

The logo for Dbvisit features the word "Dbvisit" in a bold, sans-serif font. The "Db" is colored in a gradient of green, while "visit" is in a gradient of blue. A blue curved line arches over the "i" and "s".

Dbvisit

THE SMART ALTERNATIVE

Why Not Oracle Standard Edition?

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Introduction

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ORACLE®

Certified Master

Oracle Database 11g
Administrator

Dbvisit
THE SMART ALTERNATIVE

- Product Development Manager & Architect
- 13+ years Oracle database experience
- Successfully implemented many projects from small to large scale
- Enjoy technical challenges
- Interest include Linux, Oracle Standby, Oracle Backup and Recovery
- Oracle Database 11g Certified Master
- Qualifications include a B.Sc. Degree with certifications in Solaris and Red Hat administration
- Enjoy playing golf, movies and theatre



Dbvisit Software Limited



- Dedicated software development company
- Based in New Zealand with sales offices in US and Europe
- Used in 80+ Countries
- Trusted by 500+ Companies
- Worldwide leader in DR solutions for Oracle Standard Edition
- Product Engineers with “real world” DBA Experience
- Two Oracle 11g Certified Masters
- Regular presenters at Oracle events such as OOW and Collaborate
- Passionate about Oracle Technology



Let's go on a journey together on
*“Why you should consider using
Oracle Standard Edition?”*



Questions we will look into:

- Can it provide **high availability**?
- Be used to implement **disaster recovery**?
- At a **reduced cost**?



Agenda

- Database Edition Overview
- High Availability (HA)
- Disaster Recovery (DR)
- HA and DR with Standard Edition
- Cost Comparison (\$\$\$\$)
- Restrictions
- Conclusion
- Q&A



Database Editions

Oracle provides 5 Database Editions

- Standard Edition One (SE1)
- Standard Edition (SE)
- Enterprise Edition (EE)
- Express Edition (XE)
- Personal Edition



Database Editions - Classification

Many “classify” them as follows:

- Standard Edition One (SE1) : Small
- Standard Edition (SE) : Small to Medium
- Enterprise Edition (EE) : Large Enterprise
- Express Edition (XE) : Free Entry Level
- Personal Edition : Single User





Many Options...

Which one should I use?


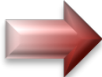


Some Differences

Database Features ¹	Standard Edition One	Standard Edition	Enterprise Edition
Maximum CPU's	2 CPU Sockets	4 CPU Sockets	No Limit
Oracle Real Application Clusters (RAC)	X	 (Included with SE up to Max. Total of 4 Sockets in Cluster)	(Extra License Cost Option) ✓
Oracle Data Guard	X (3 rd party options available)	X (3 rd party options available)	✓ (Active Data Guard requires additional license)
Flashback (Table, Database, Transaction)	X	X	 ✓



Some Differences

Database Features ¹	Standard Edition One	Standard Edition	Enterprise Edition
Parallel Options (Example: Parallel Query Parallel Data Pump)	✗	✗	✓
Automatic Workload Repository	✗  (Statspack and 3 rd party options are available)	✗ (Statspack and 3 rd party options are available)	✓ (Extra License Cost Option)
 Recovery Manager (RMAN)	✓	✓	✓
	Some key options <u>not</u> available in SE1/SE: <ul style="list-style-type: none"> • Parallel Backups • Fast incremental backups with Block Change Tracking • Block-level media recovery 		



What about High Availability (HA)?



What options are you thinking about?

I am thinking about

- Standby Databases
- Backup and Recovery (RMAN)
- Oracle RAC
- Flashback



Do I need Enterprise Edition for these options?



