

Welcome to IBM Db2 Mirror for i



User Name:

Password:

Log in

IBM i 7.4 from the IBM i home page



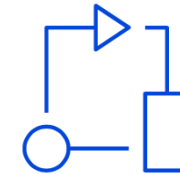
Availability

- IBM Db2 mirror provides continuous availability
- Near zero downtime
- Get work done 24 hours a day, 7 days a week, 365 days a year



Security

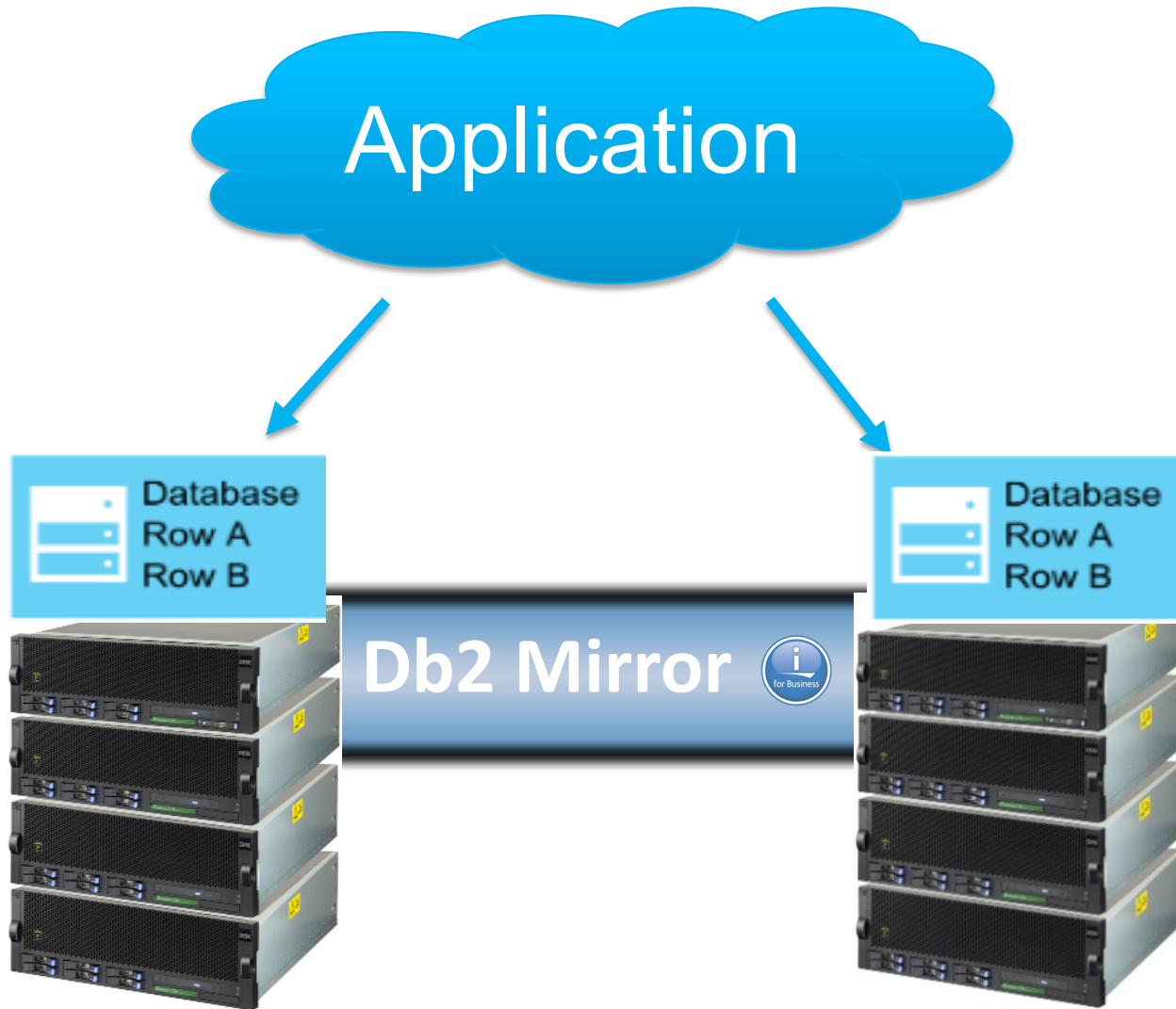
- Enhanced security features implement latest industry standard practices
- Protect critical business applications and data
- New auditing capability at the Object level



Open Source

- Industry standard Open Source environments
- Port more applications to IBM i
- Easily integrate with IoT, AI and Watson

IBM Db2 Mirror for i



IBM Db2 Mirror for i: Enables Continuous Availability

- High speed synchronous replication of Db2 for i (Data Center Solution)
- Access Db2 objects from either LPAR

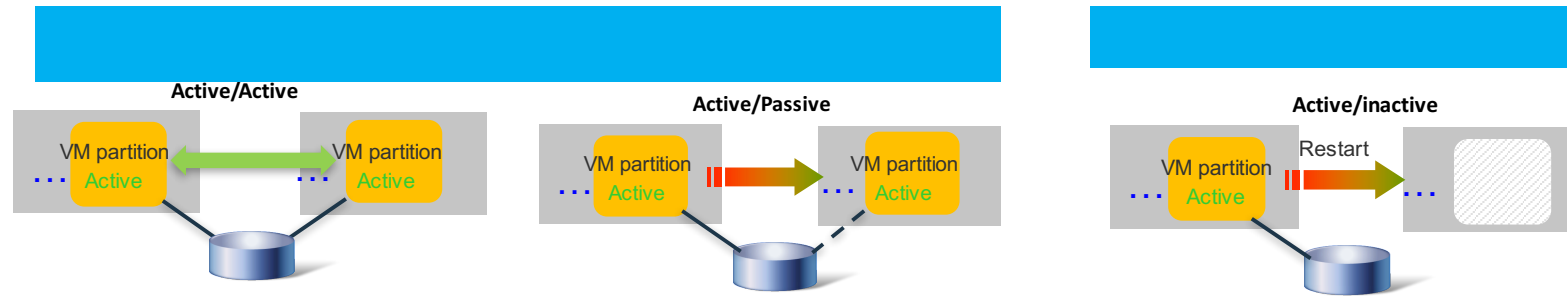
Application Availability Enablement

- Two Nodes read and write to the same DB Files
- Enables quickly moving all work to one node, for planned maintenance or node failure

Enables Business Continuity for Disruptive System Upgrades

- › Nodes can be at different OS levels
 - › Nodes can be on different Power Hardware Generations
 - › Rolling upgrades for no downtime
 - › Roll a node back a release with minimal impact if Active/Active applications are deployed
-
- Requires POWER8 or later and IBM i 7.4
 - New IBM i LPP: 5770-DBM

