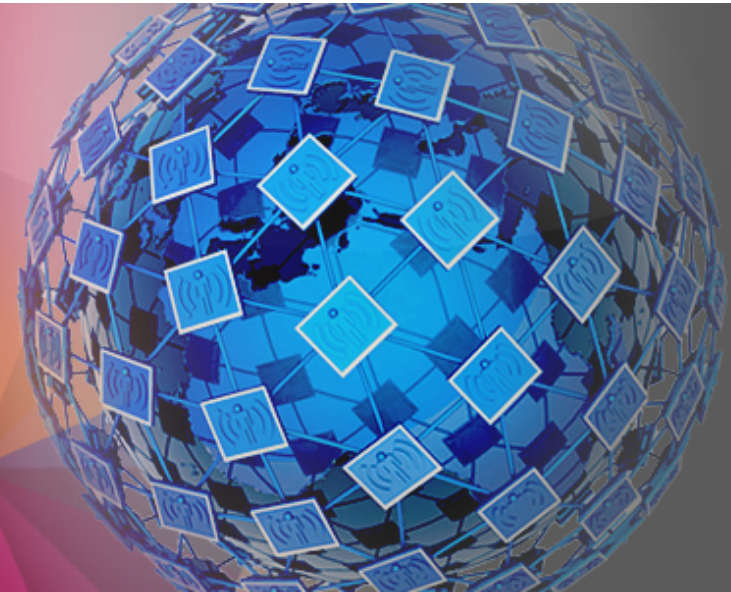




Open DOVE project proposal overview



Smarter computing | IBM System Networking

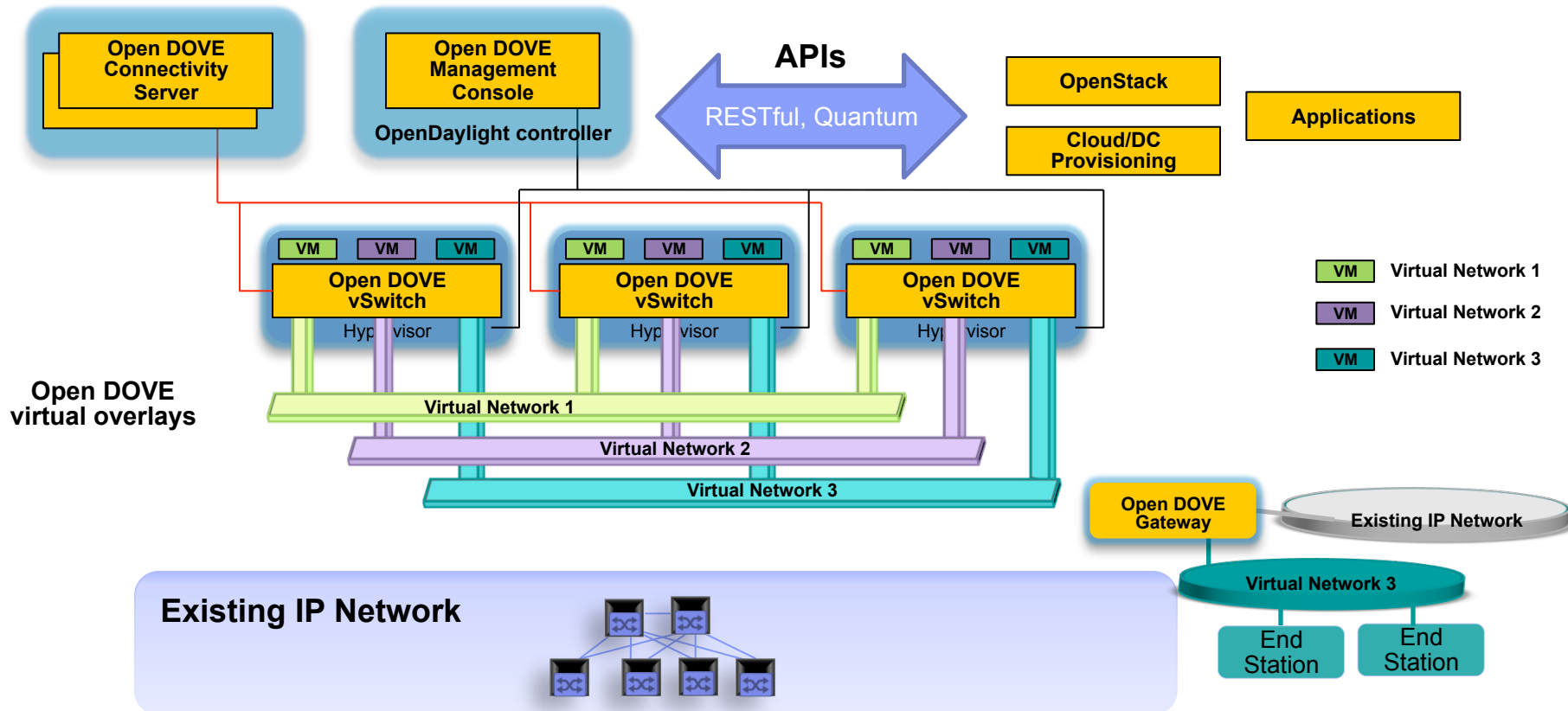


Open DOVE summary

- Open DOVE is an overlay network virtualization platform for the data center
 - logically isolated multi-tenant networks with layer-2 or layer-3 connectivity
 - runs on any IP network in a virtualized data center
 - based on IBM SDN-VE GA product and DOVE technology from IBM Research

- Open DOVE features
