

RADIUS Extensions for CGN Configurations

[draft-cheng-behave-cgn-cfg-radius-ext-01](#)

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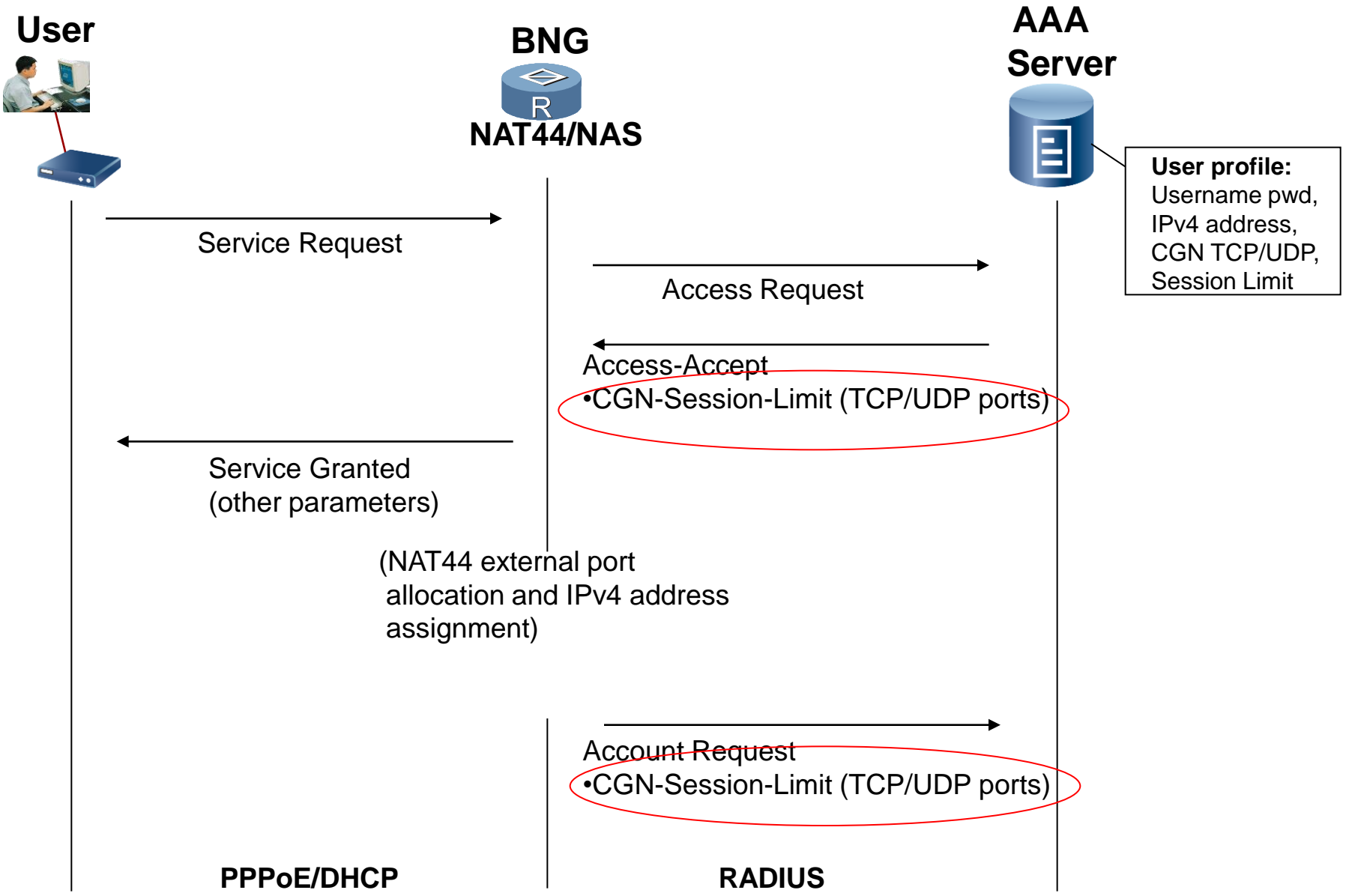
History

- 00 text - merged from two earlier drafts per suggestions
 - draft-cheng-behave-nat44-pre-allocated-ports-02
 - draft-cheng-behave-nat-fwd-port-radius-ext-00
- 00 text presented at RADEXT WG at Quebec meeting
- 00 text was listed as one “potential work” on BEHAVE WG Chairs’ slide at Quebec meeting
- Jouni Korhonen joined the work with much help
- 01 text posted in October

