Hitachi Business Continuity Manager v10.1.0-00 Release Notes

About this document

This document (RN-00HS270-65, January 2026) provides the latest information about Hitachi Business Continuity Manager v10.1.0-00 (FMID: CHYKA04), including information that was not available at the time the technical documentation for this product was published.

Intended audience

This document is intended for customers and Hitachi Vantara partners who license and use Hitachi Business Continuity Manager.

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About this release

This release is a major release that adds new features and resolves multiple known problems.

Product package contents

Medium	CD-ROM	Revision
Software	Hitachi Business Continuity Manager	10.1.0-00

New features and important enhancements

Item	New features and enhancements
New storage system support	VSP One B85 storage systems are supported.
New support	Defining the profile to the RACF FACILITY or XFACILIT class and setting READ permission for that profile to the user is now mandatory for the extended access control functions. *
New support	The YKDEXCTG command profile has been added to the specific command access control function.
New OS support	z/OS 3.2 is supported as an applicable operating system.

* See “Other” in specification differences from the previous versions.

System requirements

Operating system requirements

Operating system
z/OS® V2R2 to V2R5, 3.1 to 3.2

License keys

License keys
This version requires a 75-character license key.

Firmware levels

Storage system	Required microcode version	Storage system support function
Hitachi Virtual Storage Platform (VSP) One Block 85	A0-05-20 or later	0x60 or later
Hitachi Virtual Storage Platform (VSP) 5200, 5200H, 5600, 5600H	90-08-00 or later	0x52 or later
Hitachi Virtual Storage Platform (VSP) 5100, 5100H, 5500, 5500H	90-01-40 or later	0x52 or later

Note: In the rest of this document, VSP 5600, 5500, 5200, 5100, 5600H, 5500H, 5200H, 5100H is referred to as VSP 5000 series.

Prerequisite programs

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

Related Programs

Requirements when running z/OS® on z/VM

The following software programs are required when running BC Manager z/OS® on z/VM®.

Program name	Notes
z/VM®	Confirm supported versions with Hitachi Vantara.

Requirements for 2DC configuration environments with HyperSwap® and Universal Replicator

The following software program is required when running BC Manager in a 2DC configuration with HyperSwap® and Universal Replicator.

Program name	Notes
IBM® Copy Services Manager	6.1.0 or later

Memory and disk space requirements

Virtual memory requirements

Running BC Manager requires the following user regions:

- For a user region of 16 MB or less: 1,024 KB
- For an extended user region of 16 MB or more:
    - For TSO/E:
      4,000 KB + ↑(1 × number-of-volumes)↑ KB + ↑(3.5 × number-of-copy-pairs)↑ KB
    - For Batch:
      4,000 KB + ↑(1 × number-of-volumes)↑ KB + ↑(2.5 × number-of-copy-pairs)↑ KB
    - For running the YKIMPORT command:
      4,000 KB + ↑(1 × number-of-volumes)↑ KB + ↑(2.5 × number-of-copy-pairs-to-create)↑ KB + ↑(3 × number-of-BASEGROUP-copy-pairs)↑ KB
    - For running the YKBTSCAN command:
      4,000 KB + ↑(1.5 × number-of-volumes-to-scan)↑ KB + ↑(2 × number-of-scanned-volumes)↑ KB
        - *number of volumes:* Number of all volumes included in DAD used. When two or more copy groups are used, this is the sum total of the number of volumes that each copy group uses.
        - *number-of-copy-pairs:* Number of copy pairs in the copy group definition file to use.
        - *number-of-copy-pairs-to-create:* Number of copy pairs to create by using the YKIMPORT command.
        - *number-of-BASEGROUP-copy-pairs:* Number of copy pairs in the copy group definition file to use as a base.
        - *number-of-volumes-to-scan:* Total number of volumes included in the range to scan by using the YKBTSCAN command.
        - *number-of-scanned-volumes:* Total number of volumes in the disk configuration definition file if you run YKBTSCAN to add volumes to an existing disk configuration definition file.
        - ↑A × B↑: Indicates that the result of A × B is rounded up to the nearest integer.

The following indicates the user region that is required when linking with Replication Manager. The PREFIX parameter and DEVN parameter in the following formula are the initialization parameters of the BC Manager agent.

- For a user region of 16 MB or less: 2,048 KB
- For an extended user region of 16 MB or more:

  6,000 KB + A KB + ↑(512 × number-of-specified-PREFIX-parameters) / 1,024 KB↑ + ↑(64 × number-of-specified-DEVN-parameters) / 1,024↑ KB
    - *A:* The larger value of the following: the value of (1.5 × D) and the result of (3 × 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 BC Manager agent, the highest number of copy pairs in any group.
    - Where "↑A / B↑" indicates rounding up the decimal numbers from the result of A / B.

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

- For a user region of 16 MB or less:

  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

Disk space requirements

Files to install	Required space (in unit of tracks)	Number of directories
HDSYSAMT	30 tracks	5
HDSYLNKT	135 tracks	40
HDSYLPAT	1 track	1
HDSYPRCT	5 tracks	10
HDSYEXET	30 tracks	10
HDSYEXVT	30 tracks	10
HDSYPNLT	60 tracks	200
HDSYMSGT	5 tracks	5
HDSYTABT	5 tracks	5

Resolved problems

From 9.9.0-00 to 10.1.0-00

#	Corrected Problems	Applied products	Applied OS
1	After suspending a Shadow Image copy group from the ISPF panel with Secondary Volumes R/W: Permit specified, the Volume Query Information (SI) panel displayed PROTECT instead of PERMIT in the PROT MODE field. This issue is fixed. This issue occurs when all of the following conditions are met: (1) Execute YKSUSPND on the SI copy group (2) Open the Volume Query Information (SI) panel Workaround: None.	BC Manager	All(Note)

Known problems

None

Installation precautions

For details about installing BC Manager, see the *Hitachi Business Continuity Manager Installation Guide*.

- Before starting the installation, ensure that there is sufficient dataset capacity, and a sufficient number of directories in the distribution libraries and the target libraries that are required for installation.
- If BC Manager, Mainframe Analytics Recorder, and HTSM for Mainframe exist on the same system, the User SVC in the newest version of any of the products should be registered.

Version description

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

- Version 10.1.0-00

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

- Version 10.1.0-00 (01)

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

- 10.1.0-00

The YKY001I message output when Agent starts displays the version number of this product as follows:

- 10.1.0-00

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

- 10.1.0-00 (01)

The YK8001I message output when BCM Monitor starts displays the version number of this product as follows:

- 10.1.0-00

In the "Installing Business Continuity Manager" and "Modifying Sample JCL" sections of the *Hitachi Business Continuity Manager Installation Guide*, replace CHYKnnn and Vnnnnnn as follows:

In the manual	Replace with
CHYKnnn	CHYKA04
Vnnnnnn	V101000

User SVC version that corresponds to this product version

The User SVC version that corresponds to this product version is version 9.9.1-00(00) or later.

This information appears in the User SVC Information panel and in the result when running the YKINSCHK command.

Usage precautions

User SVC

BCM, HTSM for MF, and MAR (mainframe analytics recorder) share the same user SVC.

System Configuration

- BC Manager supports 2DC configuration (1:1). By making multiple units of 2DC configurations, you can create N:N configurations.

- BC Manager supports 3DC (TC-Sync and UR) configurations (Cascade configurations and Multi-Target configurations). Note that 3DC configurations are supported only when all storage systems in the configuration are VSP 5000 series or VSP One Block 85. N:1 configurations and configurations that consists of four or more DCs are not supported.
- BC Manager supports 4x4 and 4x4x4 Multi-Target configurations. Note that the configuration must consist entirely of VSP 5000 series or VSP One Block 85.
- BC Manager supports 4x4x4 Cascade configurations. Note that the configuration must consist entirely of VSP 5000 series or VSP One Block 85.

Remote DKC control function

- When using the Remote DKC control function, use a Fibre Channel link for the connection between storage systems. ESCON® links are not supported. When you define the logical path between the CUs for the Remote DKC control function, you must define the path between CUs that belongs to the command device volumes.
- To share a command device among multiple OSs, ensure that the “&YKCMDIF” variable is either defined in the IEASYM member or set by using the START YKSETENV command.
- When allocating a command device, note the following:
  - If a command device is defined within a parity group, the parity group cannot be moved, and the parity group type cannot be changed.
  - 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, BCM recommends the following command device setting to reduce CLI command response time:
  - The number of command devices for a head storage system of a route list should be seventeen or less.

Copy types

Do not mix copy types within a single copy group. Ensure that all volumes are SIMPLEX in the initial state. BC Manager does not display the pair status correctly in the following conditions:

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

Other

- BC Manager does not support multiplatform volumes.
- After replacing the microcode, scan the storage system.
- Specify a different storage system serial number for P-VOL and S-VOL when you define the copy group definition for copy types other than SI.
- 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 in the YKLOAD command operand.
- Do not perform PPRC operations on BCM copy pairs. If you do, dissolve and reestablish the copy pairs using BCM.

You can resynchronize copy pairs with the CESTPAIR command by using the default operands only if you run the CSUSPEND command with the default operands on the BCM copy pairs as a TC copy group without the C/T group ID.

Documentation

Available documents

Manual name	Manual no.	Issue date
Hitachi Business Continuity Manager User Guide	MK-94RD247-52	January 2026
Hitachi Business Continuity Manager Installation Guide	MK-95HC104-47	January 2026
Hitachi Business Continuity Manager Reference Guide	MK-96HC135-46	January 2026
Hitachi Storage Management Software for Mainframe Message	MK-92HC227-25	January 2026
Hitachi Business Continuity Manager Web API Reference Guide	MK-96HC137-05	January 2026

Documentation errata

Guide name	Location to be updated	Updates	
Reference Guide	Installation Verification Summary panel (environment settings verification)	Before	Status of the RACF security setting
		After	Status of the RACF security setting For details on the display, refer to the YKINSCHK command.
Reference Guide	YKINSCHK command Output items	Before	STGADMIN.YKA.BCM.PFX.** of the XFACILIT or FACILITY class STGADMIN.YKA.BCM.CGNAME.** of the XFACILIT or FACILITY class
		After	STGADMIN.YKA.BCM.PFX.** of the XFACILIT or FACILITY class STGADMIN.YKA.BCM.CGNAME.** of the XFACILIT or FACILITY class Even if STGADMIN.YKA.BCM.PFX.** and STGADMIN.YKA.BCM.CGNAME.** are set in the FACILITY class, if they are not set in XFACILIT, ONLY BASIC PASSED will be output.

About Storage System features

4x4x4 Multi-Target Configurations without the Delta Resync Function is supported. Refer to the Explanation and Usage document “4x4x4 Multi-Target Configuration without the Delta Resync Function” for details.

Temporary Restrictions

- In a configuration in which VSP 5000 series and VSP One Block 85 coexist, BC Manager can manage this configuration only when it consists of devices with serial numbers that are not duplicated (for example, each device in the configuration has a unique serial number).
- When using BC Manager to operate from L-site in a 4x4x4 Multi-Target configuration with Delta Resync, do not perform a Resync on a UR copy pair that was automatically suspended after performing Reverse Resync on TC copy pairs to avoid forming a 3DC Cascade configuration.
- When using BC Manager to operate from L-site in a 4x4x4 Multi-Target configuration with Delta Resync, start business operations after TC and UR copy pairs are formed so that the Multi-Target configuration is established.
- BC Manager does not support a recovery procedure from a failure in 4x4x4 Multi-Target configuration with Delta Resync. In this case, the procedure is provided as necessary in the following process.
- The YKWATCH command is not available for monitoring a copy pair status transition if the PPRCSUM feature in DEVSUPxx is enabled. Use the YKEWAIT command to monitor, instead.
- If the disk configuration definition file that has the specified prefix includes a subchannel set ID other than 0, the disk configuration file is not available for linking with Replication Manager.
- TC ATTIME Suspend function is only available when used on Hitachi Mainframe Cyber Resiliency.
- If you must call Hitachi Vantara customer support, make sure to provide as much information about the problem as possible, including:
  - Circumstances surrounding the error or failure.
  - Content of any error messages displayed on the host systems.
  - Content of any error messages displayed in Storage Navigator.
  - Storage Navigator configuration information (use the FD Dump Tool).
  - Service information messages (SIMs), including reference codes and severity levels, displayed by Storage Navigator.

  Hitachi Vantara customer support is available 24 hours a day, seven days a week. To reach us, visit the support Web site for current telephone numbers and other contact information:
  https://support.hitachivantara.com/en/contact-support.html.
  - If you purchased this product from an authorized Hitachi Vantara reseller, contact the reseller for support.
- BCM Web API, BCM GUI, and Installing Business Continuity Manager by using the z/OSMF workflow are not supported in z/OS 3.2.

Specification differences from the previous versions

ISPF panel

None

REXX variable structures

None

Configuration files

None

CLI command

Item	Specification in V9.9.2	New specification in V10.1
Behavior when the SSN parameter is specified in the YKQRYDEV command	When this parameter is specified and the SMODEL parameter is omitted, SMODEL operates as VSP.	When this parameter is specified and the SMODEL parameter is omitted, the YKX203E message is output and the YKQRYDEV command fails.

CSV files

None

Messages

Item	Specification in V9.9.2	New specification in V10.1
YKM041E	A sub Consistency Group ID cannot be specified for SI/TC Copy Group definition.	A sub Consistency Group ID cannot be specified for SI or TC Copy Group definition.

SAMPLE JCLs

Item	Specification in V9.9.2	New specification in V10.1
HDSYKARC HDSYKBAP HDSYKCAC HDSYKDAC HDSYKDAP HDSYKDRC	-	Deleted.
ALLOUPLD	-	Deleted the DD statement and DELETE statement for the SMPMCS dataset used for the extended access control function.
RECVUPLD	-	Deleted the DELETE statement and RECEIVE statement for the SMPMCS dataset used for the extended access control function.

SAMPLE Scripts

None

BCM Web API

None

BCM GUI

None

Other

- Even if you do not use the extended access control function of BCM, you still need to define profiles for the extended access control function and grant reference permissions.

  For users who will use BCM, you need to define the following profiles and grant the READ permission:

  - Profiles of the functions to be used
  - Generic profiles for the extended access control function

  By using generic profiles, you can grant reference permissions for multiple prefix profiles, copy group profiles, copy type profiles, specific command access profiles, and the REVERSE RESYNC protect function for users.

The following table shows the generic profile for each extended access control function:

Extended access control function	Generic profile
Prefix profile of copy group access control function	STGADMIN.YKA.BCM.PFX.**
Copy group profile of copy group access control function	STGADMIN.YKA.BCM.CGNAME.**
Copy type profile of copy group access control function	STGADMIN.YKA.BCM.CGTYPE.*
Profile of specific command access control function	STGADMIN.YKA.BCM.CLI.*
REVERSE RESYNC protection function	STGADMIN.YKA.BCM.COMMANDS.REGRSYNC.**

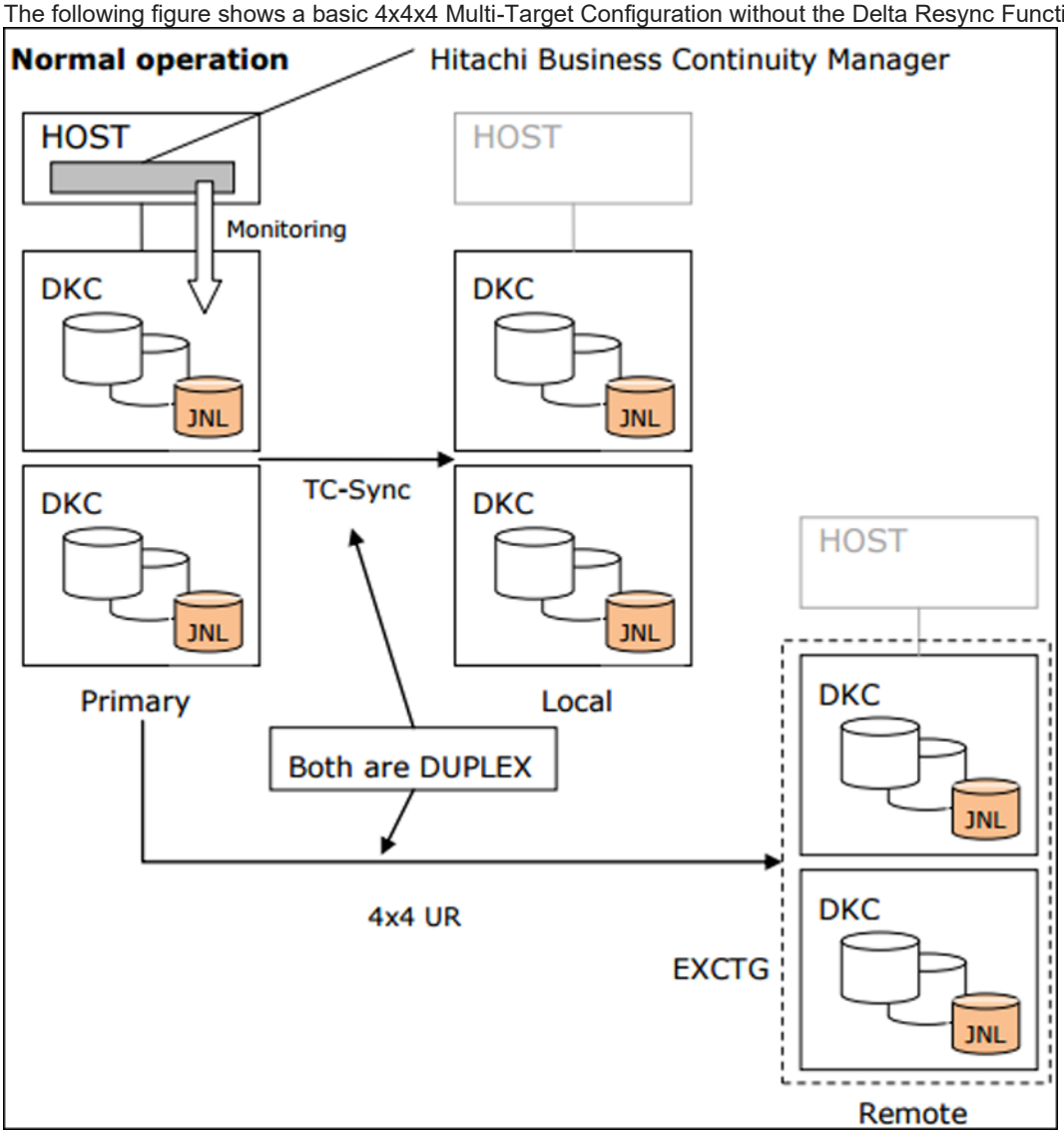
4x4x4 Multi-Target Configuration without the Delta Resync Function Explanation and Usage

What can be achieved by a Multi-Target Configuration without the Delta Resync Function

