

RADIUS Extensions for CGN Configurations

[draft-cheng-behave-cgn-cfg-radius-ext-00](#)

Dean Cheng (dean.cheng@huawei.com)

81st IETF Quebec City

Motivation

➤ **User configuration is stored on a RADIUS server (user profile)**

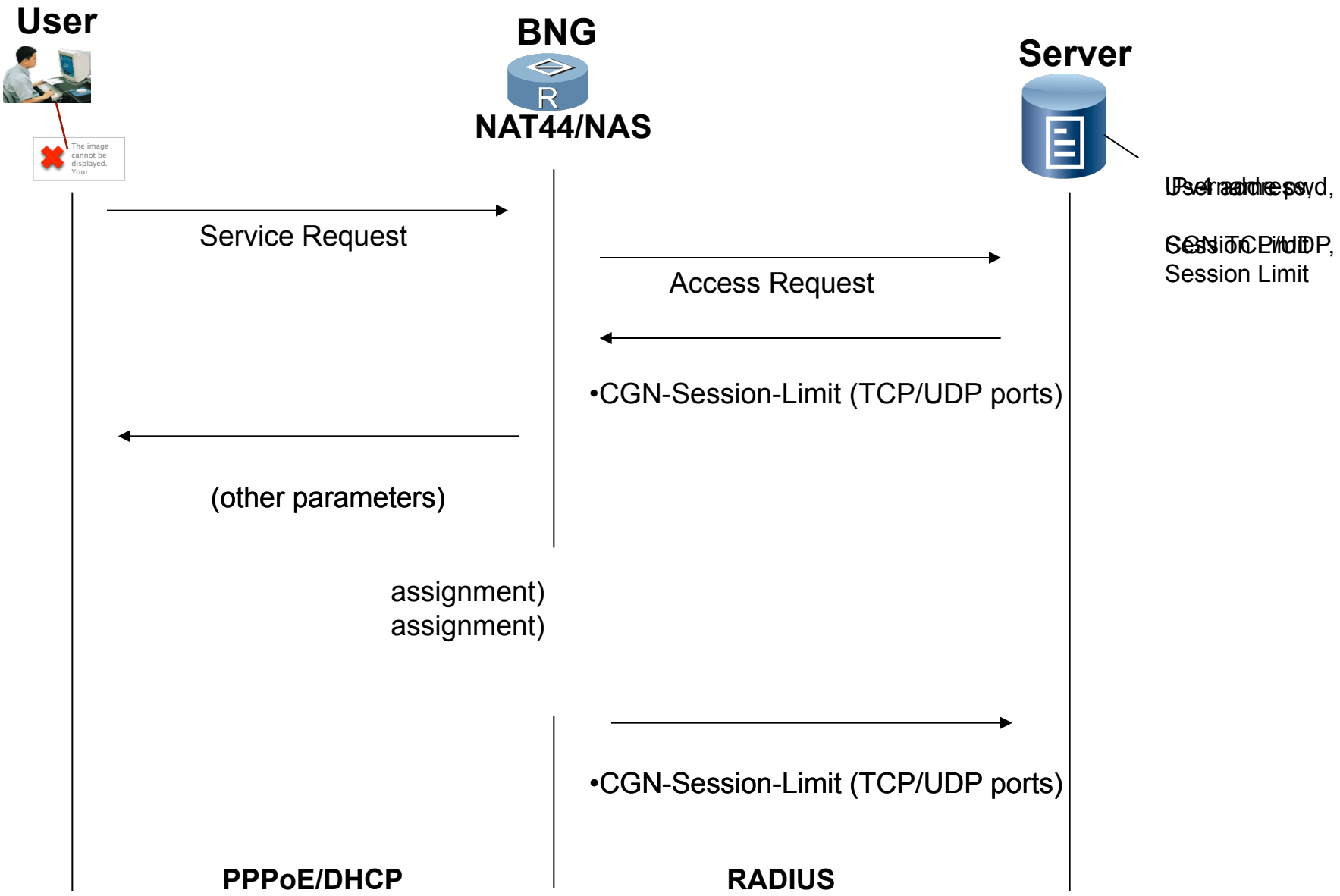
- **Problem to solve**

network to configure & manage subscriber based CGN parameters?

