



BlackBerry UEM

Disaster Recovery

12.15

Contents

- Overview..... 4**
 - Servers and services..... 4
 - About BEMS servers..... 4
 - BlackBerry Proxy..... 4

- Example of a large BlackBerry UEM deployment..... 6**

- Installation and configuration.....7**
 - Install BlackBerry UEM..... 7
 - Configure the BlackBerry Proxy clusters..... 7
 - Configure the app servers for container management..... 7
 - Configure load balancing, SSL termination at the reverse proxies, and FQDNs for the BlackBerry Proxy servers..... 7
 - Shut down all services at the secondary site..... 8
 - Install and configure the BEMS-PNS cluster..... 8
 - Install and configure the BEMS-Presence cluster..... 9
 - Install and configure the BEMS-Connect cluster..... 9
 - Install and configure the BEMS-Docs cluster..... 10

- Failover steps for a disaster recovery event..... 12**

- Additional information..... 13**

- Legal notice..... 15**

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.

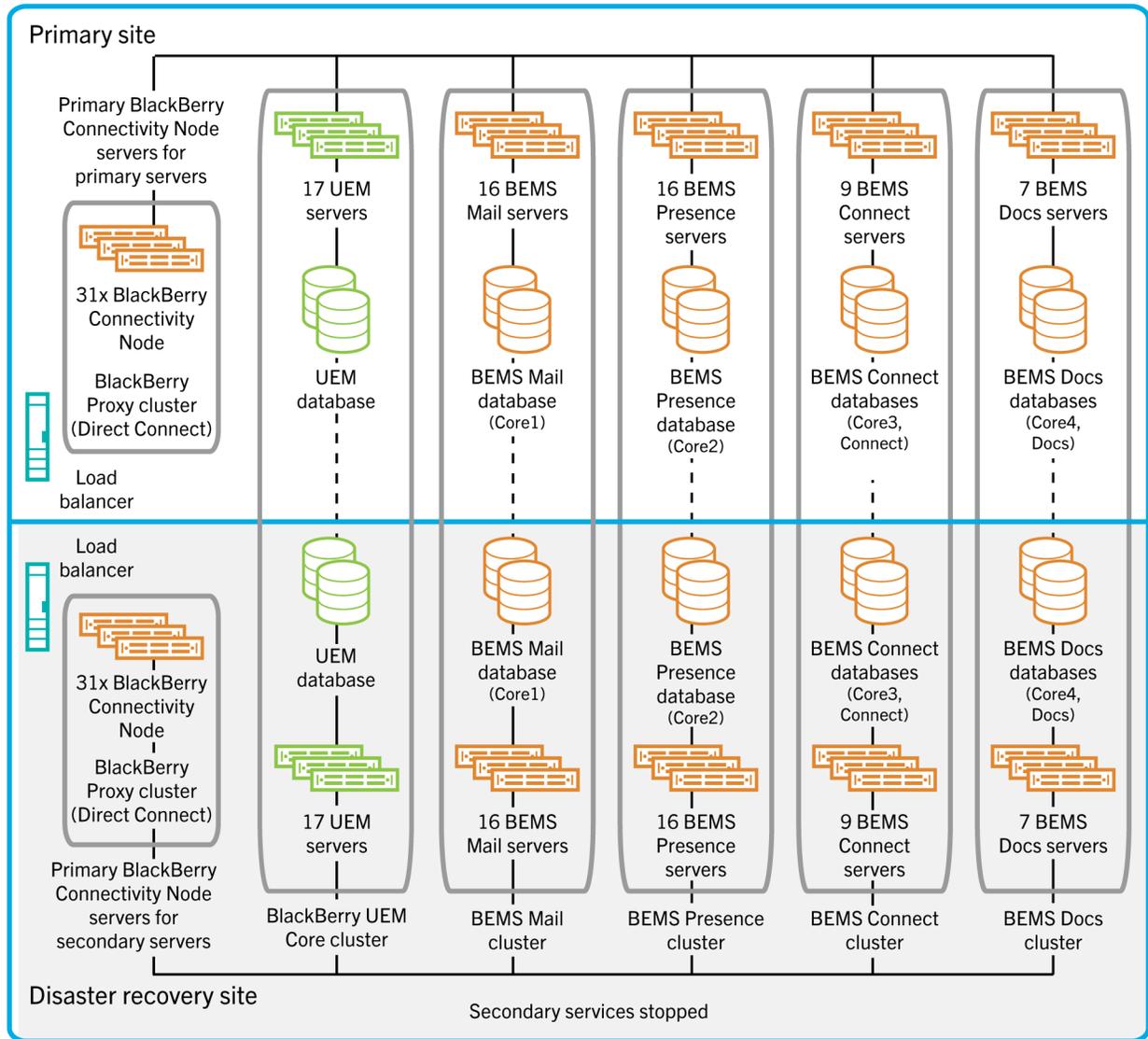
BlackBerry Proxy

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>

Legal notice

©2021 BlackBerry Limited. Trademarks, including but not limited to BLACKBERRY, BBM, BES, EMBLEM Design, ATHOC, CYLANCE and SECUSMART are the trademarks or registered trademarks of BlackBerry Limited, its subsidiaries and/or affiliates, used under license, and the exclusive rights to such trademarks are expressly reserved. All other trademarks are the property of their respective owners.

