

HP XP7 for Business Continuity Manager 8.0.0-00 Release Notes

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Version: 8.0.0-00

Description

This document contains release notes for HP XP7 for Business Continuity Manager.

About this release

This release is a major release that adds new features.

Superseded version

7.6.0-00

Operating system

One of the operating system versions shown in the following table is required.

Table 1 Applicable operating system

Operating systems	Required version
z/OS	V1R10–V2R1

License keys

You cannot use license keys that you installed for release 05-03 or earlier. This version requires a new style license key. The new style license key length is 75 characters.

Product models

Table 2 Storage system firmware levels

Storage system	Required microcode version	Storage system support function
HP XP7 Storage	80-01-01 or later	0x40 or lower
HP XP P9500 Storage	70-00-35 or later	0x33 or lower
HP XP24000 Disk Array HP XP20000 Disk Array	60-02-33 or later	0x23 or lower
HP XP12000 Disk Array HP XP10000 Disk Array	50-09-11 or later	0x16 or lower

Devices supported

HP XP7 for Business Continuity Manager on IBM mainframe servers running z/OS using HP XP7 Storage, HP XP P9500 Storage, and HP XP series disk arrays.

Languages

International English

New features and important enhancements

This version of Business Continuity Manager (BCM) supports the following functions and features:

Table 3 Supported enhancements and features in 8.0.0-00

Item	New features and enhancements
Storage system features	HP XP7 Storage is now supported.
Operation Improvement	Support the copy group configuration (Cnt Ac-S/Cnt Ac-A) of Non Gen'ed Volume on P-VOL and S-VOL.
	Support the copy group configuration (BC/Cnt Ac-J) of Non Gen'ed Volume on both P-VOL and S-VOL.
	On the Command Device Status Panel, added the Online or Offline status of the volume.

BCM can be used with the functions as indicated in Table 4. This table shows the first product that supports the function and the minimum required version of firmware to support the function. All functions are supported by newer firmware versions as well as newer products. For example, all functions are supported by HP XP7 Storage.

Table 4 BCM function by storage system

Function	Storage system	Required firmware version
Compatible FlashCopy linkage function is enabled when the Cnt Ac-J copy pair is in the DUPLEX status	XP24000/XP20000	60-05-00 or later
	XP P9500	70-01-23 or later
Compatible FlashCopy linkage using the Preserve Mirror function when the Cnt Ac-S copy pair is in the DUPLEX status	XP24000/XP20000	60-08-01 or later
	XP P9500	70-03-30 or later
Delta Resync function using the Delta Resync control path	XP24000/XP20000	60-05-00 or later
Cnt Ac-J ATTIME suspend function under 4x4x4 Multi-Target configuration	XP24000/XP20000	60-03-00 or later
2DC Configuration with HyperSwap and Cnt Ac-J	XP24000/XP20000	60-06-00 or later
	XP P9500	70-02-02 or later
Open/MF Consistency Preservation Function	XP24000/XP20000	60-06-00 or later
	XP P9500	70-02-5x or later
Suspend mode 'QUICK' with Cnt Ac-J ATTIME suspend function	XP24000/XP20000	60-07-00 or later
	XP P9500	70-02-02 or later
3DC Cascade (Cnt Ac-S Z x Cnt Ac-J Z) configuration	XP P9500	70-01-62 or later
3DC Multi-Target (Cnt Ac-S Z x Cnt Ac-J Z) configuration	XP P9500	70-01-62 or later
Delta Resync function	XP P9500	70-01-62 or later
4x4 configuration	XP P9500	70-01-62 or later
4x4x4 Multi-target configuration	XP P9500	70-02-02 or later
The volume capacity obtaining function in Remote disk or NonGen'ed disk	XP P9500	70-03-00 or later
4x4x4 Cascade configuration	XP P9500	70-03-30 or later
3DC Cascade (Cnt Ac-J Z x Cnt Ac-J Z)	XP P9500	70-04-00 or later
3DC Multi-Target (Cnt Ac-J Z x Cnt Ac-J Z)	XP P9500	70-04-00 or later
Cnt Ac-J Z path group ID (including support for values of path group ID other than 00)	XP P9500	70-05-00 or later

Business Continuity Manager can use other functions by the storage system with the microcode shown by firmware levels.

