



BlackBerry UEM

Disaster Recovery

12.17

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Overview

You can configure your BlackBerry UEM environment so that it continues to function in the event of a severe disruption.

This document describes a hot/warm disaster recovery configuration for a large organization with a primary site and a remotely located secondary, or disaster recovery, site. For detailed information about installing the components, see the installation and configuration documentation at docs.blackberry.com.

Two general principles underlie the configuration:

- Avoid cross-site configuration, connectivity traffic, and database access because the network latency and server searches between two sites can lead to slower response times and undesired timeouts.
- Configure the secondary site with servers up and all BlackBerry services off because this allows rapid connectivity timeouts at the application layers, rather than slower TCP timeouts. In addition, it allows security patches for the operating system to be applied regularly in a timely fashion.

Servers and services

When the main network is running properly, the disaster recovery servers are powered on, but their services are stopped. This configuration allows for server maintenance such as security patches. Because the services are off, TCP connections are quickly rejected if there is an attempt to connect to one of the disaster recovery servers.

In a disaster recovery event, the primary servers go offline. An administrator must manually start the services on the disaster recovery servers after the failover of the databases is complete.

The high availability configuration for all clusters is at least $n + 1$ (the number of servers you require plus one or more servers for high availability).

About BEMS servers

The BlackBerry Enterprise Mobility Server servers with BlackBerry Push Notifications, BlackBerry Connect, BlackBerry Presence, and BlackBerry Docs are generally configured as single clusters in large environments.

Servers at the disaster recovery site are assigned secondary priority.

BEMS with BlackBerry Presence can be a cluster on its own, or it can be in a BEMS with BlackBerry Push Notifications cluster, or in a BEMS with BlackBerry Connect cluster.

For BlackBerry Connect and BlackBerry Presence, the Microsoft Lync Server front-end pool connection may need to be reconfigured in a disaster recovery event.

For BlackBerry Connect, the BlackBerry Proxy start up node must be configured for the disaster recovery site on the servers with secondary priority.

