

ORACLE®

Not Your Father's Enterprise Manager

Enterprise Manager 12c, Cool and New Features

Kellyn Pot'Vin
Consulting Member of Enterprise Manager Technical Team
Strategic Customer Program

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Program Agenda

- 1 A Little History Lesson
- 2 Framework
- 3 Middleware
- 4 Database
- 5 Just Plain Cool

Program Agenda with Highlight

- 1 A Little History Lesson
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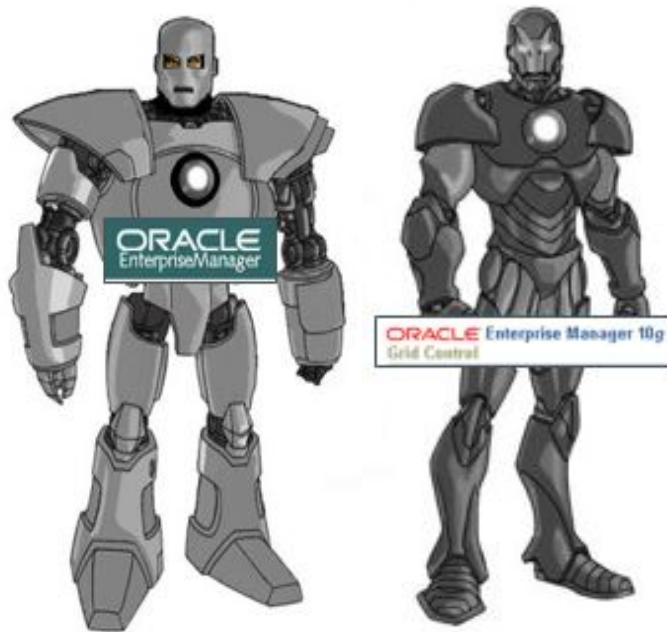
Enterprise Manager History



EM

- Web Browser Option
- Intelligent Agent
- Configuration to use with Dial-up

Enterprise Manager History



EM10g

- Introduction of SYSMAN
- All about Grid Control
- Management Agent
- OPMNCTL and EMCTL

Enterprise Manager History



EM11g

- SQL Monitor, nuff said!
- Extended Metrics
- Provisioning and Lifecycle
- VM Management

Enterprise Manager History



EM12c

- Cloud Control
- Everything as a Service
- Real Application Testing
-

Enterprise Manager History



Enterprise Manager 12c

- Enterprise level monitoring and management.
- Full Cloud Control with chargeback capabilities.
- Provisioning and life cycle management.
- Self Service portal to support XaaS.
- Middleware and Application management
- Command Line Power

Requirements for Enterprise Manager 9.2.0.2

- Available Hard Disk Space
135 MB
 - Pentium 166 MHz
 - 128 MB RAM
- Available Hard Disk Space
135 MB
 - SPARC 20 166 MHz or
SPARC Ultra 1 266 MHz
 - 128 MB RAM
- Available Hard Disk Space
135 MB
 - Pentium 266 MHz
 - 256 MB RAM

Requirements for Enterprise Manager 12c

	SMALL	MEDIUM	LARGE
Environment	<1000 Targets <100 Agents <10 Concurrent Users	<10,000 Targets <1000 Agents <25 Concurrent Users	>10,000 Targets >1000 Agents >25 Concurrent Users
Repository	DB or RAC 2 Dual Core CPU, 8Gb memory	RAC 4 Dual Core CPU, 8Gb memory	2+ Nodes RAC 8 Dual Core CPU, 16Gb memory
OMS Machine(s)	2 OMS 2 CPU, 8GB memory	2 OMS 4 CPU, 8Gb memory	2+ OMS 8 CPU, 16 GB memory

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Security Console

Security Console

Enterprise Manager Security

- Overview
- Pluggable Authentication
- Fine-grained Access Control
- Secure Communication
- Credentials Management
- Comprehensive Auditing
- Active User Session Count
- **Best Practices Analysis**

- Ability to review Enterprise Manager Security
- Not a traditional “Console”
- Information about best practices
- Violation to best practices
- Links to corrective steps

Secure Communication Page

Secure Communication

Overview **Current Configuration**

Agent Certificate Details

The following table shows secured agents along with their certificate details.

View Detach

Agent Name	CA ID	Distinguished Name	Algorithm	Strength	Valid From	Valid To	Issuer	Secure Time
10. ... 187:3871	1	cn=10. ...	sha512	1024	Jun 5, 2014	Jun 2, 2024	CN= ... us.o...	Jun 5, 2014 11:10:01
...us.oracle.com:3872	1	cn= ...us.oracle.com	sha512	1024	Jun 3, 2014	May 31, 2024	CN= ... us.o...	Jun 3, 2014 16:39:32
...us.oracle.com:1833	1	cn=... us.oracle.com	sha512	1024	Jun 10, 2014	Jun 7, 2024	CN= ... us.o...	Jun 10, 2014 10:31:05
...us.oracle.com:1831	1	cn=... us.oracle.com	sha512	1024	Jun 10, 2014	Jun 7, 2024	CN= ... us.o...	Jun 10, 2014 10:31:13

Row Count 4

Number of Unsecured Agents 0

No of Expired Registration Passwords 0

Certificate Authority Details

This Enterprise Manager installation is configured with the following Certificate Authorities.

View Detach

CA ID	Active	Distinguished Name	Algorithm	Strength	Valid From	Valid To	Issuer	Creation Time
1	Yes	CN= ...us.oracle.com,...	SHA512v	1024	Jun 2, 2014	May 31, 2024	CN= ...us.oracle.com,...	Jun 3, 2014 16:30:50

Columns Hidden 3

Row Count 1

Securing EM12c

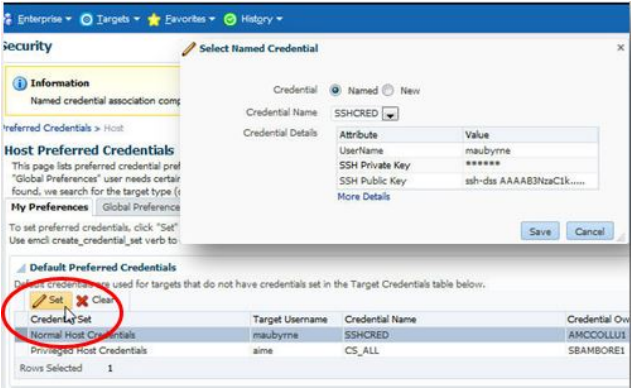
- Do NOT log in at SYSMAN, create individual accounts.
- Use the MGMT_ADMIN_USER_PROFILE in 12c .
- Create privileges and roles for accessing EM12c.
- Create Global Named Credentials to hinder risks.
- Aggregate target privileges offer granule control of access.

Private Roles

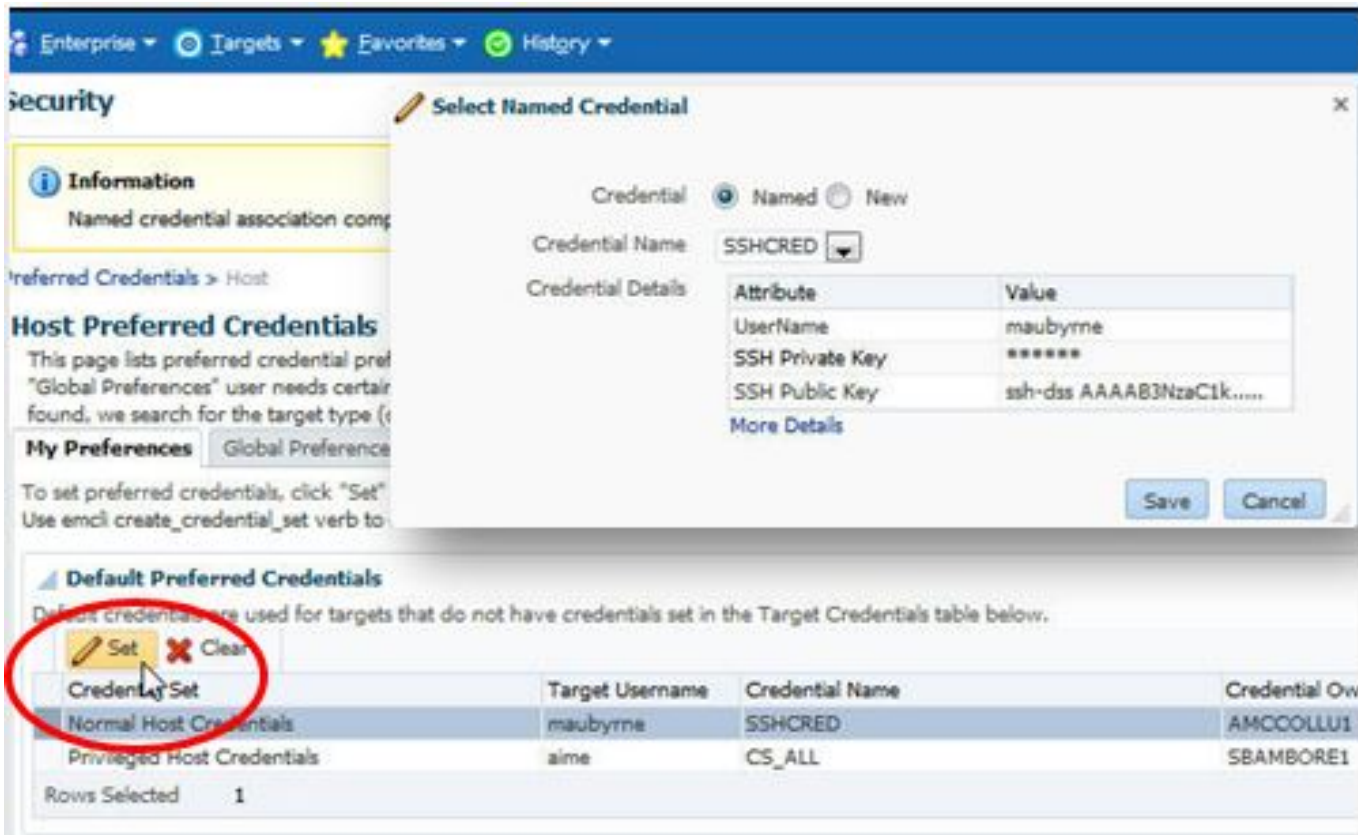
- Roles that can be granted by one EM User to another EM User to manage
 - Jobs
 - Templates
 - Targets tasks
- Allows Named Credential to be granted to a Role
- Creation can be done via the Console or the EM CLI, but only “WITH_ADMIN” option required to create a private role can be done through EM CLI GRANT_PRIVS verb call.

Credential Enhancements

- Assign credentials by default to a target, (no more logging in by user and creating new credentials or unsecure credentials.)
- Targets credentials that are default for a specific target that will be used by users granted access to the target.
- SSH credentials as Preferred Credentials
 - Supported in earlier versions, but required manual edits to emd.properties and sudoers file
 - Now one just needs to update sudoers file



UI Enhancement

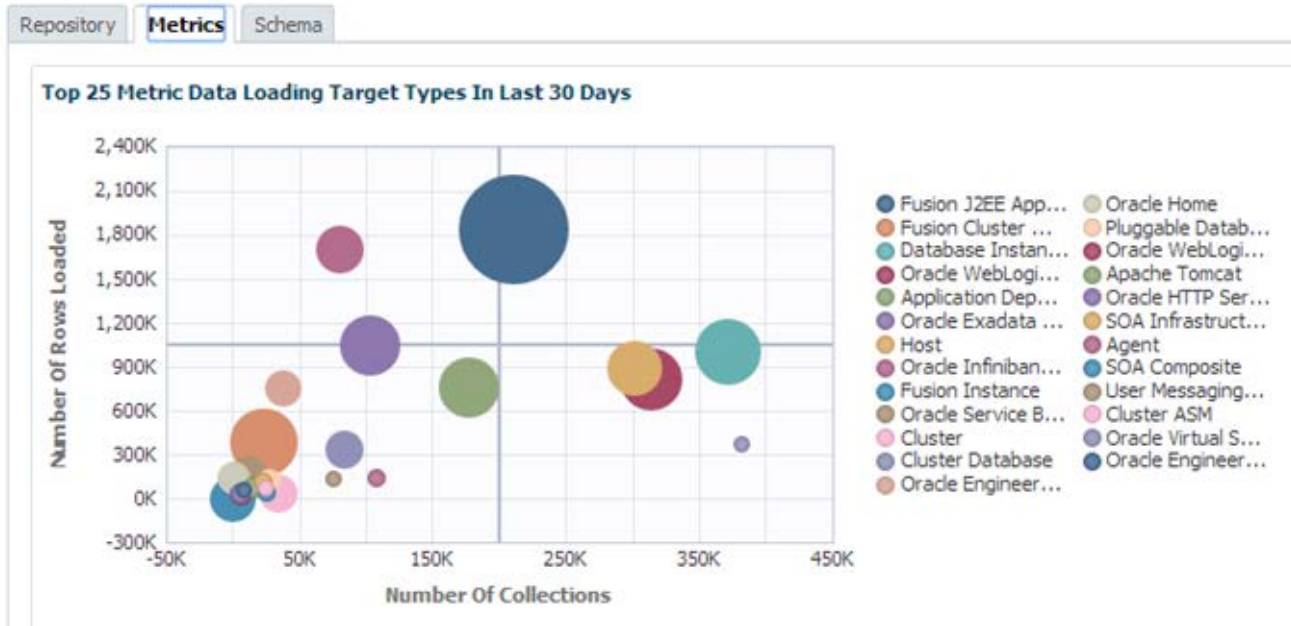


- Simple management via the console.
- EM CLI verb if global allocation desired.

