

Blue Medora VMware vCenter Operations Manager Management Pack for Oracle Enterprise Manager

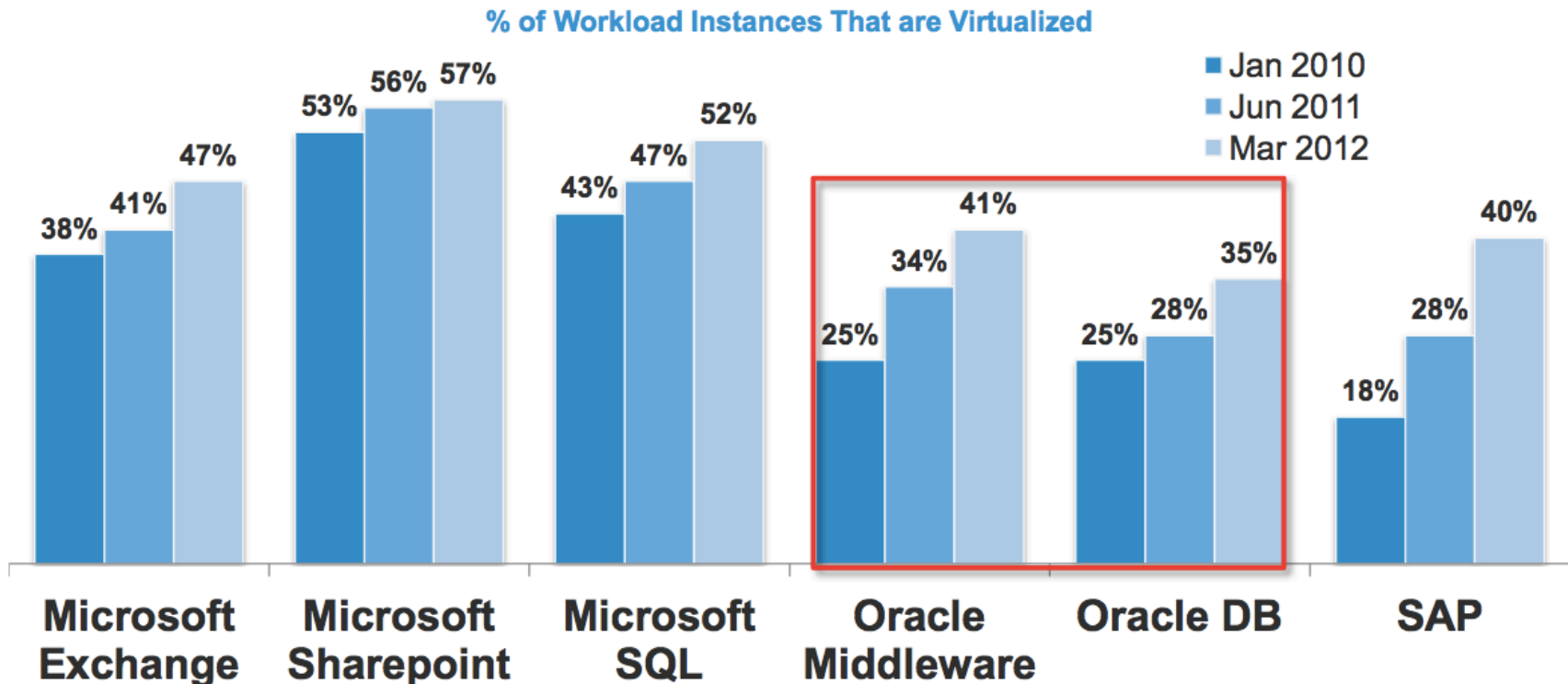
Customer Overview

Terminology used in subsequent slides

Term / Acronym	Description
vC Ops	VMware vCenter Operations Manager
OEM	Oracle Enterprise Manager – Known in previous versions as Grid Control. Most current version is Oracle Enterprise Manager Cloud Control (EM12c)
MP	Management Pack – An add solution for vC Ops that extends vC Ops visibility to a new product area (e.g. Oracle)
vC Ops MP for OEM	Blue Medora vC Ops Management Pack for Oracle Enterprise Manager
EM12c Plugin for vC OPS	Blue Medora Oracle Enterprise Manager Cloud Control Plugin for VMware

Adoption of Oracle on VMware is accelerating

- Tier-1 Oracle production workloads are finally moving onto VMware
- In 2013, the Oracle virtualization rate is projected to exceed 50%



Source: VMware customer survey, Jan 2010, Jun 2011, Mar 2012

Data: Total number of instances of that workload deployed in your organization and the percentage of those instances that are virtualized.

Top challenges running Oracle on VMware

- **Lack of management tools** that provide visibility of each layer on Oracle on VMware and the key KPIs that are required to guarantee uptime and performance
- Distinct teams (Oracle DBAs and VMware admins) with little knowledge of the “other silo’s” layers of an Oracle on VMware infrastructure
- Confusing VMware support policy by Oracle
- Concerns about Oracle on VMware licensing

Lack of out-of-the-box management tools

Lack of Integration

The top challenge moving production Oracle workloads into VMware is lack of integration between the Oracle DB/App and VMware layers

Zero Awareness

VMware's out-of-the-box management tool included with vSphere, **VMware vCenter**, has zero awareness of Oracle workloads

Capabilities Not Included

Oracle's out-of-the-box management tool that comes with Oracle, **Oracle Enterprise Manager**, does not include any capabilities to either detect, monitor, or manage VMware

Best-of-breed products that bridge the Oracle on VMware IT management divide:

- vC OPs Management Pack for Oracle Enterprise Manager
- Oracle EM12c Plugin for VMware
- Both are provided via a single license
 - Use each to provide complete visibility of the entire Oracle on VMware infrastructure from with OEM and vC Ops

Persona focused Oracle on VMware solutions

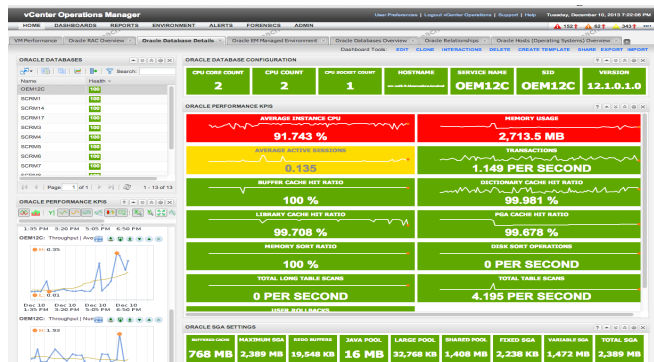
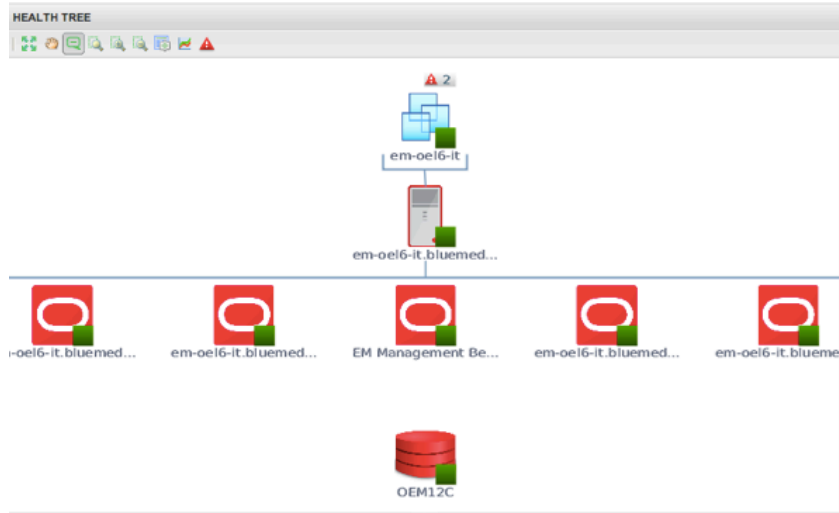
	vC Ops Management Pack for Oracle Enterprise Manager	Oracle Enterprise Manager Plugin for VMware
Plugs Into	VMware vCenter Operations Manager (vC Ops)	Oracle Enterprise Manager (OEM)
Primary Audience	VMware Admins	Oracle DBAs and Middleware Administrators
Benefits	Enriches vC Ops with Oracle-focused availability, health, and performance KPIs, metrics, and alarms	Adds VMware-focused monitoring, management, and provisioning capabilities into OEM
How it works	Collects data from OEM via a JDBC database connection to the OEM management repository	Integrates with vSphere via the vCenter Web Service API

