Coordinated Address Space Management (CASM) Architecture
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Scope of this Draft

• A general architecture is defined to meet the requirements of automatic address/pool management and allocation in wide-variety of scenarios.

• It can help to reduce the workload of the existing manual configuration approaches, and also use the address resource more efficiently.

• This can be a basic document for further work, such as interface modeling and workflow.
Use Cases

• Uses cases below have been discussed in IETF 98
  – Address pools configuration on (v)BNGs / IPv6 transition devices
  – NAT & CGN
    • Public/Private IP address pool
  – Address configuration API of IPAM
  – SDN controllers
  – Interfaces to the RPKI
    • Resource Certificates and Signed Objects
    • Local Trust Anchor and RPKI RPs in ISPs
Reference Architecture of CASM

Coordinated Address Space Management (CASM) Coordinators

- Pool management
- Address management
- Address database

Device 1
- Agent
- CASM distributor

Device 2
- Agent
- CASM distributor

Device M
- Agent
- CASM distributor
General Features

• Single solution for wide-variety of use-cases
  – Networking & security devices (routers/BNG, switches, firewalls)
  – Servers and end-points
  – Physical or virtual

• Centrally and dynamically coordination
  – Computation in coordinator based on the upper-layer inputs and the request from devices

• Openness and Integration with other address management services
  – Legacy (e.g., Radius, DNS, DHCP) and new (e.g., OpenStack, SDN) networks

• Interface modeling
  – Standard interface between CASM and the upper layer (e.g. OSS/BSS, SDN), the technical detail is hidden
Requirements For the Interfaces

• Functional requirements
  – Dynamic allocation and reclaiming
  – Generic address assignment policies
  – Address pools management:
    – Address management: Unicast(Private/Public v4 addresses, v6 addresses), Multicast

• General operational requirements
  – Authentication and Authorization
  – Audit Logging
  – Error notification
  – Aggregated view

• Interface modeling requirements
  – Functional attributes such as switch, router, firewall, server, end-point
  – Form-factoral attributes such as physical, virtual
  – Network segment identifier, such as VLAN, VxLAN or other user-defined value
  – Addressing scope attributes, such as private, public, VPN, unicast, multicast
  – Extensible user-defined attributes
Multi-party Joint Field Trial

APP (Broadband Network)

CASM Coordinator

- Huawei BNG
- ZTE vBNG/BNG
- H3C vBNG
- Certus vBNG
Moving forward

• Request more reviews and refine the document
• Interface definition in other new drafts, any contributions are welcome😊
• Adopted as a WG doc ?
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Thank you!

Q&A