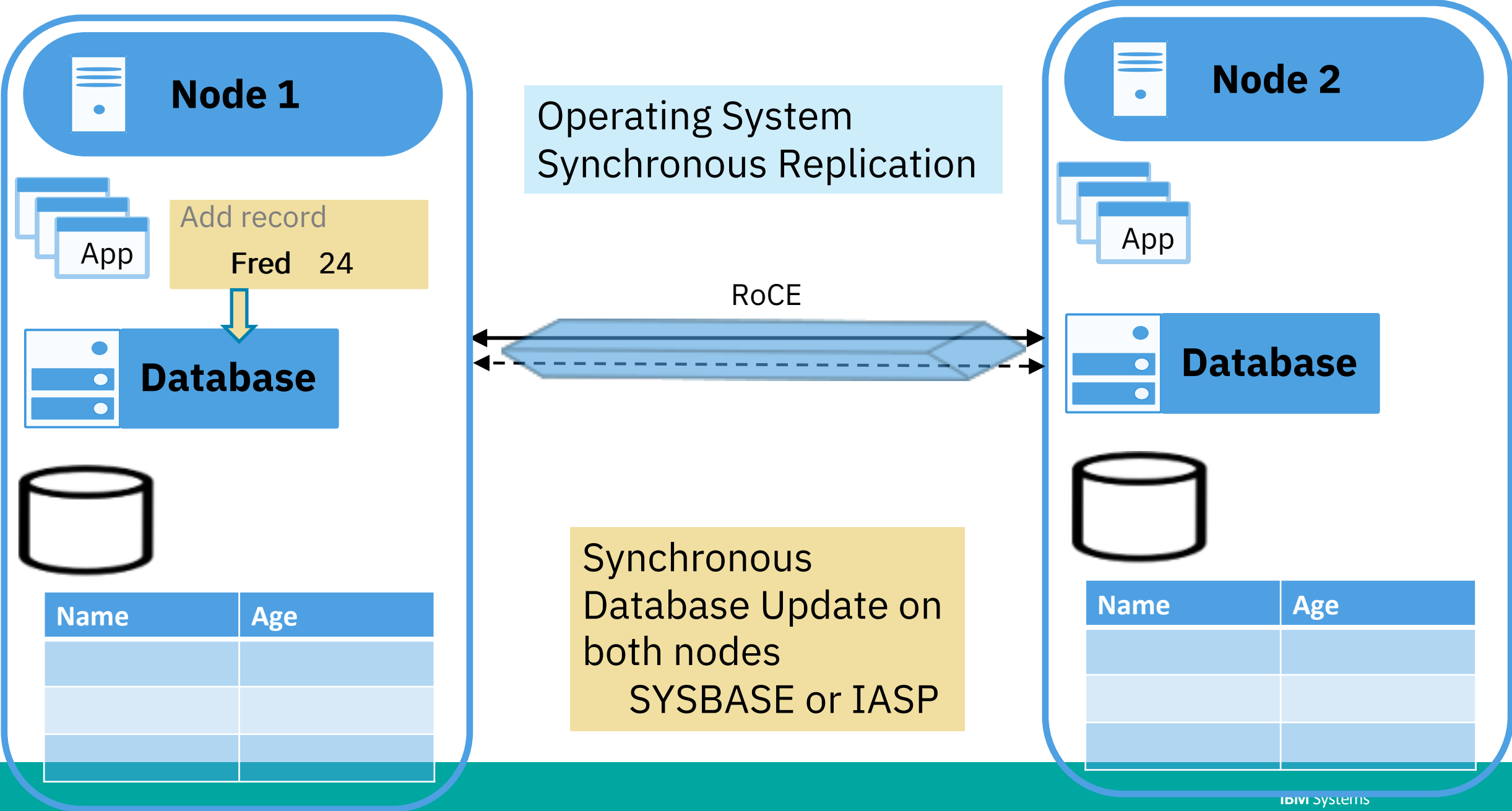
High Availability topology classification & positioning



Technology	Active/Active Clustering	Active/Passive Clustering	Active/Inactive
Definition	Application level clustering; applications in the cluster have simultaneous access to the production data therefore no app restart upon an app node outage. Certain types enable read-only access from secondary nodes	OS level clustering; one OS in the cluster has access to the production data, multiple active OS instances on all nodes in the cluster. Application is restarted on a secondary node upon outage of a production node.	VM level clustering, One VM in a cluster pair has access to the data, one logical OS, one or two physical copies. OS and applications must be restarted on a secondary node upon a primary node outage event. LPM enables the VM to be moved non-disruptively for a planned outage event.
Outage Types	SW,HW,HA, planned, unplanned RTO 0, limited distance	SW,HW,HA,DR, planned, unplanned, RTO>0, multi-site	HW,HA,DR, planned, unplanned, RTO>0, multi-site
OS integration	Inside the OS	Inside the OS	OS agnostic
RPO	Sync mode only	Sync/Async	Sync/Async
RTO	0	Fast (minutes)	Fast Enough (VM Reboot)
Licensing*	N+N licensing	N+1 licensing	N+0 licensing
Industry Examples	Oracle RAC, Db2 Mirror , pureScale	PowerHA, Redhat HA, Linux HA	VMware, VMR HA, LPM,

- N = number of licensed processor cores on each system in the cluster
- Illustrations represent two-node shared-storage configurations for conceptual simplicity. There are many other topologies and data resiliency combinations

Db2 Mirror – Active Active



Db2 Mirror – Database Supported Objects

Database replication eligible objects

Native:

- Database Physical & Logical File

SQL:

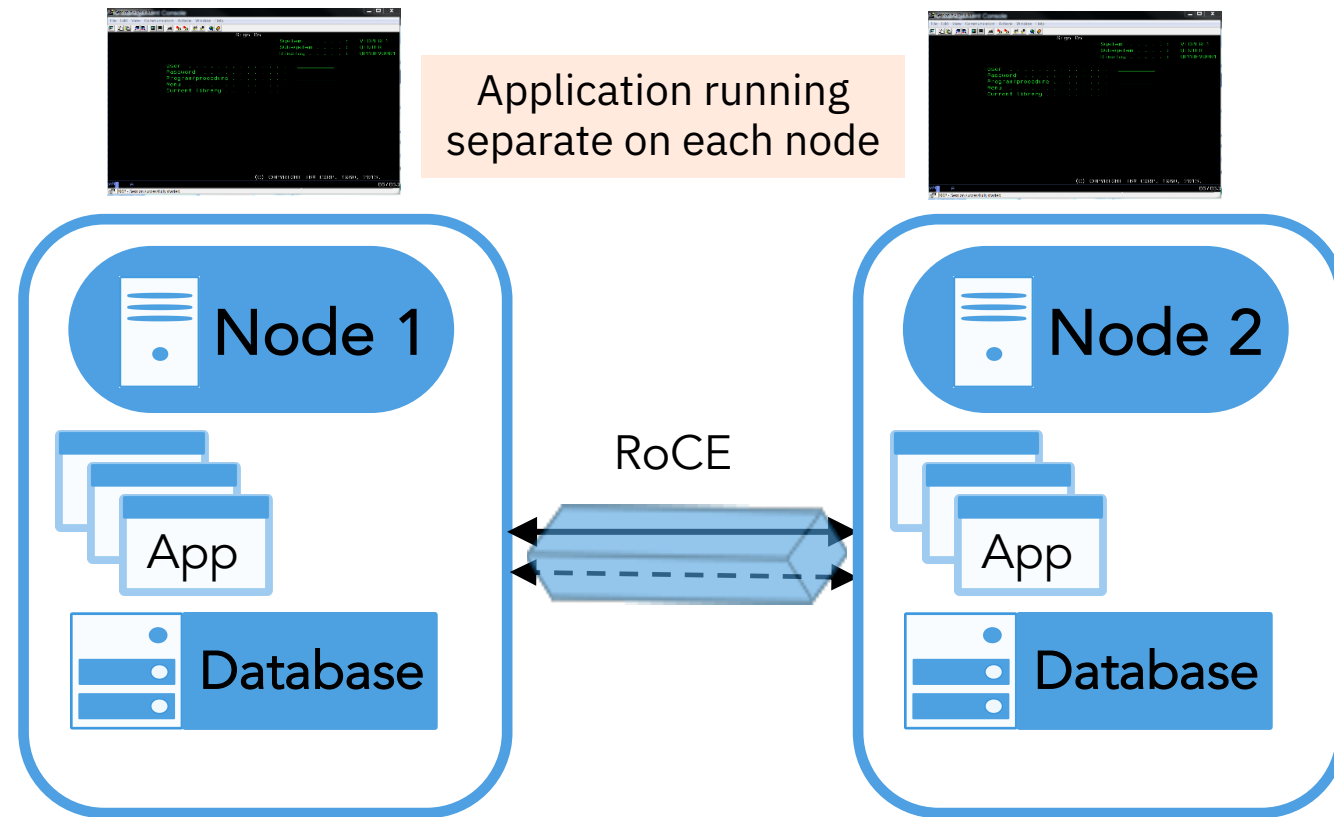
- Alias
- Function
- Global Variable
- Index
- Procedure
- Schema
- Sequence

Included with File support:

- Row Permission
- Column Mask
- Temporal Table
- Constraint
- Etc...



