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- **CISN/RSN's** are currently running Oracle 10g Release 2. Oracle 11g Release 2 is the latest Oracle version.
- **Oracle** releases Critical Patch Updates on a quarterly basis. They contain security fixes and should be installed promptly.
- **Daily backups** should be performed on the Data Center servers. NC & SC use **'rman'** (Recovery manager) to perform incremental backups.
- **CISN Schema** documentation is available on the NCEDC website: **<http://ncedc.org/db/>**
- **The CISN Schema Change Working Group** evaluates new schema changes. Users can submit their requests online.

Monitoring

➤ Server availability:

- Is the database up and running? Simple connection will do. NC uses perl scripts & Seisnetwatch. SC uses Big Brother.
- **'dbstart/dbshut'** respectively starts/shuts down the server.
- **'lsnrctl start/stop'** respectively starts/stops the listener.

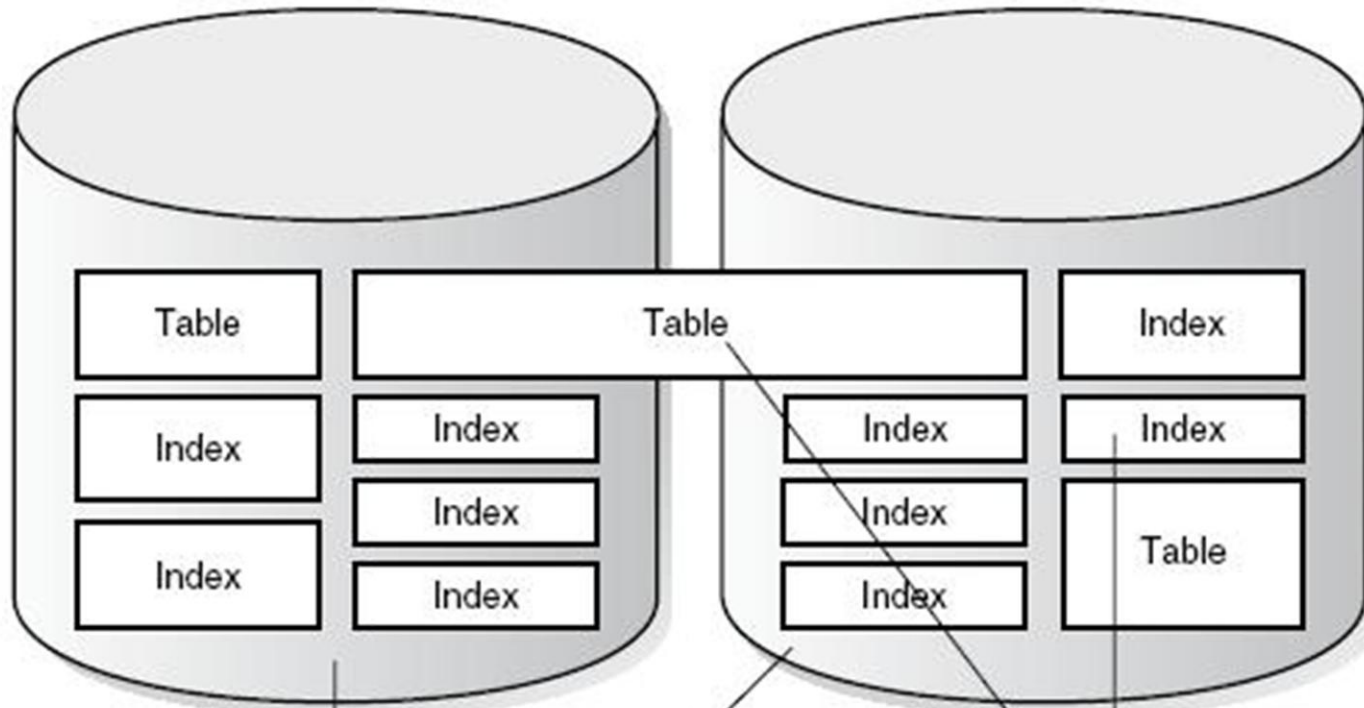
➤ Error messages:

- Oracle logs error messages in its alert log file. For example:
/home/oracle/admin/rtdb/bdump/alert_rtdb.log
- Most error messages looks like **ORA-XXXXX**.
Utility **'oerr'** can be used to retrieve error message information.

