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## **Oracle on Windows and .NET**

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# Agenda

- Oracle on Windows Intro
- Oracle on Windows and .NET – Today
  - Product Overview
  - Demo - Oracle Developer Tools for Visual Studio .NET
  - Oracle Enterprise Manager – Managing MS Products
- Oracle on Windows and .NET – 11g
  - New Features
- How to move to 11g on Windows
- Customers
- Q & A



# Oracle on Windows

- Oracle is large part of the Windows installed base
- \$1.24B Oracle DB on Windows Revenue in 2005 (Gartner 2006)
- Most downloaded database OS on OTN
- .NET Products (ODAC) a top ten OTN download
- 406,000+ subscribers to Windows and .NET OTN newsletter



# Commitment to Windows and .NET

- Oracle7 was the first database to ship on Windows in 1993
- First public DB developer's release for 64-bit Windows
- Supported both 32-bit and 64-bit Databases on the first day of Windows 2003 server release
- 32-bit Windows Server is a base development platform for Oracle; 64-bit Windows is a Porting platform within Server Technologies
- Focused Engineering and Product management groups for Windows-specific integration projects

# Oracle Database on Windows

1993.....2000    2001.....2003    2004    2005    2006    2007



Windows  
NT

Windows  
2000

Windows  
XP

Windows Server  
2003 (x86, Itanium)

Windows  
x64

Windows  
Vista



# Microsoft Relationship

Engineering

Close collaboration with MS Engineering teams (OS, ADO.NET, VS.NET, VSS ..)  
Access to Pre-release and Beta drops of Microsoft Products

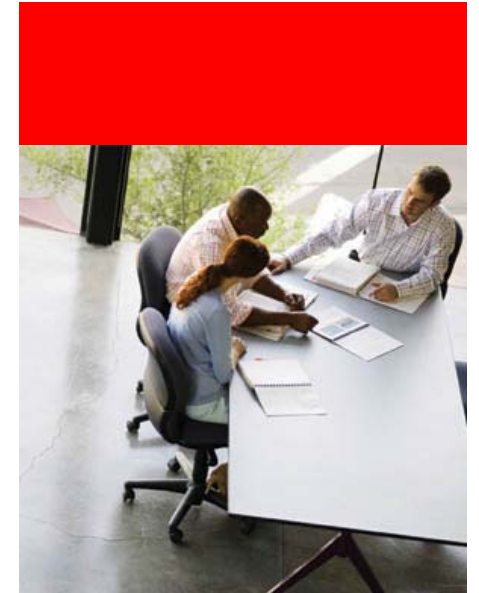
Marketing

Oracle sponsors MS Events (TechEd Orlando 2007, Boston 2006, Barcelona 2007, VS Live 2006- US/Europe, PDC 2007/2005)  
MS sponsors Oracle Events (OOW 2006 San Francisco, OOW 05 – SF, London, Shanghai)  
VSIP Premier Partner

Support

MS Premier Support Agreement  
Collaboration of support teams

# Windows and .NET - Today





# Windows 32-bit Platform Support

OS	9iR2	10gR1	10gR2
Windows 2000	Yes	Yes	Yes
Windows XP Professional	Yes	Yes	Yes
Windows Server 2003	Yes	Yes	Yes
Windows Vista	No	No	Yes*

\*Special 10.2.0.3 release for Vista



# Windows 64-bit Platform Support

OS	9iR2	10gR1	10gR2
Windows Server 2003 for Itanium (64-bit DB)	Yes	Yes	Yes
32-bit Windows XP & Windows Server 2003 on x64 (32-bit DB)	Yes	Yes	Yes
Windows XP & Windows Server 2003 x64 (32-bit DB)	Yes (client only)	Yes (client only)	Yes (client only)
Windows XP & Windows Server 2003 x64 (64-bit DB)		Developer Release (May 04)	Yes
Windows Vista x64			Planned: 2 <sup>nd</sup> Half CY 2007