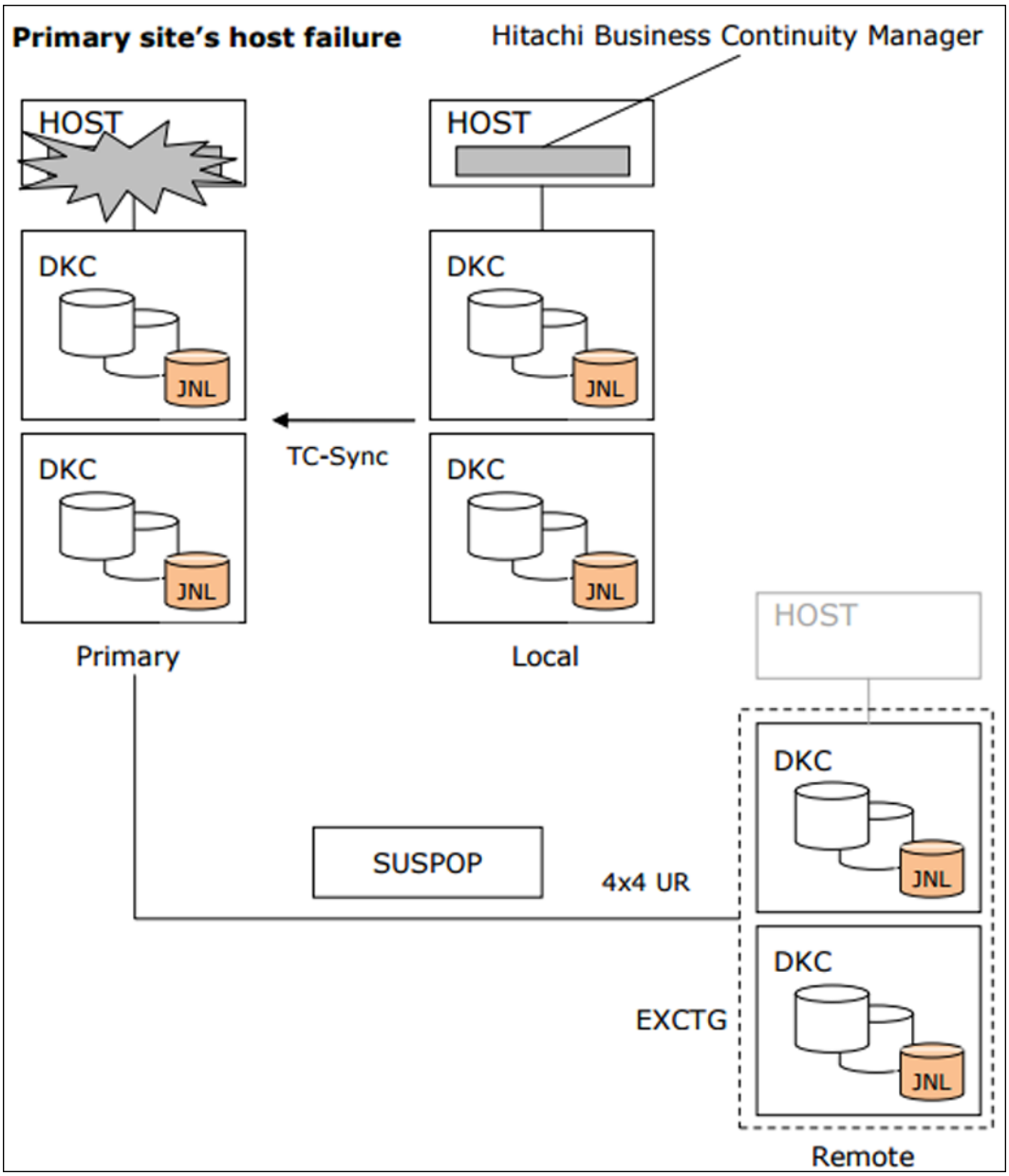
4x4x4 Multi-Target configuration without the Delta Resync Function is a combination of 4x4 configuration and 3DC Multi-Target configuration without the Delta Resync Function. When one site goes down because of disaster or other failure, it is possible to maintain 2DC configuration between the remaining two sites.

Configuration

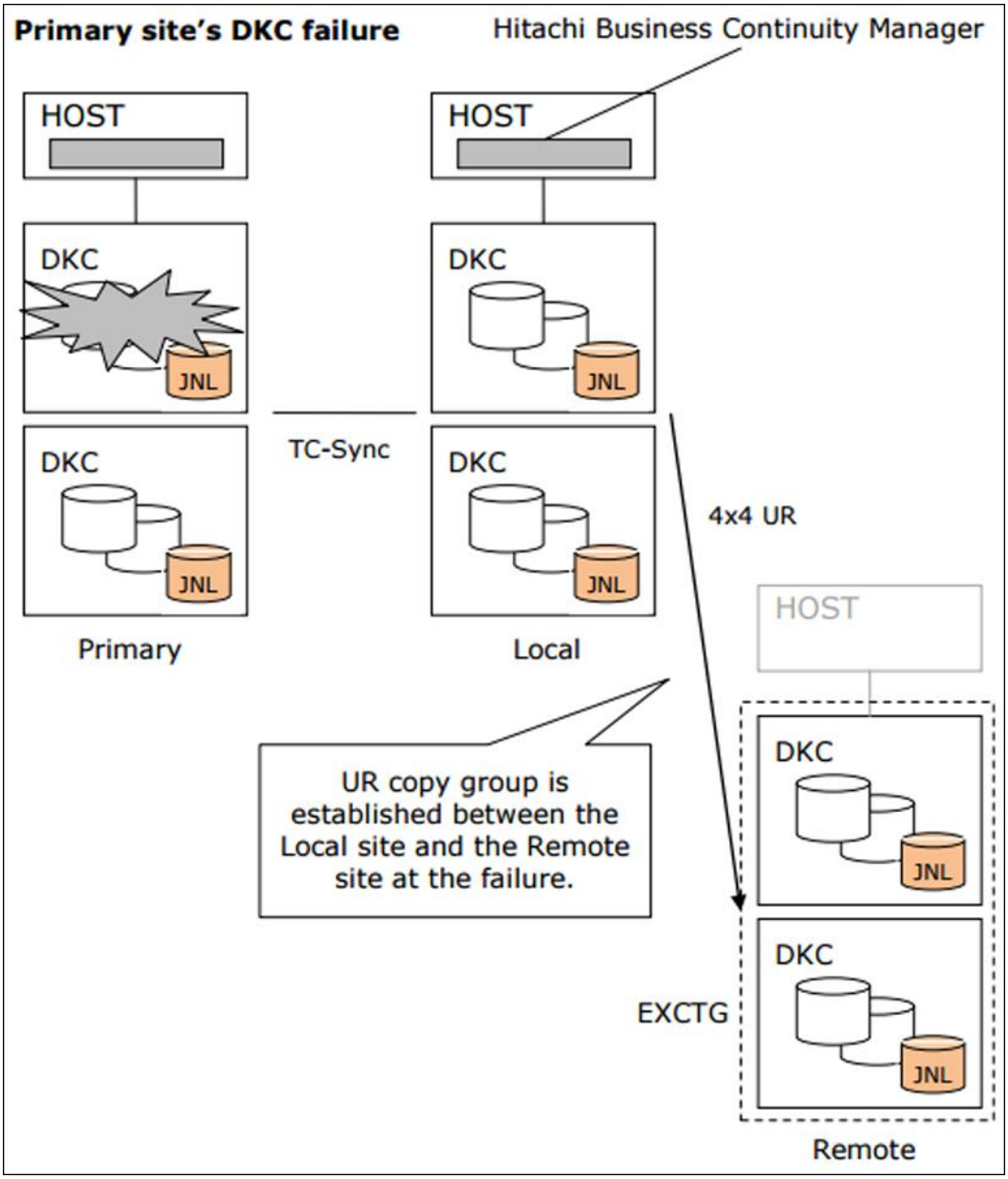
The following figure shows a basic 4x4x4 Multi-Target Configuration without the Delta Resync Function using TC and 4x4 UR.



The following figure shows an example of the configuration when a host fails at the Primary site. If the host fails at the Primary site , TC copy pairs can be established between the Local site and the Primary site by using the Reverse Resync function. As a result, you can switch to the business continuance on the Local site and maintain a 2DC configuration.



The following figure shows an example of a configuration where is a DKC failure at the Primary site. If the DKC fails at the Primary site, UR copy pairs can be established between the Local site and the Remote site. As a result, you can switch to the business continuance on the Local site and maintain a 2DC configuration.



Prerequisites

The following tables show the prerequisites for a 4x4x4 Multi-Target Configuration without the Delta Resync Function.

Prerequisite hardware

Item	Description	Remarks
Host	Primary site: one host Local site: one host	None

	Remote site: one host if operations are performed from the Remote site.	
DKC	Primary site: one to four VSP 5000 series or VSP One Block 85 Local site: one to four VSP 5000 series or VSP One Block 85 Remote site: one to four VSP 5000 series or VSP One Block 85	Up to four DKCs are supported for each site.
Inter-DKC link (physical path)	Primary site ν Local site: Fibre Channel, bi-directional Primary site ν Remote site: Fibre Channel, bi-directional Local site ν 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 through the SVP.

Prerequisite software

Item	Description	Remarks
z/OS®	Versions currently supported by BC Manager	None
BC Manager	• Basic License • UR 4x4 Extended CTG License	None

Hardware settings

Item	Description	Remarks
Arbitration command devices	DKCs at the Remote site: One or more arbitration command devices for each subordinate DKC.	Arbitration command devices must be set up through the SVP.
Journal groups	Journal groups for UR. Timer type must be “System”.	• Required at the Primary site, the Remote site, and the Local site • Journal groups must be set up through Storage Navigator.
Command devices	Three devices for each DKC. For example, in a 2x2x2 configuration, three devices for each DKC, eighteen devices in total.	None

Logical paths	Between the Primary site and the Local site: Inter-CU logical paths (bi-directional) Between the Primary site and the Remote site: Inter-DKC logical paths (bi-directional) Between the Local site and the Remote site: Inter-DKC logical paths (bi-directional)	None

Software settings (OS and BC Manager)

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. Refer to the Reference Guide to set up a route list.	None
TC copy group (Configuration file)	• TC Consistency Preservation must be applied. • Prepare the copy group that the DKC unit or each CT group divided for at the time of the failure.	None
4x4 UR copy group (Configuration file)	• 4x4 UR copy groups are required for the Primary-Remote sites and the Local Remote sites. • The S-VOL journal group of the UR copy pairs for the Primary-Remote sites must be the same as the S-VOL journal group of the UR copy pairs for the Local-Remote sites, but they must have a different mirror ID. • EXCTG ID of a forward direction of two UR copy groups (EXCTG in the Remote site) must be the same. • Prepare the copy group that the DKC or each journal group divided at the time of the failure, and do not use the 4x4 function in the divided copy groups.	None

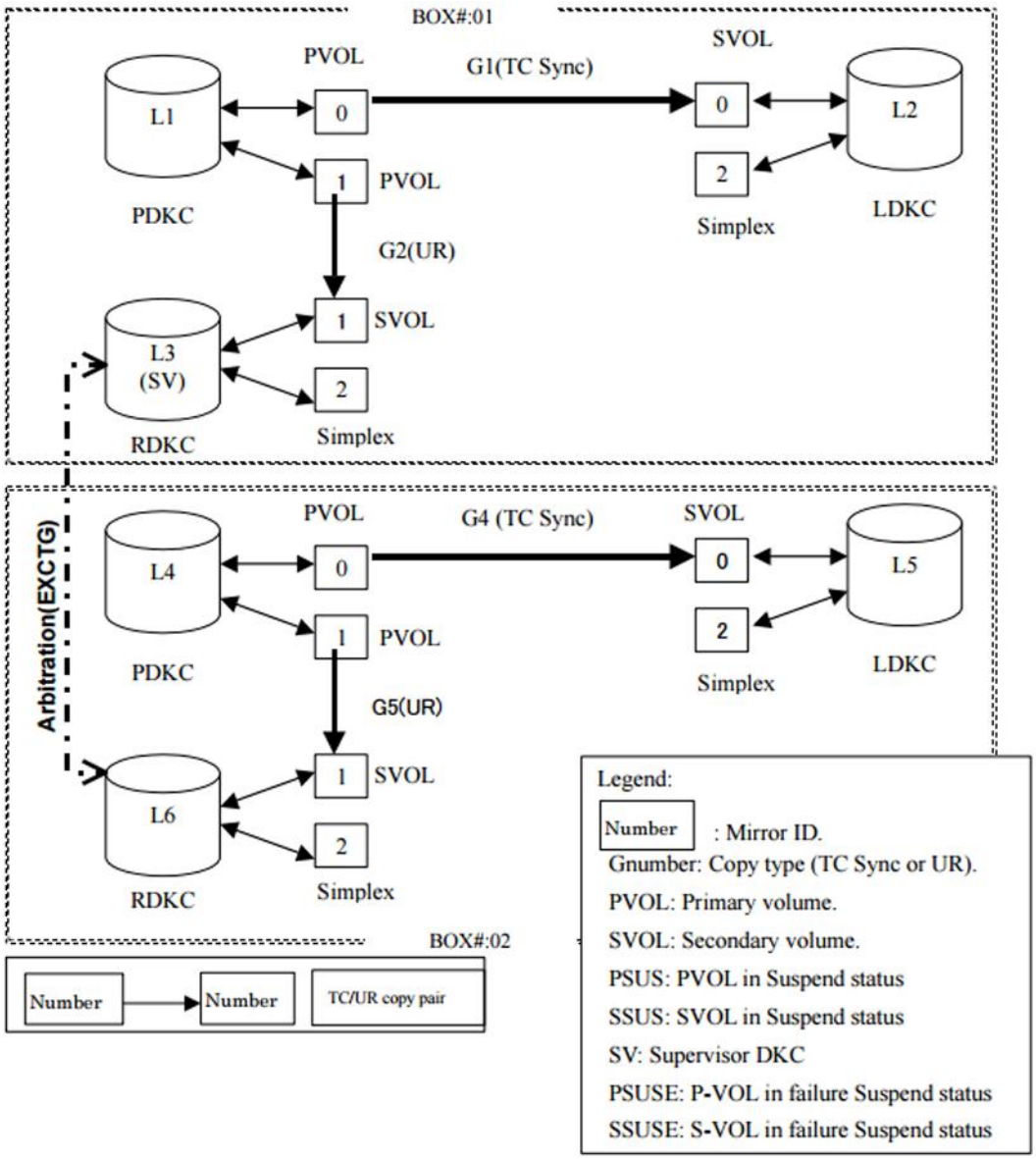
Example configurations of DKC

Figure A-4 shows an example configuration of a DKC deployment of a 4x4x4 Multi-Target Configuration without the Delta Resync Function (as a 2x2x2 configuration). This section explains the procedure based on this example configuration.

The copy group name shown in the procedure corresponds to what is shown in table A-5. In the procedure, the Primary site is referred to as the P-site, the Local site is referred to as the L-site, and the Remote site is the R site. APP1 shows the host on the Primary site, and APP2 shows the host on the Local site.

Copy group name	Corresponding Copy group
TCPL	TC copy groups for the Primary-Local sites (G1, G4)
URPR	4x4 UR copy groups for the Primary-Remote sites (G2, G5)
URLR	4x4 UR copy groups for the Local-Remote sites (G3, G6)*
G1	TC copy group for the Primary DKC (L1)-Local DKC (L2)
G2	4x4 UR copy group for Primary DKC (L1)-Remote DKC (L3)
G3	4x4 UR copy group for Local DKC (L2)-Remote DKC (L3)*
G4	TC copy group for the Primary DKC (L4)-Local DKC (L5)
G5	4x4 UR copy group for Primary DKC (L4)-Remote DKC (L6)
G6	4x4 UR copy group for Local DKC (L5)-Remote DKC (L6)*

* This copy group is not used for normal operations.



Normal operation

The setup procedure for a 4x4x4 Multi-Target Configuration without the Delta Resync Function is the same as for a 4x4 configuration and Delta Resync configuration. Refer to the previous Prerequisites section for details. For the details about setting up a 4x4 configuration and Delta Resync configuration, see the *Business Continuity Manager User Guide*.

Using a 4x4x4 Multi-Target Configuration without the Delta Resync Function is same as using a 4x4 configuration and 3DC Multi-Target configuration without Delta Resync because you do not establish the UR copy group for the Local-Remote sites. See Table A-6 for details.

Preparation

Operation procedure	Description	Configuration	Difference from 3DC multi-target configuration

Hardware setup	• Bi-directional paths must be set between the 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	Create a route list of 3DC MultiTarget configuration that contains definition or routes that start from each site. This route list is equivalent to that of Delta Resync configuration.	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 (TCPL/G1/G4), 4x4 UR between P-site and R-site (URPR/G2/G5), and 4x4 UR between L-site and R-site (URLR/G3/G6).	1DC	TC must be with C/T ID, and UR must be of 4x4 UR
Establish TC copy pairs	Establish TC copy group (TCPL).	2DC	None.
Establish UR copy pairs	Establish UR copy group (URPR).	3DC	None.

Normal operation

Operation procedure	Description	Configuration	Difference from 3DC multi-target configuration
----	• Keep DUPLEX status on both TC (G1/G4) and UR (G2/G5) copy groups.	3DC	None.

