Concept, Functionality and Scalability

Oct. 2017

Concept and overview

Goal of MSF project

- **The architectural design of carrier-grade SDN that provides wide logical network slices with general purpose switches**

- Value proposition
  - Immutable low-cost architecture (cost reduction)
    Capable to employ any product that is most economical and suitable at each moment, for providing functions required for service provider network

  - Unlimited and adaptive scalability
    Capable to provide any level of scale needed for any use case
    (e.g. small in rural area or in the startup phase, large when the business succeeded to enhance)

  - Applicability of "Any-vendor" product
    Simplified functions and unified specification in order to enable to select any-vendor's products as you like

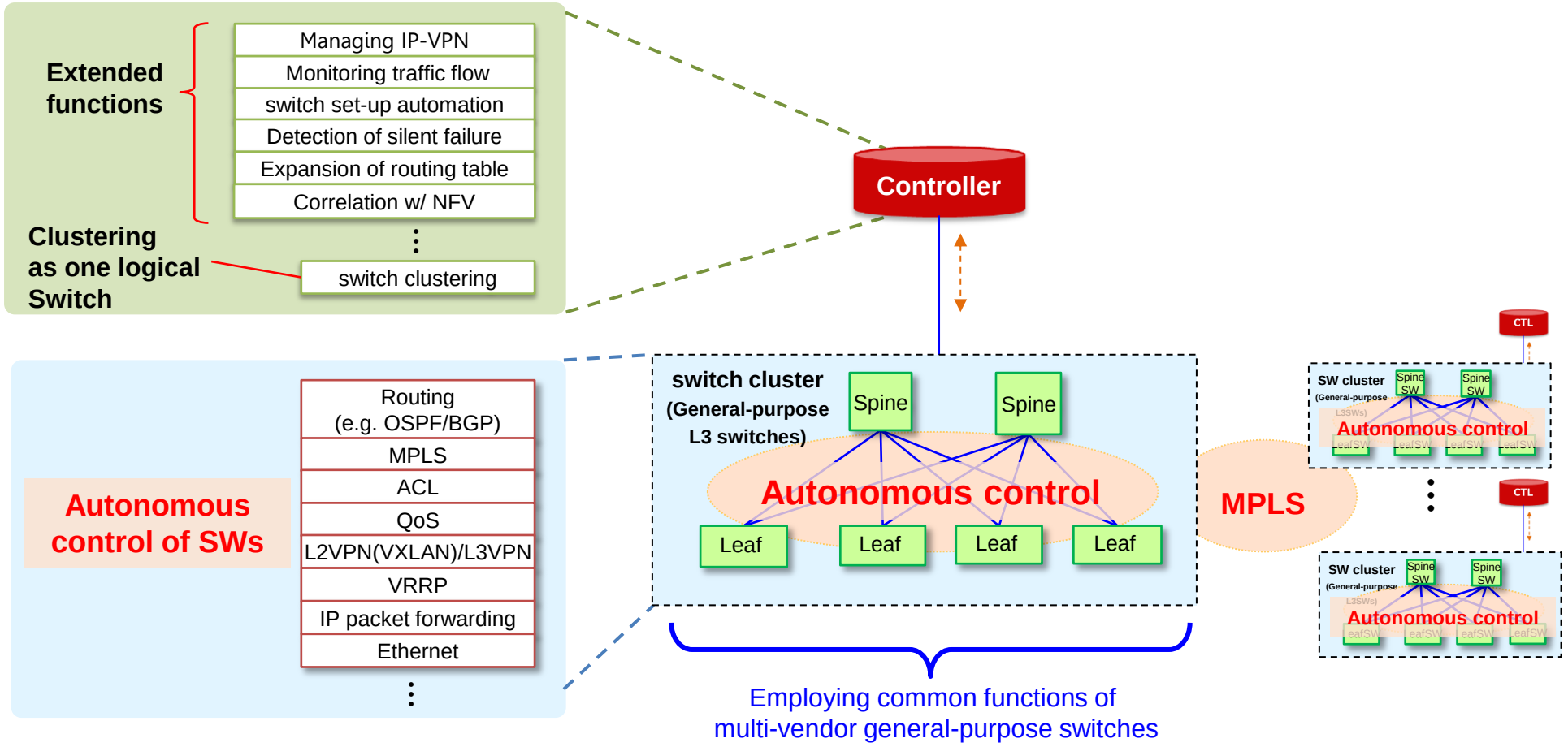
  - Easy maintenance
    Capable to make use of small, simple and transparent equipment in order to let it easy to detect and fix the cause in case of failure