Global Preferred Credentials

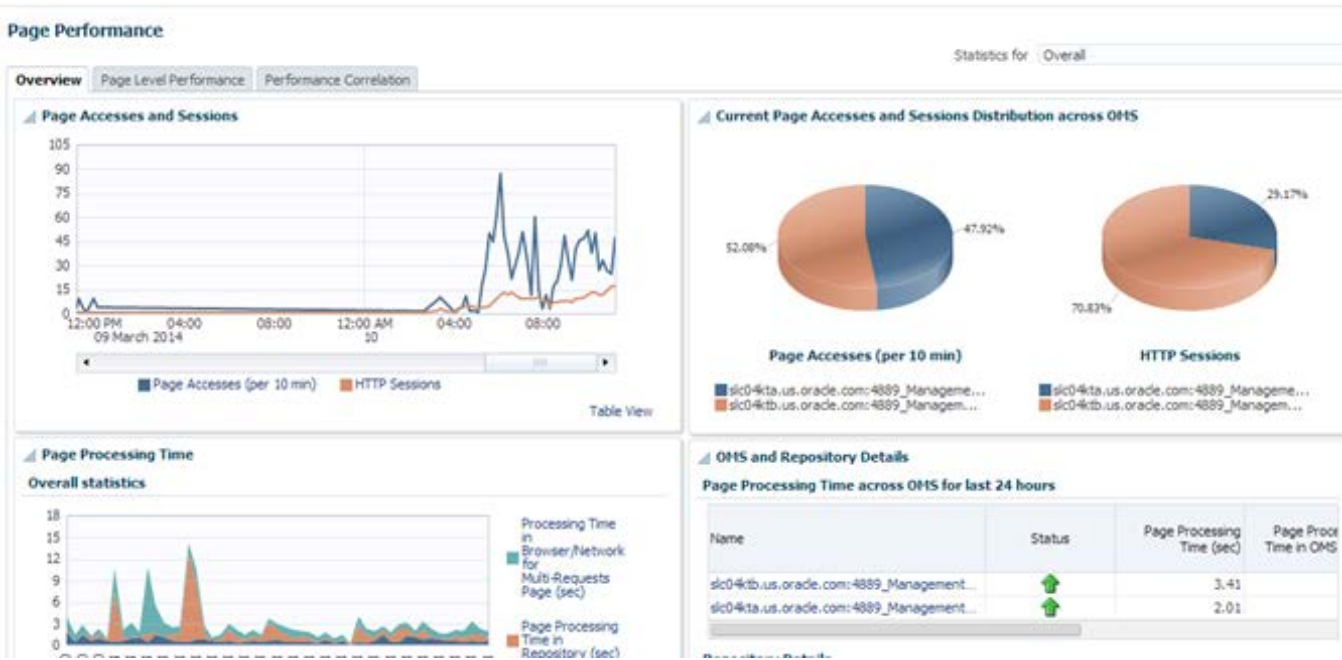
- Convenient System Wide Credentials
- Privileged Administrator can set Preferred Credentials for **ALL** users
 - For a specific Target
 - For a Target Type
- Efficient allocation of common Accounts
 - Aid in new hire on-boarding
 - User Scope Preferred Credentials
 - System Scope Preferred Credentials

The Repository Page



- Configuration Validation
- Monitor and configure EM housekeeping tasks
- Deep Insight and visualization of collected metrics
- Identify space hogs and control schema retention policies

Enterprise Manager Page Performance



- Load and processing metrics shown for overall page performance and individual page performance
- Breakdown by time spent in Repository, OMS and Browser/Network
- Diagnostics report for pages taking >30 seconds to load

Improved Target Deployment

- Windows customers- PSEXEC built in!
 - No more CYGWIN installations! 😊
 - Simpler deployment
 - Still recommend silent deploys or EM CLI scripts.

Enhanced Plug-in Deployment

The screenshot shows the Oracle Enterprise Manager Cloud Control 12c interface for the 'Deploy Plug-ins on Management Servers: Plug-ins' wizard. The wizard is at 'Step 1 of 5'. A table lists the plug-ins to be deployed, including their latest available versions, current deployment status, and the version to be deployed. Below the table, the 'IBM DB2 Database' plug-in is selected, showing its target types and a 'What's New' section with a 'Readme' section.

Name	Latest Available	Version		Downtime Required	Use Last Successful Prerequisite
		Currently Deployed	To Deploy		
IBM DB2 Database	12.1.0.2.0	None	12.1.0.2.0		<input type="checkbox"/>
Microsoft IIS	12.1.0.2.0	None	12.1.0.2.0		<input type="checkbox"/>
Oracle Utilities	12.1.0.3.0	None	12.1.0.3.0		<input type="checkbox"/>
Oracle VDI	12.1.0.2.0	None	12.1.0.2.0	✓	<input type="checkbox"/>
Oracle ZFS Storage Appliances	12.1.0.4.0	None	12.1.0.4.0		<input type="checkbox"/>

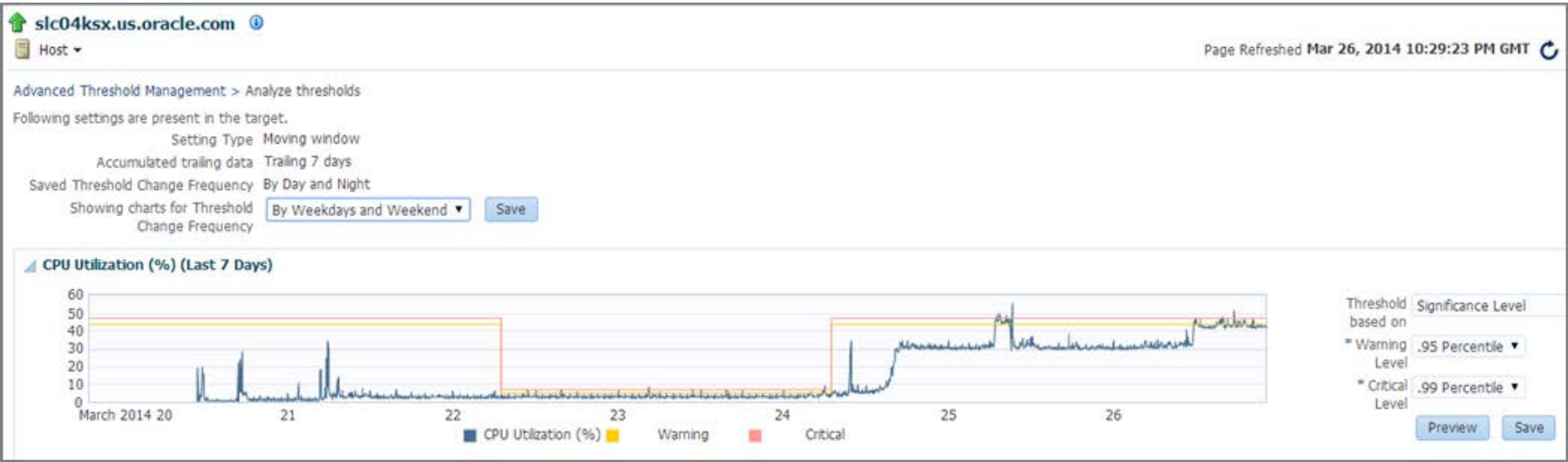
Name	Supported Target Versions	
	Plug-in Version - 12.1.0.2.0	Plug-in Version on Management Server - None
ibm_db2_database	8.2.0.0.0	

What's New in 12.1.0.2.0
 IBM DB2 Database Plug-in for monitoring DB2 databases from Enterpr

Readme
 The Oracle Management Plug-in for IBM DB2 Database extends Orac managing IBM DB2 Database instances including: monitoring of DB

- New **Plug-in Deployment Wizard** allows multiple Plug-ins to be deployed to the OMS in a single deployment session
- Identifies Plug-ins that require an OMS restart

Enhanced Threshold Management

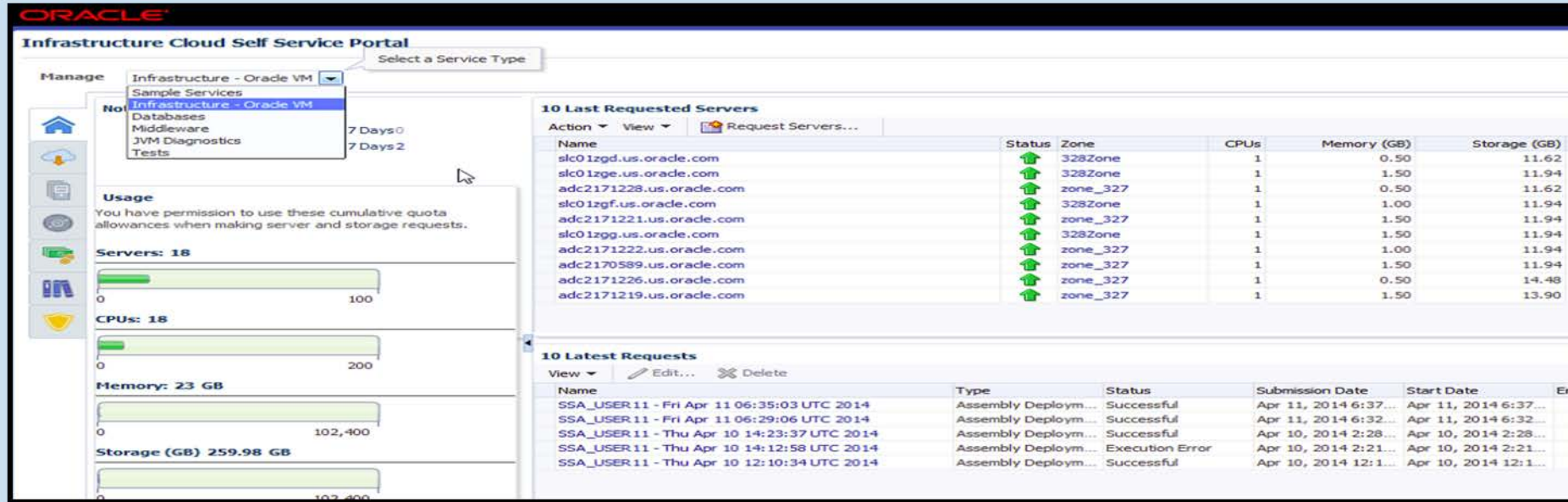


- Flexible, adaptive thresholds for more accurate alerting
 - **Time-based Static Thresholds:** Auto adjust static thresholds based on workload changes
 - **Adaptive Thresholds:** Auto calculate thresholds to alert when target deviates from expected baseline behavior

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Impressive New Self-Service Portal



- SSA Portal UI Look & Feel Changes
- Streamlined command line (emcli) support
- Adopted by SSA FW integrated services (MWaaS, DBaaS and ~~Nimble~~)
- New framework for streamlined XaaS development in future

Database as a Service Enhancements

- No longer hindered by storage platform!
- All are supported by either a hardware or software plug-in.
- Rapid Start deployment option with response file offers simpler deployment solution.

Cloning with DNFS

- Ability to create thin databases from RMAN image copies
- Supported configurations
 - Single instance databases
 - ASM is not supported for this type of thin clone provisioning, ~~(yet)~~
- Supported database versions
 - 11.2.0.3-> DB12c
- Benefits
 - Easy to setup without pre-requisites
 - No special storage software needed
 - Works on all platforms
 - Instantaneous cloning with DNFS snap clone
 - Create multiple clones based on one backup and consume very little space

More Cloning Enhancements! 😊

- Ability to create active thin clones of databases on ASM using EMC (currently VMAX Engenuity Version: 5773 and above with Time Finder.)
- Use of Active DataGuard (ADG) standby as a master for creating snap clones
 - Solves the problem of continuous replication
- Change profile attached to a service template
 - Allowing an update of data without changing configuration
- ‘Live’ Full clones using RMAN duplicate
 - Clones created from a live instance of database

JVMD as a Service

- JDaaS is designed to enable IT orgs to allow their users to consume JVMD functionality in a self-service manner & manage all their JVMs within a web based portal
- SSA users can enable JVMD on their JVMs regardless of JVMs being targets in EMCC
- To enable the cloud, all that is required is to set the Quotas.
- Quotas are set to Roles and are in terms of number of monitored JVM
- Users use this functionality by downloading an agent from the SSA and deploying it on the desired JVM.