Failover and Failback scenario

Maintenance or failure	Item	Remarks
Maintenance	L-site maintenance.	None
	P-site maintenance (host maintenance)	None
	P-site maintenance (DKC maintenance)	None
	R-site maintenance	None

Failure	L-site failure (G1 link failure)	None
	L-site failure (DKC failure [in case that Shared Memory is not volatilized])	None
	L-site failure (DKC failure[in case that Shared Memory is volatilized])	None
	P-site failure (host failure)	None
	P-site failure (DKC failure[in case that Shared Memory is not volatilized])	None
	P-site failure (DKC failure [in case that Shared Memory is volatilized])	None
	R-site failure (DKC failure [in case that Shared Memory is not volatilized])	None
	R-site failure (DKC failure [in case that Shared Memory is volatilized])	None

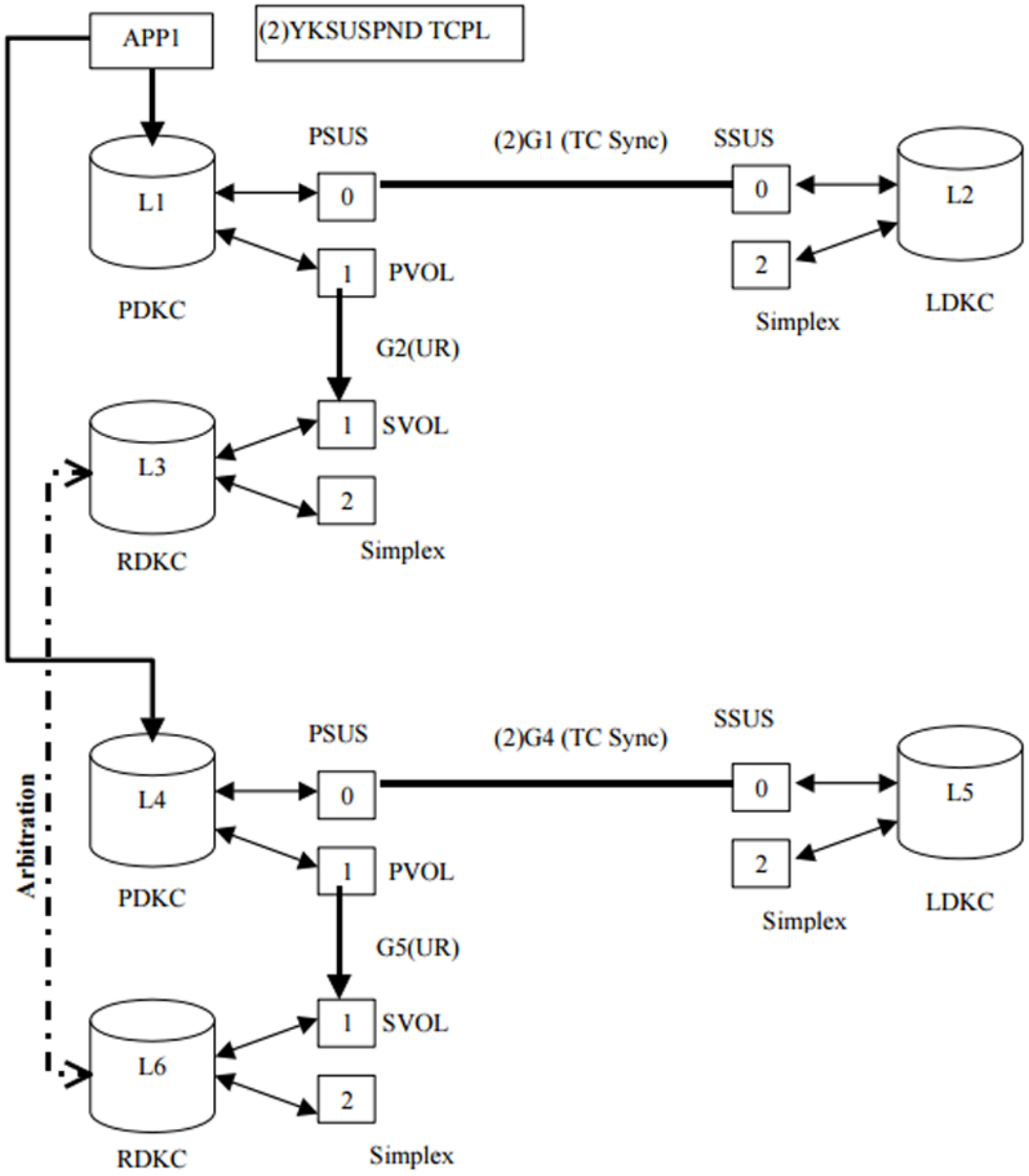
- The number described in the figure, for example (2) G1 (TC Sync), shows the state when you complete the same number in the procedure.
- The hatching in the figure shows a system failure.

Note the following when operating a 4x4x4 Multi-Target Configuration without the Delta Resync Function:

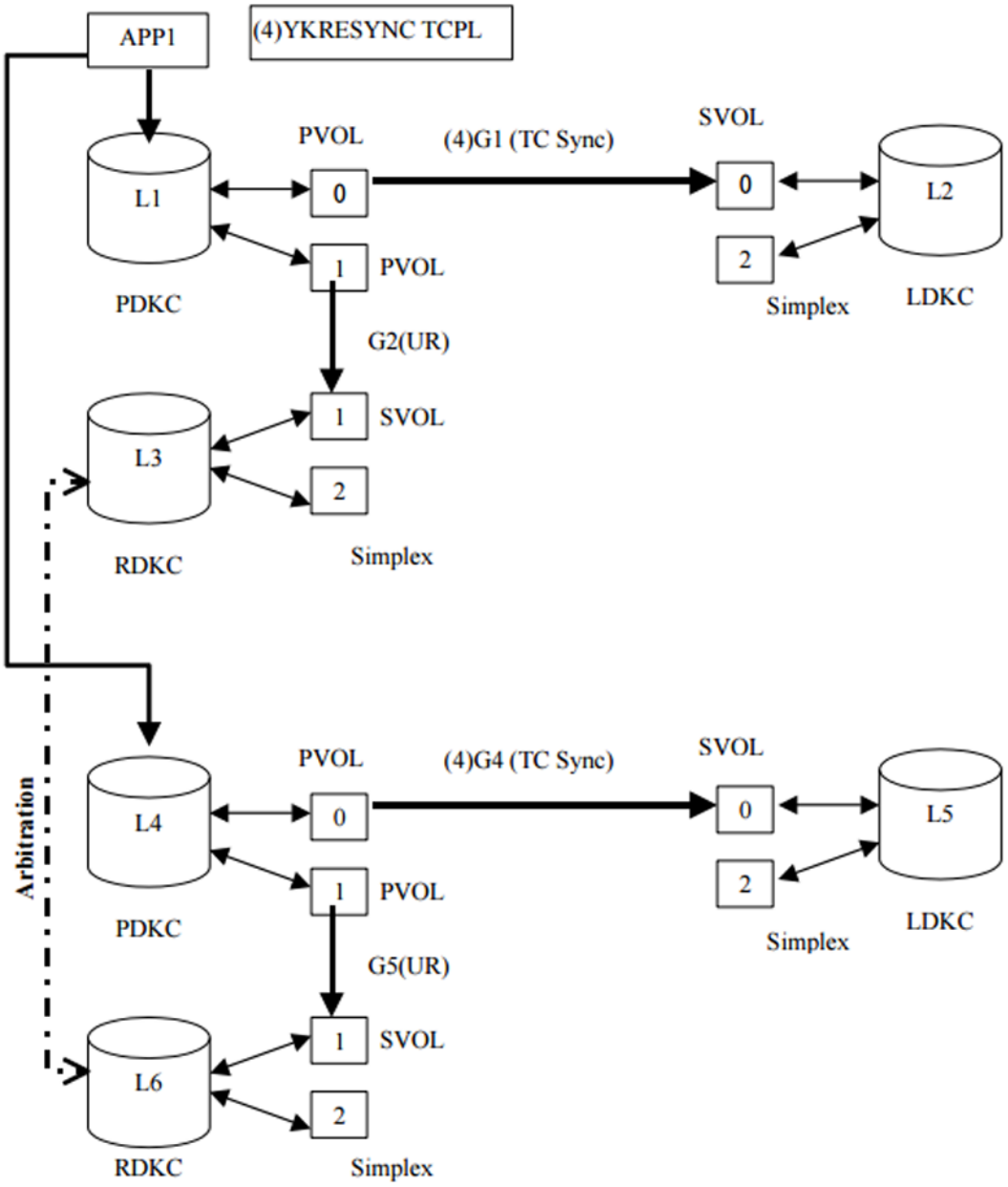
- Specify the value of the STEM parameter specified by the YKLOAD command when you specify the operated copy group for each command.
- Get the pair state of the copy group by using the YKQUERY or YKEWAIT command before running each command.
- BC Manager does not support recovery procedures from a failure in a 4x4x4 Multi-Target Configuration without the Delta Resync Function. In this case, RSD will provide the procedure, as necessary.

L-site maintenance

1. YKFREEZE TCPL from APP1. (YKFREEZE TCPL)
2. Suspend the TC Sync copy pairs from APP1. (YKSUSPND TCPL)
3. YKRUN TCPL from APP1. (YKRUN in this case can be issued without waiting for all pairs to become suspended. Any write I/O after YKRUN is kept as differential data at the MCU of TC Sync. YKRUN TCPL)
    - L-site maintenance started.



4. After L-site maintenance has completed, resynchronize TC Sync copy pairs from APP1. (YKRESYNC TCPL)

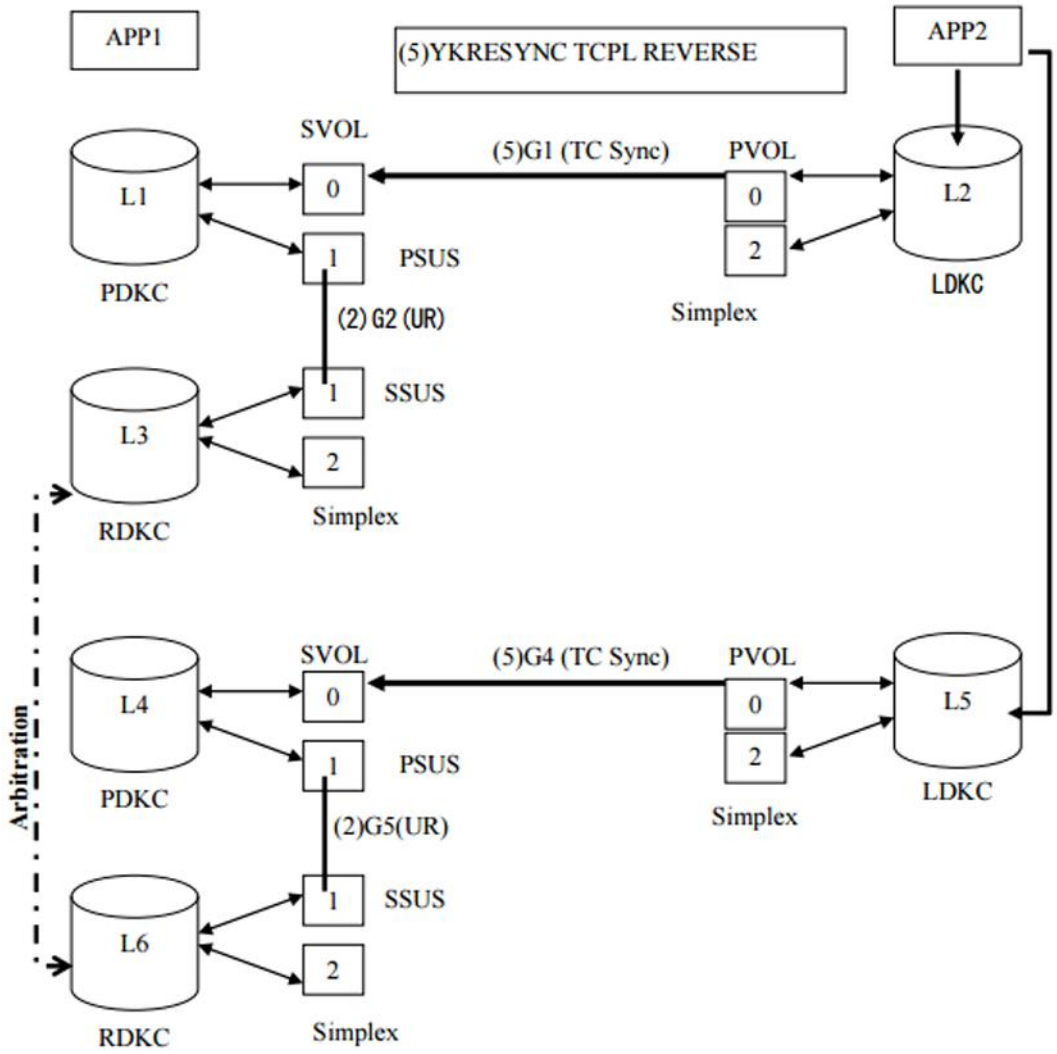


P-site maintenance (host maintenance)

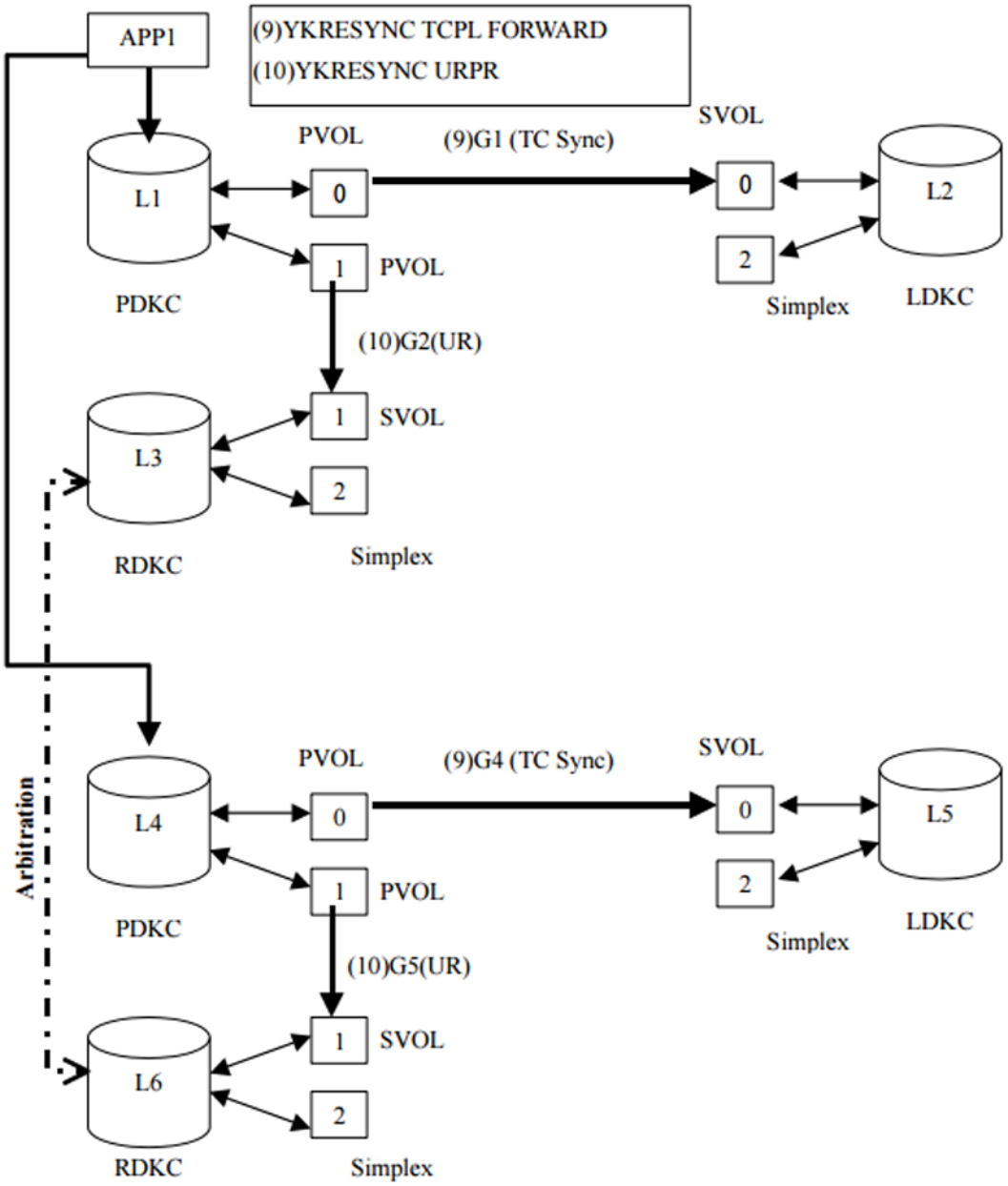
5. Stop I/O from APP1.
6. Perform Flush Suspend on UR copy pairs from APP2. (YKSUSPND URPR)

   You have to wait for copy pair status to be SUSPOP. (YKEWAIT URPR GOTO(SUSPEND))
7. Perform Reverse Suspend on TC Sync copy pairs from APP2. (YKSUSPND TCPL REVERSE)
8. Start I/O from APP2.
9. Perform Reverse Resync on TC Sync copy pairs from APP2. (YKRESYNC TCPL REVERSE)

   - P-site maintenance started.



10. Stop I/O from APP2.
11. Perform Reverse Suspend on TC Sync copy pairs from APP1. (YKSUSPND TCPL FORWARD)
12. Start I/O from APP1.
13. Perform Reverse Resync on TC Sync copy pairs from APP1. (YKRESYNC TCPL FORWARD)
14. Resynchronize UR copy pairs from APP1. (YKRESYNC URPR)

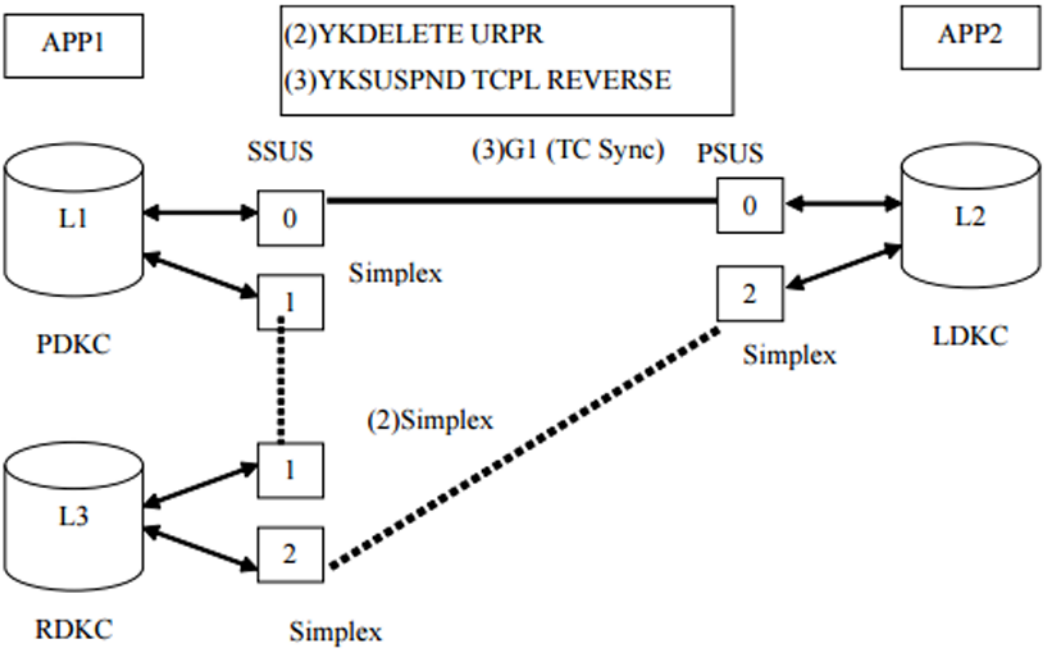


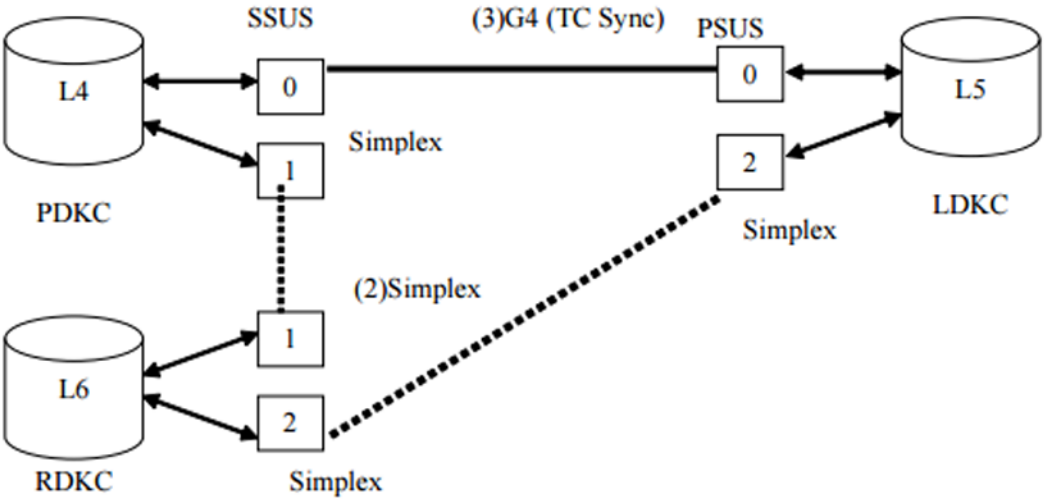
P-site maintenance (DKC maintenance)

