Interface to Address Pool Management

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Current problem of address pool management in China Telecom (1)

• 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.

Address allocation in broadband access users

- Configured with IPv4/v6 address pools, and announce the corresponding routing into Internet
- Configured with user domain for subscribers

Client | BRAS | AAA

Access request
Allocate address from user domain address pools
Authentication
Current problem of address pool management in China Telecom (2)

- 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.

It is too complicated to configure all these address pools manually
Other use cases to configure address pools

- The firewall need to configure the address pool for ACL/NAT process.
- The VPN should also need to configure the address pools for end-users.
I2APM Architecture

We need to specify:

- Overall architecture for I2APM
- Interface to address pool management
- Mechanism to manage to address pools automatically

BNG, VPN, etc

V6transition, firewall, etc

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Interface Example: A YANG data model

```yang
module: ietf-address-pool
  +++rw address-pool* [address-pool-name] string
  +++rw address-pool-entries
  +++rw ipv4-address-range* [ip]
    | +++rw ip-lower-address inet:ipv4-address-no-zone
    | +++rw ip-upper-address inet:ipv4-address-no-zone
    | +++rw usergateway inet:ipv4-address-no-zone
    | +++rw gwnetmask yang:dotted-quad
  +++rw ipv6-address-range* [ip]
    | +++rw ipv6-lower-address inet:ipv6-address-no-zone
    | +++rw ipv6-upper-address inet:ipv6-address-no-zone
    | +++rw usergateway inet:ipv6-address-no-zone
    | +++rw gwnetmask yang:dotted-quad
  +++rw type
  | +++rw usergateway
  |    | +++rw ip
  | +++rw netmask
  +++rw lifetime
  +++rw instance (VPN instance, v6transition)
  +++rw warning-threshold
  +++rw warning-threshold
  +++rw address-sharing-ratio
  +++rw action

module: ietf-address-pool-status
  +++rw address-pool* [address-pool-name] string
  +++rw status
  +++rw ipv4-address-range* [ip]
    | +++rw ip-lower-address inet:ipv4-address-no-zone
    | +++rw ip-upper-address inet:ipv4-address-no-zone
    | +++rw peak-address-usage-ratio
    | +++rw average-address-usage-ratio
  +++rw ipv6-address-range* [ip]
    | +++rw ipv6-lower-address inet:ipv6-address-no-zone
    | +++rw ipv6-upper-address inet:ipv6-address-no-zone
    | +++rw peak-address-usage-ratio
    | +++rw average-address-usage-ratio
  +++rw port-range-status
    | +++rw peak-port-usage-ratio
    | +++rw average-port-usage-ratio
  +++rw instance (VPN instance, v6transition)
  +++rw action
```

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Other requirement on Access Services Management

- We are now trying to offer access services more flexible.
  - On-demand bandwidth adjustment
  - Session-limitation change
  - Traffic scheduling

- We hope to define YANG modules for access services as well.
Next step

• Should we focus on address pool management only? Or Access service management as well?
• Where to discuss it? Create a mailing-list?