 - full-function, ready for real deployments, incl. HA
 - control plane implementation, incl. address, policy, and mobility management
 - management interfaces for programmatic configuration, including OpenStack enablement
 - open data plane implementation for Linux/KVM and VxLAN encapsulation
 - software gateway for connecting to non-virtualized networks and external hosts

Open DOVE architecture

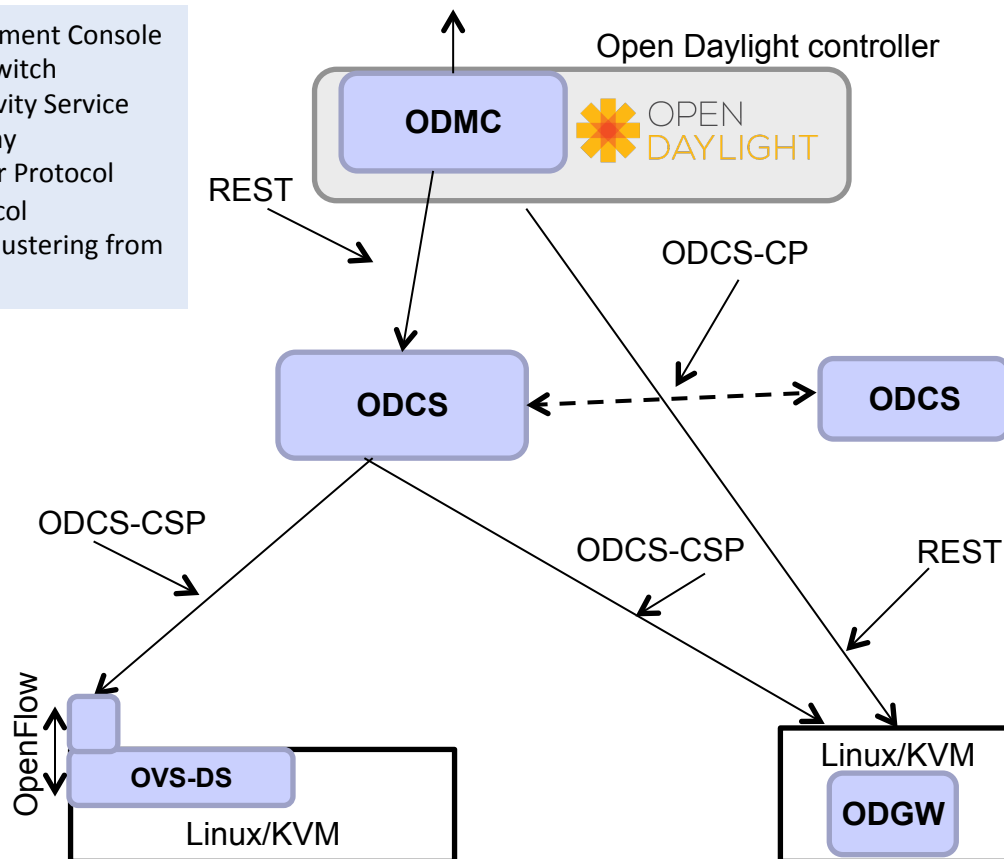


Open DOVE – component contributions

REST API, Web GUI, CLI, ...