- Standby Database
- Backup and Recovery (RMAN)
- Oracle RAC
- Flashback Database
- Flashback Query
- **Possible with SE1 & SE**
- **Available in SE1 & SE**
- **Available and Free with SE !!**
- **Only Available with EE**
- **Available with SE1 & SE**



The Forgotten Gem – Flashback Query

- View data as it was at a particular point in time in the past
 - TIMESTAMP or SCN
- Available since 9i
- **Making use of UNDO**
 - Requires Automatic Undo
 - Sufficient UNDO Tablespace
 - UNDO_RETENTION (in Seconds)
- Execute permission on DBMS_FLASHBACK
- DBMS_FLASHBACK.GET_SYSTEM_CHANGE_NUMBER



Example – Using Flashback Query

```
SQL> show parameter undo
```

NAME	TYPE	VALUE
undo_management	string	AUTO
undo_retention	integer	900
undo_tablespace	string	UNDOTBS1

```
SQL> grant execute on dbms_flashback to aels;
```

Grant succeeded.

```
SQL> connect aels/aels
```

Connected.

```
SQL> create table test (id number);
```

Table created.

```
SQL> insert into test values (1);
```

1 row created.

```
SQL> insert into test values (2);
```

1 row created.

```
SQL> commit;
```

Commit complete.



Insert 2 Rows



Example – Using Flashback Query

```
SQL> select dbms_flashback.get_system_change_number from dual;
```

```
GET_SYSTEM_CHANGE_NUMBER
```

```
-----  
4300790
```



```
SQL> delete from test where id=1;  
1 row deleted.
```

```
SQL> commit;  
Commit complete.
```

```
SQL> select * from test;
```

```
ID  
-----  
2
```



Example – Using Flashback Query

```
SQL> select * from test as of scn 4300790;
```

```
  ID
```

```
-----
```

```
  1
```

```
  2
```

```
SQL> select * from test
```

```
  as of timestamp to_timestamp('23-FEB-13 14:51:47.000000','DD-MON-RR HH24:MI:SS.FF');
```

```
  ID
```

```
-----
```

```
  1
```

```
  2
```

```
SQL> select * from test;
```

```
  ID
```

```
-----
```

```
  2
```

2 Options



Back to High Availability – SE and RAC

- Included from 10g
- Up to 4 Sockets in the Cluster
- Automatic Storage Management (ASM) must be used!
- Automatic Workload Management is enabled
 - Maximize Hardware Utilization
- 3rd party clusterware IS NOT supported
- Cluster file systems not supported for database Files

Did I mention it is free with Standard Edition...

FREE



What about Disaster Recovery?

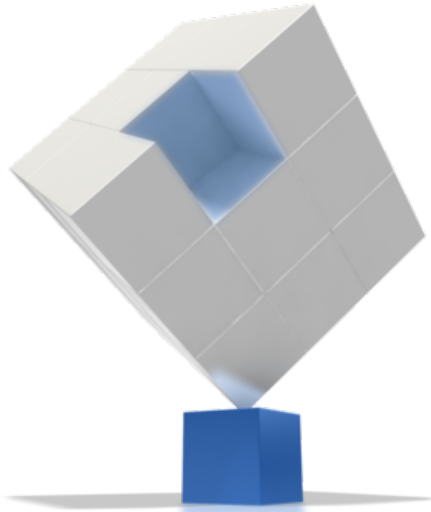


Can Standard Edition Provide DR?

Yes... a quick, easy answer!



