

Junos[®] OS 11.4 Mobility Release Notes

Release 11.4W
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Revision 2

These release notes accompany Release 11.4 of the Junos OS for the MobileNext Broadband Gateway. They describe device documentation and known problems with the software. Junos OS for the MobileNext Broadband Gateway runs on all Juniper Networks MX Series routers except the MX80 and lower.

For the latest, most complete information about outstanding and resolved issues with the Junos OS for the MobileNext Broadband Gateway software, see the Juniper Networks online software defect search application at <http://www.juniper.net/prsearch>.

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New Features in Junos OS Release 11.4 for MobileNext Broadband Gateway

The following features have been added to Junos OS Release 11.4 for the MobileNext Broadband Gateway. Following the description is the title of the manual or manuals to consult for further information.

Mobile Subscriber Serving Gateway Application Framework

- **Mobile subscriber serving gateway application framework (Broadband Gateway MX Series platforms)**—Enables you to configure Serving Gateways (S-GW) and associated features for mobility on the MobileNext Broadband Gateway.

You can configure S-GWs as well as PDN Gateways (P-GWs) on the broadband gateway. You can configure the S-GW as a standalone gateway connected to other P-GWs and eNodeBs, or as a collocated S-GW and P-GW combination, or as multiple S-GWs and P-GWs on the same device. The S-GW supports 3GPP interfaces S1-U, S11, S5, S8, S12, and S4. The S-GW also supports X1 and S1 handovers, and end-marker generation. When configured as an S-GW, the broadband gateway supports dedicated bearers.

To configure an S-GW, include the **sgw gateway-name** statement and related parameters at the **[edit unified-edge gateways]** hierarchy level. You must still configure PLMNs, GTP, anchor services and interfaces, policies, and charging parameters for the S-GW. These parameters are independent of those established for other S-GWs or P-GWs configured on the same broadband gateway. To configure idle-mode buffering, include the **idle-mode-buffering** and related statements at the **[edit unified-edge gateways sgw gateway-name]** hierarchy level.

[MobileNext Broadband Gateway Configuration Guide]

GTP

- **GTP support for S-GW (Broadband Gateway MX Series platforms)**—Enables you to configure the GPRS Tunneling Protocol (GTP) and associated features for mobility for an S-GW.

To configure GTP for the S-GW, include the **gtp** and related statements at the **[edit unified-edge gateways sgw gateway-name]** hierarchy level. The new GTP interfaces supported for the S-GW are S1-U, S11, S12, S4, and S5. You can establish separate virtual routing and forwarding tables (VRFs) for user-facing (for example, S1-U) and network-facing (for example, S5) interfaces. You can establish separate GTP parameters for the control and data planes.

[MobileNext Broadband Gateway Configuration Guide]

Charging

- **Charging for subscribers on the S-GW (Broadband Gateway MX Series platforms)**—Enables you to configure charging and associated features for an S-GW.

To configure charging for the S-GW, include the **charging** and related statements at the **[edit unified-edge gateways sgw gateway-name]** hierarchy level. To configure charging services to deliver Charging Data Records (CDRs) to the CGF using the GTP Prime protocol, include the **gtpp** and related statements at the **[edit unified-edge gateways sgw gateway-name charging]** hierarchy level. To configure the local storage of CDRs, include **local-persistent-storage-options** and related statements at the **[edit unified-edge gateways sgw gateway-name charging]** hierarchy level. To configure the transport profiles, trigger profiles, and CDR profiles that are referenced by the charging profile, include the **transport-profiles**, **trigger-profiles**, **cdr-profiles** and related statements at the **[edit unified-edge gateways sgw gateway-name charging]** hierarchy level. To configure charging profiles, include the **charging-profiles** and related statements at the **[edit unified-edge gateways sgw gateway-name charging]** hierarchy level. To configure global charging profiles and selection order, include the **global-profiles** and related statements at the **[edit unified-edge gateways sgw gateway-name charging]** hierarchy level.

[MobileNext Broadband Gateway Configuration Guide]

Quality of Service/Connection Admission Control

- **Quality-of-service (QoS) and connection admission control (CAC) support for the S-GW (Broadband Gateway MX Series platforms)**—Enables you to configure 3GPP QoS and CAC features on the S-GW.

To configure QoS for the S-GW, include the **class-of-service** and related statements at the **[edit]** hierarchy level and apply them to the mobile interface of the S-GW. To configure QoS and CAC for the S-GW, include the **anchor-pfe-default-bearers**, **anchor-pfe-guaranteed bandwidth**, and **anchor-pfe-maximum-bearers** statement and related statements at the **[edit unified-edge gateways sgw gateway-name]** hierarchy level. To configure QoS preemption on the S-GW, include the **preemption** statement at the **[edit unified-edge gateways sgw gateway-name]** hierarchy level.