Why a vC Ops MP for OEM?

- Oracle EM provides a centralized interface point for vC Ops to collect performance, health, and availability metrics across an entire Oracle estate
- OEM is pervasively deployed across the Oracle customer landscape to monitor & manage Oracle strategic products:
 - Oracle Database / Oracle RAC
 - Oracle WebLogic Server (J2EE), Tuxedo
 - Oracle VM, Oracle Exadata, and Oracle servers and storage
 - E-Business Suite, PeopleSoft, Siebel, JD Edwards, and Fusion



vC Ops MP for OEM - Overview



Oracle EM integration with vCenter Operations delivers automated correlation of performance, health, and availability data for Oracle workloads

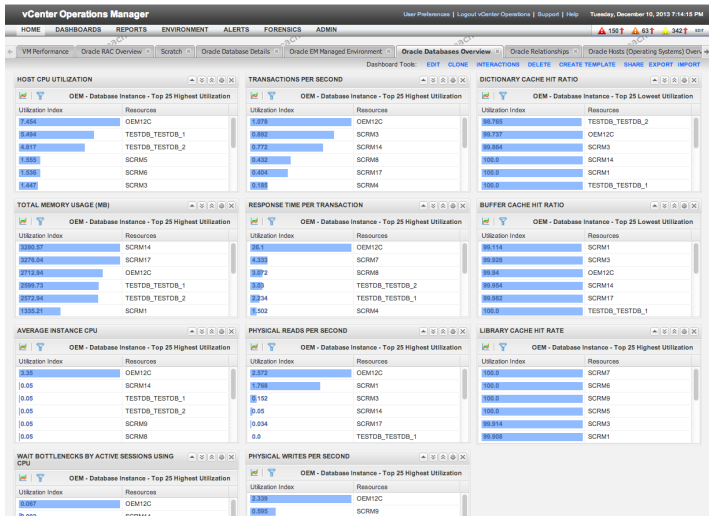
Overview

- Makes available all metrics collected by Oracle Enterprise Manager for managed Oracle targets available within vC Ops
- Includes Out-of-the-box dashboards, supermetrics, metrics, and metrics collections for Oracle targets
- Focused on Oracle workloads running on VMware vSphere
- Also provides useful info for Oracle workloads running on physical non-VMware virtualized environments

Benefits

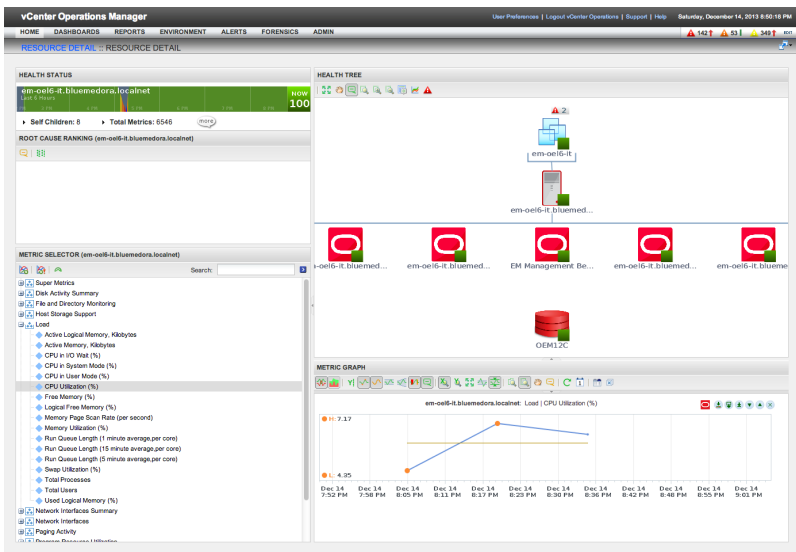
- Gain enterprise-wide visibility into Oracle workloads
- Greatly reduce Troubleshooting times, and simplify Security & Compliance Management
- Integration with between vC Ops and Oracle EM delivers reduces MTTI & MTTR

vC Ops MP for Oracle Enterprise Manager - Details



Technical Overview

- Collects data via a JDBC connection to the Oracle Enterprise Manager management repository
- Unified view of Oracle on VMware topology
 - Oracle Database Instances, Oracle Listeners, RAC, ASM, ASM Clusters, Oracle Hosts
 - End-to-End: Oracle Database → Operating System → VMware Virtual Machine → Storage
 - WebLogic J2EE Server → J2EE Applications → WebLogic Middleware Clusters → VMware Virtual Machines → Storage
 - Access to Oracle related metrics stored in the Oracle Management Repository (OMR)
- Health and performance
 - Throughput, Tablespaces, , Wait Bottlenecks, Wait by Class, Database Size, etc



What's new – vC Ops MP for OEM v5.8

Oracle on VMware visualization



- Enhanced monitoring of Oracle solutions
 - OOTB dashboards for Oracle Database and OEM-monitored operating systems
 - Support for Oracle RAC
- Enhanced relationship mapping discovers relationships between Oracle and VMware components
 - Displays linkages between entire Oracle on VMware stack