Prerequisites

Prerequisite programs

The following software programs must be installed to use Business Continuity Manager.

Table 5 Prerequisite programs to install

Program name	Notes
DFSMS	Standard OS component
ISPF	Standard OS component
TSO/E	Standard OS component
TSO/E REXX	Standard OS component
Security Server	To use the resource access control facility (RACF)
IBM Library for REXX on zSeries Release 4 (FMID HWJ9140) or IBM Library for REXX on zSeries Alternate Library (FMID HWJ9143)	The REXX Alternate Library is included in standard OS component.

Related programs

Linking Replication Manager

The following software programs are required when Replication Manager is used to collect mainframe system storage information.

Table 6 Prerequisite programs when linking Replication Manager

Program name	Description	Notes
IBM Communication Server	A communication program	Standard OS component
Replication Manager	A program required to define, use, and monitor copy pairs.	8.0.0-00 or later
IBM HTTP Server for z/OS	An optional product bundled with WebSphere Application Server for z/OS. This is required when establishing IPv6 connections or HTTPS communication with Replication Manager. In addition, z/OS Security Level3 is required when establishing HTTPS communication with Replication Manager.	Use version 6.1

Operating z/OS on z/VM

The following software programs are required when operating BC Manager z/OS on z/VM. In addition, a LOCALMOD must be performed on the z/VM Control Program (CP) to enable the CCWs used by BCM. See Appendix E in the *HP XP7 for Business Continuity Manager Installation Guide* for the details of the LOCALMOD.

Table 7 Prerequisite programs when operating Business Continuity Manager z/OS on z/VM

Program name	Notes
z/VM	V5R3 (PTF is necessary) or higher

Performing operations in a 2DC configuration with HyperSwap and Continuous Access Journal

The following software program is required when running BCM in a 2DC configuration with HyperSwap and Continuous Access Journal.

Table 8 Prerequisite programs when performing operations in a 2DC configuration with HyperSwap and Cnt Ac-J

Program name	Notes
IBM Tivoli Storage Productivity Center for Replication for System z	4.2.0 or later

Memory and disk space requirements

Virtual memory space requirements

The following indicates the user region necessary to run Business Continuity Manager.

- User region less than 16 MB:
1,024 KB
- Extended user region greater than 16 MB
 - For TSO/E:
 $4,000 \text{ KB} + (2 \times \text{number of volumes}) \text{ KB}$
 - For Batch:
 $4,000 \text{ KB} + \uparrow(1.5 \times \text{number of volumes})\uparrow \text{ KB}$
number of volumes: Number of all volumes included in DAD used. When two or more copy groups are operated, they are sum totals of the number of volumes that each copy group uses.

The following indicates the user region necessary when linking with Replication Manager. The `PREFIX` parameter and `DEVN` parameter in the formula below are the initialization parameters of the BCM agent.

- User region less than 16 MB:
2,048 KB
- Extended user region greater than 16 MB:
 $6,000 \text{ KB} + A \text{ KB}$
 $+ \uparrow(512 \times \text{number-of-specified-PREFIX-parameters}) \div 1,024 \uparrow \text{ KB}$
 $+ \uparrow(64 \times \text{number-of-specified-DEVN-parameters}) \div 1,024 \uparrow \text{ KB}$
A: The larger value of the following: the value of $(1.5 \times D)$ and the result of $(3 \times P)$
D: Among the numbers of devices specified for the DEVN parameters, the highest number of devices.
P: Among the copy groups used by the BCM agent, the highest number of copy pairs in any group.

The amount of memory required to use BCM Monitor is shown as follows.

- For a user region less than 16 MB:
2,048 KB
- For an extended user region of 16 MB or more:
6,000 KB + (3 × number-of-copy-pairs) KB + (C + S) × 1 KB
C: Number of copy group parameters specified in the YKMONCG file.
S: Number of action parameters specified in the YKMONCG file.

