

ADDRESS SPACE MANAGEMENT PROPOSAL

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AGENDA

- Why do we need a new IPAM service ?
 - Issues with traditional approach
- The new approach
 - Vision
 - Requirements

IPAM – TRADITIONAL APPROACH

➤ IP Address Management

- Usually none or little context for address allocation
 - No knowledge of who and why an address is allocated
 - No knowledge of how address is to be used
- Uncoordinated address pool management
 - Lack of single pane of glass for pool and address resource utilization
 - Different solution for physical and virtual networks
 - Different solution for different services
 - BNG, Mobility, Managed services
- Lack of built-in multi-tenancy
 - Different business entities in same organization have different approach
- Lack of integration with address services
 - DNS
 - DHCP
 - Address translation (NAT)

ADDRESS SPACE MANAGEMENT – VISION

- Meta data driven interface
 - Between address pool management system and upper layers
 - OSS/BSS, SDN Controller, Admin
- Built-in multi-tenancy for centralized management
 - Instead of manual address pool division
- Single solution for wide-variety of use-cases
 - Networking & security devices (switches, routers, firewalls)
 - Physical or virtual
 - Servers and end-points
 - Services (BNG, 3GPP, managed services, multicast such as IPTV)
- Integration with other address management services
 - A complete solution approach to addressing
- Single pane of glass for visibility into resource utilization
 - Complete network/application/workload view

ADDRESS SPACE MANAGEMENT – REQUIREMENTS ...1/2

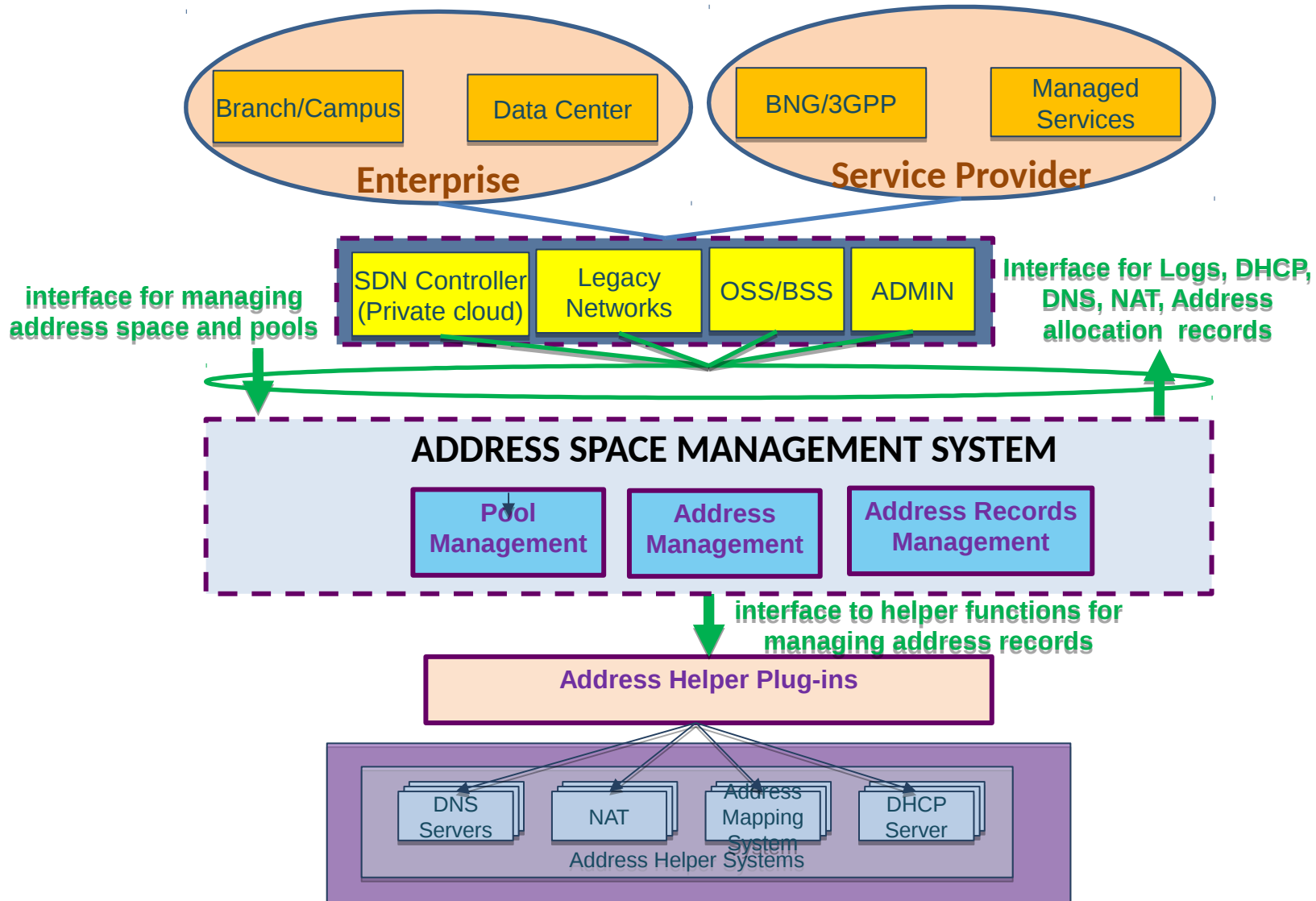
➤ Interface for address allocation

- Driven by user attributes and specific requirements
 - Device attributes (switch, router, firewall, server, end-point)
 - Form-factor attributes (virtual, physical)
 - Interface attributes (transit, end-point, management)
 - Network segment identifier (e.g., VLAN)
 - Network segment type (P2P, MP, loopback)
 - Addressing scope (Private, Public, VPN/VRF, unicast, multicast)
 - Address request (specific or any address, block size)
 - Tenant identification
 - Ability to define and customize new attributes

ADDRESS SPACE MANAGEMENT – REQUIREMENTS ... 2/2

- Interface for address pool management
 - Driven by user requirements
 - Private and Public IP address
 - Allocation schemes (map addresses to requirements)
 - Allocation priorities (order in which pools are considered)
 - Lease duration for each pool
 - Pool fragmentation rules (how pool can be sub-divided)
- General requirements for interface definition
 - Multi-tenancy, Authentication, Security
 - Query available and allocated resources
 - Notification when a resource depletion threshold is reached
- Interface for integration with other address management services
 - DHCP server pool initialization
 - NAT pool initialization
 - DNS mapping
 - Address interoperability (IPv4 & IPv6)

ADDRESS SPACE MANAGEMENT - ARCHITECTURE



References

➤ Open source work

- <http://phpipam.net>
- <http://spritelink.github.io/NIPAP/>
- <https://sourceforge.net/projects/teemip/>
- <https://github.com/digitalocean/netbox>

➤ IETF Work

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