DDS / Record Level Access
SQL / Set Based Access



Db2 Mirror – Other Supported Objects

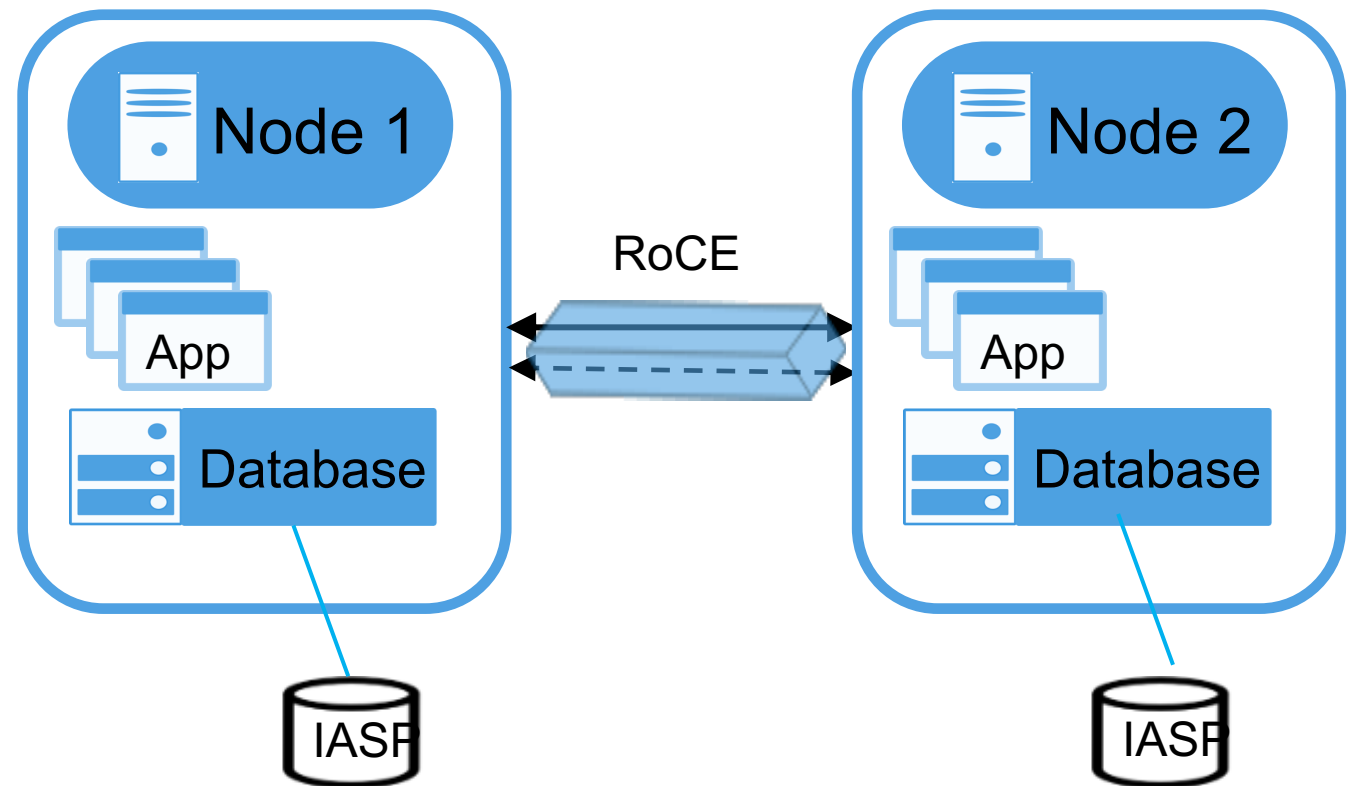
Other Objects

- User profiles
- Authority
- Ownership
- Security
- PGM/SRVPGM
- Data Areas
- Data Queues (DDL Only)
- SYSVALs
- ENVARs
- LIB
- JOBD
- Journals
- Files (also has DDL Only option)