Table 9 Disk space requirements

Files to be installed	Required space (in unit of tracks)	Number of directories
HPQSYSAMT	15 tracks	5
HPQSYLNKT	90 tracks	30
HPQSYLPAT	1 track	1
HPQSYPRCT	5 tracks	10
HPQSYEXET	45 tracks	10
HPQSYEXVT	45 tracks	10
HPQSYPNLT	60 tracks	200
HPQSYMSGT	5 tracks	5
HPQSYTABT	5 tracks	5

Fixes

None.

Resolved issues

Resolved issues from 7.6.0-00 to 8.0.0-00

Table 10 Resolved issues

Corrected problems	Applied products	Applied OS
<p>Corrected the problem in which the program terminates abnormally with an I/O error (YKZ257E) when the PATH SMODEL is specified while YKQRYDEV is executed. This problem occurs if the following conditions are met:</p> <ol style="list-style-type: none"> 1. The targeted volume (storage system) in the command does not support the path group ID. <ul style="list-style-type: none"> • On Model XP12000/XP10000, XP24000/XP2000 • On Model XP P9500 and on micro version 70-05-00 or earlier 2. A path group ID x '01' or more of the DKC logical path is registered between the targeted storage system in the command and the storage system specified in the SSN parameter. 	Business Continuity Manager	All(Note)

Known issues

None.

Installation instructions

Installation precautions

Review the following manual references for installation:

- Before starting installation, ensure that there are sufficient dataset capacity and number of directories in the distribution libraries and the target libraries that are required for installation.
- See the installation chapter of the *HP XP7 for Business Continuity Manager Installation Guide* for full details.

Determining current version

Version description

The Main Menu panel displays the version number of this product as follows:

- Version 8.0.0-00

The ISPF Setting Information panel and the `YKINSCHK` command `YKK001I` message output display the version number of this product as follows:

- Version 8.0.0-00 (02)

The `YKDSPENV` command `YKT400I` message output displays the version number of this product as follows:

- Version 8.0.0-00

When Agent starts, the `YKY001I` message output displays the version number of this product as follows:

- Version 8.0.0-00

The `YKENV` command displays the version number of this product as follows:

- Version 8.0.0-00 (02)

When BCM Monitor starts, the `YK8001I` message output displays the version number of this product as follows:

- Version 8.0.0-00

In the chapters "Installing Business Continuity Manager" and "Modifying Sample JCL" in the *HP XP7 Business Continuity Manager Installation Guide*, replace `CHYKnnn` and `Vnnnnnn` as follows:

In the manual	Replace with
<code>CHYKnnn</code>	<code>CHYK802</code>
<code>Vnnnnnn</code>	<code>V080000</code>

User SVC version that corresponds to this product version

The User SVC version that corresponds to this product version is as follows:

- Version 7.5.0-00(00) or later

This information appears in the User SVC Information panel and the `YKINSCHK` command execution result.

Compatibility/interoperability

System configuration

- BCM supports 2DC configurations (1:1). By making multiple units of 2DC configurations, it is possible to create N:N configurations.
- BCM supports 3DC (Cnt Ac-S and Cnt Ac-J) configurations (Cascade configurations and Multi-Target configurations). Note that 3DC configurations are supported only when all storage systems in the configurations are XP10000/XP12000 disk arrays, XP20000/XP24000 disk arrays, XP P9500 Storage, or XP7 Storage. N:1 configuration and a configuration that consists of 4 or more DCs are not supported.
- BCM supports 4x4 and 4x4x4 Multi-Target configurations. Note that the configuration should consist entirely of XP10000/XP12000 disk arrays, XP20000/XP24000 disk arrays, XP P9500 Storage, or XP7 Storage.
- BCM supports 4x4x4 Cascade configurations. Note that the configuration should consist entirely of XP12000/XP10000 disk arrays, XP24000/XP20000 disk arrays, XP P9500 Storage, or XP7 Storage.

