

Modernizing Databases

Leveraging HP and Intel's best practices



Database migration challenges

IT departments are being asked to manage ever more diverse information and deliver it in a timely manner with a constantly improving quality of service. With budgets being squeezed, meanwhile, organizations are under pressure to extract better value from their investments by consolidating IT operations.

Given the ever-increasing demands placed on them and extremely high running costs, data centers are obvious targets for rationalization and modernization. Migrating databases to TCO-optimized Linux-based platforms is an important part of this process.

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Whether changing platform or upgrading from previous versions, migrating to the latest release of Oracle Database 11g presents significant complexities and challenges, particularly for mission-critical applications that need to provide continuous or near-continuous service.

HP Proliant servers equipped with Intel® Xeon® processors are proven and mature platforms on which to deploy Oracle databases. Increasing numbers of customers are now approaching HP and Intel to help them migrating critical data to this platform; while minimizing downtime and the risk of data corruption.

Telecommunications and enterprise customers such as network equipment providers (NEPs) and communications service providers (CSPs) appear obvious users in this migration process, although the best practices being developed can readily be applied to other environments, industries, and customer needs.

HP and Intel's migration expertise

From recent discussions with both small and midsize business (SMB) and enterprise customers, it is clear that concerns about their ability to migrate older databases to more recent releases is an important challenge.

HP and Intel are responding to these concerns by optimizing a number of database migration platforms and documenting the migration process.

A reference use case at a major telecom customer running a large number of Oracle databases shows that mission-critical systems running old and subsequently unsupported database versions account for approximately 62% of the total number of systems to be migrated.

Upgrading databases also requires data to be adapted. Before beginning migration, therefore, a number of parameters must be established:

- The **initial database version**. Depending on the version, the upgrade path may involve a number of different stages.
- Various tools are available to upgrade databases. The **choice of tool** depends on the size and complexity of the database to migrate.
- The **target database version**. The duration of the upgrade and migration process varies considerably depending on the size and complexity of the database, the tools deployed, and the migration options.

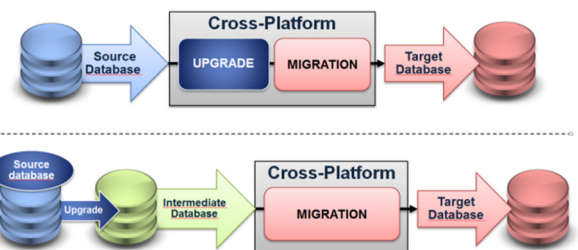


Figure 1: Migration scenarios

The timing of each stage of the migration is also important: preparation, intermediate upgrades, data migration, and downtime must all be measured as part of a migration scenario's development (Figure 1).

HP and Intel's solution

HP and Intel's goal is to develop a set of best practices for migrating databases to Linux that delivers minimum or zero downtime, maximizes the speed of data transformation, and reduces operating expenditure (OPEX).

¹ Reference: Gartner Inc., March 2011, "Market Share: Relational Database Management System Software, Worldwide, 2010"



MIGRATION BEST PRACTICES



HP and Intel's solution (continued)

Two scenarios have been developed so far:

- **Moving the same version of database** from Solaris SPARC to a Linux IA RISC-based HP ProLiant
- **Upgrading an older database** to the latest version on the same HP ProLiant server platform

#	ORACLE MIGRATION OPTIONS	ORACLE 9I CAPABLE	ORACLE 10R2 CAPABLE	ORACLE 11G ENDIAN CAPABLE	CONVERSION CAPABLE	DOWN TIME
1	DATA PUMP	✗	✓	✓	✓	✓
2	EXPORT/IMPORT	✓	✓	✓	✓	✓
3	RMAN RESTORE	✓	✓	✓	✗	✗
4	RMAN CLONE-CONVERT DATABASE	✗	✓	✓	✗	✗
5	TRANSPORTABLE TABLESPACES	✓	✓	✓	✗	✓
6	CROSS PLATFORM TTS	✗	✓	✓	✓	✓
7	TRANSPORTABLE DATABASE	✗	✓	✓	✗	✓
8	DATAGUARD	✗	✓	✓	✗	Minimal
9	STREAMS	✗	✓	✓	✓	Minimal
10	Golden Gate	✓	✓	✓	✓	✗

Figure 2: Database migration options summary table

Oracle database releases on the Solaris SPARC platform has been examined in great detail to determine the optimum migration path in each case. In parallel, a Linux IA RISC-based HP ProLiant running with equivalent functionality allowed experts to study every migration option available for particular Oracle releases. The outcomes of the work are best practices for databases modernization including:

- **The recommended upgrade paths**
- **A decision tree**
- **The summary table** (Figure2)

HP Intel CME Solution Center's team and facilities

HP and Intel have developed a framework solution to address the database migration needs of CSPs and NEPs. The solution, which is available either online or by visiting our premises, runs on Intel Xeon processor-based HP ProLiant servers with Red Hat® Enterprise Linux (RHEL). SMBs can also benefit from this solution by leveraging its database migration best practices.

With its team of dedicated experts, the HP Intel CME Solution Center offers consultation, integration, and support services for CSPs looking to increase their portfolio of services to better target the SMB, enterprise, and industry markets. It also offers a range of programs specifically targeted at service providers, including innovation workshops and proofs-of-concept.

HP and Intel key hardware components

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Intel® Xeon® Processor E7 Family

Top-of-the-Line Intel® Xeon® E7 Processors Deliver Record-Breaking Performance and Scalability for Mission Critical Challenges.

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