Welcome to IBM Db2 Mirror for i

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IBM i 7.4 from the IBM i home page
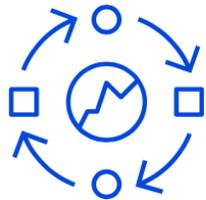
Availability

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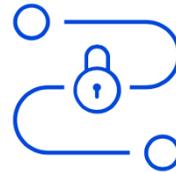
Security

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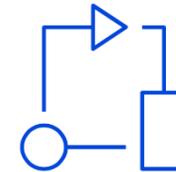
Open Source

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

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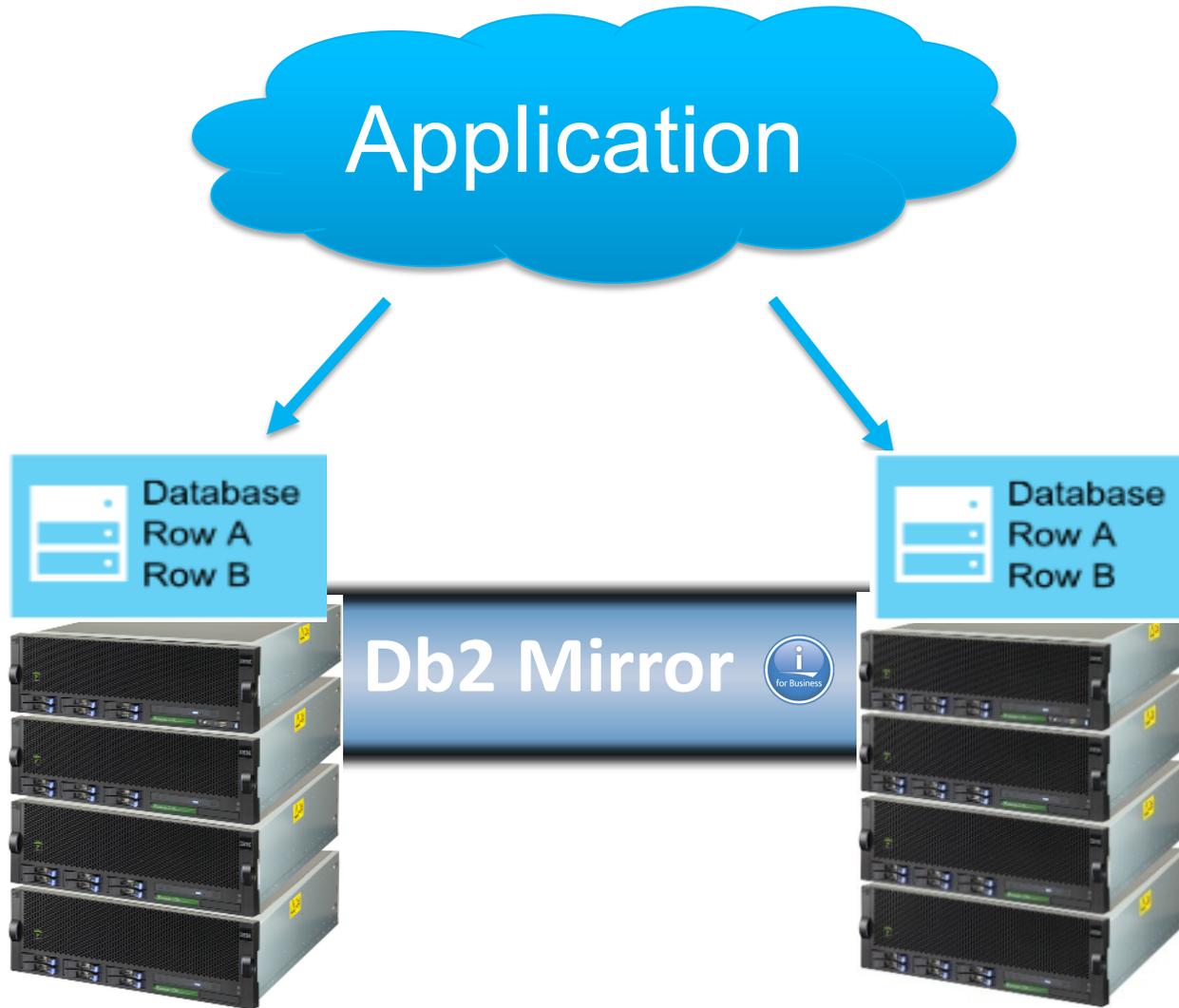
IBM Db2 Mirror for i

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

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High Availability topology classification & positioning

Active/Active — Active/Passive — Active/inactive
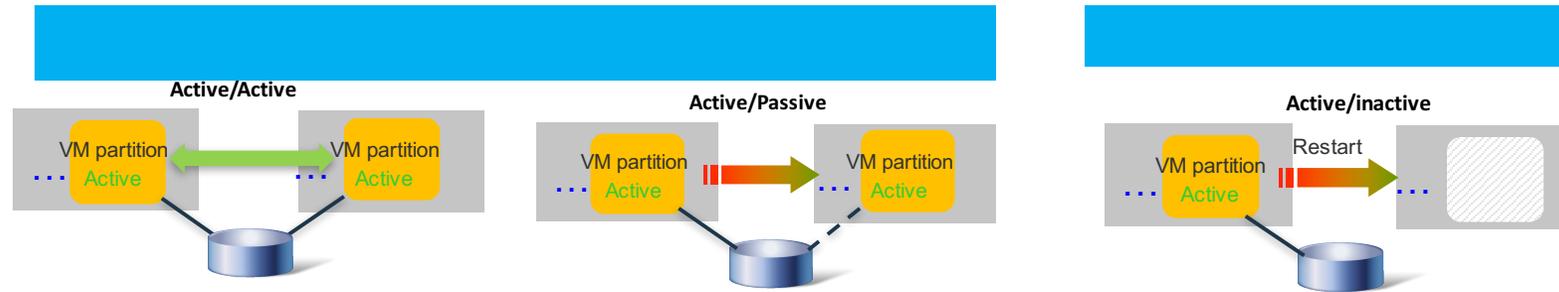
Technology	Active/Active Clustering	Active/Passive Clustering	Active/Inactive
Definition	**Application level clustering**; applications in the cluster have simultaneous access to the production data therefore no app restart upon an app node outage. Certain types enable read-only access from secondary 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
- Ilustrations represent two-node shared-storage configurations for conceptual simplicity. There are many other topologies and data resiliency combinations