Microsoft, Active Directory, Lync, SharePoint, and Skype are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

This documentation including all documentation incorporated by reference herein such as documentation provided or made available on the BlackBerry website provided or made accessible "AS IS" and "AS AVAILABLE" and without condition, endorsement, guarantee, representation, or warranty of any kind by BlackBerry Limited and its affiliated companies ("BlackBerry") and BlackBerry assumes no responsibility for any typographical, technical, or other inaccuracies, errors, or omissions in this documentation. In order to protect BlackBerry proprietary and confidential information and/or trade secrets, this documentation may describe some aspects of BlackBerry technology in generalized terms. BlackBerry reserves the right to periodically change information that is contained in this documentation; however, BlackBerry makes no commitment to provide any such changes, updates, enhancements, or other additions to this documentation to you in a timely manner or at all.

This documentation might contain references to third-party sources of information, hardware or software, products or services including components and content such as content protected by copyright and/or third-party websites (collectively the "Third Party Products and Services"). BlackBerry does not control, and is not responsible for, any Third Party Products and Services including, without limitation the content, accuracy, copyright compliance, compatibility, performance, trustworthiness, legality, decency, links, or any other aspect of Third Party Products and Services. The inclusion of a reference to Third Party Products and Services in this documentation does not imply endorsement by BlackBerry of the Third Party Products and Services or the third party in any way.

EXCEPT TO THE EXTENT SPECIFICALLY PROHIBITED BY APPLICABLE LAW IN YOUR JURISDICTION, ALL CONDITIONS, ENDORSEMENTS, GUARANTEES, REPRESENTATIONS, OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY CONDITIONS, ENDORSEMENTS, GUARANTEES, REPRESENTATIONS OR WARRANTIES OF DURABILITY, FITNESS FOR A PARTICULAR PURPOSE OR USE, MERCHANTABILITY, MERCHANTABILITY, NON-INFRINGEMENT, SATISFACTORY QUALITY, OR TITLE, OR ARISING FROM A STATUTE OR CUSTOM OR A COURSE OF DEALING OR USAGE OF TRADE, OR RELATED TO THE DOCUMENTATION OR ITS USE, OR PERFORMANCE OR NON-PERFORMANCE OF ANY SOFTWARE, HARDWARE, SERVICE, OR ANY THIRD PARTY PRODUCTS AND SERVICES REFERENCED HEREIN, ARE HEREBY EXCLUDED. YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY BY STATE OR PROVINCE. SOME JURISDICTIONS MAY NOT ALLOW THE EXCLUSION OR LIMITATION OF IMPLIED WARRANTIES AND CONDITIONS. TO THE EXTENT PERMITTED BY LAW, ANY IMPLIED WARRANTIES OR CONDITIONS RELATING TO THE DOCUMENTATION TO THE EXTENT THEY CANNOT BE EXCLUDED AS SET OUT ABOVE, BUT CAN BE LIMITED, ARE HEREBY LIMITED TO NINETY (90) DAYS FROM THE DATE YOU FIRST ACQUIRED THE DOCUMENTATION OR THE ITEM THAT IS THE SUBJECT OF THE CLAIM.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW IN YOUR JURISDICTION, IN NO EVENT SHALL BLACKBERRY BE LIABLE FOR ANY TYPE OF DAMAGES RELATED TO THIS DOCUMENTATION OR ITS USE, OR PERFORMANCE OR NON-PERFORMANCE OF ANY SOFTWARE, HARDWARE, SERVICE, OR ANY THIRD PARTY PRODUCTS AND SERVICES REFERENCED HEREIN INCLUDING WITHOUT LIMITATION ANY OF THE FOLLOWING DAMAGES: DIRECT, CONSEQUENTIAL, EXEMPLARY, INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE, OR AGGRAVATED DAMAGES, DAMAGES FOR LOSS OF PROFITS OR REVENUES, FAILURE TO REALIZE ANY EXPECTED SAVINGS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, LOSS OF BUSINESS OPPORTUNITY, OR CORRUPTION OR LOSS OF DATA, FAILURES TO TRANSMIT OR RECEIVE ANY DATA, PROBLEMS ASSOCIATED WITH ANY APPLICATIONS USED IN CONJUNCTION WITH BLACKBERRY PRODUCTS OR SERVICES, DOWNTIME COSTS, LOSS OF THE USE OF BLACKBERRY PRODUCTS OR SERVICES OR ANY PORTION THEREOF OR OF ANY AIRTIME SERVICES, COST OF SUBSTITUTE GOODS, COSTS OF COVER, FACILITIES OR

