



Avaya Aura[®] PS Connector SDK Reference Guide

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14.0 SEVERABILITY.

If any provision of this Agreement is determined to be unenforceable or invalid, this Agreement will not be rendered unenforceable or invalid as a whole, and the provision will be changed and interpreted so as to best accomplish the objectives of the original provision within the limits of applicable law.

15.0 GOVERNING LAW AND DISPUTE RESOLUTION.

15.1 Governing Law. This Agreement and any dispute, claim or controversy arising out of or relating to this Agreement (“Dispute”), including without limitation the formation, interpretation, breach or termination of this Agreement, or any issue regarding whether a Dispute is subject to arbitration under this Agreement, will be governed by New York State laws, excluding conflict of law principles, and the United Nations Convention on Contracts for the International Sale of Goods.

15.2 Dispute Resolution. Any Dispute will be resolved in accordance with the provisions of this Section 15. The disputing party shall give the other party written notice of the Dispute in accordance with the notice provision of this Agreement. The parties will attempt in good faith to resolve each controversy or claim within 30 days, or such other longer period as the parties may mutually agree, following the delivery of such notice, by negotiations between designated representatives of the parties who have dispute resolution authority.

15.3 Arbitration of Non-US Disputes. If a Dispute that arose anywhere other than in the United States or is based upon an alleged breach committed anywhere other than in the United States cannot be settled under the procedures and within the timeframe set forth in Section 15.2, it will be conclusively determined upon request of either party by a final and binding arbitration proceeding to be held in accordance with the Rules of Arbitration of the International Chamber of Commerce by a single arbitrator appointed by the parties or (failing agreement) by an arbitrator appointed by the President of the International Chamber of Commerce (from time to time), except that if the aggregate claims, cross claims and counterclaims by any one party against the other party exceed One Million US Dollars at the time all claims, including cross claims and counterclaims are filed, the proceeding will be held in accordance with the Rules of Arbitration of the International Chamber of Commerce by a panel of three arbitrator(s) appointed in accordance with the Rules of Arbitration of the International Chamber of Commerce. The arbitration will be conducted in the English language, at a location agreed by the parties or (failing agreement) ordered by the arbitrator(s). The arbitrator(s) will have authority only to award compensatory damages within the scope of the limitations of Section 8 and will not award punitive or exemplary damages. The arbitrator(s) will not have the authority to limit, expand or otherwise modify the terms of this Agreement. The ruling by the arbitrator(s) will be final and binding on the parties and may be entered in any court having jurisdiction over the parties or any of their assets. The parties will evenly split the cost of the arbitrator(s)’ fees, but Avaya and Customer will each bear its own attorneys’ fees and other costs associated with the arbitration. The parties, their representatives, other participants and the arbitrator(s) will hold the existence, content and results of the arbitration in strict confidence to the fullest extent permitted by law. Any disclosure of the existence, content and results of the arbitration will be as limited and narrowed as required to comply with the applicable law. By way of illustration, if the applicable law mandates the disclosure of the monetary amount of an arbitration award only, the underlying opinion or rationale for that award may not be disclosed.

15.4 Choice of Forum for US Disputes. If a Dispute by one party against the other that arose in the United States or is based upon an alleged breach committed in the United States cannot be settled under the procedures and within the timeframe set forth in Section 15.2, then either party may bring an action or proceeding solely in either the Supreme Court of the State of New York, New York County, or the United States District Court for the Southern District of New York. Except as otherwise stated in Section 15.3 each party consents to the exclusive jurisdiction of those courts, including their appellate courts, for the purpose of all actions and proceedings arising out of or relating to this Agreement.

15.5 Injunctive Relief. Nothing in this Agreement will be construed to preclude either party from seeking provisional remedies, including, but not limited to, temporary restraining orders and preliminary injunctions from any court of competent jurisdiction in order to protect its rights, including its rights pending arbitration, at any time. The parties agree that the arbitration provision in Section 15.3 may be enforced by injunction or other equitable order, and no bond or security of any kind will be required with respect to any such injunction or order.

15.6 Time Limit. Actions on Disputes between the parties must be brought in accordance with this Section within 2 years after the cause of action arises.

15.7 Compliance. Customer and Avaya Affiliates will comply with the dispute resolution procedures described in this Section.

15.8 Disputes with Other Users. Customer is solely responsible for Customer's interactions with third parties with whom it uses the Service to interact. Avaya will have no liability with respect to such Customer interactions or disputes that may arise between Customer and such third parties. Avaya reserves the right, but has no obligation, to become involved with disputes between Customer and any such third party in the event that Avaya's interests are impacted.