# Oracle Database 10g Express Edition (2006)

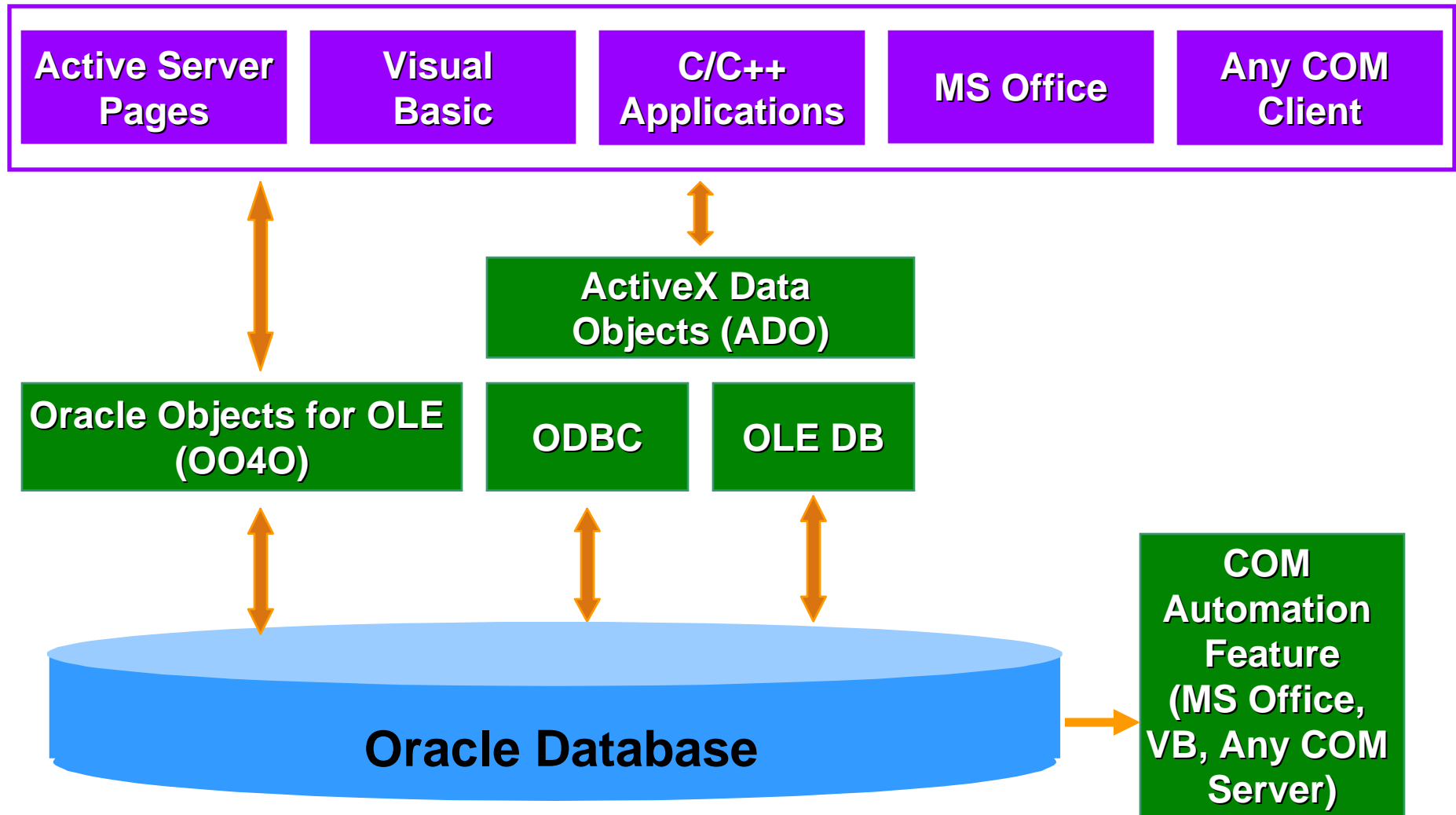
- Entry level small footprint database packaged with InstallShield
- Certified on Windows Vista
- Free to develop, deploy, and distribute
- Uses 1 CPU
- 4 GB of User Data
- Use up to 1 GB RAM
- Oracle Developer Tools for VS.NET (Express Edition version)
- Download from [www.oracle.com/technology/xe](http://www.oracle.com/technology/xe)



