

ORACLE

IAS

DEVELOPER

DATABASE

9i

CLUSTER

Oracle 9i

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가 .....?  
.....?  
.....?  
.....?  
DB 가 .....?  
Language .....?  
.....?  
.....?  
(DW,OLAP,MINING,OLTP ) DB .....?  
.....?

**Technology Evolution**

**High Availability  
Scalability**

**Manageability**

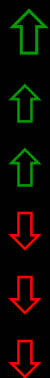
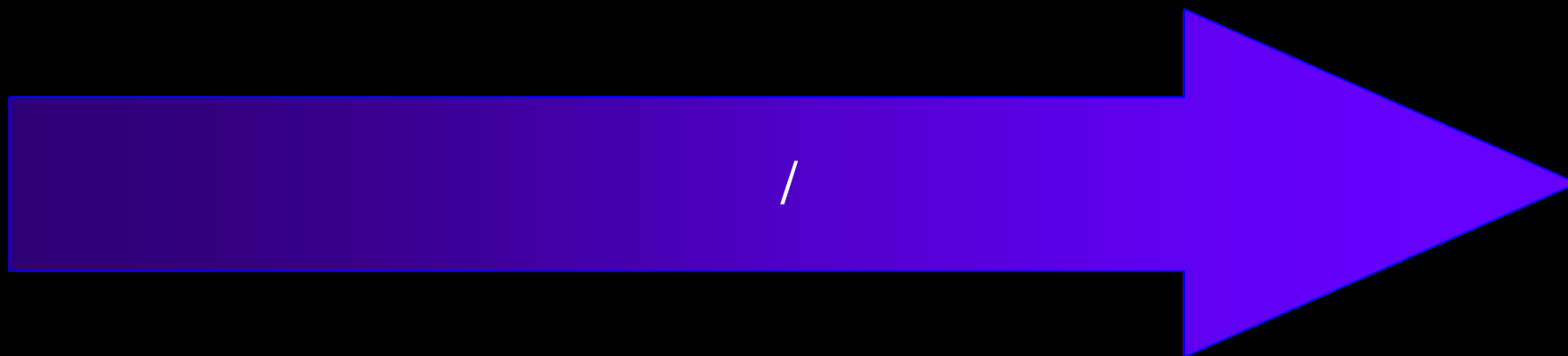
**Development Platform**

**Business Intelligence**



# Technology Evolution

# Technology Evolution



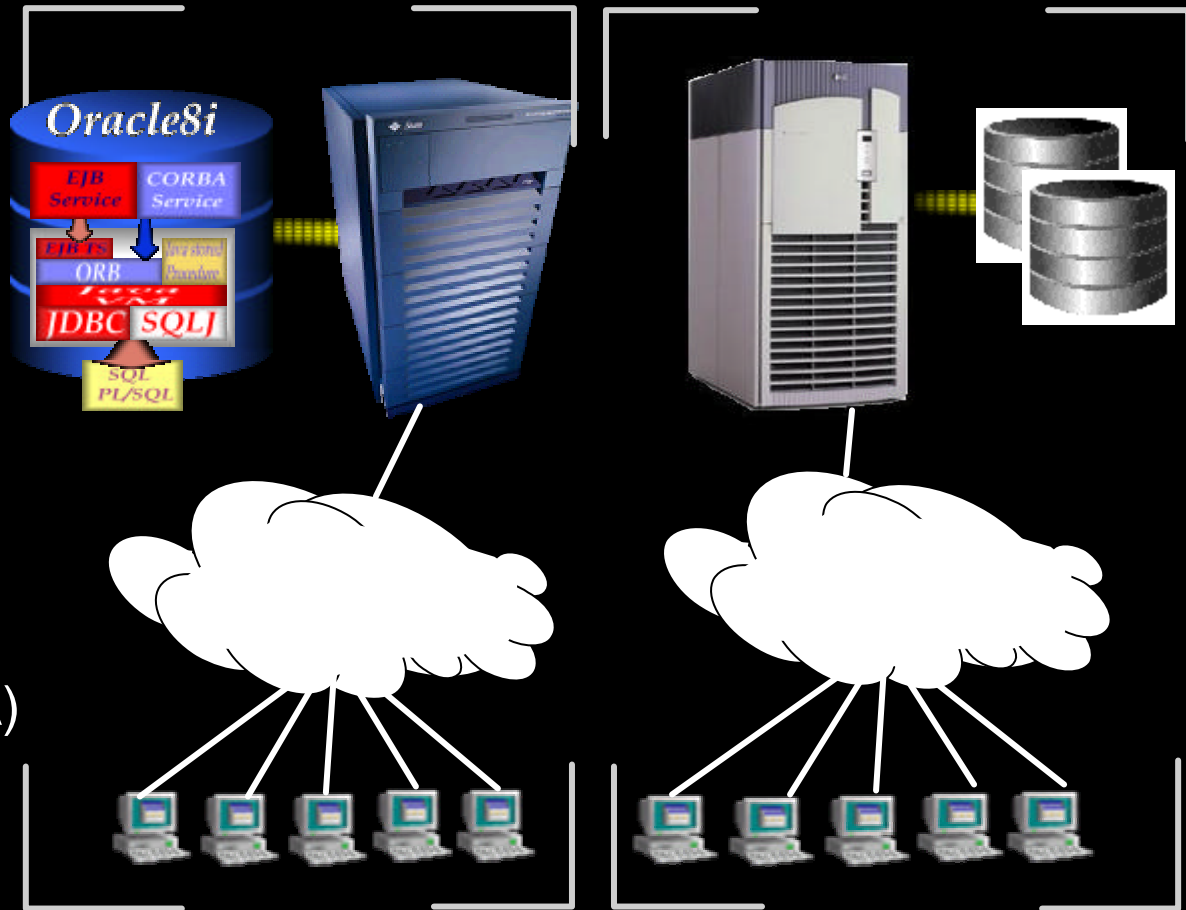
# Technology Evolution Distributed Computing. – Oracle 7

- 90
- OLTP/DW
- /APP
- GUI
- Tool
- 
- 



# Technology Evolution Internet Computing. - Oracle8i

- 90 /00
- Web Server
- 3-Tier
- JAVA
- B-to-C/B-to-B
- ERP/CRM
- E-business



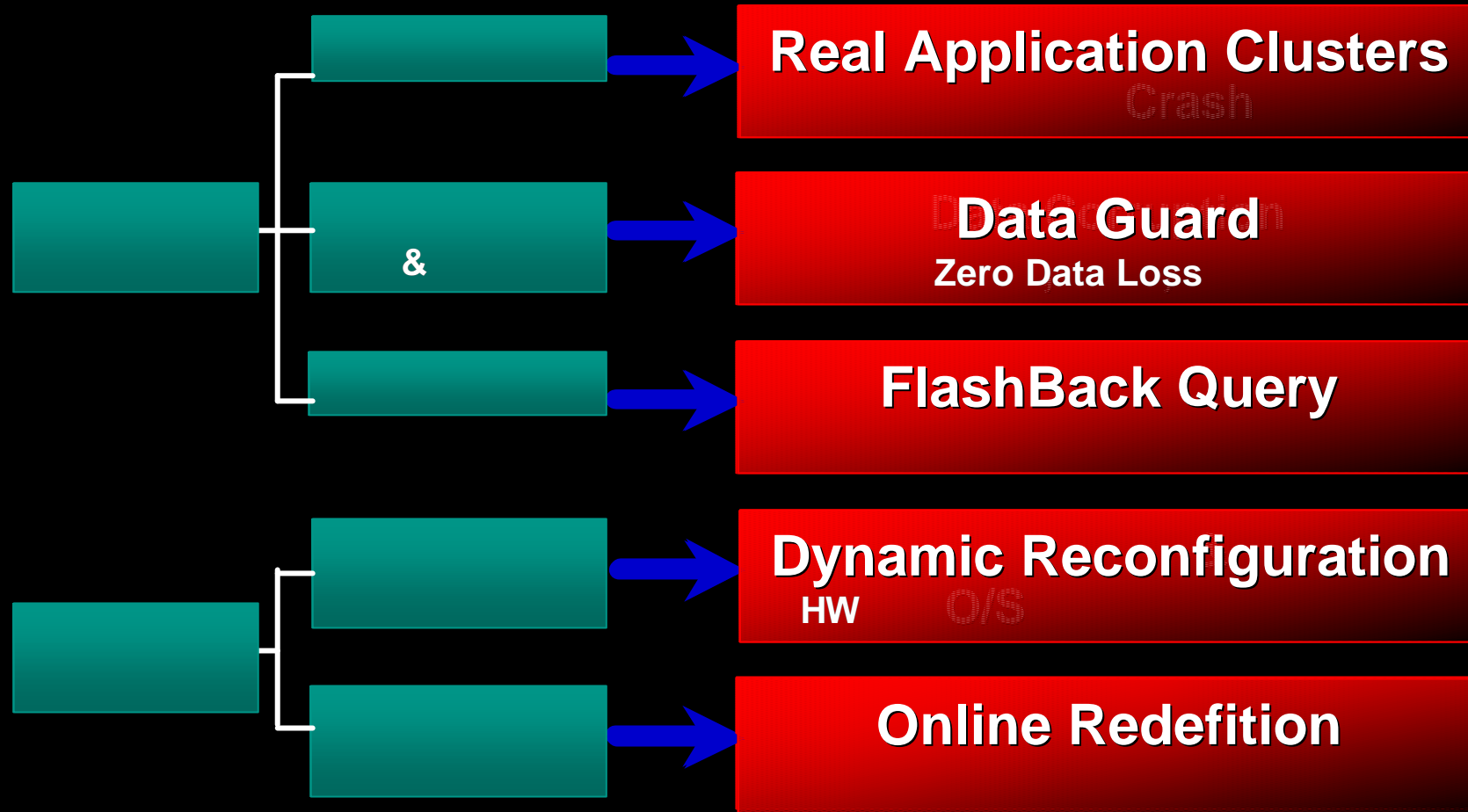
- RDBMS
- JVM (EJB,CORBA)
- Fine-grained access control
- Materialized View

# e-Business Era. - Oracle9i Clustered

- e-Business
  - 가 (High Availability)
  - (High Scalability)
  - (High Quality Of Services)
  - (Extend Market – Globalization)
  - DBA
  - On-Line Management
  - Business intelligence
  - E-business