The Core of Disaster Recovery



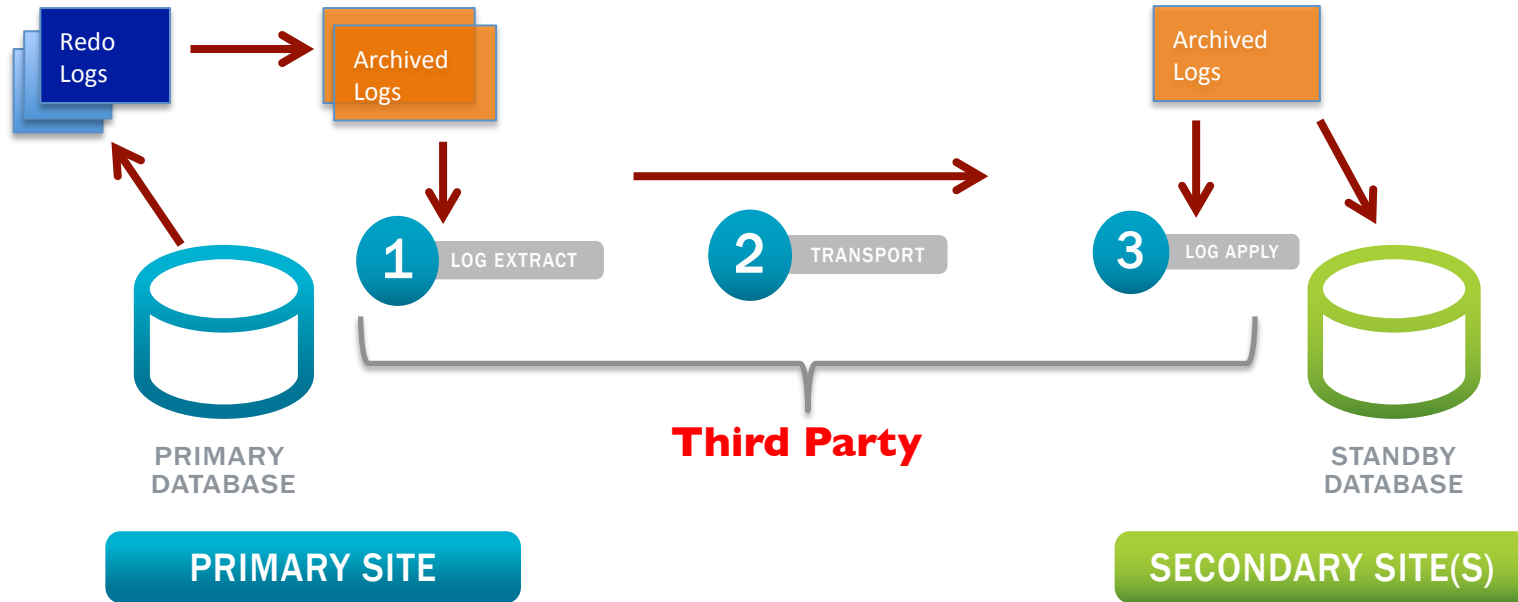
Standby Databases

Can be implemented using:

- Custom Scripts
- Third Party Products



The Basics of a Standby Database



Example Scenario

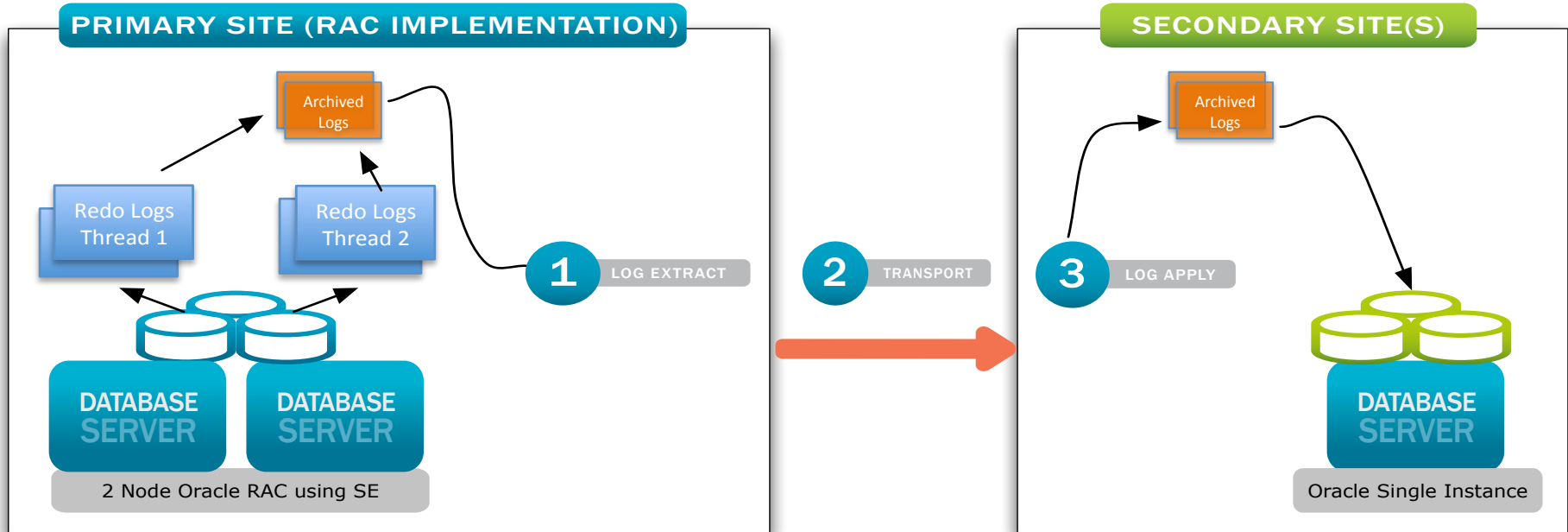


- Business Requirements:
 - 24 x 7 environment
 - 99.5 % Availability Requirement
 - 1.82 days per year downtime
 - Solution should cater for Disaster Recovery
 - Two datacenters in different geographic locations
 - Cost should be kept to the bare minimum

An application review showed no specific EE options required!



Oracle RAC + Standby Database with SE



Oracle Licensing



Licensing – Important things to know

Two Main License Metrics:

- **Oracle Database Named User Plus (NUP)**
 - Remember the Minimums
 - » SE1 and SE - 5 Users for Company
 - » EE - 25 Users per Oracle Processor License (not per socket)
- **Oracle Processor**
 - For SE, 1 Oracle Processor = 1 Socket
 - For EE, review the “Oracle Processor Core Factor Table”
 - » Example: Intel Xeon Quad Core CPU Factor is 0.5
 - Oracle Processor License = 4 Cores x 0.5
 - Required Oracle Processor Licenses = 2