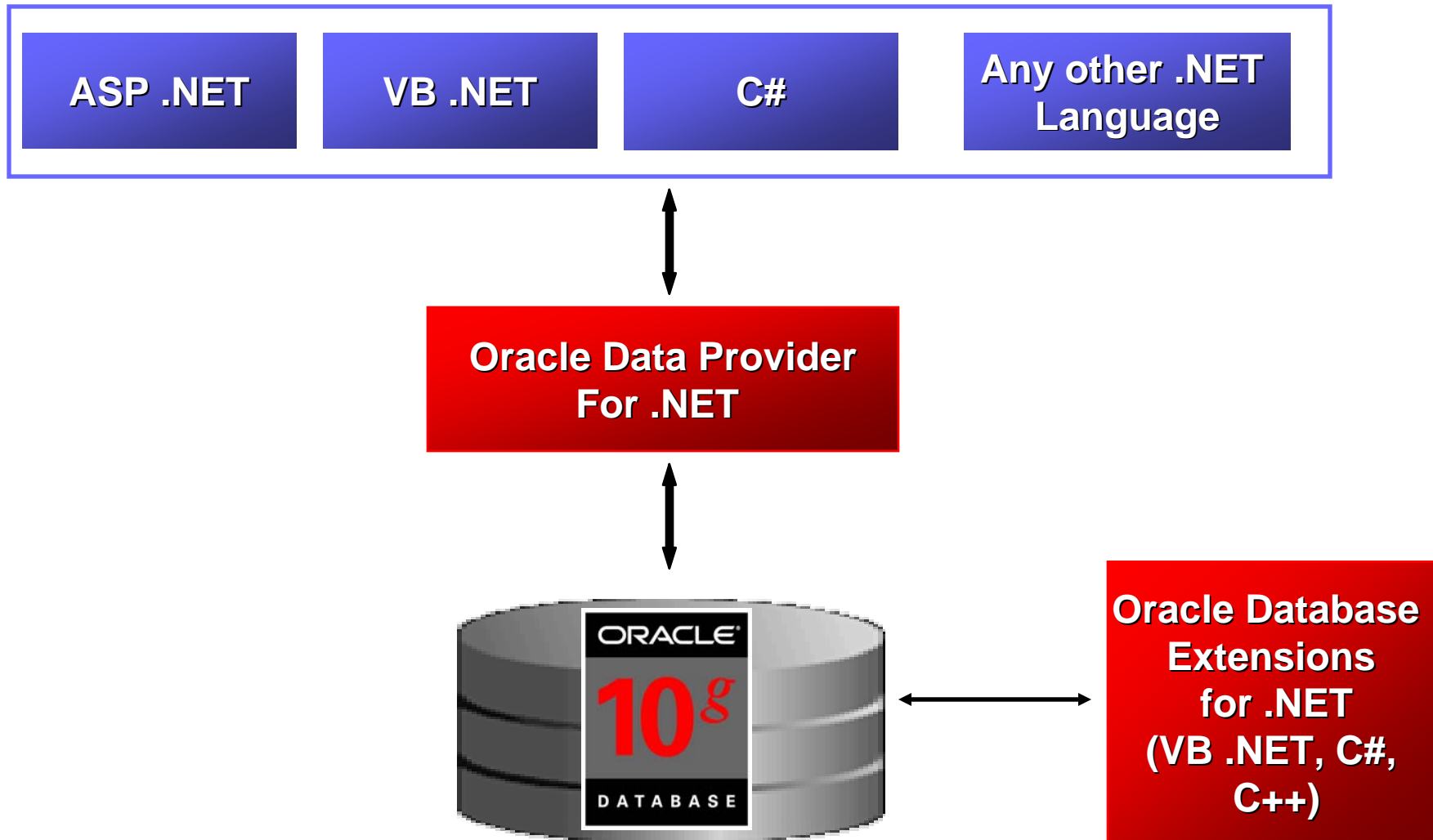
# Oracle Database 10g: Enhanced Developer Productivity