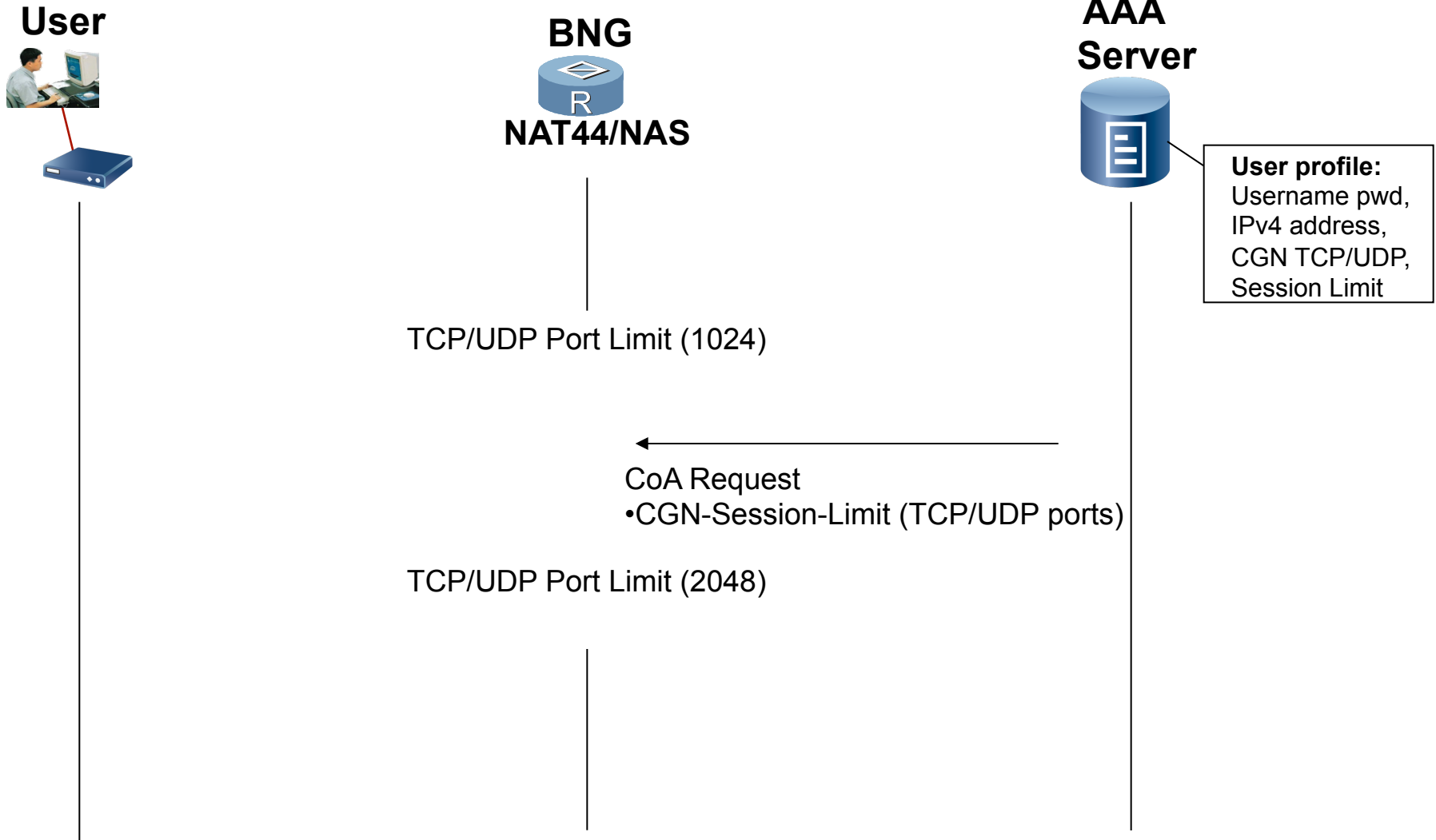
Solution proposed

- **Pre-configure the CGN related parameters on the RADIUS server as part of the user profile. This information is propagated to the BNG/CGN by RADIUS messages exchange between BNG and RADIUS server.**
- **CGN related user parameters are sent from BNG to RADIUS server.**