Open Daylight controller

- ODMC:** Open DOVE Management Console
- OVS-DS:** OVS-based DOVE Switch
- ODCS:** Open DOVE Connectivity Service
- ODGW:** Open DOVE Gateway
- ODCS-CSP:** DCS Client/Server Protocol
- ODCS-CP:** DCS Cluster Protocol
- Daylight clustering:** native clustering from Daylight controller platform



DOVE DMC and DCS components

■ DOVE Management Console

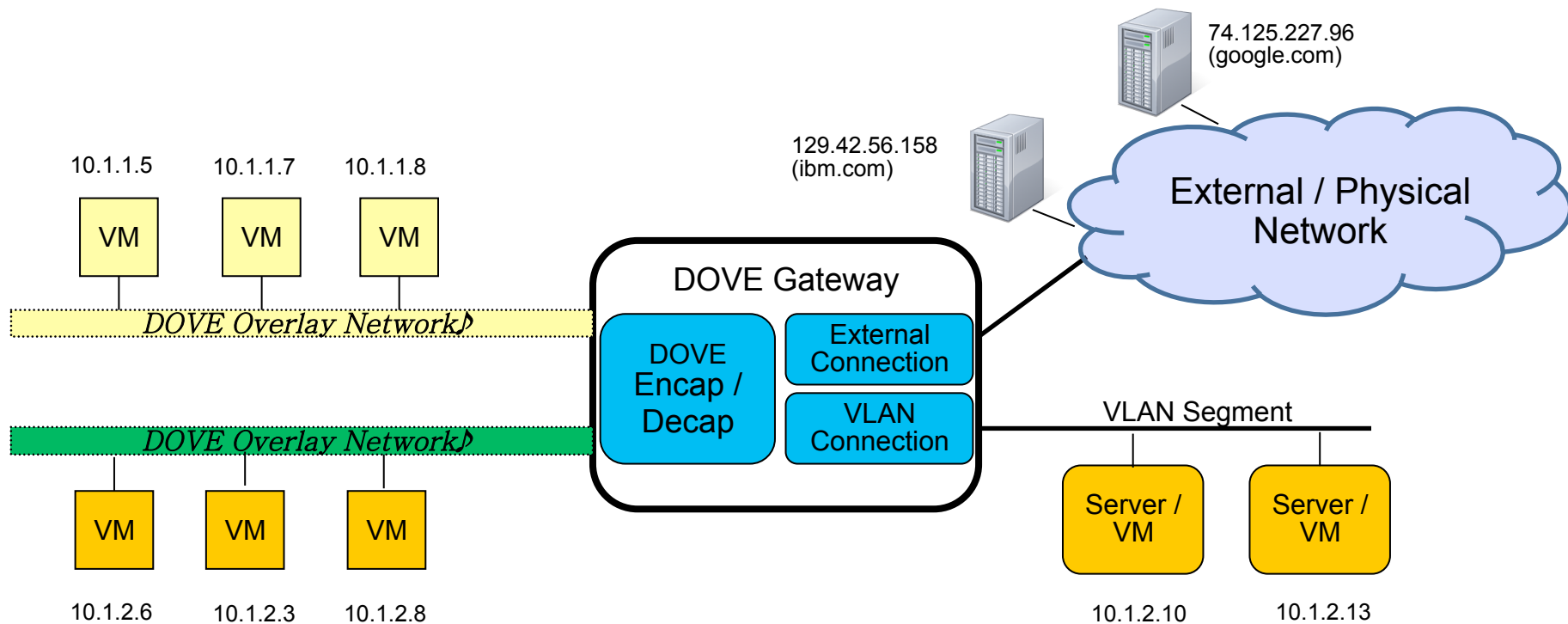
- provides the user-facing interface for DOVE and central configuration repository
- overlay network creation, policy specification, gateway configuration, etc.
- programmatic APIs via REST
- enablement for higher-level orchestration (e.g., OpenStack)
- will be developed as Java module / OSGi bundle for OpenDaylight

■ DOVE Connectivity Service

- Directory-based service to provide address dissemination and policy information to DOVE switches
- DCS has built-in support for clustering / scale-out and high-availability