- Optimized data access providers with full support for Oracle
- Server side development in .NET
- Integration with Development Tools (Visual Studio)

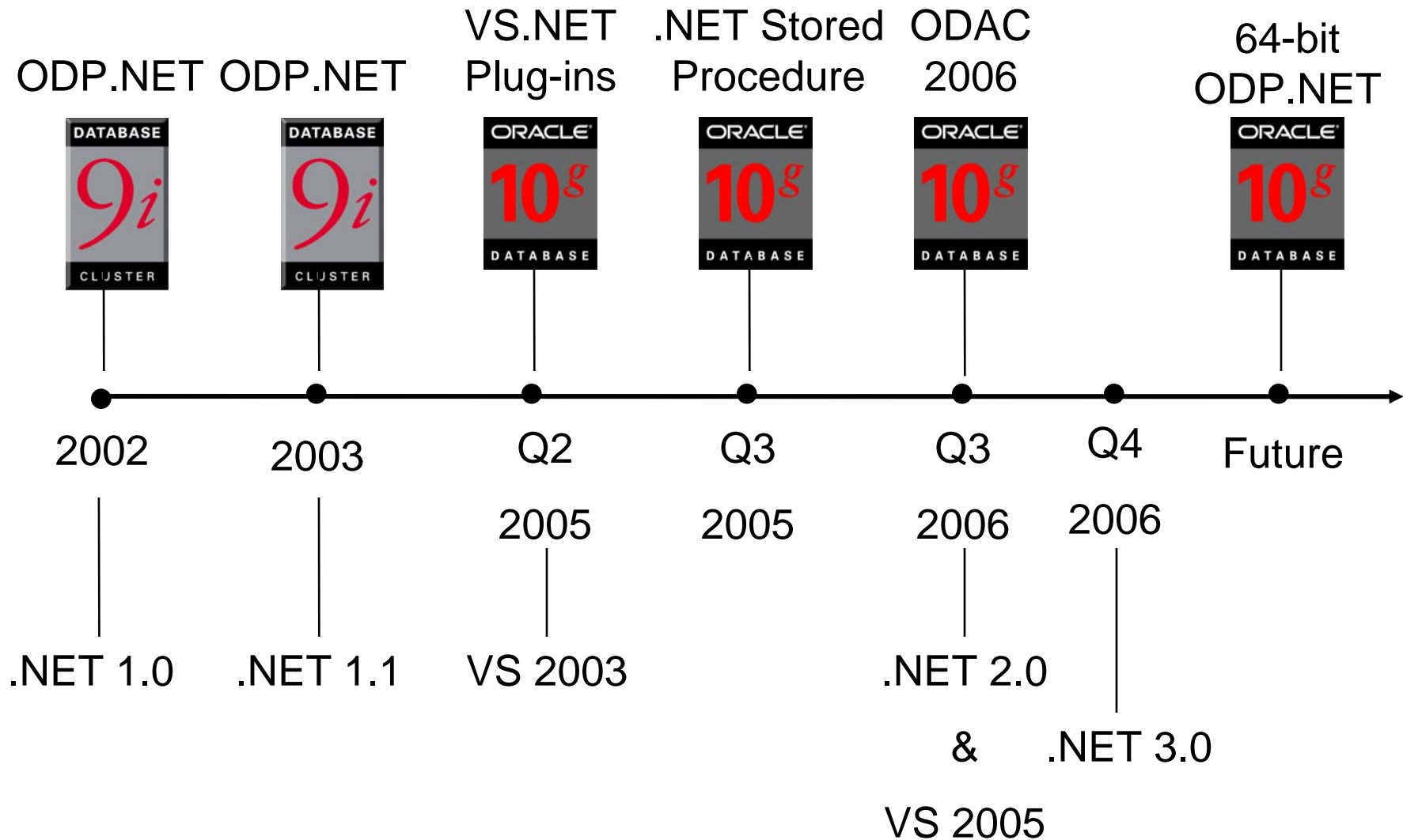
# Windows COM Data Access



# .NET Data Access



# History of Commitment to .NET





# Oracle Data Provider for .NET

- Free
- Easy to learn, even if new to Oracle
  - Compliant with ADO.NET 1.x and higher
  - No learning curve
- Complete access to .NET functionality
- Native access to Oracle 11g, 10g, 9i, 8i data
- Utilize advanced Oracle Database features
  - RAC, performance, security, data types, XML, etc.