16.0 IMPORT/EXPORT CONTROL.

Licensee is advised that the SDK is of U.S. origin and subject to the U.S. Export Administration Regulations ("EAR"). The SDK also may be subject to applicable local country import/export laws and regulations. Diversion contrary to U.S. and/or applicable local country law and/or regulation is prohibited. Licensee agrees not to directly or indirectly export, re-export, import, download, or transmit the SDK to any country, end user or for any use that is contrary to applicable U.S. and/or local country regulation or statute (including but not limited to those countries embargoed by the U.S. government). Licensee represents that any governmental agency has not issued sanctions against Licensee or otherwise suspended, revoked or denied Licensee's import/export privileges. Licensee agrees not to use or transfer the SDK for any use relating to nuclear, chemical or biological weapons, or missile technology, unless authorized by the U.S. and/or any applicable local government by regulation or specific written license. Additionally, Licensee is advised that the SDK may contain encryption algorithm or source code that may not be exported to government or military end users without a license issued by the U.S. Bureau of Industry and Security and any other country's governmental agencies, where applicable.

17.0 AGREEMENT IN ENGLISH.

The parties confirm that it is their wish that the Agreement, as well as all other documents relating hereto, including all notices, have been and shall be drawn up in the English language only. Les parties aux présentes confirment leur volonté que cette convention, de même que tous les documents, y compris tout avis, qui s'y rattachent, soient rédigés en langue anglaise.

18.0 ENTIRE AGREEMENT.

This Agreement, its exhibits, schedules and other agreements or documents referenced herein, constitute the full and complete understanding and agreement between the parties and supersede all contemporaneous and prior understandings, agreements and representations relating to the subject matter hereof. No modifications, alterations or amendments shall be effective unless in writing signed by both parties to this Agreement.

19. REDISTRIBUTABLE CLIENT FILES.

The list of SDK client files that can be redistributed, if any, are in the SDK in a file called Redistributable.txt.

**Schedule 1 to Avaya SDK License Agreement
Third Party Notices**

1. **CODECS:** WITH RESPECT TO ANY CODECS IN THE SDK, YOU ACKNOWLEDGE AND AGREE YOU ARE RESPONSIBLE FOR ANY AND ALL RELATED FEES AND/OR ROYALTIES, IF ANY. IT IS YOUR RESPONSIBILITY TO CHECK.

THE G.729 CODEC IS LICENSED BY SIPRO LAB TELECOM INC. SEE WWW.SIPRO.COM/CONTACT.HTML.

THE H.264 (AVC) CODEC IS LICENSED UNDER THE AVC PATENT PORTFOLIO LICENSE FOR THE PERSONAL USE OF A CONSUMER OR OTHER USES IN WHICH IT DOES NOT RECEIVE REMUNERATION TO: (I) ENCODE VIDEO IN COMPLIANCE WITH THE AVC STANDARD ("AVC VIDEO") AND/OR (II) DECODE AVC VIDEO THAT WAS ENCODED BY A CONSUMER ENGAGED IN A PERSONAL ACTIVITY AND/OR WAS OBTAINED FROM A VIDEO PROVIDER LICENSED TO PROVIDE AVC VIDEO. NO LICENSE IS GRANTED OR SHALL BE IMPLIED FOR ANY OTHER USE. ADDITIONAL INFORMATION FOR THE H.264 (AVC) CODEC MAY BE OBTAINED FROM MPEG LA, L.L.C. SEE [HTTP://WWW.MPEGLA.COM](http://WWW.MPEGLA.COM).

Contents

1	PS Connector Description.....	16
1.1	Intended Audience	16
1.2	Overview	16
2	Deployment.....	17
3	Upgrade.....	18
4	Administration.....	18
4.1	PS DataGrid Configuration	18
4.2	PS Connector Authorization.....	19
4.3	PS Connector Privileged User Profile Attribute.....	20
5	PSConnector APIs.....	22
5.1	Get presence on behalf of a watcher.....	22
5.2	Set presence on behalf of a user.....	23
5.3	Send an IM on behalf of a user	23
5.4	Forward an IM for external user using internal account	24
5.5	Subscribe for presence update	25
5.5.1	Subscribe for a single presentity.....	25
5.5.2	Subscribe for a set of presentities.....	25
5.6	Subscribe for incoming IM messages.....	26
5.6.1	Subscribe for event CHAT_STARTED_TARGET:	26
5.6.2	Subscribe for event IM_RECEIVED	27
5.6.3	Subscribe for event CHAT_ENDED	28
5.7	Broadcast IM	28

6	Limitations.....	28
7	Capacity.....	29
8	Developing Avaya Breeze Snap-In that Uses PSC.....	29
9	Troubleshooting.....	30

1 PS Connector Description

PS Connector (PSC) is an Avaya Breeze snap-in service that allows other Avaya Breeze applications to interact with the Presence Services (PS) application.

1.1 Intended Audience

This document is intended for Avaya Breeze snap-in developers using the PSC to access presence and instant messaging services from PS.