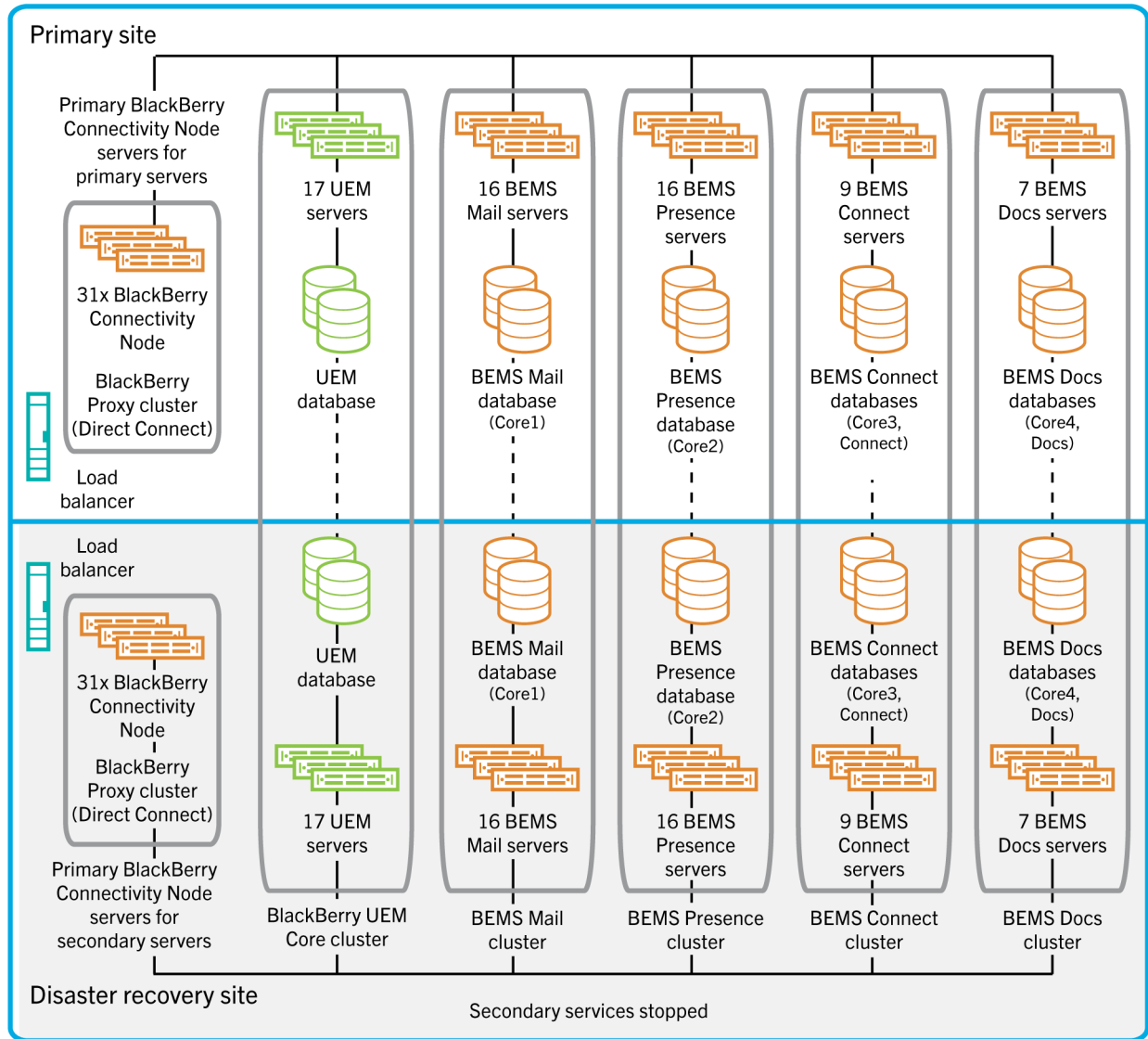
BlackBerry Proxy

More BlackBerry Proxy clusters can be added, but BlackBerry Proxy clusters should not span across sites. BlackBerry Proxy clusters connected to the BlackBerry Dynamics NOC can be added if desired but are not required. The administrator may need to enable the BlackBerry Proxy cluster flag Enable for activation if it has been turned off. The configuration described in this document makes it unnecessary to turn off the Enable for activation flag.

Note: BlackBerry Control is now **App servers for Container Mgmt App(com.good.gd.gdgc)**, which is found under **App servers** in the BlackBerry Dynamics Connectivity Profile.

Example of a large BlackBerry UEM deployment

Below is an example of a large deployment without regionalization that is configured for disaster recovery and high availability.



- - - - asynchronous connection

Installation and configuration

Install BlackBerry UEM

1. At the primary site, install UEM Core and the BlackBerry Connectivity Node on separate servers, including BlackBerry Proxy.
2. At the secondary site, install UEM Core and the BlackBerry Connectivity Node on separate servers, including BlackBerry Proxy.

Configure the BlackBerry Proxy clusters

1. Configure the BlackBerry Proxy servers at the primary site in a cluster (for example, BPCluster1).
2. Configure the BlackBerry Proxy servers at the secondary site in a cluster (for example, BPCluster2).
3. Leave **Enabled for Activation** on for all BlackBerry Proxy servers. When the services at the secondary site are stopped, the servers will not be used for activation attempts.

Configure the app servers for container management

In the UEM management console, in the Default BlackBerry Dynamics connectivity profile, perform the following actions:

- a) Under **App servers for Container Mgmt App**, for each of the BlackBerry Control servers at the primary site, set the **Priority** to PRIMARY and **Primary BlackBerry Proxy cluster** to BPCluster1.
- b) Under **App servers for Container Mgmt App**, for each of the BlackBerry Control servers at the secondary site, set the **Priority** to SECONDARY and **Primary BlackBerry Proxy cluster** to BPCluster2.

Configure load balancing, SSL termination at the reverse proxies, and FQDNs for the BlackBerry Proxy servers

If the BlackBerry Proxy servers are not using BlackBerry Dynamics Direct Connect, and therefore accessed only through the BlackBerry Infrastructure, additional network configuration is not required.

If the BlackBerry Proxy servers are using Direct Connect, third-party network appliances must be configured for the incoming connections from devices and containers. Security-sensitive customers may set up a configuration that uses SSL Termination at a Reverse Proxy. For best performance and minimum latencies, a configuration that uses a global traffic manager configuration with two external FQDNs (one for each BlackBerry Proxy cluster) and a local traffic manager configuration for load balancing within each BlackBerry Proxy cluster is suggested.