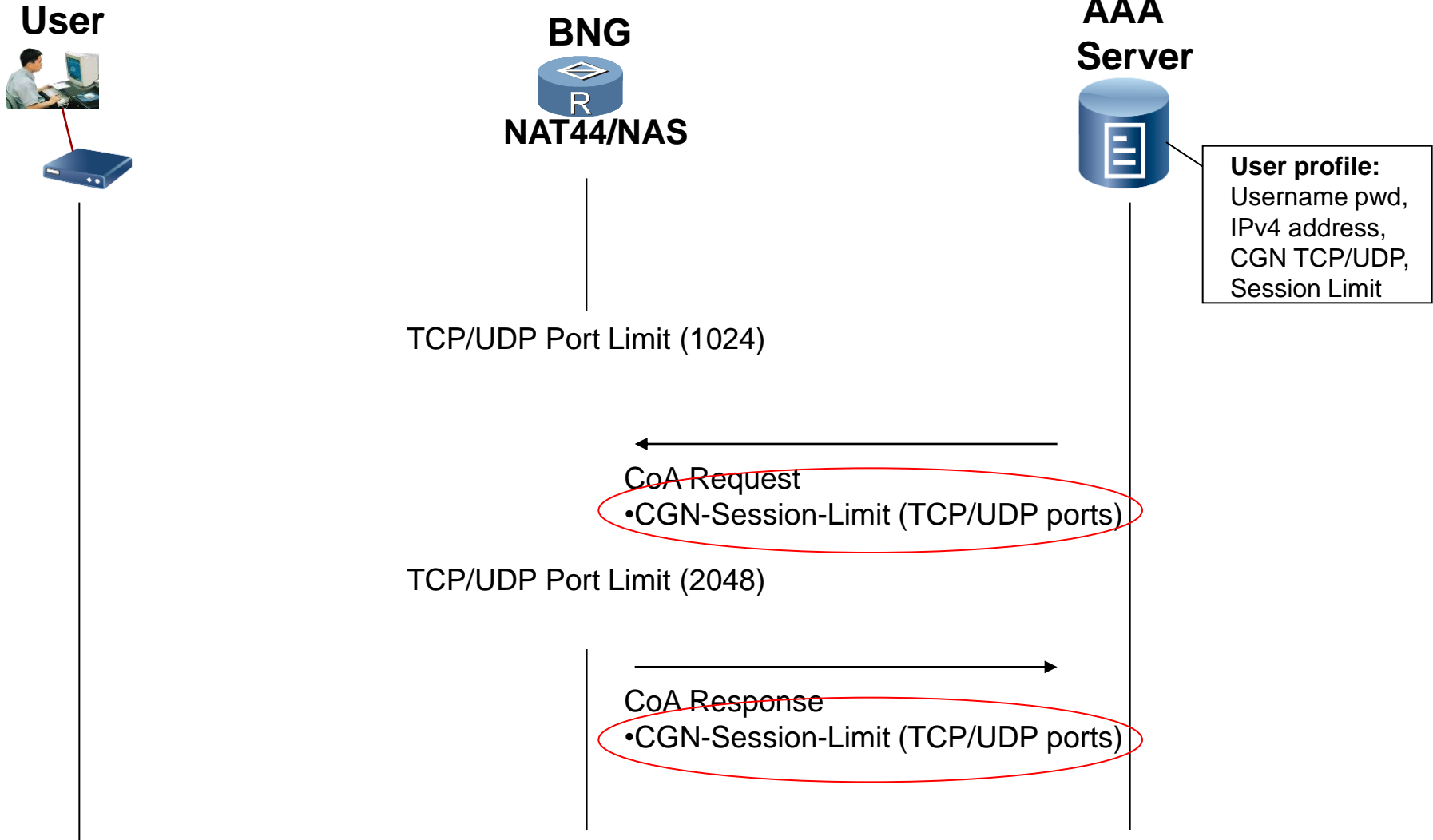
Motivation

- **Scenario (in a broadband network)**
 - **User configuration is stored on a RADIUS server (user profile)**
 - **User's broadband connection terminates at a BNG**
 - **CNG (e.g. NAT44) can be co-located on a BNG**
- **Problem to solve**
 - **For subscriber based CGN parameters, how to leverage the existing infrastructure in broadband network to configure & manage them?**
- **Solution proposed**
 - **Pre-configure per-user based CGN parameters on RADIUS server**
 - **Limit of IP sessions**
 - **Port forwarding mapping**
 - **These parameters propagated to BNG/CGN via RADIUS at user registration time**
 - **BNG/CGN conveys IP session allocation/deallocation details to RADIUS server**