1.2 Overview

This document describes the application program interface (API) to be used by snap-ins running on Avaya Breeze platform and using PSC for interacting with PS.

The diagram below illustrates the deployment model for PSC, along with other Avaya Breeze applications interested in using PSC service.

PS Connector Deployment View

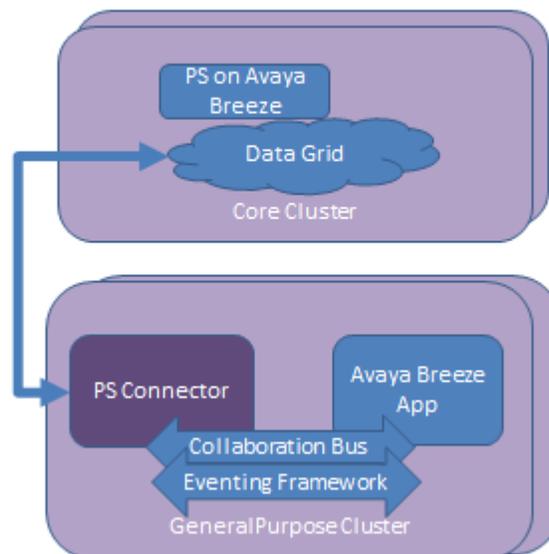


Figure 1 – PSC Deployment View

PSC is installed on a separate cluster from the PS. It utilizes LPS and a remote data grid connection to PS.

The Avaya Breeze Collaboration bus and Eventing Framework are communication paths between PSC and other Avaya Breeze snap-ins.

PS Connector Software Components

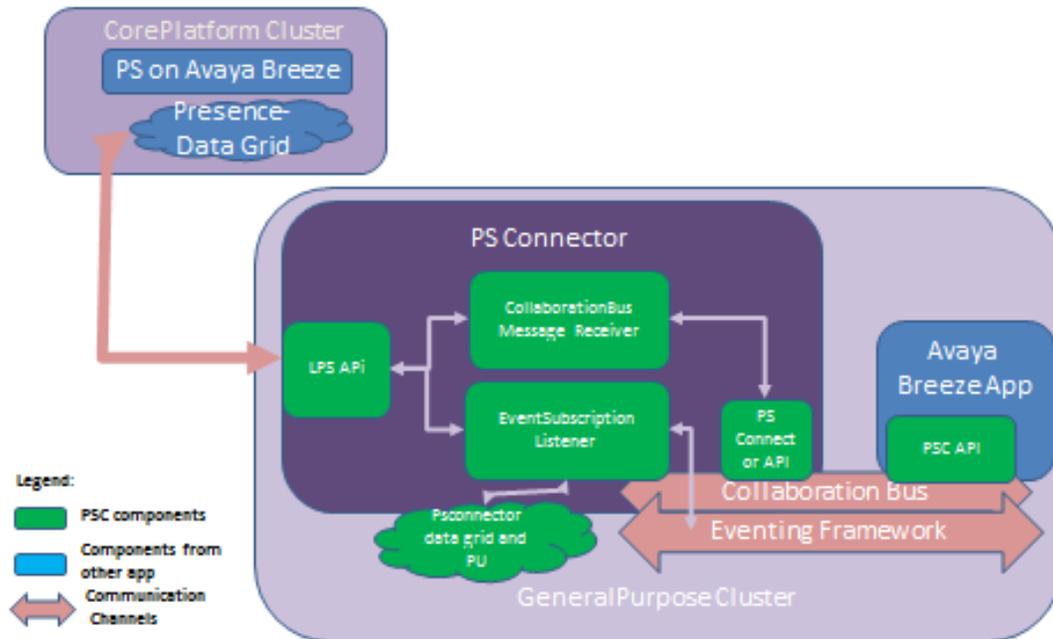


Figure 2 – PSC Software Components

PSC has two major dependencies:

- LPS, which accesses the Presence Services data grid
- PS client API, which defines Avaya Breeze Collaboration bus messages

Both LPS and PS client API are packaged inside PSC. Snapin applications communicating with PSC must package the PS client API in its svar.

2 Deployment

PSC is intended to be deployed on Avaya Breeze General Purpose Cluster. Follow the Avaya Breeze documentation for deploying the service. Any Breeze snap-in application that wants to utilize PSC must be deployed on the same Avaya Breeze cluster as PSC.

PSC must be deployed on the same SMGR as PS. One PSC cluster can communicate with only one PS cluster.

The PSC cluster does not have to have the same number of servers as the PS cluster.

Note: a co-resident deployment of PS, PSC and application using PSC is also supported on a general purpose cluster.

3 Upgrade

To upgrade PSC follow the steps below:

1. Load new PSC snap-in
2. Uninstall old PSC snap-in
3. Install new PSC snap-in

The existing service attribute values are preserved during upgrade, however any new attributes, introduced in the new PSC version, will have default values and may require configuration by the administrator.