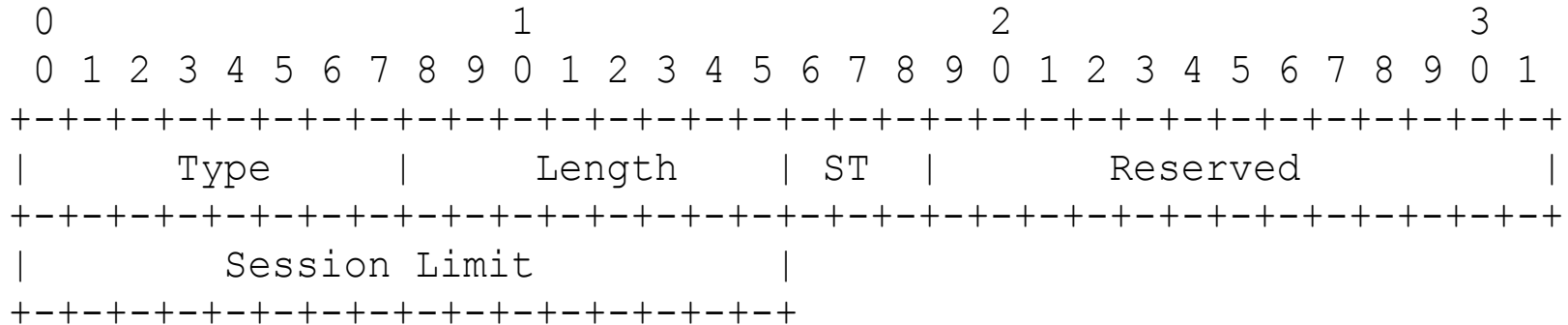
Configure NAT44 TCP/UDP Session Limit via RADIUS



