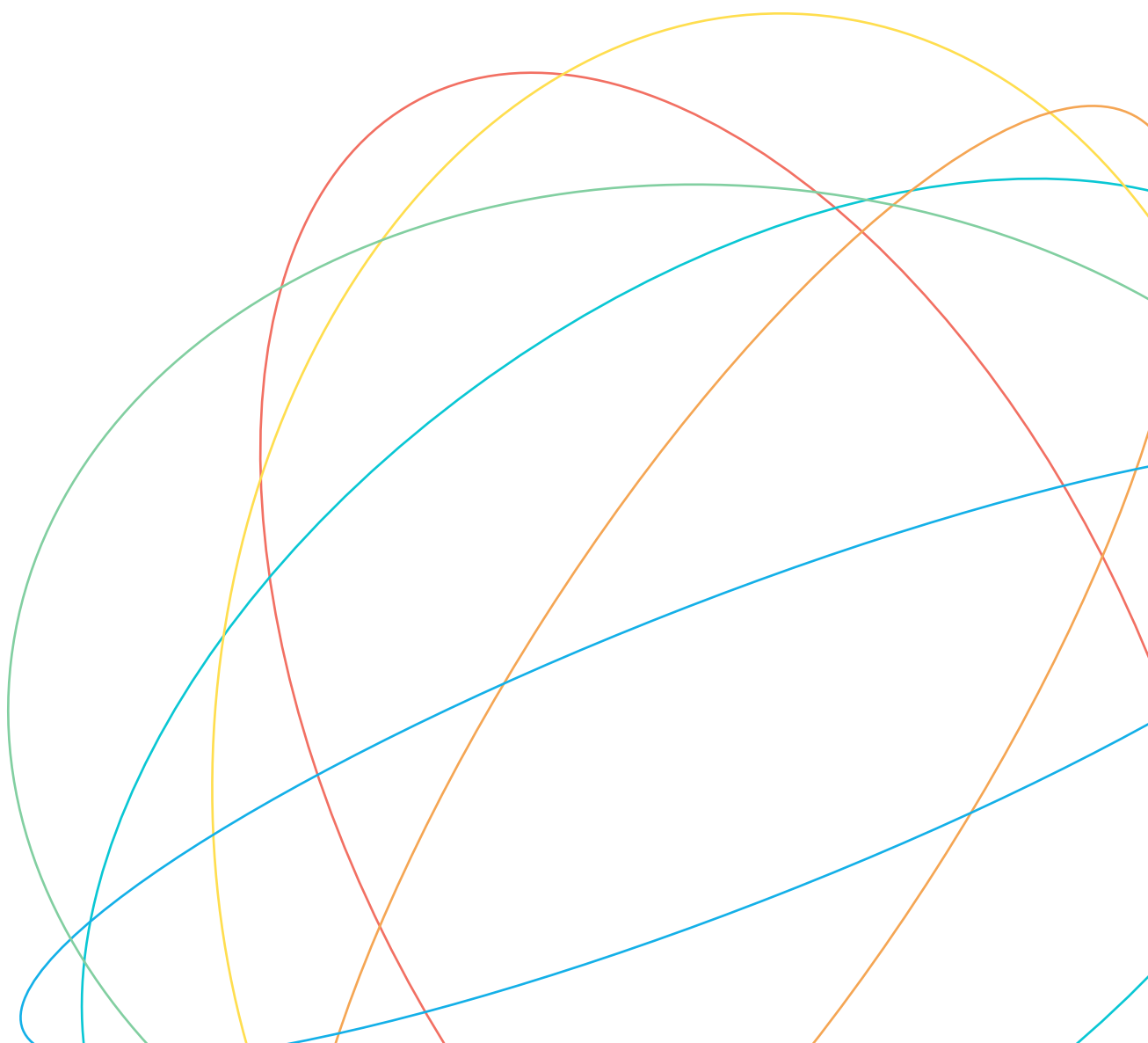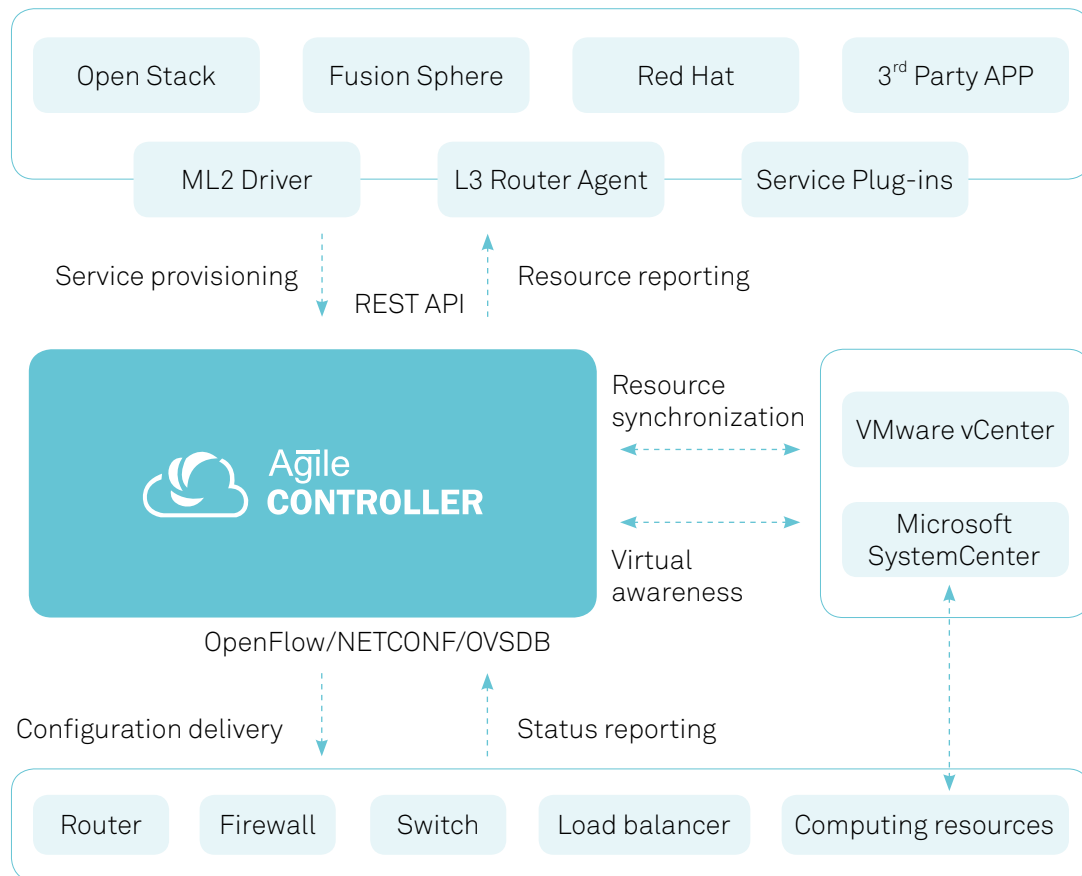Agile Controller for Data Center Networks