# Oracle9i Database - Downtime...



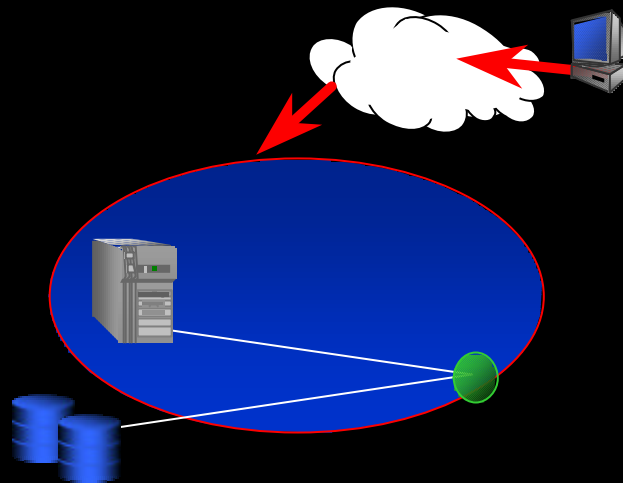


# High Availability Scalability

# Choosing A Deployment Platform

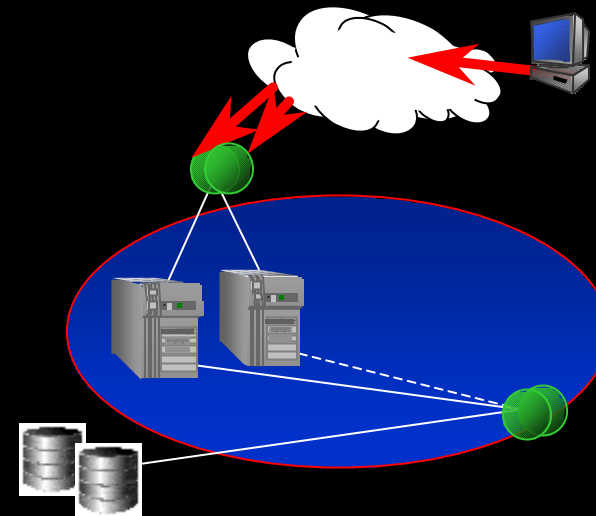
## Single SMP

- CPU 가
- 가
- 가

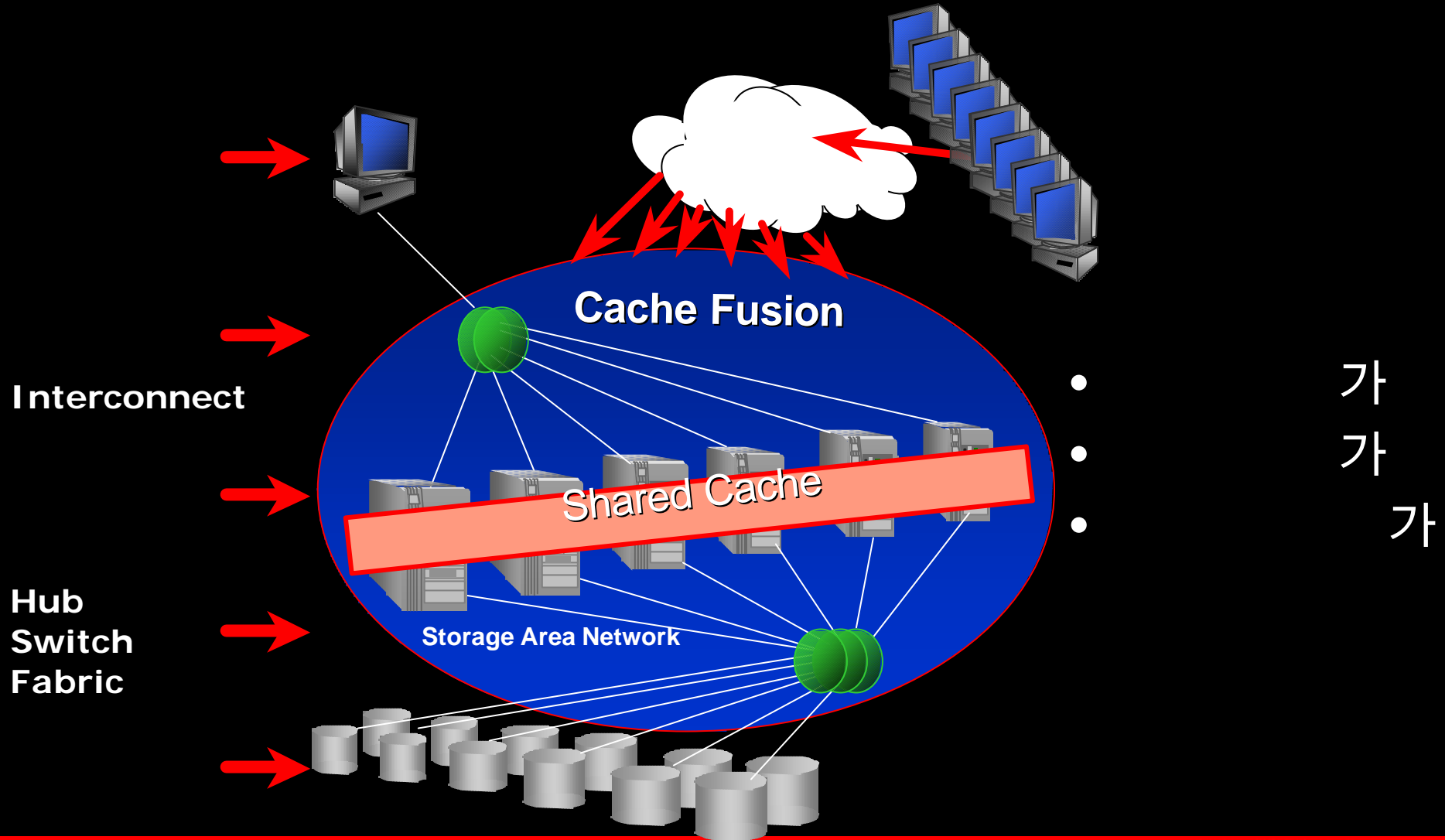


## Failover Clustering

- Fault tolerant systems; 가
- 가

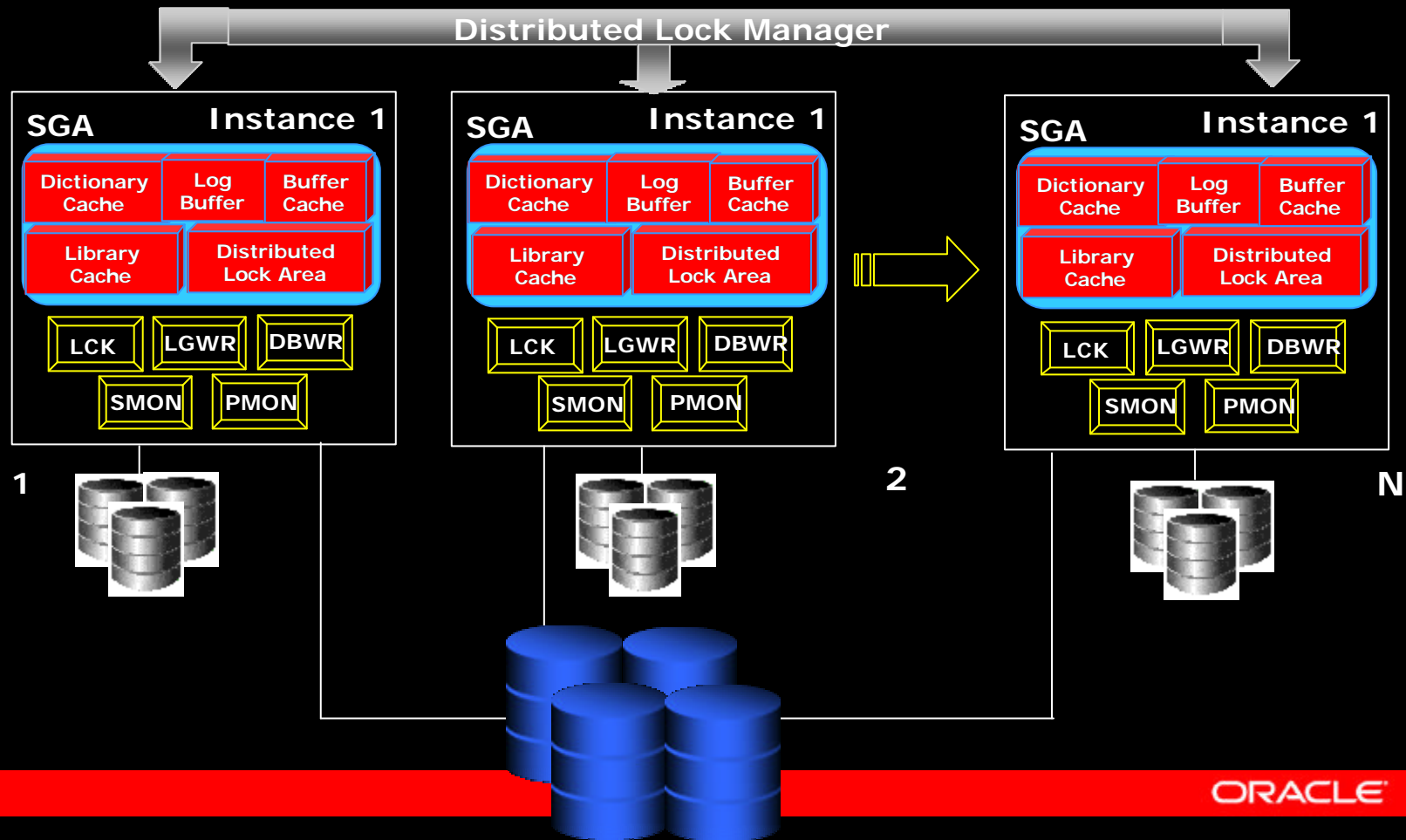


# Real Application Clusters



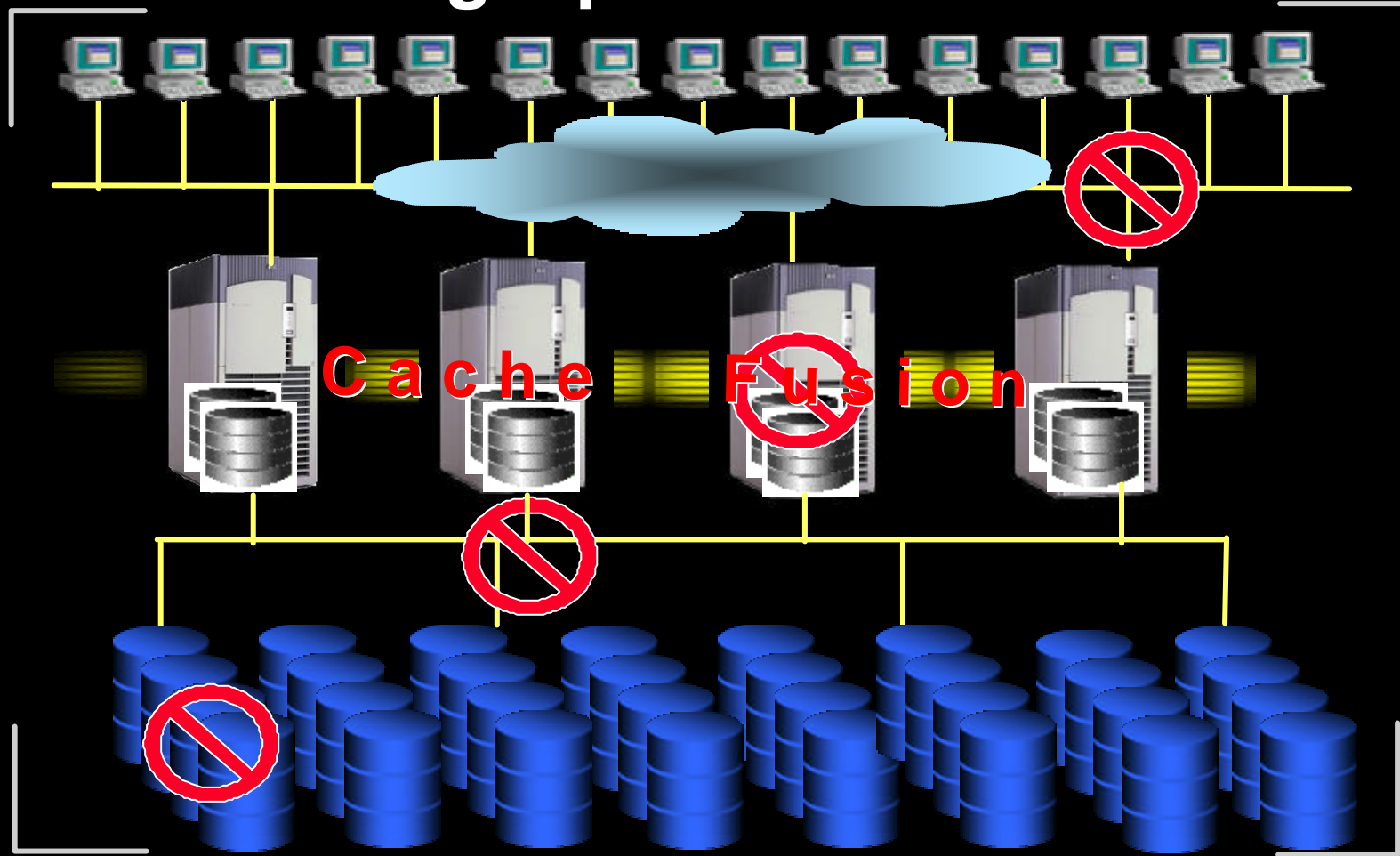
# Real Application Cluster Instance

*Oracle Parallel Database*