Change NAT44 TCP/UDP Session Limit via RADIUS



CGN-Session-Limit Attribute



Type - TBD

Length - 6 octets

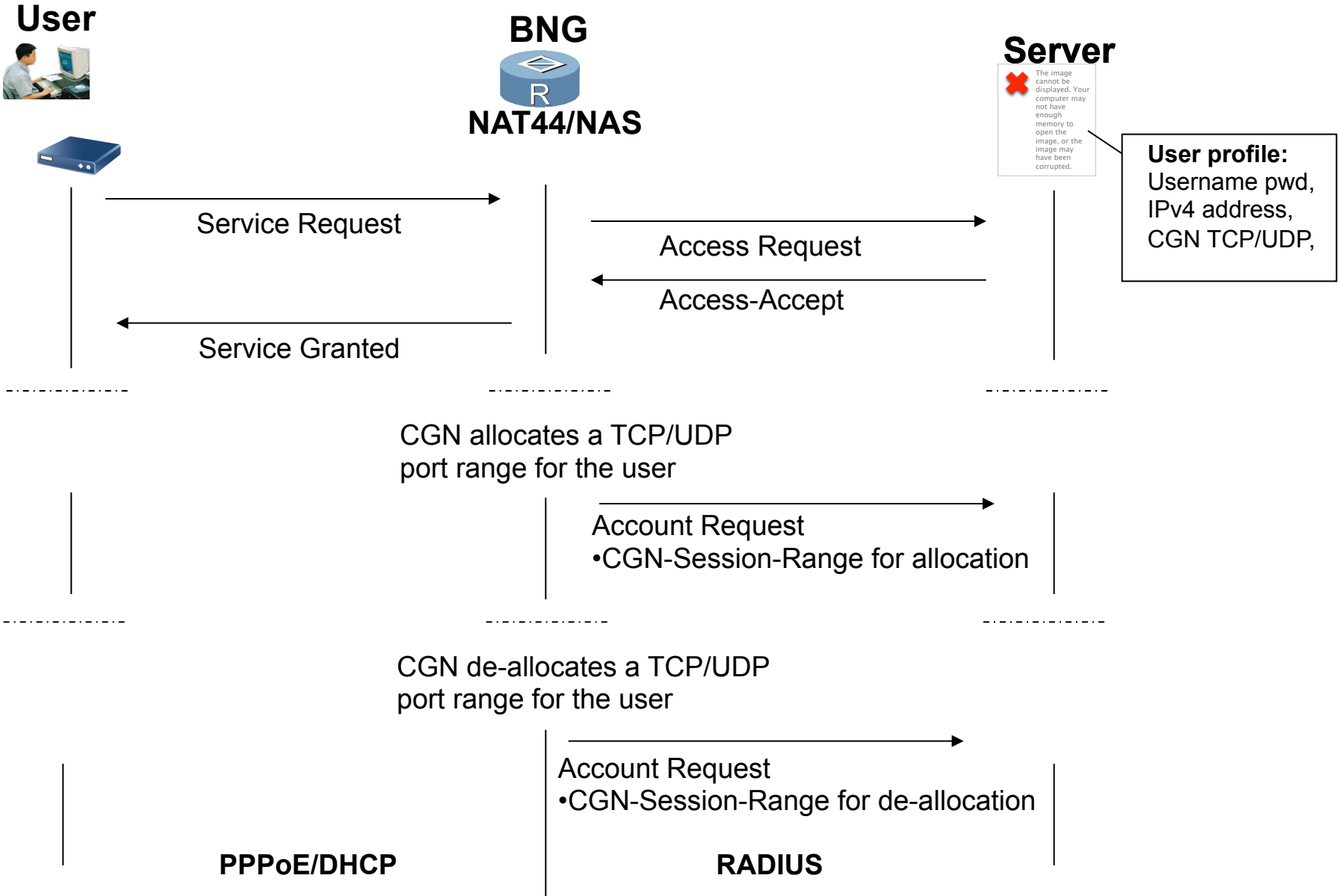
ST (3 bit) -

- 0: The limit as specified is applied to the sum of TCP ports, UDP ports and ICMP identifiers.
- 1: The limit as specified is applied to the sum of TCP ports and UDP ports.
- 2: The limit as specified is applied to TCP ports.
- 3: The limit as specified is applied to UDP ports.
- 4: The limit as specified is applied to ICMP identifiers.
- 5-7: Not used.

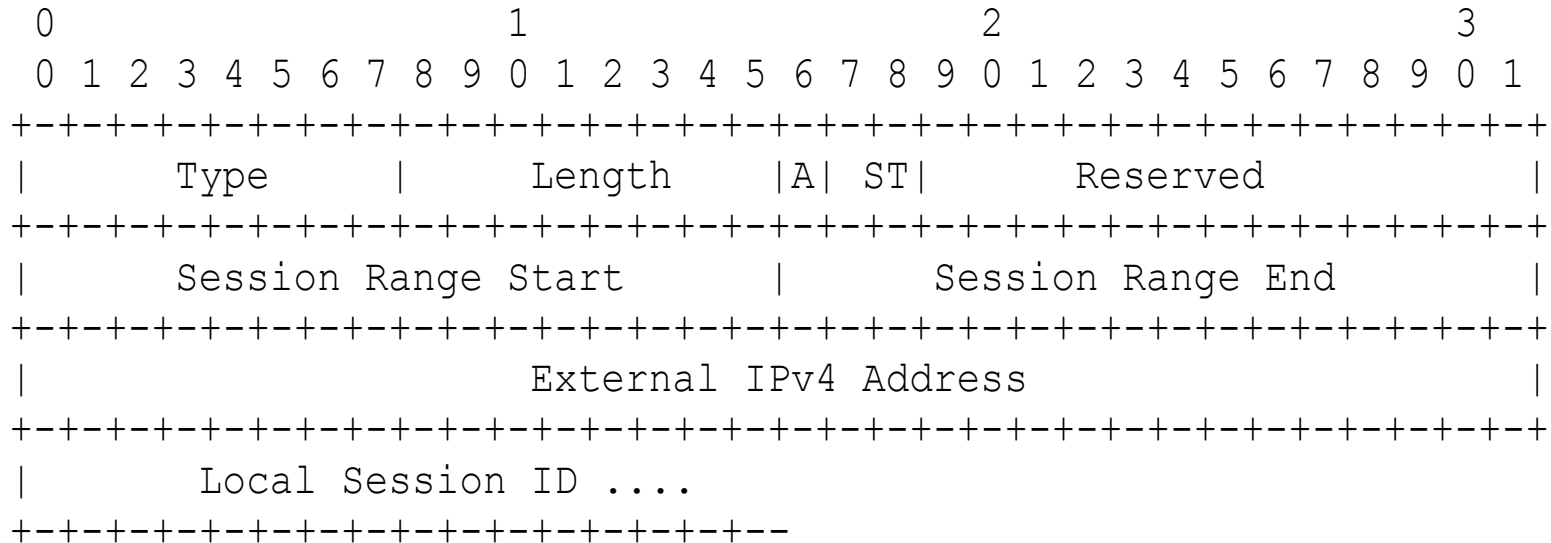
Reserved - set to zero by sender and ignored by receiver.

