTION AND USE CASES

NAM Tier 1 Operator PoC

- Massively distributed environment for NFV (extending to CPE)
- Orchestration on top of O/S + SDN Environment
- Integration of CBMS 2.0 on top of O/S + SDN
- Application On-boarding
- Node Blueprinting

NAM Tier 1 Service Provider PoC

- Common NFV Platform for Wireline and Wireless
- Integration of best of breed products
- Blueprint design work
- Multiple on-boarding activities
- Support in defining operational processes

EMEA Tier1 Operator PoC

- Network virtualization project
- Multi-vendor PoC with vEPC and vCDN
- Integration of CBMS on top of 3rd party nodes
- Support for on-boarding of 3rd party applications
- Collaboration on operational processes

APAC Tier 1 Operator poC

- Build distributed cloud node environment
- Support homegrown Applications DHCP, AAA, DNS
- Blueprint + Disaster Recovery testing for data centers

APAC Tier1 Service Provider PoC

- Build distributed cloud environment for vEPC
- Single cloud env with 2 vEPC vendors
- Field trial preparation underway