# e-Business Era. – Oracle9i RAC

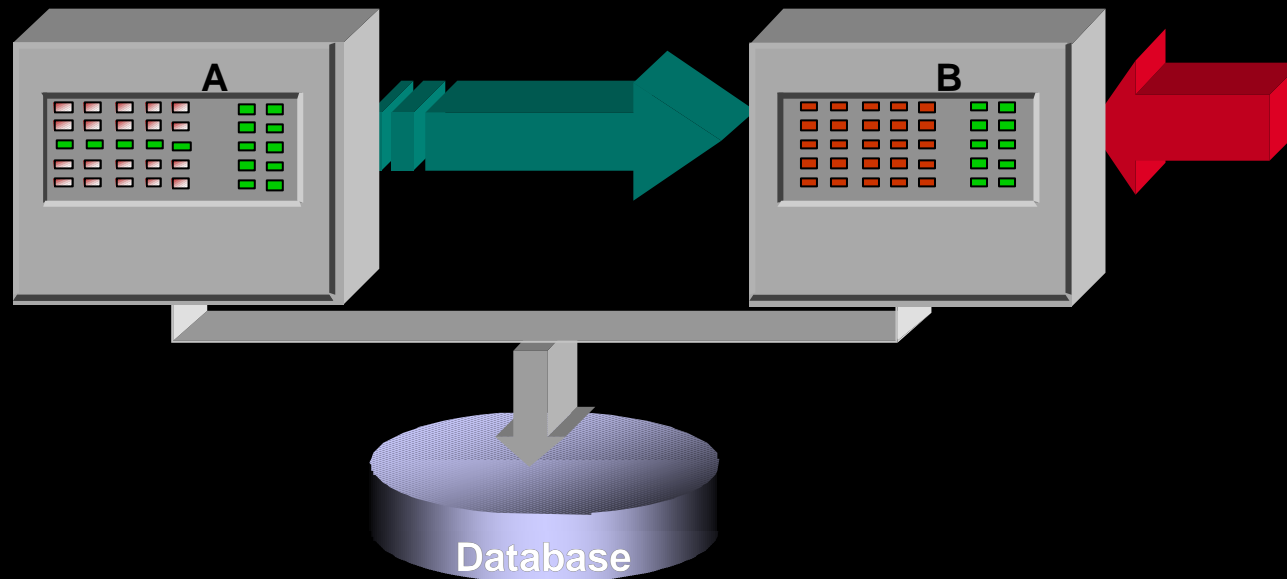
## No Single point of Failure



# (Cache Fusion)

- Oracle9i

- Interconnect
- Disk I/O



# (Cache Fusion)

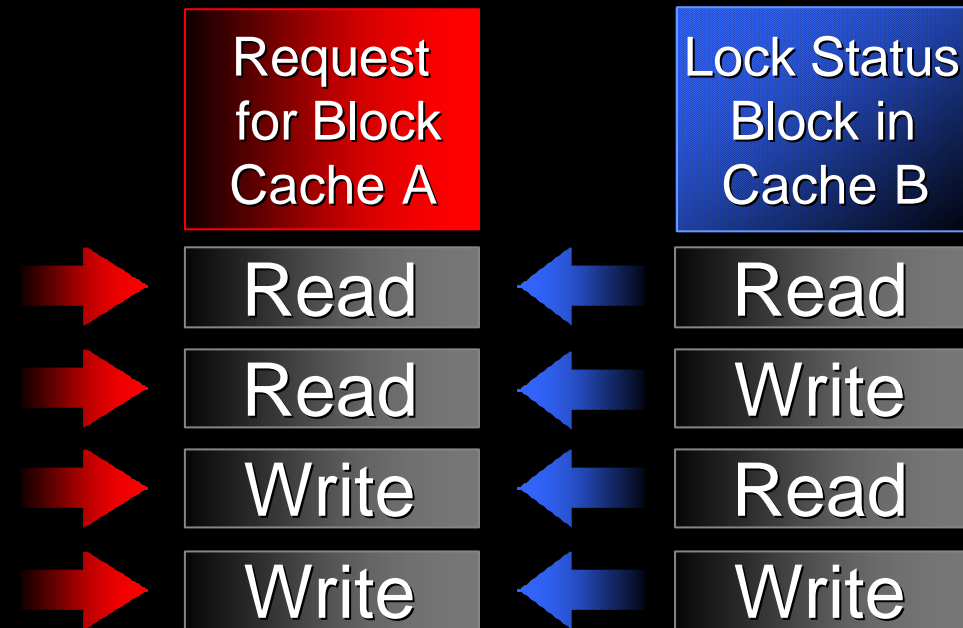
- Instance B

A가

contention

Lock  
(DLM)

instance

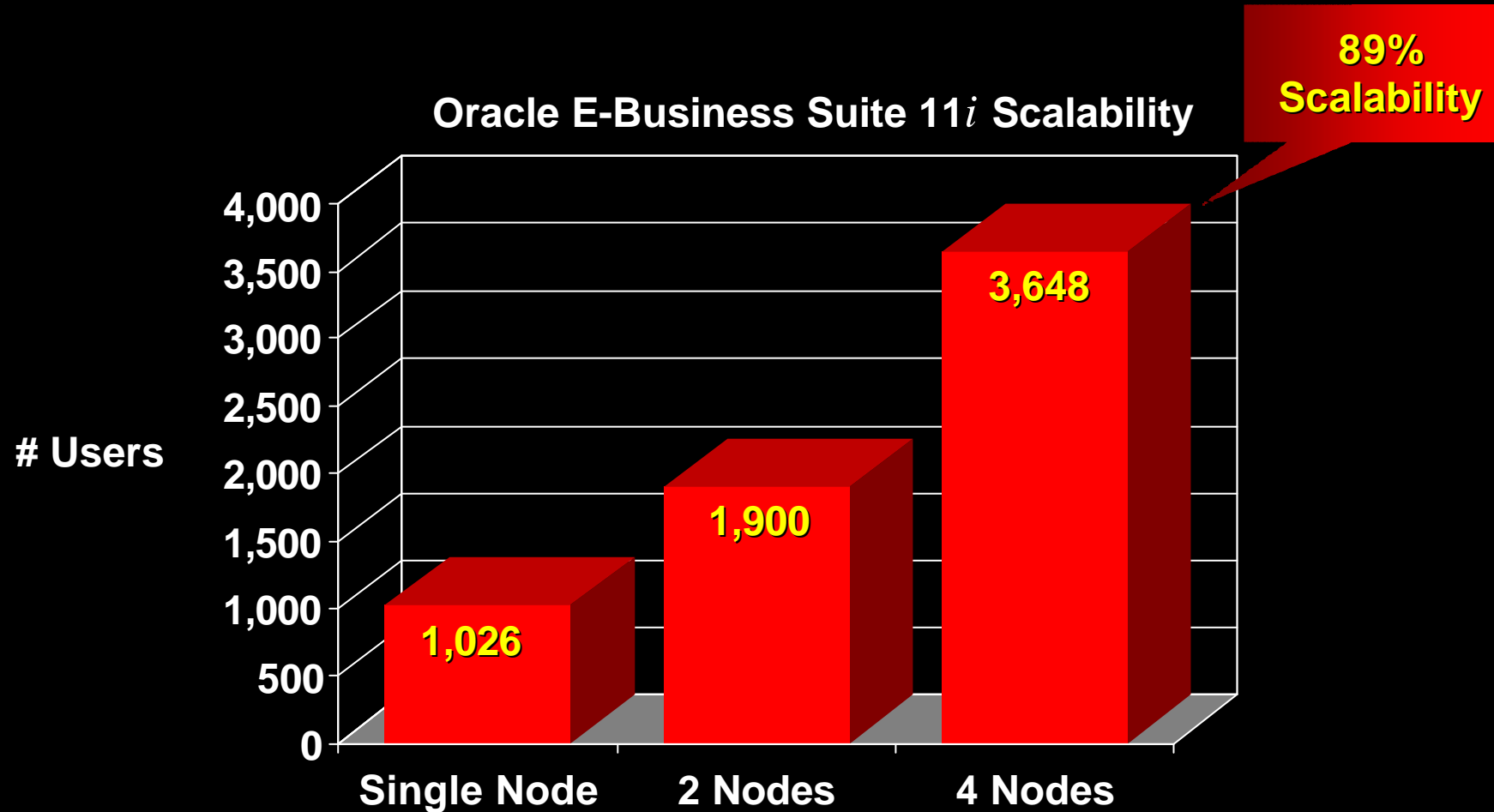




- - clustered database  
(DW OLTP )
  - (Data Warehouse)
  - Parallel-enabled OLTP
- Lock
  - DLM configuration
  - INIT.ORA lock
- 가
- SMP SAN