Remote DKC control function

- When using Remote DKC control function, use Fibre Channel links for connection between DKCs. ESCON links are not supported. When you define the logical path between CUs for Remote DKC control function, you must define the path between the CUs that belong to the command device volumes.
- To share a command device among multiple operating systems, ensure that the `&YKCMDIF` variable is either defined in the IEASYM member or set by the `START YKSETENV` command.
- When allocating a command device, note the following items:
 - A parity group cannot be moved if a command device is defined within the parity group.
 - The parity group type cannot be changed if the command device is defined within the parity group.
 - The command device between LCUs cannot be moved.
 - The volume size of the command device cannot be changed .
- When defining a multiple command device line, HP recommends the following command device setting to reduce the CLI command response time:
 - The number of command devices for the first storage system of a route list should be 17 or less.

Copy types

There should not be a mix of copy types within a single copy group. Ensure that all volumes are `SIMPLEX` in the initial state. BCM does not display the pair status correctly in the following conditions:

- Copy group definition is changed when all pairs are not `SIMPLEX`.
- Pair configuration in the copy group definition differs from the actual pair configuration.

Other

- From BCM 04-00, CLI Command-Execution Logs are output to `SYSLOG`. This applies to the CLI commands that are executed from within the ISPF panels of BCM. Therefore, large amounts of data will be output to `SYSLOG` when you make frequent use of BCM or issue many CLI commands.
- BCM does not support Data Exchange volumes.
- From z/OS V1R8, a console ID cannot be specified to the CN operand of the TSO/E `SEND` command. Because of this, a console ID cannot be specified for the CN operand of the `YKWATCH` command when using it on z/OS V1R8 or later. If the console ID is specified, the TSO/E `SEND` command that is used in the `YKWATCH` command will fail and the `YKWATCH` does not return the expected message.
- From BCM 06-00, it becomes impossible to use the configuration file made by versions earlier than 02-00. (`APIInfo Level` in the configuration file is 1.1.0 or earlier).
- After the storage system microcode is replaced, scan the storage system.
- Specify a different storage system serial number for P-VOL and S-VOL when you define the copy group definition of the copy type other than Business Copy.
- Do not specify a different DADID from the DADID in a copy group definition when you specify a DADID in the Set Defaults panel or the `YKLOAD` command's operand.
- From BCM 06-00, it is necessary to set up the resource access control facility (RACF) to use the CLI commands or BCM agent.
- Do not perform PPRC operations on BCM copy pairs. If you perform PPRC operations to BCM copy pairs, dissolve and re-establish the copy pairs using BCM.
You can resynchronize copy pairs with the `CESTPAIR` operation with the default operands only if you perform the `CSUSPEND` operation with the default operands on the BCM copy pairs of a Cnt-Ac S copy group without the C/T group ID.
- If there is already a configuration file generated by the `YKP2A` command of the Mainframe Agent program, make sure to use the different prefix value for BCM so that it does not reference the configuration file generated by the `YKP2A` command. BCM does not accept a configuration file generated by the `YKP2A` command. If such a file is used for any BCM operations, it causes an error.
- With BCM versions earlier than version 6.1.0-00, user SVCs cannot be used to suppress output of IOS002A messages when the I/O path between the host and the storage system is disconnected while device scanning is being performed. Therefore, in a mixed-version environment, make sure to always use user SVCs of BCM version 6.1.0-00 or later.

Temporary restrictions

- In a configuration in which supported XP disk arrays, XP P9500 Storage, and XP7 Storage coexist, BCM can manage a configuration only when it consists of devices whose serial numbers are not duplicates. Each device in the configuration must have a unique serial number.
- When using BCM to operate from L-site in a 4x4x4 Multi-Target configuration with Delta Resync, do not perform the resync operation on a Cnt Ac-J copy pair that was automatically suspended after performing Reverse Resync on Cnt Ac-S copy pairs to avoid forming a 3DC Cascade configuration.
- When using BCM to operate from L-site in a 4x4x4 Multi-Target configuration with Delta Resync, start the business operation after Cnt Ac-S and Cnt Ac-J copy pairs are formed so the Multi-Target configuration is established.

