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# Upravljanje Data centrom kroz Oracle Enterprise Manager – Grid Control

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Jednostavno drugačiji



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# Agenda

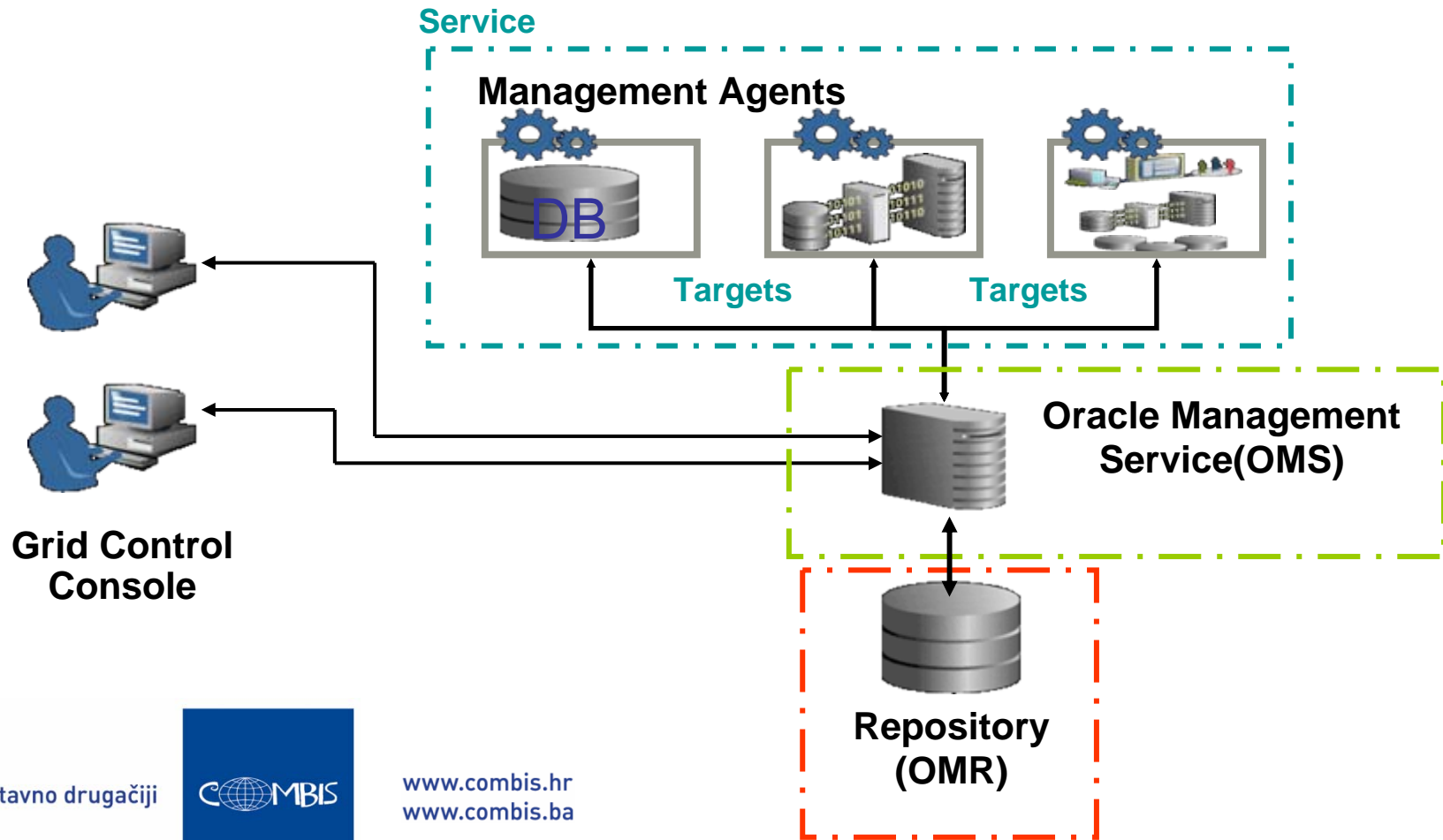
1. Zašto nam treba alat za nadzor i upravljanje data centrom
2. Oracle odgovor na potrebe nadzora i upravljanja data centrom
3. Osnovne karakteristike Oracle Enterprise Manager (OEM) – Grid Control
4. Koju konfiguraciju odabrati
5. Osnovni paketi i njihova implementacija
6. T-Mobile – zašto OEM 10g Grid Control
7. Database Control vs. Grid Control
8. Karakteristike OMS i OMR
9. Agenti – nadzirani objekti (Targets)
10. Upravljačka konzola

