

The Basic Model of SDN

SDN is modelled as a set of client-server relationships with the SDN controller at its core.

Service Customer

- Manage-control network services via SDN Controller
- Send/receive data using network resources

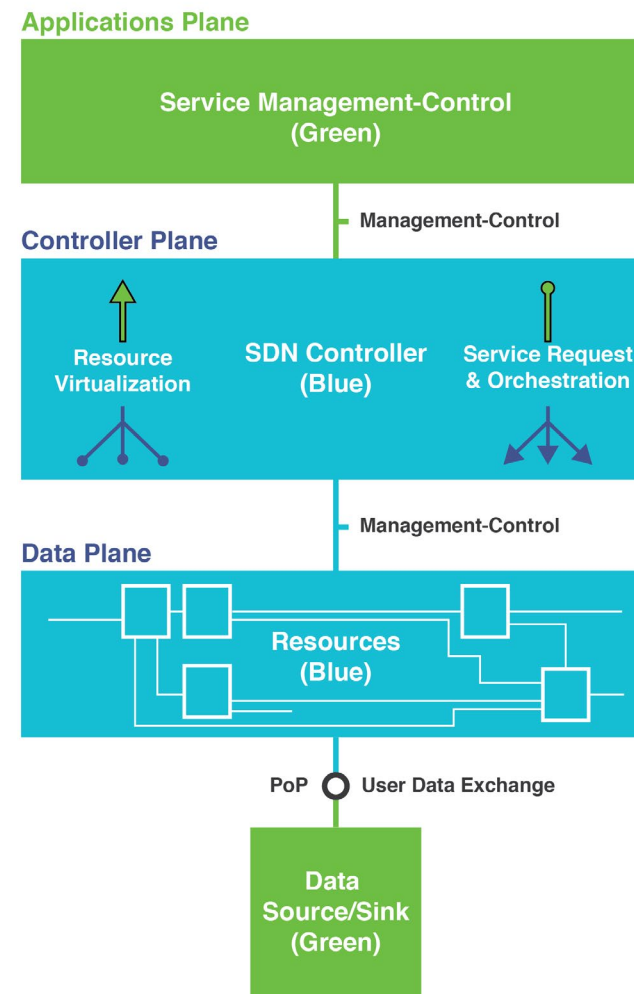
Network/Service Provider

- Map customer service intent onto resources
- Resources include forwarding, processing, and storage domains
- Recursively map services and resources to scale or to span multiple administrative domains
- Virtualize resources to views for customers
- Orchestrate resources needed for service fulfillment

Key Features

Spans all forms of

- Environments — Carrier, Enterprise Campus, Cloud
- Services — residential, business, intent-based, non-intent-based
- Resources — physical, virtual, compute, storage, forwarding



Enables

- Security
- Policy enforcement
- Information hiding

Scales

- From completely local to global service span
- Hierarchical or peer relationship
- Combinations of the above

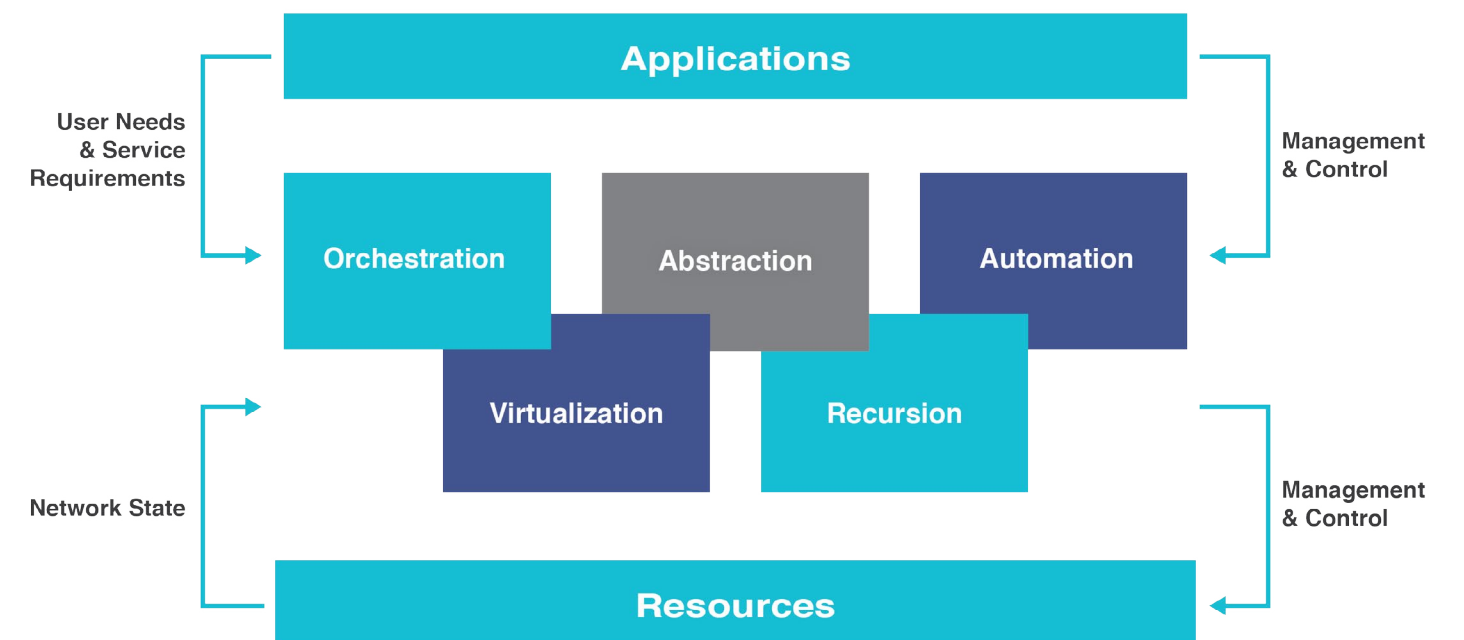


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The Architecture of Software-Defined Networks



The purpose of SDN is to reduce cost and improve user experience by automating the full range of network services, from end user to network element.

Principles that promote this include the decoupling of control from traffic processing and forwarding, centralization of control, and the ability of customers and applications to interact directly with network control.



For the detailed version of the SDN Architecture, please refer to ONF TR-521, which is available for download at:
<https://www.opennetworking.org/sdn-resources/technical-library>

The Central Entity in the SDN Architecture is the SDN Controller

The essence of the SDN controller is its real-time feedback control capability, expressed in the orchestration and virtualization functions.

The architecture usually portrays client and server as existing in separate business domains, illustrated with separate colors.

Virtualization is the process of abstracting, partitioning and aggregating underlying resources into virtual resources, each of which is dedicated to some particular client.

Orchestration is the process of using the SDN controller's resources to simultaneously satisfy service demands from all of its clients according to an optimization policy.