Special Handling

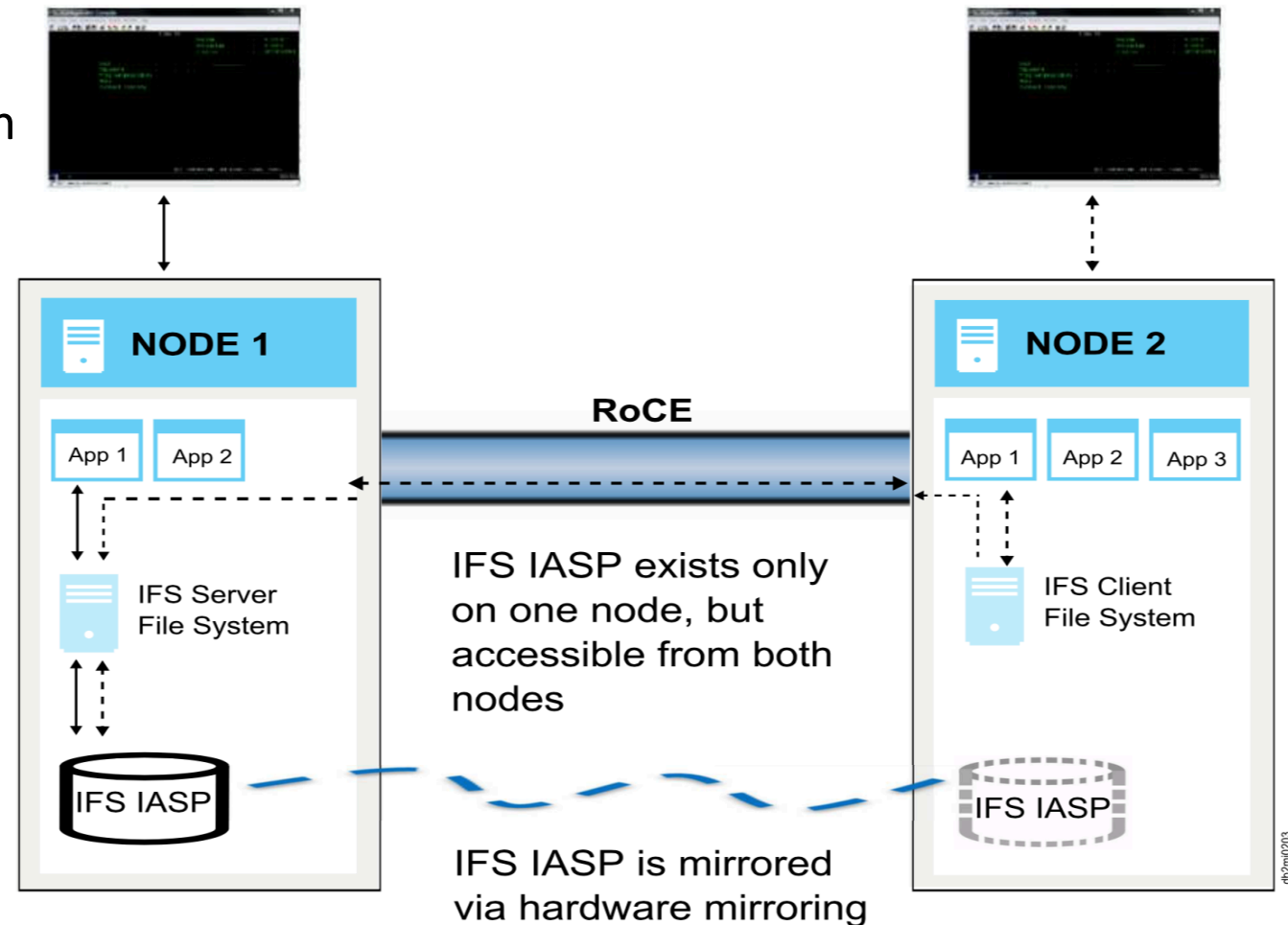
- OUTQ / Spool
- Job Queue

Objects can be in either SYSBASE or IASPs



IFS Support

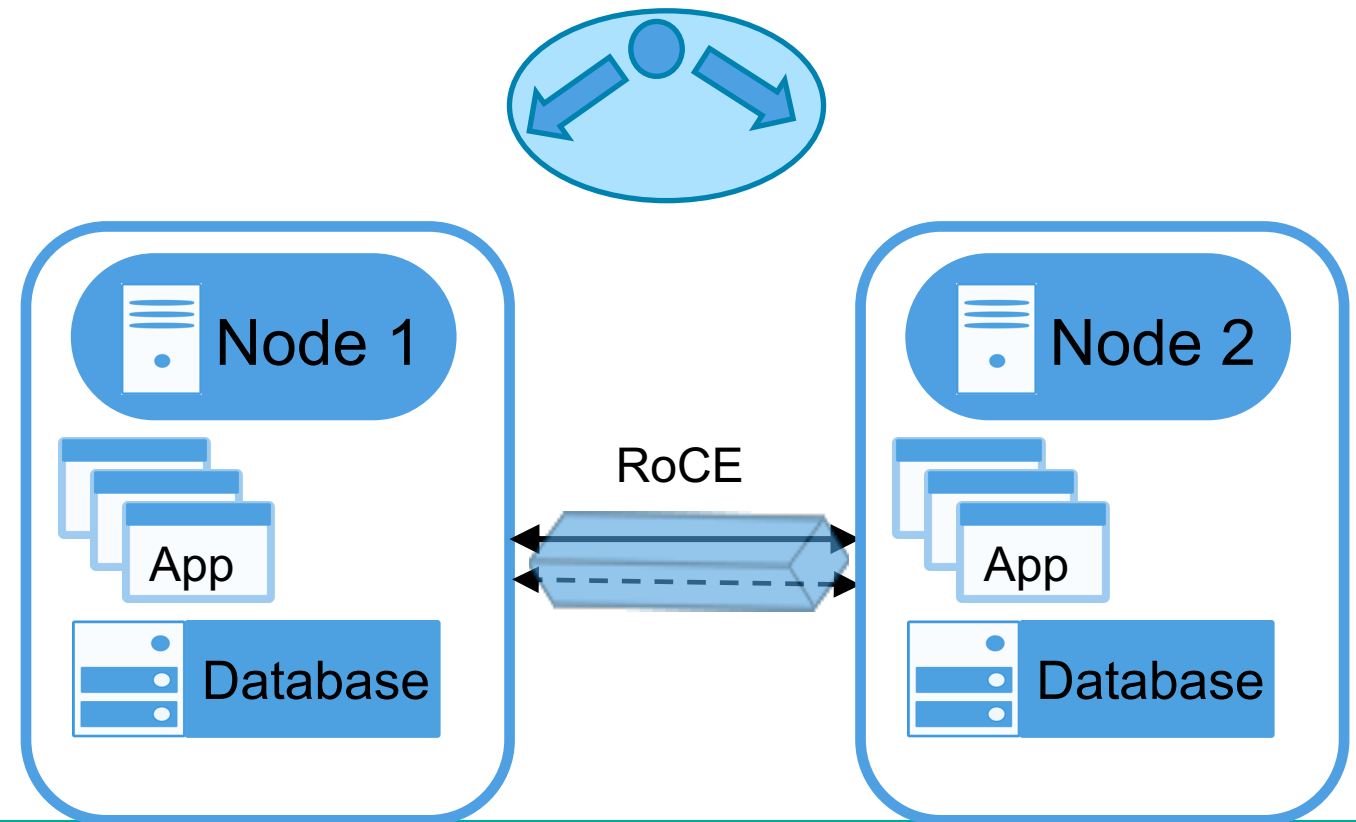
- Requires IASP
- IFS accessible on both Nodes (R/W)
- Requires PowerHA
- Filesystem automatically 'mutates' when the storage is switched