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Db2 Mirror – Active Active

Node 1

App

Add record

Fred   24

Database

Name	Age

Operating System Synchronous Replication

RoCE

Synchronous Database Update on both nodes
    SYSBASE or IASP

Node 2

App

Database

Name	Age

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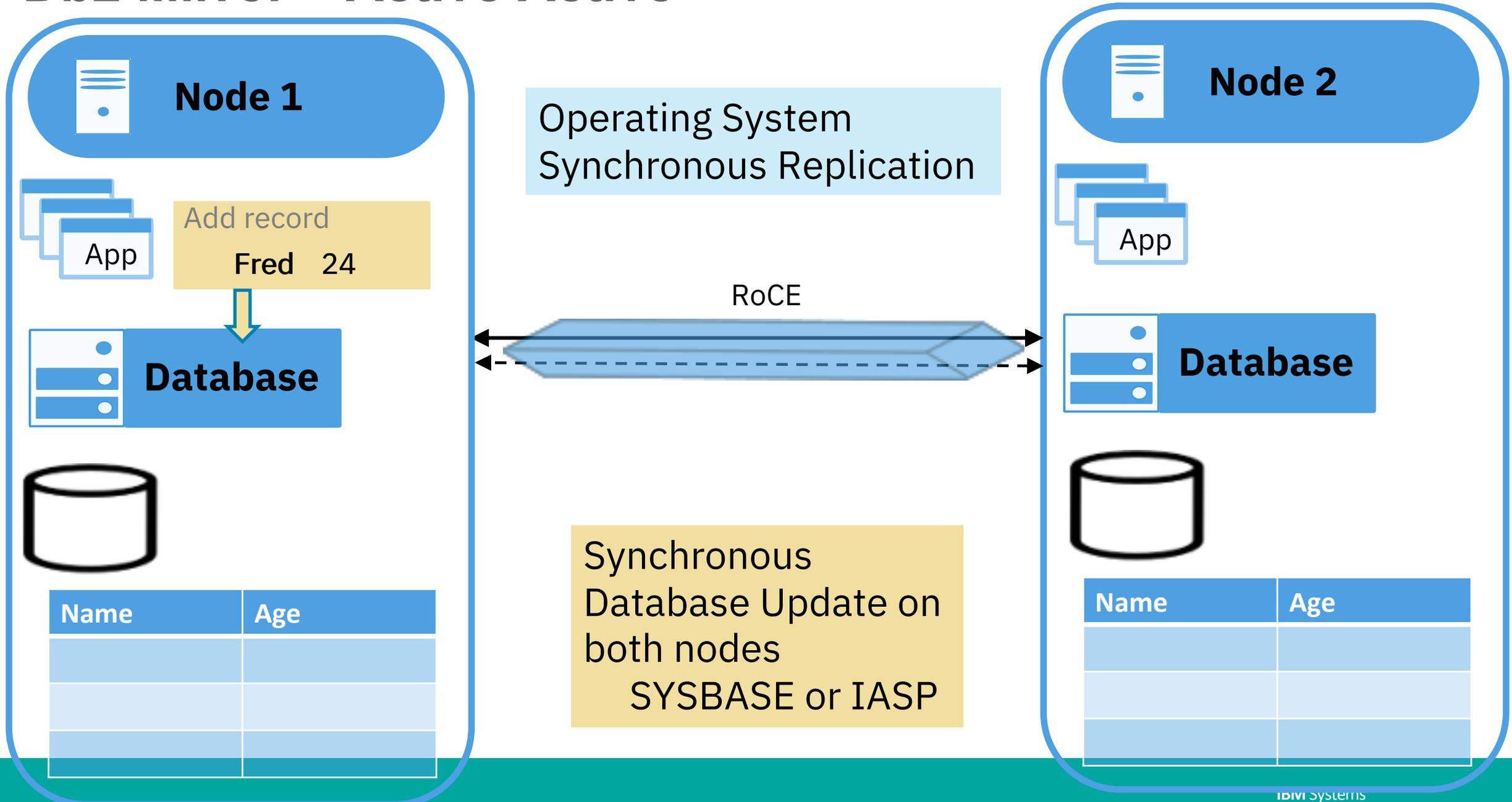
Db2 Mirror – Database Supported Objects

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

Application running separate on each node

Node 1

App

Database

RoCE

Node 2

App

Database
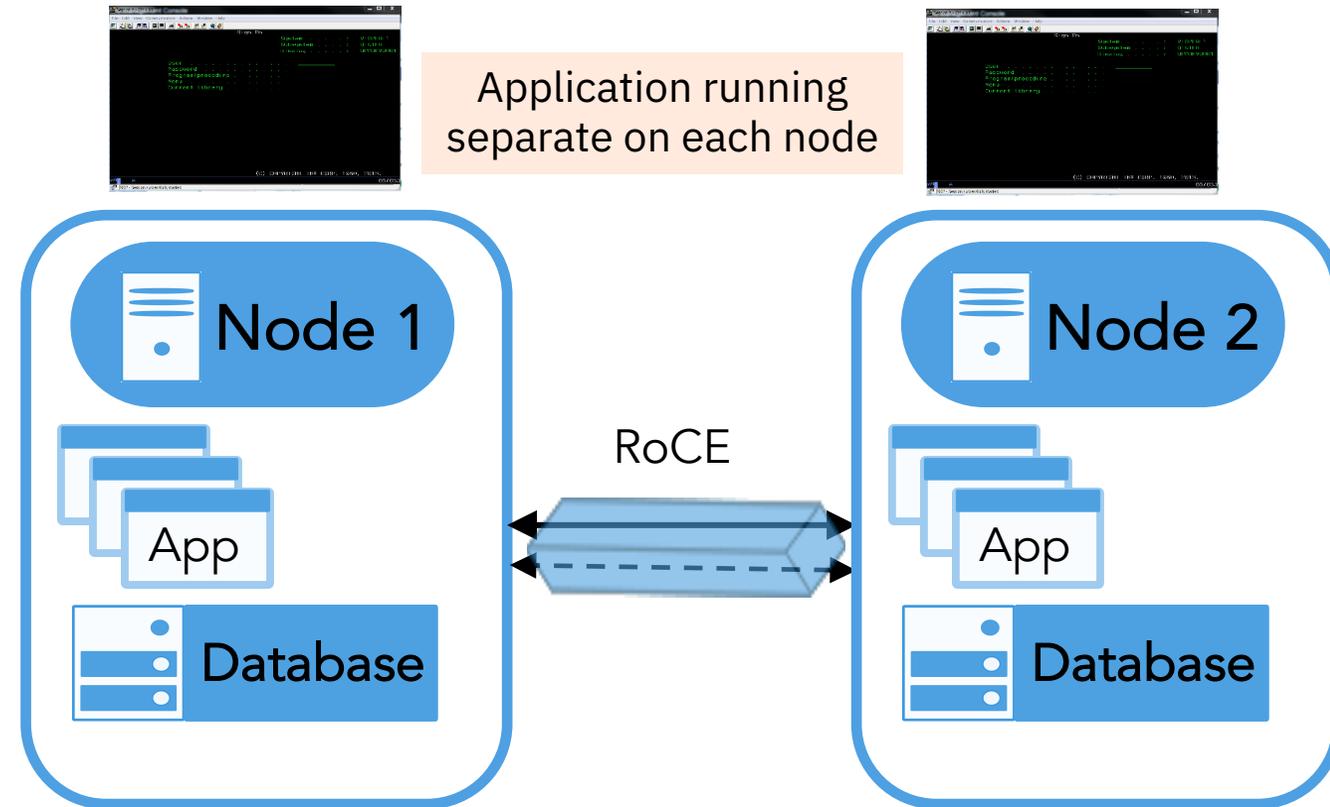
Db2 Mirror – Other Supported Objects