Expanded set of OEM metrics and KPIs



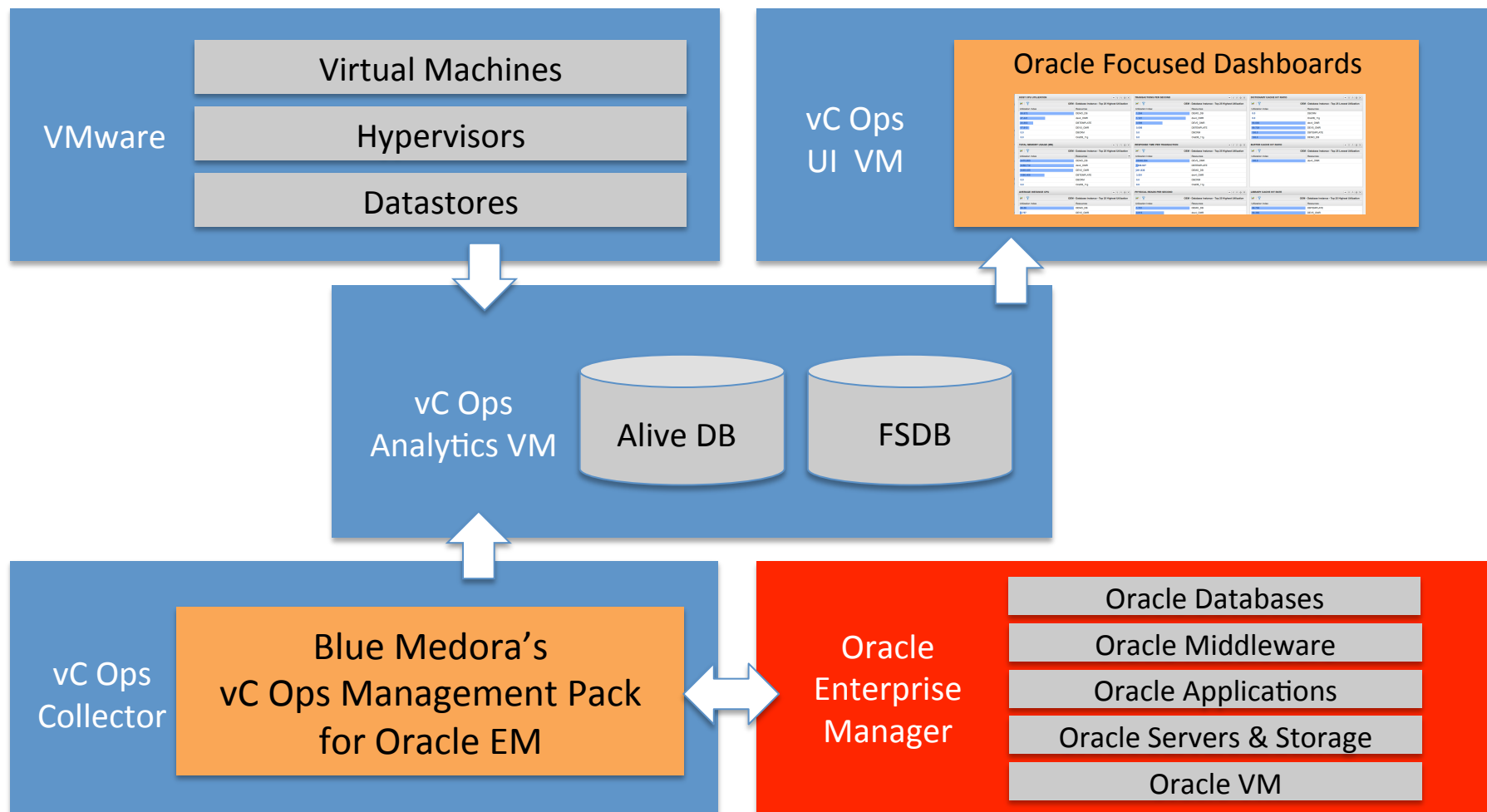
- Support for latest versions of OEM – Oracle EM12c Release 3
 - Leverage existing investment in OEM for Oracle related info
- Improved configuration and automatic detection of over 180 distinct Oracle product types
- Expanded set of Oracle Database focused metrics and supermetrics

Focus on Oracle on VMware Best Practices



- Dashboards focused on key Oracle on VMware KPIs
- Simplified identification of Oracle on VMware I/O related issues
- Look beyond single Database Instances to Oracle Database Performance across the enterprise