Open Interfaces and Capability Overview

Open Ecosystem Construction and Capability Overview

The Agile Controller for Data Center Networks (Agile Controller-DCN) is a core component in Huawei's CloudFabric Data Center Network Solution. Based on the hierarchical decoupling nature of Software-Defined Networking (SDN), the Agile Controller-DCN implements automated mapping from applications to physical networks, performs resource pool deployment, and visualizes Operations and Maintenance (O&M), enabling administrators to build service-oriented features for dynamically scheduling network services. Additionally, the Agile Controller-DCN seamlessly interoperates with popular cloud platforms and computing resources through open and standards-based northbound and southbound interfaces. These facilities provide flexible collaboration capabilities between computing and network resources. With these capabilities, the Agile Controller-DCN allows customers to flexibly deploy and schedule network resources based on their application requirements and service development process, enabling the data center network to be more agile for cloud services.

Open Stack	Fusion Sphere	Red Hat	3rd Party APP
ML2 Driver	L3 Router Agent	Service Plug-ins	

Service provisioning   Resource reporting

REST API

Agile CONTROLLER

Resource synchronization

VMware vCenter

Microsoft SystemCenter

Virtual awareness

OpenFlow/NETCONF/OVSDB

Configuration delivery   Status reporting

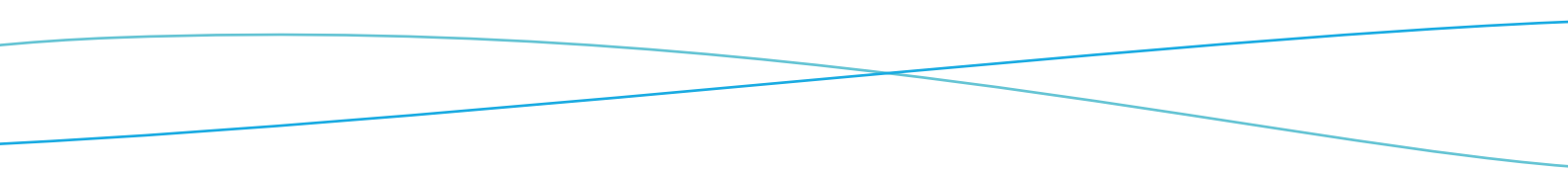| Router	Firewall	Switch	Load balancer	Computing resources

Using Representational State Transfer (REST) Application Programming Interfaces (APIs), Huawei Agile Controller-DCN interoperates with mainstream cloud platforms. In addition, with the capability to leverage modular plug-ins, drivers, or agents, the Agile Controller-DCN interoperates directly with third-party applications. Neutron interfaces on OpenStack-based cloud platforms connect to the Agile Controller-DCN through ML2 drivers to complete Layer 2 network, subnet, and port configurations. The Neutron support capability also provides interfacing through L3 router agents to complete Elastic IP (EIP) and Source Network Address Translation (SNAT) configurations. Agile Controller-DCN also provides support for OpenStack Neutron integration with Virtual Private Network-as-a-Service (VPNaaS); Firewall-as-a-Service (FWaaS); Load Balance-as-a-Service (LBaaS); Generic Routing Encapsulation-as-a-Service (GREaaS); and Secure Sockets Layer-as-a-Service (SSLaaS) plug-ins to complete service configurations.

Huawei Agile Controller-DCN interoperates with third-party computing platforms to deliver collaboration in the orchestration of network and computing resources. When an administrator creates, migrates, or deletes Virtual Machine (VM) resources on VMware vCenter or Microsoft SystemCenter, through direct API integration the Agile Controller-DCN automatically detects associated VM status changes and delivers network configurations relevant to the new or updated VM state. This allows network configurations to automatically be provisioned or migrate with VMs, and release network resources upon VM decommissioning.

Huawei Agile Controller-DCN uses standard OpenFlow, Network Configuration Protocol (NETCONF), and Open vSwitch Database Management Protocol (OVSDB) interfaces to seamlessly connect to physical and virtual devices, such as switches, routers, firewalls, and load balancers.

Using an open architecture, Huawei Agile Controller-DCN breaks the restrictions of conventional network architectures to provide automatic deployment and fine-grained O&M capabilities; therefore shortening service provisioning periods and simplifying cloud data center network O&M.

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