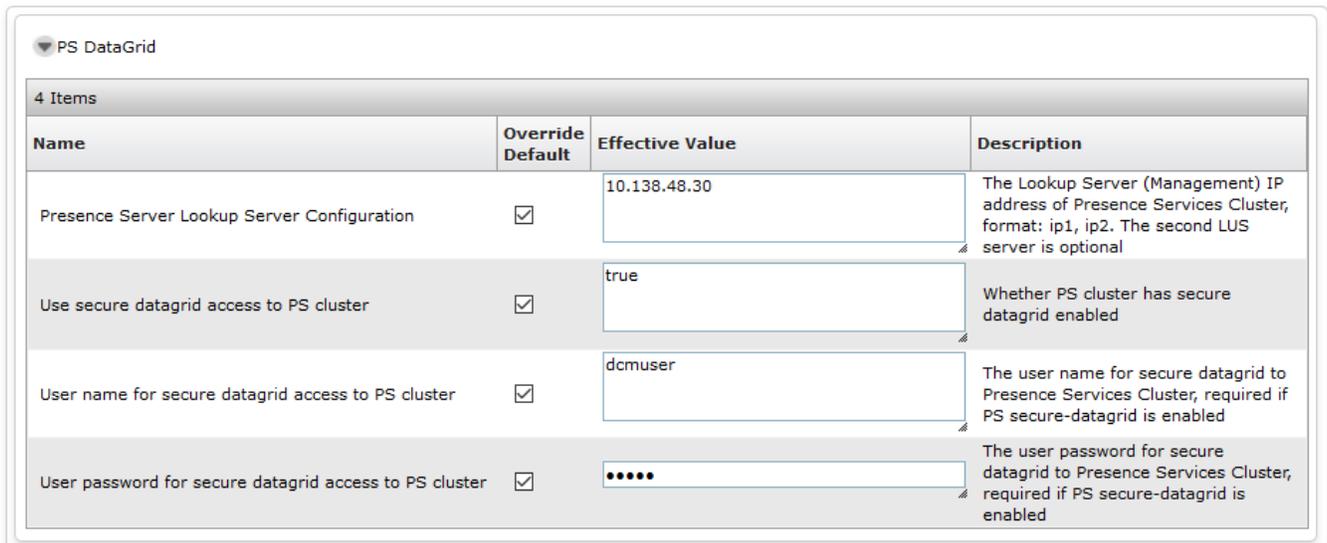
4 Administration

Administration of PSC is done via ‘Service Attributes’ configuration on SMGR. On the SMGR web console, navigate to Elements, Avaya Breeze, Configuration, and Attributes. Attributes are recommended to be provisioned on the Service Clusters tab, by selecting the Cluster and PSC service.

4.1 PS DataGrid Configuration

Since PSC uses the PS data grid to communicate with the PS server, configuration of the PS data grid Lookup Service (LUS) server(s) is required. Note: the PS management IP addresses are used.

As shown below, if the PS data grid is secure, then the PS Secure Grid credentials must be configured.



PS DataGrid			
4 Items			
Name	Override Default	Effective Value	Description
Presence Server Lookup Server Configuration	<input checked="" type="checkbox"/>	10.138.48.30	The Lookup Server (Management) IP address of Presence Services Cluster, format: ip1, ip2. The second LUS server is optional
Use secure datagrid access to PS cluster	<input checked="" type="checkbox"/>	true	Whether PS cluster has secure datagrid enabled
User name for secure datagrid access to PS cluster	<input checked="" type="checkbox"/>	dcmuser	The user name for secure datagrid to Presence Services Cluster, required if PS secure-datagrid is enabled
User password for secure datagrid access to PS cluster	<input checked="" type="checkbox"/>	•••••	The user password for secure datagrid to Presence Services Cluster, required if PS secure-datagrid is enabled

Figure 2 – PSC Attribute Configuration for PS DataGrid

The “Presence Server Lookup Server Configuration” service attribute value is the primary and secondary data grid LUS IP/Port of PS core cluster. The service attribute definition must be in a format <primaryIP,secondaryIP>. The secondary IP information is only needed if the PS cluster has more than one server.

To get the LUS server IP address of the PS cluster, on the SMGR, navigate to Elements, Avaya Breeze, Cluster Administration, and click the “Show” link beside the PS cluster. The server(s) that have a ‘magnifying glass’ icon beside them are the ones running LUS. Configure the management IP address(es) of these LUS servers in the PSC “Presence Server Lookup Server Configuration” attribute.