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

Node 1

App

Database

RoCE

Node 2

App

Database
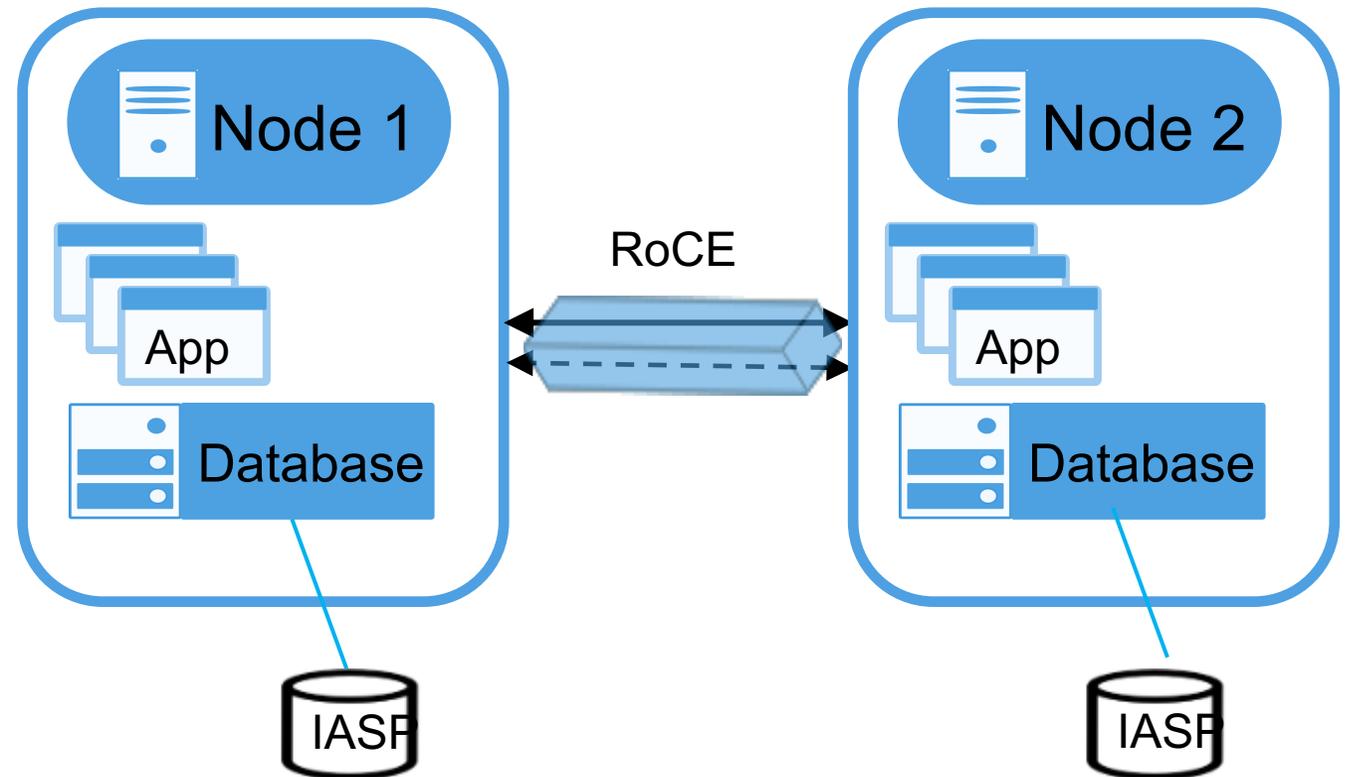
IASP

IASP

IFS Support

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

NODE 1

App 1 | App 2

IFS Server File System

IFS IASP

RoCE

NODE 2

App 1 | App 2 | App 3

IFS Client File System

IFS IASP

IFS IASP exists only on one node, but accessible from both nodes

IFS IASP is mirrored via hardware mirroring
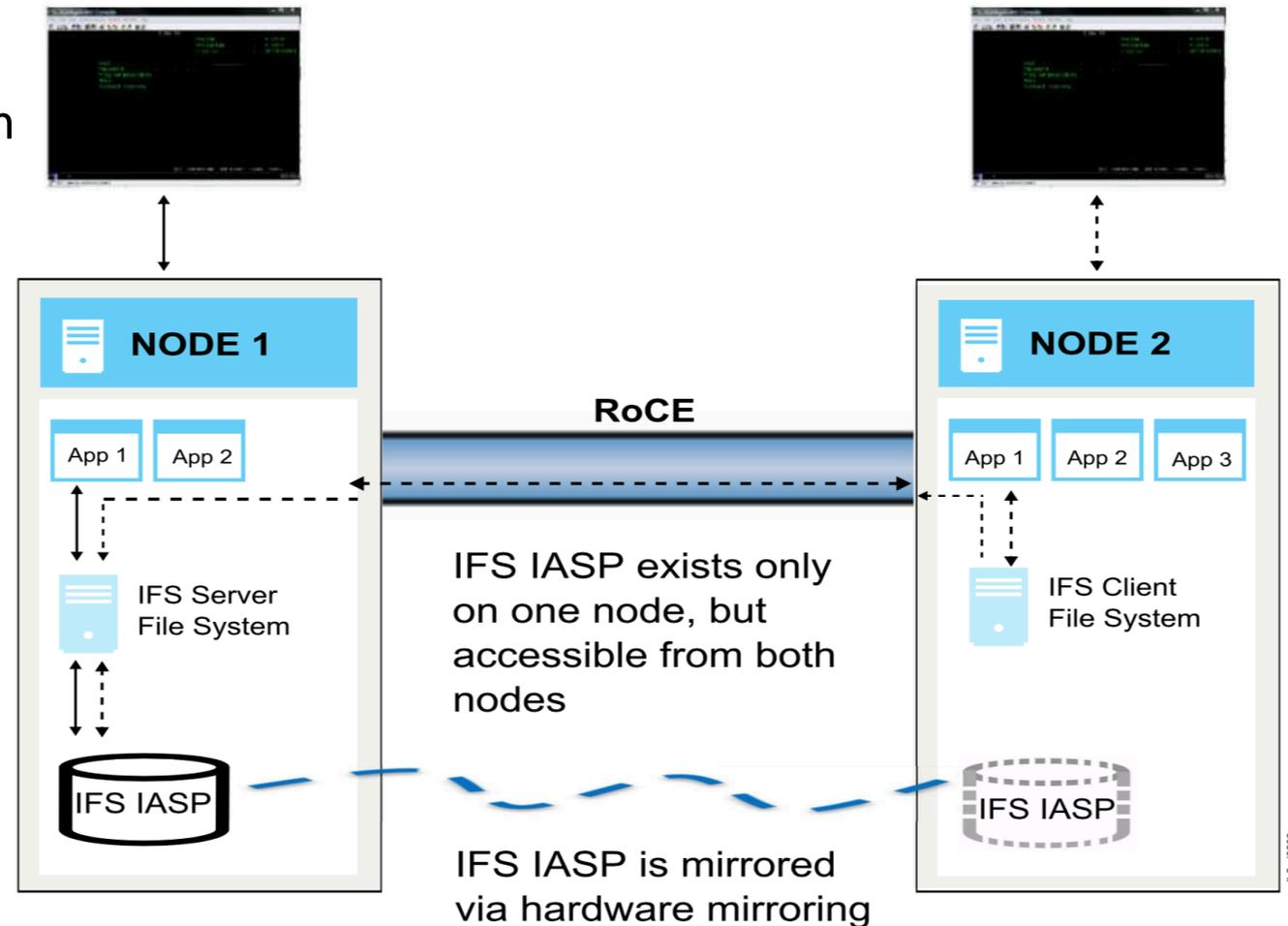