# Oracle9iDB Cluster Performance

Oracle E-Business Suite 11i Scalability



Running on HP Computers

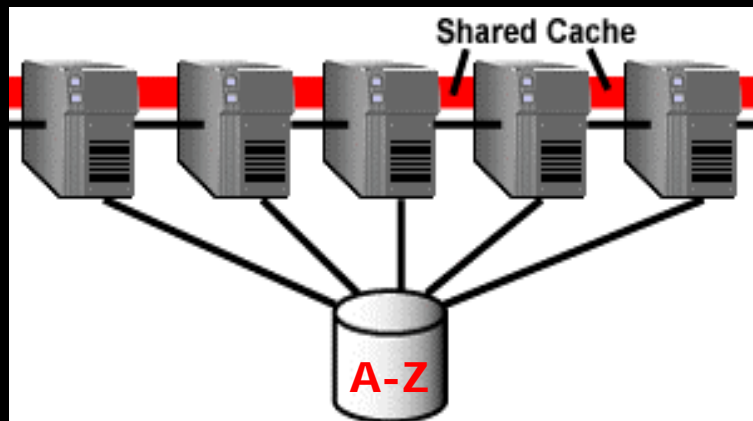
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# Clustering Types

- **Shared disk**

Runs real applications

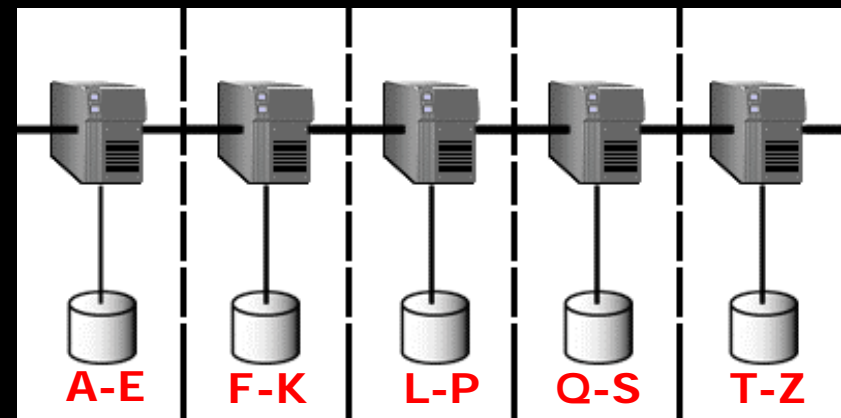
- DB2
- Shard Cache Fusion  
Oracle 9i RAC



- **Shared nothing**

Only runs benchmarks

- Microsoft SQLServer
- DB2 UNIX & windows
- 
- 
- No SAP, Siebel, Peoplesoft



# Shard Nothing Disk

가

8

1.

2.

3.

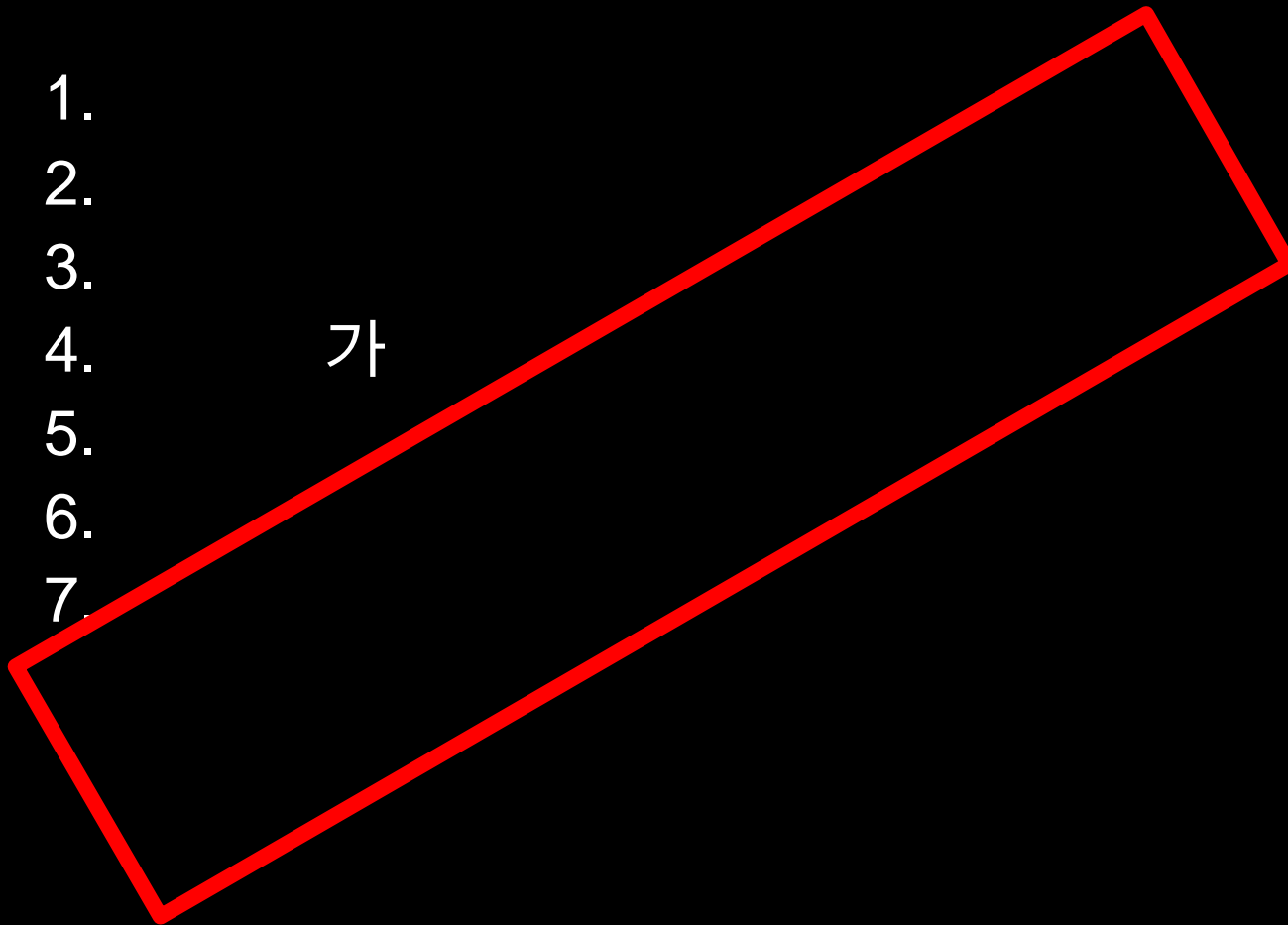
4.

5.

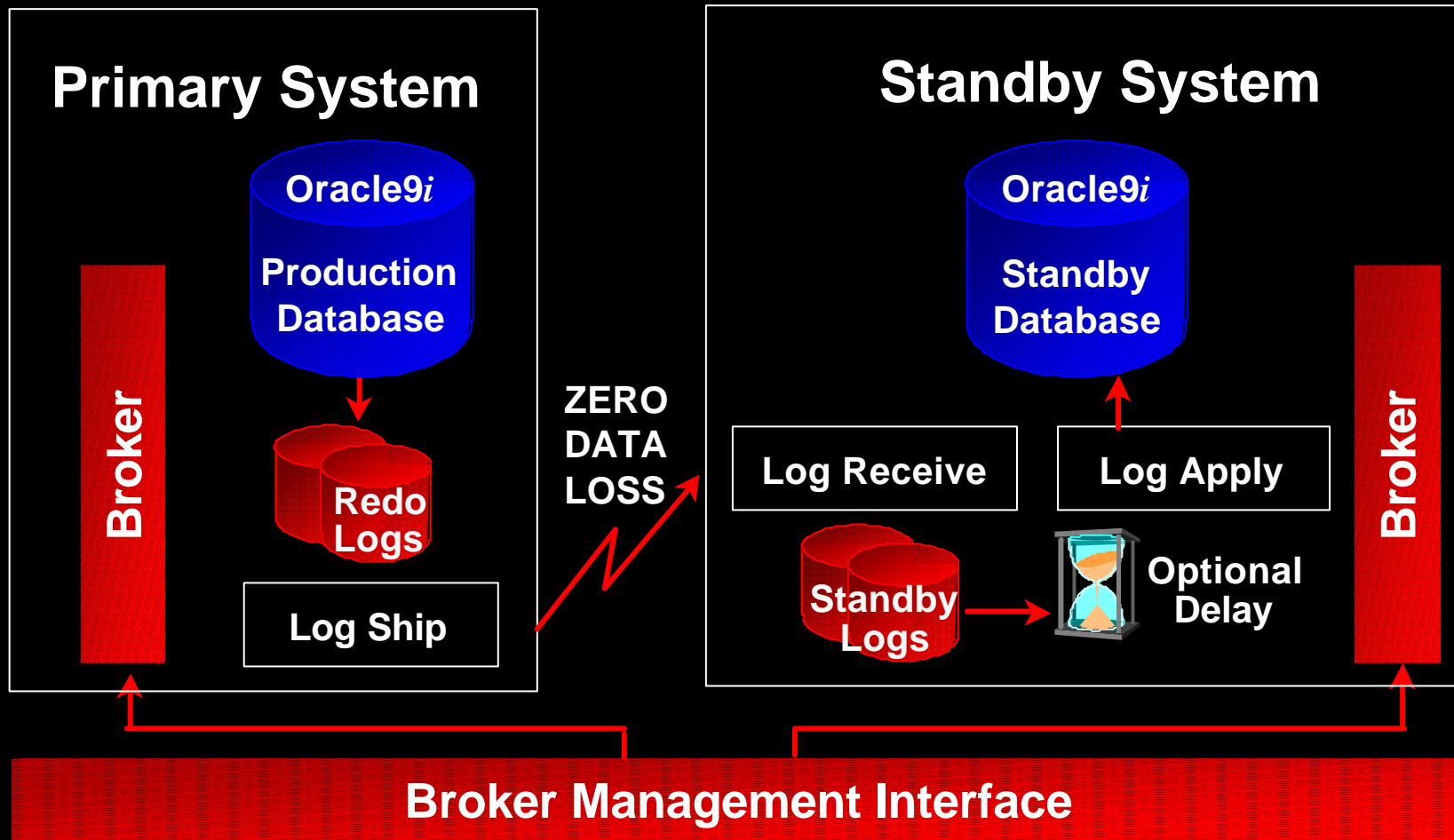
6.

