



# Flow Aware Packet Acceleration

This chapter describes the Flow Aware Packet Acceleration (FAPA) feature and provides detailed information on the following topics:

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## Feature Description

The Flow Aware Packet Acceleration (FAPA) feature improves the throughput in terms of PPS, by caching rule matching results of a flow for selected flows so as not to incur the lookup penalty for a large number of packets in that flow. This new accelerated path is capable of performing a full range of basic functions including handling charging, modification of packet headers, and incrementing various counters. The accelerated path dynamically evaluates the current flow state and reverts back to the slow path when the flow cannot be handled on the fast path.



### Important

A Flow Aware Packet Acceleration license is required on ASR 5500 and VPC platforms.

The acceleration is applied to specific flows without affecting any external interfaces related to Billing, CLI, interfaces, and so on. This feature is an extension of the TRM/FastPath that was introduced in R15.0 for ASR 5500 platform. This feature will be supported when TRM FastPath is enabled on the Rulebase. TRM FastPath works on approximately 50-65% of all packets, including VoLTE, Encrypted and HTTP, in the system for any given call model, with the control path left intact. New changes are in the data path after TRM has cached the rule matching results. FAPA ECS packet path can efficiently process 50+% of data packets in the system, yielding a significant performance gain on ECS data path.

TRM/FP support has been extended beyond rule-matching. Qualifying packets avoid much of the ECS stack for N bytes of volume for a given flow. Only the packets requiring minimal work are qualified for the accelerated path. The work needed for each packet include a subset of flow actions, QoS enforcement, L3/L4 header inspection, TCP sequence number validation, and applicable charging methods.

The FAPA function identifies packets that need only a small amount of processing, and performs only those necessary tasks on these packets. Only those packets that do not require DPI are allowed to enter the Accelerated path.

VoLTE, encrypted, HTTP, HTTPS, RTP and plain TCP/UDP traffic where L7 analysis is not enabled, and so on are all the flows that will get accelerated.

The FAPA functionality is extended for the active charging service with CF/ICAP/BL configured. Simple TCP traffic will be eligible on accelerated path with Static Content Filtering configured in active charging service but not in rulebase. Packets for tethered flows will be counted on accelerated packets. Packets for blacklisted flows will be counted on fast-path packets.

This feature provides the operator with additional capacity on deployed systems without any hardware addition. The operators could get 30-40 of the system capacity based on their traffic pattern and deployed call models.

The following charging formats are supported on the FAPA feature, which gives improved performance for HTTP traffic, if the traffic flow is FAPA eligible:

- EDR
- EGCDR
- Gy
- Rf
- VoGx

The FAPA feature is controlled by the FAPA license, and a CLI at active-charging service. The FAPA path will be functional, only if TRM/FP is enabled and the CLI is configured.

## Configuring Flow Aware Packet Acceleration

Use the following configuration to enable Flow Aware Packet Acceleration (FAPA):

```
configure
  active-charging service <service_name>
    [ no ] accelerate-flow
  end
```

## Verifying the FAPA Configuration

Enter the following command in the Exec mode to check the "Accelerate Flow" AVP value:

```
show active-charging service name <service_name>
```

## Monitoring and Troubleshooting the FAPA feature

This section provides information regarding show commands and/or their outputs in support of this feature.

### Bulk Statistics

The following bulk statistics are supported for the FAPA feature:

- ip-accel-pkts
- udp-accel-pkts
- tcp-accel-pkts

- http-accel-pkts
- https-accel-pkts
- rtp-accel-pkts