# Potrebe za nadzorom i upravljanjem data centrom

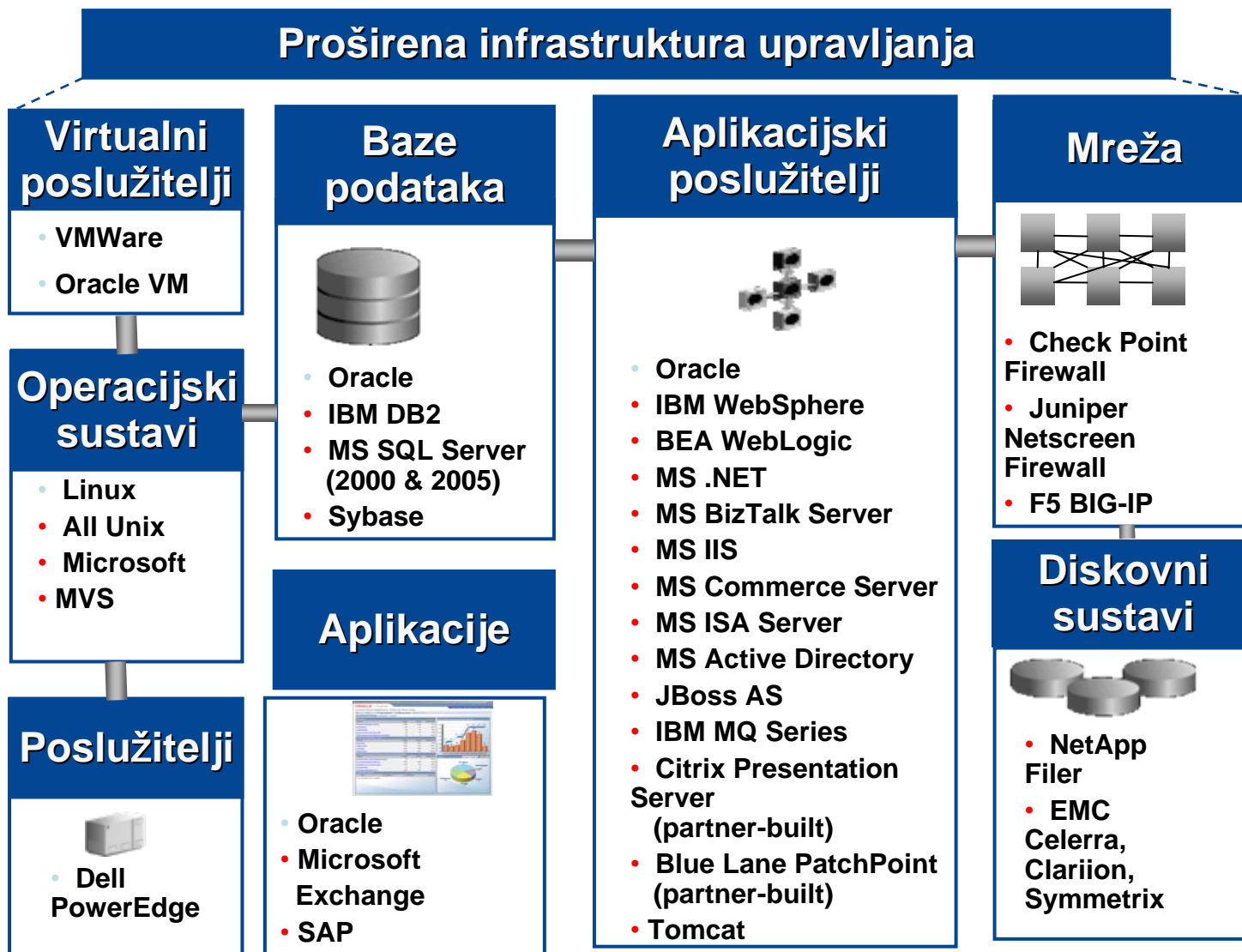
## Osnovne karakteristike Data centra:

- velik broj poslužitelja različitih namjena (aplikacijski, bazni, firewall, mail, domain controller, LDAP ...)
- heterogene okoline (različiti HW, OS, baze podataka, aplikacije)
- velik broj visoko specijaliziranih IT stručnjaka
- kompleksni nadzor i upravljanje

# Oracle odgovor – OEM Grid Control 10g



# Osnovne karakteristike



# Osnovne karakteristike

http://tdsgcm01.oracleleads.com - Oracle Enterprise Manager (GCDEMO) - Databases - Microsoft Internet Explorer

File Edit View Favorites Tools Help

ORACLE Enterprise Manager 10g  
Grid Control

Hosts | **Databases** | Application Servers | Oracle Applications | Siebel | PeopleSoft | Web Applications | Services | Systems | Groups | Production Databases | All

Databases Databases

Page Refreshed 27-Mar-2008 08:49:22 CDT

Search  Go [Advanced Search](#)

Remove Configure Add

| Select                   | Name                                   | Type                 | Status | Version    | Host CPU Utilization (%) | Alerts | Policy Violations | Database CPU Time (%) | Instance CPU (%) | Sorts to Disk (per second) | CPU Usage (per transaction) | Compliance Score (%) |
|--------------------------|--|----------------------|--------|------------|--------------------------|--------|-------------------|-----------------------|------------------|----------------------------|-----------------------------|----------------------|
| <input type="checkbox"/> | DB2                                    | IBM DB2 Database     |        |            |                          | 3 0    | 0 0 0             |                       |                  |                            |                             |                      |
| <input type="checkbox"/> | FINDEMO_ORACLELEADS.COM                | Database Instance    |        | 10.2.0.1.0 | 13.09                    | 0 12   | 12 24 3           | 89.57                 | .39              | 0                          | 2.28                        |                      |
| <input type="checkbox"/> | IDMINFRA_tdsadminoid02.oracleleads.com | Database Instance    |        | 10.1.0.5.0 | 18                       | 0 2    | 10 16 3           | 45                    | 2                | 0                          | 19                          |                      |
| <input type="checkbox"/> | SQLServer_tdsqwin02                    | Microsoft SQL Server |        |            |                          | 10 6   | 0 0 0             |                       |                  |                            |                             |                      |
| <input type="checkbox"/> | VIS                                    | Database Instance    |        | 9.2.0.6.0  |                          | 1 8    | 12 11 20          |                       | 2.92             | 0                          |                             |                      |
| <input type="checkbox"/> | VIS12.oracleleads.com                  | Database Instance    |        | 10.2.0.2.0 | 33.5                     | 0 6    | 23 28 27          | 93.66                 | 3.5              | 0                          | .83                         |                      |
| <input type="checkbox"/> | dev.oracleleads.com                    | Database Instance    |        | 10.1.0.4.2 |                          | 0 0    | 10 18 4           | 100                   | 0                | 0                          | 1                           |                      |
| <input type="checkbox"/> | emrep.oracleleads.com                  | Database Instance    |        | 10.2.0.3.0 | 2.6                      | 0 6    | 11 10 3           | 94.46                 | 2.2              | 0                          | 6.4                         |                      |
| <input type="checkbox"/> | la2036                                 | Database Instance    |        | 10.2.0.2.0 | 4.59                     | 0 13   | 28 27 26          | 100                   | .35              | 0                          | .35                         |                      |
| <input type="checkbox"/> | mssql_tdsintsieb1                      | Microsoft SQL Server |        |            |                          | 14 5   | 0 0 0             |                       |                  |                            |                             |                      |
| <input type="checkbox"/> | ora10g.oracle.com                      | Database Instance    |        | 10.1.0.3.0 |                          |        | 17 15 5           |                       |                  |                            |                             |                      |
| <input type="checkbox"/> | ora10gR2.oracleleads.com               | Database Instance    |        | 10.2.0.3.0 | 82.65                    | 2 2    | 12 17 3           | 16.38                 | 49               | 0                          | 27.07                       |                      |
| <input type="checkbox"/> | ora10gR2RCA.oracleleads.com            | Database Instance    |        | 10.2.0.1.0 |                          |        | 1 5 2             |                       |                  |                            |                             |                      |
| <input type="checkbox"/> | ora11g.tdsgcdb11g01.oracleleads.com    | Database Instance    |        | 11.1.0.4.0 | 12.25                    | 0 45   | 9 14 2            | .13                   | .2               | 0                          | 8.05                        |                      |
| <input type="checkbox"/> | ora9i.oracle.com                       | Database Instance    |        | 9.2.0.6.0  |                          |        | 12 5 0            |                       |                  |                            |                             |                      |
| <input type="checkbox"/> | orcl.tdssoaob1.oracleleads.com         | Database Instance    |        | 10.2.0.2.0 | 22.24                    | 0 3    | 16 17 4           | 86.92                 | 1.2              | 0                          | 14.14                       |                      |
| <input type="checkbox"/> | orcl.tdssoaob2.oracleleads.com         | Database Instance    |        | 10.2.0.2.0 | 46.07                    | 0 4    | 16 17 4           | 85.15                 | 1.5              | 0                          | 14.41                       |                      |
| <input type="checkbox"/> | orcl.tdssoaob3.oracleleads.com         | Database Instance    |        | 10.2.0.2.0 | 44.99                    | 1 4    | 16 17 4           | 86.93                 | 1.5              | 0                          | 19.99                       |                      |
| <input type="checkbox"/> | orcl.tdssoaob4.oracleleads.com         | Database Instance    |        | 10.2.0.2.0 | 25.41                    | 0 1    | 16 17 4           | 81.23                 | .79              | 0                          | 12.13                       |                      |
| <input type="checkbox"/> | pcdb.oracleleads.com                   | Database Instance    |        | 10.1.0.4.2 | 13                       | 0 1    | 10 19 4           | 94                    | 2                | 0                          | 13                          |                      |
| <input type="checkbox"/> | prod                                   | Cluster Database     |        | 10.2.0.1.0 |                          |        | 22 23 5           |                       |                  |                            |                             |                      |
| <input type="checkbox"/> | rca10g                                 | Database Instance    |        | 10.2.0.1.0 | 1.11                     | 0 1    | 12 11 3           | 98.32                 | .02              | 0                          | 1.11                        |                      |