15. Stop I/O from APP1.
16. Dissolve on UR copy pairs from APP2. (YKDELETE URPR)

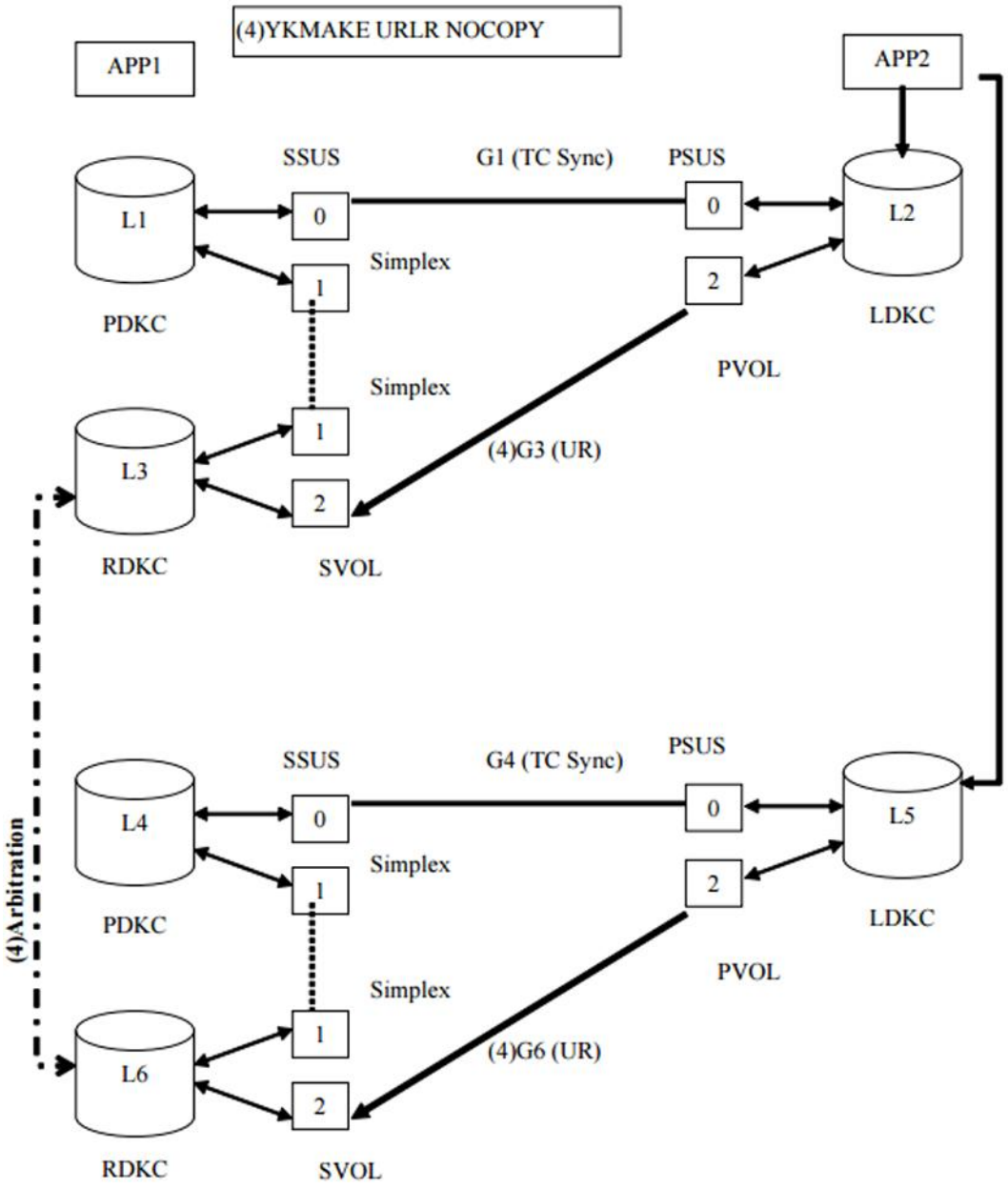
    Note: After (2) is executed, EXCTG is dissolved.

17. Perform Reverse Suspend on TC Sync copy pairs from APP2. (YKSUSPND TCPL REVERSE)

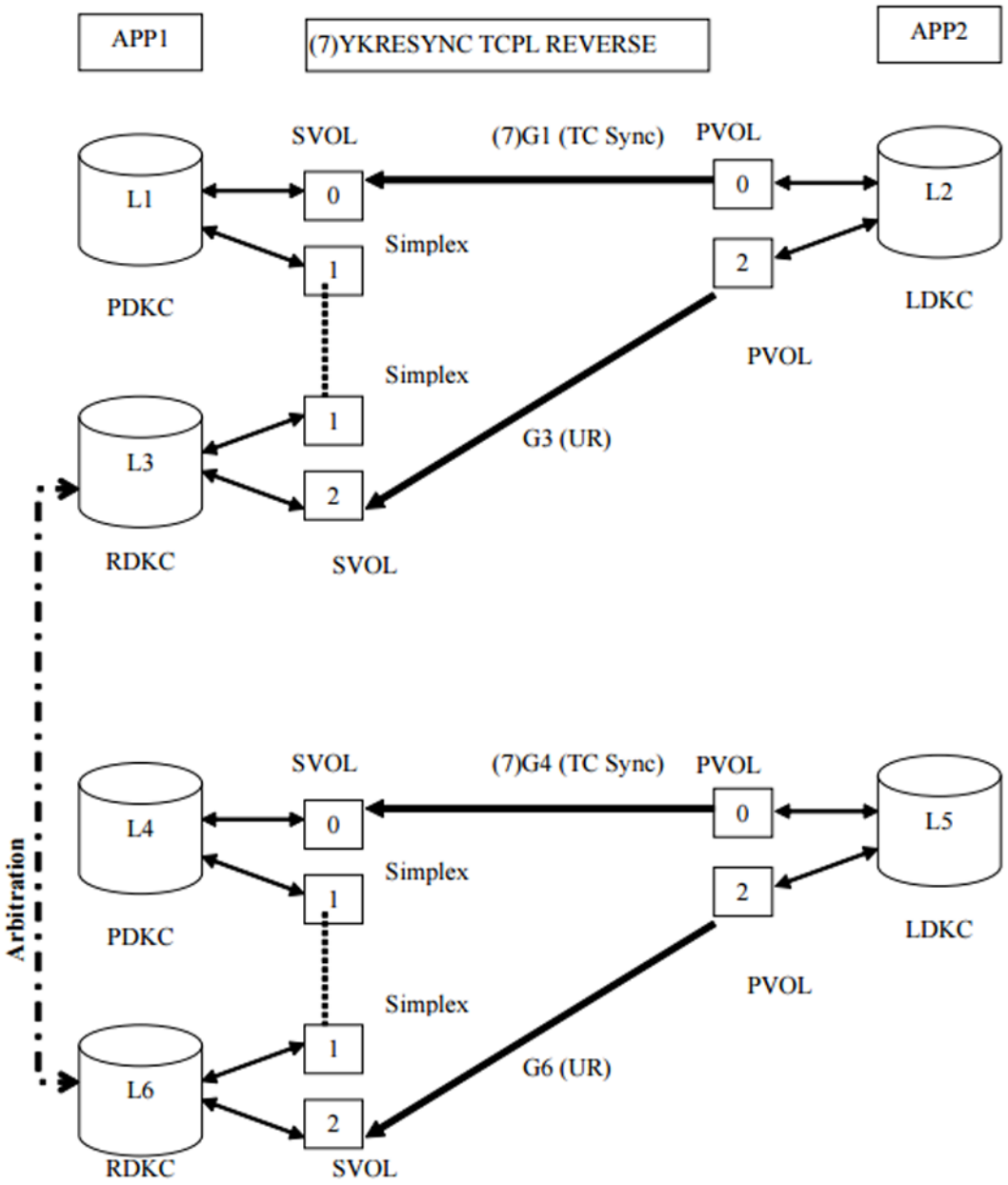




18. Establish UR copy pairs with NOCOPY parameter from APP2. (YKMAKE URLR NOCOPY)
    Note: After (4) is executed, EXCTG is registered.
19. Start I/O from APP2.
    P-site maintenance started.



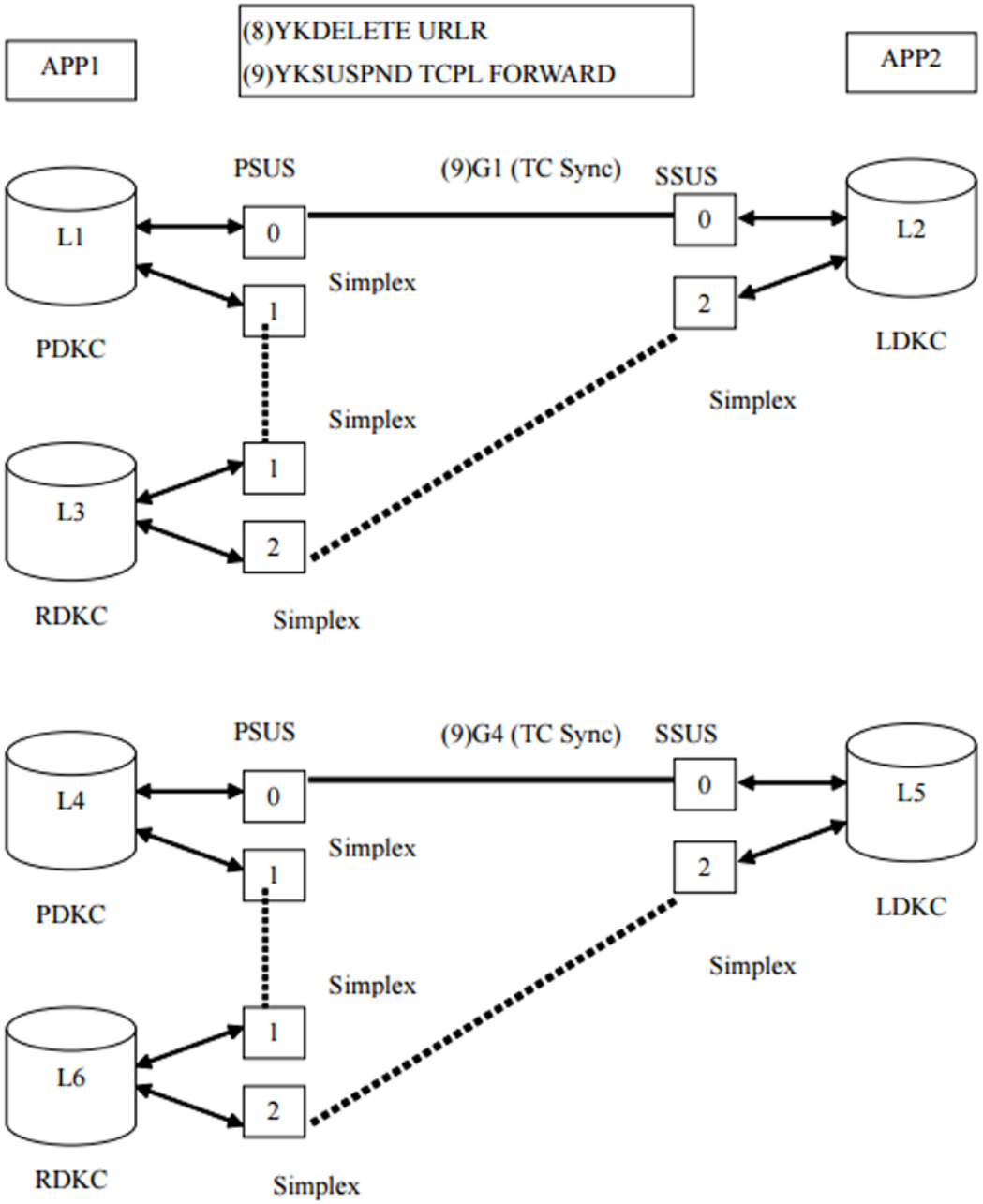
20. Stop I/O from APP2
21. Perform Reverse Resync on TC Sync copy pairs from APP2. (YKRESYNC TCPL REVERSE)



22. Dissolve on UR copy pairs from APP2. (YKDELETE URLR)

    Note: After (8) is executed, EXCTG is dissolved.

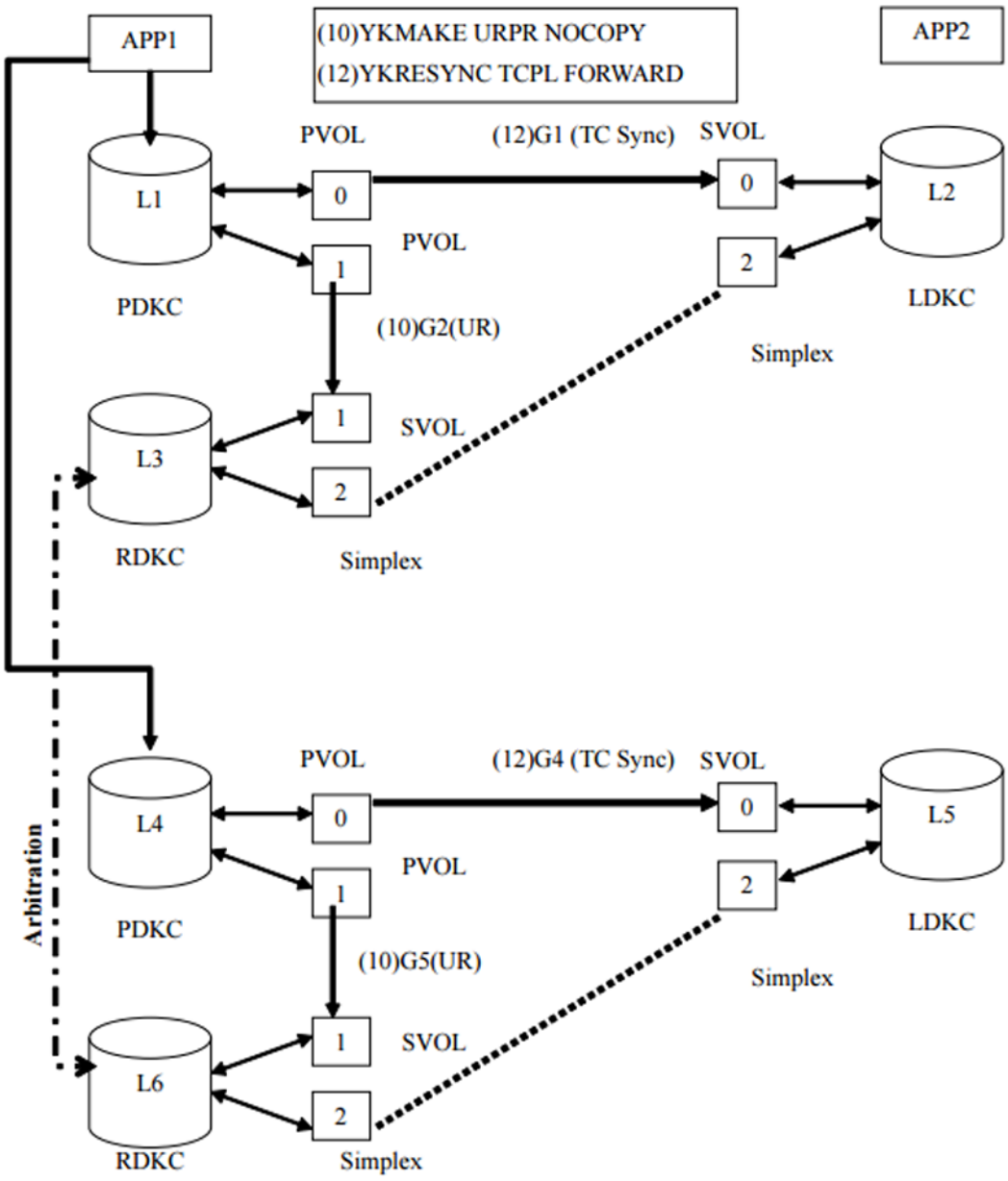
23. Perform Reverse Suspend on TC Sync copy pairs from APP1. (YKSUSPND TCPL FORWARD)



24. Establish UR copy pairs with NOCOPY parameter from APP1. (YKMAKE URPR NOCOPY)

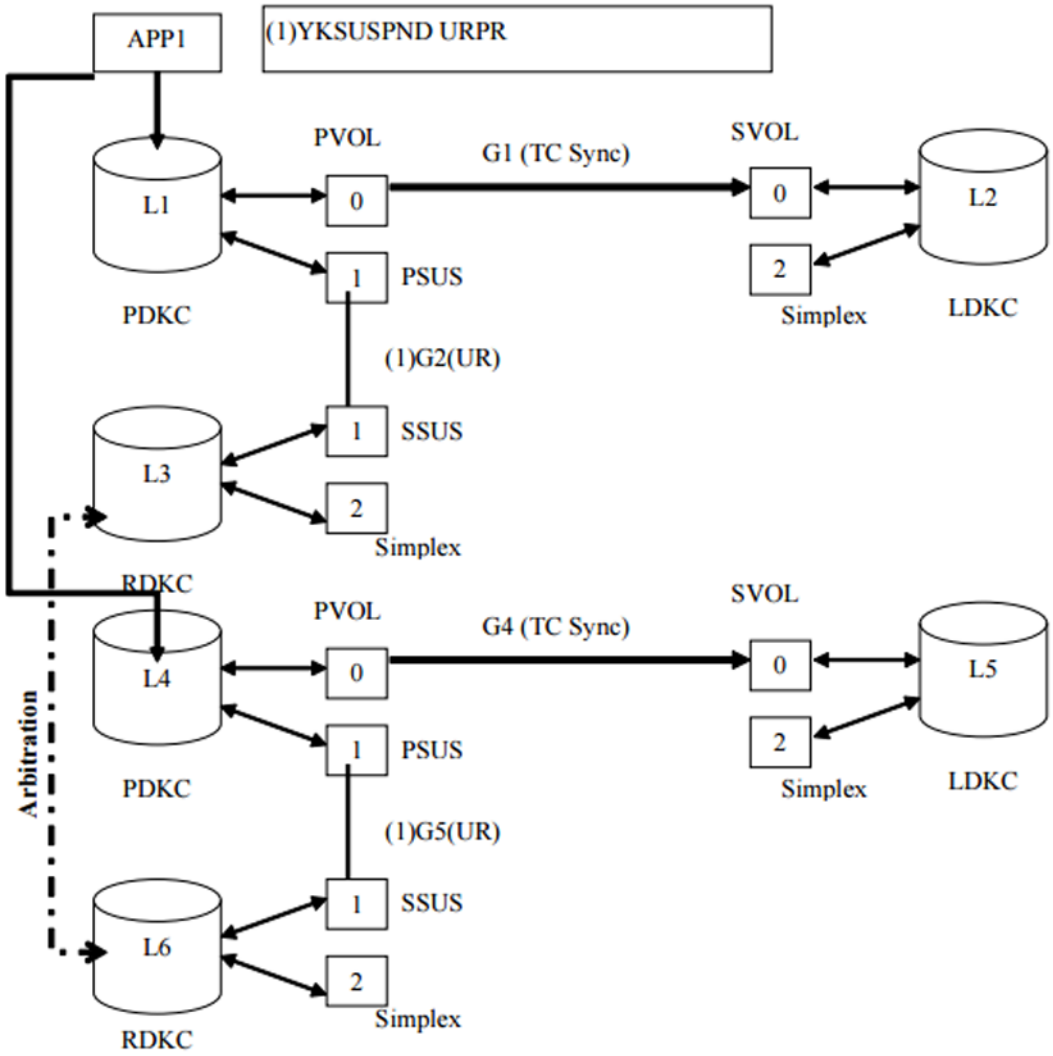
    Note: After (10) is executed, EXCTG is registered.