Server Name	Security Module	Server Version	Server State	Alarms	Activity	Cluster Database	Cluster Database Connection	Data Replication	Service Install Status	Tests Pass	Data Grid Status	Overload Status
mhou-ce26 	Up	3.1.0.0.41014	Accepting	0/0/0	0	Master	✓	✓	✓	✓	Up	✓
mhou-ce28 	Up	3.1.0.0.43011	Accepting	0/0/0	0	Slave	✓	✓	✓	✓	Up	✓

Figure 3 – PS Core Cluster Lookup Server Information

4.2 PS Connector Authorization

PSC authorization can be enabled to restrict access to PS by specific snap-ins. Authorization is done by including the authorized snap-ins in the given user(s) Service Profile. All PSC APIs apply the same authorization rule.

PSC provides the capability for a PS User to forward IMs, on behalf of external users, to other PS users. Administrators can explicitly enable/disable this functionality by configuring the attribute ‘Allow PS user to forward an IM on behalf of another user’ flag as shown in the following figure.

Connector Authorization			
2 Items			
Name	Override Default	Effective Value	Description
Force Application Subscription Authorization Rules	<input type="checkbox"/>	false	Enforce application authorization against user's service profile for PS connector APIs and event subscriptions. Attribute value can be either 'true' or 'false'. If turned off, authorization check is not performed.
Allow PS user to forward an IM on behalf of another user	<input type="checkbox"/>	False	Allow an internal Presence Services user to forward an IM on behalf of another user (True/False)

Figure 4 – PSC Attribute Configuration for Connector Authorization

4.3 PS Connector Privileged User Profile Attribute

This feature is new for PS Connector 7.1.2.

The Privileged User feature allows presence subscription and or retrieval from any user regardless of access control policy or rules. To enable the Privileged User feature for an Aura user, assigned a service profile to the user as described in the follow steps:

1. On the SMGR, on the Avaya Breeze, Configuration, Service Profiles page, create a Service Profile associated with PS Connector Service, as shown below. Select the + in front of the PSConnector service from the list of available services, to add the PSC service to this profile.

The screenshot displays the 'Service Profile Editor' interface. The 'Identity' section contains the following fields:

- Name:** PS Connector Snapin
- Description:** (empty)

The 'Services in this Service Profile' section shows a table with one item:

Remove from Service Profile	Name	Version	Description
X	PSConnector	Latest*	Presence Services Connector

Below this table, there are two footnotes:

- * The 'Latest' Service Profile version ensures that the latest version of a Service installed on the cluster is used for this Service Profile when a newer version is deployed.
- ** The 'Preferred' Service Profile version uses the version set as Preferred on the Service Management page for each particular cluster. If not set then Latest is used.

The 'Available Service to Add to this Service Profile' section shows a table with six items:

Add to Service Profile	Name	Description
+ Advanced...	EventDelivery	EventDelivery
+ Advanced...	HelloWorld	My Service
+ Advanced...	PresenceServices	Presence Services
+ Advanced...	PresenceServicesEnhanced	Presence Service features Licensing Service
+ Advanced...	PSConnector	Presence Services Connector
+ Advanced...	ZangSmsConnector	Zang SMS Connector

2. On SMGR, on the User Management, Manage Users page, select the Aura user to be used as the PSC privileged user, and click Edit. Enable the Avaya Breeze Profile in the Communication Profile tab and select the Service Profile created above in step 1 from the drop-down menu, as shown below. Only one Service Profile can be associated with a user.

User Profile | Edit | 3000000@blu.ottps.avaya.com

Identity | **Communication Profile** | Membership | Contacts

Communication Profile Password

PROFILE SET: Primary ▾

CommunicationAddress

PROFILES

Session Manager Profile

Avaya Breeze Profile

CM Endpoint Profile

Presence Profile

Service Profile: PS Connector Snapin ▾

- On the SMGR, on the Avaya Breeze, Configuration, Attributes page, select the Service Profiles tab. Select the service profile created in step 1 (called “PSConnector Snapin” in the examples here) from the Profile pulldown menu. Select the PSConnector service from the Service pulldown. This will display the Connector Authorization configuration attributes, as shown below. Check the “**Privileged User**” attribute, as shown below. This enables the privileged user feature for the Aura user, 3000000@blu.ottps.avaya.com in our example.

Note: this is a Service Profile attribute only. The Service Profile tab must be used to access this attribute.

Service Profiles | Service Clusters | Service Globals

Profile: PSConnector Snapin ▾

Service: PSConnector ▾

Connector Authorization

2 Items

Name	Override Default	Effective Value	Description
Allow PS user to forward an IM on behalf of another user	<input type="checkbox"/>	False	Allow an internal Presence Services user to forward an IM on behalf of another user (True/False)
Privileged User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Allow a privileged user to watch presence of others regardless of any Access Control policy(True/False)

Figure 5 - PSC Privileged User Attribute Configuration

- The privileged user service profile must also include the application snap-in, referred to as Avaya Breeze App in figure 1 and 2, as this application is making PSC API calls on behalf of the privileged user. This is only required if the PSC configuration attribute “Force Application Subscription Authorization

Rules” is enabled. Refer to step 1 to include the Avaya Breeze application to the service profile. Also refer to section 4.2 for PSC Authorization.