- BCM does not support a recovery procedure from failure in 4x4x4 Multi-Target configuration with Delta Resync by misoperation. In this case, use the following assistance:
If you need to call technical support, make sure to provide as much information about the problem as possible, including:
 - The circumstances surrounding the error or failure.
 - The content of any error messages displayed on the host systems.
 - The content of any error messages displayed on Remote Web Console.
 - The Remote Web Console configuration information (use the FD Dump Tool).
 - The service information messages (SIMs), including reference codes and severity levels, displayed by Remote Web Console.
- Do not specify the following values to the DADID of a Disk Configuration Definition, a copy group, or a route list. Specifying those values may cause the information displayed in the Discover HP Storage Arrays panel to become incorrect.
 - "R"
 - "CMD"
 - "I"
 - "K"
 - "RC"

Examples that cannot be specified:

- "R"
- "xx.R"
- "R.xx"
- "xx.R.xx"

where *xx* is an arbitrary string of one or more characters.

- The `YKWATCH` command is not available for monitoring a copy pair status transition if the `PPRCSUM` feature in `DEVSUPxx` is enabled in z/OS V1R13 or later. Use the `YKEWAIT` command to monitor instead.
- TLS 1.2 is not possible when HTTPS communicates with Replication Manager

Specification differences from previous versions

This section describes the specification differences between BCM version 7.6.0-00 and version 8.0.0-00.

- In configuration files and in REXX variable structures, "XP7" is displayed as "VSPG1000".

Commands

Command	Specification in version 7.6.0-00	New specification in version 8.0.0-00
YKQRYDEV	SMODEL ({ USP USPV VSP })	SMODEL ({ USP USPV VSP VSPG1000 })

ISPF panels

Panel name	Specification in version 7.6.0-00	New specification in version 8.0.0-00
Edit Logical Path Definition	In [Primary Model], you can specify the following values: <ul style="list-style-type: none"> • 9900V • USP • USPV • VSP 	In [Primary Model], you can specify the following values: <ul style="list-style-type: none"> • 9900V • USP • USPV • VSP • VSPG1000
	In [Secondary Model], you can specify the following values: <ul style="list-style-type: none"> • 9900V • USP • USPV • VSP 	In [Secondary Model], you can specify the following values: <ul style="list-style-type: none"> • 9900V • USP • USPV • VSP • VSPG1000
CU Selection List for Edit devn	—	In [Model], "XP7" is displayed as "VSPG1000".
CCA Selection List for Edit devn		
Control Unit Selection List		
Command Control Address (CCA) Selection List		
Edit Port Definition		
Command Device Status		
Command Device Selection List		
Confirm Command Device Delete		
Command Device Status	HostStatus is not displayed.	HostStatus indicating the Online/Offline state of the volume is displayed.
Copy Group Attributes For Container (TC)	The default value of [DIF UNIT] is "CYL".	The default value of [DIF UNIT] is "TRK".
Copy Group Attributes (TC)		
Copy Group Attributes For Container (TCA)		
Copy Group Attributes (TCA)		

Messages

Command	Specification in version 7.6.0-00	New specification in version 8.0.0-00
YKZ414E	The following values are displayed in <parameter-name>: <ul style="list-style-type: none"> • UR_CTTIMEMODE • TC_OPENMF • LinkageOption=HS 	The following values are displayed in <parameter-name>: <ul style="list-style-type: none"> • UR_CTTIMEMODE • TC_OPENMF • LinkageOption=HS

Command	Specification in version 7.6.0-00	New specification in version 8.0.0-00
	<ul style="list-style-type: none"> • AttimeSplitMode=QUICK • UR_PathID 	<ul style="list-style-type: none"> • AttimeSplitMode=QUICK • UR_PathID • GroupID=<GroupID>
YKY001I	AGENT STARTED (<vv>-<rr>[-<zz>])	AGENT STARTED (<v.r.r.-zz>)
YKZ422E	—	Newly added

4x4x4 Multi-Target configuration with Delta Resync

Additional information and updates to the 4x4x4 Mutli-Target configuration with Delta Resync documentation.