1. Configure each BlackBerry Proxy server at the primary site as **Direct Connect** = Yes, with a Host Name that is the first external public FQDN (for example, cluster1.external.org.com). Leave **Web Proxy** = No, **Proxy Host** and **Proxy Port** blank.
2. Configure each BlackBerry Proxy server at the secondary site as **Direct Connect** = Yes, with a Host Name that is the second external public FQDN (for example, cluster2.external.org.com). Leave **Web Proxy** = No, **Proxy Host** as blank, and **Proxy Port** as blank.
3. Set up the two FQDNs to point to the endpoints or servers that resolve to the BlackBerry Proxy cluster servers at the corresponding primary and secondary sites. A global traffic manager configuration will allow both

FQDNs to always be reachable, with one FQDN responding quickly with a connection failure when one site is down.

Using two FQDNs serves two purposes. It allows the search algorithm of the client library (SDK) to know when the primary site is not reachable, and that it is therefore using the BlackBerry Proxy cluster at the secondary site. It also allows the endpoints (for example, virtual IP addresses) to be set up so that when a site is down, attempted connections to the corresponding FQDN will result in a fast fail instead of long TCP connection timeouts.

Shut down all services at the secondary site

Shut down all services on the servers at the secondary site. This allows fast-fail of all attempted connections to the secondary site.

Install and configure the BEMS-PNS cluster

Install and configure the BEMS-PNS cluster, including Mail and Enterprise Services, but not Presence.

Before you begin: Before you add a BEMS-Mail instance for disaster recovery, complete the following actions:

- Configure database replication for the BEMS-Mail database (BEMS-Core) from your primary site to your secondary site. SQL log shipping is recommended. Consult your database administrator for assistance.
 - Make sure that the appropriate network ports are open to allow the BEMS-Mail servers within your secondary site to communicate with the database, Microsoft Exchange Server and BlackBerry Proxy servers in your secondary and primary site.
1. Install BEMS on each BEMS-Mail server at the primary site. Select the **Mail** option in each case. Use the same database for all the servers in this cluster.
 2. Install BEMS on each BEMS-Mail server at the secondary site. Select the **Mail** option in each case. Add the servers to the same database that you used in step 1.
 3. At the primary site, in the BEMS dashboard (BEMS System Settings > BEMS Configuration > BlackBerry Dynamics), configure one or more BlackBerry Proxy servers from one or more clusters from the primary site. This list is used only for startup. Make sure that you clear the 'Apply to other nodes in this BEMS cluster' check box. Repeat this step for each BEMS-PNS instance in the primary site.
 4. At the secondary site, in the BEMS dashboard (BEMS System Settings > BEMS > BlackBerry Dynamics), configure one or more BlackBerry Proxy servers from one or more clusters from the secondary site. This list is used only for startup. Make sure that you clear the 'Apply to other nodes in this BEMS cluster' check box. Repeat this step for each BEMS-PNS instance in the secondary site.
 5. Configure the appropriate mail server and active directory settings and test them from both sites.
 6. Stop the services on the servers at the secondary site.
 7. In the BlackBerry UEM management console, in the Default BlackBerry Dynamics connectivity profile, do the following. Depending on your environment configuration, additional server-side services might be required. For more information about BEMS services and server-side bindings, see the [Additional information](#).
 - a) Under **App servers for BlackBerry Core and Mail Services**, for each of the BEMS-Mail servers at the primary site, set the **Priority** to PRIMARY and set the **Primary BlackBerry Proxy cluster** to BPcluster1.
 - b) Under **App servers for BlackBerry Core and Mail Services**, for each of the BEMS-Mail servers at the secondary site, set the **Priority** to SECONDARY or TERTIARY and set the **Primary BlackBerry Proxy cluster** to BPcluster2.

Install and configure the BEMS-Presence cluster

The BEMS-Presence server does not require a separate database when it is installed with a service that uses a database (for example, BEMS_Core if Push notifications service (Mail) is installed on the same server). The BEMS-Presence server requires access to a database when it is installed as a separate cluster.