[MobileNext Broadband Gateway Configuration Guide]

Network Behind Mobile

- **Network-behind-mobile support for P-GW access point names (APNs) (Broadband Gateway MX Series platforms)**—Enables you to configure the support for multiple networks that are behind the mobile device on a P-GW APN.

To configure the network that is behind the mobile feature for the P-GW APN, include the **network-behind-mobile** and related statements for an APN configured at the **[edit unified-edge gateways ggsn-pgw gateway-name apn-services apn apn-name]** hierarchy level. The feature supports local address (prefix) configuration or assignment from a RADIUS server. RADIUS prefixes override locally configured prefixes.

[MobileNext Broadband Gateway Configuration Guide]

HTTP Header Enrichment

- **HTTP header enrichment support for P-GW APNs (Broadband Gateway MX Series platforms)**—Enables you to configure the support for adding fields (tags) to HTTP headers on a P-GW APN. This feature is also known as HTTP Content Management (HCM).

To configure the HTTP header enrichment feature, also known as HTTP content management (HCM), for the P-GW APN, include the **hcm** and related statements at the **[edit services]** hierarchy level. To configure the tag rules to detect the headers to enrich and the tags to add to the header, include the **tag-rule tag-rule-name** statement and related terms, the **tag-attributes** statement and related parameters, and the **tag tag-name** statement and related parameters at the **[edit services hcm]** hierarchy level. Apply the tags and tag rules to the mobile interface (**mif-**) for the APN as part of a service set. You must include the **subscriber-awareness** statement as a service set option at the **[edit services service-set service-set-name service-set-options]** hierarchy level. Only one subscriber-aware service set per mobile interface (**mif-**) is supported. You can configure more than one subscriber-aware service set per mobile interface, but this configuration is not supported. Only one service set for a mobile interface can be subscriber aware.

If you configure Services PICs with N:1 redundancy, and if more than one services PIC fails, then the second PIC failure deletes the subscribers anchored on the second (failed) services PIC.

HTTP header enrichment with the network-behind-mobile feature is not supported.

HTTP header enrichment for IPv6 addresses is not supported.

[MobileNext Broadband Gateway Configuration Guide]

Changes in Default Behavior in Junos OS Release 11.4 for MobileNext Broadband Gateway

The changes to default behavior for the MobileNext Broadband Gateway are as follows:

- If you switch a Packet Forwarding Engine or anchor Packet Forwarding Engine from one gateway type to another (for example, from a P-GW to an S-GW), then the chassis automatically reboots the complete Flexible PIC Concentrator (FPC).

Issues in Junos OS Release 11.4 Mobility for MobileNext Broadband Gateway

The current software release is Release 11.4W for Mobility.

- [Current Software Release on page 5](#)

Current Software Release

Outstanding Issues in Junos OS Release 11.4 for MobileNext Broadband Gateway

Chassis

Wildcard configuration for mobile interfaces at the **[edit class-of-service]** hierarchy level does not work. As a workaround, configure specific mobile interfaces (for example, **mif.0**, **mif.1**, and so on). [PR/577828]

Chassis

If a GTP response message is received and results in a GTP parsing error, then the received erroneous response is ignored and the S-GW initiates a retransmit of the original GTP request for the N3 and T3 cycle. The GTP request transaction is not aborted when the first erroneous response is received. [PR/700925]

Chassis

When multiple gateways are configured on the same chassis, and a particular gateway instance receives error indication packets from a remote GTP-U peer, the received error-indication packets might be sent to the control plane module of another gateway. Consequently, the expected processing (that is, subscriber deletion on the gateway and generating appropriate control plane messages) for received error-indication packets might not occur. [PR/709256]

Chassis

If you configure an anchor Packet Forwarding Engine or session PIC at the **[edit chassis]** hierarchy level, then you should also configure the Packet Forwarding Engine or PIC at the **[edit unified-edge gateways gateway-type gateway-name system]** hierarchy level of the GGSN/P-GW or S-GW gateway. Otherwise, an anchor packet forwarding engine or session PIC added later to the **system** hierarchy level of the gateway might not be in-service and useable. [PR/711465]

Chassis

The Commit check fails for IP pool changes after removing the Services PIC or AMS from the gateway system hierarchy. As a workaround, perform the following steps to put individual Services PICs or AMS in service, or take an individual Services PICs or AMS out of service. [PR/704710/716813]

To put an individual service PIC in service:

1. Include the **package jservices-mobile** statement at the **[edit chassis fpc fpc-slot pic pic-slot adaptive-services service-package extension provider]** hierarchy level.
2. Add the service PIC interface (**interface interface-name**) at the **[edit unified-edge gateways gateway-name system anchor-spics]** hierarchy level.
3. Commit the configuration.