25. Start I/O from APP1.
26. Perform Reverse Resync on TC Sync copy pairs from APP1. (YKRESYNC TCPL FORWARD)



R-site maintenance (DKC maintenance)

27. Suspend UR copy pairs from APP1 when R-site maintenance needs to be performed. (YKSUSPND URPR)
    - R-site maintenance started.

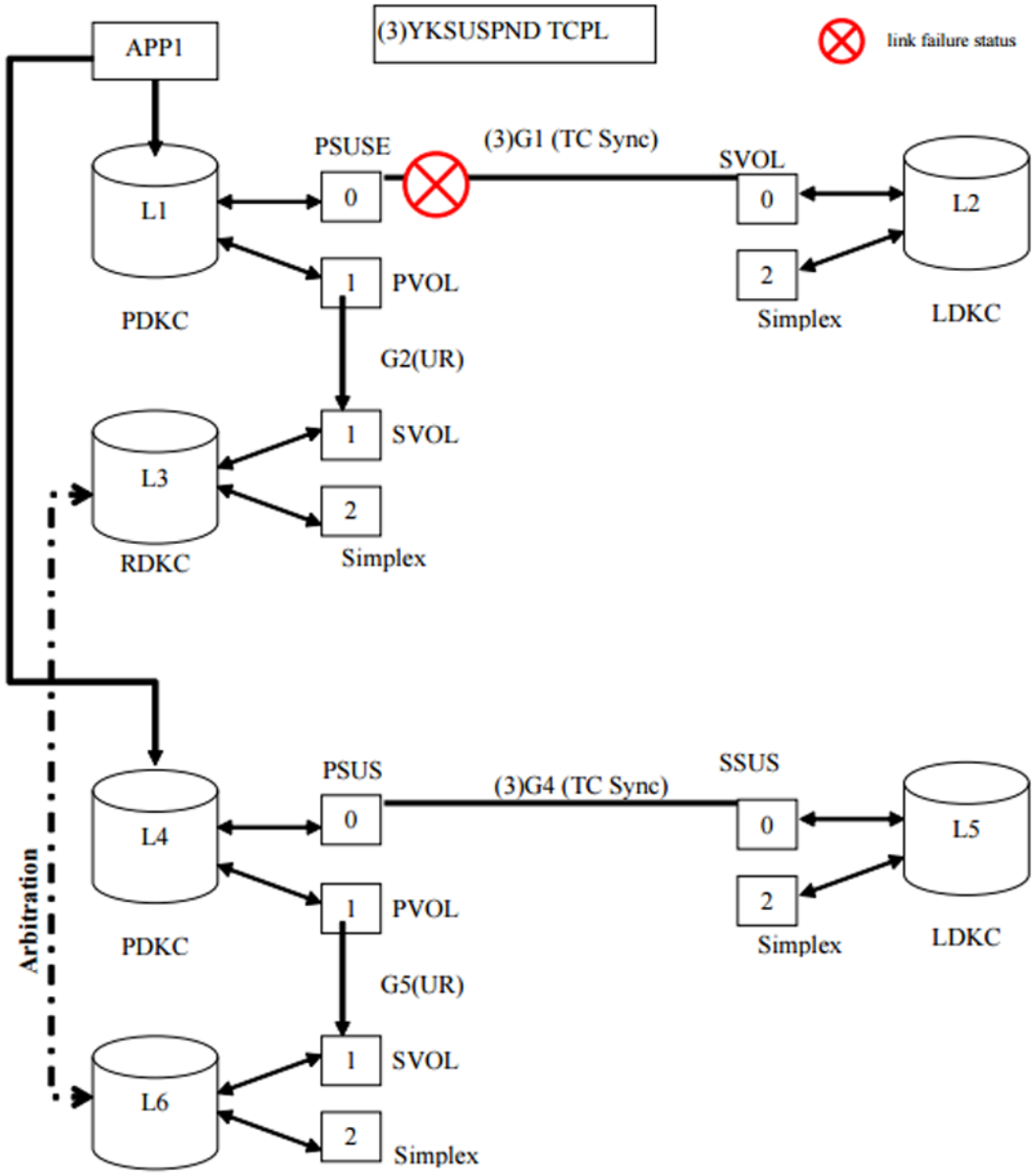


28. After R-site maintenance has completed, resynchronize UR copy pairs from APP1. (YKRESYNC URPR)

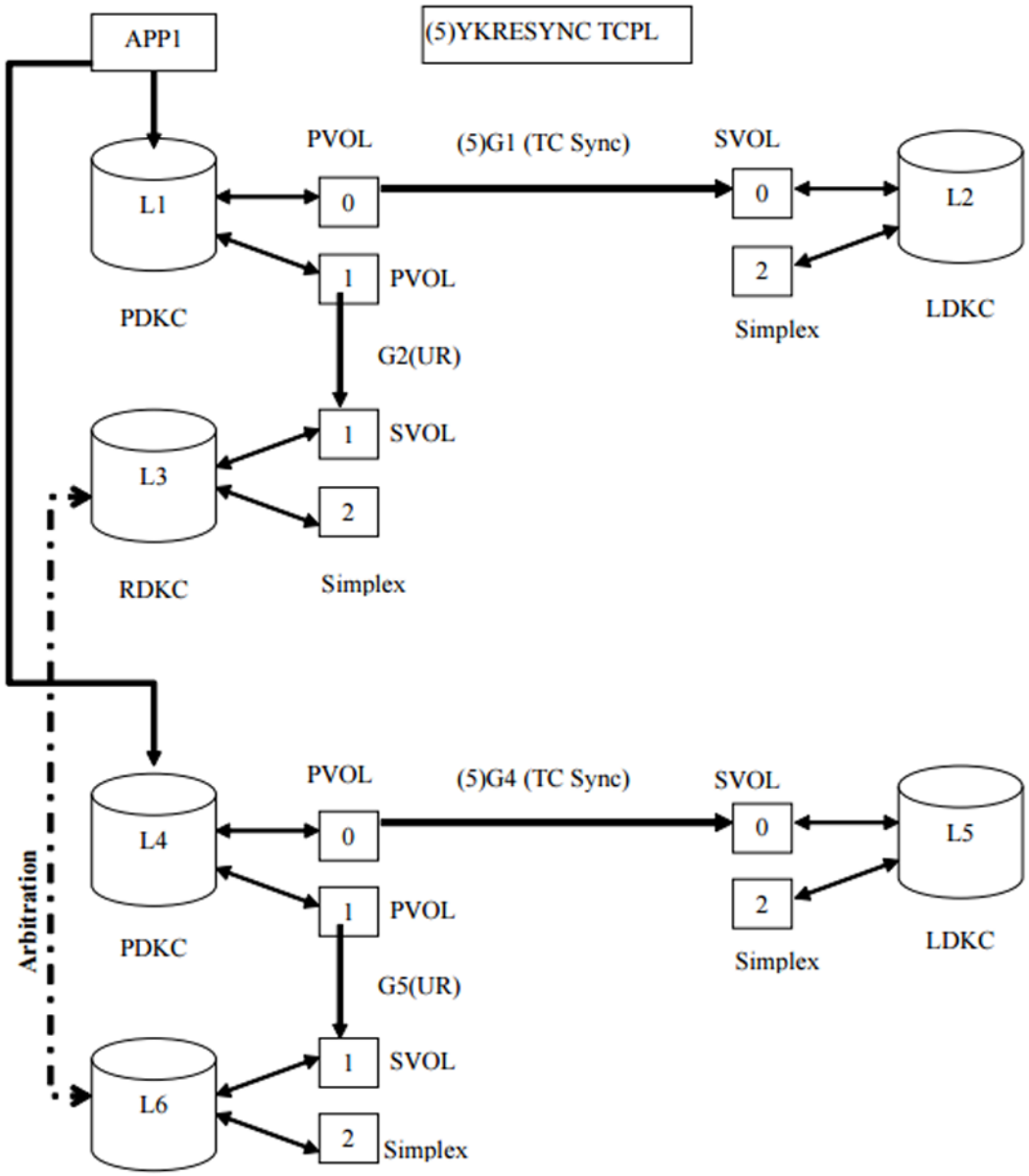
L-site failure (G1 link failure)

29. Trap IEA494I message with YKCONMSG from APP1.
30. YKFREEZE TCPL from APP1. (YKFREEZE TCPL)
31. Suspend TC Sync copy pairs from APP1. (YKSUSPND TCPL)
32. YKRUN TCPL from APP1. (YKRUN in this case can be issued without waiting for all pairs to become suspended. Any write I/O after YKRUN is kept as differential data at the MCU of TC Sync. YKRUN TCPL)

Note: You can perform (1) to (4) steps at once by scripting at APP1 site.



33. After L-site has recovered from failure, resynchronize TC Sync copy pairs from APP1. (YKRESYNC TCPL)



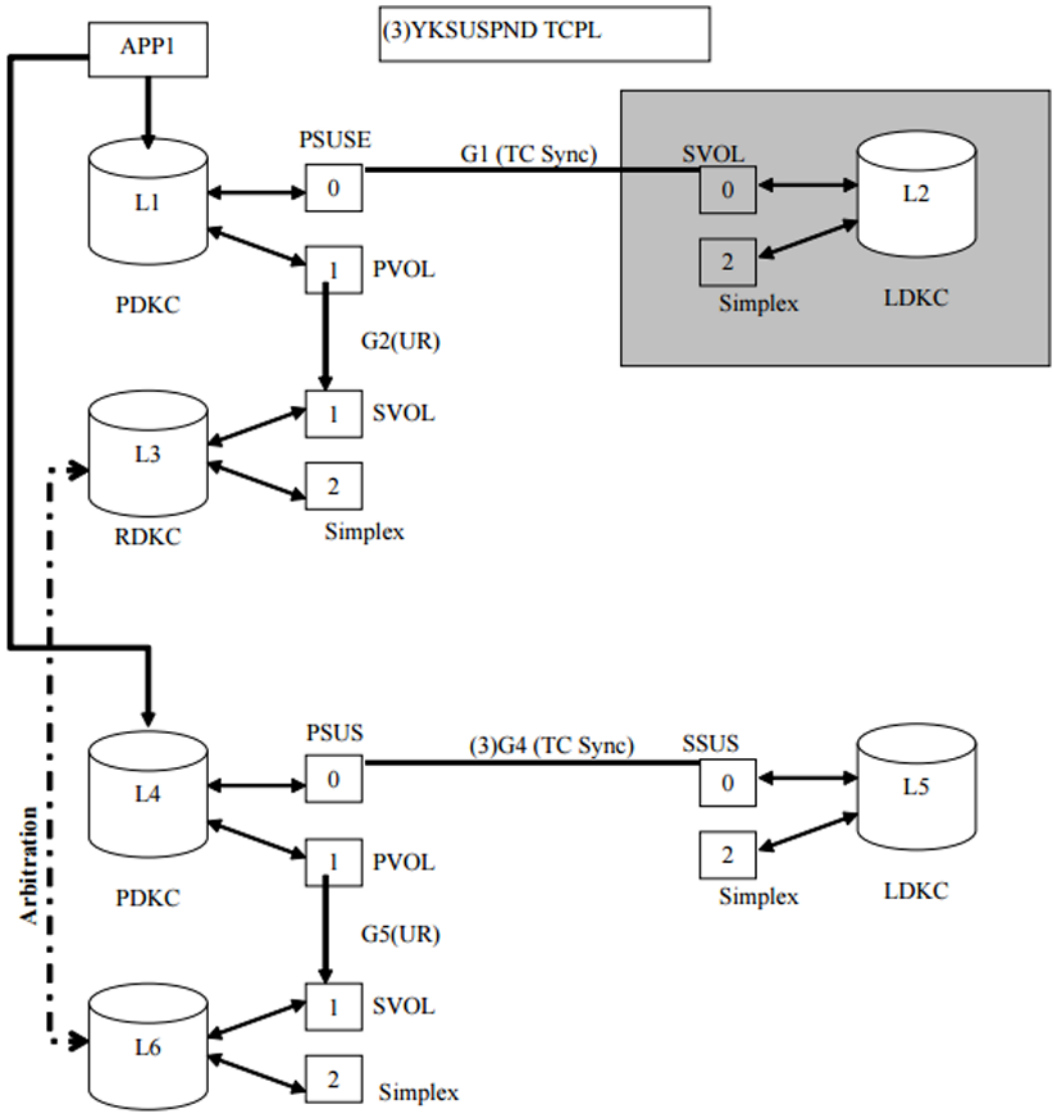
L-site failure (L-DKC failure (in case that Shared Memory is not volatilized))

Perform process as shown in “L-site failure (G1 link failure)”.

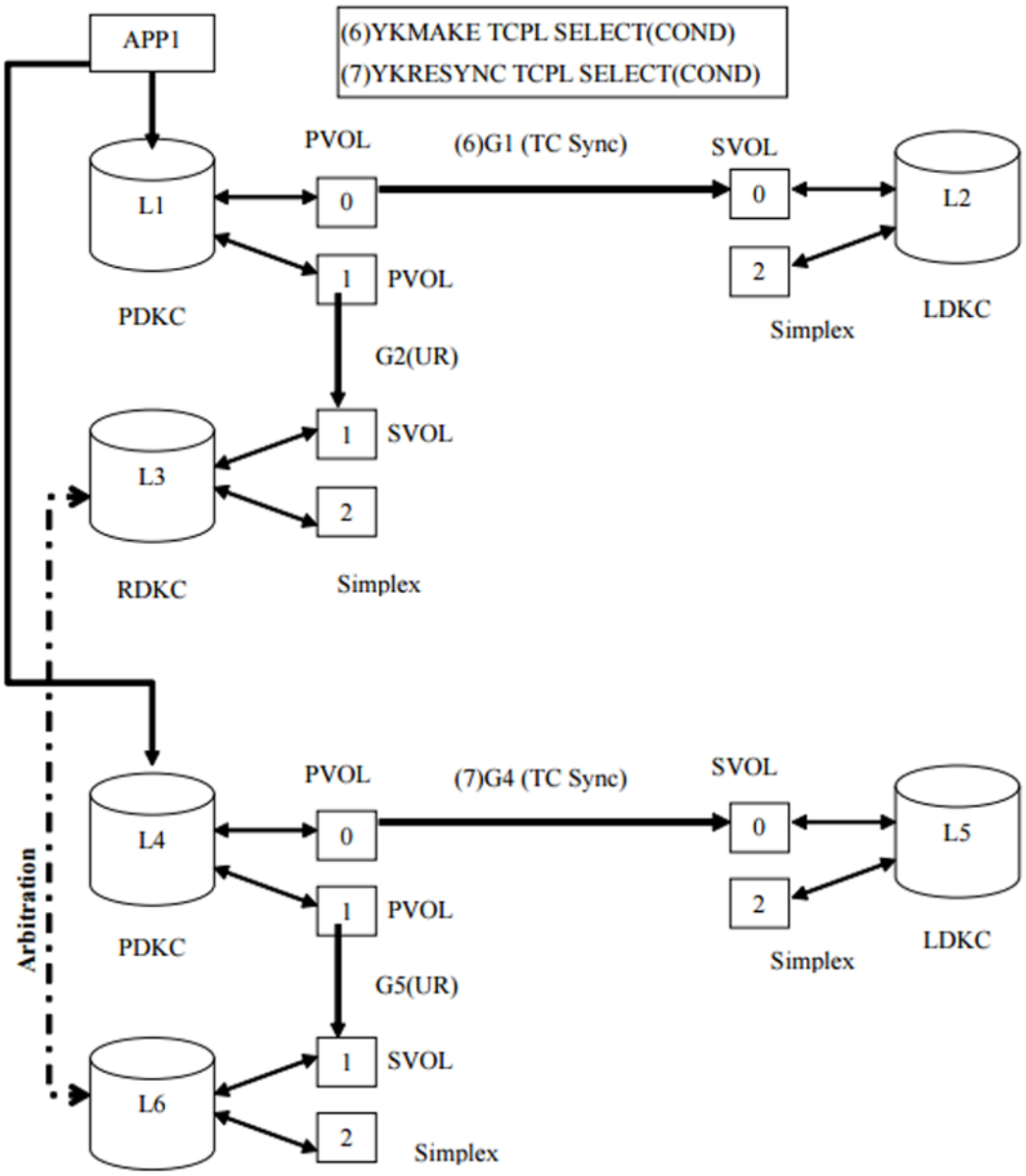
L-site failure (L-DKC failure (in case that Shared Memory is volatilized))

34. Trap IEA494I message with YKCONMSG from APP1.
35. YKFREEZE TCPL from APP1. (YKFREEZE TCPL)
36. Suspend TC Sync copy pairs from APP1. (YKSUSPND TCPL)
37. YKRUN TCPL from APP1. (YKRUN in this case can be issued without waiting for all pairs to become suspended. Any write I/O after YKRUN is kept as differential data at the MCU of TC Sync. YKRUN TCPL)

    Note: You can perform (1) to (4) steps at once by scripting at APP1 site.