Db2 Mirror – Active Active, Web Clients

Web Clients

Application layer connects with
either JDBC or Load Balancer

Node 1

App

Database

RoCE

Node 2

App

Database

IBM Systems
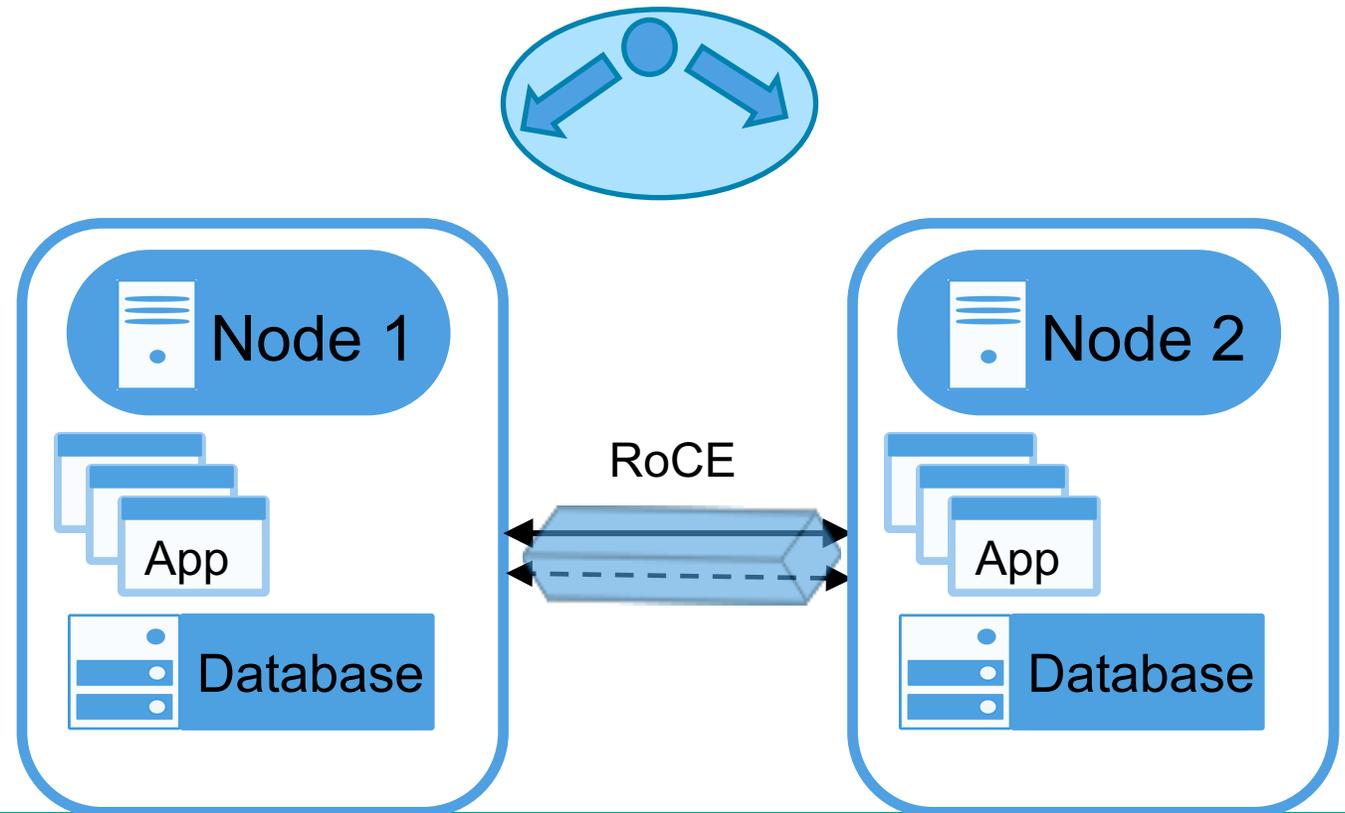
Db2 Mirror – Active Passive
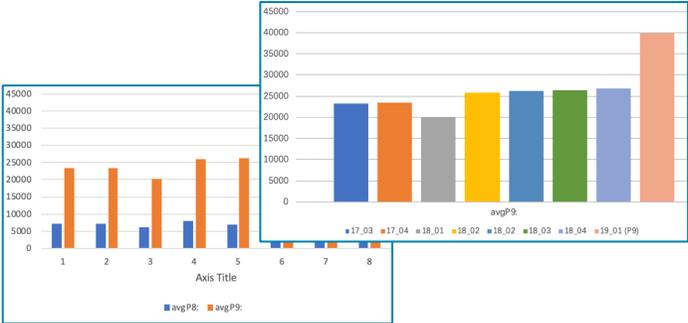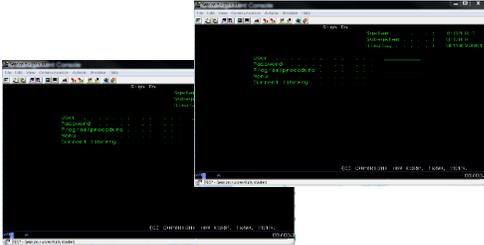
Run Production Workloads on this node
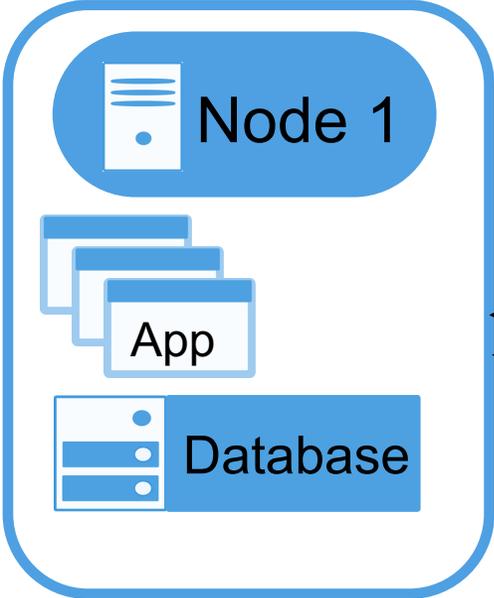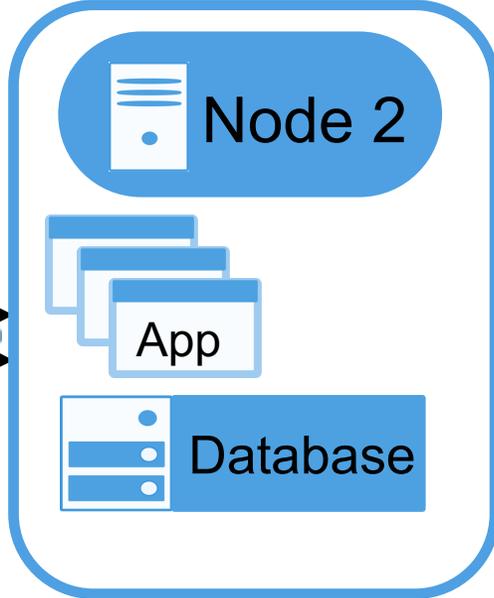
Run Queries and reports on this node