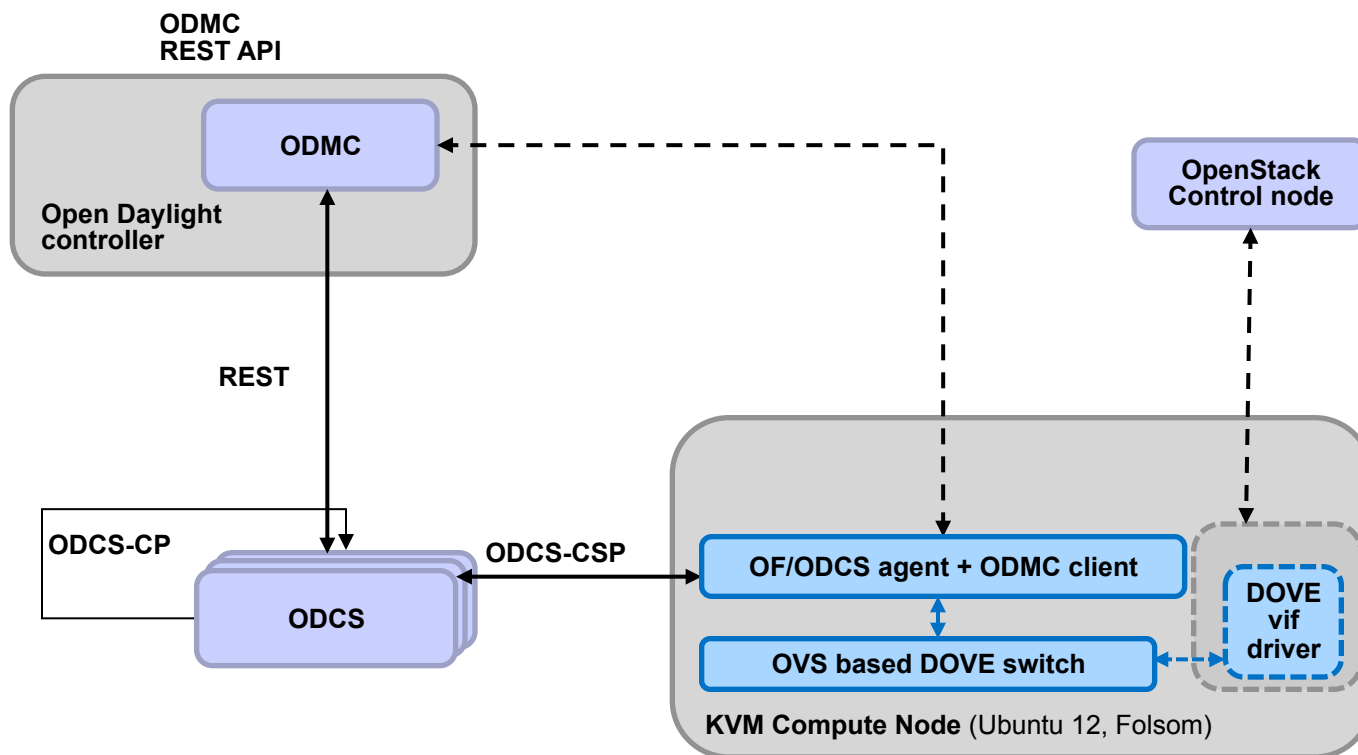
DOVE Gateway

- DOVE Gateways allow VMs on a DOVE Network to connect to systems on a non-DOVE Network.
- Two types of connections are supported:
 - DOVE External Gateway
 - Connects VMs on a DOVE Network with Systems on an External Network and vice-versa.
 - Supports for NAT or Pass-Thru connection to External Networks.
 - DOVE VLAN Gateway
 - Connects VMs on a DOVE Network to Systems on a VLAN Segment and vice-versa