Table 11 Additional information and documentation updates

Guide name	Location to be updated	Updates	
Reference Guide	2. CLI commands YKDELETE command Notes	Add	In 4x4x4 Multi-Target configurations with Delta Resync, information about an EXCTG is deleted when all copy pairs of either the Cnt Ac-J Z or the Delta Resync copy group that was first registered to the EXCTG are dissolved. For example, if the YKDELETE command is issued to Cnt Ac-J Z copy pairs or Delta Resync pairs in HOLD status after Delta Resync is performed, a Journal Group of Cnt Ac-J Z copy pairs in DUPLEX is also unregistered from the EXCTG. Therefore, if YKQUERY is issued to retrieve copy pair information from the Cnt Ac-J Z copy pairs, the YKZ296E message occurs. If this occurs, either issue the YKMAKE command with the HOLD parameter to the dissolved Cnt Ac-J Z copy pairs or Delta Resync pairs, or issue the YKMAKE command with the SELECT (COND) parameter to (undissolved) Cnt Ac-J Z copy pairs to re-register them to the EXCTG.
Reference Guide	2. CLI commands YKRECVER command Notes	Add	In 4x4x4 Multi-Target configurations with Delta Resync, information about an EXCTG is deleted when all copy pairs of either the Cnt Ac-J Z or the Delta Resync copy group that was first registered to the EXCTG are dissolved. For example, if the YKRECVER command is issued to Cnt Ac-J Z copy pairs or Delta Resync pairs in HOLD status after Delta Resync is performed, a Journal Group of Cnt Ac-J Z copy pairs in DUPLEX is also unregistered from the EXCTG. Therefore, if YKQUERY is issued to retrieve copy pair information from the Cnt Ac-J Z copy pairs, the YKZ296E message occurs. If this occurs, either issue the YKMAKE command with the HOLD parameter to the dissolved Cnt Ac-J Z copy pairs or Delta Resync pairs, or issue the YKMAKE command with the SELECT (COND) parameter to (undissolved) Cnt Ac-J Z copy pairs to re-register them to the EXCTG.
Messages	1. Messages List of messages Description of YKZ296E message	Add	In 4x4x4 Multi-Target configurations with Delta Resync, information about an EXCTG is deleted when all copy pairs of either the Cnt Ac-J Z or the Delta Resync copy group that was first registered to the EXCTG are dissolved. For example, if the YKDELETE command or the YKRECVER command is issued to the Cnt Ac-J Z copy pairs or Delta Resync pairs in HOLD status after Delta Resync is performed, a Journal Group of Cnt Ac-J Z copy pairs in DUPLEX is also unregistered from the EXCTG. Therefore, this message occurs for Cnt Ac-J Z copy pairs in DUPLEX. Action to take in 4x4x4 Multi-Target configurations with Delta Resync: either issue the YKMAKE

Table 11 Additional information and documentation updates *(continued)*

Guide name	Location to be updated	Updates
		command with the <code>HOLD</code> parameter to the dissolved Cnt Ac-J Z copy pairs or Delta Resync pairs, or issue the <code>YKMAKE</code> command with the <code>SELECT (COND)</code> parameter to (undissolved) Cnt Ac-J Z copy pairs to re-register them to the EXCTG.

Table 12 (page 14), Table 13 (page 14), Table 14 (page 15), and Table 15 (page 16) show prerequisite conditions for 4x4x4 Multi-Target configuration with Delta Resync.