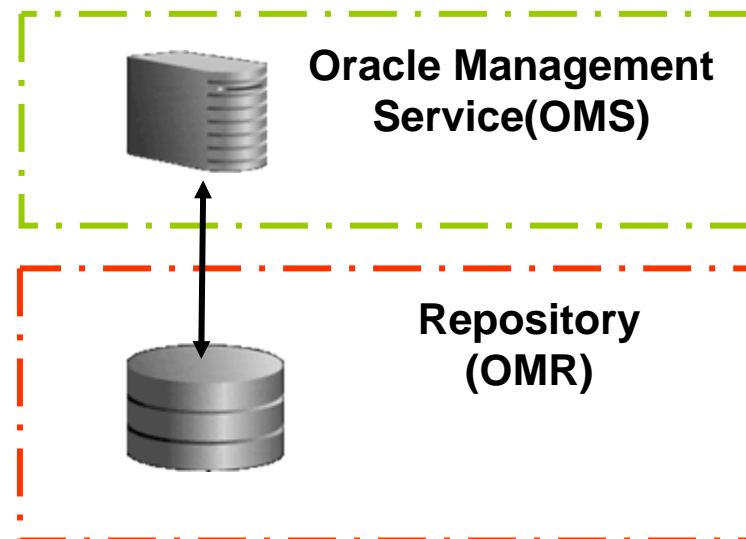
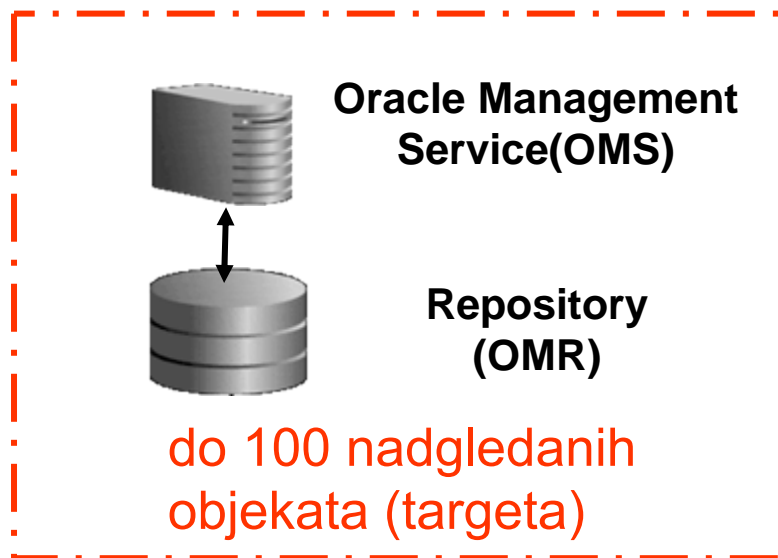
Remove Configure Add

TIP For an explanation of the icons and symbols used in this page, see the [Icon Key](#).

http://tdsgcm01.oracleleads.com/em/console/targetsScbType=Databases

Start 5 Internet Exp... C:\PRESALES\PR... Control Panel Microsoft PowerP... Windows Task Ma... HE 14:48

# Koju konfiguraciju odabrati





# Koju konfiguraciju odabrati

## Management Agents



Targets



Targets



- konfiguracija (`emd.properties`)



**Oracle Management Service (OMS)**

- siguran, lozinka, https
- otvoren, nema lozinke, http



**Repository (OMR)**

- postojeća baza, konfiguracija parametara
- nova baza, u sklopu instalacije OEM-a

# 20 upravljačkih paketa i više od 20 različitih plug-inova

## Osnovni paketi:

1. Database management packs
2. Middleware management packs
3. Stand Alone management packs
4. Application management packs

## Plug-inovi:

1. za ne-Oracle baze podataka
2. za ne-Oracle aplikcijske poslužitelje
3. poslužitelji
4. diskovni sustavi (storage)
5. mreža