NOTE: Steps 1 and 2 need to be performed in a single commit operation.

To take an individual AMS out of service:

1. Remove the AMS interface from the **[edit unified-edge gateways gateway-name system anchor-spics]** hierarchy.
2. Remove the service package (**package jservices-mobile**) at the **[edit chassis fpc fpc-slot pic pic-slot adaptive-services service-package extension provider]** hierarchy level.
3. Commit the configuration.



NOTE: Steps 1 and 2 need to be performed in a single commit operation.

To put an individual AMS in service:

1. Include the **package jservices-mobile** statement at the **[edit chassis fpc fpc-slot pic pic-slot adaptive-services service-package extension provider]** hierarchy level.
2. Add the service PIC interface (**interface interface-name**) at the **[edit unified-edge gateways gateway-name system anchor-spics]** hierarchy level.
3. Commit the configuration.



NOTE: Steps 1 and 2 need to be performed in a single commit operation.

To take an individual services PIC out of service:

1. Remove the services PIC interface from the **[edit unified-edge gateways gateway-name system anchor-spics]** hierarchy level.
2. Remove the service package (**package jservices-mobile**) from **[edit chassis fpc fpc-slot pic pic-slot adaptive-services service-package extension provider]** hierarchy level.
3. Commit the configuration.



NOTE: Steps 1 and 2 need to be performed in a single commit operation.

Chassis

When you configure N:1 AMS redundancy, multiple interface reboots invalidate the internal state of the interfaces even after they come back online. As a workaround, interfaces in the AMS configuration must be taken offline and then brought online again. [PR/723010]

Chassis

To move a Packet Forwarding Engine or anchor Packet Forwarding Engine from one P-GW to another (for example, from PGW1 to PGW2), perform the following steps: [PR/721184]

1. Put gateway **PGW1** into maintenance mode.
2. Remove the required Packet Forwarding Engine or anchor Packet Forwarding Engine from **PGW1**.
3. Add the required Packet Forwarding Engine or anchor Packet Forwarding Engine to **PGW2**.
4. Reboot the FPC.



NOTE: If you switch a Packet Forwarding Engine or anchor Packet Forwarding Engine from one gateway type to another (for example, from a P-GW to an S-GW), then the chassis automatically reboots the complete FPC.

Chassis

To move a Packet Forwarding Engine or anchor Packet Forwarding Engine from one S-GW to another (for example, from SGW1 to SGW2), perform the following steps: [PR/716813]

1. Put gateway **SGW1** into maintenance mode.
2. Remove the required Packet Forwarding Engine or anchor Packet Forwarding Engine from **SGW1**.
3. Add the required Packet Forwarding Engine or anchor Packet Forwarding Engine to **SGW2**.
4. Reboot the FPC.



NOTE: If you switch a Packet Forwarding Engine or anchor Packet Forwarding Engine from one gateway type to another (for example, from a P-GW to an S-GW), then the chassis automatically reboots the complete FPC.

Chassis

By design, if the MME sends an MME control plane address in the FQ-TEID that is different than the source IP address of any signaling message, then all the signaling responses are sent to the source IP address only. If this is an issue, use the same address for both the MME control plane address in the FQ-TEID and the source IP address for signaling packets originating from the MME. [PR/719078]

Chassis

Moving **mams-** members across **ams-** interfaces within a single configuration **commit** is not supported. As a workaround, perform the following steps to move (for example) **mams-4/0/0** from **ams-1** to **ams-2**. You must remove a **mams-** interface member, commit, and then add it to another **ams-** interface. [PR/723582]

To move **mams-4/0/0** from **ams-1** to **ams-2**:

1. Delete the **interface ams-1 load-balancing-options member-interface mams-4/0/0** statement.
2. Commit the configuration.
3. Use **set interface ams-2 load-balancing-options member-interface mams-4/0/0**.
4. Commit the configuration.