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Database

Comparing Performance Periods

Comprehensive System Monitoring

Incident Rules and Management

Groups

How Often Do We Ask, “What Changed?”

- It ran fine last week, now it no longer does!
- ETL loads have changed, but no one has released any new code!
- The DBA says there hasn't been any parameter changes to this database, but I'm sure there have been.

- Compare ADDM Resolution

What is Compare ADDM?

- Uses Two AWR snapshots
- Creates Report that-
 - Compares SQL that is common and different.
 - SGA changes
 - IO/CPU bound issues
 - Parameter Changes

What is in an ADDM Compare?

- Report Includes Following:
 - Clear Demonstration of impact of change.
 - Recommendations to address issue.
 - Identifies causes behind change, (with limitations.)
 - Lists Regressed SQL, too!

- *Tip: If Installing to database for first time, (simple installation, nothing to concern about, just pkg to fulfill views) you must have preferred credentials SET or install will fail!*


Executing a Report from EM12c

Comparison

- Choose focus period
- Choose to compare to an Offset, Baseline or Custom

Step 1: Select a Comparison Period

Begin Time 

End Time 

TIP Time will be adjusted to the capture time of the closest snapshot

Step 2: Select a Base Period


Offset


Offset ▼

Baseline

Baseline ▼

Customize

Begin Time 

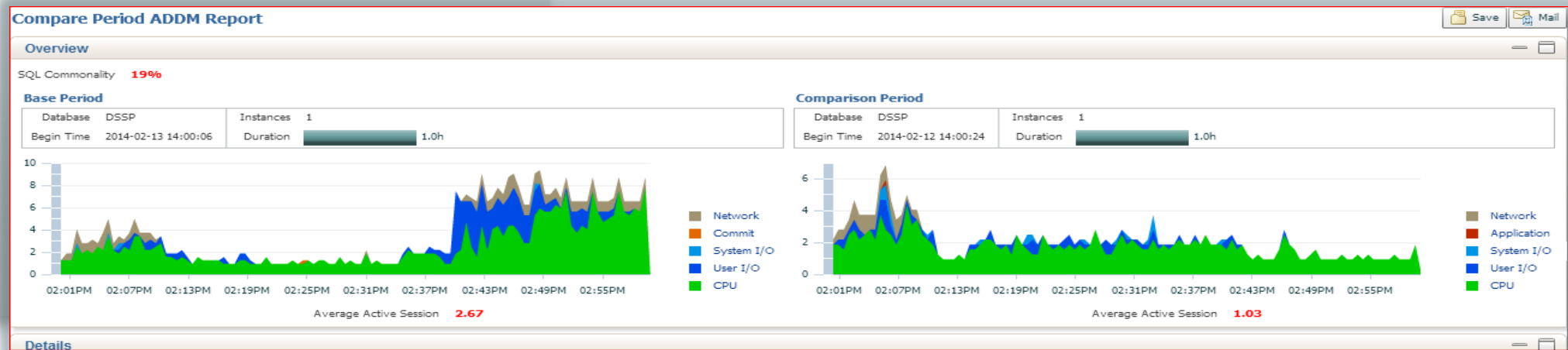
End Time 

TIP Time will be adjusted to the capture time of the closest snapshot

Main Screen of Comparison

2-3PM, 12th Vs. 13th

- Familiar interface with visual wait event comparisons.
- Average # of sessions during each period are displayed.



Detail Report

- High level data, highlight for analysis and recommendations.

Compare Period ADDM Report Save Mail

Details Configuration Finding Resource

	Performance Difference	Change Impact(%)	Base Period	Comparison Period
↑	Top Missing SQLs	81	1.99	0
↓	Top New SQLs	-22	0	.64
↑	Top Segments by 'User I/O' and	16	.43	.02
↑	Temporary Tablespace I/O	16	.42	0
↑	Undersized Buffer Cache	15	.59	.21

↑	Temporary Tablespace I/O	16	.42
↑	Undersized Buffer Cache	15	.59

Display: Change Impact (Absolute Value) >= % ↓ Regression ↑ Improvement

Description

The PGA was inadequate sized, causing more active sessions to do more I/O to temporary table spaces. Impact changed from 0.42 active sessions to 0 active sessions by 16%

Regression SQL

- Any performance degradation is noted with the down arrow icon:



Details		
Configuration Finding Resource		
	Performance Difference	Change Impact(%)
↑	Top Missing SQLs	81
↓	Top New SQLs	-22

Hide SQL Breakdown			
		SQL ID	Change Impact(%)
	↓	dnh23ddh0w9hb	-2
	↓	90q1dn708bvdq	-5
	↓	bx99v36sm6hwx	-2
	↓	32qkt6fb3u8fa	-2

Top Segments Causing IO Waits

- High Level data
- Click on “Show Hot Object Breakdown” to see more detail.

↑	Top Segments by 'User I/O' anc	16	.43	.02
↑	Temporary Tablespace I/O	16	.42	0
↑	Undersized Buffer Cache	15	.59	.21

Display: Change Impact (Absolute Value) >= % ↓ Regression ↑ Improvement

Description

Individual database segments responsible for significant "User I/O" and "Cluster" waits were found.
Impact changed from 0.43 active sessions to 0.02 active sessions by 16%

Hide Hot Object Breakdown

	Object	Change Impact(%)	Base Period	Comparison Period
↑	DSSMGR.FT_STORE_SKU_FORECAST_WK(TABLE PARTI	5	.12	0
↑	DSSMGR.FT_STORE_SKU_SSALES_MONTH(TABLE PARTI	1	.02	0
↑	136076_UNKNOWN	2	.05	0
↑	GLDSS.FT_ACCOUNT_UNIT_BAL_PERIOD(TABLE)	0	0	.02

Resource Comparisons

- Comparisons of Memory, CPU, IO and Interconnect.
- Memory Is there Virtual paging?
- Memory Base Period
- Memory Comparison Period

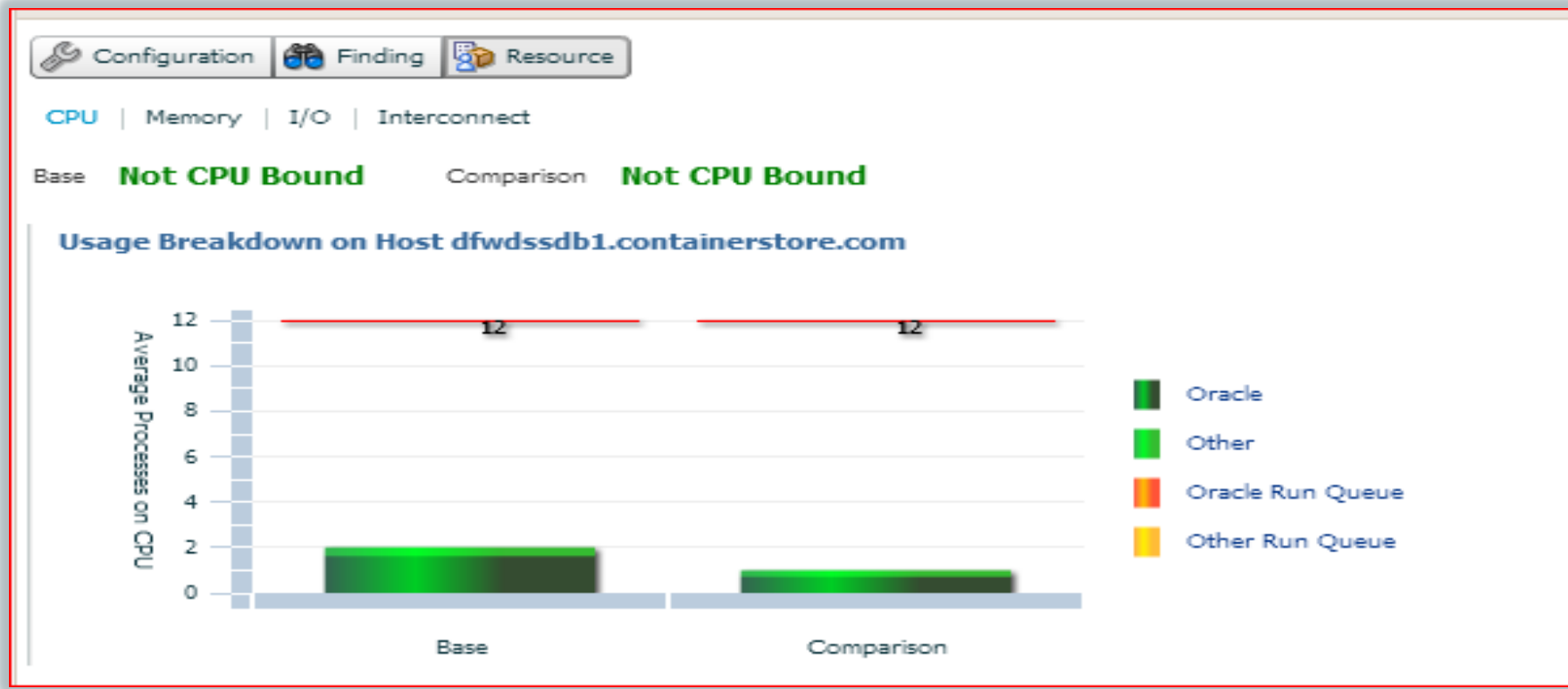
CPU | **Memory** | I/O | Interconnect

Base **No Virtual Memory Paging** Comparison **No Virtual Memory Paging**

Host Name	Total Physical Memory	Total Memory Paging Out		Memory Used by Oracle Database	
		Base Period	Comparison Period	Base Period	Comparison Period
dfwdssdb1.containe	258,430.6MByte	0MByte	0MByte	103,556.2MByte	102,904.3MByte

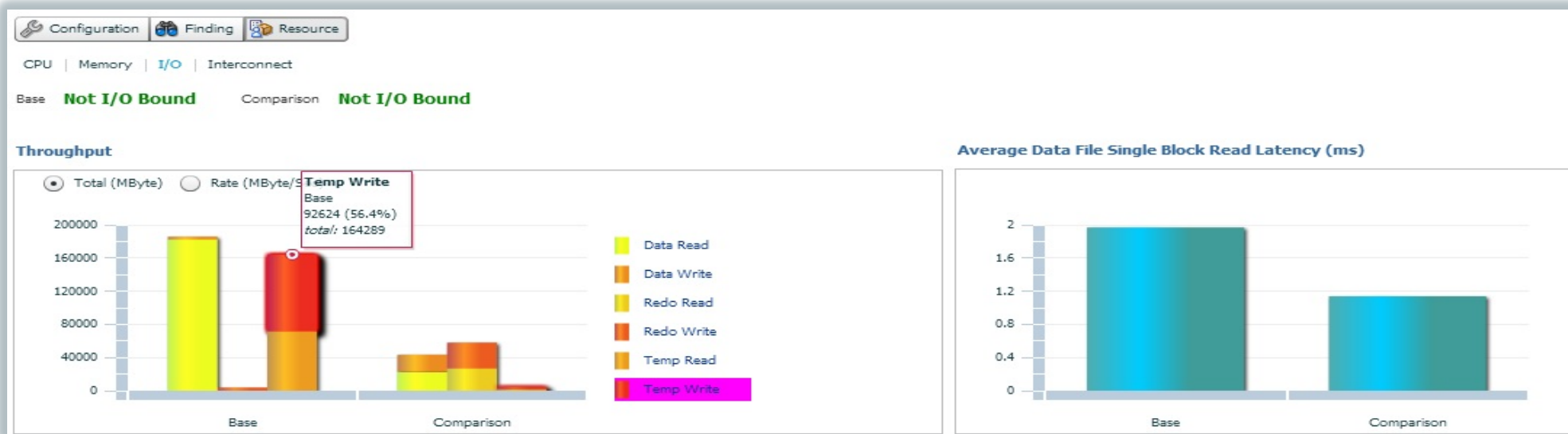
Dashboard Provided for CPU, Memory, IO and Interconnect

- Is something OTHER than Oracle the cause?



IO Bound Dashboard

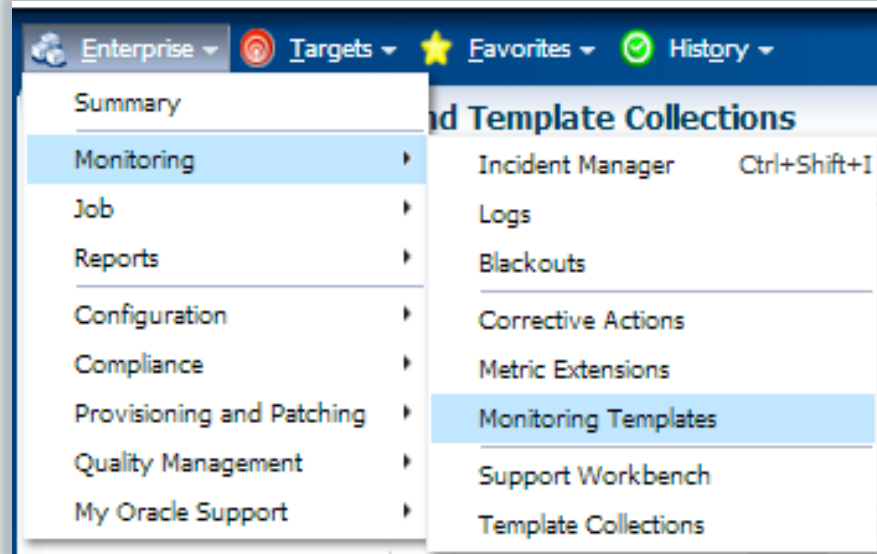
- ⦿ Base vs. comparison period
- ⦿ Temp reads/writes specified
- ⦿ Single block read latency



Monitoring Templates

- Sets distinct, consistent monitoring for individual targets or groups.
- Still allows for individual metric policies and thresholds to be set and not overridden by templates.
- Easy to maintain and can be automated to be set as “default” template for targets/groups.