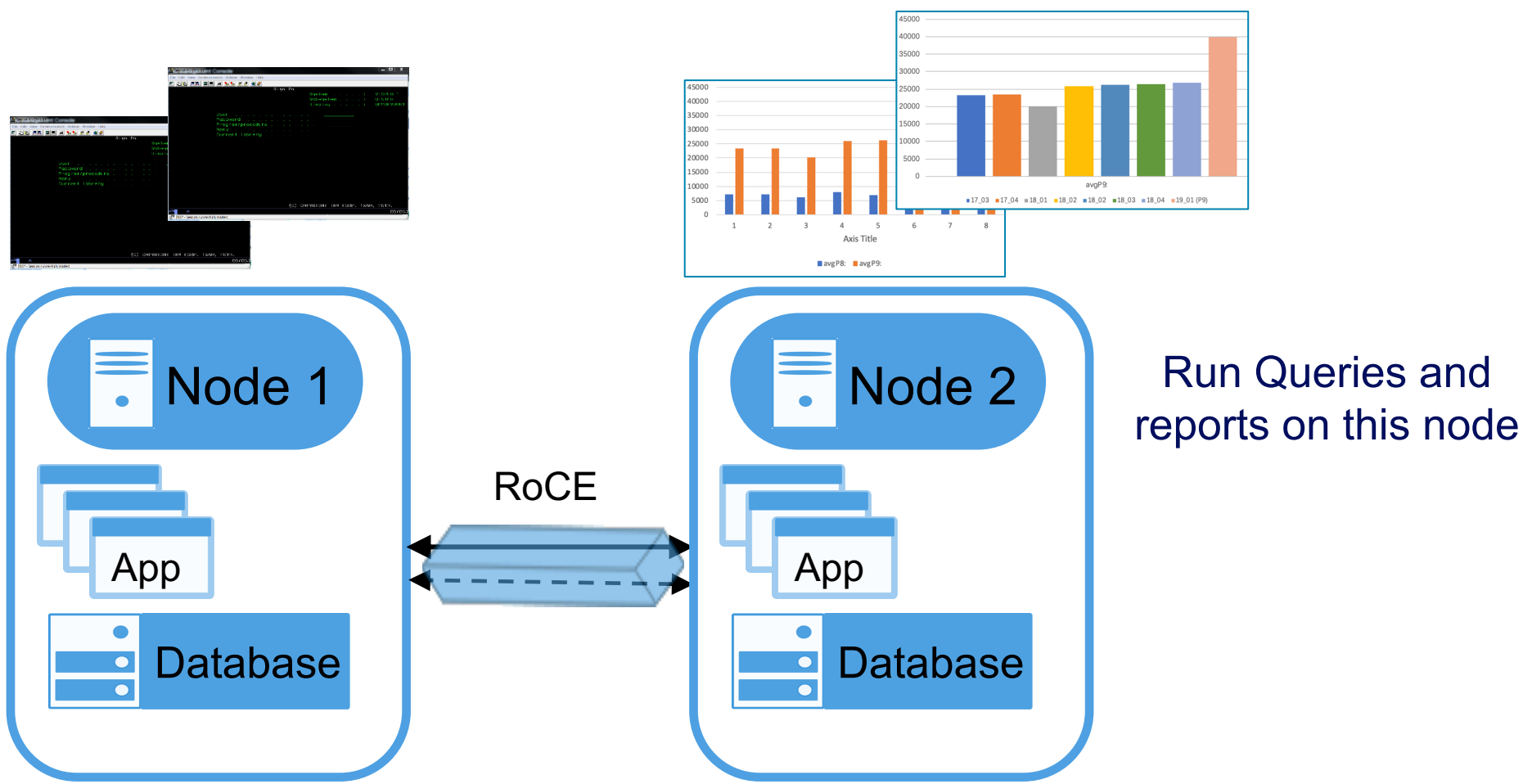
Db2 Mirror – Active Active, Web Clients



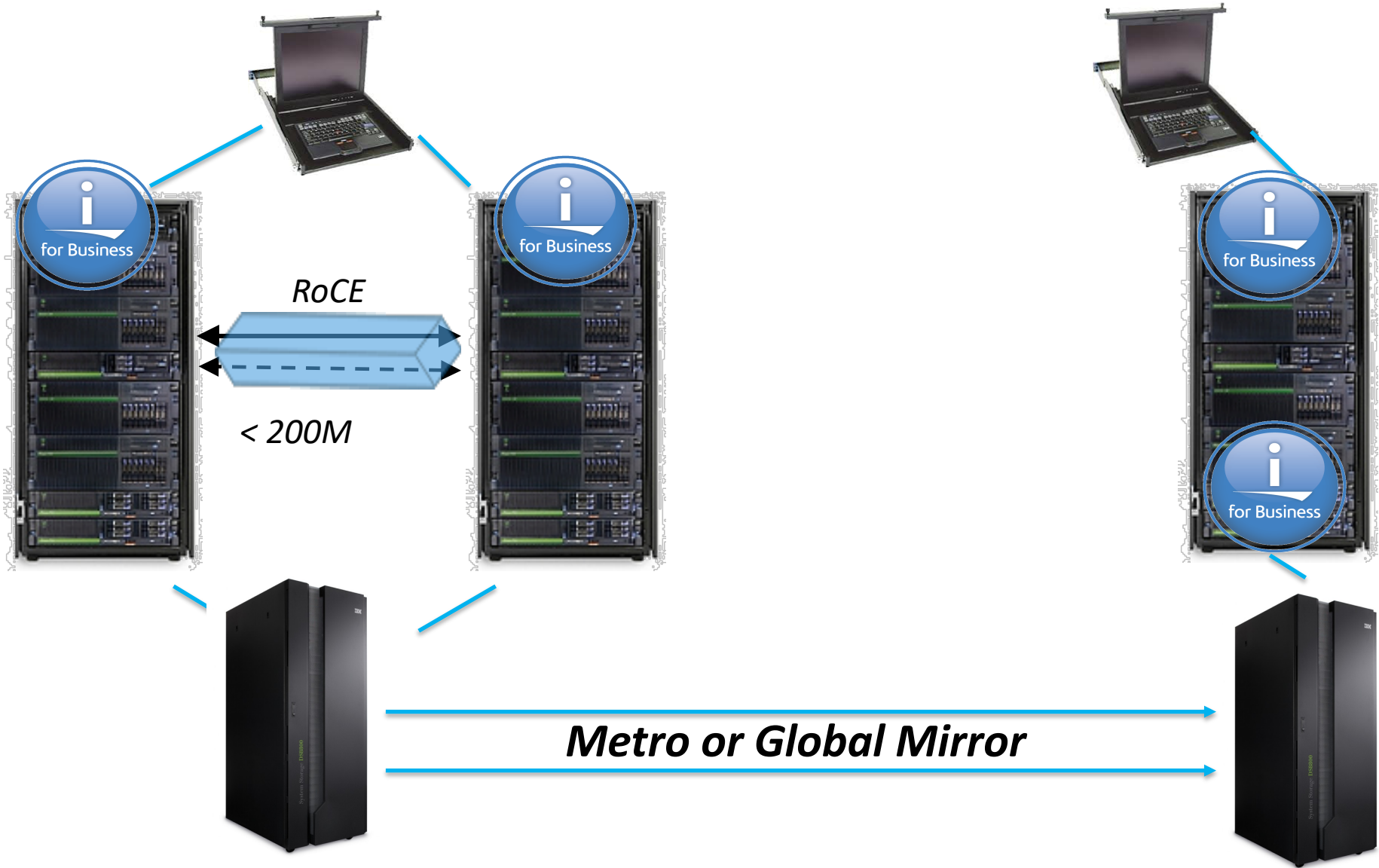
Application layer connects with
either JDBC or Load Balancer



