

# Using RMAN & Data Guard in Nokia

Julian Dontcheff  
DBA Team Lead, Oracle Certified Master



**NOKIA**  
Connecting People

# Nokia Overview

- World leader in mobility technologies
- Provides wide range of mobile devices with services and software that enable people to experience music, navigation, video, television, imaging, games, business mobility
- Head office in Finland
- Strong R&D presence in 10 countries
- Device manufacturing in 9 countries
- World's #1 manufacturer of mobile devices
- Estimated 39% share of global device market in 2008
- World's 5th most valued brand
- #1 brand in Asia and #1 brand in Europe
- World's number one supply chain

# Oracle at Nokia

- 9 DBAs
- Applications
  - **OLTP: 50%**
  - Hybrid (OLTP & DW): 40%
  - DW: 10%
- About 900 Oracle databases hosted internally:
  - **Oracle Database 10g: 60%**
  - Oracle Database 9i: 37%
  - Oracle8i: 2%
  - Oracle Database 11g: 1%
- Host platforms:
  - Solaris
  - HP-UX

# Oracle at Nokia (cont.)

- Production databases
  - 5 MB – 7 TB range
- Leverage virtually all Oracle database features
- DBAs share responsibilities
- Many federated databases
- Common Oracle platform
- 99% of databases backed up with RMAN (primary & standby databases)
- Over 1200 backup clients
- 6 RMAN catalog databases
- 2 PB+ backed up / month

# Maximum Availability Architecture (MAA) at Nokia

- Most critical databases use RAC Primary & RAC Standby
- Disaster recovery planning
- Tiered service level agreements
  - Always Available (Zero downtime and data loss)
  - Fast Recovery from Disk (RPO/RTO = 1-12 hours)
  - Recover from Tape (RPO/RTO > 12 hours)
    - Incremental backup to tape strategy
    - Archived logs backed up throughout the day
- Managing double failures
- Flash Recovery Area: pros and cons

# Standby Databases at Nokia

- Use OEM to create the standby database
- Use RMAN to duplicate the database for standby
- Hundreds of databases refreshed/cloned on regular basis

ORACLE Enterprise Manager 11g   
Database Control

Database Instance: JD1.europe.nokia.com >

## Information

Use the Add Standby Database wizard to configure a Data Guard environment.

[Add Standby Database](#)

## Data Guard

Enterprise Manager provides comprehensive Data Guard setup, management, and monitoring capabilities, including:

- Easy creation and management of physical and logical standby databases
- Centralized control of primary and standby databases via Data Guard broker
- Built-in monitoring, alert, and control capabilities
- Automated switchover and failover operations
- Integrated support for Oracle Real Application Clusters 10g

# Duplicate from Active Database

## Oracle Database 11g

```
RMAN> DUPLICATE TARGET DATABASE FOR STANDBY FROM  
ACTIVE DATABASE DB_FILE_NAME_CONVERT ( 'JD1' , 'JD3' );
```

- Network-enabled database duplication without backups
- Benefits
  - Much faster
  - No need to use backup devices
  - Easier standby database creation over the network

# Oracle Database 11g

## Features of Interest to Nokia

- Data Guard
  - Compression of Redo Traffic Over the Network
  - Real-Time Query Capability of Physical Standby Database (Active Data Guard)
- RMAN
  - Configuring backup compression: use `CONFIGURE` command to choose between BZIP2 and ZLIB compression algorithms for RMAN backups
  - Undo optimization during full backup
  - *Intrafile* parallel backup of large data files allows backup workload to be more efficiently distributed.