38. After L-site has recovered from failure, dissolve TC Sync copy pairs from APP1 that were in failure. (YKDELETE G1)
39. Create TC Sync copy pairs that were in failure. (YKMAKE TCPL SELECT(COND))
40. Resynchronize TC Sync copy pairs from APP1. (YKRESYNC TCPL SELECT(COND))

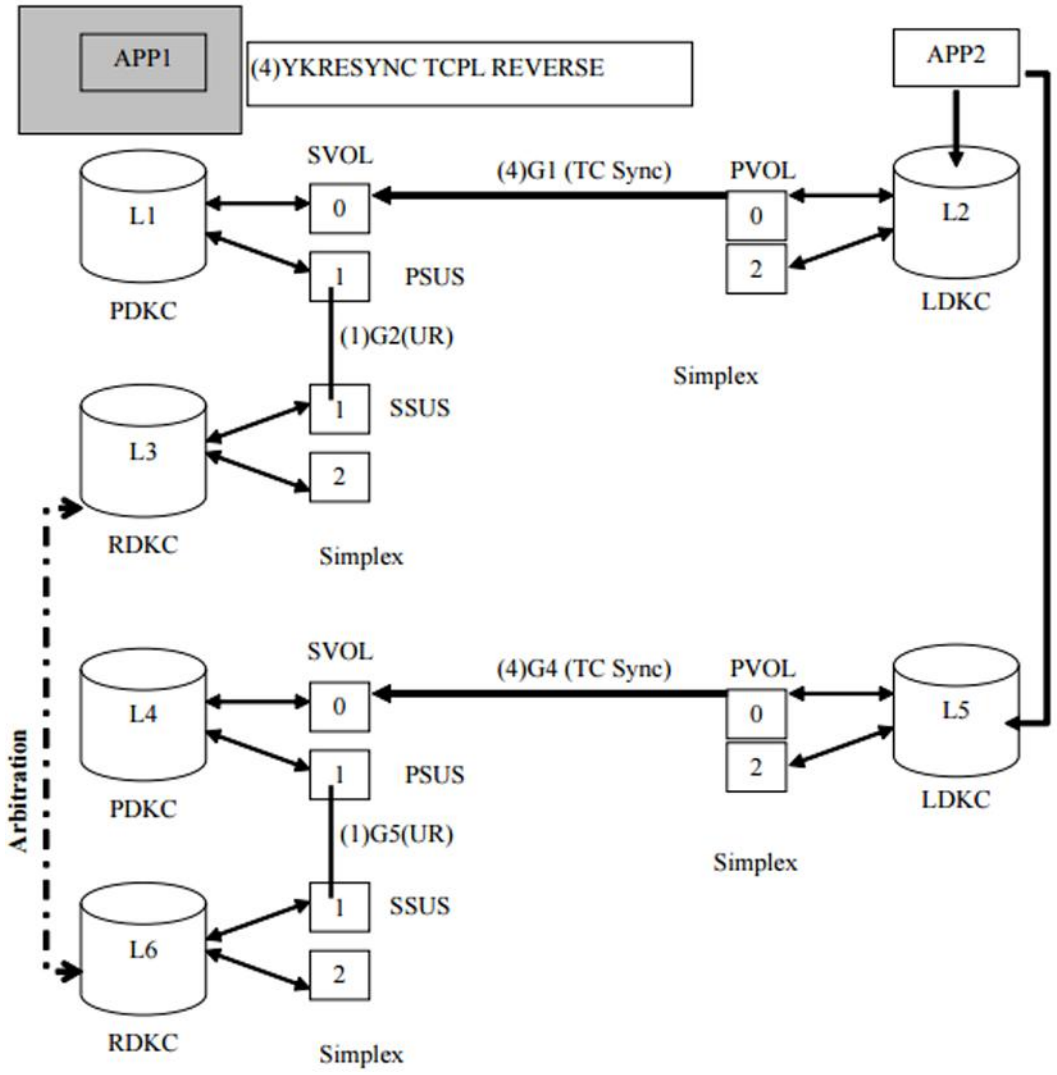


P-site failure (host failure)

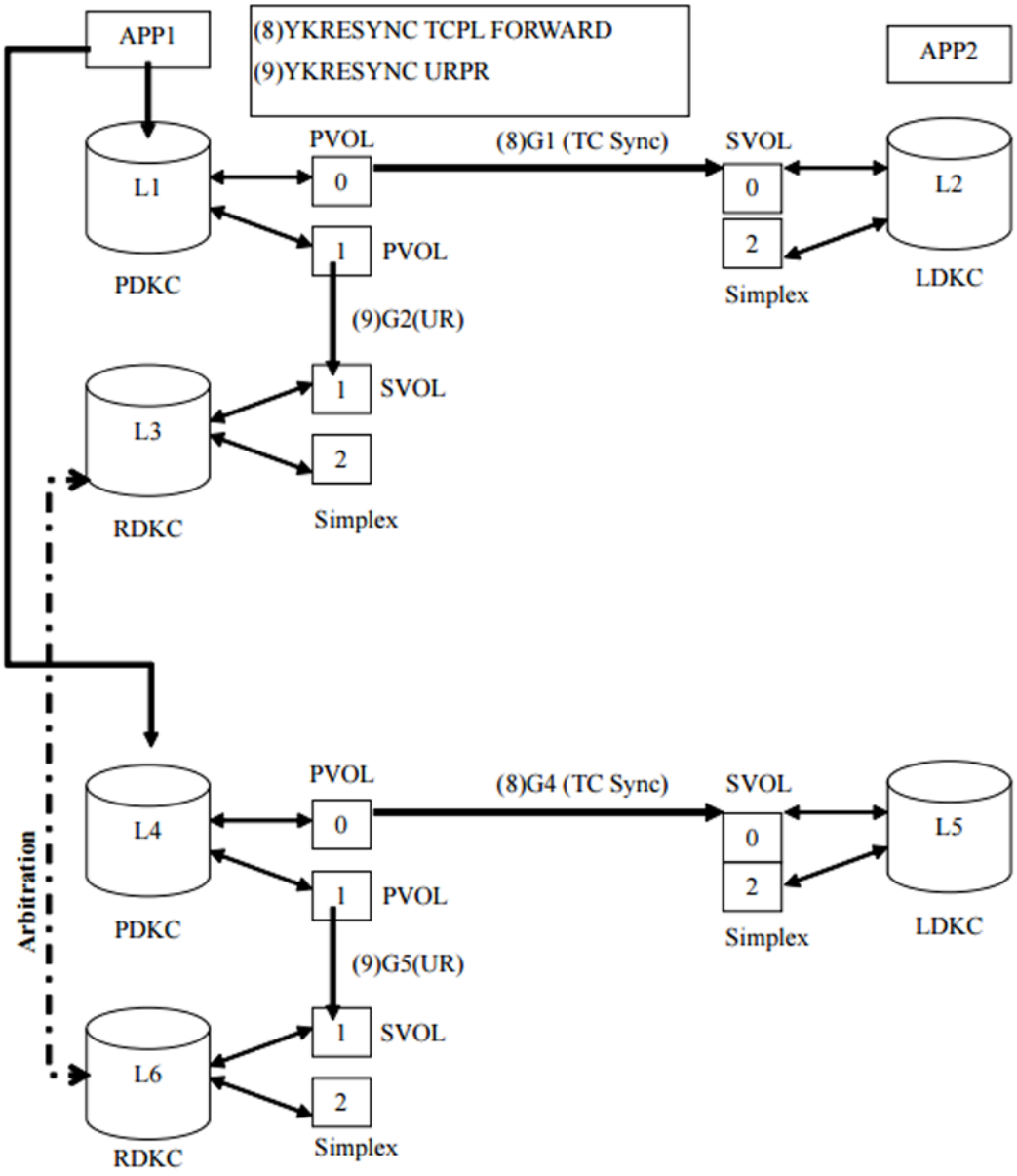
41. Perform Flush Suspend on UR copy pairs from APP2. (YKSUSPND URPR)

    You have to wait copy pair status to be SUSPOP. (YKEWAIT URPR GOTO(SUSPEND))

42. Perform Reverse Suspend on TC Sync copy pairs from APP2. (YKSUSPND TCPL REVERSE)
43. Start I/O from APP2.
44. Perform Reverse Resync on TC Sync copy pairs from APP2. (YKRESYNC TCPL REVERSE)



45. Stop I/O from APP2.
46. Perform Reverse Suspend on TC Sync copy pairs from APP1. (YKSUSPND TCPL FORWARD)
47. Start I/O from APP1.
48. Perform Reverse Resync on TC Sync copy pairs from APP1. (YKRESYNC TCPL FORWARD)
49. Resynchronize UR copy pairs from APP1. (YKRESYNC URPR))

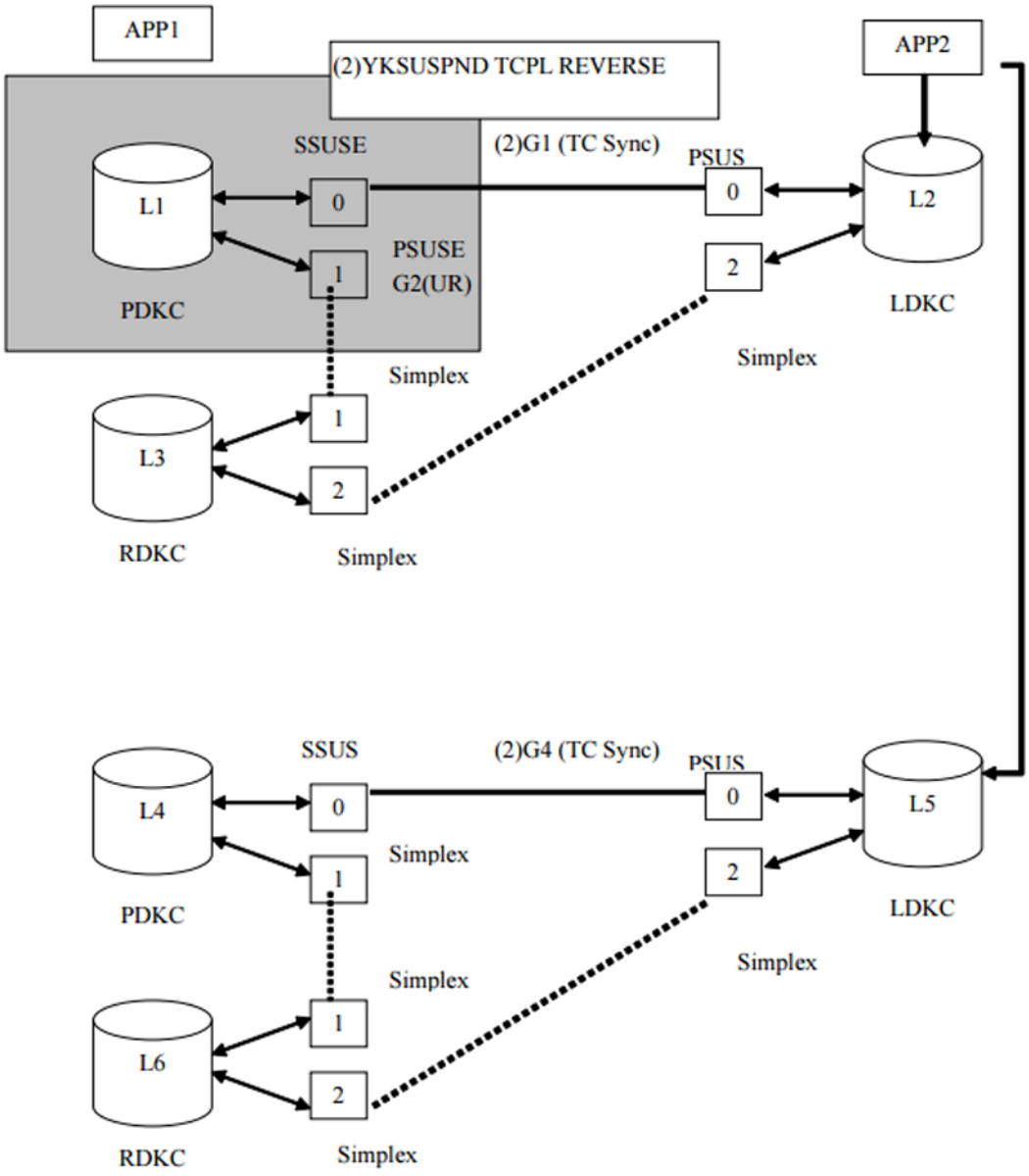


P-site failure (DKC failure (in case that Shared Memory is not volatilized))

50. Dissolve on UR copy pairs from APP2. (Perform YKRECVER to the copy group in DKC which were in failure. Perform YKDELETE to a normal copy group. YKRECVER G2, YKDELETE G5)

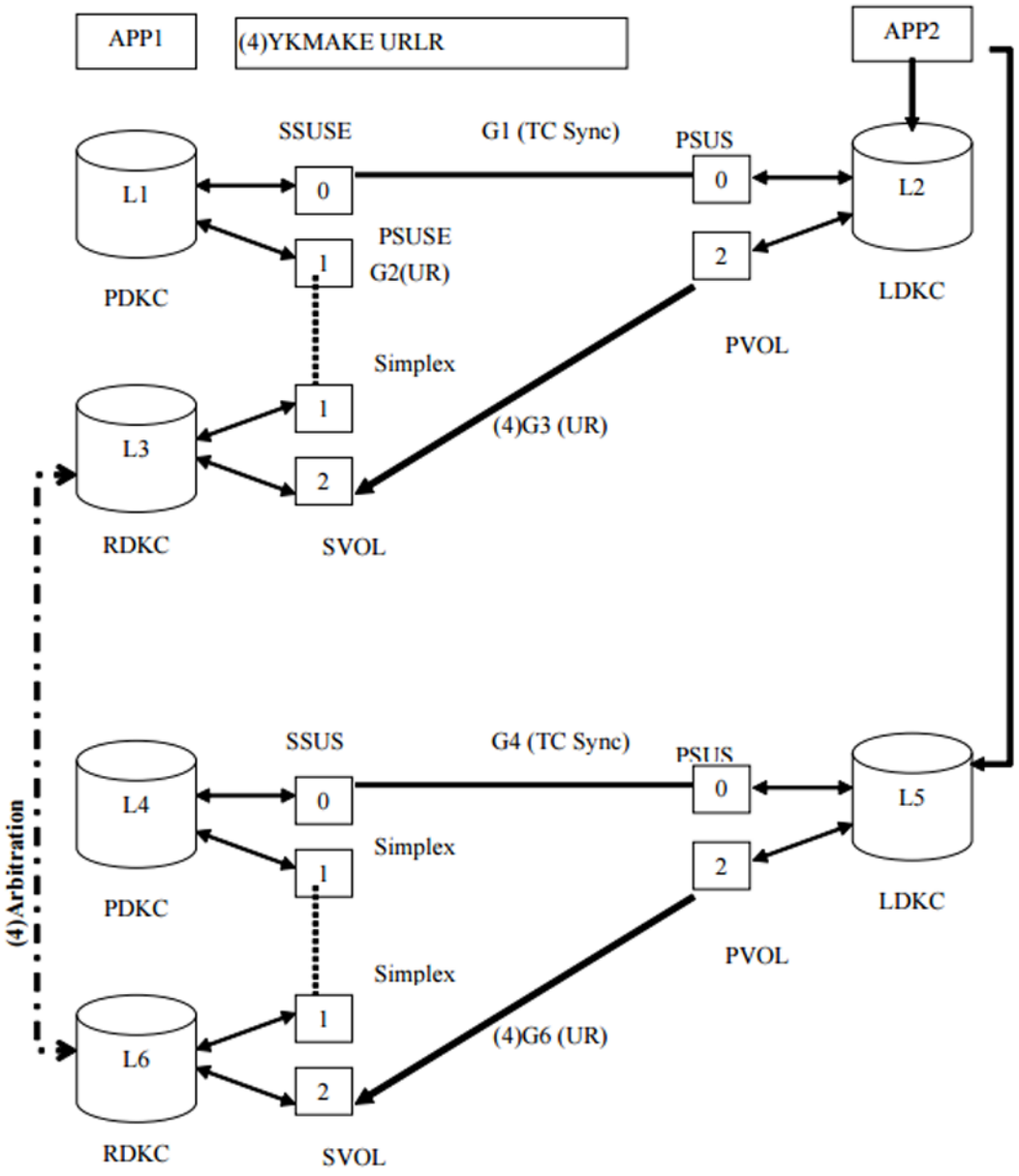
    Note: After (1) is executed, EXCTG is dissolved.

51. Perform Reverse Suspend on TC Sync copy pairs from APP2. (YKSUSPND TCPL REVERSE)

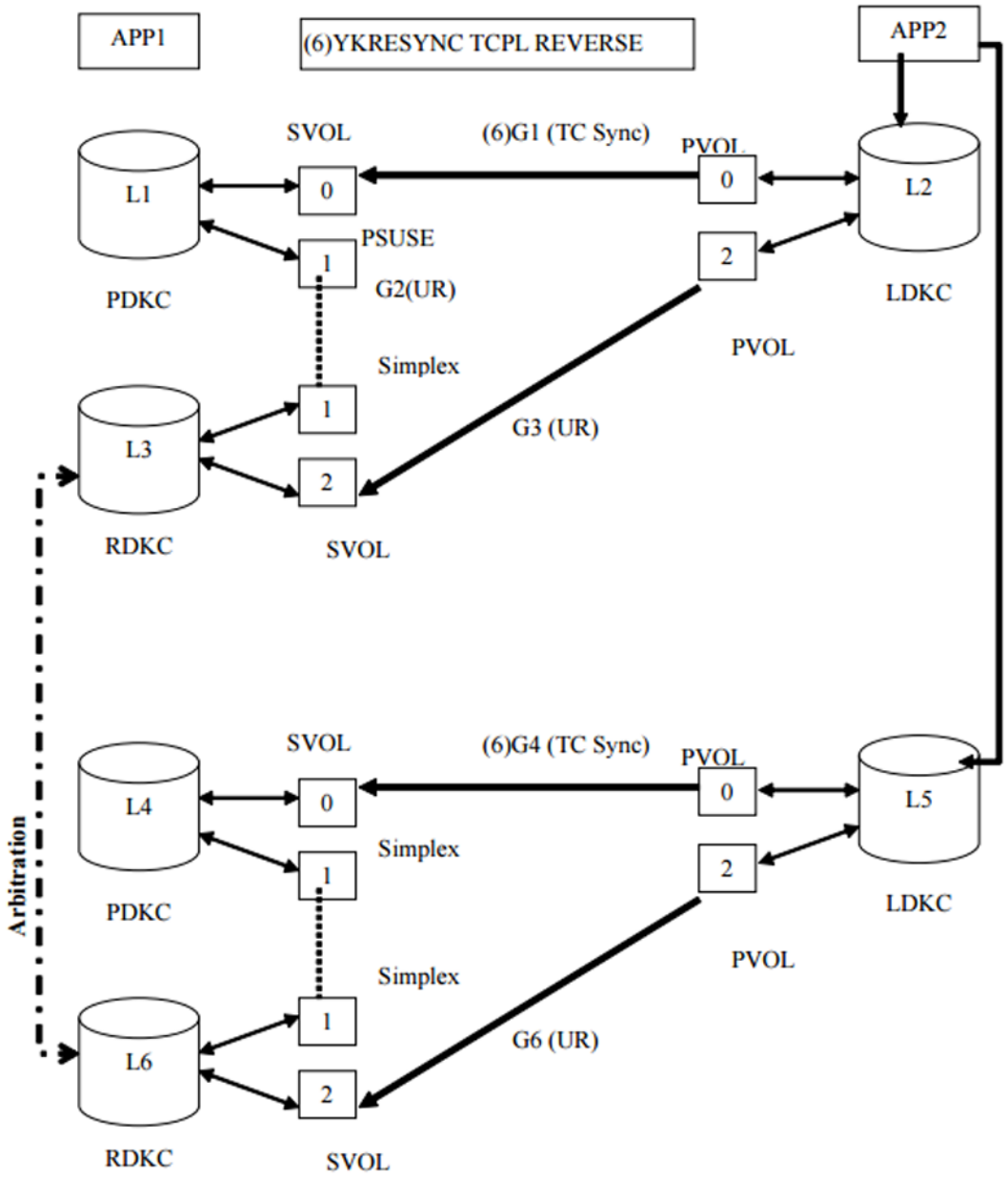


52. Start I/O from APP2.
53. Establish UR copy pairs from APP2. (YKMAKE URLR)

    Note: After (4) is executed, EXCTG is registered.