Node 1

Node 2

RoCE

App

App

Database

Database

Db2 Mirror with DR

RoCE

< 200M

Metro or Global Mirror

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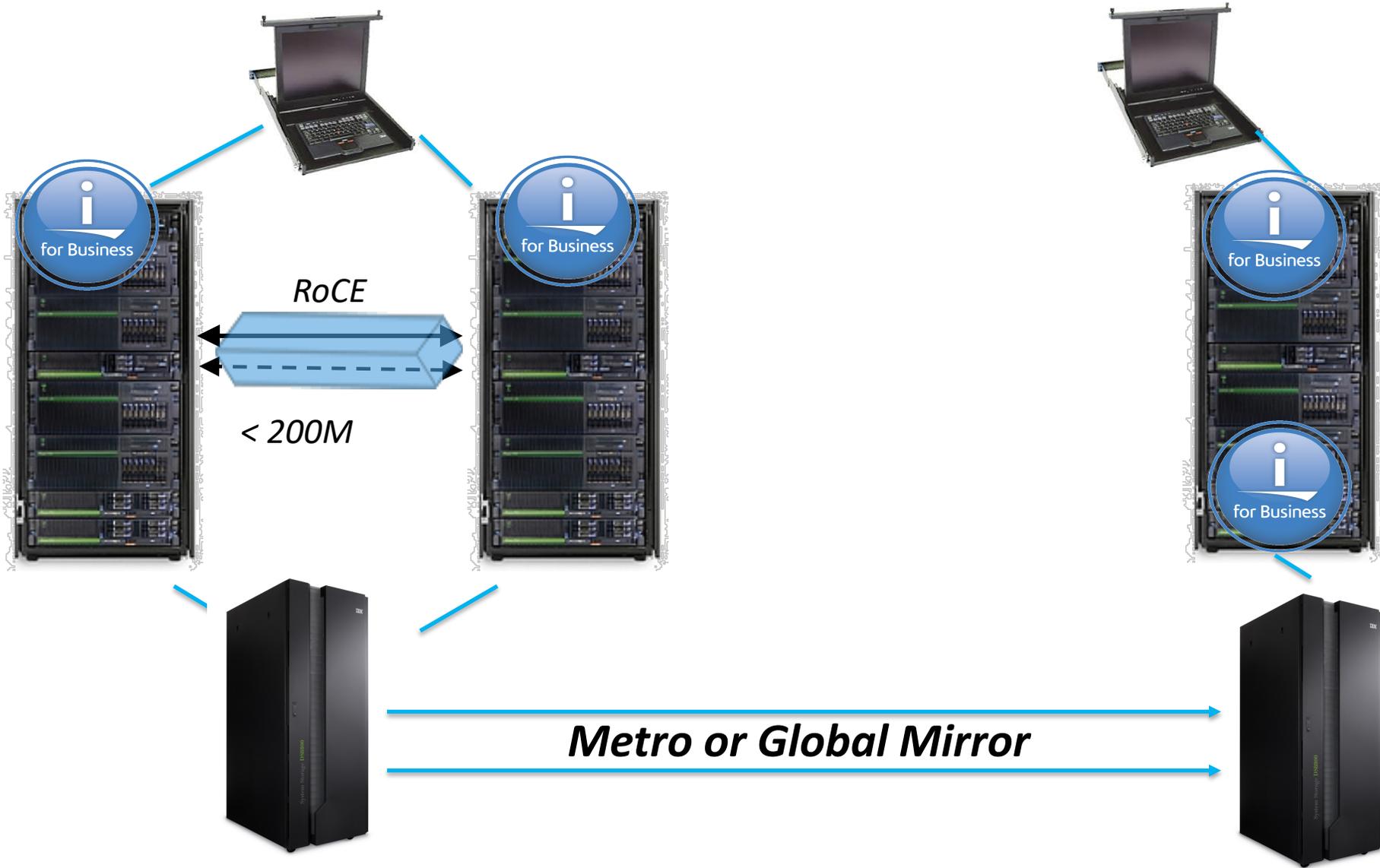
Common DR with one storage