Table 12 Prerequisite hardware

Item	Description	Remarks
Host	Primary site: 1 host Local site: 1 host if operation is to be performed from the Local site. Remote site: 1 host if operation is to be performed from the Remote site.	z/OS should be installed.
Storage system	Primary site: 1 or more XP12000/XP10000, XP24000/XP20000, or XP P9500 disk arrays Local site: 1 or more XP12000/XP10000, XP24000/XP20000, or XP P9500 disk arrays Remote site: 1 or more XP12000/XP10000, XP24000/XP20000, or XP P9500 disk arrays	
Inter-DKC link (physical path)	Primary site <—> Local site: Fibre Channel, bi-directional. Primary site <—> Remote site: Fibre Channel, bi-directional. Local site <—> Remote site: Fibre Channel, bi-directional. Arbitration path in remote site: Fibre Channel, single direction from the supervisor DKC to each subordinate DKC.	Arbitration paths must be set up with Remote Web Console.

Table 13 Prerequisite software

Item	Description
z/OS V1R10–V2R1	Versions supported by BCM Version 8.0.0-00
BCM	Version 8.0.0-00 <ul style="list-style-type: none"> • Basic License • Cnt Ac-J 4x4 Extended CTG License

Table 14 Storage system settings

Item	Description	Remarks
Arbitration command devices	Storage systems at the remote site: One or more arbitration command devices for each subordinate DKC.	Arbitration command devices must be set up with Remote Web Console.
Journal groups	Journal groups for Cnt Ac-J. Timer type must be "System."	<ul style="list-style-type: none"> • Required at the Primary, Remote, and Local sites. • Journal groups must be set up with the Remote Web Console before running a script.
Journal volumes	Journal volumes for Cnt Ac-J.	<ul style="list-style-type: none"> • One or more of journal volumes are required at each of the Primary, Remote, and Local sites.
Command devices	In 2x2x2 configuration: 3 devices for each DKC, 18 devices in total.	None
Logical paths	Between the Primary and Local sites: Inter-CU logical paths (bi-directional). Between the Primary and Remote sites: Inter-DKC logical paths (bi-directional). Between the Local and Remote sites: Inter-DKC logical paths (bi-directional).	None

Table 15 Software settings (Operating system and BCM)

Item	Description	Remarks
Route list (Configuration file)	As in the basic 3DC Multi-Target configuration with Delta Resync pairs, the host at each site must have its own route list. See "Preparing the Software (OS, Business Continuity Manager)" in the <i>User Guide</i> to set up a route list.	None
Cnt Ac-S copy group (Configuration file)	<ul style="list-style-type: none"> Cnt Ac-S Consistency Preservation function must be applied. Prepare the copy group that the unit of DKC or each CT group divided for the operation at the failure. 	None
4x4 Cnt Ac-J copy group (Configuration file)	<ul style="list-style-type: none"> 4x4 Cnt Ac-J copy groups are required for the Primary-Remote sites and the Local-Remote sites. The S-VOL journal group of the Delta Resync pairs must be the same as the S-VOL journal group of Cnt Ac-J copy pairs, but they must have the different mirror ID specified. EXCTG ID of a forward direction of Cnt Ac-J copy pairs (EXCTG in the Remote site) must be the same as EXCTG ID of a forward direction of Delta Resync copy pairs (EXCTG in the Remote site). Prepare the copy group that the unit of DKC or each journal group divided for the operation at the failure. And, do not use 4x4 function in the divided copy groups. 	None

Overview of CLI commands for 4x4x4 Multi-Target configuration with Delta Resync

The following table shows the CLI commands that support 4x4x4 Multi-Target configuration with Delta Resync and how they differ from their behavior on 4x4 configuration and Delta Resync configuration.