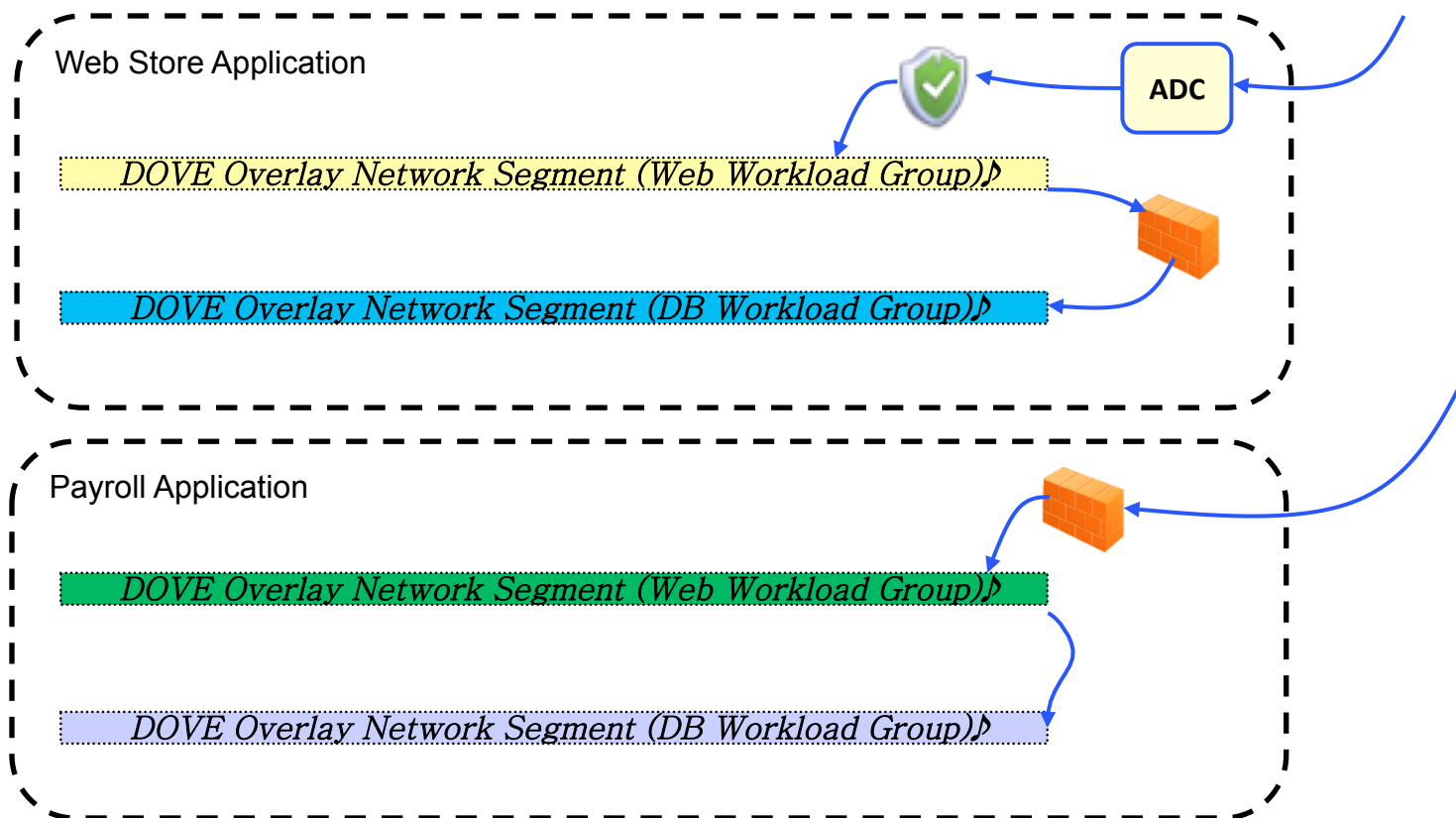
DOVE switch based on OVS

- DOVE vswitches implemented on Open vSwitch
 - leverage OVS native encapsulation / tunneling support (VxLAN frame format)
 - OpenFlow locally to program vswitch at the host



DOVE Policies

- policies manage communication between DOVE Overlay Network Segments.
- default (when unspecified) policy is to deny communication.
- policy can be customized for each Application.



Proposed code contribution scope

- DOVE Management Console (controller bundle)
 - REST APIs
 - Basic GUI
- DOVE Connectivity Server with clustering
- DOVE vswitch (Open vSwitch + user-space agent)
- DOVE Gateway
- OpenStack plugin to enable DOVE for cloud networking

Possible interactions with VTN project

- From NEC VTN overview, VTN Coordinator:
 - Provide API of VTN for users
 - Use OpenDaylight APIs to realize VTN models
 - Coordinate VTNs across multiple SDN controllers

- Open DOVE can potentially provide an implementation of VTN model and APIs
 - addition to native DOVE virtual network model