Chassis

If packets are dropped when the source address of the user equipment does not match the assigned address, then the address violations count in the **show ggsn-pgw statistics** command output is incorrectly shown as 0. [PR/724194]

Charging

The second container closed in a Charging Data Record (CDR) generated after Session PIC switchover doesn't contain User Location Information (ULI) if the previous container is closed with a ULI change prior to the switchover. [PR/707430]

Charging

A CDR generated after Session PIC switchover doesn't contain the Serving Node Changes information (that is, the Serving Node Address/Type). [PR/718393]

Charging

A CDR container is closed when the S-GW receives an Update Bearer Request with the same QoS Class Identifier (QCI) or aggregate maximum bit rate (AMBR) or Allocation and Retention Priority (ARP) values from a P-GW, even though there is no quality-of-service (QoS) change. [PR/723307]

Charging

A CDR is not generated when the QoS Class Identifier (QCI) or aggregate maximum bit rate (AMBR) or Allocation and Retention Priority (ARP) changes for a dedicated bearer. [PR/723340]

Charging

A CDR is not generated for the second Packet Data Network (PDN) session when the Tracking Area Update (TAU) comes with an Mobility Management Entity (MME) and User Location Information (ULI) change, and this change reaches the maximum set for the serving node changes limit. [PR/724214]

IP Address Pool

Duplicate IP address allocation is not checked for conflicts between local-pool and network-behind-mobile prefixes. You must configure a non-overlapping local pool and network-behind-mobile prefix pool. [PR/720085]

IP Address Pool

If you configure one or more address pools for an APN in a P-GW routing instance, the available addresses are incorrectly shared with another P-GW routing instance on the same chassis, even if the APN is not configured under the second P-GW routing instance. Use the **show unified-edge ggsn-pgw address-assignment pool-name pool-name routing-instance Gi-routing-instance detail** command to determine how many addresses are available per P-GW routing instance. As a workaround, if more subscribers need to connect to this APN on a particular P-GW, then configure additional address pools. [PR/720263]

IPsec and NAT Services

Configuration changes and deletions to NAT Services do not work when the system is running. [PR/610284]

IPsec and Services

We recommend that you configure a **policy-db-size** value of at least 1024 at the **[edit chassis fpc fpc-number pic pic-number adaptive-services service-package extension-provider]** hierarchy level. [PR/663332]

IPsec and Services

The IPsec tunnel MTU value is not honored and should not be configured using the CLI. [PR/700471]

IPsec and Services

Only a single IPsec tunnel under an Internet Key Exchange (IKE) Security Association (SA) is supported. If you configure two IPsec tunnels for a single IKE SA, then data traffic might be dropped on the second IPsec tunnel. [PR/710815]

Port Mirroring

When an active port-mirroring tap is deleted by the administrator and Graceful Routing Engine Switchover (GRES) occurs subsequently, then the **mobiled** process running on the new Routing Engine might crash. [PR/718177]

Port Mirroring

After Graceful Routing Engine Switchover (GRES), if the administrator deletes all active port-mirroring taps, the tap delete requests are not processed. As a workaround, the administrator should delete a single active port-mirroring tap, wait for a response from the gateway, and then delete all remaining active port-mirroring taps. [PR/718931]

QoS/CAC

Wildcard configuration for mobile interfaces (**mif-**) is not supported at the **[edit class-of-service]** hierarchy level. Therefore, DiffServ Code Point (DSCP) ingress rewrite and egress classification do not apply to mobile interfaces when wildcards are used. As a workaround, use the specific mobile interface values instead of a wildcard configuration. [PR/577828]

QoS/CAC

If the value for the **anchor-pfe-default-bearers-percentage** statement at the **[edit unified-edge gateways sgw sgw-name]** hierarchy level of an S-GW is changed while the broadband gateway is running and the change committed, subsequent GTP create session requests from MMEs to the specific S-GW do not process successfully and result in reject responses sent to the MME. As a workaround, reboot the broadband gateway when you change the value of the **anchor-pfe-default-bearers-percentage** statement at the **[edit unified-edge gateways sgw sgw-name]** hierarchy level of an S-GW. [PR/702190]

QoS/CAC

If you change the **maximum-bearers** statement value for an APN or P-GW from a higher value to a lower while the broadband gateway is running, then call setups cause call rejects. As a workaround, reboot the system when configuring a lower value for the **maximum-bearers** statement. [PR/723161]

QoS/CAC

If you change the **anchor-pfe-ipv4-nbm-prefixes** or **anchor-pfe-ipv6-nbm-prefixes** statement value for an APN from a higher value to a lower while the broadband gateway is running, then call setups cause call rejects. As a workaround, reboot the system when configuring a lower value for the **anchor-pfe-ipv4-nbm-prefixes** or **anchor-pfe-ipv6-nbm-prefixes** statements. [PR/723856]

Errata in Junos OS Release 11.4 for MobileNext Broadband Gateway Documentation

The documentation errors for the MobileNext Broadband Gateway are as follows:

- Although they are documented, the **dead-server-retry-interval**, **dhcp-server-selection-algorithm**, **dead-server-successive-retry-attempt**, and **servers** statements are not supported for DHCPv6. [PR/720752]
- Although documented, network-based licensing is not supported in this release. To enable mobility-specific configurations and features on an MX Series router configured as a broadband gateway, you install a chassis activation license.