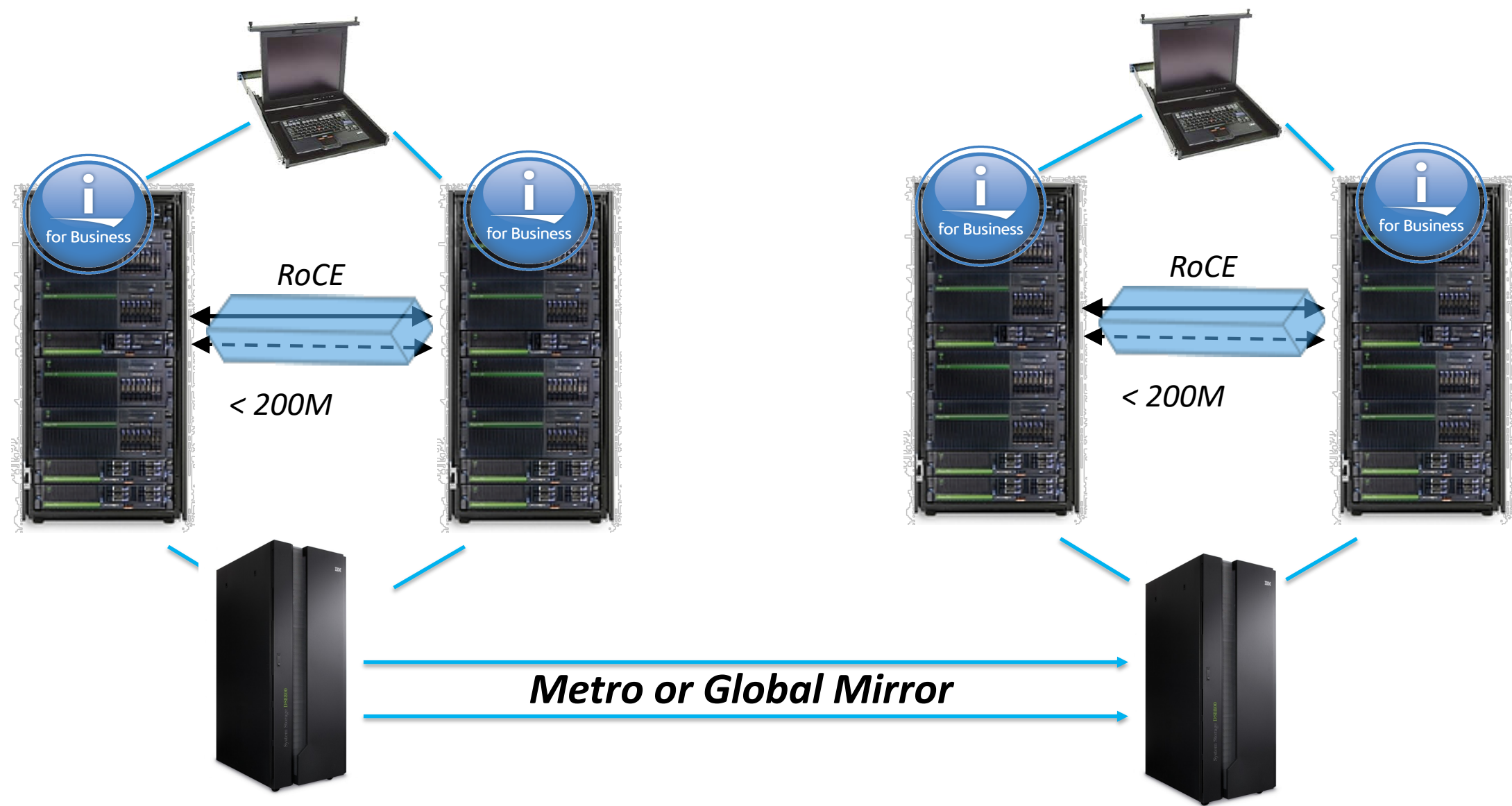
Db2 Mirror – Active Passive



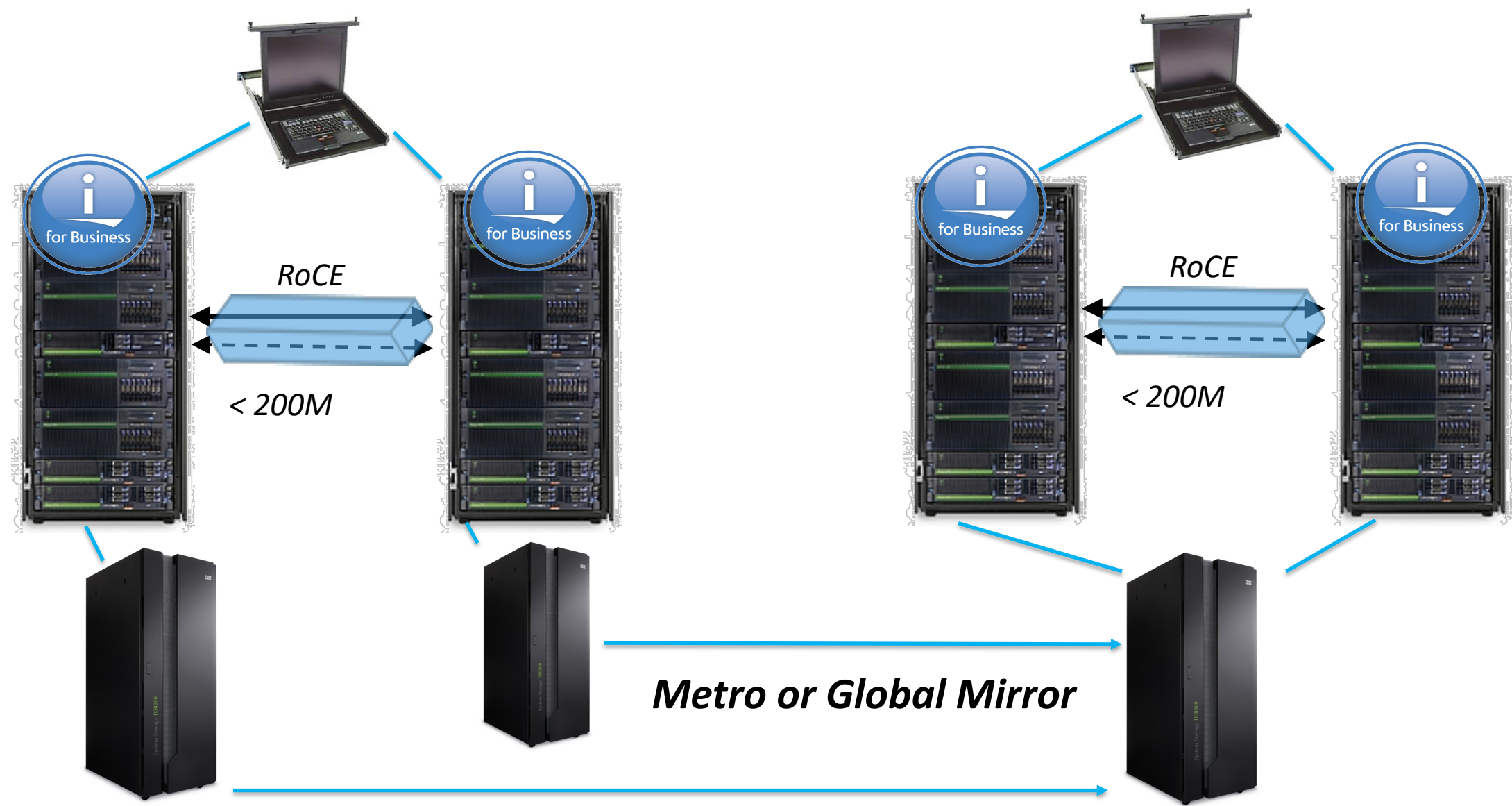
Db2 Mirror with DR



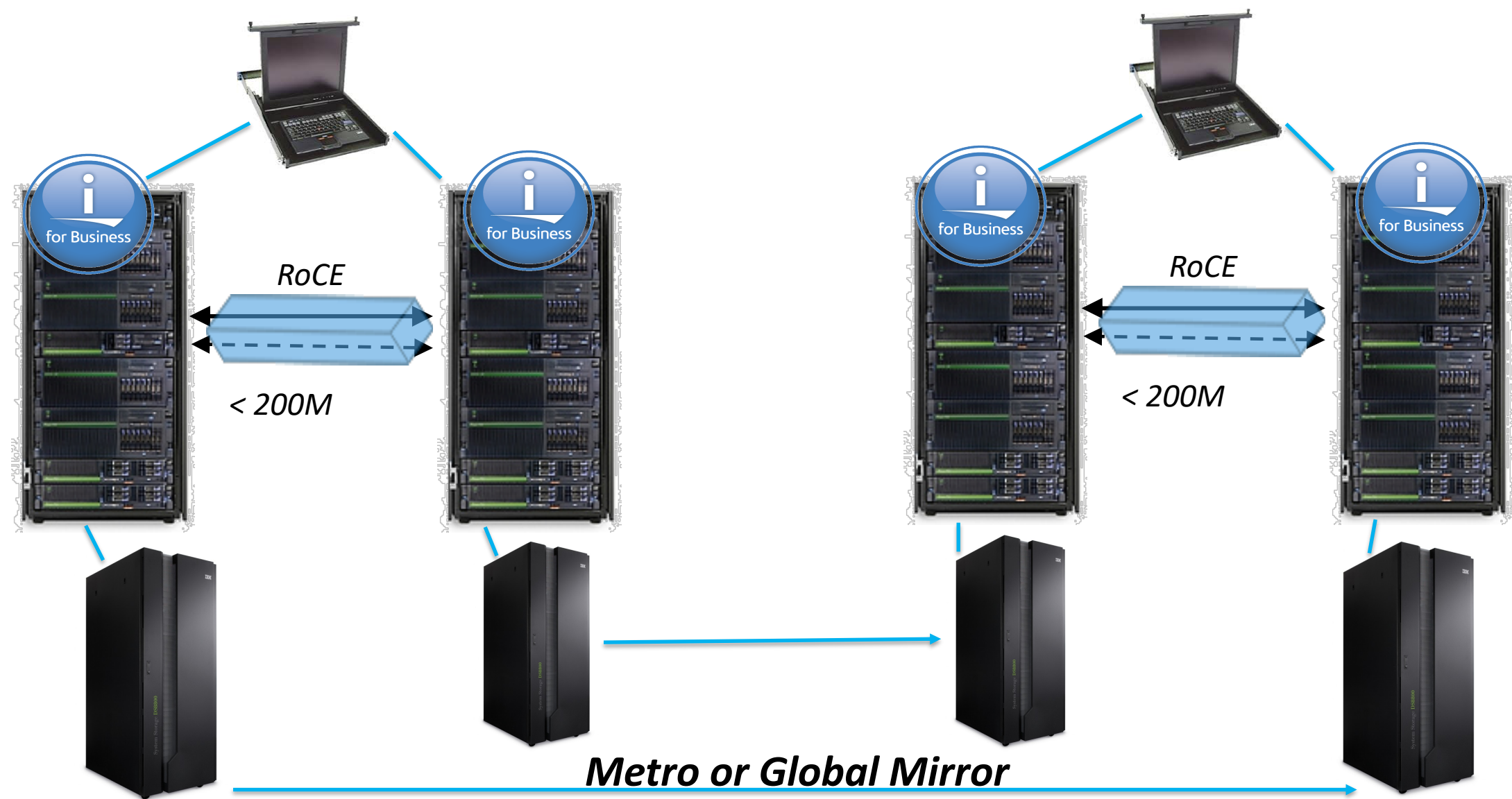
Common DR with one storage



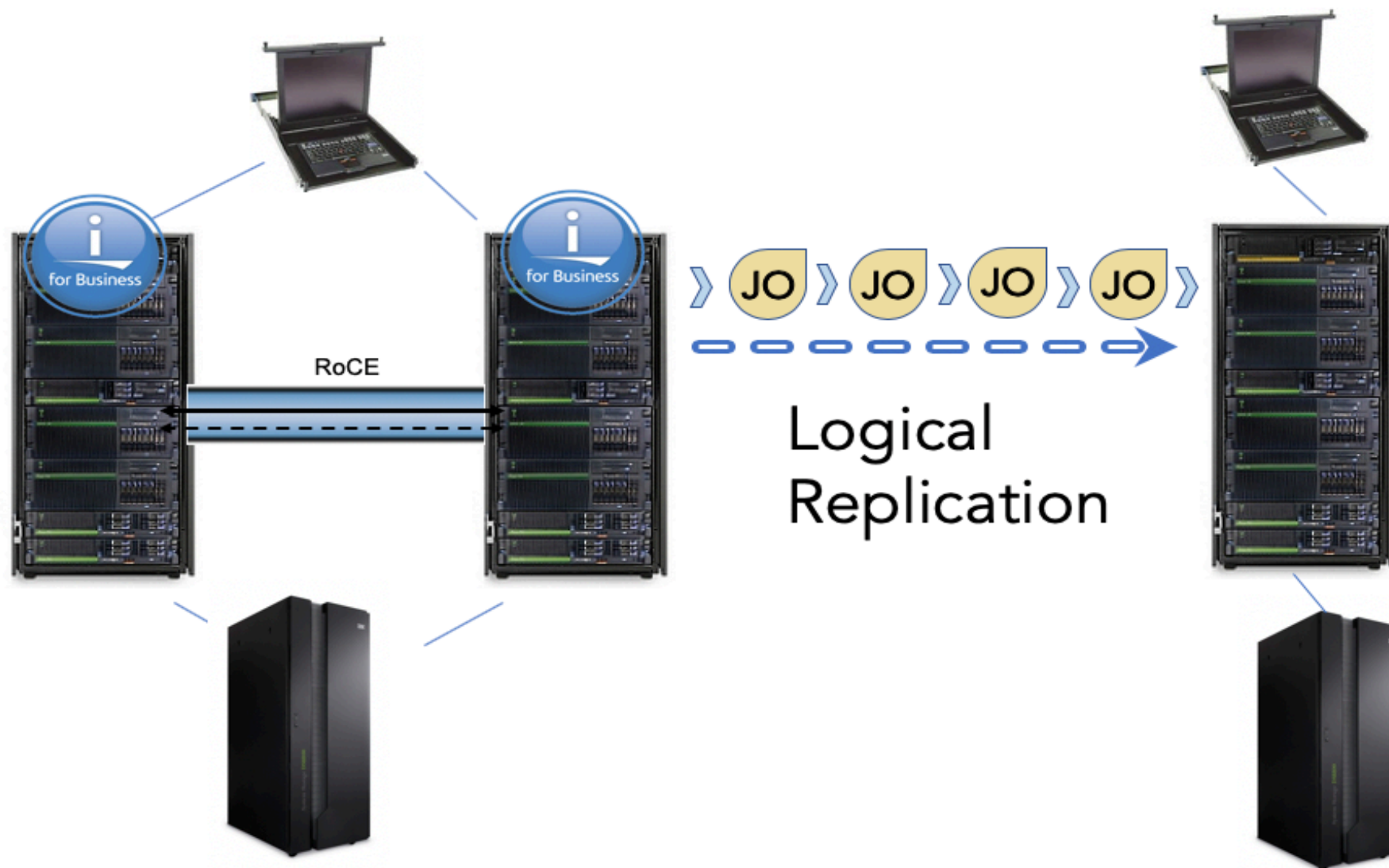
Common DR with multiple storage



Full storage redundancy DR



Basic logical replication DR



ASC : SQL Insert from Examples

The screenshot displays the IBM i Access Client Solutions (ASC) interface. On the left, a sidebar contains a 'System' dropdown set to '<Select a system>' and a navigation tree with categories: General (Data Transfer, 5250 Emulator, Integrated File System, Navigator for i, SSH Terminal, Printer Output), Database (Schemas, Run SQL Scripts, SQL Performance Center), Console (5250 Console, Virtual Control Panel), and Management (System Configurations, 5250 Session Manager, HMC Probe Utility).

The main window is titled 'Welcome to IBM i Access Client Solutions' and shows a SQL script editor. The script is titled 'Run SQL Scripts - 10.3.6...' and contains the following SQL code:

```
1 --
2 -- category: Db2 Mirror
3 -- description: Db2 Mirror - Install - Review Db2 Mirror product install detail
4 --
5 CL:DSPSFWRSC OUTPUT(*OUTFILE) OUTFILE(QTEMP/SFWRSC);
6
7 --
8 -- Is the Db2 Mirror LPP installed?
9 --
10 WITH db2m (install) AS (
11     SELECT COUNT(*)
12     FROM qtemp.sfwsrc
13     WHERE lcpdri = '5770SS1'
14         AND lcsfgi = '0048'
15 )
16 SELECT
17     CASE
18         WHEN install > 0 THEN 'Db2 Mirror Product (5770SS1 Option 48)'
19         ELSE 'Db2 Mirror Product (5770SS1 Option 48)'
20     END
21 FROM db2m;
22
23 --
24 -- Is the Db2 Mirror GUI installed?
25 --
26
27 WITH db2m (install) AS (
28     SELECT COUNT(*)
```

Below the script editor, a console window shows the output of the SQL script:

```
00001
Db2 Mirror Clone Support (5770DBM Option 1) is installed

Done: 1 rows retrieved.
WITH db2m (install) AS ( SELECT COUNT(*) FROM qtemp.sfwsrc
```

