

Interactions Between SRC-ACP and Other Components

This topic describes how SRC-ACP interacts with other components to track data.

1. (Edge and dual mode only) When a subscriber connects to the router, SRC-ACP loads the subscriber profile from the directory. If the subscriber profile contains provisioned and actual traffic rates for the subscriber's interface and the set of congestion points between the subscriber and the router, SRC-ACP caches the information while the subscriber is connected to the router. SRC-ACP automatically updates the subscriber's actual upstream and downstream rates if the subscriber profile changes in the directory.
2. (Backbone mode only) When a subscriber activates a service, SRC-ACP loads the network interfaces defined in the service and caches the information.
3. (Optional) SRC-ACP obtains through its remote CORBA interface data from external applications about subscribers and congestion points. If a congestion point is unavailable, SRC-ACP denies service activation requests on the associated network interface until the interface is available again.
4. If SRC-ACP does not receive data from an external application, SRC-ACP loads data about congestion points from the directory. For each congestion point the following data is retrieved:
 - Provisioned bandwidth
 - Background bandwidths (if used for edge congestion points)

SRC-ACP caches this information and automatically updates the cache when the information changes in the directory.

5. (Edge and dual modes) If SRC-ACP does not receive data from an external application, SRC-ACP loads a subscriber's provisioned or actual bandwidth from the subscriber profile. If the actual bandwidth is available, SRC-ACP ignores the provisioned bandwidth.

SRC-ACP caches this information and automatically updates the cache when the information changes in the directory.

6. (Backbone and dual modes only) Using a hosted plug-in, the SAE monitors the states of router interfaces associated with backbone congestion points. The SAE sends relevant data to SRC-ACP through the SRC-ACP's remote interface.
7. When the subscriber requests activation of a service subscription (either through the SAE core API or automatically for activate-on-login services), the SAE notifies SRC-ACP to authorize and track the service usage.
 - a. The SAE sends the requested bandwidth to SRC-ACP.
 - b. SRC-ACP authorizes or denies service activation.

If SRC-ACP authorizes the service activation, the SAE activates the service and sends a tracking event to SRC-ACP. SRC-ACP updates the current bandwidth for all congestion points with the requested bandwidth.

If SRC-ACP authorizes the service activation with state synchronization enabled, SRC-ACP reserves the requested bandwidth on all congestion points

until the reservation expires. You can specify the reservation timeout value when configuring SRC-ACP operation.

- For each congestion point, SRC-ACP verifies whether:

$$(\text{current bw} + \text{reserved bw} + \text{requested bw}) > [\text{provisioned bw} - (\text{background bw} \times \text{tuning factor})]$$

If the desired bandwidth exceeds the allocated bandwidth, SRC-ACP denies service activation.

- When SRC-ACP receives a service start tracking event, the requested bandwidth is committed. That is, for each congestion point, the requested bandwidth reservation is removed and the requested bandwidth is added to the current bandwidth.
- When the bandwidth reservation expires, the reserved bandwidth is released.

If SRC-ACP does not authorize the service activation, the SAE delivers a message detailing the reason to the originator of the activation request.

SRC-ACP distinguishes between bandwidth exceeded on the subscriber interface (first congestion point) and bandwidth exceeded on a network interface by sending two different messages back to the SAE. In the first case, the subscriber may resolve the bandwidth problem by deactivating another service.

8. When a service is deactivated (either through the SAE core API or because a session times out), SRC-ACP updates the current bandwidth for all congestion points by removing the original requested bandwidth.
9. SRC-ACP stores all information about subscribers, services, and congestion points in a set of files.

SRC-ACP continually adds data to these files, but does not delete old data. Consequently, the sizes of the files continue to increase. SRC-ACP does, however, reorganize the files when the sum of their sizes increments by a specified value. Reorganizing the files reduces their sizes. You can also reorganize the files by using the SRC CLI (see Reorganizing the File That Contains ACP Data .)