Creating a Monitoring Template







- Or part of administration group creation step.

Monitoring Template Design

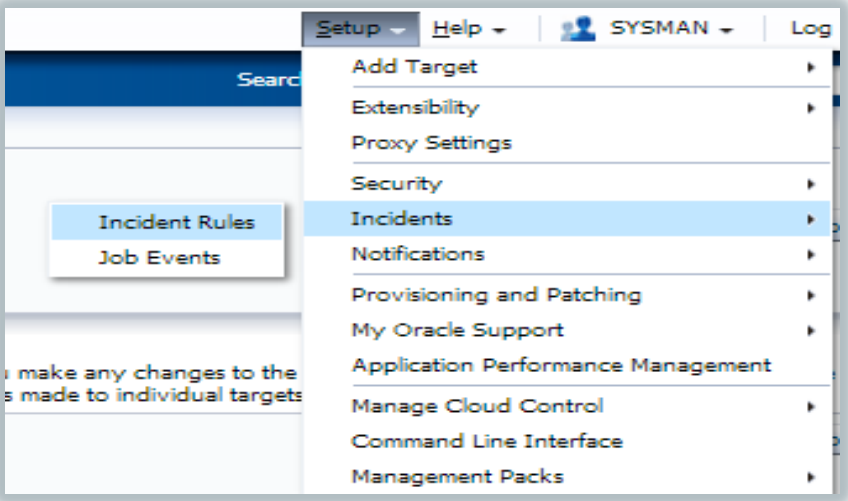
- Base Templates off Existing Targets
- Build by Target Type
- Make Templates DEFAULT for Crucial Target Types.

Pending Apply Operations: 0










Select	Name	Target Type
<input checked="" type="radio"/>	 Prod_DB_Inst_Tmpl	Database Instance
<input type="radio"/>	 Prod_DB_CLSTR_Tmpl	Cluster Database
<input type="radio"/>	Non_Prod_DB_Tmpl	Database Instance
<input type="radio"/>	 Host_Mon_Tmpl	Host

 Default Template for a target type. This template will be applied automatically to newly discovered targets in Enterprise Manager.

Incident Rule Sets



- Two Default Rule Sets
- “Create Like” for the Default Rules Sets
- Build out New Ones
- Disable the Defaults

Name	Description	Ord	Enterprise Rule Set	Owner	Enabled
Incident management Ruleset for all targets 	System-generated Ruleset to create and manage incidents.	1		System Generated	No 
Event management Ruleset for Self Update 	System-generated Ruleset for Self Update Events	2		System Generated	No 
Incident Management Ruleset	System-generated Ruleset to create and manage incidents.	3		SYSMAN	Yes
Event Management Ruleset	System-generated Ruleset for Self Update Events	4		SYSMAN	Yes
Non-Prod Incident Management Rule Set	System-generated Ruleset to create and manage incidents for Non-Production Group. This has just bee...	5		SYSMAN	Yes

A Rule Set Can.....

- Be assigned to a Target, Target Type or a GROUP.
- Build out rule sets as complete as you need.

Targets | Rules | Co-authors

Select targets to which this rule set applies. You can exclude specific targets from the scope - e.g. all database targets except 'MyDevDB'.

All targets
 All targets of types
 Specific targets

Add

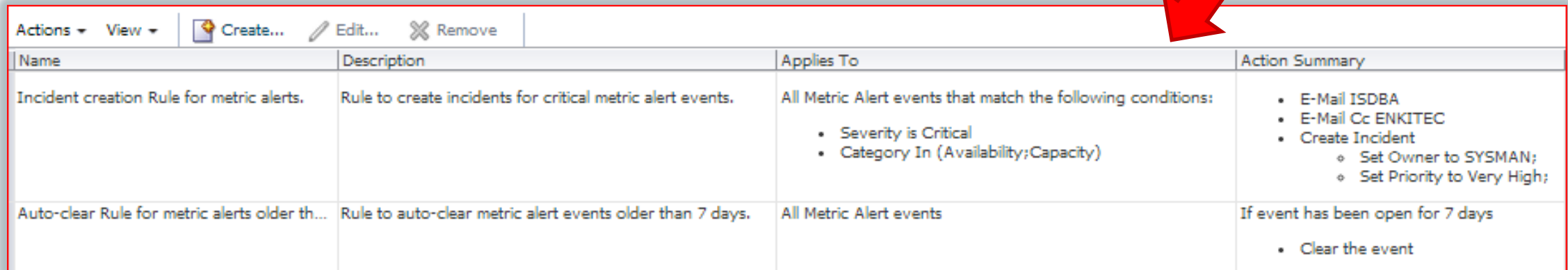
Name	Type
Production	Group

Rules

- Think about...
 - What is important to be ACTUALLY notified for?
 - What is TRULY mission critical?
 - What should be managed during the business day?
 - More notifications are NOT better notifications
 - No, NO WHITE NOISE- make every notification count.

Defining Rules for Efficiency

- From default rule, but have eliminated all categories but Availability and Capacity that are Critical.
- Email who is required to be notified AND
- Set the owner and the priority in the incident.



Name	Description	Applies To	Action Summary
Incident creation Rule for metric alerts.	Rule to create incidents for critical metric alert events.	All Metric Alert events that match the following conditions: <ul style="list-style-type: none"> • Severity is Critical • Category In (Availability;Capacity) 	<ul style="list-style-type: none"> • E-Mail ISDBA • E-Mail Cc ENKITEC • Create Incident <ul style="list-style-type: none"> ◊ Set Owner to SYSMAN; ◊ Set Priority to Very High;
Auto-clear Rule for metric alerts older th...	Rule to auto-clear metric alert events older than 7 days.	All Metric Alert events	If event has been open for 7 days <ul style="list-style-type: none"> • Clear the event

The Rest of the Categories

- Created a second rule
 - Still severity has to be critical
 - Covers all categories removed from original rule.
 - No email notification- I want these to just create an incident.
 - Sets the owner and the priority automatically.

Metric Alert Rule Categories NoEmail	This rule is Critical Metric Alerts that no emails should be ...	All Metric Alert events that match the following conditions: <ul style="list-style-type: none"> • Severity is Critical • Category In (Business;Configuration;Diagnostics;Errn 	<ul style="list-style-type: none"> • Create Incident <ul style="list-style-type: none"> ◊ Set Owner to SYSMAN; ◊ Set Priority to Urgent; • Clear the event
--------------------------------------	--	---	---

Auto-Clear of Metric Rules

- Update how long till auto-clear
- Remove notification- no, I don't want an email!



Name	Description	Applies To	Action Summary
Incident creation Rule for metric alerts.	Rule to create incidents for critical metric alert events.	All Metric Alert events that match the following conditions: <ul style="list-style-type: none"> • Severity is Critical • Category In (Availability;Capacity) 	<ul style="list-style-type: none"> • E-Mail ISDBA • E-Mail Cc ENKITEC • Create Incident <ul style="list-style-type: none"> ◦ Set Owner to SYSMAN; ◦ Set Priority to Very High;
Auto-clear Rule for metric alerts older th...	Rule to auto-clear metric alert events older than 7 days.	All Metric Alert events	If event has been open for 7 days <ul style="list-style-type: none"> • Clear the event

What about Warnings??

- No, there aren't any rules set for warnings.
- I choose to use the incident manager to track warnings and pro-actively manage from it.
- Severity Warning, creates and incident, sets the owner to SYSMAN and priority to LOW.
- This is a PROFESSIONAL PREFERENCE.

Incident Creation Rule for Warnings	Additional rule to maintain incidents for Warnings and gi...	All Metric Alert events that match the following conditions: <ul style="list-style-type: none"> • Severity is Warning 	<ul style="list-style-type: none"> • Create Incident <ul style="list-style-type: none"> ✦ Set Owner to SYSMAN; ✦ Set Priority to Low;
-------------------------------------	--	--	---

When to Know to Change a Rule

- Notification does not provide value.
- Notification is triggered by a bug, isn't critical or can't be resolved by the one notified.
- Always retain the email notification to ensure you are editing the correct notification.
- Break down the rule to ensure that metrics grouped in one category are not mistakenly set to not notify.

Everything You Need....

Target type=**Host**

Target name=**host.orcl.com**

Categories=**Capacity**

Message=**Disk Device sdd is 97.371% busy.**

Severity=**Critical**

Event reported time=**Feb 8, 2014 8:19:26 PM CST**

Operating System=**Linux**

Platform=**x86_64**

Associated Incident Id=**8193** |

Event Type=**Metric Alert**

Event name=**DiskActivityiskActivitybusy**

Metric Group=**Disk Activity**

Metric=**Disk Device Busy (%)**

Metric value=**97.371**

Key Value=**sdd**

Key Column 1=**Disk Device**

Rule Name=**New Ruleset - Incident Management, Incident creation Rule for metric alerts.**

Update Details:

Disk Device sdd is 97.371% busy.

Incident created by rule (Name = New Ruleset - Incident Management, Incident creation Rule for metric alerts.; Owner = SYSMAN).

Edit the Rule from the Rule Set..

Incident created by rule (Name = New Ruleset - Incident Management, Incident creation Rule for metric alerts.;

Categories=**Capacity**
 Message=**Disk Device sdd is 97.371% busy.**
 Severity=**Critical**

Edit Rule - Incident creation Rule for metric alerts. : Select Events

This rule acts on events that meet the criteria you specify. Type must be specified.

Select By

Type
 Metric Alert ⓘ

All events of type Metric Alert
 Specific events of type Metric Alert

Severity In ⌵

Category In ⌵

Target type

Target Lifecycle Status

Associated with incident

Event name

Associated incident action

Total occurrence count

Root-cause analysis reason

Comment added

Availability

Business

Capacity

Configuration

Diagnostics

Error

Fault

Jobs

Load

Performance

Security

Search the Target Type and Metric

Select Specific Metric Alert

Metrics
To select metrics and optional key values, select a target type first and click "Search".

Search
* Target Type: Host Metric Name: disk% Search

Select	Metric Group	Metric	Objects	Excluded Objects
<input type="checkbox"/>	Disk Activity	Average Disk I/O Service Ti...	<input type="radio"/> All objects (Disk Device) <input type="radio"/> Select	<input type="text"/> +
<input type="checkbox"/>	Disk Activity	Average Disk I/O Wait Time...	<input type="radio"/> All objects (Disk Device) <input type="radio"/> Select	<input type="text"/> +
<input type="checkbox"/>	Disk Activity	Average Outstanding Disk I...	<input type="radio"/> All objects (Disk Device) <input type="radio"/> Select	<input type="text"/> +
<input type="checkbox"/>	Disk Activity	Disk Block Writes (per seco...	<input type="radio"/> All objects (Disk Device) <input type="radio"/> Select	<input type="text"/> +
<input type="checkbox"/>	Disk Activity	Disk Blocks Transferred (per...	<input type="radio"/> All objects (Disk Device) <input type="radio"/> Select	<input type="text"/> +
<input checked="" type="checkbox"/>	Disk Activity	Disk Device Busv (%)	<input type="radio"/> All objects (Disk Device) <input type="radio"/> Select	<input type="text"/> +

Severity and Corrective Action Status

Severity: [dropdown]

Corrective action status

- Success for critical metric alert
- Problem for critical metric alert
- Success for warning metric alert
- Problem for warning metric alert

OK Cancel

**Metric Group=Disk Activity
Metric=Disk Device Busy (%)**

Add the Device to Exclusion List

Target type=**Host**
 Target name=**host.orcl.com**
 Categories=**Capacity**
 Message=**Disk Device sdd is 97.371% busy.**

Search and select objects

Search

Disk Device:
 Host:

Go

Result

Disk Device	Host
loop6	host-orcl.com
loop4	host-orcl.com
dm-3	host-orcl.com
loop4	host-orcl.com
sddd	host-orcl.com
sdbv	host-orcl.com
sdbo	host-orcl.com

OK Cancel

Metric Group	Metric	Target Type
Disk Activity	Disk Device Busy (%)	Host

Target Type	Severity	Objects		Corrective Action Status	
		Selected	Excluded	On Critical	On Warning
Host	Critical	All objects	ssd	Problem	

Tips on Event Building

- Create New Rules and Break Down Categories
- Inspect Each Notification the Impacts Effective Alerting.