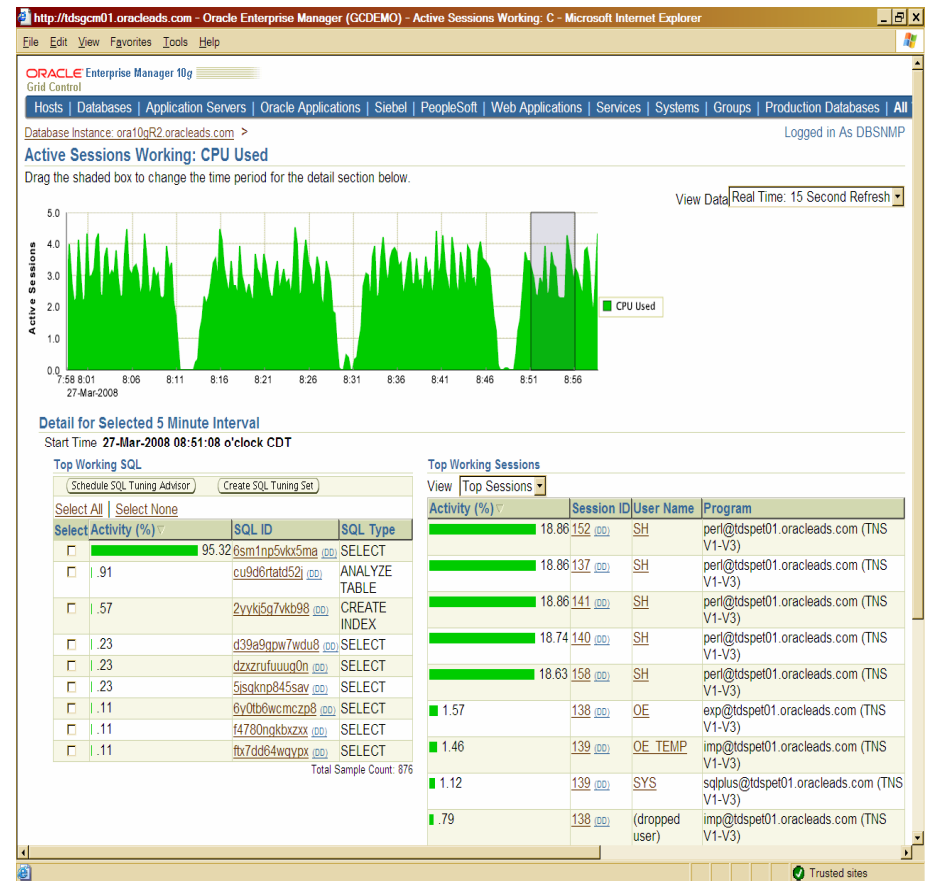
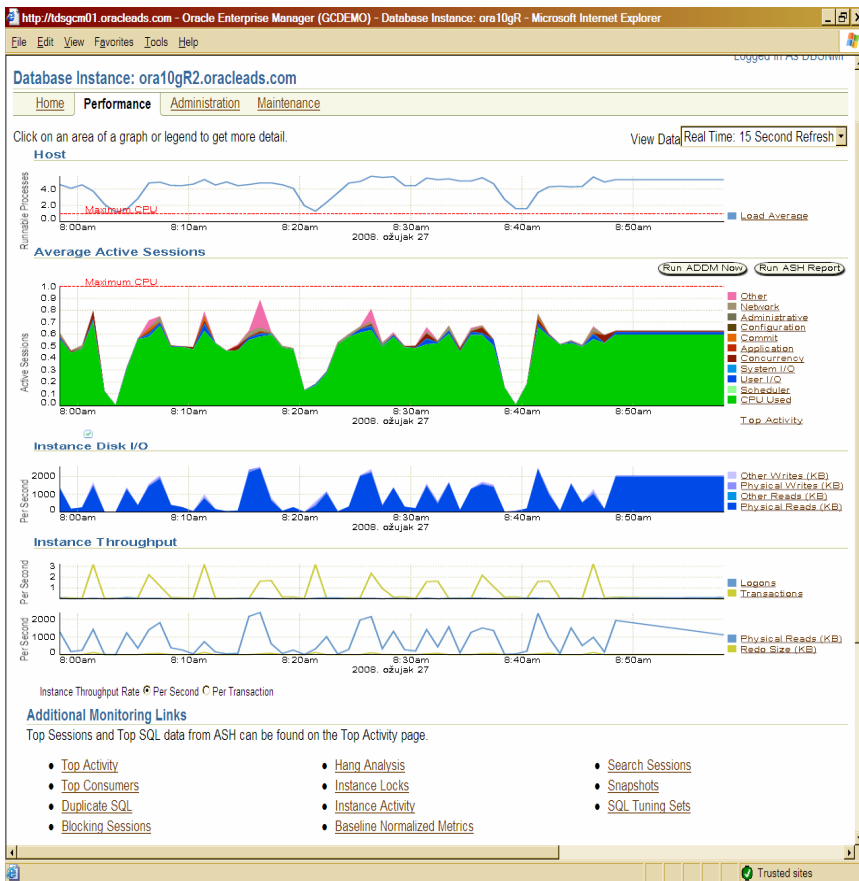
# Paketi za upravljanje bazama

1. Diagnostics Pack
2. Tuning Pack
3. Configuration Management Pack
4. Change Management Pack
5. Data Masking Pack
6. Provisioning Pack

# Diagnostics Pack

- povijesno praćenje i nadzor performansi (baze podataka, RAC, poslužitelji i klasteri)
- ADDM (Automated Database Diagnostic Monitor)
- AWR (Automatic Workload Repository)
- Event/Alert obaviješćivanje: metode obaviješćivanja, pravila i vremenski raspored
- Event/Alert povijest/metrika (baze podataka, RAC, poslužitelji i klasteri)
- korisničko definirane metrike
- Blackouts (planirani prekidi u radu)
- predefinirani obrasci za nadzor
- korektivne akcije
- podesivi pragovi metrika
- izvješća dijagnostike (Diagnostic), performansi (Performance) i događaja (Events)
- baza podataka i repozitorij (tablice, pogledi, api) koje pohranjuju i prezentiraju gore navedene podatke

# Disagnostics Pack

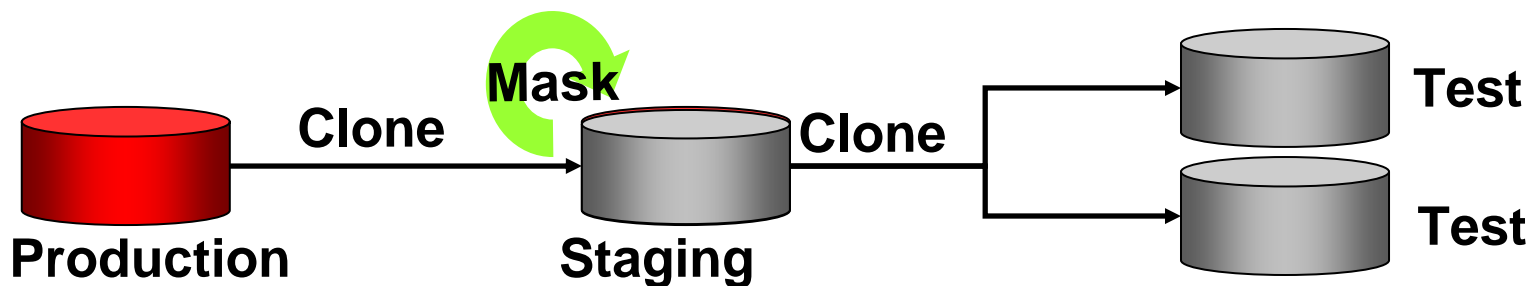


# Data Masking Pack

| Prezime | Broj kartice | Stanje |
|---------|--------------|--------|
| IVIĆ    | 203-33-3234  | 40,000 |
| PERIĆ   | 323-22-2943  | 60,000 |
| ŠIMIĆ   | 989-22-2403  | 80,000 |
| TOMIĆ   | 093-44-3823  | 45,000 |