Licensing – Recommended Reading

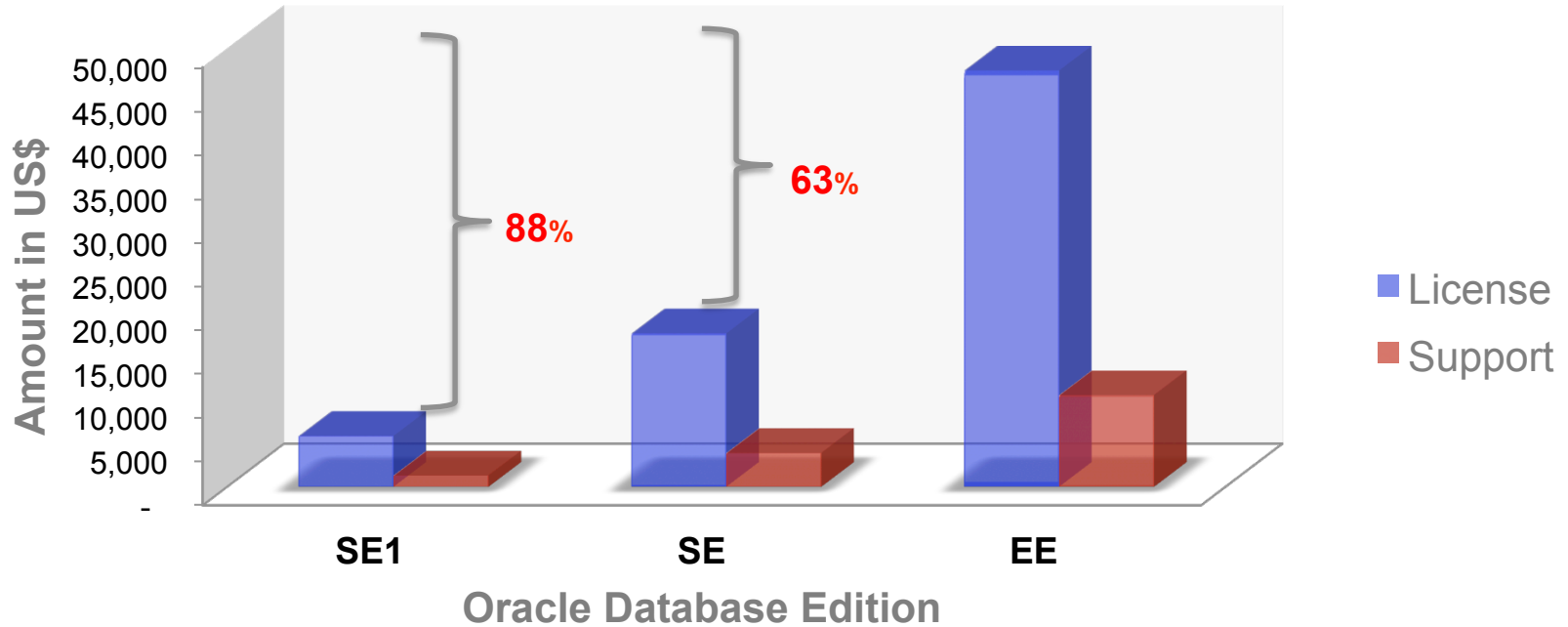


- Oracle Processor Core Factor Table
<http://www.oracle.com/us/corporate/contracts/processor-core-factor-table-070634.pdf>
- Oracle Software Investment Guide
<http://www.oracle.com/us/corporate/pricing/sig-070616.pdf>



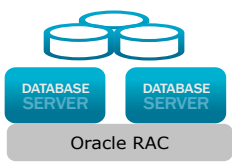
License Cost

One Processor License Comparison



Example - Cost Comparison

Two Node RAC Cluster




Processor: 2 x Intel Xeon E5-4603 (4 Cores/CPU) per node
Memory: 64G/node
Storage: Shared 1TB

Oracle RAC



Single Instance Standby Database



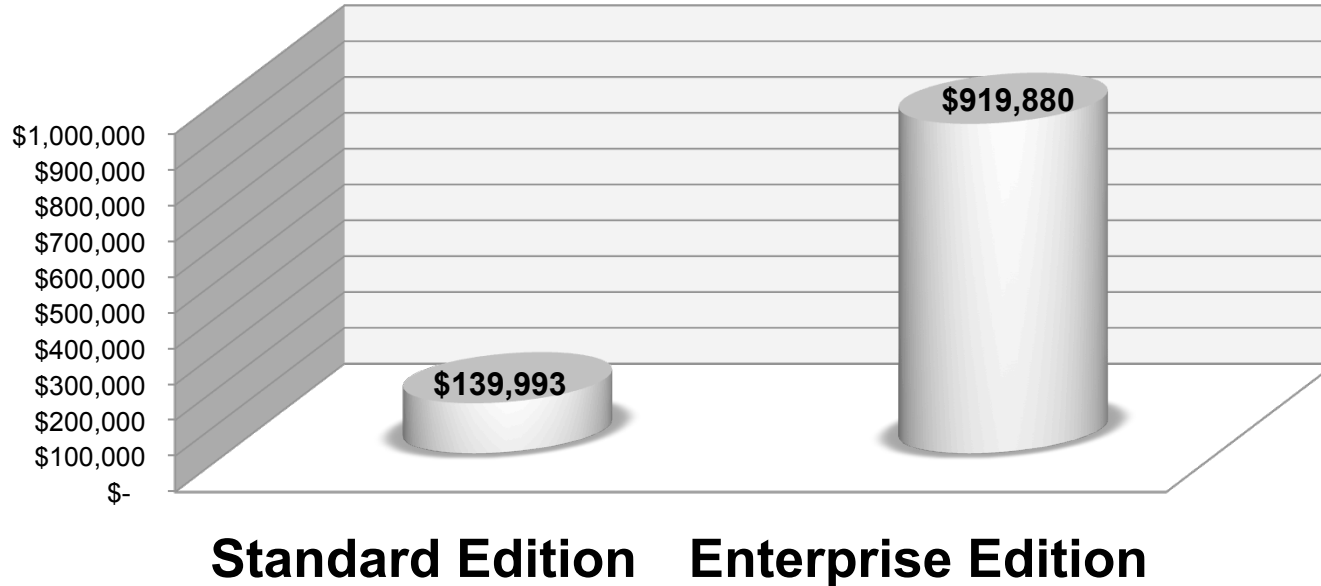
Processor: 2 x Intel Xeon E5-4603 (4 Cores/CPU)
Memory: 64G
Storage: Internal 1TB