5 PSConnector APIs

5.1 Get presence on behalf of a watcher

PresencePersonState getPresence(watcherUri, presentityUri) throws UnauthorizedException

- watcherUri – SMGR login name of presence user that’s configured in the PS cluster.
- presentityUri - SMGR login name of a presence user that’s configured in the PS cluster.
- This API is authorized if PSC service attribute ‘Force Application Subscription Authorization Rules’ is disabled, or if the watcher has the calling service in its service profile. If authorization fails, an UnauthorizedException status is thrown.
- Sample Usage:

```
PresencePersonState state = PsClientFactory.getPsClient().getPresence(watcherUri, presentityUri);
```

The returned PresencePersonState (enum type, defined in psclient-api.jar) is aggregated presence, and can be one of:

```
AVAILABLE("available"),  
BUSY("busy"),  
AWAY("away"),  
DND("unavailable"),  
ON_THE_PHONE("on-the-phone"),  
OFFLINE("offline"),  
OUT_OF_OFFICE("vacation"),  
UNKNOWN("unknown");
```

This method is a blocking call. If the request times out (default 60 seconds), a warning log is given and an unknown state is returned.

To specify a different timeout value, use the following method:

```
PresencePersonState state = PsClientFactory.getPsClient().getPresence(watcherUri, presentityUri, timeoutInSeconds);
```

PSC processes the getPresence() request taking into account any ACL rules that exist. If the presentity’s ACL is BLOCK or CONFIRM then an unknown state is returned.

If the watcher is a privileged user, getPresence() returns the presence status of the presentity regardless of any access control policy or rule.

If the presentity is an external user then unknown state is returned.

5.2 Set presence on behalf of a user

int setPresence(presentityUri, manualPresenceStatusToBeSet)

- presentityUri - SMGR login name of a presence user that's configured in the PS cluster. If presentity is an external user, a 404 status is returned.
- This API is authorized if PSC service attribute 'Force Application Subscription Authorization Rules' is disabled, or if the presentity has this calling app in its service profile. If authorization fails, 403 status is returned.
- Manual presence status can be one of the following:

```
AUTOMATIC("automatic"), // use this to remove the last set present status
AVAILABLE("available"),
BUSY("busy"),
AWAY("away"),
DND("unavailable"),
ON_THE_PHONE("on-the-phone"),
OFFLINE("offline"),
OUT_OF_OFFICE("vacation")
```

- Sample Usage:

```
int status = PsClientFactory.getPsClient().setPresence(userUri,
presenceStateToBeSet);
```

The returned status is an integer, and can be one of:

```
200 : request is successful
400 : bad request, typically when malformed parameter
403 : not authorized
404 : user not found, or invalid presentity
500 : other error, check log for details
```

5.3 Send an IM on behalf of a user

int sendMessageToUser(fromUri, toUri, threadId, message)

- fromUri - SMGR login name of a presence user that's configured in the PS cluster. If fromUri is an external user, a 404 status is returned.
- toUri - SMGR login name of a presence user that's configured in the same PS cluster or the presence URI of a federated user.
- ThreadId - String that associates messages within the same conversation.
- message – the message to send to the toUri.

- This API is authorized if PSC service attribute 'Force Application Subscription Authorization Rules' is disabled, or if the sender has this calling app in its service profile. If authorization fails, a 403 status is returned.
- Sample Usage:

```
int status = PsClientFactory.getPsClient().sendMessageToUser(toUri, fromUri,
threadId, messageToSend);
```

The returned status is an integer, and can be one of:

```
200 : request is successful
400 : bad request, typically when malformed parameter
403 : not authorized
404 : user not found, or invalid presentity
500 : other error, check log for details
```

5.4 Forward an IM for external user using internal account

int forwardMessage(forwarderUri, originatorUri, toUri, threadId, message)

- This API sends an IM on behalf of an external user using an internal user URI. The forwarder (PS user) is NOT exposed in the message. The message appears to be sent directly from the originatorURI when it arrives at the toUri's endpoint device.
- This API is authorized if PSC service attribute 'Force Application Subscription Authorization Rules' is disabled or the forwarderUri user has this calling app in its service profile), and forwarderUri has PresenceServices in its service profile, and user has PS service attribute 'Allow PS user to forward an IM on behalf of another user' enabled. If authorization fails, a 403 status is returned.
- forwarderUri – SMGR the login name of a presence user that's configured in the same PS cluster that PSC is connected to. If the forwarderUri is an external user, a 404 status is returned.
- originatorUri – the original sender of this message. It is the presence URI of an external user. This is the user that the message appears to originate from.
- toUri – SMGR login name of the message's recipient. It must be an internal PS user.
- Sample Usage:

```
int status = PsClientFactory.getPsClient().forwardMessage(forwarderUri,
originatorUri, toUri, threadId, message);
```

The returned integer status value can be one of:

```
200 : request is successful
400 : bad request, typically when malformed parameter
403 : not authorized
404 : user not found, or invalid presentity
500 : other error, check log for details
```

5.5 Subscribe for presence update

To receive presence events, the application must subscribe for these events and implement the Avaya Breeze Eventing Framework 'EventListener' interface. Only internal PS users can subscribe and receive presence events. Avaya Breeze snap-ins can subscribe for presence update event by using the PS client APIs.