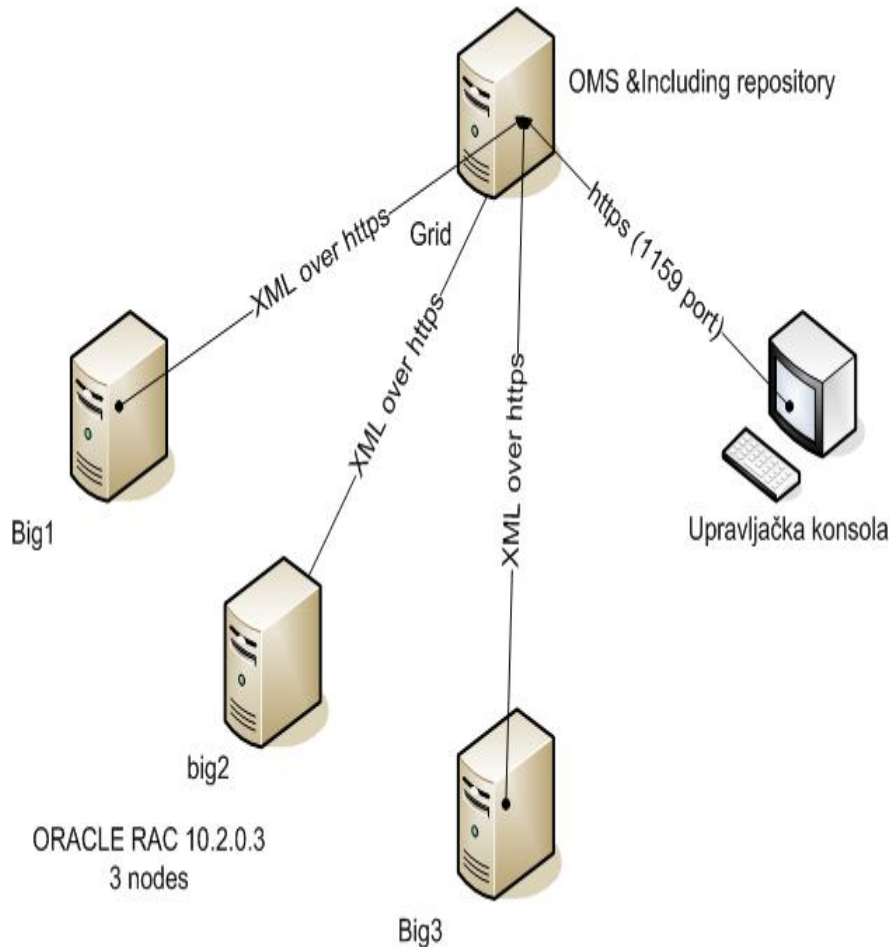
| Prezime    | Broj kartice | Stanje |
|------------|--------------|--------|
| ANSKEKSL   | 111-23-1111  | 40,000 |
| BGKZRKZJKP | 111-34-1345  | 60,000 |
| KLPLJBAHA  | 111-97-2749  | 80,000 |
| FJETMDWJSK | 111-49-3849  | 45,000 |



# T-Mobile – zašto OEM 10g GC

- konsolidirana platforma:
  - a. klaster sa tri noda
  - b. EMC Clariion Storage
  - c. Oracle 10g RAC
  - d. Oracle ASM
  - e. 4 baze podataka
- problem nadzora
- troškovi ograničeni
- vrijeme implementacije (out-of-the-box rješenje)

# T-Mobile – zašto OEM 10g GC



## Nadzirani objekti (targets)

- 3 poslužitelja
- 4 baze podataka
- 12 instance (baze)
- 12 listenera (baze)
- 3 instance (ASM)
- 3 listenera (ASM)
- 3 agenta
- diskovni prostor (storage)



# DC vs GC

## Database control

- uključen samo nadzor nad baznim instancama (Oracle RDBMS verzije 8i, 9i i 10g)
- nema centralnog repozitorija
- nema podrške za Plug-inove

## Grid Control

- omogućuje centralni nadzor i upravljanje heterogenim okolinama
- proširene funkcionalnosti OEM 10g Database Control produkta
- dozvoljava partnerima ili trećim stranama da proširuju Grid Control mogućnosti putem otvorene mreže
- besplatno se isporučuje uz Enterprise Edition baze
- licenciranje je potrebno za određene “premium” pakete i funkcionalnosti

# Karakteristike OMS i OMR

- Management Server (OMS): poslužitelj na srednjem sloju koji osigurava komunikaciju sa agentima i upravljačkom konzolom
  - konfiguracijska datoteka:
    - emoms.properties
  - dobivanje statusa OMS-a:
    - emctl status oms
- preduvjet za instalaciju OMS-a je postojanje baze koja će sadržavati repozitorij:
  - postojeća baza
  - nova baza (dio OMS instalacije)
- OMS i repozitorij se mogu nalaziti na istom poslužitelju ili na dva odvojena poslužitelja, zavisno o broju nadziranih objekata