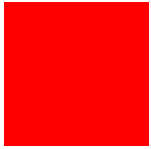
# Oracle Database Extensions for .NET (AKA .NET Stored Procedures)

- Write Microsoft Visual C# or Visual Basic .NET procedures/functions
- Oracle 10g Release 2 on Windows Database Option
- Build assembly in Visual Studio .NET
- Deploy from Visual Studio .NET into Oracle using .NET Deployment Wizard



# Oracle Developer Tools for Visual Studio .NET

- Free
- “Add-in” for Visual Studio 2005 and VS .NET 2003
- Easy to use and intuitive
- Powerful features that enhance productivity
  - Table/view designers
  - Auto .NET code generation
  - PL/SQL editor/debugger
  - Much more
- Stay in Visual Studio for project lifecycle



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D E M O N S T R A T I O N

## Integration with Visual Studio 2005



# Oracle Enterprise Manager Managing Microsoft Products



# Windows Host Management

- Proactively monitor Windows environments
- Analyze performance trends
- Manage many as one
- Ensure compliance through standardization
- Rich visualization and reporting
- Out-of-box Availability and Performance Monitoring
- Comprehensive Configuration management
- Powerful Administration Capabilities

# Host Performance Page

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Policies Jobs Reports

Hosts | Databases | Application Servers | Web Applications | Services | Systems | Groups | All Targets | Collaboration Suites

Host: [stacb08.us.oracle.com](#) Latest Data Collected From Target Jan 11, 2006 2:29:17 PM PST

Home Performance Targets Configuration

View Performance Summary View Data Real Time: Manual Refresh

### CPU Utilization

CPU in I/O Wait (%) ✓ **0.09**  
 Run Queue Length (5-minute average) ✓ **0.16**  
 Additional Metrics [CPU Usage](#)

### Memory Utilization

Memory Page Scan Rate (pages/sec) **0**  
 Swap Utilization (%) ✓ **18.34**  
 Additional Metrics [Paging Activity](#)

### Disk I/O Utilization

Longest Service Time (ms) **36.54**  
 Additional Metrics [Disk Activity](#)

### Processes

Processes [232](#)

Top 10 Processes

View By CPU Utilization (%)

Process ID	Command
25597	/u01/oracle/orahomes/midtier101202_1/bin/emagent
466	oracleinfraDB2 (LOCAL=NO)
23871	/u01/oracle/orahomes/midtier101202_3/bin/emagent
18488	/u01/oracle/orahomes/agent10gR2/bin/emagent
3903	oidldapd connect=infraDB2 control=3877 dispatcher=1 worker=2 debug=33554432 configset=0 instance=1 key=425859401 host=stacb08 trcdimension=511 logchange=TRUE port=389 sport=636
4066	/u01/oracle/orahomes/midtier101202_3/opmn/bin/opmn -d
11147	/u01/oracle/orahomes/midtier101202_1/opmn/bin/opmn -d
18685	/u01/oracle/orahomes/infra101202/bin/emagent
3814	/u01/oracle/orahomes/infra101202/opmn/bin/opmn -d
3909	/u01/oracle/orahomes/infra101202/jdk/bin/java -Xms128m -Xmx1024m -classpath /u01/oracle/orahomes/infra101202/jlib/ldapjclnt10.jar:/u01/oracle/orahomes/infra101202/jdbc/lib/classes12.jar:/u01/oracle/orahomes/infra101202/jdbc/lib/nls_charset11.jar:/u01/oracle/orahomes/oracle.ldap.odip.engine.Server /u01/oracle/orahomes/infra101202 instance=1 configset=0 port=636 sslauth=1 host=stacb08.us.oracle.com