vC Ops MP for OEM High Level Architecture



Oracle DB on VMware focused vC Ops dashboards



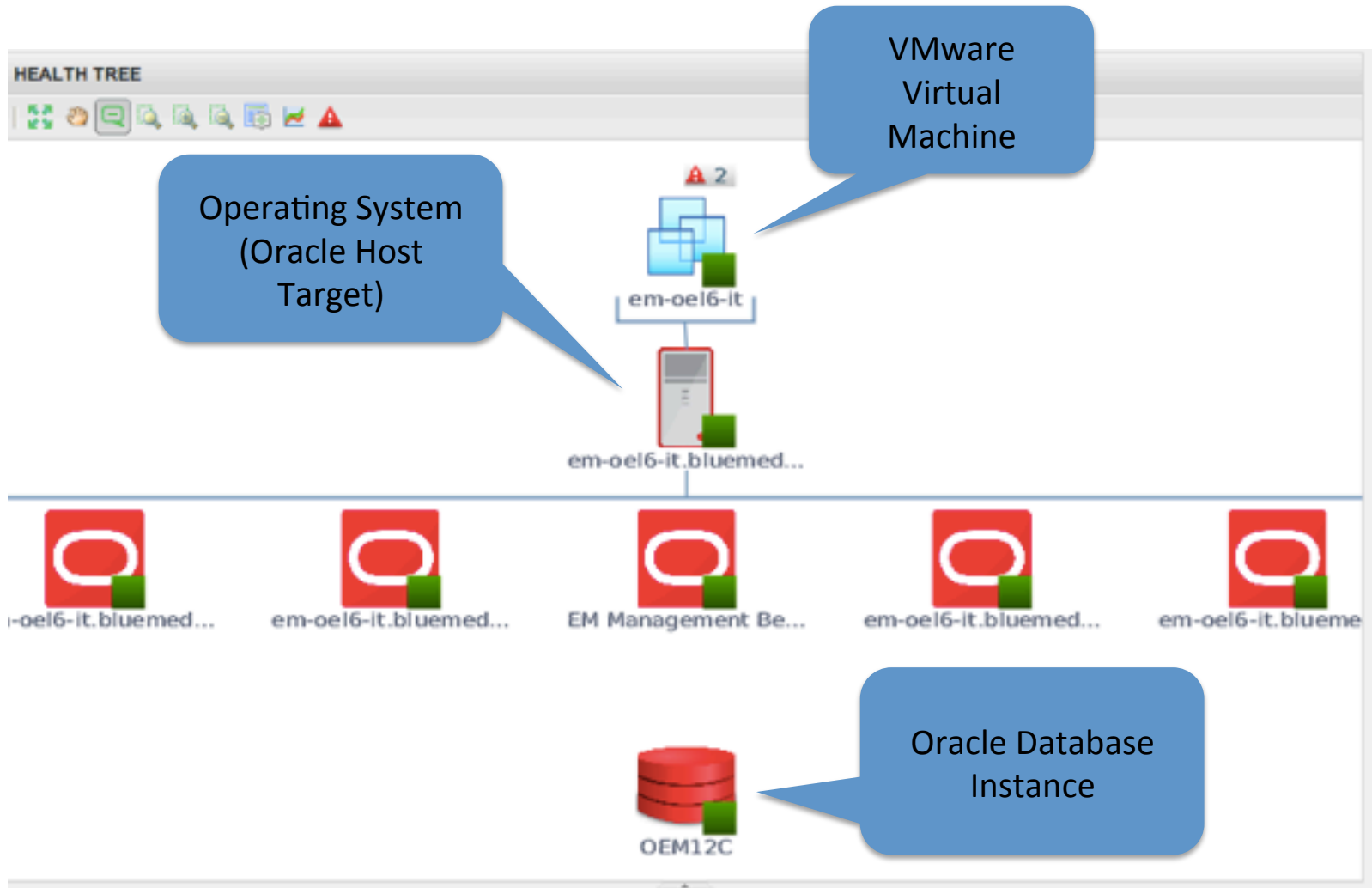
Select an Oracle DB

View Oracle DB Config

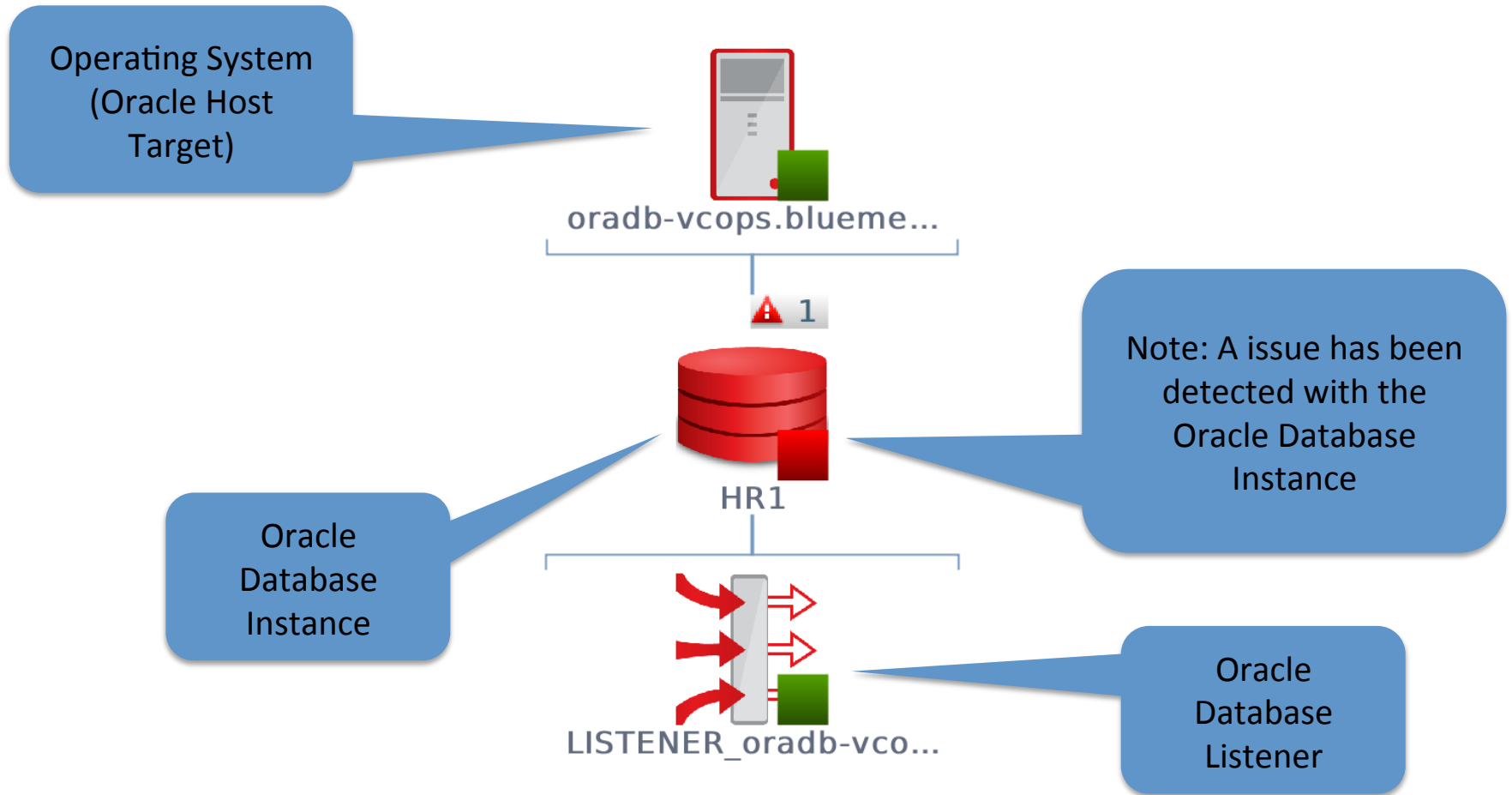
View Oracle Database KPIs

Oracle SGA settings

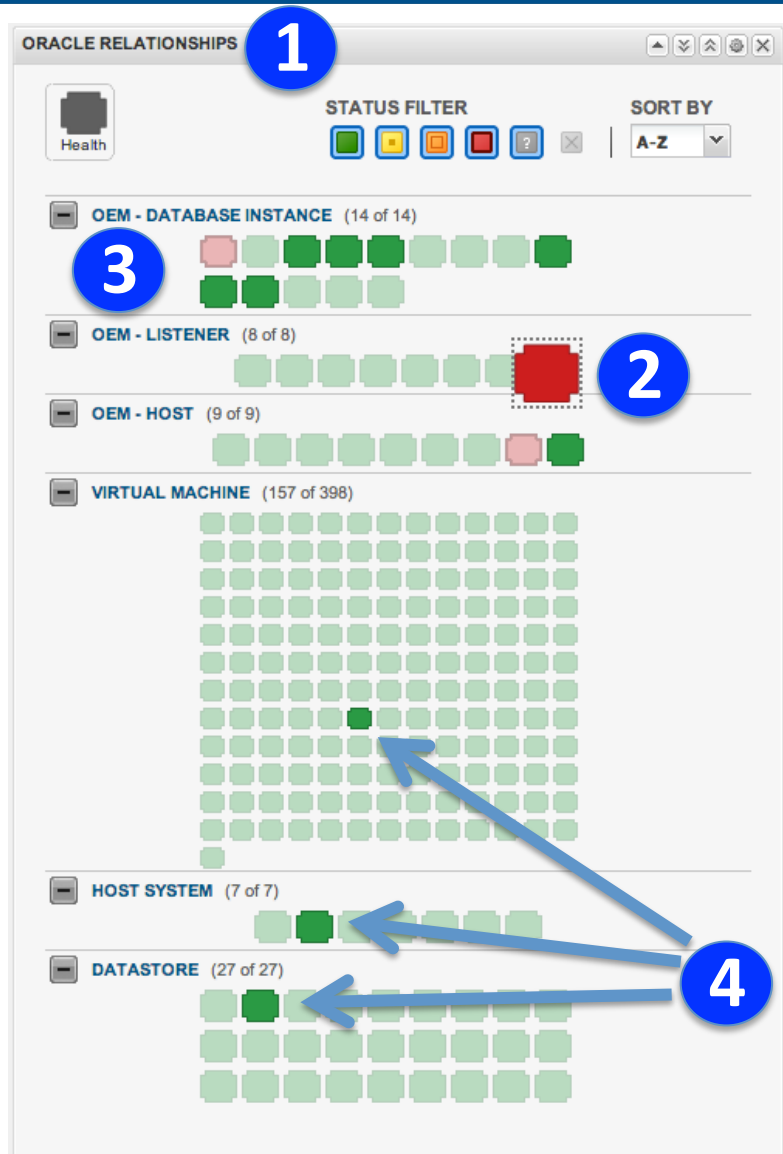
Bird's eye views of Oracle on VMware



Identify where problems exist....