RoCE

< 200M

RoCE

< 200M

Metro or Global Mirror

IBM Systems
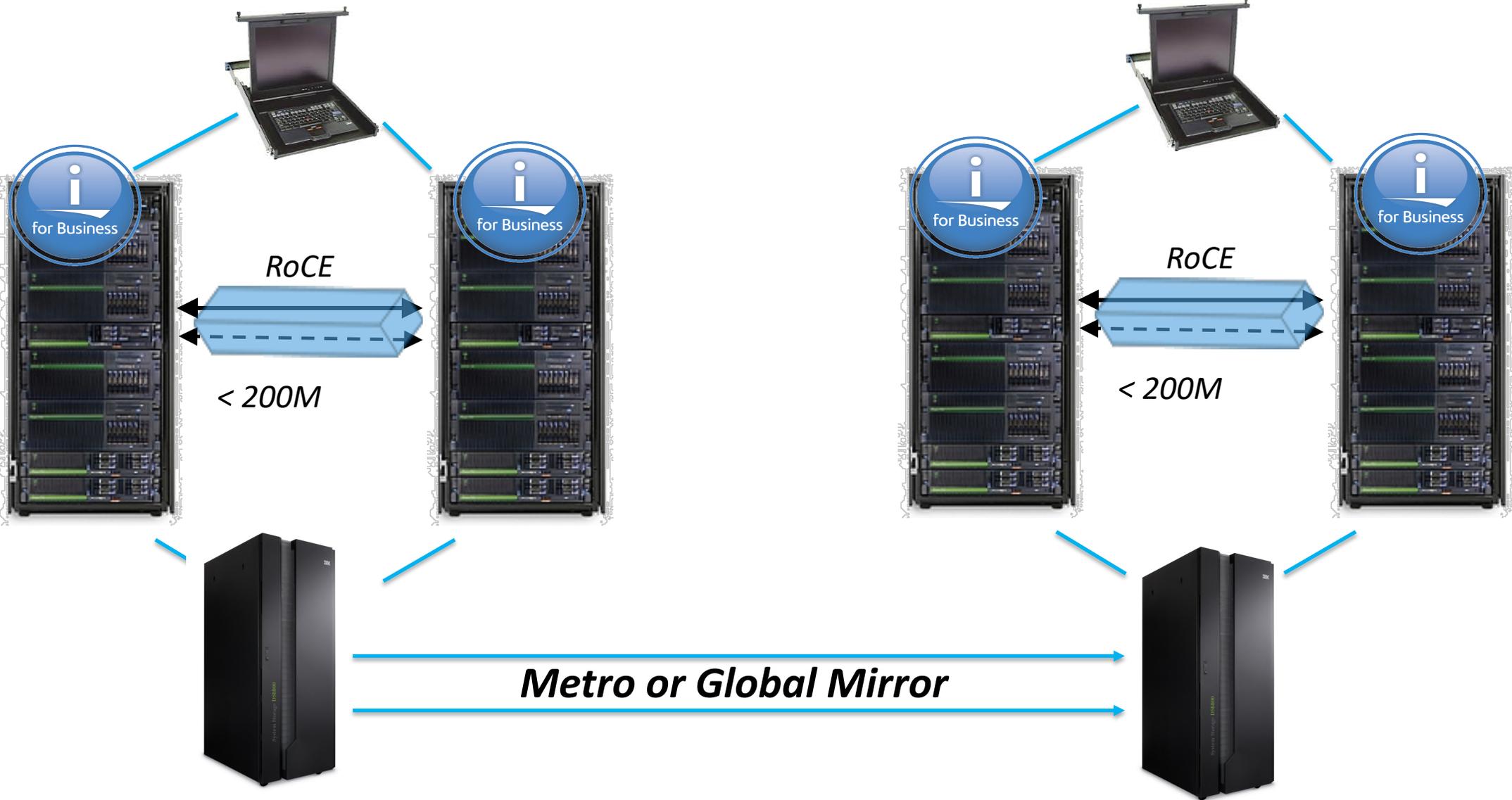
Common DR with multiple storage