Design Policy

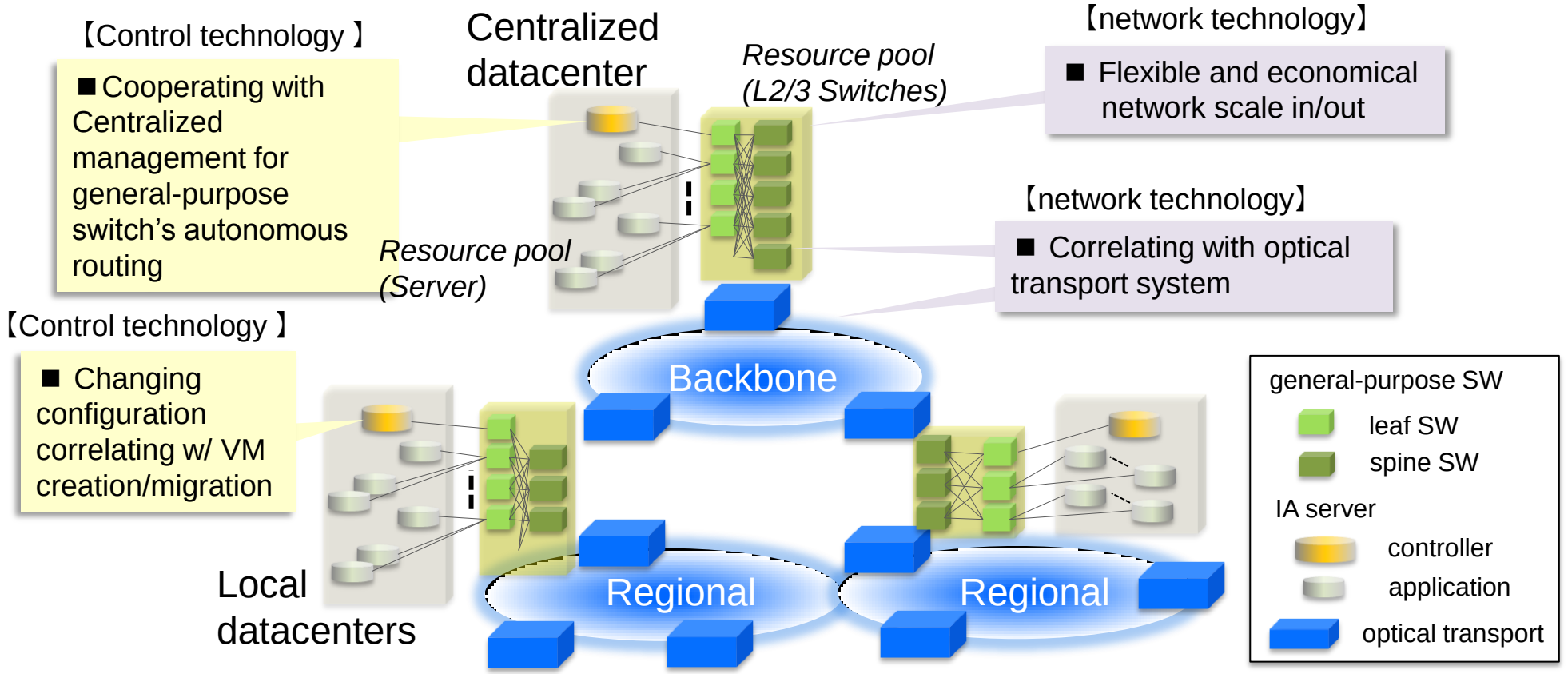
- Applicable to both data center and service provider network with the same architecture
- Use commodity hardware and open source software, open interface as much as possible
- Support carrier-grade scalability and stability by making use the autonomous and distributed IP function of the switches
- Provide service common functions on the switches and service dependent functions on servers in cloud
- In order for quick commercial deployment, it must be interoperable with existing networks using legacy protocols
- Solving limitation of commodity switches is assisted by the controller that organizes the switch cluster as a fabric

Vision

- ◆Centralized: management and abstraction is performed by the controller
- ◆Distributed/Autonomous: routing is done among the switches.