On the right, an 'Examples' window is open, showing a search bar and a list of examples. The search bar contains 'Db2 Mirror'. The list includes:

- Mirror - Install - Review Db2 Mirror product install detail
- Mirror - License - Review Db2 Mirror licenses
- Mirror - Manage - Review important Db2 Mirror messages
- Mirror - Manage - Suspend or Resume replication of SYSBAS
- Mirror - NRG - Review and configure link priorities
- Mirror - NRG - Show all the network redundancy groups that have active links
- Mirror - OTL - Show all the tracked entries that have not yet been processed.
- Mirror - OTL - What's in the process of being resynchronized?
- Mirror - Product - Determine if the current partition is the primary node
- Mirror - Product - Review Db2 Mirror environment
- Mirror - RCL - Add multiple rules at the same time
- Mirror - RCL - Review user created rules
- Mirror - Security - Authorization to use SQL Services
- Mirror - Security - Review Db2 Mirror Audit Journal records
- Mirror - Serviceability - Compare a single table
- Mirror - Serviceability - Compare all replicated objects within a library
- Mirror - Serviceability - Compare the following replicated object types: *AUTL,

The 'Examples' window also shows a preview of the SQL script for the selected example:

```
END
FROM db2m;

-- Is the Db2 Mirror GUI installed?
--
WITH db2m (install) AS (
    SELECT COUNT(*)
    FROM qtemp.sfwsrc
    WHERE lcpdri = '5770DBM'
        AND lcsfgi = '0000'
)
SELECT
    CASE
        WHEN install > 0 THEN 'Db2 Mirror GUI (5770DBM Option 0)'
        ELSE 'Db2 Mirror GUI (5770DBM Option 0) is not installed'
    END
FROM db2m;

-- Is the Db2 Mirror Clone support installed?
--
WITH db2m (install) AS (
    SELECT COUNT(*)
    FROM qtemp.sfwsrc
    WHERE lcpdri = '5770DBM'
        AND lcsfgi = '0001'
)
SELECT
    CASE
        WHEN install > 0 THEN 'Db2 Mirror Clone Support (5770DBM Option 1)'
        ELSE 'Db2 Mirror Clone Support (5770DBM Option 1) is not installed'
    END
FROM db2m;
```

At the bottom of the 'Examples' window, there are 'Insert' and 'Cancel' buttons.