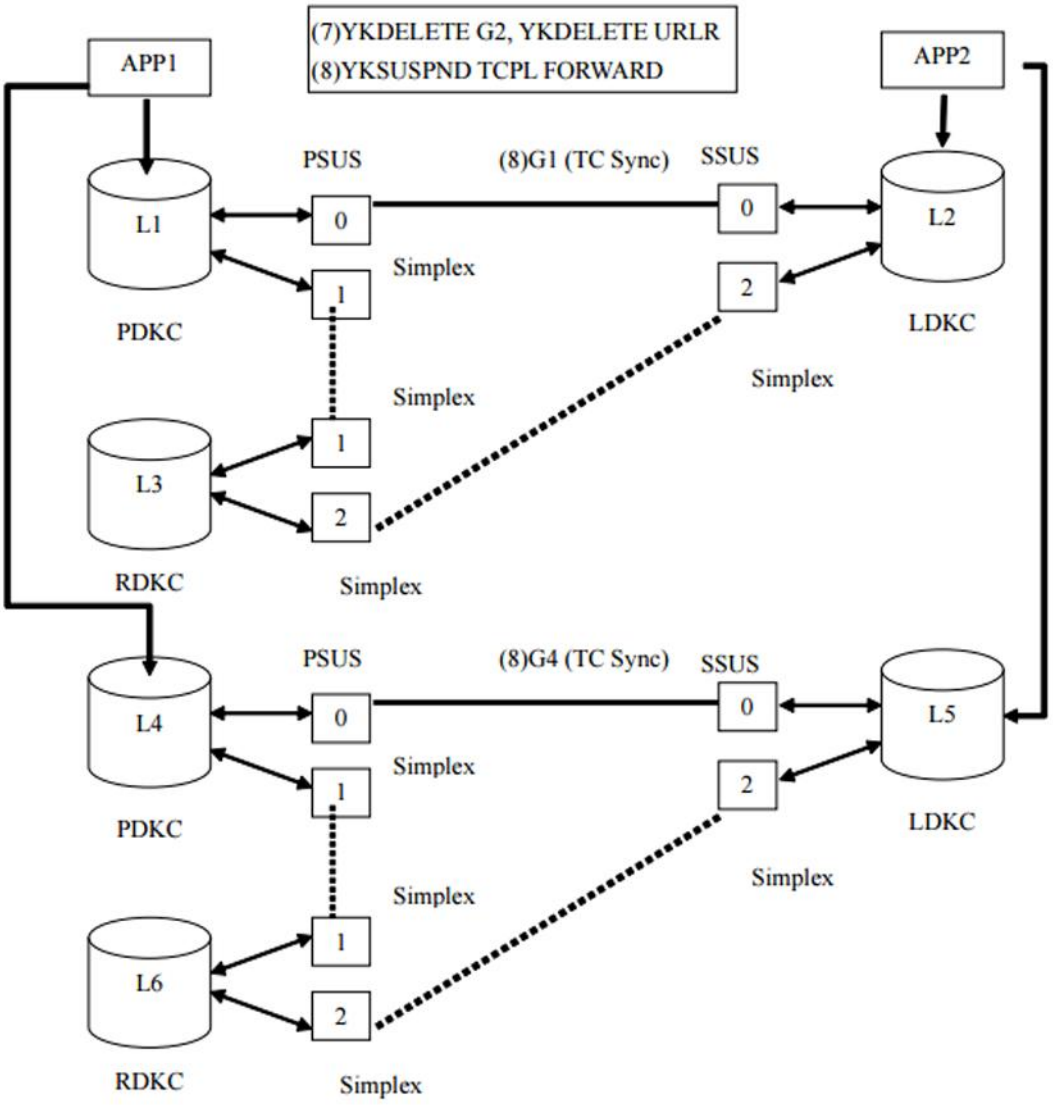
54. Stop I/O from APP2.
55. Perform Reverse Resync on TC Sync copy pairs from APP2. (YKRESYNC TCPL REVERSE)



56. Dissolve on UR copy pairs from APP2. (P-VOL of the copy group which were in failure is failure suspend status, and dissolve the pair. YKDELETE G2, YKDELETE URLR)

    Note: After YKDELETE command is executed on URLR, EXCTG is dissolved.

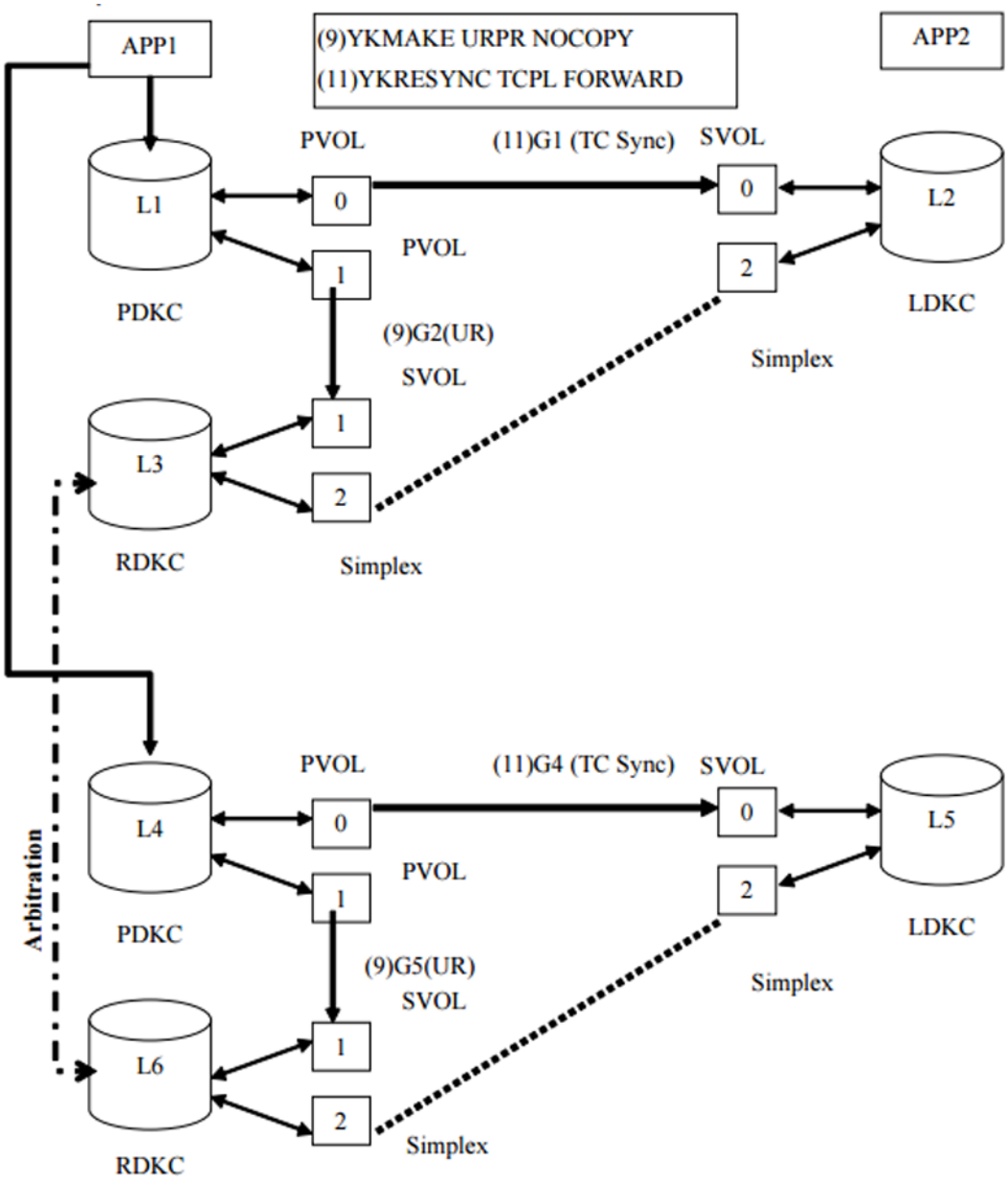
57. Perform Reverse Suspend on TC Sync copy pairs from APP1. (YKSUSPND TCPL FORWARD)



58. Establish UR copy pairs with NOCOPY parameter from APP1. (YKMAKE URPR NOCOPY)

    Note: After (9) is executed, EXCTG is registered

59. Start I/O from APP1.
60. Perform Reverse Resync on TC Sync copy pairs from APP1. (YKRESYNC TCPL FORWARD

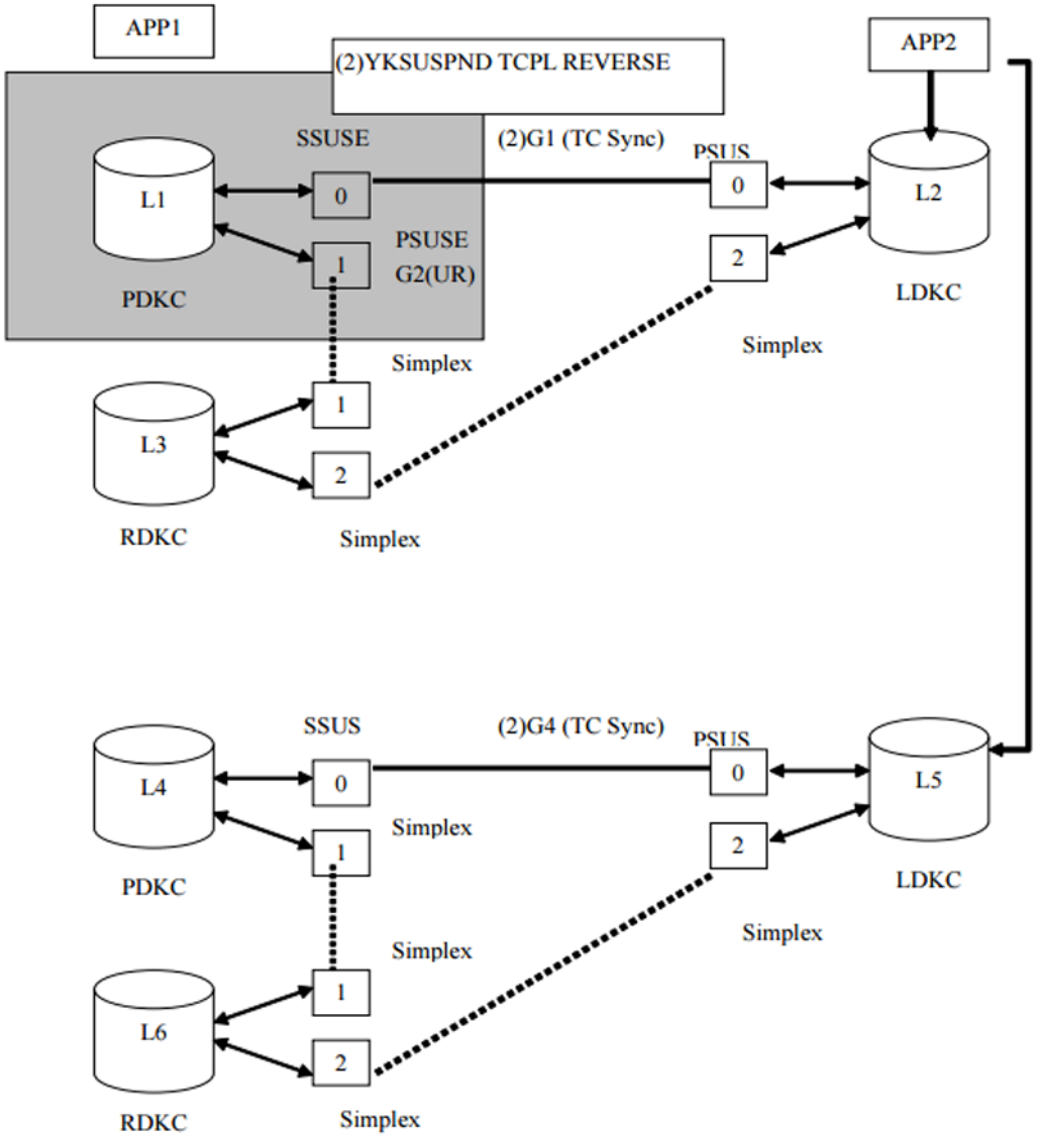


P-site failure (DKC failure (in case that Shared Memory is volatilized))

61. Dissolve on UR copy pairs from APP2. (Perform YKRECVER to the copy group in DKC which were in failure. Perform YKDELETE to a normal copy group. YKRECVER G2, YKDELETE G5)

    Note: After (1) is executed, EXCTG is dissolved.

62. Perform Reverse Suspend on TC Sync copy pairs from APP2. (YKSUSPND TCPL REVERSE)

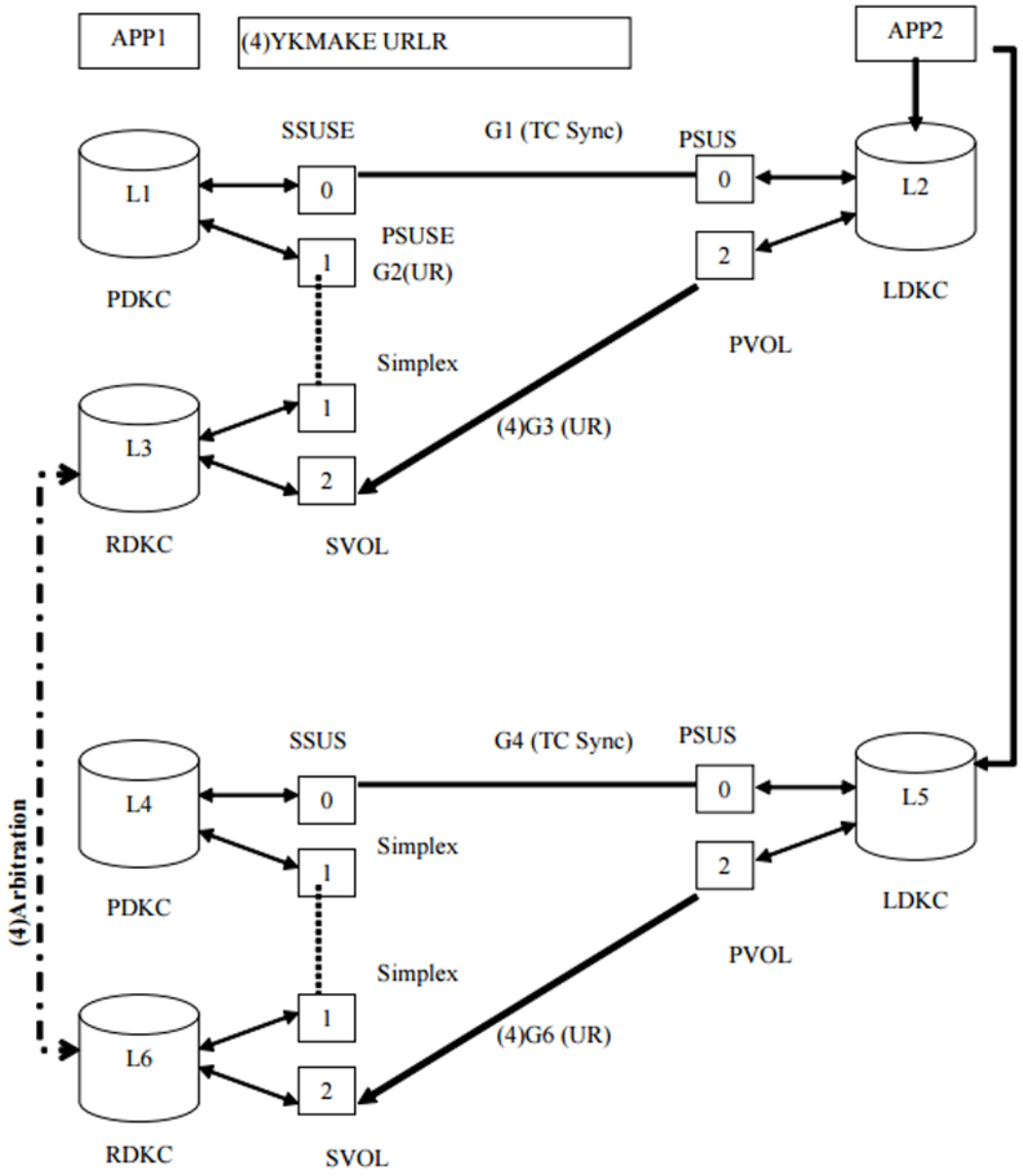


63. Start I/O from APP2.
64. Establish UR copy pairs from APP2. (YKMAKE URLR)

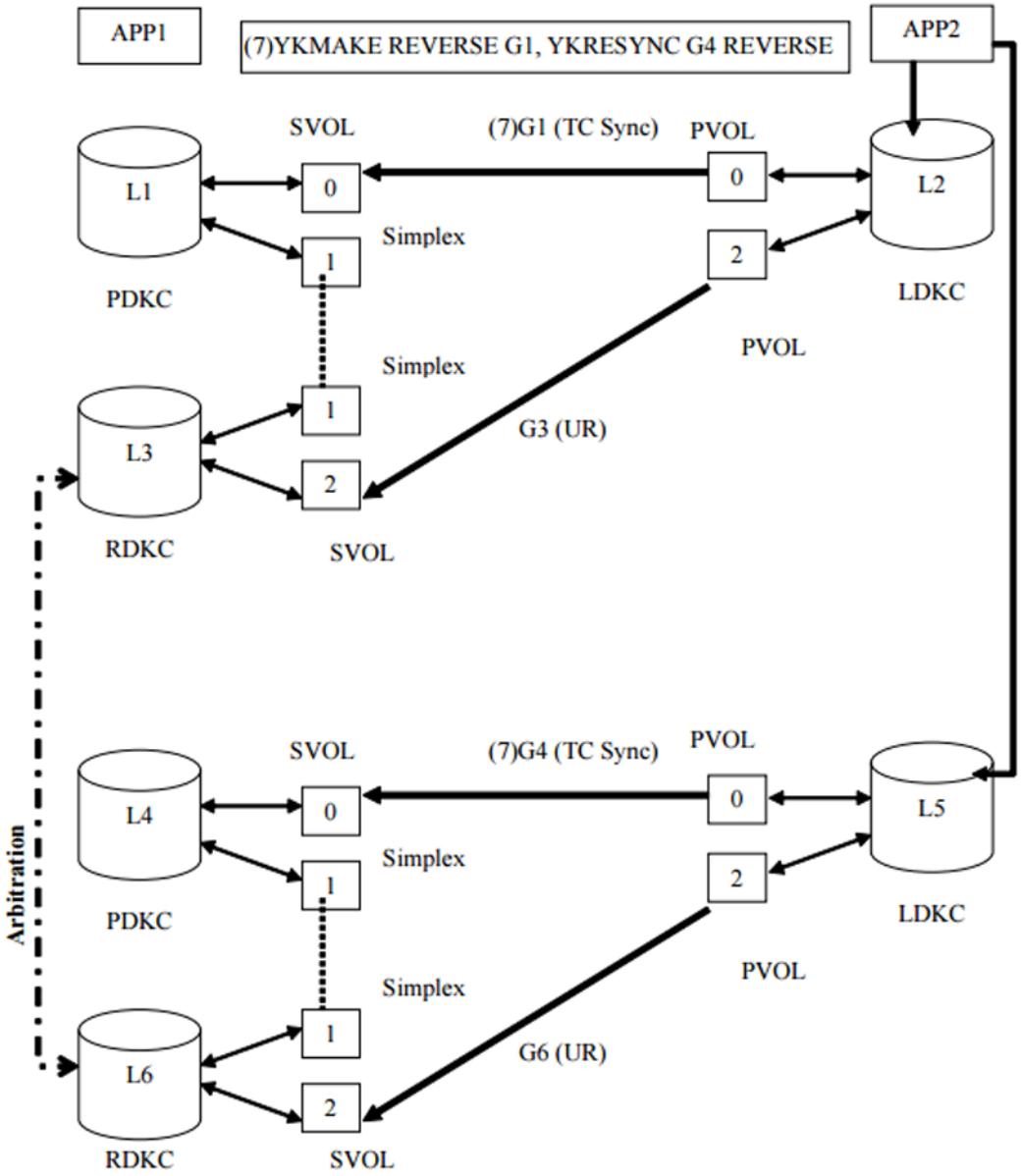
    Note: After (4) is executed, EXCTG is registered.