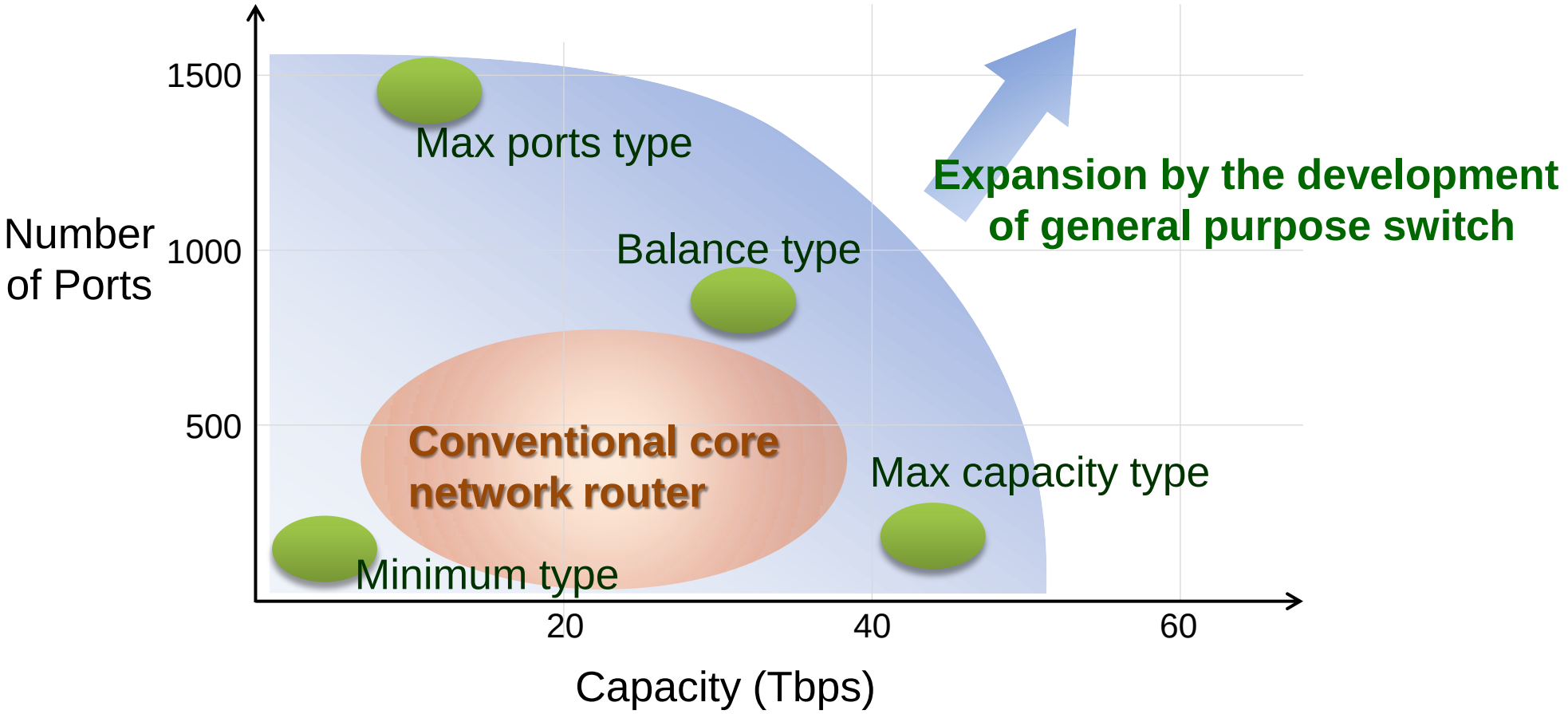


Deployment model of future carrier network



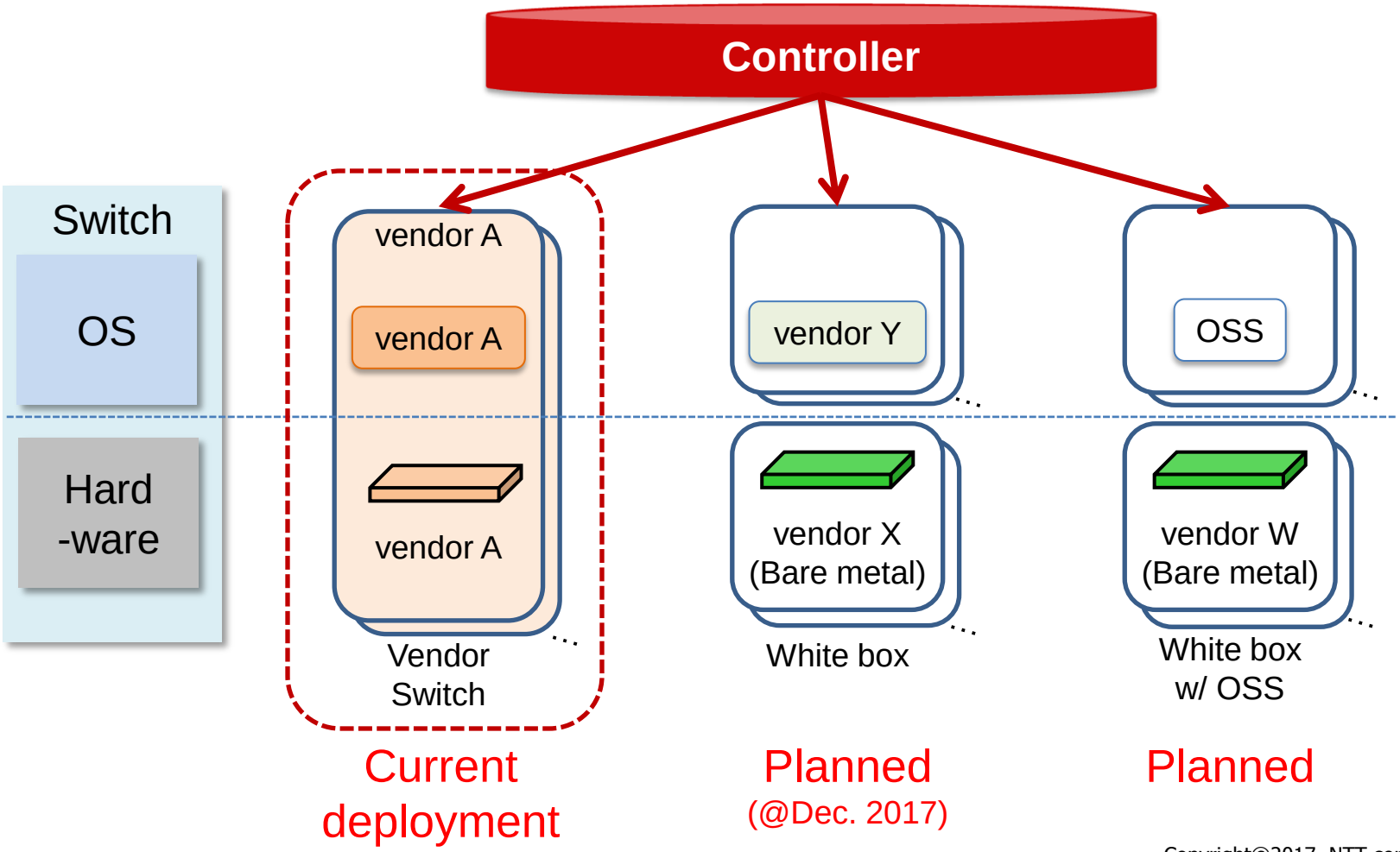
Adaptive scalability

◆By assembling the switch cluster according to the requirement, our concept is capable of providing any level of scale needed for any use cases.