Communication Hardware

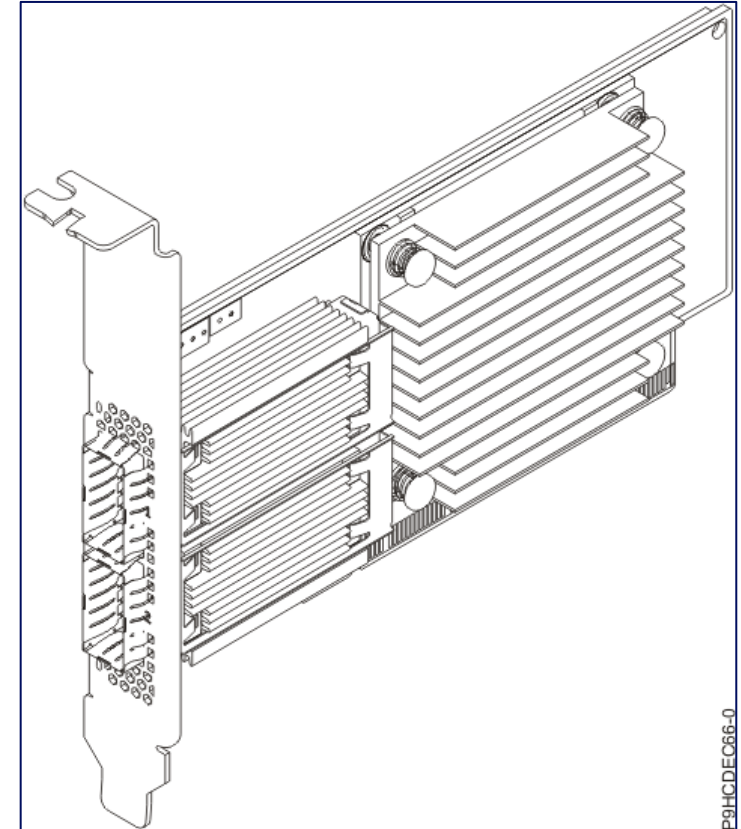
4 Adapter Options

- PCIe3 2-port 10 Gb NIC & ROCE SR/Cu adapter (FC EC2R and EC2S; CCIN 58FA)
- PCIe3 2-port 25/10 Gb NIC & ROCE SFP28 adapter (FC EC2T and FC EC2U; CCIN 58FB)
- PCIe3 2-port 100 GbE NIC & ROCE QSFP28 Adapter (FC EC3L and EC3M; CCIN 2CEC)
- PCIe4 2-port 100 GbE ROCE x16 adapter (FC EC66 and EC67; CCIN 2CF3)

Max Cable length = 100 M

Optional RoCE switch

Power9 enables SR-IOV



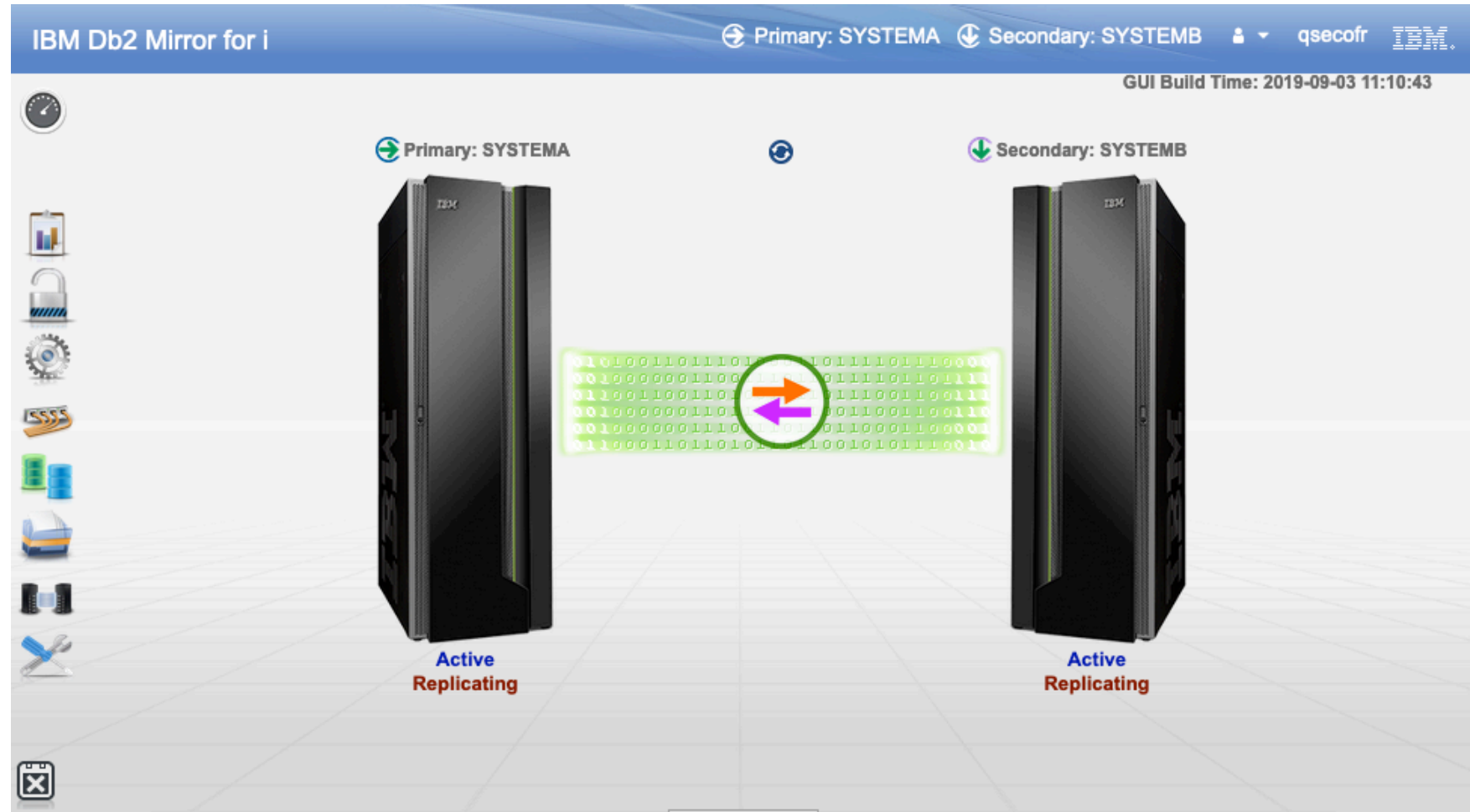
Db2 Mirror GUI

GUI runs on IBM i

GUI can run on the Db2 Mirror nodes

GUI can run outside of the Db2 Mirror nodes and manage multiple pairs

<http://systemname:2006/Db2Mirror>



Db2 Mirror – More informations

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Previous Next

Db2 Mirror

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Table of Contents

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Take a tour

IBM® Db2® Mirror for i is a continuous availability solution which offers the ability to keep database files synchronized between two nodes and can provide a recovery time objective close to zero.

- **PDF file for Db2 Mirror**

Use this to view and print a PDF of this information.

- **Introduction and architecture**

IBM Db2 Mirror for i enables a continuous availability solution for data on IBM i. This solution allows for the availability of Db2 for i content across two independent LPARs to provide a solution to reduce or eliminate common downtime windows.

- **Db2 Mirror concepts**

This section describes the basic concepts you need to understand when working with Db2 Mirror.

- **Application considerations**

The design of your production applications will affect the recovery time objective possible with IBM Db2 Mirror for i. Changes to your application architecture can provide added benefits in a Db2 Mirror environment.

- **Planning and setup**

Many decisions need to be made as you prepare and step through the Db2 Mirror setup process. Db2 Mirror configuration concepts should be understood before starting in order to make the right decisions for your business.

- **Managing and monitoring Db2 Mirror**

To facilitate continuous availability of your applications, it is necessary to understand how to monitor the Db2 Mirror environment, how to manage planned and unplanned outages, and how to maintain your Db2 Mirror environment as your production environment evolves.

- **Db2 Mirror services**

There are many SQL services that you can use to work directly with the Db2 Mirror environment.

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https://www.ibm.com/support/knowledgecenter/ssw_ibm_i_74/db2mi/db2mintro.htm

IBM i: A platform for innovators,
by innovators

Merci