    - P-site DKC recovery started.

After P-site DKC has recovered from failure, establish logical path of G1 and G2. (L1 to L3 and L1 to L2)



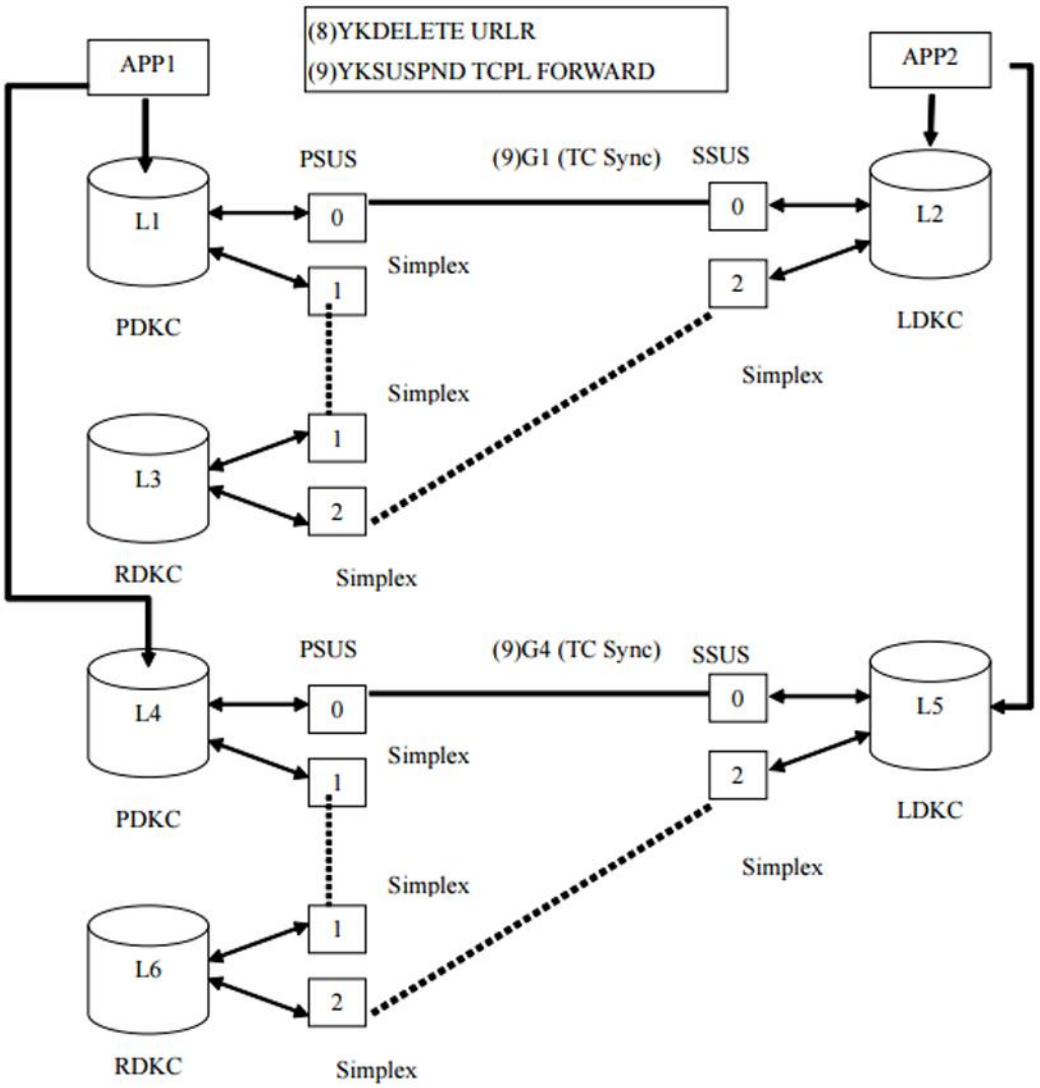
65. Stop I/O from APP2
66. Perform YKRECVER to the copy group in DKC which were in failure from APP2. (YKRECVER G1)
67. Establish TC Sync copy pairs in reverse direction and perform Reverse Resync on TC Sync copy pairs from APP2. (YKMAKE REVERSE G1, YKRESYNC G4 REVERSE)



68. Dissolve on UR copy pairs from APP2. (YKDELETE URLR)

Note: After (8) is executed, EXCTG is dissolved.

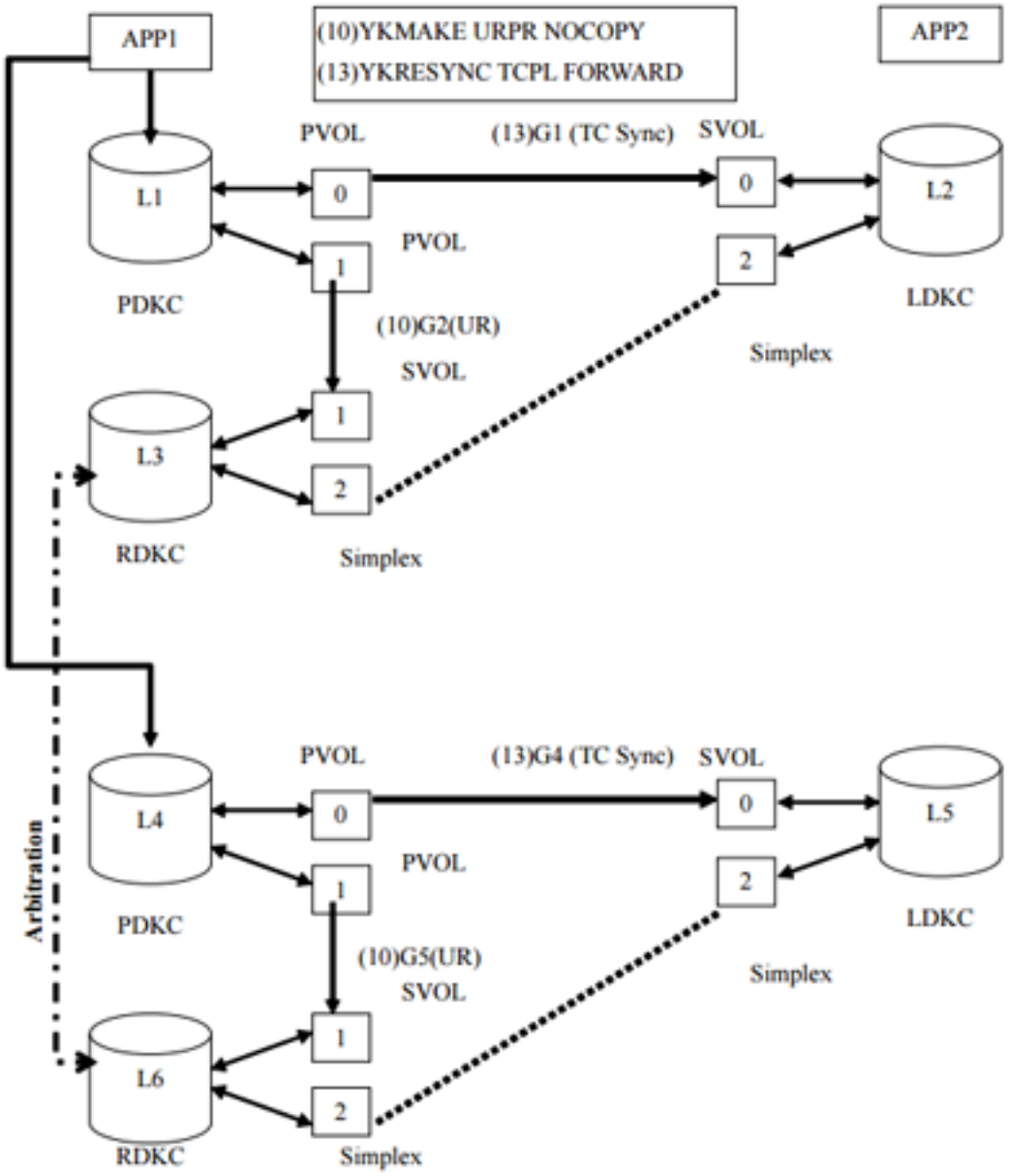
69. Perform Reverse Suspend on TC Sync copy pairs from APP1. (YKSUSPND TCPL FORWARD)



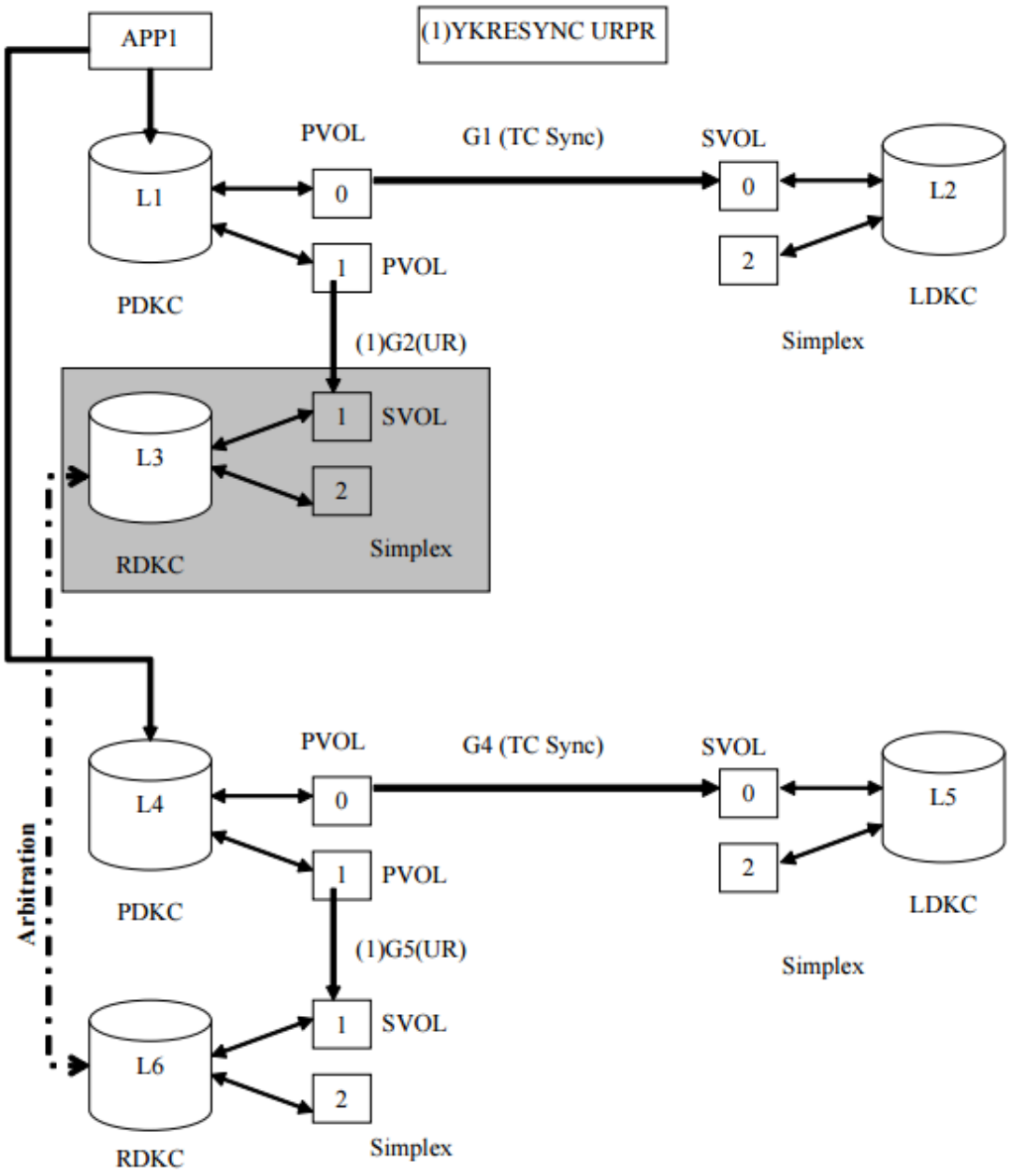
70. Establish UR copy pairs with NOCOPY parameter from APP1. (YKMAKE URPR NOCOPY)

    Note: After (10) is executed, EXCTG is registered.

71. Create the JNL-Group for P-site (L1) again by Storage Navigator.
72. Start I/O from APP1.
73. Perform Reverse Resync on TC Sync copy pairs from APP1. (YKRESYNC TCPL FORWARD)

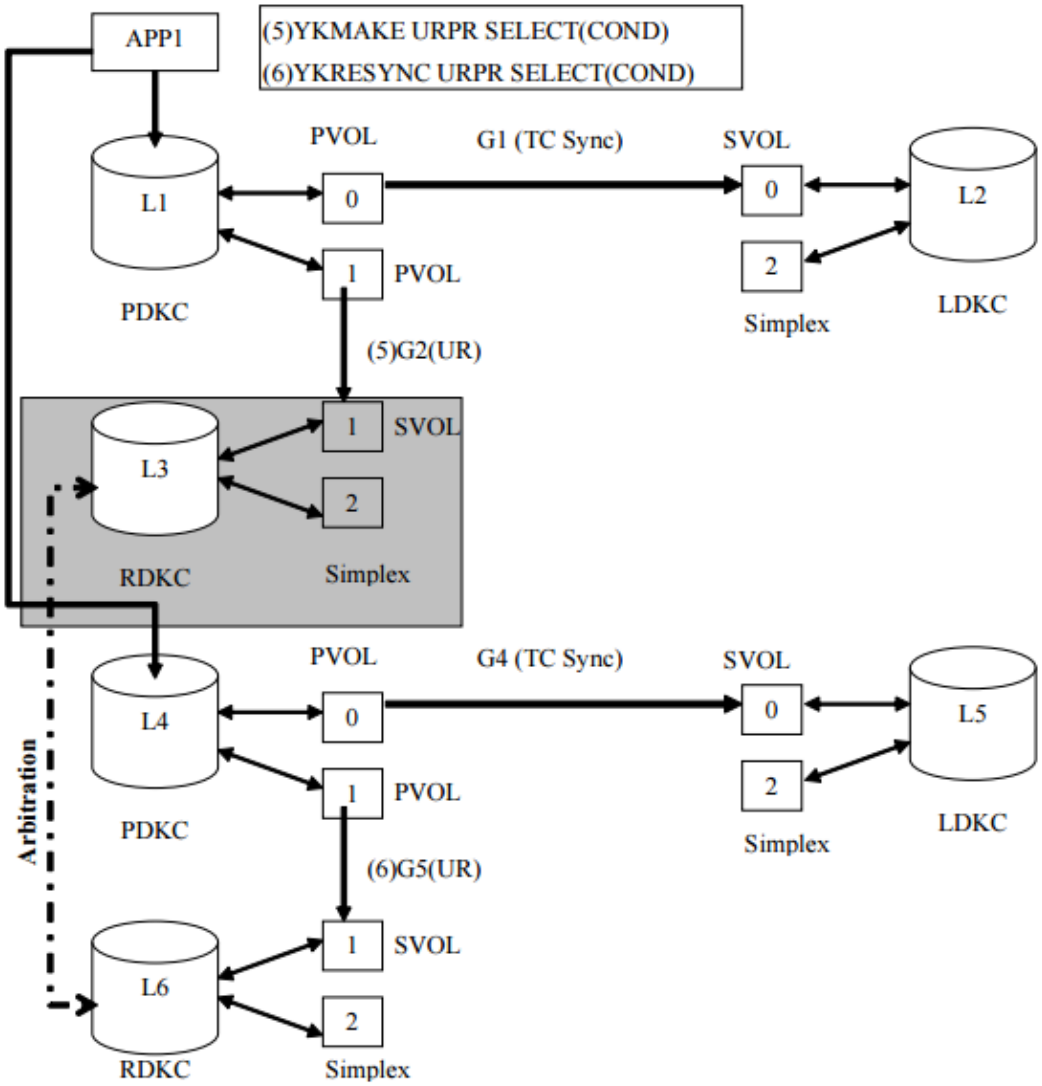


74. After R-site DKC has recovered from failure, resynchronize UR copy pairs from APP1. (YKRESYNC URPR)



R-site failure (in case that Shared Memory is volatilized)

75. After R-site DKC has recovered from failure, dissolve UR copy pairs from APP1 which were in failure. (YKDELETE G2)
76. Create the JNL-Group for R-site (L3) again by Storage Navigator.
77. Delete EXCTG related information from JNL in force by Storage Navigator.
78. Establish logical path of G2. (L3 to L1)
79. Create UR copy pairs which were in failure and register all UR JNLG to EXCTG again from APP1. (YKMAKE URPR SELECT(COND))
80. Resynchronize UR copy pairs from APP1. (YKRESYNC URPR SELECT(COND)



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