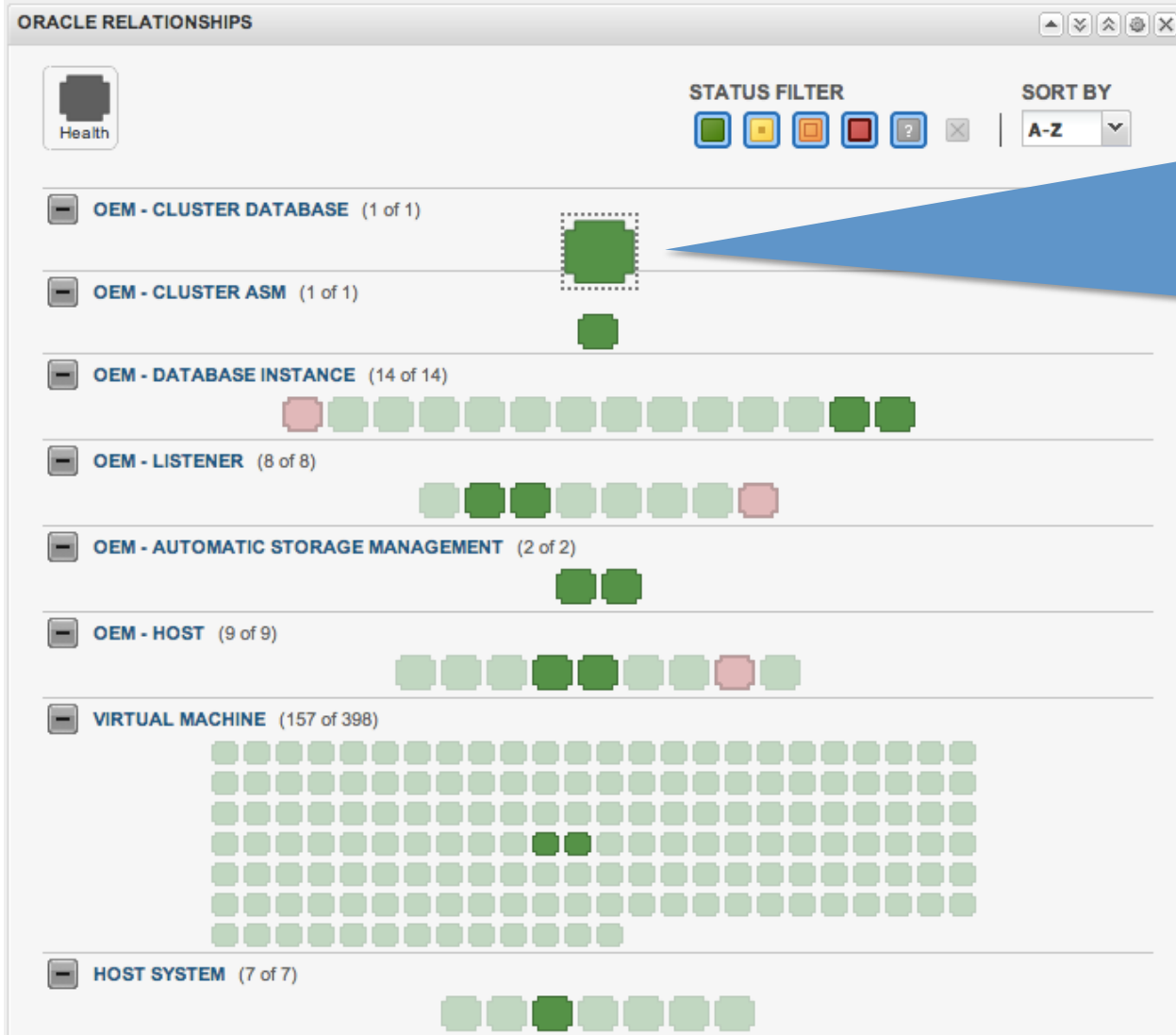


Comprehend complex Oracle on VMware stacks



1. View your entire Oracle landscape with the vC Ops Management Pack for OEM
2. Identify and click a down Oracle Database Listener (Lit up Red)
3. Instantly identify that 6 Oracle Database Instances affected by the Listener that is down (Lit up Dark Green)
4. At a glance identify the related VMware VM, VMware ESX Server, and Datastore(s)
5. Click any of the objects to drill down for more details

Visualize Oracle RAC on VMware



Select a Oracle RAC Cluster and instantly understand each Oracle on VMware component that make up the RAC cluster (lit up in **Dark Green** throughout the view)

Navigate through each Oracle on VMware layer

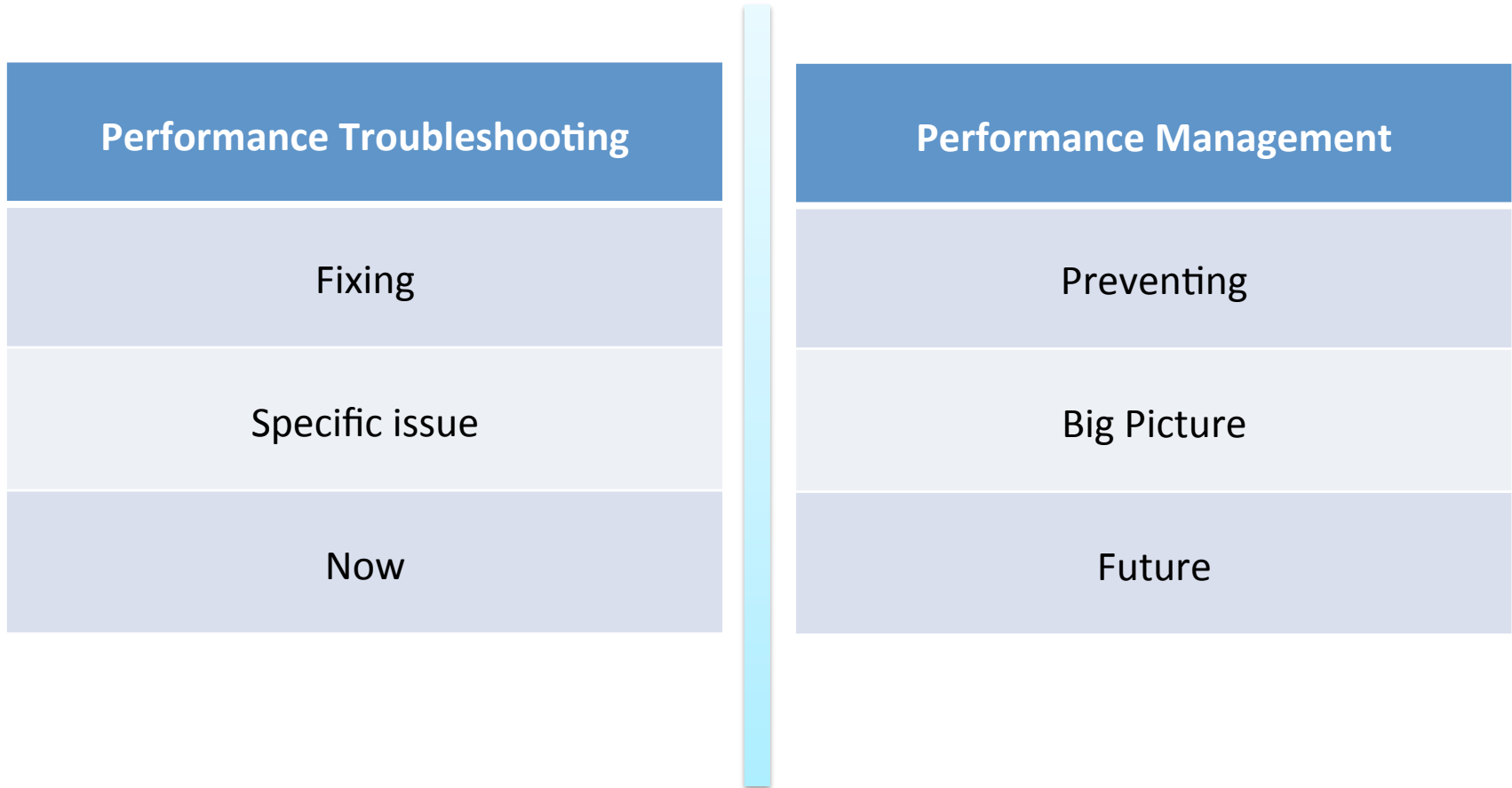
The screenshot displays the vCenter Operations Manager interface with three main panels, each indicated by a numbered callout:

- 1. ORACLE DATABASE INSTANCE:** A table listing database instances with their names, health status, and IDs.
- 2. ORACLE HOST (OPERATING SYSTEM):** A table listing the host operating system with its name, health status, and ID.
- 3. VIRTUAL MACHINE:** A table listing the virtual machine with its name, health status, and description.

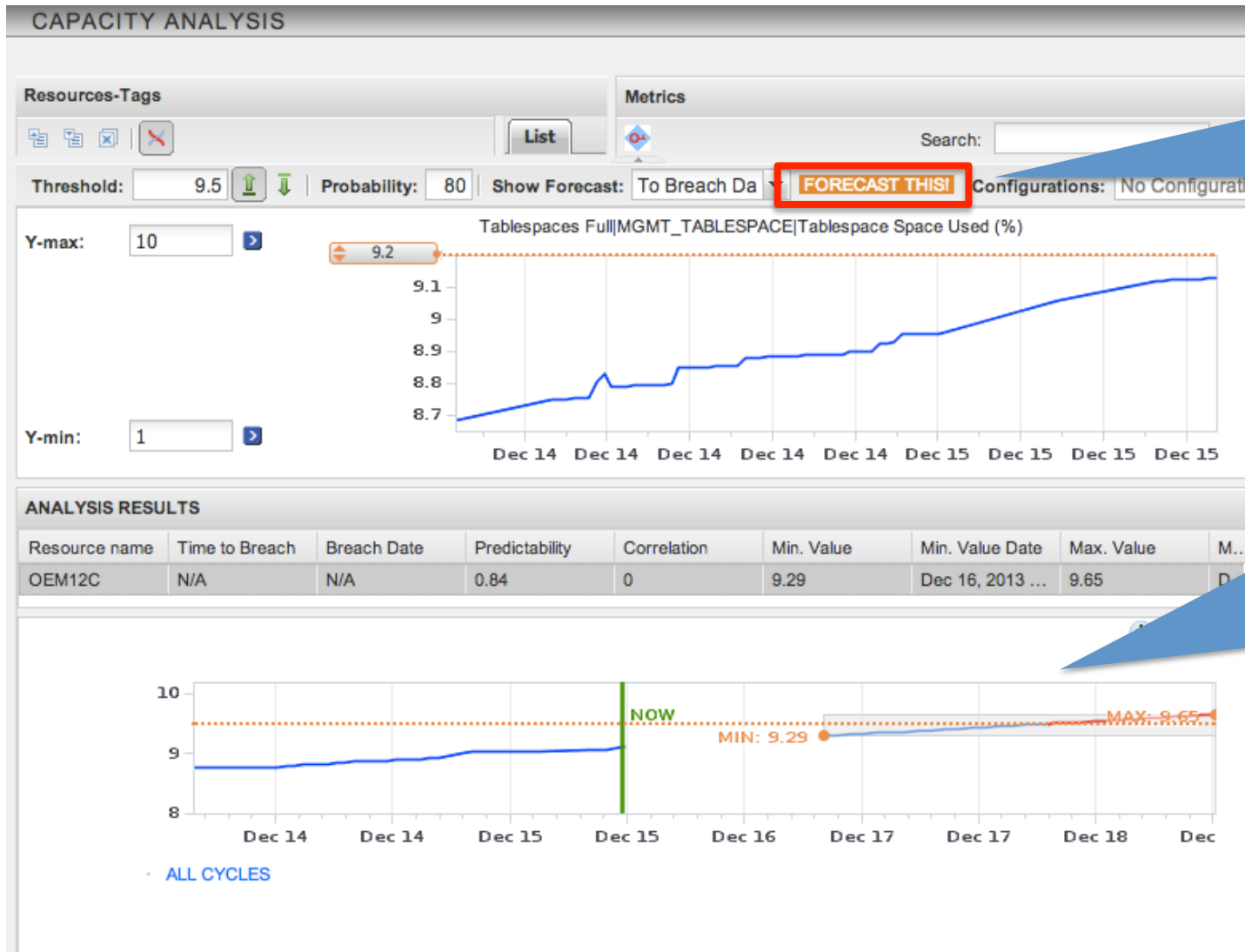
Each panel includes a search bar and a table of metrics. The Oracle Database Instance panel shows metrics such as Library Cache Hit Ratio (99.8%), PGA Cache Hit Ratio (99.9%), Memory Sort Ratio (100%), Disk Sort Operations (0 per second), Total Long Table Scans (0 per second), Total Table Scans (3.6 per second), and User Rollbacks (0.0166 per second). The Oracle Host (Operating System) panel shows metrics such as CPU Utilization (4.4%), Free Memory (31.3%), Logical Free Memory (59.7%), Swap Utilization (10.5%), Total Network I/O Rate (0.002 MB/s), and Total Disk Utilized ... s Local Filesystems (48.6%). The Virtual Machine panel shows metrics such as Swap In Rate (0 KBps), Swap Out Rate (0 KBps), Memory Usage (18.7%), Write Latency (2 ms), Read Latency (0 ms), Network Transmit Rate (1.4 KBps), and Network Receive Rate (0.4667 KBps).

1. Click a Oracle Database critical KPIs are displayed
2. The Oracle host target (operating system) is discovered and critical KPIs for the operating system layer are displayed
3. The VMware virtual machine the Database lives on is discovered along with KPIs for the VM

The 2 sides of Oracle on VMware Performance



Use vC Ops predictive analytics to predict Oracle issues



Forecast when the Oracle DB Tablespace will exceed 90% Utilized

Tablespace has a 84% chance of exceeding 90% utilization in roughly 2.5 days

How does vC Ops perform reliable predictive forecasting?