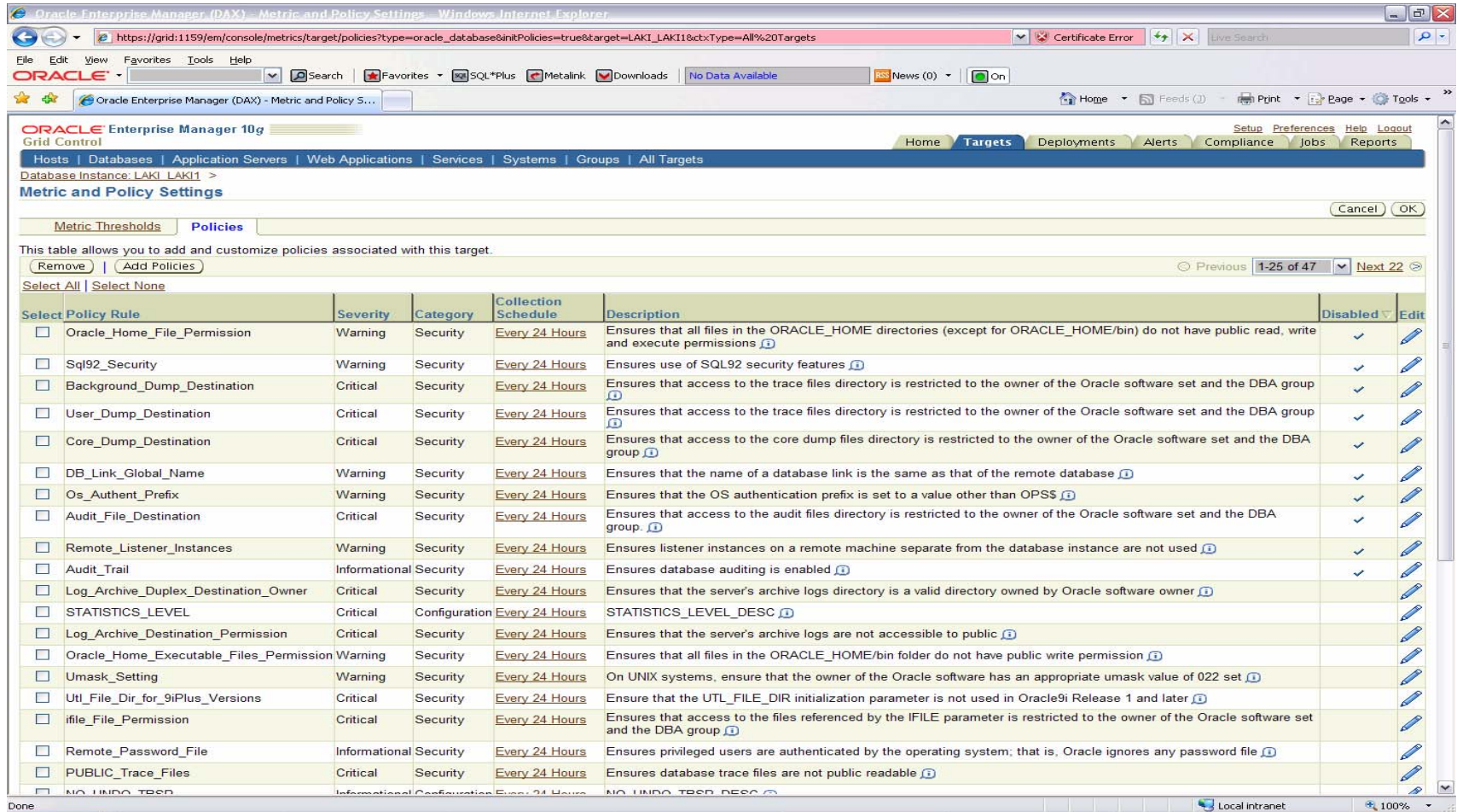
# Agenti – nadzirani objekti

- agenti su generički, a potreban je jedan agent na svakom nadgledanom poslužitelju
- instalacija agenata može se raditi lokalno ili s udaljene lokacije koristeći OEM konzolu (Agent Deployment)
- agenti pohranjuju podatke o nadziranim objektima (targets) u obliku XML datoteke koja se zatim prosljeđuje na OMS putem HTTP ili HTTPS protokola, te konačno se ti podaci pohranjuju u repozitorij (OMR)
- konfiguracijska datoteka:
  - `emd.properties`
- naredba za dobivanje statusa agenta:
  - `emctl status agent`

# Agenti – status agenta

```
•[oracle@big3 ~]$ /u06/app/oracle/product/10/agent10g/big3/bin/emctl status agent
•Oracle Enterprise Manager 10g Release 3 Grid Control 10.2.0.3.0.
•Copyright (c) 1996, 2007 Oracle Corporation. All rights reserved.
•-----
•Agent Version      : 10.2.0.3.0
•OMS Version        : 10.2.0.4.0
•Protocol Version   : 10.2.0.2.0
•Agent Home         : /u06/app/oracle/product/10/agent10g/big3
•Agent binaries     : /u06/app/oracle/product/10/agent10g
•Agent Process ID   : 9517
•Parent Process ID  : 9389
•Agent URL          : https://big3:3872/emd/main
•Repository URL     : https://grid:1159/em/upload
•Started at        : 2008-05-02 07:50:13
•Started by user    : oracle
•Last Reload       : 2008-05-02 10:34:45
•Last successful upload                : 2008-05-05 22:56:44
•Total Megabytes of XML files uploaded so far : 493.96
•Number of XML files pending upload      : 0
•Size of XML files pending upload(MB)    : 0.00
•Available disk space on upload filesystem : 49.44%
•Last attempted heartbeat to OMS        : 2008-05-05 22:57:03
•Last successful heartbeat to OMS       : 2008-05-05 22:55:59
•-----
•Agent is Running and Ready
```

# Agenti – konfiguracija metrika

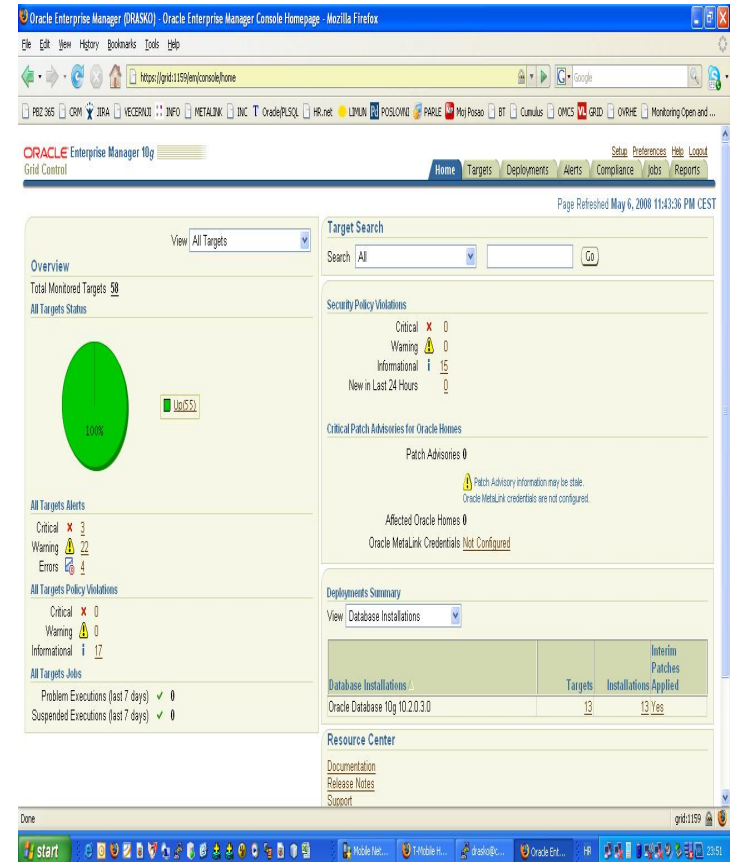


The screenshot shows the Oracle Enterprise Manager 10g interface for configuring metrics and policies. The page title is "Metric and Policy Settings" for the target "LAK1\_LAK11". It features a table of policy rules with columns for "Policy Rule", "Severity", "Category", "Collection Schedule", "Description", "Disabled", and "Edit".