Before you begin: Before you add a BEMS-Presence instance for disaster recovery, complete the following actions:

- If your environment has separate Front End Pools or additional Trusted Application Pools, make sure that you add the correct permissions. Note: BEMS-Presence and BEMS-Connect can use the same Trusted Application Pool for disaster recovery.
 - Make sure that the appropriate network ports are open to allow the BEMS-Presence servers within your secondary site to communicate with the database, Skype for Business Server or Microsoft Lync Server, Microsoft Lync Server or Skype for Business database, and BlackBerry Proxy servers in your secondary and primary site.
1. Install BEMS on each BEMS-Presence server at the primary site. Select the **Presence** option in each case. If only Presence is installed on a server, use a new database to create a new cluster dedicated to Presence (for example, BEMS_Core2). If Presence is installed on a server with a service that uses a database (for example, Push notifications service (Mail)), Presence uses the BEMS_Core database.
 2. Install BEMS on each BEMS-Presence server at the secondary site. Select the **Presence** option in each case. Depending on your environment configuration in step 1, add the servers to the same database or the new database.
 3. At the primary site, in the BEMS dashboard (BEMS System Settings > BlackBerry Configuration > BlackBerry Dynamics), configure one or more BlackBerry Proxy servers from one or more clusters in the primary site. This list is used only for startup. Clear the 'Apply to other nodes in this BEMS cluster' check box. Repeat this step for each BEMS-Presence instance in the primary site.
 4. At the secondary site, in the BEMS dashboard (BEMS System Settings > BlackBerry Configuration > BlackBerry Dynamics), configure one or more BlackBerry Proxy servers from one or more clusters in the secondary site. This list is used only for startup. Clear the 'Apply to other nodes in this BEMS cluster' check box. Repeat this step for each BEMS-Presence instance in the secondary site.
 5. Configure the appropriate instant messaging (for example, Skype for Business) and Active Directory settings (for example, the Lync front-end pool).
 6. Stop the services on the servers at the secondary site.
 7. In the BlackBerry UEM management console, in the Default BlackBerry Dynamics connectivity profile, do the following. Depending on your environment configuration, additional server-side services might be required. For more information about BEMS services and server-side bindings, see the [Additional information](#).
 - a) Under **App servers for BlackBerry Presence Service**, for each of the BEMS-Presence servers at the primary site, set the **Priority** to PRIMARY and set the **Primary BlackBerry Proxy cluster** to BPcluster1.
 - b) Under **App servers for BlackBerry Presence Service**, for each of the BEMS-Presence servers at the secondary site, set the **Priority** to SECONDARY or TERTIARY and set the **Primary BlackBerry Proxy cluster** to BPcluster2.

Install and configure the BEMS-Connect cluster

Disaster recovery is not supported for BlackBerry Connect using Cisco Jabber because BEMS only stores one set of global configurations.

Before you begin: Before adding a BEMS-Connect instance for disaster recovery, complete the following actions:

- If your environment has separate Front End Pools or additional Trusted Application Pools, make sure that you add the correct permissions. Note: BEMS-Presence and BEMS-Connect can use the same Trusted Application Pool for disaster recovery.
 - Make sure that the appropriate network ports are open to allow the BEMS-Connect servers within your secondary site to communicate with the database, Skype for Business Server or Microsoft Lync Server, Microsoft Lync Server or Skype for Business database, and BlackBerry Proxy servers in your secondary and primary site.
1. Install BEMS on each BEMS-Connect server at the primary site. Select the **Connect** option in each case. Use a new database to create a new cluster that is dedicated to BlackBerry Connect.
 2. Install BEMS on each BEMS-Connect server at the secondary site. Select the **Connect** option in each case. Add the servers to the same database that you used in step 1.
 3. At the primary site, complete the following tasks:
 - a) In the BEMS dashboard for the BEMS-Connect (BlackBerry Services Configuration > Connect > BlackBerry Dynamics), add the BlackBerry Proxy for the primary site. Repeat this step for each BEMS-Connect instance in the primary site.
 - b) In the BEMS dashboard (BEMS System Settings > BlackBerry Configuration > BlackBerry Dynamics), configure one or more BlackBerry Proxy servers from one or more clusters in the primary site. This list is used only for startup. Clear the 'Apply to other nodes in this BEMS cluster' check box. Repeat this step for each BEMS-Connect instance in the primary site.
 4. At the secondary site, complete the following tasks:
 - a) In the BEMS dashboard for the BEMS-Connect (BlackBerry Services Configuration > Connect > BlackBerry Dynamics), add the BlackBerry Proxy for the secondary site. Repeat this step for each BEMS-Connect instance in the secondary site.
 - b) In the BEMS dashboard (BEMS System Settings > BlackBerry Configuration > BlackBerry Dynamics), configure one or more BlackBerry Proxy servers from one or more clusters in the secondary site. This list is used only for startup. Clear the 'Apply to other nodes in this BEMS cluster' check box. Repeat this step for each BEMS-Connect instance in the secondary site.
 5. Configure the appropriate instant messaging (for example, Skype for Business) and Active Directory settings (for example, the Lync front-end pool).
 6. Stop the services on the servers at the secondary site.
 7. In the BlackBerry UEM management console, in the Default BlackBerry Dynamics connectivity profile, do the following. Depending on your environment configuration, additional server-side services might be required. For more information about BEMS services and server-side bindings, see the [Additional information](#).
 - a) Under **App servers for BlackBerry Connect**, for each of the BEMS-Connect servers at the primary site, set the **Priority** to PRIMARY and set the **Primary BlackBerry Proxy cluster** to BPCluster1.
 - b) Under **App servers for BlackBerry Connect**, for each of the BEMS-Connect servers at the secondary site, set the **Priority** to SECONDARY or TERTIARY and set the **Primary BlackBerry Proxy cluster** to BPCluster2.

Install and configure the BEMS-Docs cluster

Before you begin:

- Configure the appropriate file-sharing services (for example, Microsoft SharePoint) and Active Directory settings.
- Configure database replication for the BEMS-Docs database (BEMS-Core) from your primary site to your secondary site. SQL log shipping is recommended. Consult your database administrator for assistance.
- Make sure that the appropriate network ports are open to allow the BEMS-Docs servers within your secondary site to communicate with the database, Microsoft Exchange Server and BlackBerry Proxy servers in your secondary and primary site.

1. Install BEMS on each BEMS-Docs server at the primary site. Select the **Docs** option in each case. Use a new database to create a new cluster dedicated to Docs.
2. Install BEMS on each BEMS-Docs server at the secondary site. Select the **Docs** option in each case. Add the servers to the same database that you used in step 1.
3. At the primary site, in the BEMS dashboard (BEMS System Settings > BEMS Configuration > BlackBerry Dynamics), configure one or more BlackBerry Proxy servers from one or more clusters from the primary site. This list is used only for startup. Make sure that you clear the 'Apply to other nodes in this BEMS cluster' check box. Repeat this step for each BEMS-Docs instance in the primary site.
4. At the secondary site, in the BEMS dashboard (BEMS System Settings > BEMS Configuration > BlackBerry Dynamics), configure one or more BlackBerry Proxy servers from one or more clusters from the secondary site. This list is used only for startup. Make sure that you clear the 'Apply to other nodes in this BEMS cluster' check box. Repeat this step for each BEMS-Docs instance in the secondary site.
5. Configure the appropriate file-sharing services (for example, SharePoint) and Active Directory settings.
6. Stop the services on the servers at the secondary site.
7. In the BlackBerry UEM management console, in the Default BlackBerry Dynamics connectivity profile, do the following. Depending on your environment configuration, additional server-side services might be required. For more information about BEMS services and server-side bindings, see the [Additional information](#).
 - a) Under **App servers for Feature - Docs Service Entitlement**, for each of the BEMS-Docs servers at the primary site, set the **Priority** to PRIMARY and set the **Primary BlackBerry Proxy cluster** to BPcluster1.
 - b) Under **App servers for Feature - Docs Service Entitlement**, for each of the BEMS-Docs servers at the secondary site, set the **Priority** to SECONDARY or TERTIARY and set the **Primary BlackBerry Proxy cluster** to BPcluster2.