7.

가



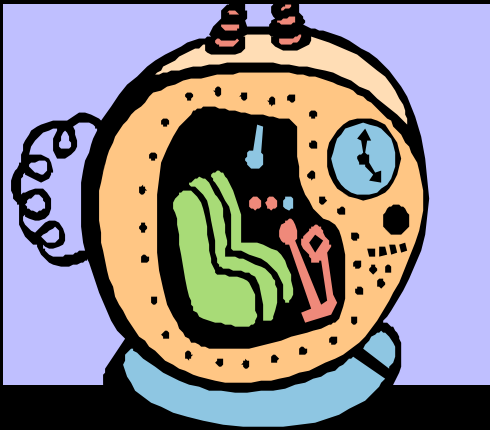
# Oracle9i Data Guard



# Oracle9i Data Guard protects...

	Data Guard	
System Failure	Standby	Failover
Data Corruption	Primary	
Disasters		
Human Error	Primary	
Routine Operations	Standby	Offload
Routine Maintenance	Standby	Switchover

# Oracle9i Flashback Query



SQL

```
Create table old_emp as  
select * from emp AS OF yesterday;
```

가

....

# Online Redefinition

- INDEX
  - Index Organized Table
  - ,
- 가, ,
- analyze validate
- Updates & queries continue uninterrupted



# Oracle9i High Availability Matrix

가				
Fast Restart			Yes	
Recovery Manager	Yes			Yes
Dynamic Reconfiguration	Yes			
Online Redefinition	Yes			
Flashback Query		Yes		
Log Miner		Yes		
Data Partitioning	Yes	Partial		Partial
Data Guard	Yes	Yes	Yes	Yes
'cold' Failover			Yes	
Real Application Clusters			Yes	

# 가

가	Oracle9i	DB2 UDB	SS 2000
Fast Start recovery	Yes	No	No
Multiplexed log files	Yes	Yes	No
Data Guard	Yes	No	No
Transparent Application Failover	Yes	No	No
Sub-minute System Failover	Yes	No	No
Flashback Query	Yes	No	No
Partitioning Mechanisms	Yes	Limited	No



# Manageability

# Manageability

- 
- 
- 
- /
- **Enterprise Manager**

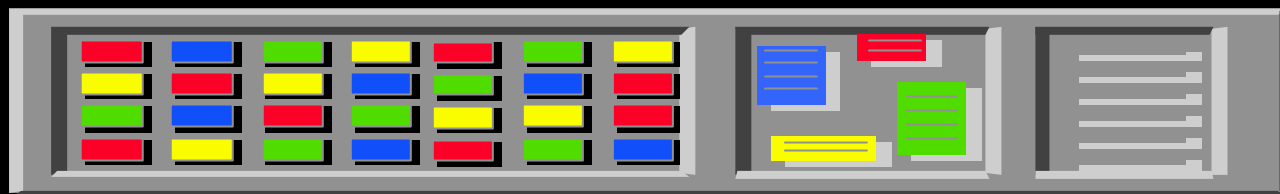


Keep the number of DBA's constant as we scale to Internet Use

- (Undo)
  - Undo 가 -  
undo block contention, consistent read, space utilization
- (Managed Files)
  - 
  - Oracle9i가
- Self-Tuning of private memory allocation
- Buffer cache, Shared pool

Buffer  
Cache

Shared  
Pool



Private  
Memory

# Dynamic Reconfiguration

- Oracle9i

- SMP CPU
- Storage
- 가

- Capacity on demand

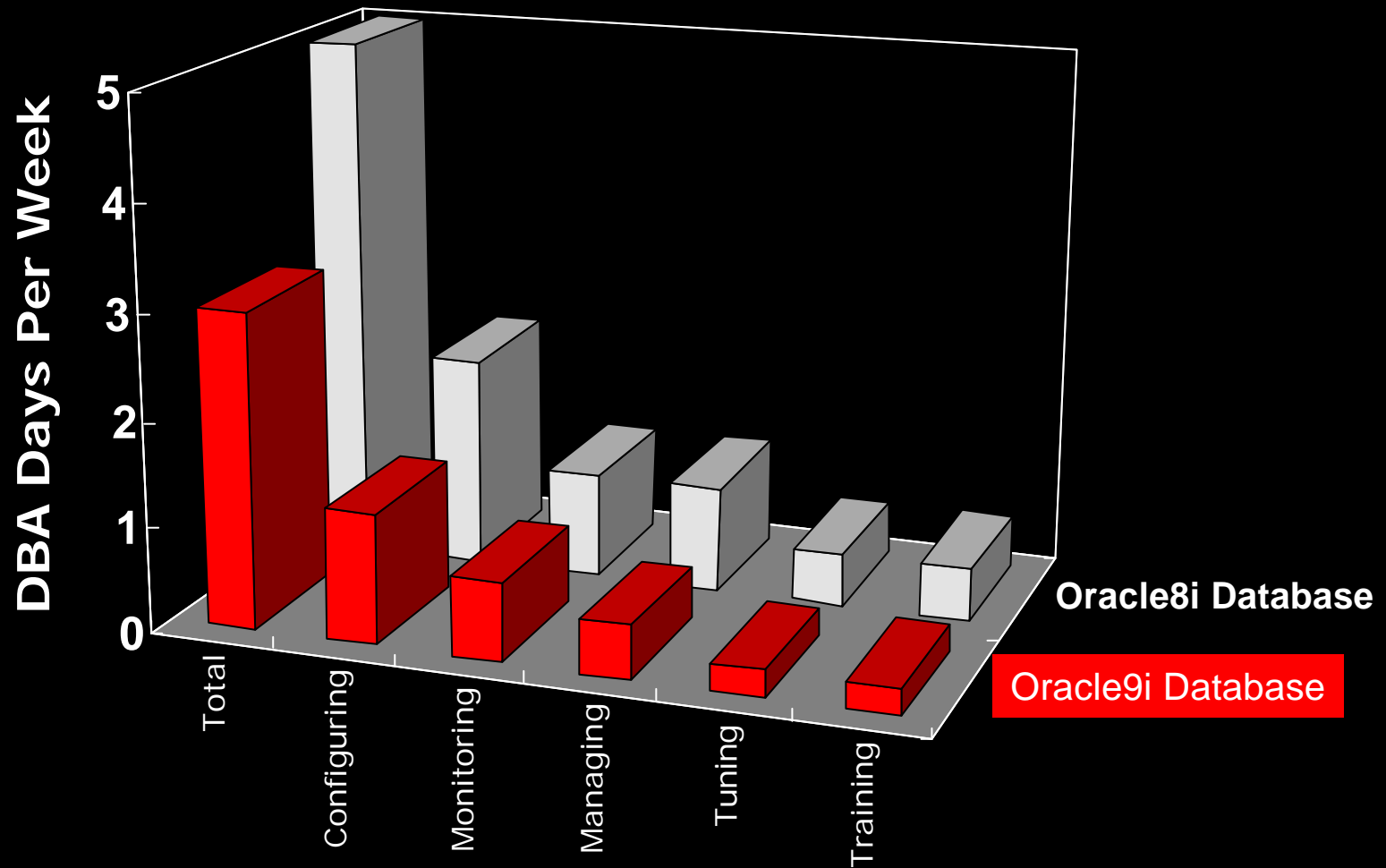
- **Persistent Parameter File**
  - INIT.ORA
- **Resumable Space Allocation**
  -
- **Cached Execution Plan**
  - SQL  
Execution Plan
- -
- **Default Temporary Tablespace**