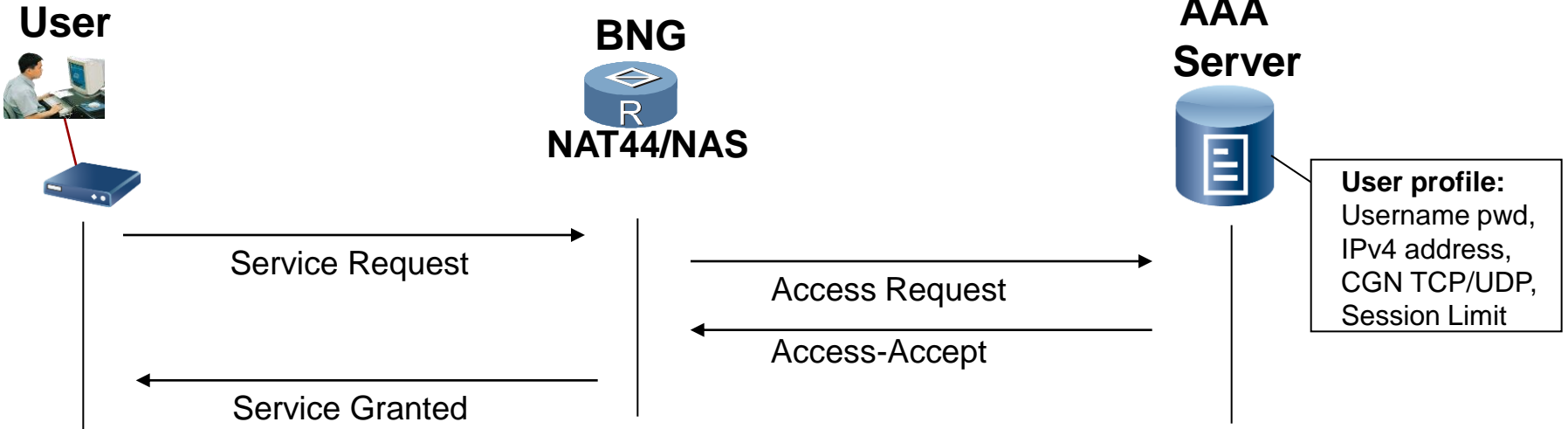
Configure NAT44 TCP/UDP Session Limit via RADIUS



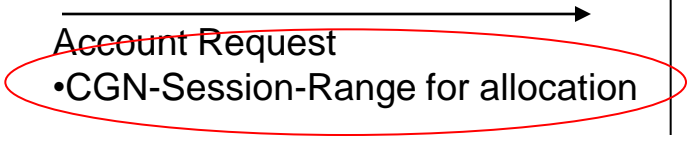
Change NAT44 TCP/UDP Session Limit via RADIUS



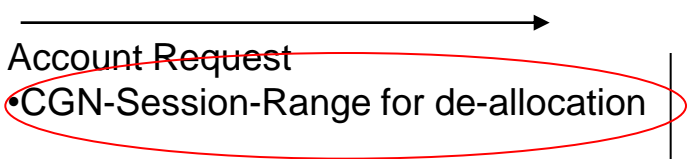
Report NAT44 TCP/UDP Port Allocation Range via RADIUS