Database Storage

Tablespace

(one or more datafiles)



Datafiles
(physical structures associated
with only one tablespace)

Objects
(stored in tablespaces-
may span several datafiles)

Database Storage

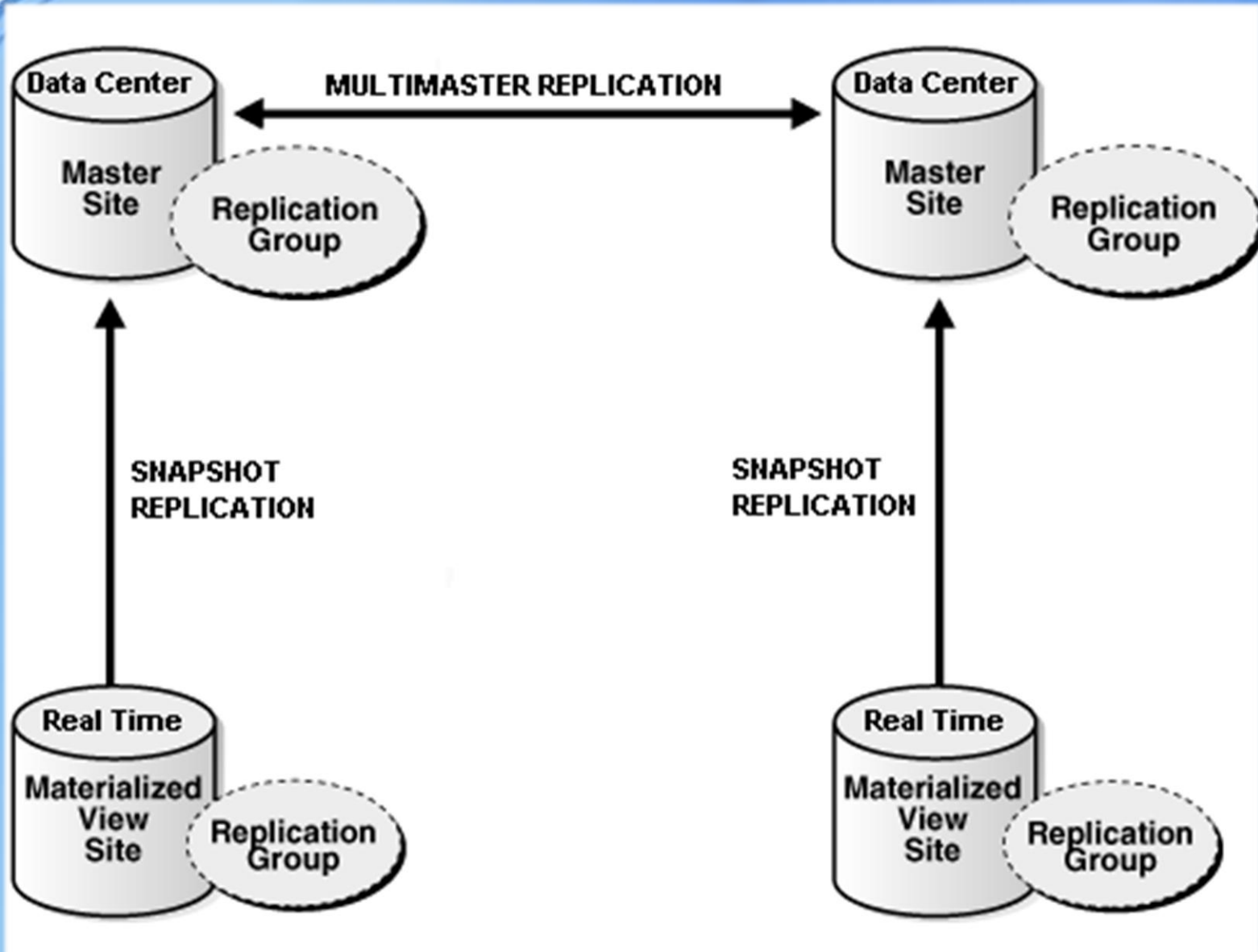
- When a tablespace is running out of space, Oracle will log the following error message:

ORA-01653: unable to extend table *X* in tablespace *T*

- The easiest way to resolve this issue is to add a new datafile to the tablespace:

```
ALTER TABLESPACE T  
ADD DATAFILE '/home/oracle/data/y2.dbf'  
SIZE 1024M;
```

Database Replication



Database Replication

- **Snapshot replication** is used to propagate information from the RT databases to the PP ones (one direction).
 - A snapshot can only have one master.
 - However, multiple snapshots can replicate to the same master.
- **Multimaster replication** is used to propagate information between the different PP databases (both directions).
- Oracle **push jobs** are scheduled to transfer transactions from one database to another. If for some reason, transactions cannot make it to the target database (server is down):
 - The push job is stopped (**DBA_JOBS**) and needs to be restarted manually with **DBMS_JOB.RUN ()**.
 - Deferred transactions are being queued up in the **DEFTRANDEST** view.

Database Replication

- If a transaction cannot be applied on the target database (tablespace full):
 - The transaction will be moved aside and Oracle will log a replication error in the **DEFERROR** view.
 - Once the underlying issue is fixed (more space added to the tablespace), the transaction can be re-applied with:

DBMS_DEFER_SYS.EXECUTE_ERROR ().

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Resources

- Database Administrators:

- Ellen Yu at Caltech:

- eyu@gps.caltech.edu**

- Stephane Zuzlewski at UC Berkeley:

- stephane@seismo.berkeley.edu**

- Online Resources:

- Oracle Support:

- <http://support.oracle.com>**

- Oracle Technology Network: **<http://otn.oracle.com>**