| Select                   | Policy Rule                             | Severity      | Category      | Collection Schedule | Description  | Disabled                            | Edit |
|--------------------------|---|---------------|---------------|---------------------|--|-------------------------------------|------|
| <input type="checkbox"/> | Oracle_Home_File_Permission             | Warning       | Security      | Every 24 Hours      | Ensures that all files in the ORACLE_HOME directories (except for ORACLE_HOME/bin) do not have public read, write and execute permissions <a href="#">[D]</a>  | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Sql92_Security                          | Warning       | Security      | Every 24 Hours      | Ensures use of SQL92 security features <a href="#">[D]</a>   | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Background_Dump_Destination             | Critical      | Security      | Every 24 Hours      | Ensures that access to the trace files directory is restricted to the owner of the Oracle software set and the DBA group <a href="#">[D]</a>                   | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | User_Dump_Destination                   | Critical      | Security      | Every 24 Hours      | Ensures that access to the trace files directory is restricted to the owner of the Oracle software set and the DBA group <a href="#">[D]</a>                   | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Core_Dump_Destination                   | Critical      | Security      | Every 24 Hours      | Ensures that access to the core dump files directory is restricted to the owner of the Oracle software set and the DBA group <a href="#">[D]</a>               | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | DB_Link_Global_Name                     | Warning       | Security      | Every 24 Hours      | Ensures that the name of a database link is the same as that of the remote database <a href="#">[D]</a>  | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Os_Authent_Prefix                       | Warning       | Security      | Every 24 Hours      | Ensures that the OS authentication prefix is set to a value other than OPSS <a href="#">[D]</a>  | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Audit_File_Destination                  | Critical      | Security      | Every 24 Hours      | Ensures that access to the audit files directory is restricted to the owner of the Oracle software set and the DBA group <a href="#">[D]</a>                   | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Remote_Listener_Instances               | Warning       | Security      | Every 24 Hours      | Ensures listener instances on a remote machine separate from the database instance are not used <a href="#">[D]</a>  | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Audit_Trail                             | Informational | Security      | Every 24 Hours      | Ensures database auditing is enabled <a href="#">[D]</a>   | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Log_Archive_Duplex_Destination_Owner    | Critical      | Security      | Every 24 Hours      | Ensures that the server's archive logs directory is a valid directory owned by Oracle software owner <a href="#">[D]</a>                                       | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | STATISTICS_LEVEL                        | Critical      | Configuration | Every 24 Hours      | STATISTICS_LEVEL_DESC <a href="#">[D]</a>  | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Log_Archive_Destination_Permission      | Critical      | Security      | Every 24 Hours      | Ensures that the server's archive logs are not accessible to public <a href="#">[D]</a>  | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Oracle_Home_Executable_Files_Permission | Warning       | Security      | Every 24 Hours      | Ensures that all files in the ORACLE_HOME/bin folder do not have public write permission <a href="#">[D]</a>   | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Umask_Setting                           | Warning       | Security      | Every 24 Hours      | On UNIX systems, ensure that the owner of the Oracle software has an appropriate umask value of 022 set <a href="#">[D]</a>                                    | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Utl_File_Dir_for_9iPlus_Versions        | Critical      | Security      | Every 24 Hours      | Ensure that the UTL_FILE_DIR initialization parameter is not used in Oracle9i Release 1 and later <a href="#">[D]</a>  | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | ifile_File_Permission                   | Critical      | Security      | Every 24 Hours      | Ensures that access to the files referenced by the IFILE parameter is restricted to the owner of the Oracle software set and the DBA group <a href="#">[D]</a> | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | Remote_Password_File                    | Informational | Security      | Every 24 Hours      | Ensures privileged users are authenticated by the operating system; that is, Oracle ignores any password file <a href="#">[D]</a>                              | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | PUBLIC_Trace_Files                      | Critical      | Security      | Every 24 Hours      | Ensures database trace files are not public readable <a href="#">[D]</a>   | <input checked="" type="checkbox"/> |      |
| <input type="checkbox"/> | NO_UNDO_TSPD                            | Informational | Configuration | Every 24 Hours      | NO_UNDO_TSPD_DESC <a href="#">[D]</a>  | <input checked="" type="checkbox"/> |      |

# Upravljačka konzola

- web aplikacija
- jedinstveni pristup upravljanju svih nazdiranim objektima (targets):
  - a. poslužitelji
  - b. baze podataka
  - c. listeneri
  - d. asm instance
  - e. diskovni prostor
- raspodijela odgovornosti između administratora (superadministrator, read-only, target admin ...)



The screenshot displays the Oracle Enterprise Manager 10g console interface. The main area shows a green circle representing 100% target health. On the left, there are sections for 'All Targets Alerts' and 'All Targets Policy Violations'. The 'All Targets Alerts' section shows 3 Critical, 22 Warning, and 4 Error alerts. The 'All Targets Policy Violations' section shows 0 Critical, 0 Warning, and 17 Informational violations. The 'All Targets Jobs' section shows 0 Problem Executions and 0 Suspended Executions. On the right, there is a 'Target Search' box and a 'Security Policy Violations' section showing 0 Critical, 0 Warning, and 15 Informational violations. Below that, there is a 'Critical Patch Advisories for Oracle Homes' section showing 0 advisories. The 'Deployments Summary' section shows a table with columns for Database Installations, Targets, and Interim Patches. The 'Resource Center' section includes links for Documentation, Release Notes, and Support.

| Database Installations         | Targets | Interim Patches |
|--------------------------------|---------|-----------------|
| Oracle Database 10g 10.2.0.3.0 | 13      | 13 Yes          |

# Upravljačka konzola



Oracle Enterprise Manager (DRASKO) - Oracle Enterprise Manager Console Homepage - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://grid:1159/em/console/home

PBZ 365 CRM JIRA VECERNJI INFO METALINK INC Oracle/PLSQL HR.net LIMUN POSLOVNI PARLE Moj Posao BT Cumulus OMCs GRID OVRHE Monitoring Open and ...