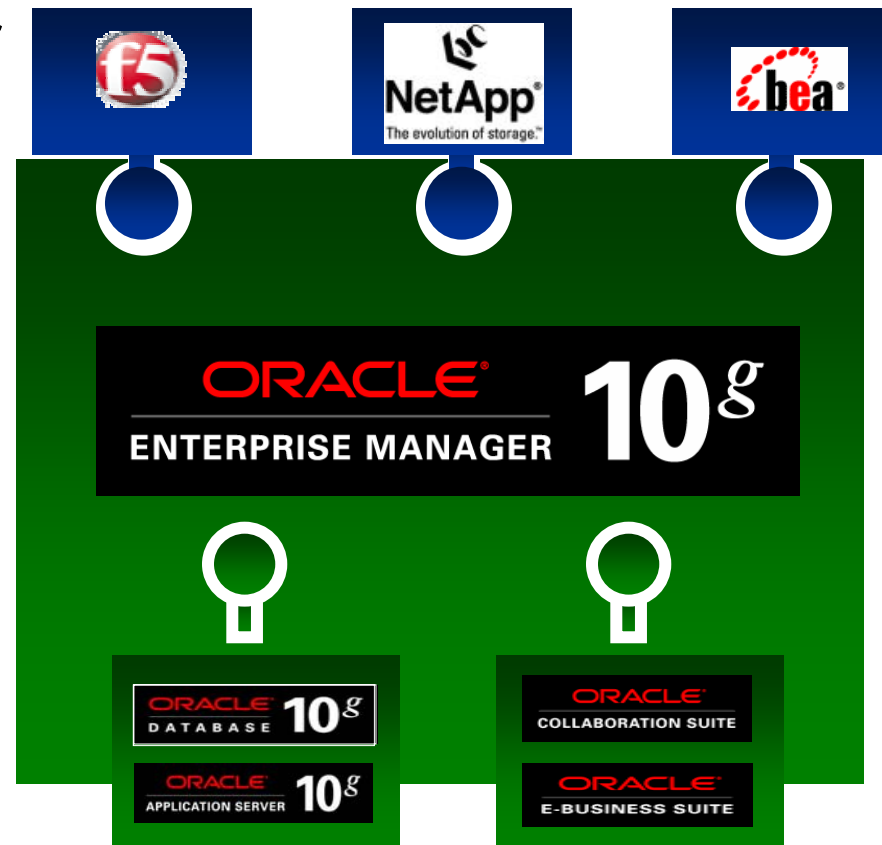
Home Performance Targets Configuration

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# Management Plug-Ins

*Systematic way to extend system coverage*

- Enable Grid Control to monitor and manage new components
- Microsoft plug-ins:
  - SQL Server
  - Active Directory
  - BizTalk Server 2004
  - Commerce Server 2002
  - .NET Framework
  - IIS
  - ISA Server 2004





# Management Connector for Microsoft Operations Manager (MOM)

- Enables selective forwarding of MOM alerts to Enterprise Manager
  - Automatic and manual alert forwarding
- Enterprise Manager is automatically updated when changes in MOM occur
- Flexible modeling options inside Enterprise Manager:
  - Generic MOM Managed Host target
  - Map MOM computers to individual targets in EM

# MOM alerts in Enterprise Manager

ORACLE Enterprise Manager 10g  
Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Hosts Databases Application Servers Web Applications Services Systems Groups All Targets

MOM Managed Host: SMP-MPI2

Page Refreshed Oct 19, 2006 1:47:41 PM PDT Refresh

Home

**General**

Status **Up**  
Availability (%) Not Applicable  
(Last 24 Hours)