Session Limit - This field contains the maximum number that is imposed to the total number of TCP ports, or UDP ports, or the sum of the two, or ICMP Identifiers, or the sum of the three, depending on the value in the Session Type field, that the specific user can use during CGN operation.

Report NAT44 TCP/UDP Port Allocation Range via RADIUS



CGN-Session-Range Attribute



Type - TBD

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

A-bit Flag -

- 0: The specified range is for allocation.
- 1: The specified range is for de-allocation.

ST (Session Type) 2 bits:

- 0: The session range is applied to TCP ports.
- 1: The session range is applied to UDP port range.
- 2: The session range is applied to both TCP and UDP port range.
- 3: The session range is applied to ICMP identifier range.

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.

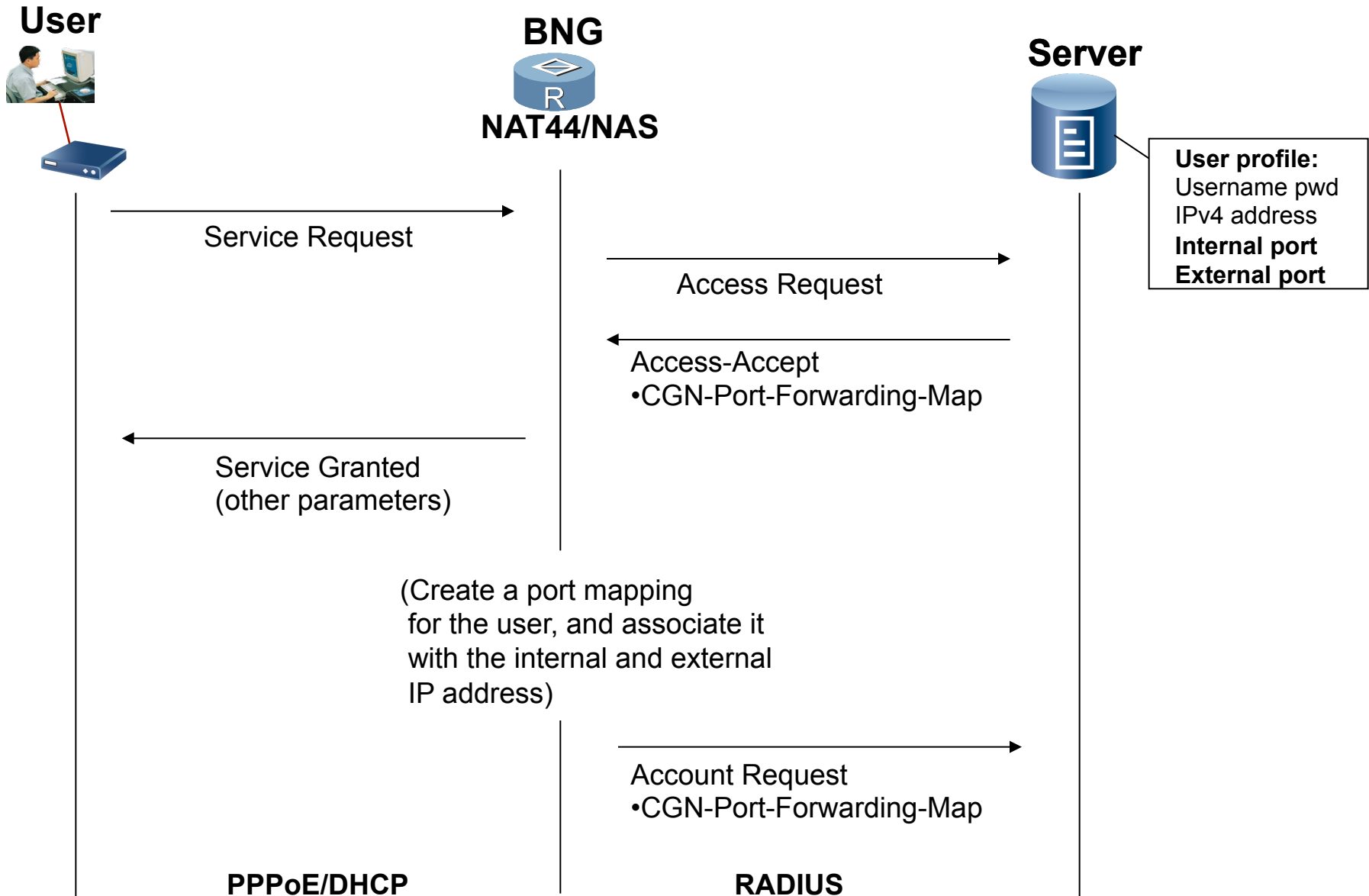
External IPv4 Address:

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

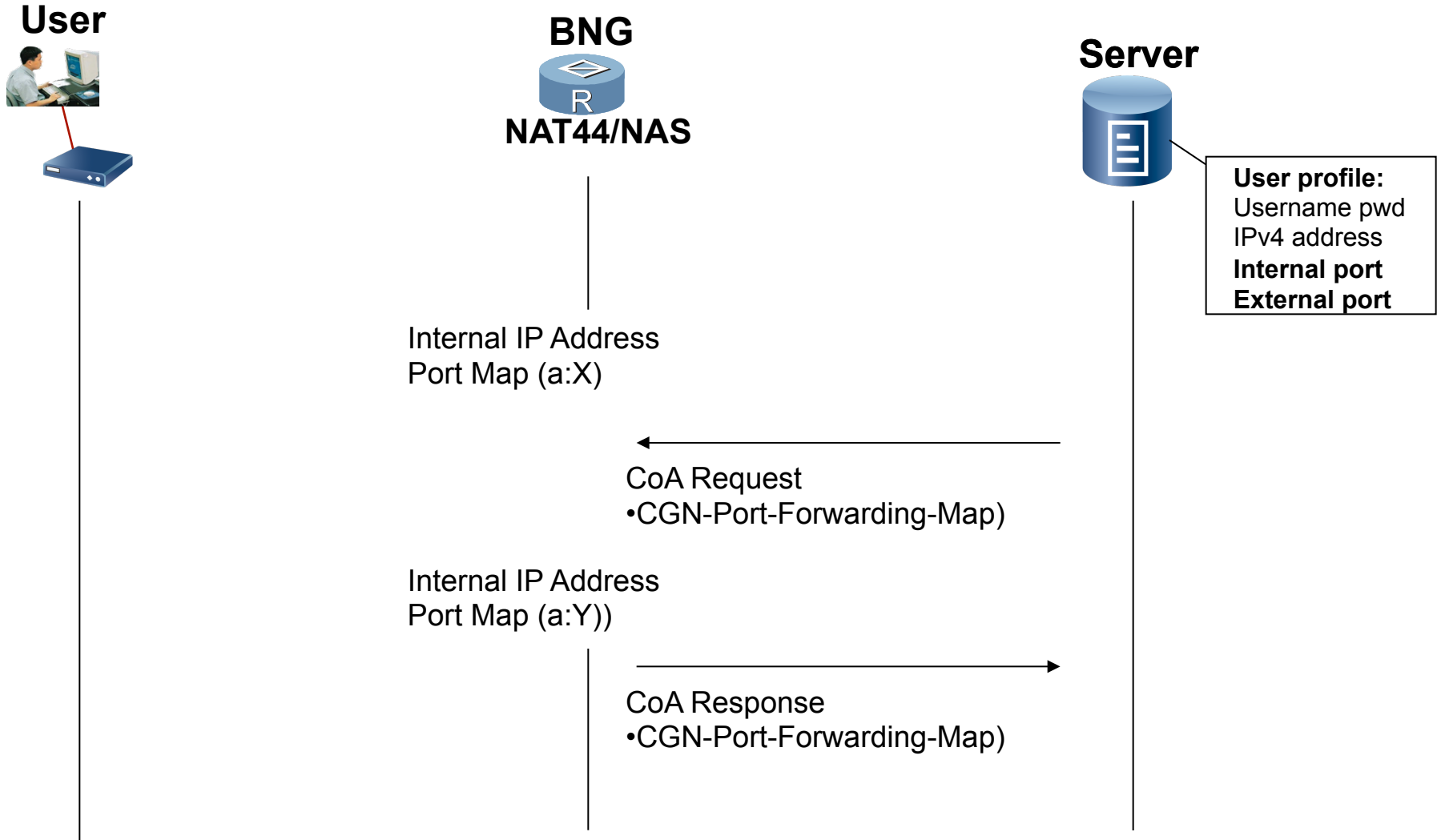
Local Session ID:

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



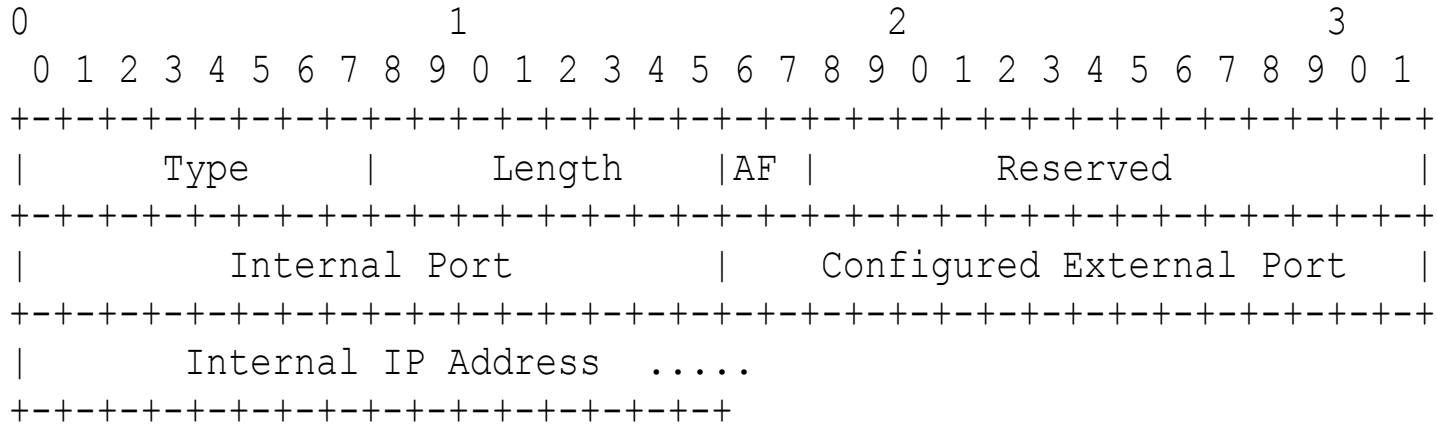
Change NAT44 TCP/UDP Port Mapping via RADIUS



PPPoE/DHCP

RADIUS

CGN-Forwarding-Port-Map Attribute



Type - TBD

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

AF (Address Family)- 2 bits:

- 0: no internal IP address
- 1: The internal address is an IPv4 address.
- 2: The internal address is an IPv6 address.
- 3: Unused.

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

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.

Next Step ...

- **Solicit review and assistance from RADEXT WG on the RADIUS elements in the draft**
- **Propose as a WG document in BEHAVE WG**