CGN allocates a TCP/UDP port range for the user



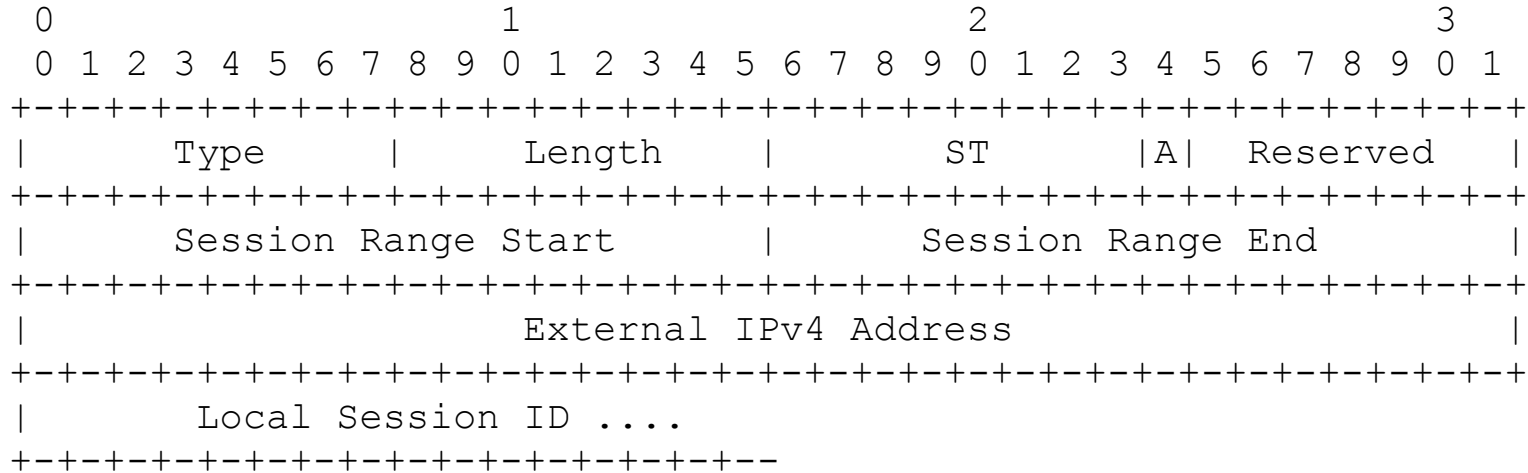
CGN de-allocates a TCP/UDP port range for the user



PPPoE/DHCP

RADIUS

CGN-Session-Range Attribute



Type - TBA2 for CGN-Alloc-Port-Range

Length - (12 plus the length of Local Session ID) octets

ST (Session Type)- 8 bits,

This field contains an enumerated value (refer to Section 4.1) that indicates the semantics of the Session Range.

A-bit Flag -

0: The specified range is for allocation.

1: The specified range is for de-allocation.

CGN-Session-Range Attribute (Cont.)

Reserved - set to zero by sender and ignored by receiver.

External Session Range Start:

This field contains the smallest TCP/UDP Port number or the smallest ICMP identifier number in the session range, which contains consecutive TCP/UDP ports or ICMP identifiers, depending on the value of Session Type.

External Session Range End:

This field contains the largest TCP/UDP Port number or the largest ICMP identifier number in the session range, which contains consecutive TCP/UDP ports or ICMP identifiers, depending on the value of Session Type.

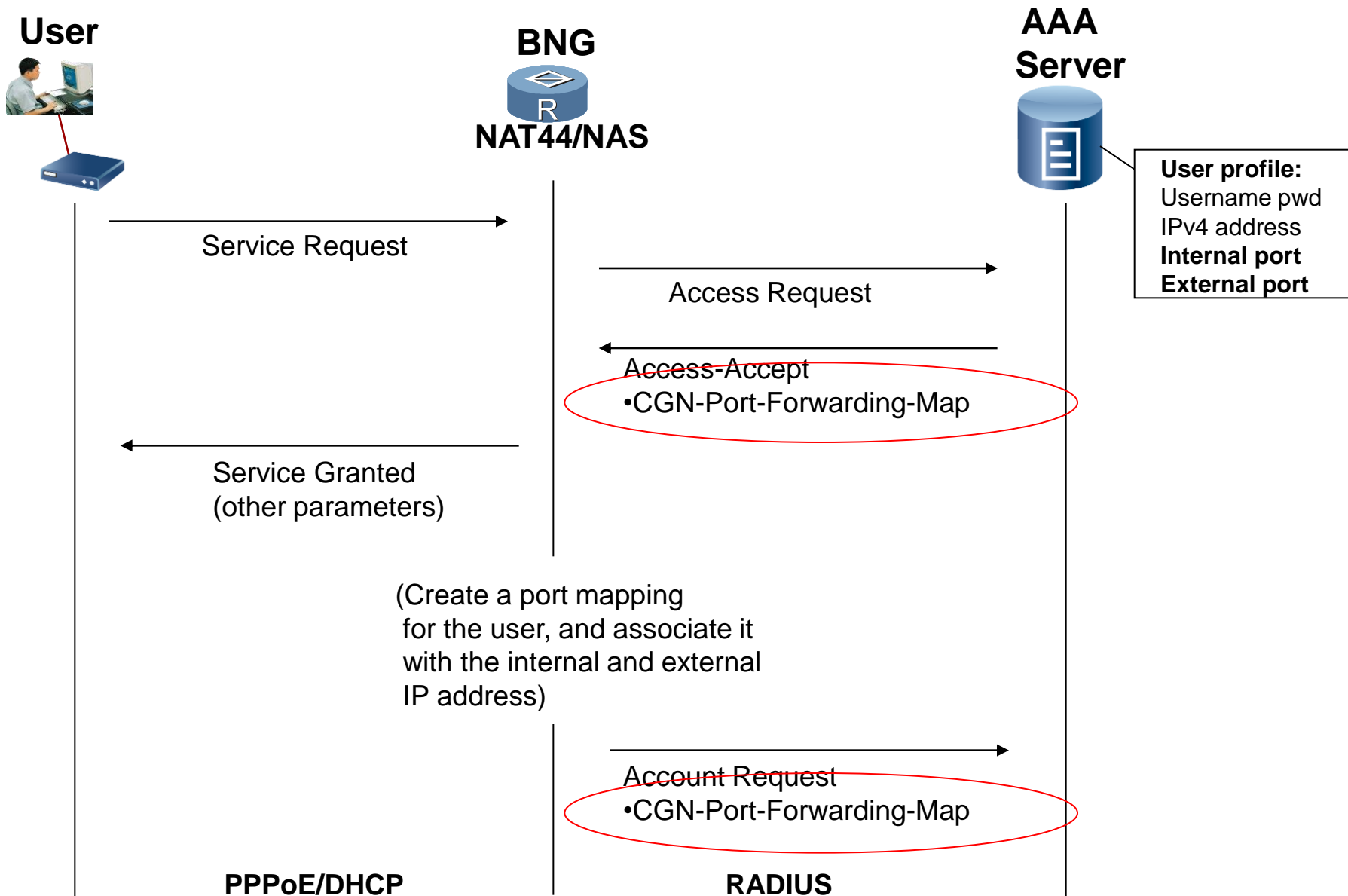
External IPv4 Address:

This field contains the IPv4 address assigned to the associated subscriber to be used in the external realm.

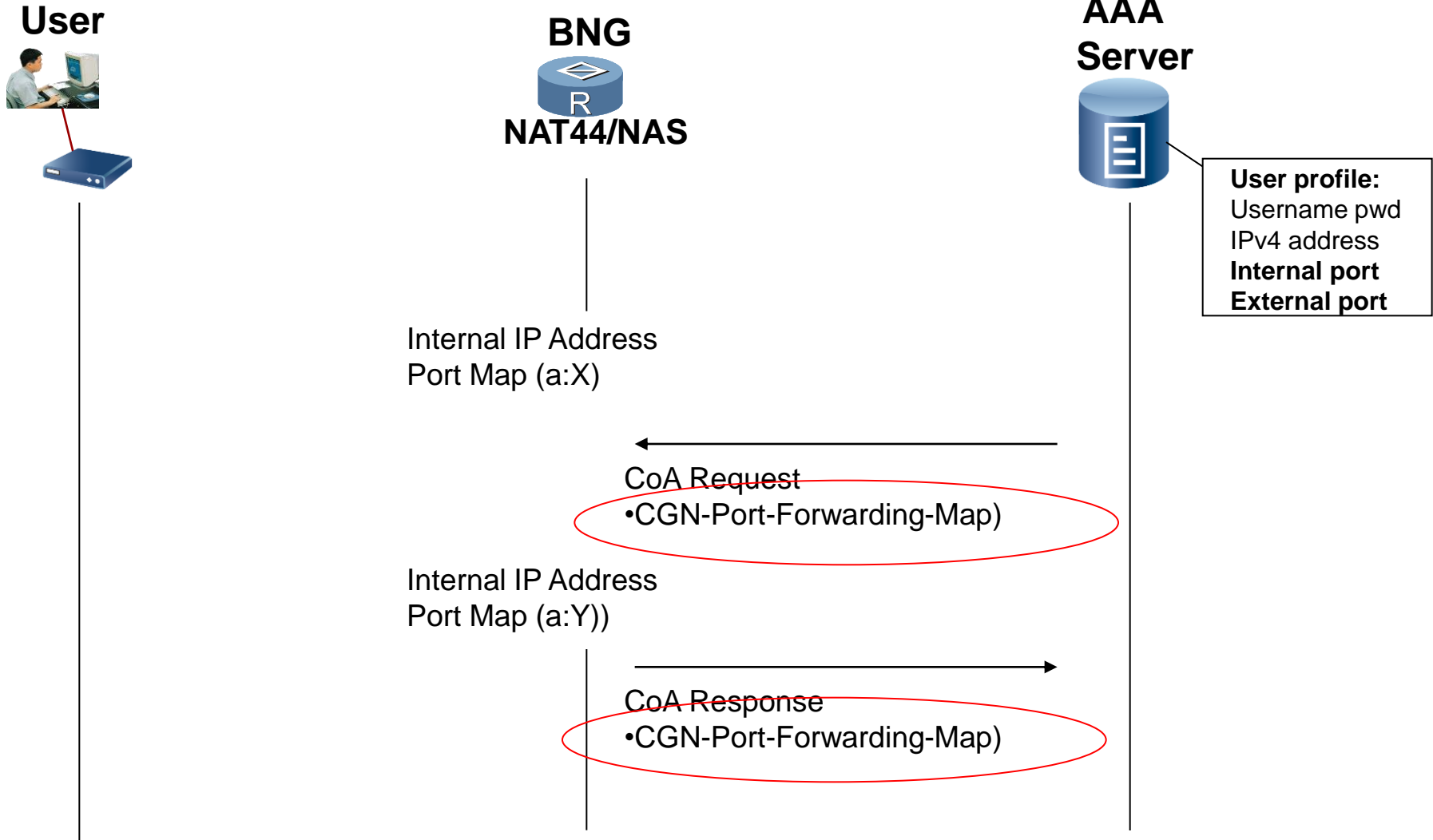
Local Session ID:

This is an optional field and if presents, it contains a local session identifier at the customer premise, such as MAC address, interface ID, VLAN ID, PPP sessions ID, VRF ID, etc. The length of this field equals to the total attribute length minus 12 octets.

NAT44 Port Forwarding Configuration via RADIUS



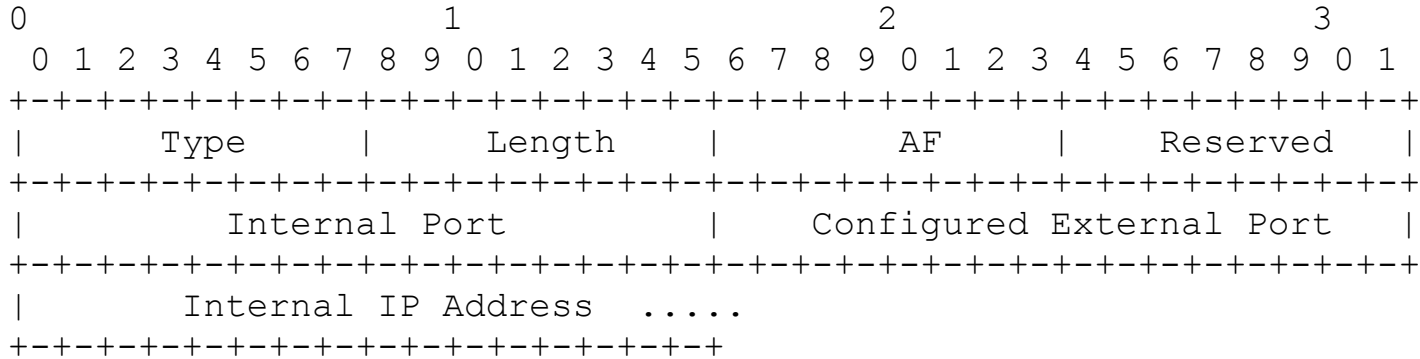
Change NAT44 TCP/UDP Port Mapping via RADIUS



PPPoE/DHCP

RADIUS

CGN-Forwarding-Port-Map Attribute



Type - TBA3 for CGN-Forwarding-Port-Map

Length - Depending on the value of the AF field, the length could be 8, 12 or 24 octets.

AF (Address Family)- 8 bits. This field contains an enumerated value that indicates the address family of the internal IP address for the mapping as follows:

- 0: no internal IP address
- 1: The internal address is an IPv4 address.
- 2: The internal address is an IPv6 address.
- 3-255: Values not defined.

Internal Port - The internal port for the CGN mapping.

External Port - The external port for the CGN mapping.

Internal IP address - if exists, contains the internal IPv4 or IPv6 address for the CGN mapping.

IANA Considerations (code point request)

- New RADIUS attributes:
 - **CGN-Session-Limit (Section 4.1)**
 - **CGN-Session-Range (Section 4.2)**
 - **CGN-Forwarding-Port-Map (Section 4.3)**
- CGN session type (Section 4.1)

Next step ...

- Soliciting comments from BEHAVE WG...
- Requesting to be adopted as a BEHAVE WG document...