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

Setup Preferences Help Logout

Page Refreshed May 6, 2008 11:43:36 PM CEST

### Overview

View: All Targets

Total Monitored Targets **58**

#### All Targets Status

100% Up(55)

#### All Targets Alerts

|          |    |
|----------|----|
| Critical | 3  |
| Warning  | 22 |
| Errors   | 4  |

#### All Targets Policy Violations

|               |    |
|---------------|----|
| Critical      | 0  |
| Warning       | 0  |
| Informational | 17 |

#### All Targets Jobs

|                                    |   |
|------------------------------------|---|
| Problem Executions (last 7 days)   | 0 |
| Suspended Executions (last 7 days) | 0 |

### Target Search

Search: All

#### Security Policy Violations

|                      |    |
|----------------------|----|
| Critical             | 0  |
| Warning              | 0  |
| Informational        | 15 |
| New in Last 24 Hours | 0  |

#### Critical Patch Advisories for Oracle Homes

Patch Advisories: 0

Affected Oracle Homes: 0

Oracle MetaLink Credentials: Not Configured

#### Deployments Summary

View: Database Installations

| Database Installations         | Targets | Installations | Interim Patches Applied |
|--------------------------------|---------|---------------|-------------------------|
| Oracle Database 10g 10.2.0.3.0 | 13      | 13            | Yes                     |

#### Resource Center

- Documentation
- Release Notes
- Support

Done

grid:1159

start Mobile Net... T-Mobile H... drasko@c... Oracle Ent... HR 23:51

Jednostavno drugačiji



www.combis.hr  
www.combis.ba

# Upravljačka konzola



Oracle Enterprise Manager (DRASKO) - Host: big1 - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://grid:1159/em/console/monitoring/hostTargetList?ctxType=Hosts&selTab=3&target=big1&type=host

PBZ 365 CRM JIRA VECERNJI INFO METALINK INC Oracle/PLSQL HR.net LIMUN POSLOVNI PARLE Moj Posao BT Cumulus OMCS GRID OVRHE Monitoring Open and ...

ORACLE Enterprise Manager 10g Grid Control

Home Targets Deployments Alerts Compliance Jobs Reports

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

Host: big1

Page Refreshed May 6, 2008 11:48:59 PM CEST

Home Performance Administration **Targets** Configuration

(Remove)

Select All | Select None

| Select                   | Name                     | Oracle Home                         | Availability | Alerts | Policy Violations | Compliance Score (%) | Type                         | Last Load Time          |
|--------------------------|--------------------------|-------------------------------------|--------------|--------|-------------------|----------------------|------------------------------|-------------------------|
| <input type="checkbox"/> | big1:3872                | /u06/app/oracle/product/10/agent10g |              | 0 0    | 0 0 0             |                      | Agent                        | May 6, 2008 11:39:21 PM |
| <input type="checkbox"/> | +ASM1_big1               | /u01/app/oracle/product/10/asm      |              | 0 0    | 0 0 0             |                      | Automatic Storage Management | May 6, 2008 11:54:04 PM |
| <input type="checkbox"/> | CDR_CDR1                 | /u03/app/oracle/product/10/db       |              | 0 1    | 0 0 1             | 100                  | Database Instance            | May 6, 2008 11:54:10 PM |
| <input type="checkbox"/> | CUPID_CUPID1             | /u03/app/oracle/product/10/db       |              | 0 1    | 0 0 1             | 100                  | Database Instance            | May 6, 2008 11:54:01 PM |
| <input type="checkbox"/> | LAKI_LAKI1               | /u03/app/oracle/product/10/db       |              | 0 1    | 0 0 1             | 100                  | Database Instance            | May 6, 2008 11:54:00 PM |
| <input type="checkbox"/> | SMS_SMS1                 | /u03/app/oracle/product/10/db       |              | 0 1    | 0 0 1             | 100                  | Database Instance            | May 6, 2008 11:52:31 PM |
| <input type="checkbox"/> | LISTENER BIG1_big1       | /u01/app/oracle/product/10/asm      |              | 0 0    | 0 0 0             | 100                  | Listener                     | May 6, 2008 11:54:09 PM |
| <input type="checkbox"/> | LISTENER CDR BIG1_big1   | /u03/app/oracle/product/10/db       |              | 0 0    | 0 0 0             | 100                  | Listener                     | May 6, 2008 11:54:10 PM |
| <input type="checkbox"/> | LISTENER CUPID BIG1_big1 | /u03/app/oracle/product/10/db       |              | 0 0    | 0 0 0             | 100                  | Listener                     | May 6, 2008 11:54:11 PM |
| <input type="checkbox"/> | LISTENER LAKI BIG1_big1  | /u03/app/oracle/product/10/db       |              | 0 0    | 0 0 0             | 100                  | Listener                     | May 6, 2008 11:54:12 PM |
| <input type="checkbox"/> | LISTENER SMS BIG1_big1   | /u03/app/oracle/product/10/db       |              | 0 0    | 0 0 0             | 100                  | Listener                     | May 6, 2008 11:54:13 PM |

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|----------------------------------|-------|-------------------|--------|--------|-------------------|----------------------|------------|---------------|---------------|-----------------|------------------|
| <input checked="" type="radio"/> | CDR   | Cluster Database  |        | 0 5    | 0 0 4             | 100                  | 10.2.0.3.0 | n/a           | n/a           | n/a             | n/a              |
| <input type="radio"/>            | CUPID | Cluster Database  |        | 0 4    | 0 0 3             | 100                  | 10.2.0.3.0 | n/a           | n/a           | n/a             | n/a              |
| <input type="radio"/>            | LAKI  | Cluster Database  |        | 0 4    | 0 0 3             | 100                  | 10.2.0.3.0 | n/a           | n/a           | n/a             | n/a              |
| <input type="radio"/>            | RID   | Database Instance |        | 0 3    | 0 0 4             | 100                  | 10.2.0.3.0 | .01           | 0             | .01             | .1               |
| <input type="radio"/>            | SMS   | Cluster Database  |        | 0 5    | 0 0 3             | 100                  | 10.2.0.3.0 | n/a           | n/a           | n/a             | n/a              |

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