# MTTR( )

- **Block** 가 -  
- DB File Block
- /
- /
- - /  
**(Test Recovery)**
- - 가



# Increase Oracle DBA productivity by 40 %





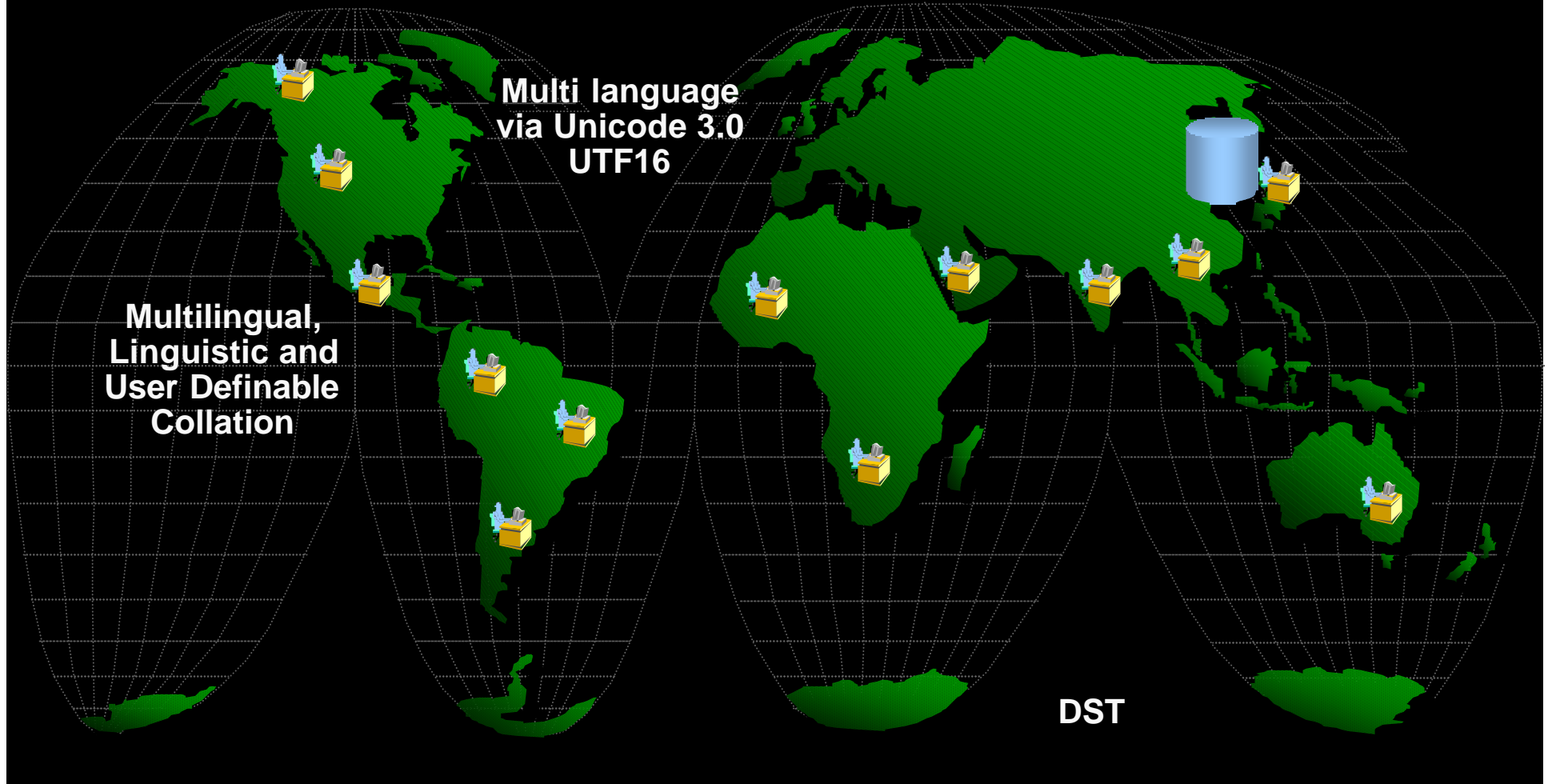
# Development Platform

# Development Platform

- Globalization
  - NCHAR
  - Unicode 3.0/UTF16
  - Timezone/DST
- Security
  - Virtual Private Databases
  - `label` security
- Type Inheritance
- Type evolution
- Native XMLType
  - XMLType
  - SQL XML
  - XPath
- SQL PL/SQL
  - TimeZone DST
  - SQL CASE
  - Table Function
- UltraSearch
  - Intranet Portal

# Globalization –

# eBusiness



# Globalization

57

,88

200

- |  |  |
|--|--|
| <p>DB</p> <p>( / / / / / )</p> <p>: Password</p> <p>: ?????G???</p> <p>( / / / / / / / )</p> <p>: Mot de passe ( / / / / )</p> <p>: ID utente = ID( / )</p> <p>: Contraseña ( / )</p> <p>: Heslo</p> <p>: Kennwort</p> <p>: ?????</p> <p>: パスワ? ド( )</p> <p>( / )</p> <p>: Passord ( )</p> <p>: Senha ( / )</p> <p>: ( )</p> <p>: Lösenord ( )</p> <p>: Parola ( )</p> | <p>- NCHAR</p> <p>: Password</p> <p>( / / / / / / / )</p> <p>: Salasana ( )</p> <p>: Adgangskode</p> <p>: ?? ? ?</p> <p>가 : Jelszó ( 가 )</p> <p>: Wachtwoord</p> <p>: Has b ( )</p> <p>: Parol? ( )</p> <p>: Heslo ( )</p> <p>: ?????? ( )</p> <p>: 密碼 ( / / )</p> |
|--|--|

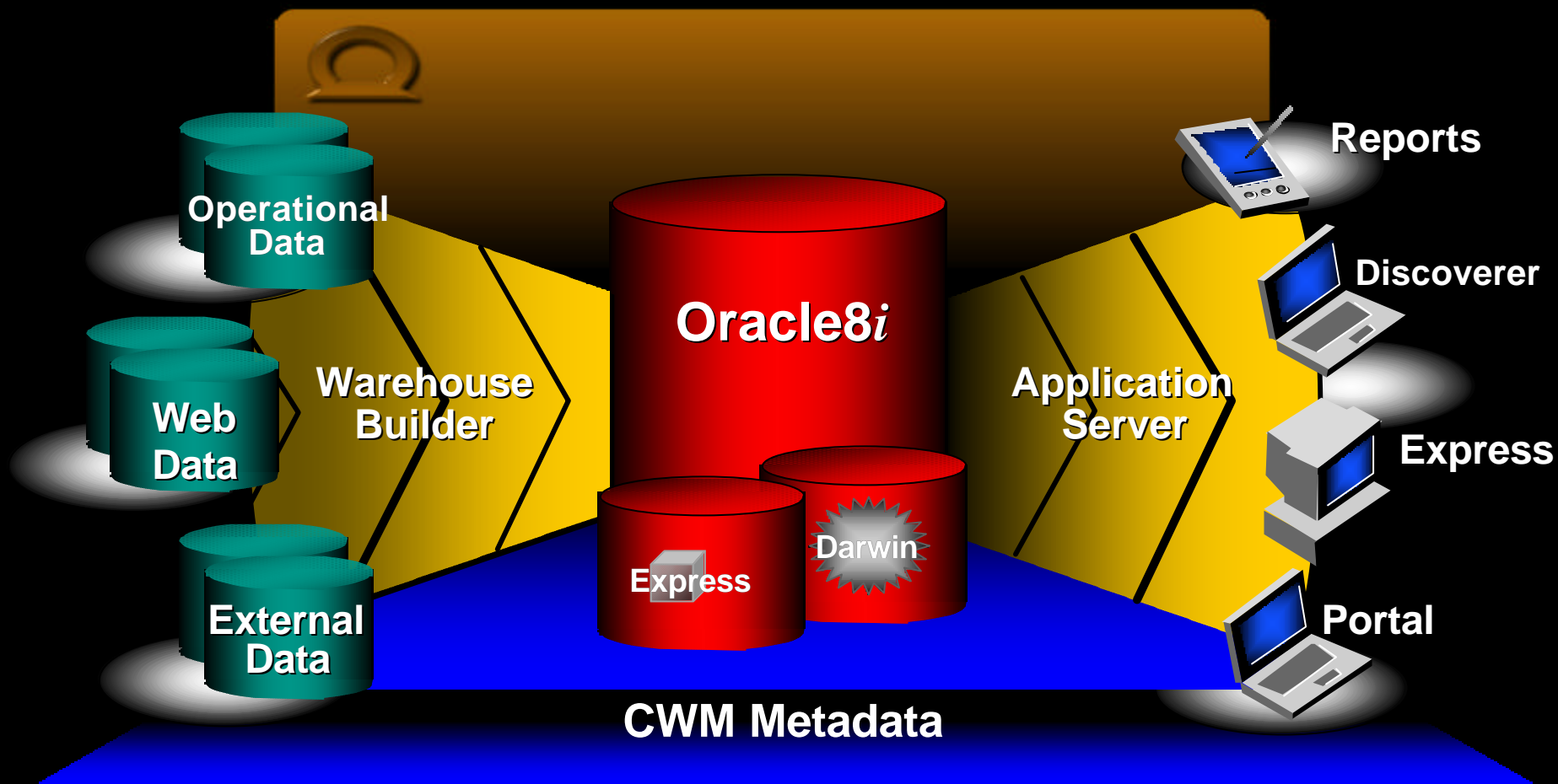


# Business Intelligence

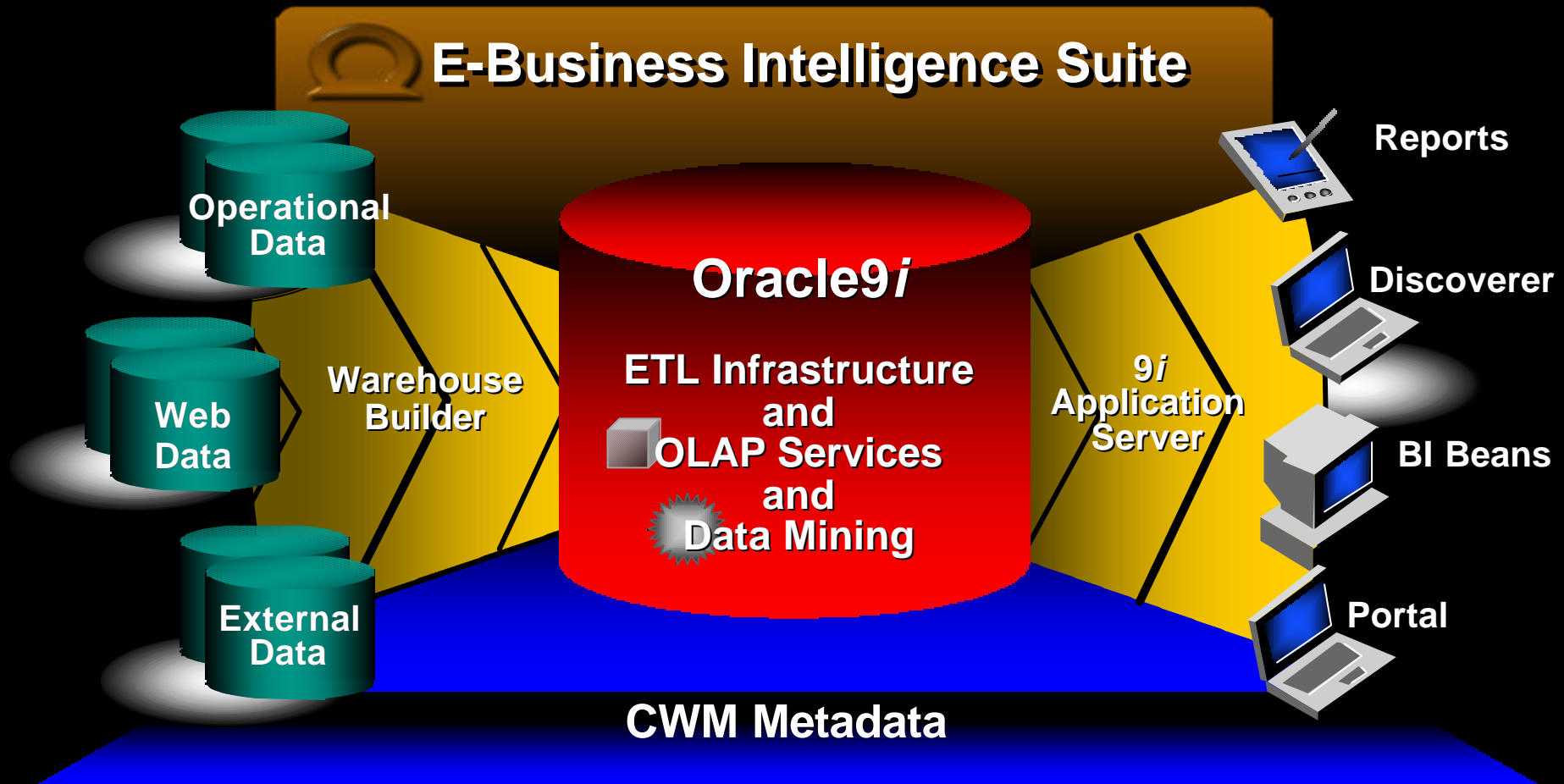
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# Oracle 8i