Standard Edition	Enterprise Edition
6 Processor License - (2 Sockets per server – 3 Servers)	12 Processor License - (24x0.5)=12 (8 Core/server)
Database: \$ 17,500 x 6 = \$ 105,000	Database: \$ 47,500 x 12 = \$ 570,000
Database Support: \$ 3,850 x 6 = \$ 23,100	Database Support: \$ 10,450 x 12 = \$ 125,400
Oracle RAC: None	Oracle RAC: \$ 23,000 x 8 = \$ 184,000
Oracle RAC Support: None	Oracle RAC Support: \$ 5,060 x 8 = \$ 40,480
3 rd Party Standby (Dbvisit Standby) = \$ 11,893	Standby Database using Data Guard (included with EE)
Total Cost \$ 139,993	Total Cost \$ 919,880



Example - Cost Comparison

License Comparison Oracle RAC + DR (SE vs. EE)



Note 1: The above is a comparison for a 2 Node RAC cluster with Single Instance Standby. Each node is running 2 x Intel Quad Core CPUs.

Note 2: No discounts is taken into account.



Standard Edition Restrictions



Yes, it is important to know the limitations!



Standard Edition Restrictions

CPU Limitation

- SE1 only Maximum 2 CPU Sockets
- SE Maximum 4 CPU Sockets

But, is it really a restriction in your own environment?

- 1 CPU Socket can have MANY Cores
- With SE1 you can have 2 x Intel E7-8870 CPU's at 2.4GHz
- That is 20 Cores!!! (10 per Socket)



Standard Edition Restrictions

- Flashback Database
 - But Flashback Query is available in SE
- Parallel Query
- Parallel Index Building
- Online Index Rebuilding
- Block change tracking for fast incremental backups
- Parallel Backup and Recovery
- Automatic Workload Repository (extra license option)
- Don't forget statspack!!! It is still available in SE



So why should Standard Edition
still be on the menu?



Reasons to consider Standard Edition

- SE & SE1 is proven database technology
 - Affordable cost of ownership
 - SE1 pricing is attractive
 - SE is almost 1/3 of the EE price tag
- Cut costs, NOT quality of the service!
- Oracle RAC at your fingertips
 - NO additional cost!



Reasons to consider Standard Edition

- Disaster Recovery
 - Standby Databases still possible
- Performance Tuning
 - Statspack etc.
- Processing Power:
 - You might be limited on CPU Sockets...
 - But 1 Socket can have many Cores



Many Options...

Which one should I use?

To help answer the question:

- Review Oracle Licensing and Costs
- Review each Database Edition Capability
- Review Application Requirements
- Review Business Requirements



Questions?



Thank you for attending

Why Not Oracle Standard Edition?

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