Use Cases of CASM
(Coordinated Address Space Management)
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Use Cases List

- Address pools configuration on (v)Devices / (v)Functions
  - DHCP server pool
  - Static address configuration
- NAT & CGN
  - Public IP address pool
- Address configuration API of IPAM
- Interfaces to the RPKI
  - Resource Certificates and Signed Objects
  - Local Trust Anchor and RPKI RPs in ISPs
- SDN/NFV scenarios
Use case 1 – sharing address among devices/(v)devices

• Our problem:
  – With address shortage problem, the remaining IPv4 address pools are usually quite scattered.
  – It is complicated to manually configure all the address pools statically in BNGs (large MAN may have more than 100 BNGs).
  – Sometimes, the address pools are needed to be transited from one BNG to another.
  – The same requirement for Mobile is to manage PGW
Use case 2 - sharing address among functions/(v)functions

• Our problem
  – For IPv6 transition technologies, e.g. DS-Lite, lw4over6, etc., they need to be configured with address pools as translated addresses.
  – Different address pools are needed to be configured on each transition instance for HA support.
  – The occupation of the address pools may vary during different transition periods.
  – The same requirement for managing address of dynamic created SFC functions

It is too complicated to configure all these address pools manually
Use case 3 - NAT & CGN

• Our problem:
  – With address shortage problem, the remaining IPv4 address pools are usually quite scattered.
  – It is complicated to manually configure all the address pools statically in NAT.
  – Sometimes, the public address pools are needed to be transited from one NAT to another.
Use case 4 - Address configuration API

Address configuration API of IPAM

MNS/OSS and IPAM perform address management on different levels of granularity
Use case 5 - RPKI

IPAM

ISP’s RPKI System

CA

Repository

Local Trust
Anchor

RPKI
Relying Party

IP Address Block Allocation>> Resources Certificate Issuance

IP Address Block Assignment>> Signed Object Management

Private/Protected Addresses Allocation>> Local Routing Origin Assertion
Use case 6 - SDN scenarios

SDN Controller (e.g., Neutron)

allocation and de-allocation of subnets and IP addresses

CASM (e.g., IPAM)

Virtual Machine

Virtual Function

Overlay Network

Private or public clouds

Virtual Machine

Virtual Function

Overlay Network

DHCP Agent
Discussion

• Do you have similar address management problem in your network?
• What’s the current approach for address management in your network?
• Is it useful to have a common address management specification?
• Do you have same requirement in your network?
• Do you have interests to work on this topic?
Backup slides
Description

• Organizations use IP Address Space Management (IPAM) tools to manage their IP address space, often with proprietary database and interfaces.

• This work intends to evolve IPAM into standardized interfaces for coordinated management of IP addresses, including SDN/NFV networks and other forms of virtualization.

• Use cases include dynamic allocation and release of IP addresses and prefixes based on usage (reallocation in case of no more in use) and/or user intent (for specific services).