$$g \quad \Pi_{P_{1,1}, P_{1,2}, \dots, P_{m,m}}(p_{1,1}, p_{1,2}, \dots, p_{m,m}) = \left[\frac{\Gamma\left(\theta_{0,0} + \sum_{i=1}^{m-1} \sum_{j=1}^{m+1} \theta_{i,j} + \sum_{i=m,j=1}^m \theta_{i,j}\right)}{\Gamma(\theta_{0,0}) \cdot \prod_{i=1}^{m-1} \prod_{j=1}^{m+1} \Gamma(\theta_{i,j}) \cdot \prod_{i=m,j=1}^m \Gamma(\theta_{i,j})} \right] \cdot \left[\prod_{i=1}^{m-1} \prod_{j=1}^{m+1} p_{i,j}^{\theta_{i,j}-1} \cdot \prod_{i=m,j=1}^m p_{i,j}^{\theta_{i,j}-1} \right] \cdot \left[1 - \left(\sum_{i=1}^{m-1} \sum_{j=1}^{m+1} p_{i,j} + \sum_{i=m,j=1}^m p_{i,j} \right) \right]^{\theta_{0,0}-1}$$

where $\sum_{i=1}^{m-1} \sum_{j=1}^{m+1} p_{i,j} + \sum_{i=m,j=1}^m p_{i,j} \leq 1$, $0 \leq p_{i,j} \leq 1$ and $\Gamma(z) = \int_0^\infty t^{z-1} e^{-t} dt$

g The marginal distribution of the i^{th} row of J is:

$$(p_{i,1}, \dots, p_{i,m+1}) : \left\{ \begin{array}{l} \text{Dirichlet} \left(\Theta - \sum_{j=1}^{m+1} \theta_{i,j}, \theta_{i,1}, \theta_{i,2}, \dots, \theta_{i,m+1} \right) \quad \text{for } i = 1, \dots, m-1 \\ \text{Dirichlet} \left(\Theta - \left(\theta_{0,0} + \sum_{j=1}^m \theta_{m,j} \right), \theta_{m,1}, \theta_{m,2}, \dots, \theta_{m,m}, \theta_{0,0} \right) \quad \text{for } i = m \end{array} \right\}$$

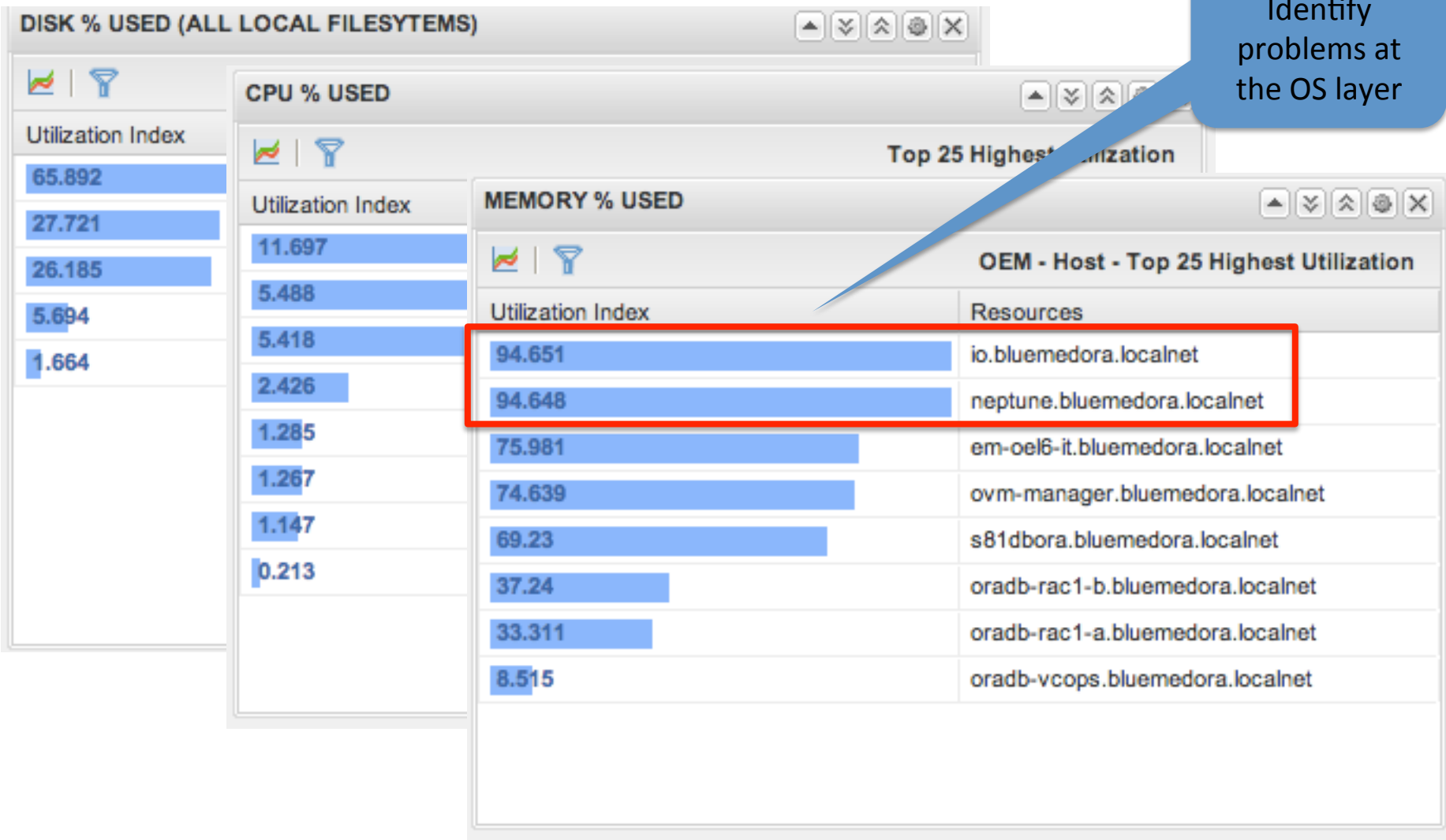
where $\Theta = \theta_{0,0} + \sum_{i=1}^{m-1} \sum_{j=1}^{m+1} \theta_{i,j} + \sum_{i=m,j=1}^m \theta_{i,j}$

It is pretty difficult for a human to beat the computer in analysis of the data..

The above is one of the many algorithms applied by vCenter Operations.