- Recognize when a metric threshold vs. a rule set is the “culprit”.

Edit Actions

- Choose if this should be done for all actions.
- Create Incident, automatically assign.
- Set a priority and even update information automatically in the incident.

Conditions for actions


You can define the actions to apply whenever the rule matches or apply them conditionally.

Always execute the actions
 Only execute the actions if specified conditions match

Create Incident or Update Incident

If there is no incident associated with the event, you could create one and optionally, set the incident owner and priority. If an incident exists, you could update the incident.

Create Incident (If not associated with one) Update Incident

Assign to 

Set priority to ▼

Create Ticket

Editing Actions, Cont.

Notifications

Assign recipients for notifications. Recipients for the "To" list can only be added or removed in this section. Users who subscribe commas. Recipients could be Enterprise Manager users,

Basic Notifications

E-mail To

E-mail Cc

Page

Enter Enterprise Manager administrators, E-mail addresses or predefined variables separated by commas.

Repeat Notifications

Both basic and advanced notifications can be sent repeatedly. The repeat notifications will stop only when the incident is acknowledged root cause analysis status update on events.

Send Repeat notifications

Global Notification Settings Disabled

Use global notification settings Override global notification settings

Frequency (Minutes)

Maximum Repeat Notification

Clear events




For most events, Enterprise Manager detects when the Manager to detect when the underlying issue is cleared.

Clear permanently

Review Rule and Rule Sets

Incident Rules - All Enterprise Rules

A rule contains a set of automated actions to be taken on specific events, incidents or problems. For example, individual rules can respond to incoming or updated events, incidents, or problems, and then take actions such as sending e-mails, creating incidents, updating incidents, and creating tickets. You can enable or disable a rule using the actions menu. Rules are evaluated and applied in the order specified. You can change the order using the Reorder Rule action. Any changes made to the rules are not saved until the 'Save' button is clicked.

Actions ▾ View ▾  Create...  Edit...  Remove

Name	Description	Applies To	Action Summary	Enabled	Last Updated On	Last Updated By	Type
Incident creation Rule for metric alerts.	Rule to create incidents for critical metric alert events.	All Metric Alert events that match the following conditions: <ul style="list-style-type: none"> Severity is Critical Category In (Availability;Capacity) 	<ul style="list-style-type: none"> E-Mail View E-Mail Cc View Create Incident <ul style="list-style-type: none"> Set Owner to SYSMAN; Set Priority to Very High; 	Yes	Dec 6, 2013 10:46:48 A...	SYSMAN	Events
Auto-clear Rule for metric alerts older th...	Rule to auto-clear metric alert events older than 7 days.	All Metric Alert events	If event has been open for 7 days <ul style="list-style-type: none"> Clear the event 	Yes	Aug 20, 2013 6:08:06 P...	SYSMAN	Events
Incident creation rule for compliance sco...	System-generated rule to create incidents for complianc...	All Compliance Standard Score Violation events that match ... <ul style="list-style-type: none"> Severity is Critical 	<ul style="list-style-type: none"> Create Incident 	Yes	Aug 22, 2013 3:56:07 P...	SYSMAN	Events
Auto clear Rule for job status change ter...	System-generated Rule to auto clear job status change e...	Specific Job Status Change events	If event has been open for 7 days <ul style="list-style-type: none"> Clear the event 	Yes	Aug 22, 2013 3:58:01 P...	SYSMAN	Events
Out-of-box Incident creation rule for Se...	Out-of-box Rule to create incidents for critical service le...	All Service Level Agreement Alert events that match the foll... <ul style="list-style-type: none"> Severity is Critical 	<ul style="list-style-type: none"> E-Mail Cc View Create Incident <ul style="list-style-type: none"> Set Owner to SYSMAN; Set Priority to High; Clear the event 	Yes	Sep 6, 2013 7:50:31 PM ...	SYSMAN	Events
Incident creation Rule for target unreach...	Rule to create target availability incidents for agent and ...	Specific Target Availability events that match the following ... <ul style="list-style-type: none"> Target type In (Host;Agent) 	<ul style="list-style-type: none"> E-Mail View E-Mail Cc View Create Incident <ul style="list-style-type: none"> Set Owner to SYSMAN; Set Priority to Very High; Clear the event 	Yes	Sep 6, 2013 7:52:14 PM ...	SYSMAN	Events

Incident Management

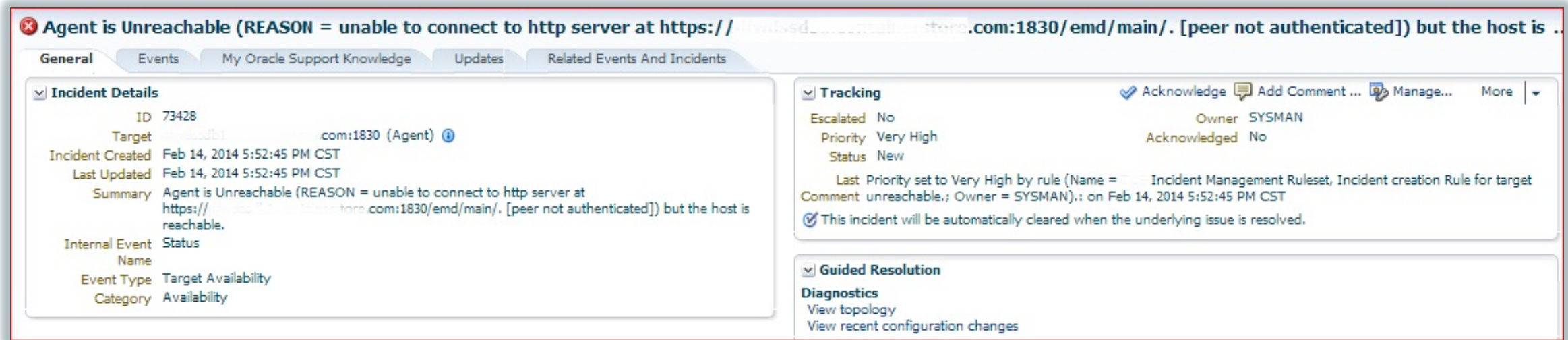
- Critical Notifications are now ONLY for Mission Critical and Production Down
- The Incident Manager interface now can be utilized for review and management.

Incident Manager: My open incidents and problems

Views Actions View View search criteria Acknowledge Clear...

Severity	Summary	Ta	Pri	Sta	Last Updated	Owner
	Metrics "Database Time Spent Waiting (%)" is at 48.517 for event class "Concurrency"	...	...	...	Feb 14, 2014 6:52:...	SYSMAN
	User SYS logged on from dfwmwmdb1.containerstore.com.	...	...	...	Feb 14, 2014 6:48:...	SYSMAN
	Agent is Unreachable (REASON = unable to connect to http server at https://dfwdssdb1.containerstore.com:1830/emd/main/. [peer not a...	...	...	...	Feb 14, 2014 5:52:...	SYSMAN
	Agent is Unreachable (REASON = unable to connect to http server at https://dfwdssdb1.containerstore.com:1830/emd/main/. [peer not a...	...	...	...	Feb 14, 2014 5:52:...	SYSMAN
	User SYS logged on from labtstdb2.containerstore.com.	i...	...	...	Feb 14, 2014 9:30:...	SYSMAN
	User SYS logged on from labtstdb2.containerstore.com.	...	...	...	Feb 14, 2014 8:09:...	SYSMAN
	Metrics "Current Open Cursors Count" is at 1,201	...	...	...	Feb 14, 2014 4:29:...	SYSMAN
	User SYS logged on from labtstdb2.containerstore.com.	...	...	...	Feb 13, 2014 8:15:...	SYSMAN
	User SYS logged on from labtstdb2.containerstore.com.	f...	...	...	Feb 13, 2014 5:46:...	SYSMAN
	User SYS logged on from labtstdb2.containerstore.com.	...	...	...	Feb 13, 2014 1:31:...	SYSMAN
	Snapshot Too Old Error detected: SQL ID 8ux9k556s8w0q, Snapshot SCN 0x07d7.311e6142, Recent SCN 0x07d7.3685c416, Undo Tablespa...	...	...	...	Feb 13, 2014 10:2...	SYSMAN
	User SYS logged on from labtstdb2.containerstore.com.	...	...	...	Feb 13, 2014 7:04:...	SYSMAN
	Metrics "Current Open Cursors Count" is at 1,259	...	...	...	Feb 12, 2014 8:49:...	SYSMAN
	User SYS logged on from labtstdb2.containerstore.com.	...	...	...	Feb 12, 2014 11:1...	SYSMAN

An Incident



Agent is Unreachable (REASON = unable to connect to http server at https://www1ssd...main...store.com:1830/emd/main/. [peer not authenticated]) but the host is ..

General | Events | My Oracle Support Knowledge | Updates | Related Events And Incidents

Incident Details

- ID: 73428
- Target: ...com:1830 (Agent)
- Incident Created: Feb 14, 2014 5:52:45 PM CST
- Last Updated: Feb 14, 2014 5:52:45 PM CST
- Summary: Agent is Unreachable (REASON = unable to connect to http server at https://...com:1830/emd/main/. [peer not authenticated]) but the host is reachable.
- Internal Event Name: Status
- Event Type: Target Availability
- Category: Availability

Tracking | Acknowledge | Add Comment ... | Manage... | More

- Escalated: No
- Priority: Very High
- Status: New
- Owner: SYSMAN
- Acknowledged: No

Last Priority set to Very High by rule (Name = Incident Management Ruleset, Incident creation Rule for target unreachable.; Owner = SYSMAN).; on Feb 14, 2014 5:52:45 PM CST

This incident will be automatically cleared when the underlying issue is resolved.

Guided Resolution

Diagnostics

- View topology
- View recent configuration changes

High Level Information regarding incident and links to details.

Incident Events

Steps covered in incident and escalation.

Target is down; 1 members are down: timed.containerstore.com

General | **Events** | My Oracle Support Knowledge | Updates | Related Events And Incidents

Latest Events

View ▾ Remove from incident...

Message	Severity	Target	Target Type	Reported at	Root Cause Analysis	
					Result	Status
Target is down; 1 members are down: timed.containerstore.com	⊖	timed.containerstore.com	Database System	Feb 5, 2014 12:44:46 PM CST	n/a	n/a

Columns Hidden 7

Event Sequence ⓘ for selected event: **Target is down; 1 members are down: timed.containerstore.com**

Use the table below to see all the severities of the event from the time it initially triggered.

Message	Severity	Reported at
Target is down; 1 members are down: timed.containerstore.com	⊖	Feb 5, 2014 12:44:46 PM CST
The current status of the target is Down	⊖	Feb 5, 2014 12:25:52 PM CST
Agent Unreachable cleared.	⚠	Feb 5, 2014 12:25:52 PM CST
The current status of the target is Agent Unreachable	⚠	Feb 5, 2014 12:25:52 PM CST
Target is down; 1 members are down: timed.containerstore.com	⊖	Feb 5, 2014 11:22:51 AM CST

Incident Updates

- Steps through the updates to the incident.
- If any notifications have been sent, this is where you look!

General			
Events			
My Oracle Support Knowledge			
Updates			
Related Events And Incidents			
View ▾			
Time	Type	User	Message
Feb 5, 2014 11:32:...	Rule update		Priority set to High by rule (Name = TCS Non-Prod Incident Management Rule Set, Incident creation Rule for target down.; Owner = SYSMAN).
Feb 5, 2014 11:32:...	Rule update		Owner set to SYSMAN by rule (Name = TCS Non-Prod Incident Management Rule Set, Incident creation Rule for target down.; Owner = SYSMAN).
Feb 5, 2014 11:32:...	Rule update		Incident created by rule (Name = TCS Non-Prod Incident Management Rule Set, Incident creation Rule for target down.; Owner = SYSMAN).

Editing Thresholds for Incidents

- If Metrics Involved, Edit from Incident:

The screenshot shows the Oracle Incident Management console interface. It features a navigation bar with tabs: General, Events, My Oracle Support Knowledge, Updates, and Related Events And Incidents. The main content is divided into three sections:

- Incident Details:** ID 73448, Metric Database Time Spent Waiting (%), Metric Group Waits by Wait Class, Wait Class Administrative, Target mmsp (Database Instance), Incident Created Feb 14, 2014 7:03:37 PM CST, Last Updated Feb 14, 2014 7:03:37 PM CST, Summary Metrics "Database Time Spent Waiting (%)" is at 56.472 for event class "Administrative", Internal Event Name wait_sess_cls:dbtime_waitclass_pct, Event Type Metric Alert, Category Load.
- Tracking:** Escalated No, Priority Low, Status New, Owner SYSMAN, Acknowledged No. Includes a note: "Last Priority set to Low by rule (Name = TCS Incident Management Ruleset, Incident Creation Rule for Warnings; Comment Owner = SYSMAN).: on Feb 14, 2014 7:03:37 PM CST" and a checked checkbox: "This incident will be automatically cleared when the underlying issue is resolved."
- Guided Resolution:** Diagnostics (View topology, View recent configuration changes, View Metric Help) and Actions (Edit Thresholds, which is circled in red).