RoCE

< 200M

RoCE

< 200M

Metro or Global Mirror

IBM Systems
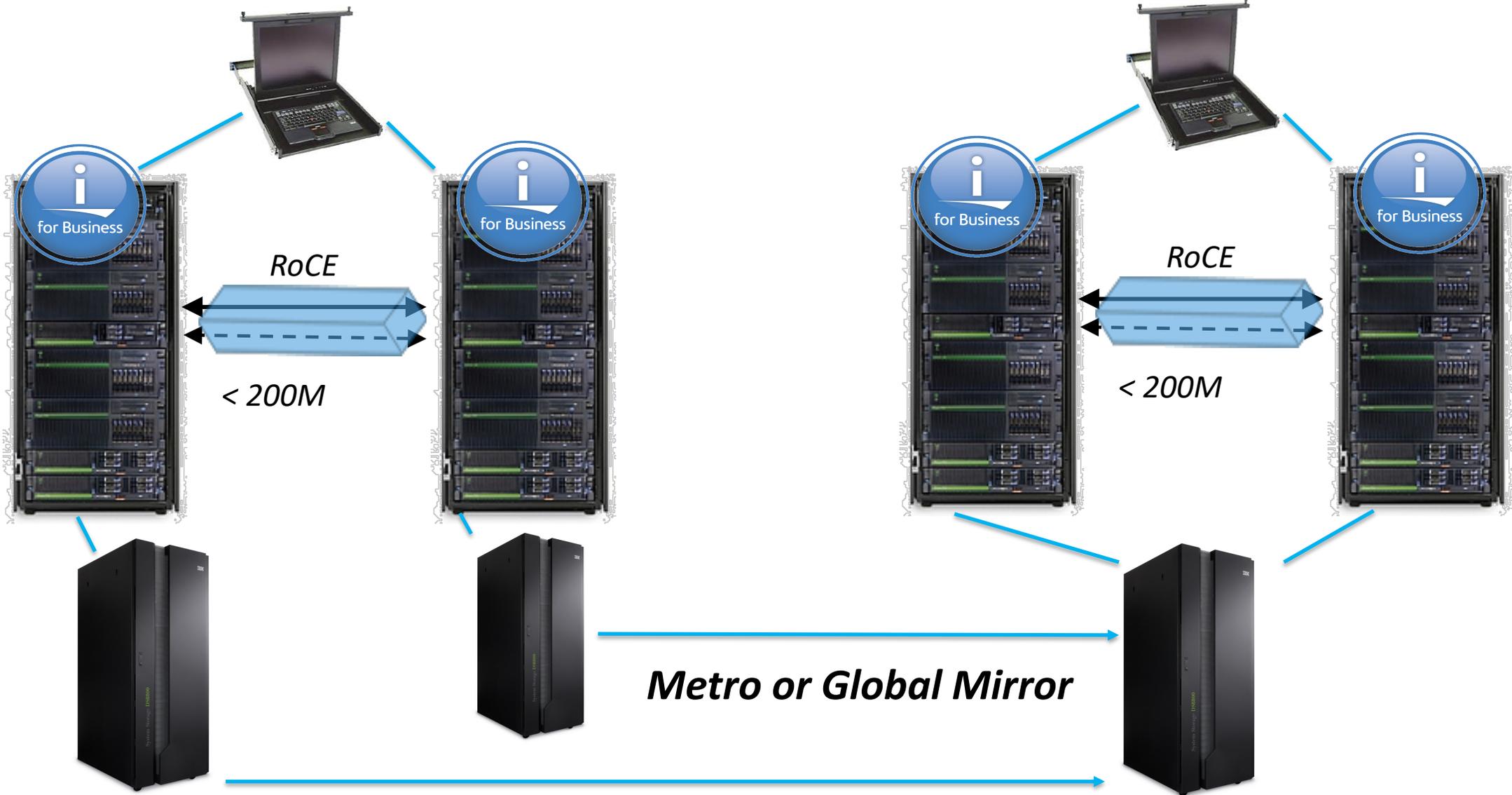
Full storage redundancy DR

RoCE

< 200M

RoCE

< 200M

Metro or Global Mirror

IBM Systems
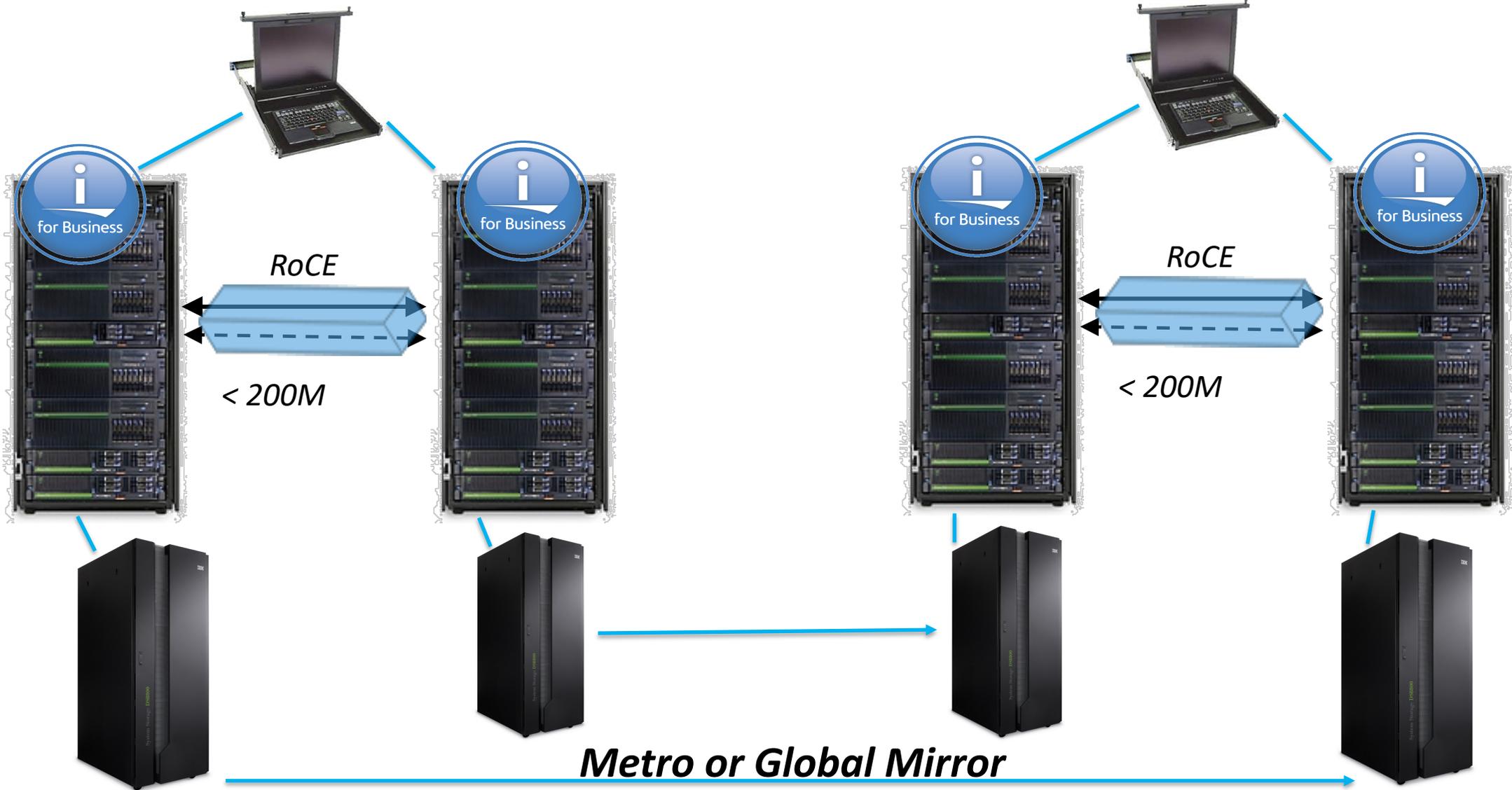
Basic logical replication DR