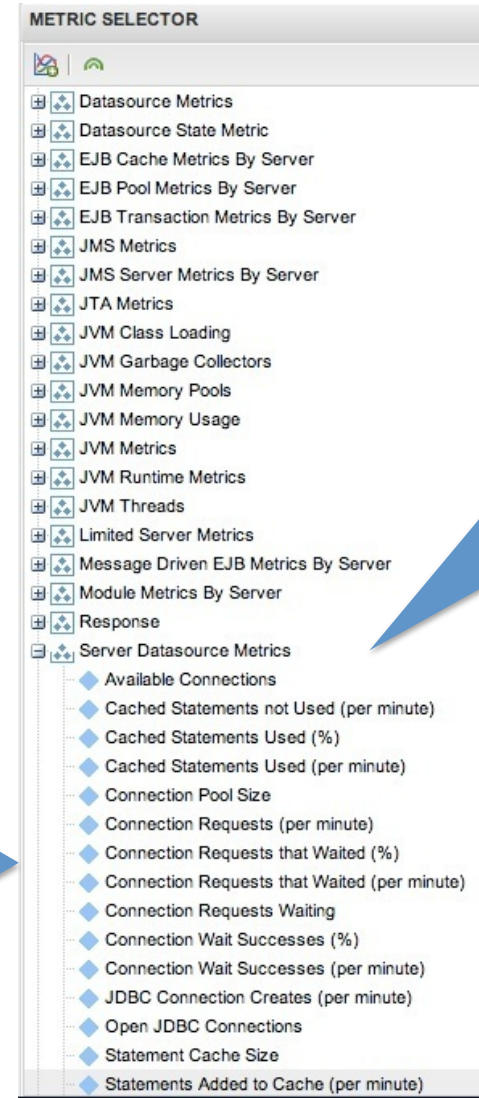
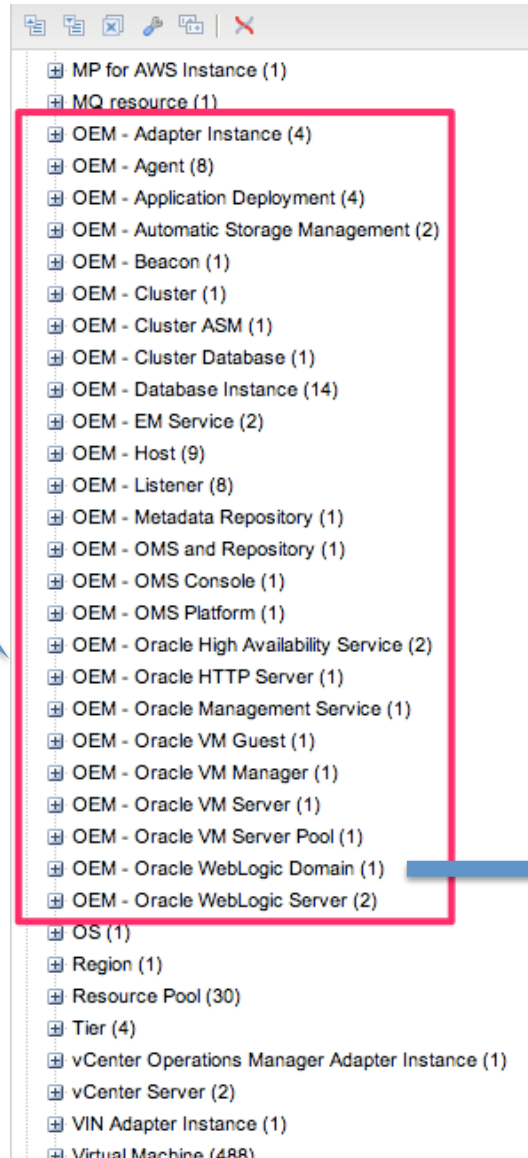
These algorithms are used to forecast Oracle-related capacity issues.

Identify most utilized Oracle-related OS resources



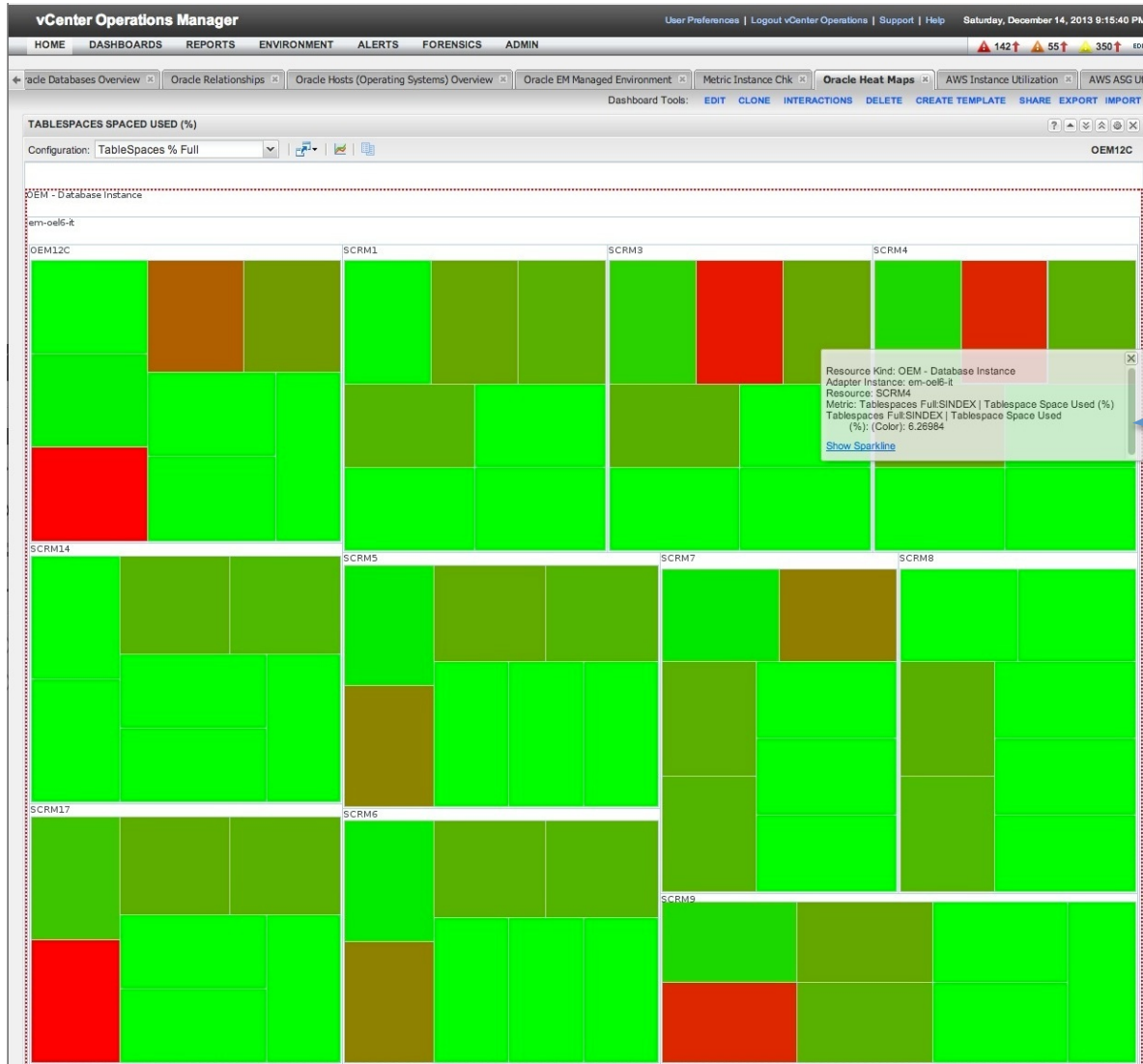
Monitor, graph, forecast capacity for any Oracle EM metric

Pull any OEM metric into vC Ops for any system OEM is monitoring or managing



Example:
Oracle
WebLogic
Domain
metrics

Identify Oracle Database Tablespace issues



Use Heat Maps to identify Oracle Tablespace issues across the Oracle EM monitored Oracle Database environment

Management Pack software licensing information

- Only supported with vC Ops Enterprise Edition
- Licensed directly from Blue Medora or Blue Medora's authorized resellers
 - Previous VMware version (the vC Ops Adapter for Oracle EM) has been withdrawn by VMware and is no longer available for new license acquisitions
 - Future versions will be developed, marketed, and supported by Blue Medora
- Existing vC Ops customers who have deployed the previous VMware vC Ops Adapter for Oracle EM are eligible for a special entitlement to latest release

Management Pack entitlement for current customers

- Licensees of the VMware versions of the vCenter Operations Manager Adapter for Oracle Enterprise Manager that are current with VMware maintenance, are entitled to the the Blue Medora release with 12 months of software support and maintenance as of December 18, 2013
- Current customers will be provided the option to renew software support and maintenance with Blue Medora, based on stated license metrics, on or before December 17, 2014, at the then current rate.

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