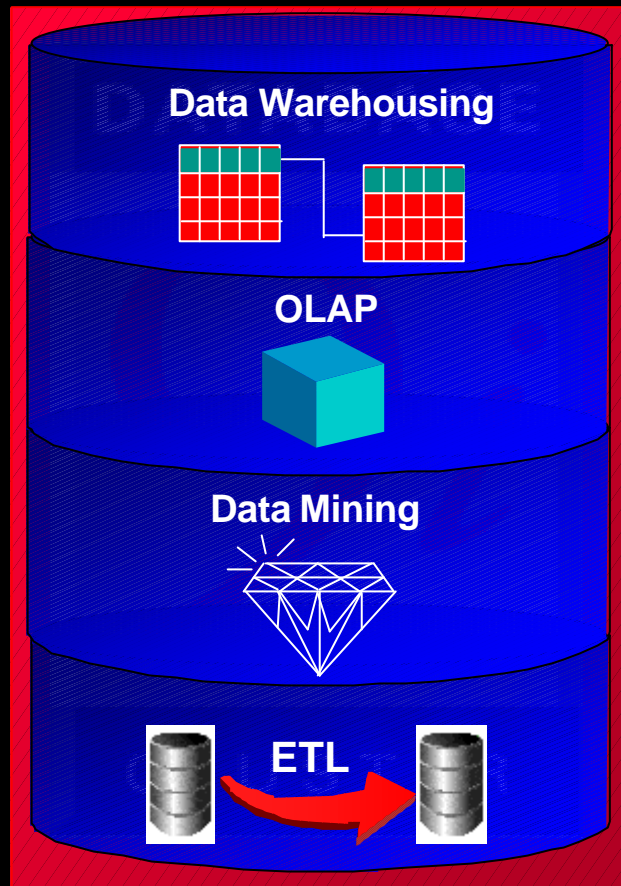
## Architecture for E-Business Intelligence



# Oracle 9i Foundation for E-Business Intelligence

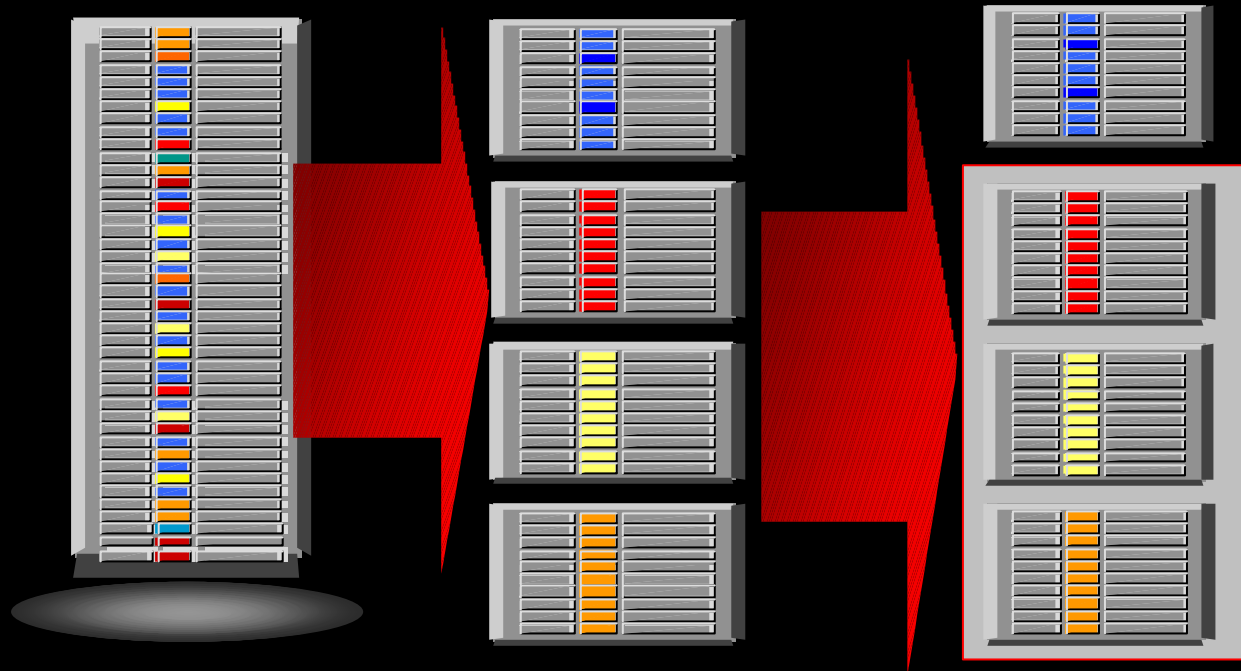






- Data Warehousing
  - List Partitioning
  - Bitmap Join Indexes
- OLAP Services - Analytic
  - Business Intelligence Beans
  - MOLAP/ROLAP
  -
- Data Mining
  - Oracle Personalization Recommendation Engine
- Oracle9i ETL
  - Extract, Storage, Transform, Load, Store
  - Data Staging
  - External Table – OS

# Oracle9i Partitioning

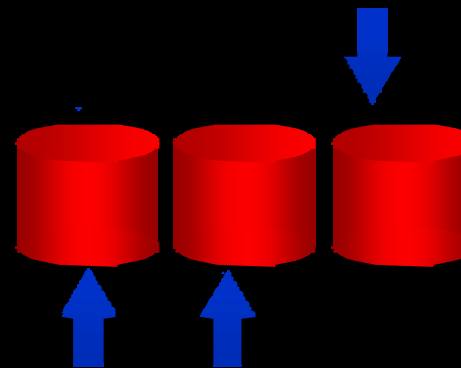


Partition by...

- Range
- **List**
- Hash
- Composite

# List Partitioning

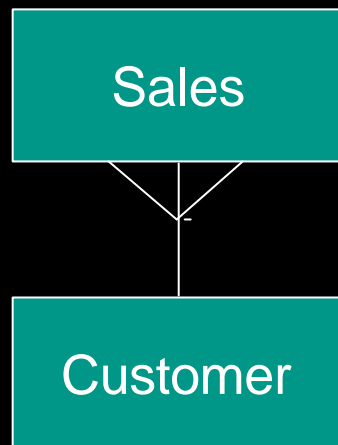
```
CREATE TABLE  
(...)  
  PARTITION BY LIST ( )  
  ( PARTITION  
VALUES ( ' ' ' ' ' ' '),  
  PARTITION  
VALUES ( ' ' ' ' ' ' '),  
  PARTITION  
VALUES ( ' ' ' ' ' ' '),  
  PARTITION  
VALUES ( ' ' ' ' ' ' ' ' ));
```



0400  
GMT

# Bitmap Join Indexes

- Bitmap join index
  - Materialized views
  - Star Schema                      Dimension



## Example Query

```
SELECT SUM(Sales.dollar_amount)
FROM Sales, Customer
WHERE Sales.cust_id =
Customer.cust_id
AND Customer.state = 'Oregon';
```

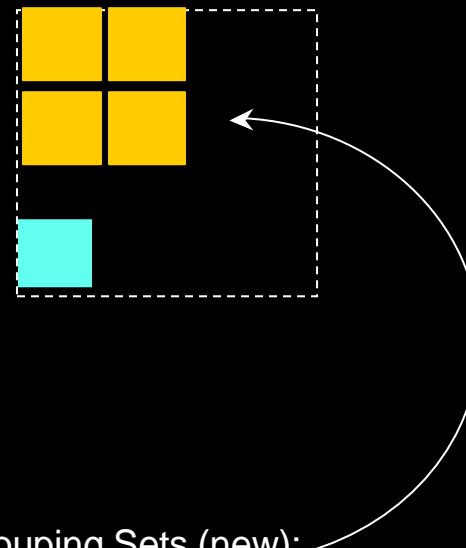
# Oracle9i Scalability Data Partitioning

	Range	Hash	Composite	List
Oracle8i	Yes	Yes	Yes	No
Oracle9i	Yes	Yes	Yes	Yes
DB2	S/390	Unix, NT AS400	No	No
SS 2000	No	No	No	No

# OLAP Services

## *SQL Aggregation Enhancements*

- - Grouping Sets
  - Concatenated Grouping Sets
  - Aggregate Pruning



Concatenated Grouping Sets (new):