RoCE

JO › JO › JO › JO

Logical
Replication
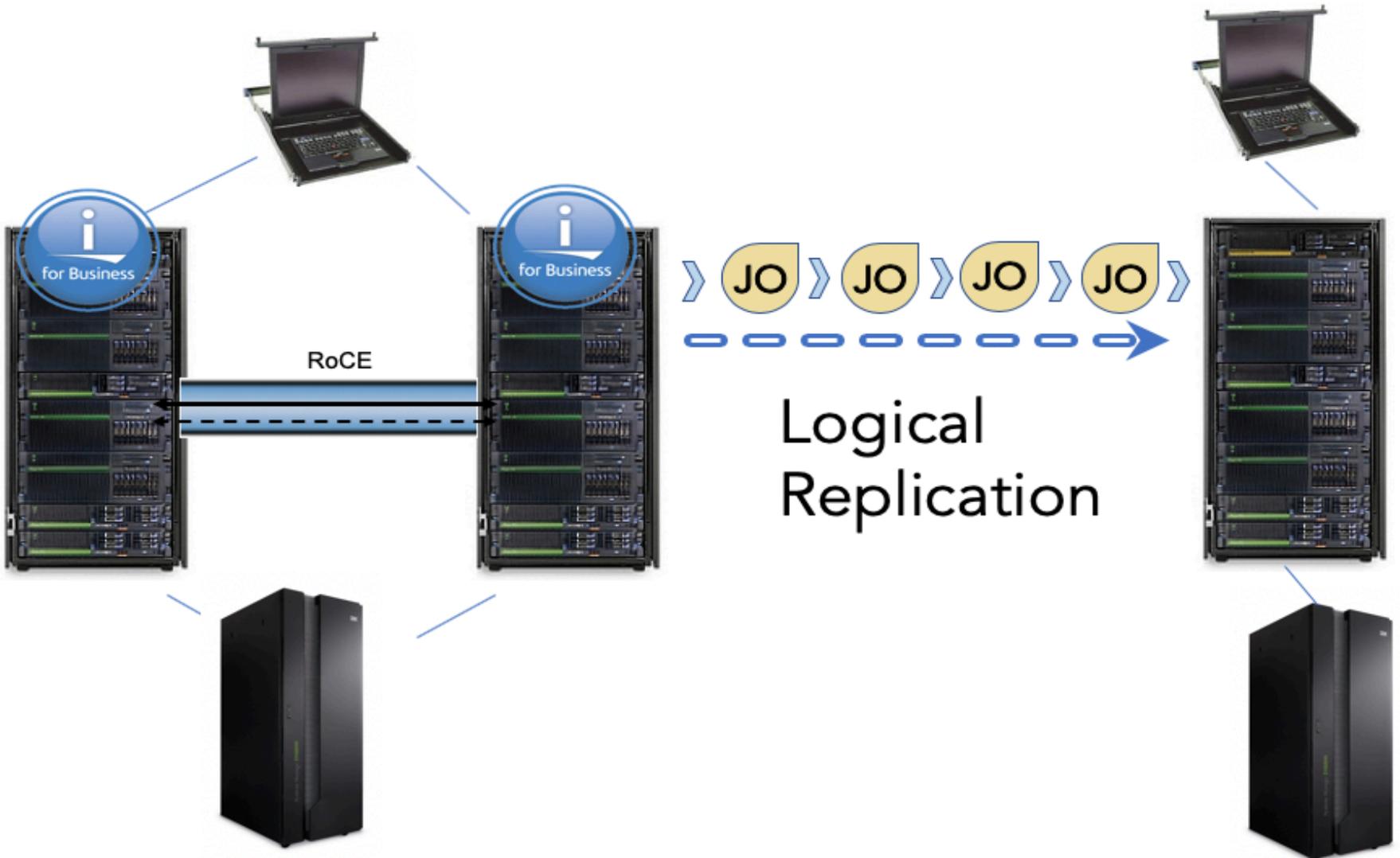
ASC : SQL Insert from Examples

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

P9HCDEC66-0
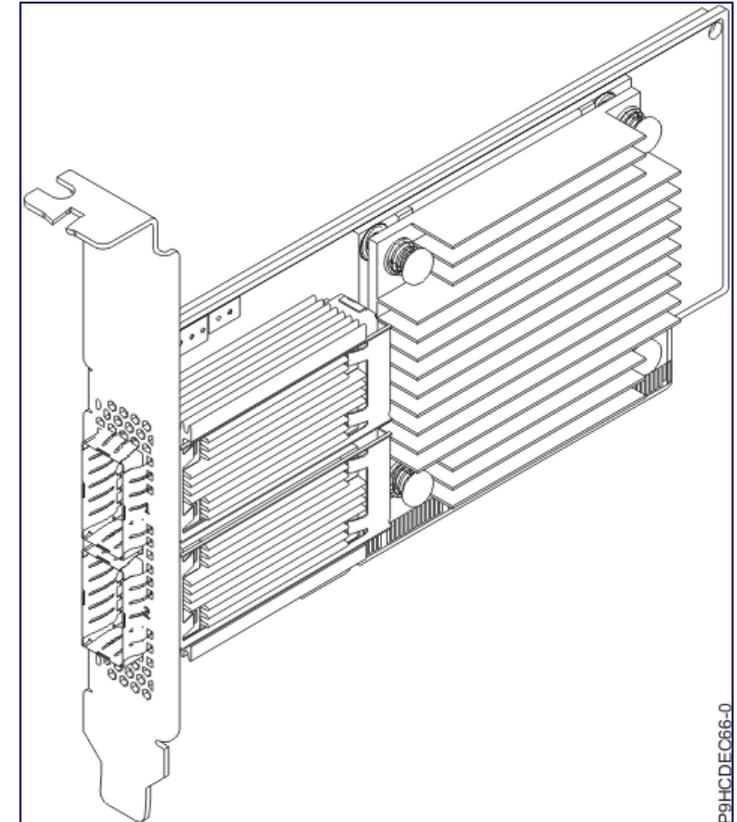
Db2 Mirror GUI

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

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Db2 Mirror – More informations

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

IBM Systems

IBM i: A platform for innovators,
by innovators

Merci