**Alerts**

Metric	Severity	Alert Triggered	Message
<a href="#">Microsoft Operations Manager</a>	✘	Oct 17, 2006 9:17:43 PM	The Microsoft Operations Manager performance provider could not access performance counters on computer SMP-MPI2. Microsoft Operations Manager will not monitor performance counters on this computer until they become available. Error details: Access is denied.
<a href="#">MOM Virtual Server Service Discovery</a>	✘	Oct 17, 2006 9:15:42 PM	The Microsoft Operations Manager management pack failed to execute the MOM Virtual Server Service Discovery script successfully. The following error event was returned "Unable to connect to cluster service. The cluster service may not be running. Please investigate ". The following additional error details were returned "".
<a href="#">APPLICATION</a>	⚠	Oct 18, 2006 4:33:44 PM	Remote system without user credentials
<a href="#">SQLServer</a>	⚠	Oct 17, 2006 9:21:43 PM	SQL Server is down

**Related Links**

[Access](#) [Alert History](#) [Connector Setup](#)

Home

# Windows and .NET – 11g





# 11g Windows Vista Support

- 32-bit support
- 64-bit support (for x64 systems)



# Oracle DB 11g - Oracle VSS Writer

- Oracle VSS writer is transparently integrated with Volume Shadow Copy Service (VSS)
  - Most of the writer functionality usable by any requestor
  - Oracle writer is installed automatically with Oracle RDBMS on windows
  - Automatic online point-in-time copy of Oracle database using VSS requestor
- Simple backup and recovery procedure
- Offload backup and reporting to another server using transportable snapshots



# .NET New Feature Themes

- Performance
  - Expose new tuning features
  - Improve performance out of the box
- Manageability
  - Deployment: smaller client and easier packaging
- Ease of Development
  - Integration with Visual Studio 2005
  - Features to improve developer productivity
- Security
- Grid Computing



# Oracle on .NET Release Plan

- Release vehicles (in chronological order)
  - ODP.NET 10.2.0.3 Patch
    - New ODP.NET features
  - Oracle Database 11g
    - New ODP.NET features
  - ODAC 2007
    - New ODT and ODP.NET features



# ODP.NET - Performance

- ODP.NET and Oracle improvements (11g)
  - Improved statement caching
    - Cache ODP.NET parameter contexts
  - Better LOB performance
    - LOB prefetching – fewer roundtrips
  - Client Query Cache
    - Caches results sets either on client or server
    - Accessible across the same process to different users
    - Cache remains consistent via DB Change Notification



# ODP.NET - Performance

- ADO.NET 2.0 Bulk Copy (ODAC 2007)
  - Direct data upload from .NET to Oracle
  - Excellent for large amounts of external data
  - Performance comparable to SQL\*Loader
  - Benefit: Load external data quickly into Oracle database with an easy to use API



# ODP.NET Manageability – Simpler Deployment

- Instant Client (ODAC 2007)
  - Easier to package
    - Use Xcopy method for large scale deployments
    - Use OUI for small deployments
  - Smaller footprint
    - Instant Client (Xcopy)
    - Instant Client (OUI)
  - Faster to deploy
    - Xcopy
  - Exact same ODP.NET functionality



# Ease of Development - ODT

- Native integration with VS 2005
  - “Data Sources” Window - automatic code generation
  - Server Explorer Integration
  - VS Wizards, Designers and Tools (eg Query Designer)
- Source control integration
  - Source Safe, Team System, Subversion, etc
  - Check in files from Oracle Database Project
- SQL Script editor and execution engine
  - Edit and run SQL and PL/SQL scripts
  - Keyword coloring, Integrated online help



# Ease of Development - ODT

- ASP.NET (web) development support
  - Data Sources Window – code generation
- Tuning and Profiling
  - Explain Plan
- Query Builder



# ODP.NET – Ease of Development

- System.Transactions (10.2.0.3)
  - Support for local transactions
    - Set by developer in Windows Registry or connection string
  - Download ODP.NET 10.2.0.3.02 patch from Metalink
    - Not available as part of the 10.2.0.3 DB patchset
  - Benefit: local transactions in System.Transactions
  - Not promotable to distributed transactions (yet)