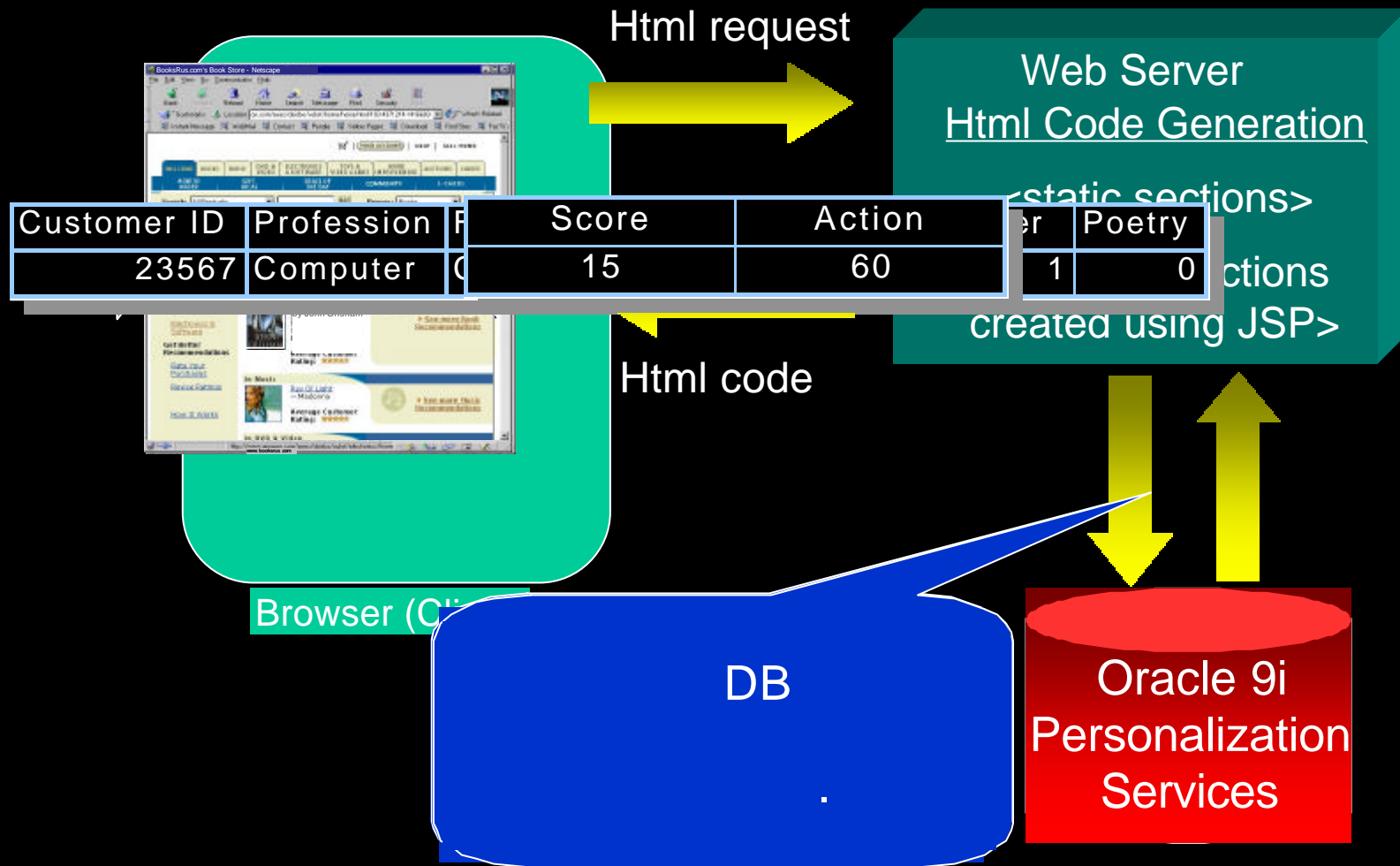
```

SELECT      ,      ,      ,      SUM(Sales)
FROM        ,      ,
WHERE      .      ID =      .      ID
AND        .      ID =      .      ID
GROUP BY
GROUPING SETS (      .      ,      .      ),
GROUPING SETS (      .      ,      .      );
  
```

# Personalization Services

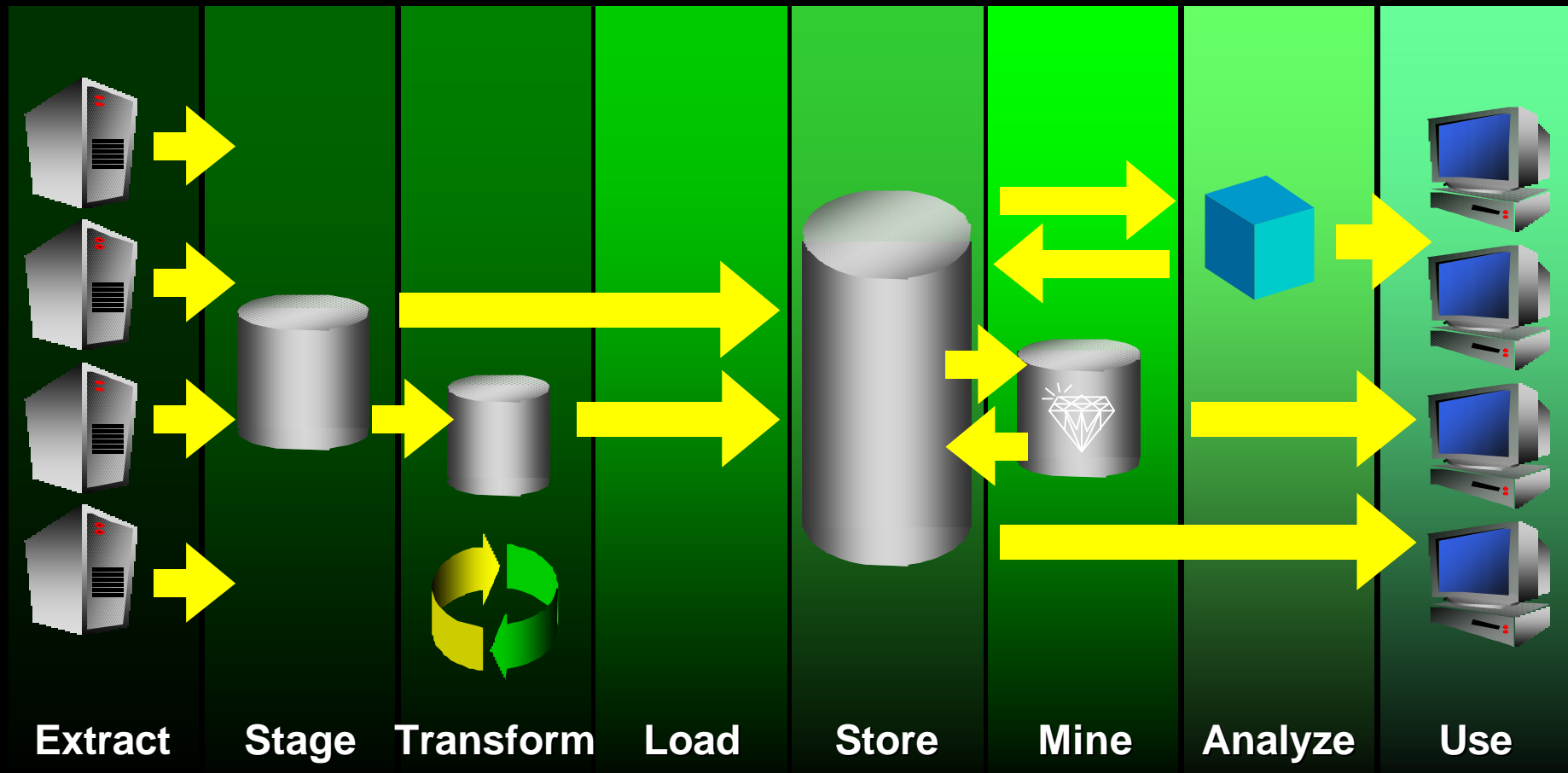
How Does It Work?

BooksRus.com



# ETL Process

## Business Intelligence, The Old Way





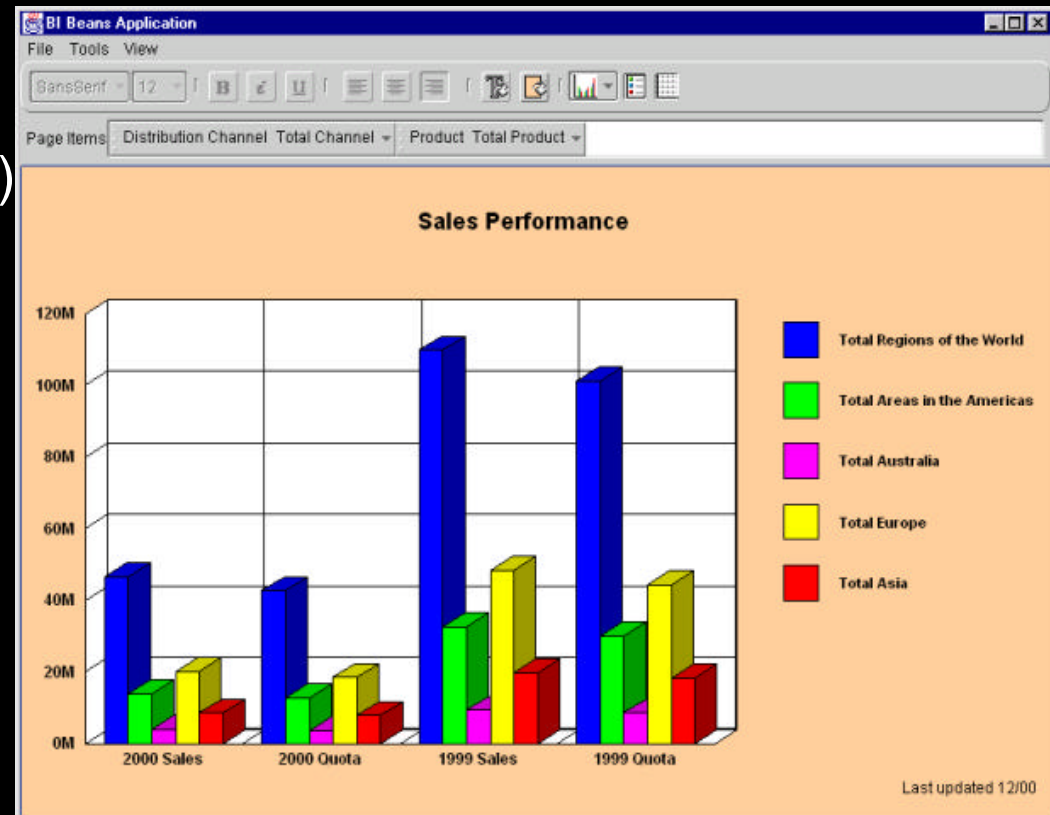
# ETL Process- Oracle 9i Business Intelligence



- Scalable Data Flow
- High-Performance Transformation Engine
- Easy to build and manage

# Business Intelligence Beans

- Rapid Development
  - Presentation Beans (Crosstab, Table, Graph)
  - Analysis Beans (Query Builder, Calc Builder)
- Internet Deployment
  - Java client
  - Server side / HTML only client
- Leverage 9i OLAP
- JDeveloper integration



# Oracle9i Unique New Features

- Scalability
  - Real Application Clusters
- Availability
  - DataGuard
  - On-Line Reorganization
  - Flash-Back Query
- Security
  - Label Security
  - Fine Grained Auditing
- Management
  - Feedback-Directed Memory Management
  - Resumable Statements
- Hosting
  - Enhanced Virtual Private Database
- Business Intelligence
  - Integrated OLAP
  - Advanced Analytics
  - ETL
  - Bitmap-Join Indexes
- Content Management
  - Files
  - UltraSearch
- Web Services
  - Dynamic Services
  - XML Datatype

# Oracle 9i



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