SERVICES, COST OF CAPITAL, OR OTHER SIMILAR PECUNIARY LOSSES, WHETHER OR NOT SUCH DAMAGES WERE FORESEEN OR UNFORESEEN, AND EVEN IF BLACKBERRY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW IN YOUR JURISDICTION, BLACKBERRY SHALL HAVE NO OTHER OBLIGATION, DUTY, OR LIABILITY WHATSOEVER IN CONTRACT, TORT, OR OTHERWISE TO YOU INCLUDING ANY LIABILITY FOR NEGLIGENCE OR STRICT LIABILITY.

THE LIMITATIONS, EXCLUSIONS, AND DISCLAIMERS HEREIN SHALL APPLY: (A) IRRESPECTIVE OF THE NATURE OF THE CAUSE OF ACTION, DEMAND, OR ACTION BY YOU INCLUDING BUT NOT LIMITED TO BREACH OF CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR ANY OTHER LEGAL THEORY AND SHALL SURVIVE A FUNDAMENTAL BREACH OR BREACHES OR THE FAILURE OF THE ESSENTIAL PURPOSE OF THIS AGREEMENT OR OF ANY REMEDY CONTAINED HEREIN; AND (B) TO BLACKBERRY AND ITS AFFILIATED COMPANIES, THEIR SUCCESSORS, ASSIGNS, AGENTS, SUPPLIERS (INCLUDING AIRTIME SERVICE PROVIDERS), AUTHORIZED BLACKBERRY DISTRIBUTORS (ALSO INCLUDING AIRTIME SERVICE PROVIDERS) AND THEIR RESPECTIVE DIRECTORS, EMPLOYEES, AND INDEPENDENT CONTRACTORS.

IN ADDITION TO THE LIMITATIONS AND EXCLUSIONS SET OUT ABOVE, IN NO EVENT SHALL ANY DIRECTOR, EMPLOYEE, AGENT, DISTRIBUTOR, SUPPLIER, INDEPENDENT CONTRACTOR OF BLACKBERRY OR ANY AFFILIATES OF BLACKBERRY HAVE ANY LIABILITY ARISING FROM OR RELATED TO THE DOCUMENTATION.

Prior to subscribing for, installing, or using any Third Party Products and Services, it is your responsibility to ensure that your airtime service provider has agreed to support all of their features. Some airtime service providers might not offer Internet browsing functionality with a subscription to the BlackBerry® Internet Service. Check with your service provider for availability, roaming arrangements, service plans and features. Installation or use of Third Party Products and Services with BlackBerry's products and services may require one or more patent, trademark, copyright, or other licenses in order to avoid infringement or violation of third party rights. You are solely responsible for determining whether to use Third Party Products and Services and if any third party licenses are required to do so. If required you are responsible for acquiring them. You should not install or use Third Party Products and Services until all necessary licenses have been acquired. Any Third Party Products and Services that are provided with BlackBerry's products and services are provided as a convenience to you and are provided "AS IS" with no express or implied conditions, endorsements, guarantees, representations, or warranties of any kind by BlackBerry and BlackBerry assumes no liability whatsoever, in relation thereto. Your use of Third Party Products and Services shall be governed by and subject to you agreeing to the terms of separate licenses and other agreements applicable thereto with third parties, except to the extent expressly covered by a license or other agreement with BlackBerry.

The terms of use of any BlackBerry product or service are set out in a separate license or other agreement with BlackBerry applicable thereto. NOTHING IN THIS DOCUMENTATION IS INTENDED TO SUPERSEDE ANY EXPRESS WRITTEN AGREEMENTS OR WARRANTIES PROVIDED BY BLACKBERRY FOR PORTIONS OF ANY BLACKBERRY PRODUCT OR SERVICE OTHER THAN THIS DOCUMENTATION.

BlackBerry Enterprise Software incorporates certain third-party software. The license and copyright information associated with this software is available at <http://worldwide.blackberry.com/legal/thirdpartysoftware.jsp>.

BlackBerry Limited
2200 University Avenue East
Waterloo, Ontario
Canada N2K 0A7

BlackBerry UK Limited
Ground Floor, The Pearce Building, West Street,
Maidenhead, Berkshire SL6 1RL
United Kingdom

Published in Canada