# ODP.NET – Ease of Development

- Change Notification – Query-based (11g)
  - Finer granularity
    - Distinguishes whether row changed would change client query results
  - Benefit: more accurate notifications
  - Requires Oracle Database 11g server



# ODP.NET – Ease of Development

- User-Defined Types aka ADTs (ODAC 2007)
  - Map .NET custom objects to
    - Collections (Varrays and Nested Tables)
    - Objects
  - ODP.NET OracleRef can represent Oracle REF
  - Optimum for Spatial and other object applications
  - Oracle Developer Tools for Visual Studio .NET
    - Create, view, and modify ADTs and their specifications
    - Automatically generate .NET custom type from existing Oracle Collections and Objects
  - Benefit: Improved productivity with Oracle ADTs
- ODP.NET Performance Counters (ODAC 2007)
  - Real-time monitoring of connections and connection pool



# ASP.NET – Ease of Development

- ASP.NET Providers (ODAC 2007)
  - Pre-built services to store website state into databases
    - Cache Dependency Provider
    - Membership Provider
    - Profile Provider
    - Role Provider
    - Site Map Provider
    - Session State Provider
    - Web Parts Personalization Provider
    - Web Events Provider
  - Low learning curve
    - Based on standard ASP.NET provider APIs and schema



# ODP.NET – Security

- Windows-authenticated connection pooling (ODAC 2007)
  - Each Windows user can have its own pool
    - Identified via their Windows domain/username
  - Set “User Id=/  
”
  - Benefit: Better performance



# ODP.NET – Grid Computing

- Fast Connection Failover enhancement (ODAC 2007)
  - Faster failover for severed connections
    - No waiting for a TCP/IP timeout
- Benefit: Connections are cleaned up much faster
- Works with RAC, Data Guard, and single instance
- Works with 11g and 10.2 DB server



# ODP.NET – Grid Computing

- HA DB Down event (ODAC 2007)
  - Frees all pooled connections to the downed DB
  - ODP.NET now can receive DB down event
  - Set through HA Events = true in connection string
    - Events for service, service member, node, and database down
- Benefit: Failover to surviving Data Guard instance
- Works with Data Guard
- Works with 11g and 10.2 DB server



# How to Move to 11g on Windows?

- Interoperability
  - Existing application with 11g
  - New 11g client application, older version of Oracle
- Migration
  - In many cases, no rebuild of application needed
- Compatibility
  - Existing applications can be used without any changes



# Oracle on Windows Customers

- Thompson Financial
- Lipper
- One Source
- Giant Eagle
- Kroll Factual Data
- WeightWatchers.com
- TRW Safety Systems
- Ohio Savings Bank
- Schlumberger
- New York State Insurance Fund
- SAIC
- US Army Medical Research & Material Command
- First Command Financial Planning
- Tripos
- New Mexico State Highway and Transportation Department

# .NET Customers

“We’re taking the best of both worlds – .NET and Oracle – to give us the best platform possible. ODP.NET is vital to the success of our next-generation application

”

Bill Evjen,  
Technical Architect



“Since we use a Microsoft .NET middle tier, Oracle Data Provider for .NET provided the high throughput, high performance, and bulletproof connectivity to the database

”

Jim Lombardi,  
Principal Database Engineer



“Integrating ODP.NET was easy and straightforward.. we were able to take advantage of... the power and high availability of the grid

”

Jason Lin, Assistant Vice  
President, Application  
Integration and Architecture





# For More Information

## Questions

Christian Shay, Product Manager, Windows and .NET  
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## Windows Server System Center

<http://www.oracle.com/technology/windows>

## .NET Developer Center


<http://www.oracle.com/technology/dotnet>

## Oracle Enterprise Manager 10g Grid Control

<http://www.oracle.com/technology/products/oem>

A large, stylized graphic of the letters 'Q' and 'A' in a dark grey, serif font. The 'Q' is positioned above the 'A', and they are intertwined. The 'Q' has a thick, rounded top and a small tail at the bottom. The 'A' is a classic serif font with a thick stroke. The letters are rendered in a dark grey color.

**QUESTIONS**  
**ANSWERS**



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