5.5.1 Subscribe for a single presentity

String subscribeForPresenceUpdate(watcherUri, presentityUri) throws UnauthorizedException

- This API is authorized if the watcher has this calling service in its service profile. If authorization fails, a UnauthorizedException is thrown.
- This API returns a subscription id, which the application can use to unsubscribe to events.
- watcherUri and presentityUri are the login names of presence users that are configured in the same PS cluster that PSC is connected to. If either user is an external user, an IllegalStateException is thrown.
- This API also checks ACL rules before subscribing to event framework. If ACL is not allow, an UnauthorizedException is thrown.
- If the watcher is a privileged user, the subscription is successful regardless of any access control policy or rule that applies to the presentity and the watcher.
- Sample Usage:

```
String subId = PsClientFactory.getPsClient().subscribeForPresenceUpdate(watcherUri,  
presentityUri);  
  
PsClientFactory.getPsClient().unsubscribeForPresenceUpdate(subId);
```

5.5.2 Subscribe for a set of presentities

String subscribeForPresenceUpdates(watcherUri, presentityUris, subToFedFlag) throws UnauthorizedException

- This API is authorized if the watcher has this calling service in its service profile. If authorization fails, a UnauthorizedException is thrown.
- This API returns a subscription id, which the application can use to unsubscribe to events.
- watcherUri and presentityUris are the login names of presence users that are configured in the same PS cluster that PSC is connected to. In addition, the set of presentities may contain federated user Presence/IM handles.
- subToFedFlag is a boolean flag use to control presence subscriptions to a federated system. If the flag is true, the PSC will trigger a subscription for presence to the federated system via PS for any

federated presentities in the presentity list. If the flag is false, any federated presentities will be ignored by PSC.

- This API also checks ACL rules before subscribing to event framework. If ACL is not allow, an UnauthorizedException is thrown.
- If the watcher is a privileged user, the subscription is successful regardless of any access control policy or rule that applies to the presentity and the watcher.
- Sample Usage:

```
String subId =PsClientFactory.getPsClient().subscribeForPresenceUpdates(watcherUri,  
presentityUries, true);
```

```
PsClientFactory.getPsClient().unsubscribeForPresenceUpdates(subId);
```

5.6 Subscribe for incoming IM messages

To receive IM events the application must subscribe for these events directly to the Eventing Framework and implement the 'EventListener' interface. Only internal PS users can subscribe and receive IM events.

5.6.1 Subscribe for event CHAT_STARTED_TARGET:

event family: PresenceIM

event type: CHAT_STARTED_TARGET

event filter (optional): user: login name of the user to be monitored

- Note that 'CHAT_STARTED_TARGET' event is only detected by PSC if an IM with a 'new' threadId arrived. This means either one of the following:
 - o This threadId had never been seen before since the subscription was created; Examples:
 - Scenario: App X creates subscription for user A; user B starts conversation with A and sends the first message; App X receives 'CHAT_STARTED_TARGET' event.
 - Scenario: User A and B are already in conversation; App X creates subscription for user A; B sends another message to A; App X receives 'CHAT_STARTED_TARGET' event.
 - Scenario: User A and B are already in conversation; App X creates subscription for user A; B sends another message to A; App X receives 'CHAT_STARTED_TARGET' event; A and B continues conversation; App Y creates subscription for user A; App Y will never receive 'CHAT_STARTED_TARGET', it can only receive "IM_RECEIVED" or "CHAT_ENDED" events if it had subscribed.
 - o There was a 'gone' Chat State message received against this threadId, and thus effectively ending the conversation.

- User authentication is done when PSC receives this subscription. Authentication is done by checking if the user has the subscribing application in its service profile. Authorization check is done in following steps:
 - If specified user filtering and user has subscribing application in its service profile, it's authorized; otherwise,
 - If no user filtering and 'isMatchConsumerToUserViaServiceProfile' is enabled, it's authorized; otherwise,
 - Not authorized.
 - If subscriptions from multiple applications were received by PSC, and at least one subscription is not authorized, then no event is created for any subscription of the same type.
 - Scenario: If application A has subscribed for userX, userX has appA in service profile; application B has subscribed for userX, userX does not have appB in service profile. Psconnector will not send IM events onto eventing bus.