Set New Thresholds

Edit Advanced Settings: Database Time Spent Waiting (%)

Wait Class Administrative

Corrective Actions

Warning <none>

Critical <none>

Allow only one corrective action for this metric to run at any given time

Advanced Threshold Settings

Comparison Operator >

Warning Threshold

Critical Threshold

Number of Occurrences

Collection Schedule Every 10 Minutes

Time before alert is triggered/cleared 30 Minutes

TIP Empty Thresholds will disable alerts for that metric.

Template Override

Prevent metric settings on this page from being changed when a monitoring template is applied to the target



Threshold Suggestions

Threshold Suggestion

This feature will help you to arrive at an ideal threshold value using the historical data. Specify threshold values high/low/average for the selected time period.

Warning Threshold Critical Threshold View Data

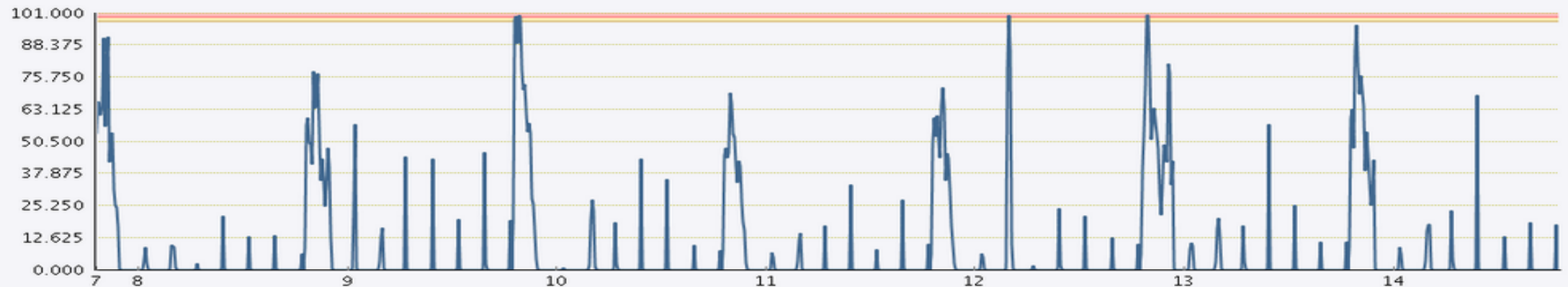
Threshold Suggestion

This feature will help you to arrive at an ideal threshold value using the historical data. Specify threshold values and pick a time period you want to choose as a reference. The chart will display how often you would have crossed the high/low/average for the selected time period.

Warning Threshold Critical Threshold View Data

Results

High Value	100	Time in warning (%)	0
Low Value	0	Time in critical (%)	0
Average Value	7.77	Number of warning events	0
		Number of critical events	0



Set the New Metric Thresholds

- Suggestions Have Verified- no Guessing.
- Upped Number of Occurrences to Eliminate False Alerts
- Choose if Monitoring Templates Can Override.

Advanced Threshold Settings

Comparison Operator >

Warning Threshold

Critical Threshold

Number of Occurrences

Collection Schedule Every 10 Minutes

Time before alert is triggered/cleared 30 Minutes

TIP Empty Thresholds will disable alerts for that metric.

Template Override

Prevent metric settings on this page from being changed when a monitoring template is applied to the target

Groups and Admin Groups

- Groups ease management of targets, allowing assignment of tasks, monitoring and other features through a single alias for multiple targets.
- Groups are still supported, but limited vs. what Administration groups offer you. The one advantage is multiple group assignment of a single target.
- Administration groups set hierarchy and automate management by assigning monitoring templates, compliance standards, and cloud policies.

Groups- Simple

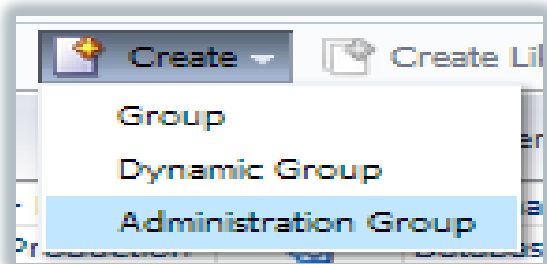
- Creating Groups are like Creating Roles...😊
- Add targets to a group or more than one group at any time.
- Edit standard groups down the road.
- Groups can be used with rule sets to assign alerts to multi-level escalation in actions.

Administration Groups- Complex

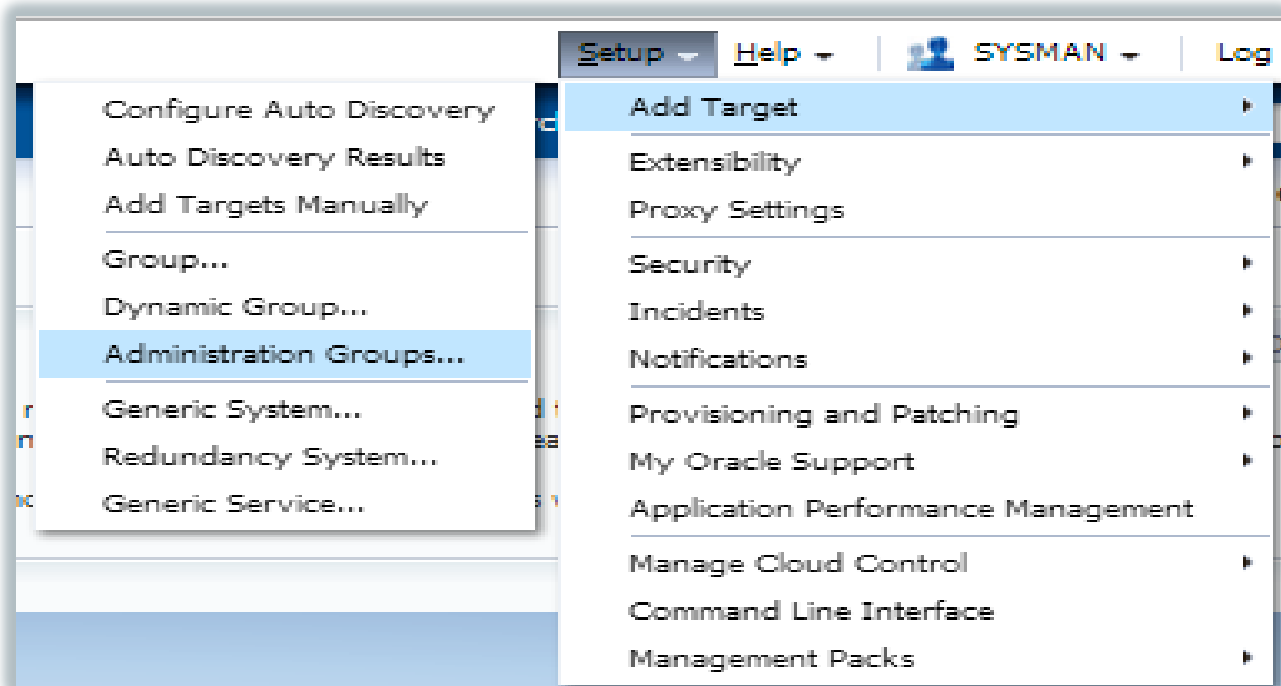
- Plan out first, including “Line of Business”, “Lifecycle Status” and what types of databases exist in environment, (production, mission critical, staging, development, QA, etc.)
- Once created, most design elements of the Administration group are not open to edits.
- All hierarchy for each target is available in the “target properties”.

Setting up Admin Groups

- Click on Targets, Groups OR Setup, Add Target, Administration Groups
- Create, Choose Administration Group



Have your design ready...



Creation a Hierarchy

- Start with Lifecycle Status
- Decide which to keep, edit, add, remove or merge.

Hierarchy Levels

+ Add - Remove

Target Property
Lifecycle Status

Preview

All Administration Gr
AdminGrp 1

Development
Deve-Grp

Mission Critical

Production

Staging

Test
Test-Grp

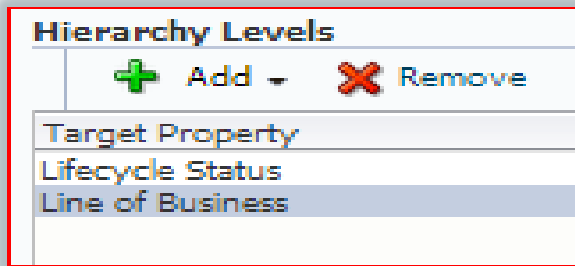
Hierarchy Nodes: Lifecycle Status

+ Add Edit... Remove Merge Split

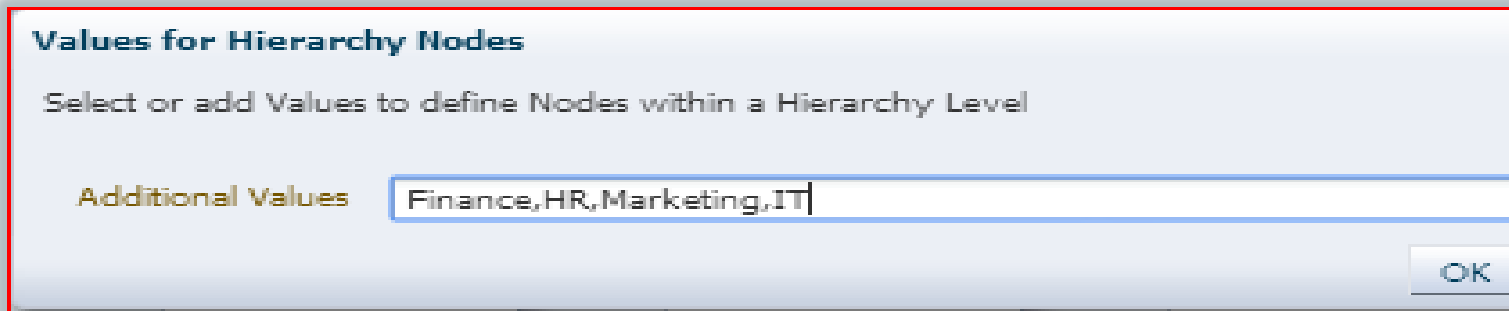
Property Value for Membership Criteria	Short Value
Development	Deve
Mission Critical	MC
Production	Prod
Staging or Test	ST

Create Your Line of Business

- Click on “Add” in Hierarchy Levels, (again)



- Choose Line of Business, click on Add, separate by a comma all lines of business desired.



Simple Hierarchy is now built

- Development Hierarchy, (same for each Lifecycle status)



Create Hierarchy

- Click on Create, warning will appear-

Confirmation

Are you sure you are ready to create the administration group hierarchy now?

Make sure you have thought through your administration group hierarchy and all levels have been defined with the appropriate target property. Once the administration groups are created, it will not be possible to change the level of a property, add a new level, or remove a level without deleting all the administration groups and recreating the whole hierarchy. Note that you will still be able to add and remove values for properties easily.

Continue

Cancel

Monitoring Template (1)

Compliance Standard (0)

Cloud Policies (0)

- Monitoring Templates, (covered earlier), can be created as part of this step.
- Compliance and Cloud standards must be created in the appropriate framework in EM12c before being added to the Administration Group.

Create and Choose Existing

Administration Groups and Template Collections

Administration Groups and Template Collections > Create Template Collection

Create Template Collection

* Name:

Description:

Monitoring Template (0) | Compliance Standard (0) | Cloud Policies (0)

View ▾ | Add | Remove | Go To Monitoring Template Home

Name	Target Type
No Monitoring Template included	

Add Monitoring Template to Template Collection Prod Monitoring Collection

Name:

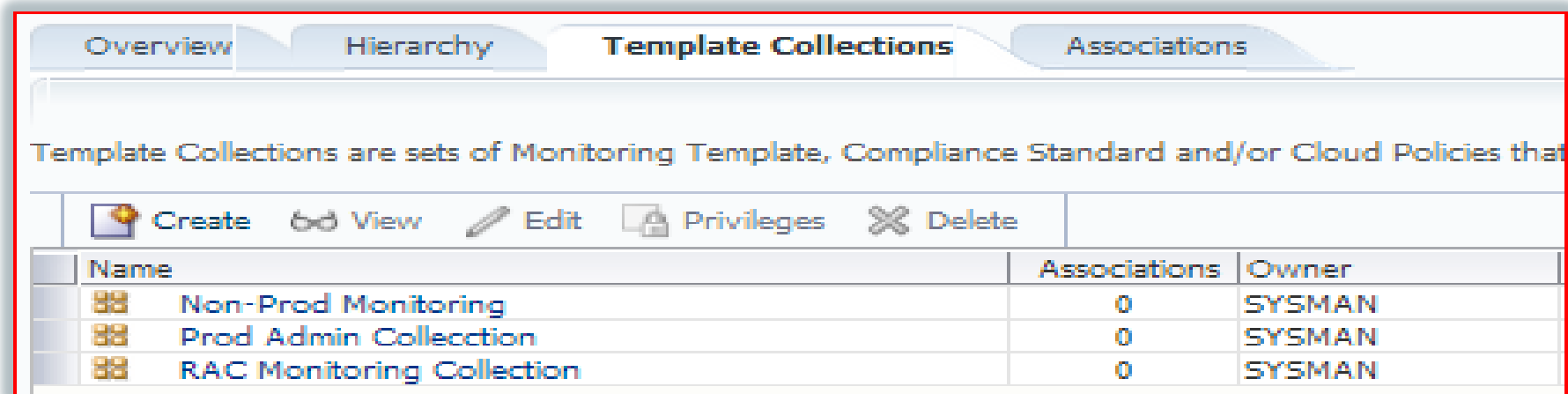
Target Type: Display Out of Box

Name	Target Type	Description
Prod_DB_CLSTR_Tmpl	Cluster Database	Monitoring Template for Cluster
Host_Mon_Tmpl	Host	Monitoring Templates for Standard Host Target
Non_Prod_DB_Tmpl	Database Instance	Production Database Single Instance Monitoring Template
Prod_DB_Inst_Tmpl	Database Instance	Production Database Single Instance Monitoring Template

Any User-Defined Metric in the template will be excluded from template sync operations. Explain the reason.