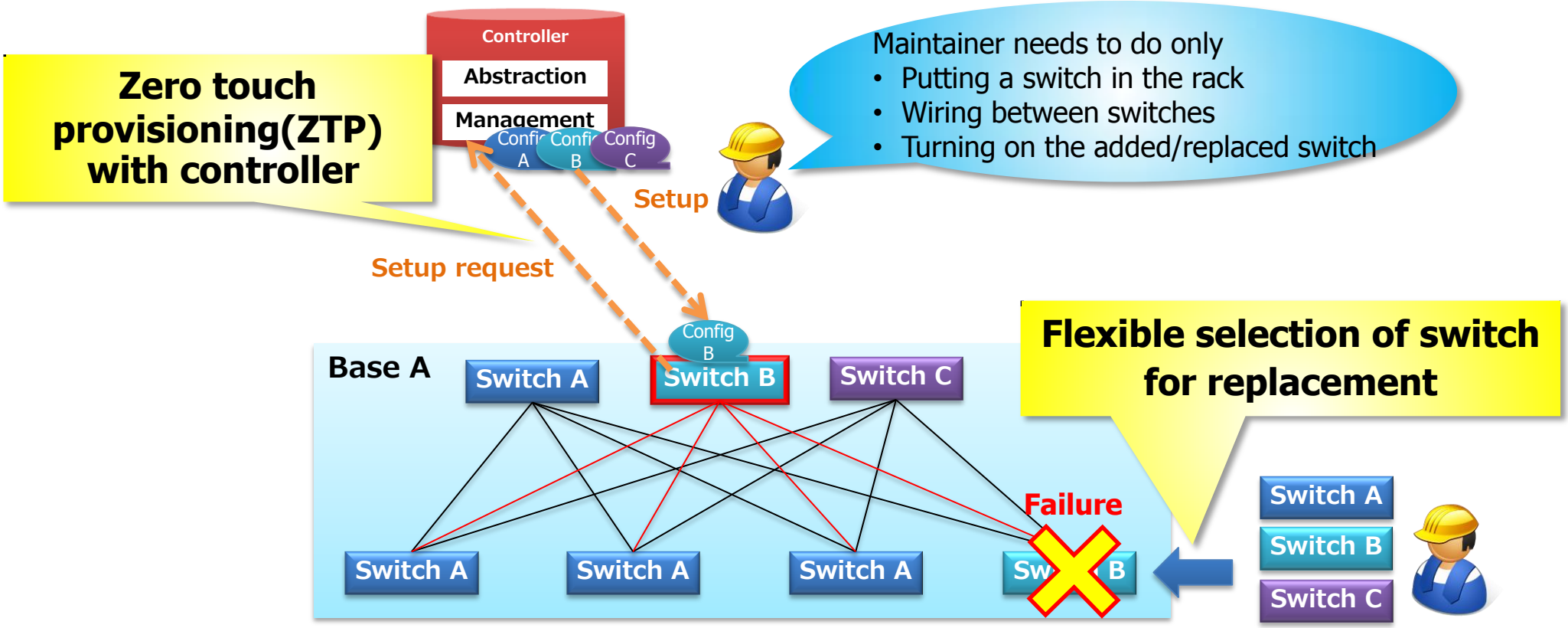
“Any–vendor” modular assemble/replacement

◆ Components are able to be replaced freely with any vendor’s product to choose the best and cheapest product at each moment.



Easy maintenance

- Connection between switches consists of standard Ethernet link and standard routing protocols.
- Maintainers do not need to know knowledge depending on vender products.
- Controller has functions for assistance of switch replacement and addition.