Table 16 Overview of CLI commands

CLI command	4x4x4 configuration	Differences from previous version	Remarks
YKBLDCMD	Not applicable	Not applicable	
YKBLDPTH	Not applicable	Not applicable	
YKCONMSG	Supported	None	
YKDELCMD	Not applicable	Not applicable	
YKDELETE	Supported	After performing Delta Resync, if the Delta Resync copy pairs between the Primary and Remote sites are dissolved, EXCTG information of Cnt Ac-J copy pairs between the Local and Remote sites is also deleted. Therefore, issuing the YKQUERY command	If this situation occurs, issue either the YKMAKE command with the HOLD parameter to the Delta Resync copy pairs between the Primary and Remote sites, or the YKMAKE command with the SELECT(COND) parameter to the Cnt Ac-J copy pairs between the

Table 16 Overview of CLI commands *(continued)*

CLI command	4x4x4 configuration	Differences from previous version	Remarks
		to such copy pairs causes the YKZ296E error message to occur.	Local and the Remote sites to re-register them to EXCTG.
YKDELPTH	Not applicable	Not applicable	
YKEWAIT	Supported	None	
YKFCSTAT	Not applicable	Not applicable	
YKFREEZE	Supported	None	
YKLOAD	Supported	None	
YKMAKE	Supported	None	
YKQRYDEV	Supported	None	
YKQRYPTH	Not applicable	Not applicable	
YKQUERY	Supported	None	
YKRECVER	Supported	After performing Delta Resync, if the Delta Resync copy pairs between the Primary and Remote sites are dissolved, EXCTG information of Cnt Ac-J copy pairs between the Local and Remote sites is also deleted. Therefore, issuing the YKQUERY command to such copy pairs causes the YKZ296E error message to occur.	If this situation occurs, issue either the YKMAKE command with the HOLD parameter to the Delta Resync copy pairs between the Primary and Remote sites, or the YKMAKE command with the SELECT(COND) parameter to Cnt Ac-J copy pairs between the Local and Remote sites to re-register them to EXCTG.
YKRESYNC	Supported	None	
YKRUN	Supported	None	
YKSCAN	Not applicable	Not applicable	
YKSLEEP	Not applicable	Not applicable	
YKSTATS	Supported	None	
YKSTORE	Supported	None	
YKSUSPND	Supported	None	
YKWATCH	Supported	None	

Setup procedure of 4x4x4 Multi-Target configuration with Delta Resync is equivalent to that of 4x4 configuration and 3DC Multi-Target configuration with Delta Resync except that there are some restrictions on definition of Cnt Ac-S and 4x4 Cnt Ac-J.

Operation of 4x4x4 Multi-Target configuration with Delta Resync is same as that of 4x4 configuration and 3DC Multi-Target configuration with Delta Resync.

Table 17 Operation procedure of 4x4x4 Multi-Target configuration with Delta Resync

Operation procedure	Description	Configuration	Difference from 3DC Multi-Target configuration
Preparation			
Hardware setup	<ul style="list-style-type: none"> • Bi-directional paths must be set between P-L, P-R and L-R sites. • One or more Journal groups in each site. • Arbitration paths and arbitration command devices. 	1DC	Arbitration paths and command devices for 4x4 configuration are necessary.
Route list	<p>Create a route list of 3DC Multi-Target configuration that contains definition or routes that start from each site. This route list is equivalent to that of 3DC Multi-Target configuration with Delta Resync.</p> <p>Once a route list is defined, establish routes according to the route list.</p>	1DC	A command device is necessary for each DKC.
Definition of copy pairs	Create a copy group definition file for TC between P-site and L-site (G1/G4), 4x4 Cnt Ac-J between P-site and R-site (G2/G5), and 4x4 Cnt Ac-J between L-site and R-site (G3/G6).	1DC	Cnt Ac-S must be with C/T ID, and Cnt Ac-J must be of 4x4 Cnt Ac-J. See Table 15 (page 16) for more details.
Establish Cnt Ac-S copy pairs (G1/G4)	Establish Cnt Ac-S copy group (G1/G4).	2DC	None
Establish Cnt Ac-J copy pairs (G2/G5)	Establish Cnt Ac-J copy group (G2/G5).	3DC	None
Establish Delta Resync Cnt Ac-J copy pairs (G3/G6)	Establish Delta Resync Cnt Ac-J copy group (G3/G6) into HOLD status.	3DC	None
Normal operation			
....	Keep DUPLEX status on both Cnt Ac-S (G1/G4) and Cnt Ac-J (G2/G5) copy groups.	3DC	None

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