Create the Template Collections

- Add all monitoring templates required of any life cycle.



Template Collections are sets of Monitoring Template, Compliance Standard and/or Cloud Policies that

Name	Associations	Owner
Non-Prod Monitoring	0	SYSMAN
Prod Admin Collection	0	SYSMAN
RAC Monitoring Collection	0	SYSMAN

- Note- No associations exist yet!

Run Unassociated Target Report

- Run Report to see what targets aren't associated with Admin Groups.

Administration Groups and Template Collections

Overview | Hierarchy | Template Collections | **Associations**

Actions | ↔ Associate Template Collection | ✕ Disassociate Template Collection

Unassigned Targets Report

Target Name	Target Type	Non Privilege Propagating Aggregate	Lifecycle Status	Line of Business
oms12c1_ct...	Agent			
EM Job Service	Oracle Home			
EM Management Beacon	EM Service	<input checked="" type="checkbox"/>		
ccdd.containerstore.com	Beacon			
lmsd.containerstore.com	Database Instance			
posd.containerstore.com	Database Instance			
lmsd.containerstore.com	Database Instance			
webd.containerstore.com	Database Instance			
LISTENER_LABDDVT	Database Instance			
LABDDVT_listener.containerstore.com	Listener			
LABDDVT_ahdsvdb1.containerstore.com	Automatic Storage Management			
ora11g_gndinfrhome1_labddvdb1	Oracle Home			
ora11g_home1_labddvdb1	Oracle Home			
ora11g_home2_labddvdb1	Oracle Home			
ams1.containerstore.com	Database Instance			
lcp1.containerstore.com	Database Instance			
lcp1opcsrvr10.3.5.0_ora11g	Oracle Home			
diwrepdb1.containerstore.com	Host			
diwrepdb1.containerstore.com/892_Management	OMS Console			
diwrepdb1.containerstore.com	Database Instance			
rmanp.containerstore.com	Database Instance			
LISTENER_DRWRPDB1	Listener			
ora11g_home1_diwrepdb1	Oracle Home			
ora11g_home1_diwrepdb1	Oracle Home			
diwrepdb1.containerstore.com/892_Management	Oracle Management Service	<input checked="" type="checkbox"/>		

Editing a Target

- Fill in all Pertinent Information

Administration Groups and Dynamic Groups are created using membership criteria specified using global target properties and values. A target joins a Dynamic Groups' criteria, subject to limitations.

Following is the list of property values used in the definition of Administration Groups Hierarchy.

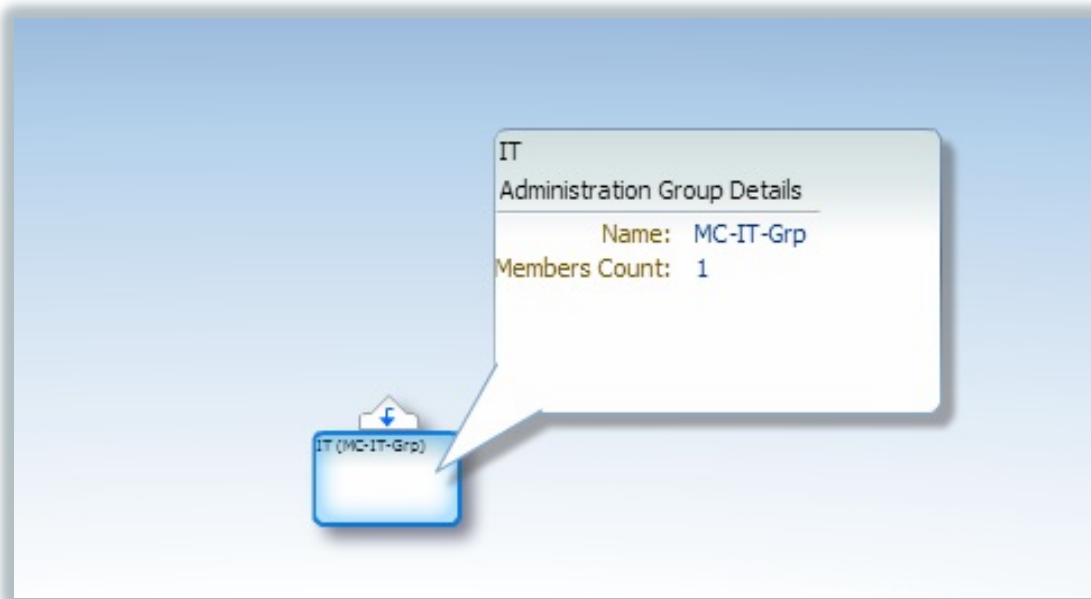
Lifecycle Status : Development, Mission Critical, Production, Staging, Test

Line of Business : Finance, HR, IT, Marketing

Name	Value
Comment	EM12c and RMAN Server
Contact	DBA
Cost Center	
Customer Support Identifier	
Department	IT
Lifecycle Status	Mission Critical ▼
Line of Business	IT
Location	San Antonio, TX
Operating System	Linux
Platform	x86_64
Target Version	12.1.0.2.0

Post Association

- Associate Template Collection
- Continue with all Targets Till Complete.



Dynamic Groups

- High Level Review

- A dynamic group allows administrators to create a group of targets by specifying its membership criteria instead of adding targets directly into the group. Membership criteria are based on target properties such as Lifecycle Status, Line of Business, Target Type, etc. When multiple criteria are defined for a dynamic group, a target must match all criteria before it is automatically added to the dynamic group. An example of dynamic group criteria can be (Target Type = Database or Listener) AND (Lifecycle Status = Production).

Define the Membership Criteria

Define Membership Criteria

Specify Membership Criteria Using Target Properties

Target Types:

On Host:

Lifecycle Status:

Line of Business:

Location:

Contact:

Overview

- Choose the target property group
- A target's properties are checked against the property group before it is added to the dynamic group
- Target properties that do not match the property group are excluded from the dynamic group membership criteria

Member Preview

Use the Update Member Preview button to review the list of targets that currently match the dynamic group criteria.

Target Name ▲	Applicable Target Types	Host	Status
/EMGC_GCDomain/instance1/ohs1	Oracle HTTP Server	oh1.containerstore.com	
10gR2SE_home1_3_10gR2SE	Oracle Home	dfwmedb1.containerstore.com	n/a
agent12c1_13_10gR2SE	Oracle Home	dfwrepdb1.containerstore.com	n/a
agent12c1_3_10gR2SE	Oracle Home	dfwdfmdb1.containerstore.com	n/a
agent12c1_4_10gR2SE	Oracle Home	dfwocsd1.containerstore.com	n/a
agent12c1_4_10gR2SE	Oracle Home	dfwocsd2.containerstore.com	n/a
agent12c1_4_10gR2SE	Oracle Home	dfwocsd3.containerstore.com	n/a

Previous 1-25 of 80 Next 25

Reviewing the Build

- The Membership can now easily build out from the criteria entered.
- Saves from having to build Admin Groups.

Define Membership Criteria
Specify the target properties that determine the group membership. All targets that match all criteria (logical AND) will automatically be added to the group

Define Membership Criteria

Target Property	Property Value(s)
Target Types	Agent, Host, Listener, OMS and Repository, Oracle Database Exadata Storage Server System, Oracle Exadata Database Machine, Oracle Exadata Storage Server, Oracle Home, Oracle HTTP Server, Oracle High Availability Service, OMS Console, Oracle Database Service
On Host	dfwdssdl dfwposd dfwwmsl

Time Zone
The time zone you select here is used for scheduling operations such as jobs and blackouts on this group. The groups statistics charts will also use this time zone.

Time Zone (UTC-06:00) US Central Time (CST) ▼

Charts

- Use Default Charts to Begin

Create Dynamic Group

General **Charts** Columns Dashboard Access

Add default charts
Include Oracle suggested charts.

Specify the charts that will be shown in the Group Charts page. By default, the commonly used charts for the target types contained in this Group are added.

Edit Remove | Add Reorder Previous 1-25 of 34 Next 9

Select	Metric Name	Chart Description
<input checked="" type="radio"/>	Host: Total Processes	5 Peak Targets
<input type="radio"/>	Host: Total Disk Space Utilized (across all local filesystems in MB)	5 Peak Targets
<input type="radio"/>	Host: Logical Free Memory (%)	5 Peak Targets
<input type="radio"/>	Host: Memory Utilization (%)	5 Peak Targets
<input type="radio"/>	Host: Run Queue Length (5 minute average, per core)	5 Peak Targets
<input type="radio"/>	Database Instance: Host CPU Utilization (%)	5 Peak Targets
<input type="radio"/>	Database Instance: Active Sessions Waiting: I/O	5 Peak Targets
<input type="radio"/>	Database Instance: Active Sessions Using CPU	5 Peak Targets
<input type="radio"/>	Database Instance: Wait Time (%)	5 Peak Targets
<input type="radio"/>	Database Instance: Average Active Sessions	5 Peak Targets
<input type="radio"/>	Listener: Connections Refused (per min)	5 Peak Targets
<input type="radio"/>	Listener: Connections Established (per min)	5 Peak Targets
<input type="radio"/>	Listener: Response Time (msec)	5 Peak Targets

Keep it Simple

- Use Default for Charts, Columns, Dashboard

Search and Select Administrator or Role Cancel Select

Search

Search

Type Go

Results

✓ TIP Owner has Full privilege o

Select All | Select None

Select	Name ▲	Type	Description
<input type="checkbox"/>	PUBLIC	Role	PUBLIC role is granted to all administrators. This role can be customized at site level to group privileges that need to be granted to all administrators

Cancel Select

General | Charts | Columns | Dashboard | **Access**

Owner SYSMAN

Remove | Add

Select All | Select None

Select	Name ▲	Type
<input type="checkbox"/>	PUBLIC	Role

Group Review

- Dynamic Easier, Fluid
- Administration- more complex, but open to more errors.

Groups






Groups allow users to monitor and manage many targets as one. Group membership is defined either by explicitly adding targets as members or, in the case of Dynamic Groups, automatically added to the appropriate Dynamic Group or Administration Group. Administration Groups are a special type of group meant to automatically deploy roles.

Search

Name

Search Advanced Search Save Search Criteria

View Create Create Like Edit Remove View Members Customize Page Associate Template Collection

Name	Group Type	Template Collection	Members
AdminGrp1		n/a	Group(20), Agent(1)
ASM - Production		n/a	Automatic Storage Management(8)
Non-Production		n/a	Database Instance(21), Oracle Home(17), Database System(16), Listener(6), Host(4), ... More
Production		n/a	Oracle Home(49), Database Instance(21), Listener(20), Database System(18), Host(15), ... More
Production Group		n/a	Oracle Home(53), Database Instance(22), Listener(20), Host(17), Agent(17), ... More

Summary-How This Works Together

- Automate-
 - Monitoring Templates
 - Rule Sets
 - Dynamic Groups if you are not using Advanced Features
 - Administration Groups if you want automation, auto-discovery/monitoring
- Efficiency
 - Remove notifications that create “white noise”.
 - Update metric thresholds.
 - Silence metrics that offer no value.