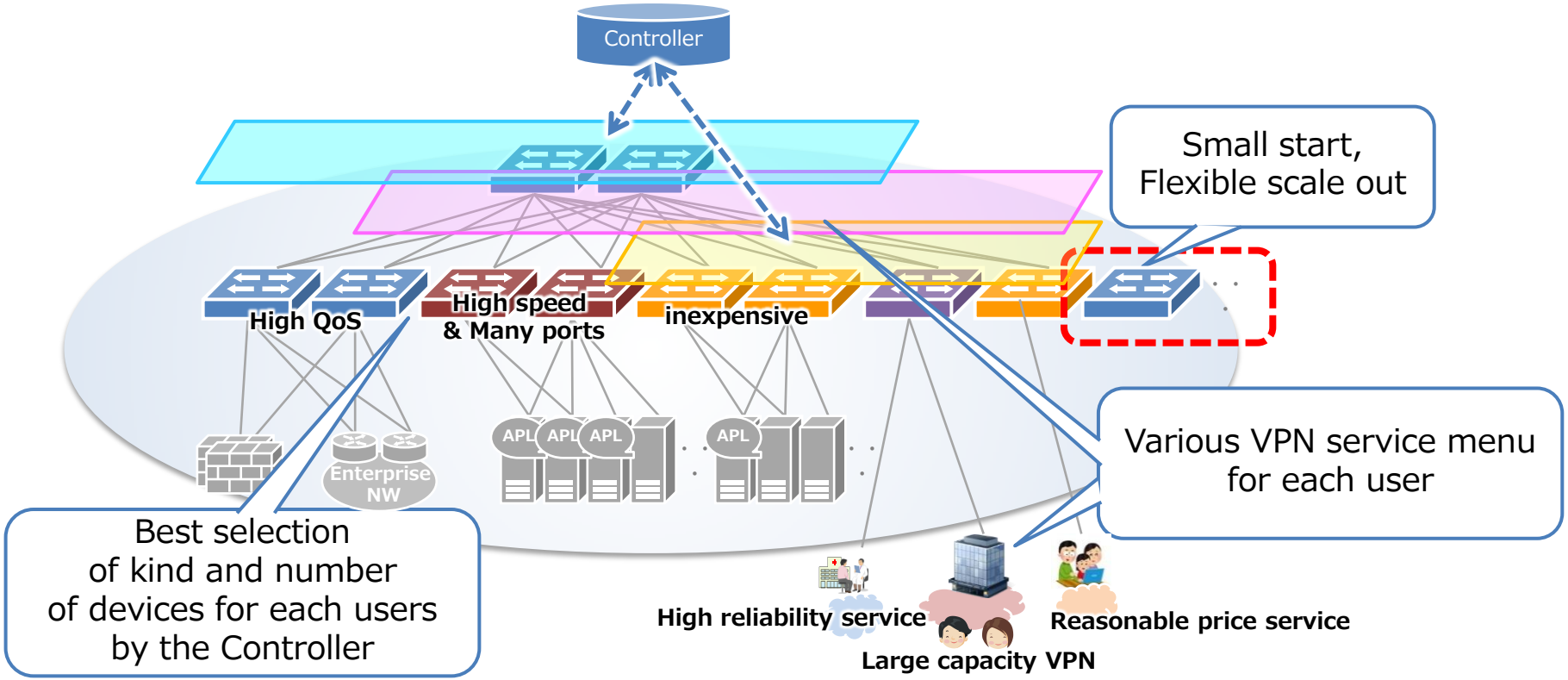
Use case

◆Used in various networks to make easy operation by zero-touch provisioning and network abstraction, and CAPEX reduction

1. **Replace core/edge routers to general purpose switches**
   - switch fabric
2. **Provide various services with the common infrastructure**
   - Virtual network slicing
3. **Enterprise Services**
   - L2/L3 (MPLS) VPN
4. **Datacenter**
   - switch fabric

Expectations for DC

- Providing global DC/cloud service for various requirements by **unified network technologies**.
- Availability of application of **various types and vendors' devices** to various flexible services.
- Small start and large scale out, **introducing technologies flexibly**.
- **Reliable mechanism** by independence of switch's forwarding form controller conditions.
- **Avoiding silo** by independence of controller vendor from switch vendors.



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