5.6.2 Subscribe for event IM_RECEIVED

event family: PresenceIM

event type: IM_RECEIVED

event filter (optional): user: login name of the user to be monitored

event filter (optional): criterion: threadId=<some threadId string>

- User authentication is done when PSC receives this subscription. Authentication is done against the 'user' of this subscription, to check if it has subscribing application in its service profile. Authorization check is done in following steps:
 - If specified user filtering and user has subscribing application in its service profile, it's authorized; otherwise,
 - If no user filtering and 'isMatchConsumerToUserViaServiceProfile' is enabled, it's authorized; otherwise,
 - Not authorized.
 - If subscriptions from multiple applications were received by PSC, and at least one subscription is not authorized, then no event is created for any subscription of the same type.

5.6.3 Subscribe for event CHAT_ENDED

event family: PresenceIM

event type: CHAT_ENDED

event filter (required): criterion: threadId=<some threadId string>

- This event is given if either party of the conversation identified by 'threadId' has sent a 'chat-gone' status.
- Subscription authorization is not performed against a subscriber. However, 'threadId' event filter must be presented to be authorized

5.7 Broadcast IM

String sendBroadcastMessage(fromUri, recipientType, recipients, header, message, listener) throws UnauthorizedException

- fromUri - login name of sender, in format of user@domain. The sender name does not have to match an existing user in SMGR.
- recipientType - recipient type indicates a group of users that will receive the broadcast message. The groups can be all users, all users matching a list of domains or a list of users.
- recipients - depends on the recipient type. If type is domains, then this contains a comma separated list of domains. For the recipient type of all users this parameter can be null or a blank String.
- header – the header of the message
- message – the message
- listener - the listener to be called when a response is received
-

Broadcast IMs supports the 'Force Application Subscription Authorization Rules' attribute.

6 Limitations

- PSC only supports an external user's presence collection via the subscribeForPresenceUpdates() API.
- PSC supports sending IM on behalf of an external user only via 'forwardIm' API.
- PSC does not support subscribing presence and/or IM event on behalf of an external user.

7 Capacity

Since each snap-in has its own capacity requirements, no capacity testing is done on the PSC. Each snap-in should ensure that their capacity requirements are met when using this connector.

8 Developing Avaya Breeze Snap-In that Uses PSC

To develop Avaya Breeze snap-in applications that use the PSC for Presence and IM functionalities, the following steps are recommended:

- Setup Development Environment;
 - Install Maven (minimum 3.1.1)
 - Install Java JDK (minimum 1.8)
 - Install Eclipse (latest for Java)
- Install Avaya Breeze 3.5 SDK;
- Install PSC SDK;
 - Run 'install.sh' on Linux (or 'install.bat' on Windows) from unzipped SDK package.
- Follow Avaya Breeze SDK guide to create a snap-in application project.

PSC uses the Avaya Breeze Collaboration Bus and Eventing Framework, as a result, dependencies from Avaya Breeze SDK and PSC SDK must be available on the development machine. By installing the SDK's listed above, these dependencies are installed with the expectation that Maven is used for building the snap-in.

When creating an Avaya Breeze snap-in to use PSConnector APIs, include the following minimum dependencies in its pom.xml file:

```
<dependency>
  <groupId>com.avaya.common.logging</groupId>
  <artifactId>avaya-logging-client</artifactId>
  <version>0.0.3</version>
  <scope>provided</scope>
</dependency>
<dependency>
  <groupId>com.avaya.collaboration.api</groupId>
  <artifactId>avaya-aura-collaboration-api-[version in SDK]</artifactId>
  <version>[SDK version]</version>
  <scope>provided</scope>
</dependency>
<dependency>
  <groupId>com.avaya.presence</groupId>
  <artifactId>psclient-api</artifactId>
  <version>[version in PSC SDK]</version>
</dependency>
```

9 Troubleshooting

This list covers some of the common errors when developing with the PSC:

1. All URI parameters of PSC APIs should be the SMGR login name, not SIP handle or Presence/IM handle;
2. Make sure calling app is in user's service profile, if PSC has 'Force Application Subscription Authorization Rules' enabled;
3. Make sure 'Allow PS user to forward an IM on behalf of another user' is allowed, when trying to enable forwardIM for a given user, and make sure PSConnector is in this user's service profile;
4. Check `/var/log/Avaya/services/PSConnector/PSConnector.log` file to see if there are any exceptions or errors in the logfile. Turn on debug log (via SMGR) for more information if required.
5. Common Error codes for API calls:
 - 400 : bad request, typically when malformed parameter
 - 403 : not authorized
 - 404 : user not found, or invalid presentity
 - 500 : other error, check log for details
 - 503 : service not available, typically PSConnector is not deployed