Program Agenda with Highlight

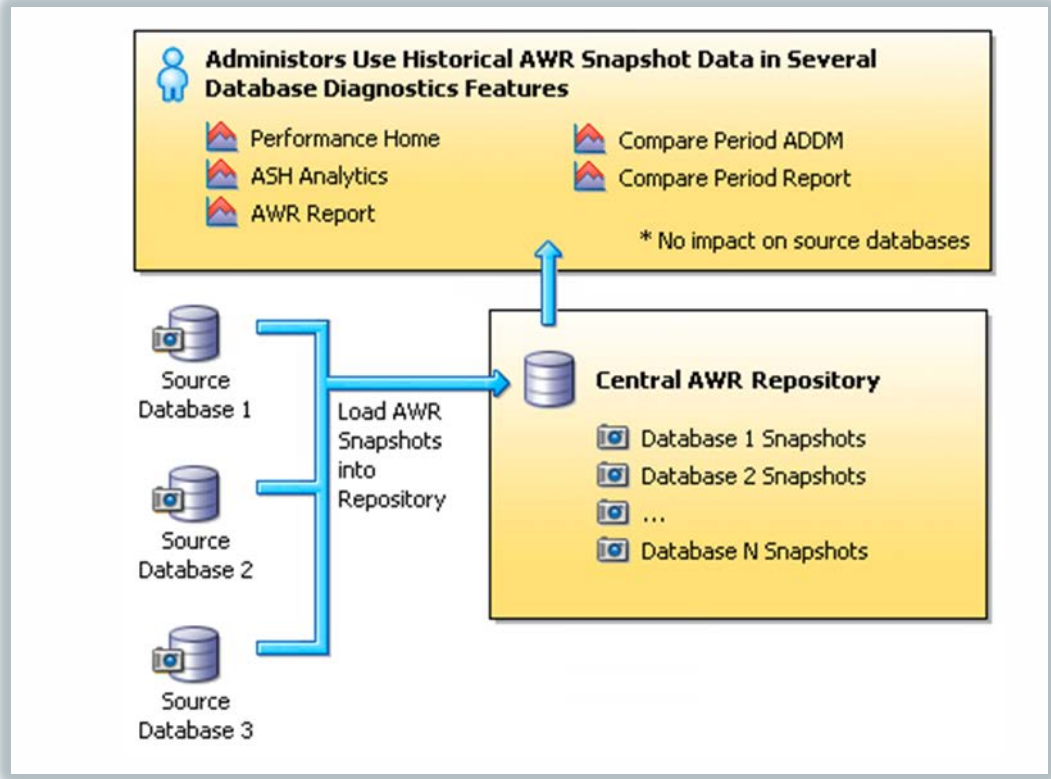
- 1 A Little History Lesson
- 2 Framework
- 3 Everything as a Service
- 4 Database
- 5 Just Plain Cool**

Just Plain Cool

AWR Warehouse

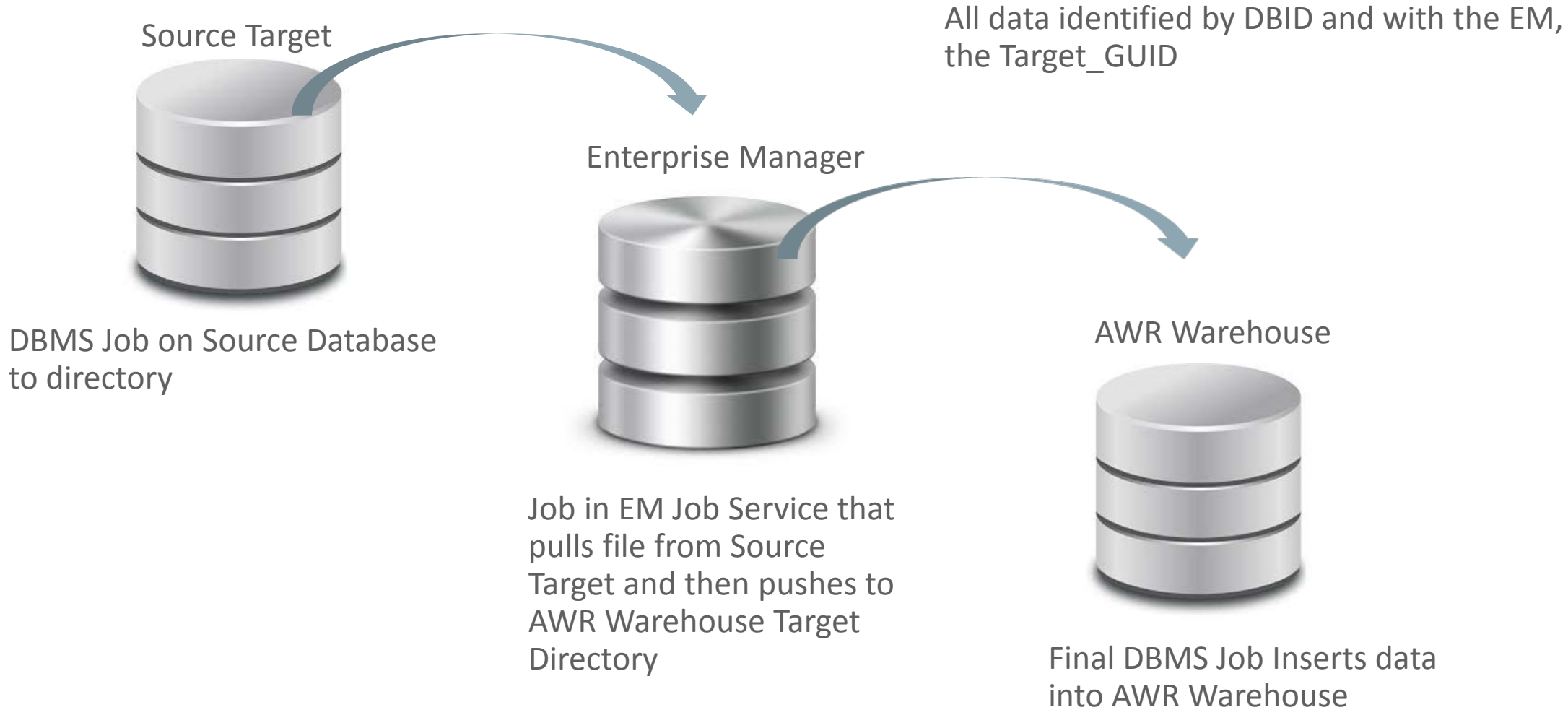
The Future

AWR Warehouse

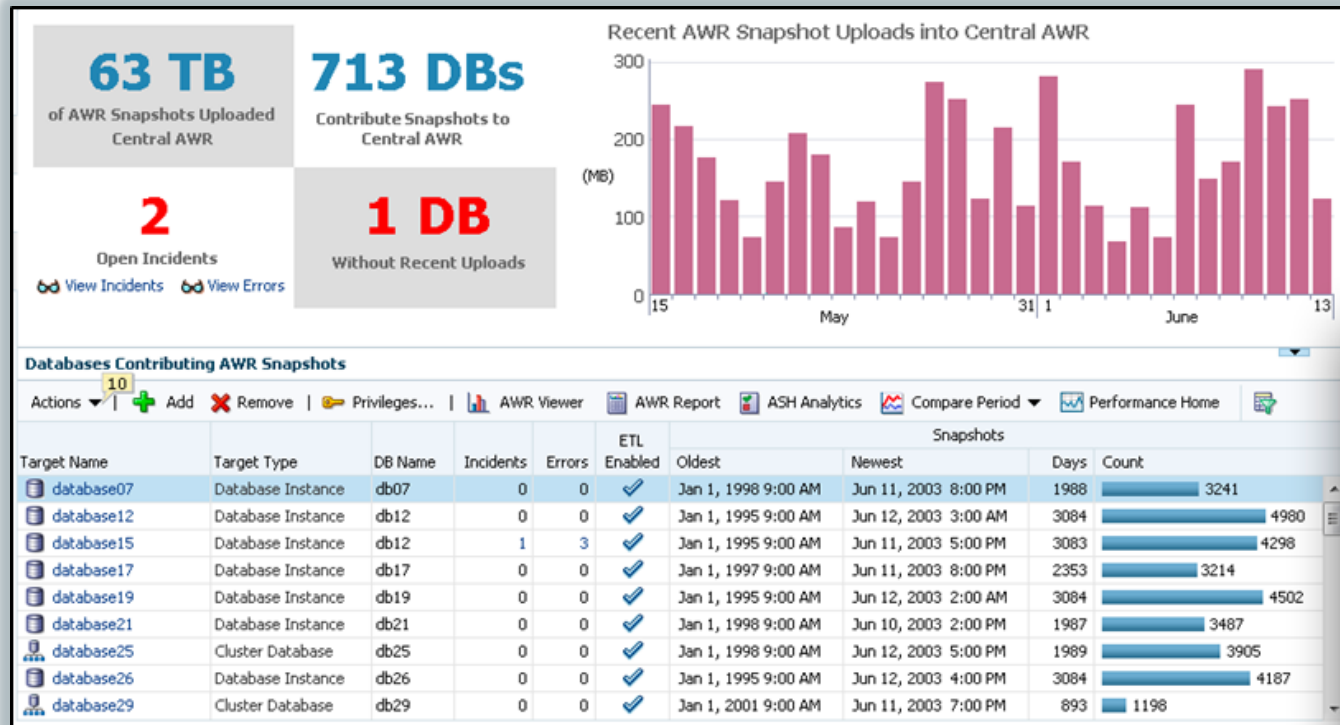


- Central warehouse configured for long term AWR data retention
- Historical and ongoing AWR snapshots collected from databases enabled for AWR warehouse
- ETL jobs moves snapshots from source databases into AWR warehouse
- Retention period configurable for weeks, months, years or forever (default)

AWR ETL Jobs

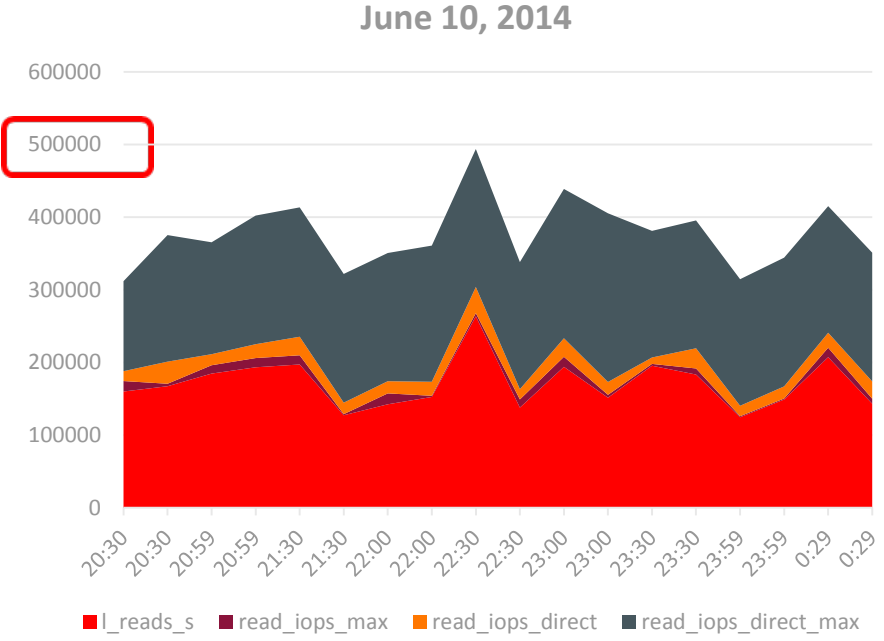
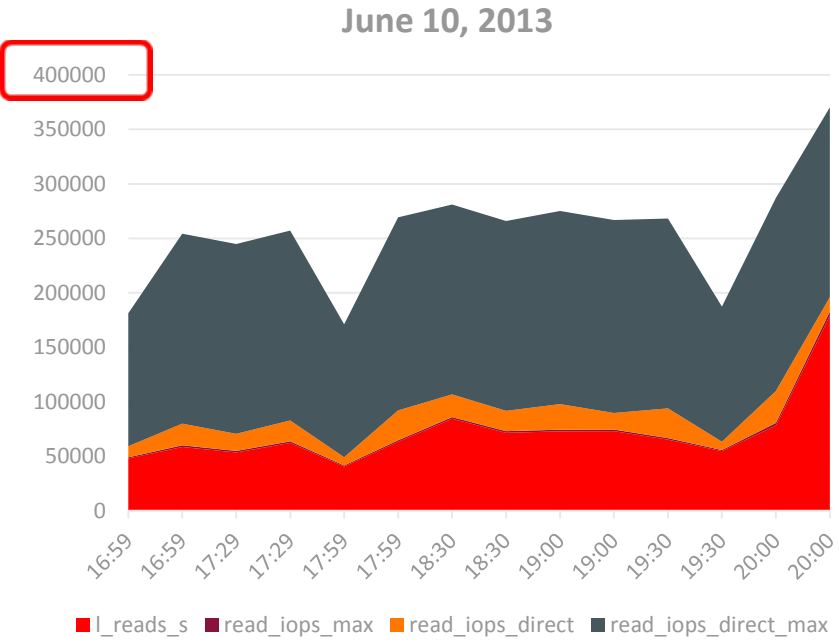


Warehouse Interface



- Warehouse dashboard tracking ETL jobs
- All AWR features available on long term AWR data
 - Performance page
 - AWR report
 - ASH analytics
 - Compare Period ADDM
 - Compare Period Report
- Integrated seamlessly into EM UI
- Zero runtime overhead on source Production databases

What Can I do with the AWR Warehouse?



The Future



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<http://about.me/dbakevlar>



Email

dbakevlar@gmail.com

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