Failover steps for a disaster recovery event

1. Stop services at the primary site. If possible, stop the services on all servers at the primary site.
2. Failover all third-party services, such as:
 - Microsoft Active Directory
 - Microsoft Exchange
 - Skype for Business
 - Microsoft SharePoint
3. Failover the databases:
 - BlackBerry UEM database
 - BEMS-Core1 database (BEMS-Mail cluster (Push Notifications) database)
 - BEMS-Core2 database (BEMS-Presence cluster database)
 - BEMS-Core3 and Connect databases (BEMS-Connect cluster databases)
 - BEMS-Core4 and Docs databases (BEMS-Docs cluster databases)
4. At the disaster recovery site, reconfigure the database access for the services to connect to the appropriate databases.
 - If the databases are using Always On Availability Groups for their disaster recovery configuration, then no action is required.
 - For configurations that do not use Always On Availability Groups, reconfigure the UEM Core database access by using the UEM Configuration Tool on each server to update the db.properties file.
5. Start services at the disaster recovery site.

Start the UEM Core, BlackBerry Connectivity Node, and BlackBerry Proxy services first, then the BEMS services. You may need to enable the startup mode if it is disabled.
6. Reconfigure the BEMS databases in the BEMS dashboard. Restart the BEMS services.
7. Verify that the BlackBerry Presence and BlackBerry Connect services are stopped before you change the settings.
8. For the BlackBerry Presence and BlackBerry Connect clusters, reconfigure the Lync front-end pool configuration. Restart the applicable services.
9. For the BlackBerry Connect cluster, BEMS-Connect Service Configuration, reconfigure the BlackBerry Proxy startup server to point to the BlackBerry Proxy server at the disaster recovery site. Restart the applicable services.
10. Reconfigure the network FQDN endpoints.

Reconfigure the first FQDN (for example, cluster1.external.org.com) to point to an endpoint at the secondary site that has no BlackBerry Proxy servers attached. This is generally done through a Global Traffic Manager or equivalent and enables fast fail for attempted connections to the original primary site.
11. Optionally, swap the primary and secondary servers.

If the outage will be long-term, use the BlackBerry UEM console to swap the primary and secondary priorities for all App servers.

Leave the BlackBerry Proxy configuration unchanged.
12. To failback, follow steps 1 through 9, reversing the primary and disaster recovery sites.

Additional information

OS-level security upgrades

The system is resilient at the high-availability level, so individual servers can be restarted one at a time if server restarts are required by OS-level security patches.

Certificate updates

When security certificates require renewals or upgrades, it may be necessary to start some of the services at the secondary site for new certificates to be distributed. Adding new UEM Core or BlackBerry Connectivity Node servers modifies the SAN entries on the Good Dynamics SSL certificates.

Table of apps, services, and bindings

Description	ID	Server-side bindings
BlackBerry Work	com.good.gcs.g3	n/a
Feature-Docs Service Entitlement	com.good.feature.share	Docs Service 1.0.0.0 <i>(com.good.gdservice.enterprise.docs)</i>
BlackBerry Connect	com.good.goodconnect	Send Message Service 1.0.0.0 <i>(com.good.gdservice.send-message)</i>
Good Enterprise Services	com.good.gdservice-entitlement.enterprise	Directory Service 1.0.0.0 <i>(com.good.gdservice.enterprise.directory)</i> Email Service 1.0.0.0 <i>(com.good.gdservice.enterprise.email)</i> FollowMe Store Service 1.0.0.0 <i>(com.good.gdservice.enterprise.followme)</i> Launcher customization service 1.0.0.0 <i>(com.blackberry.gdservice.launcher-customization)</i> Presence Service 1.0.0.0 <i>(com.good.gdservice.enterprise.presence)</i> Docs Service 1.0.0.0 <i>(com.good.gdservice.enterprise.docs)</i>

Description	ID	Server-side bindings
BlackBerry Core and Mail Services	com.blackberry.gdservice-entitlement.coreandmail	Directory Service 1.0.0.0 <i>(com.good.gdservice.enterprise.directory)</i> Email Service 1.0.0.0 <i>(com.good.gdservice.enterprise.email)</i> FollowMe Store Service 1.0.0.0 <i>(com.good.gdservice.enterprise.followme)</i> Launcher customization service 1.0.0.0 <i>(com.blackberry.gdservice.launcher-customization)</i>
BlackBerry Presence Service	com.blackberry.gd-service.entitlement.presence	Presence Service 1.0.0.0 <i>(com.good.gdservice.enterprise.presence)</i>

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