

Oracle's data center improves system availability by 25% and staff productivity by 30% using Oracle Enterprise Manager



Oracle Corporation
Redwood Shores, CA
www.oracle.com

Industry:
Software

Annual Revenue:
US \$22.4 billion

Employees:
85,000

Oracle Products & Services:
Oracle Enterprise Manager
Oracle Database
Oracle Application Server

Key Benefits:

- Improved availability by 25% for datacenter infrastructure that hosts Oracle's core business applications
- Increased staff productivity by 30% in spite of infrastructure growth of 35%
- Manage complete Oracle infrastructure of over 7000 targets with 99.9+% service level availability
- Reduce time to provision and monitor newly acquired application infrastructure by 75%

"With the continued acquisitions and expansion of our datacenter, we continue to rely on Oracle Enterprise Manager to monitor and manage the infrastructure that our core business relies on, and in turn enables us to provide the high quality of service that our customers, partners and employees have come to depend on." –

Patrick Combs, Director, PDIT, Oracle

Oracle provides the world's most complete, open and integrated business software and hardware systems in more than 145 countries across the globe. With some 40+ acquisitions over the last 3 years, Oracle has not only strengthened its product offerings but has also inadvertently put a huge demand on its own datacenter to rapidly scale and support its core business applications while integrating the datacenter assets from its acquisitions. One team in Oracle's Global IT organization involved in this rapid expansion was the Applications IT team, now formally known as Product Development IT Business Application Services team (PDIT). PDIT is responsible for the deployment and support of the database and middle tier infrastructure that hosts Oracle's financials, sales, marketing, partner portals, human resource and various employee applications. To meet the needs of Oracle's global customers, partners and employees, these critical business applications all have 24x7, 99.99% Service Level Availability requirements.

To manage the ever growing infrastructure and maintain high quality of service, Patrick Combs, Director at PDIT, and his global team realized early on that proper planning, establishing and implementing standard processes, and using the right tools were essential to doing the job right. Oracle uses its own technology in its datacenter – from the database and middle tier layers up to the business applications themselves – and uses Oracle Enterprise Manager to manage the complete stack. Several years ago, the datacenter footprint Combs' team needed to manage consisted of 125 Oracle databases, 35 Oracle Application Servers, Discoverer and various components of Oracle E-Business

Key Benefits:

- Centralized administration of redundant tasks by migrating distributed maintenance tasks to Enterprise Manager job system

Suite, 335 hosts and infrastructure components such as disk subsystems and Big IP routers. With the series of acquisitions, these gradually grew to 245 Oracle databases, 218 Oracle Applications Servers, 563 hosts and other infrastructure targets bringing the current count to around 7000 managed components in all, and increasing on a monthly basis.

Laying the groundwork for growth

With careful planning, Combs and his team setup their Enterprise Manager infrastructure with high availability and scalability goals in mind. “When implementing Enterprise Manager, it is important to review architecture before the installation starts to ensure that the architecture you deploy today will support tomorrow’s requirements”, advises Combs.

Next, they discussed and established the proper standards and procedures for provisioning and monitoring new databases and application servers. When these were all reviewed and approved, Combs and his team started implementing these in Enterprise Manager. Using Enterprise Manager’s “manage many as one” approach, they first organized all components (called ‘targets’ in Enterprise Manager) into more manageable units called groups based on target type and application environment. Once created, these groups would continue to be used in all management operations in Enterprise Manager. Next, they created different monitoring templates containing the monitoring settings for their production, stage and test databases as well as their corresponding mid-tier targets. Where application-specific monitoring was required, they created User-Defined Metrics and added these to their monitoring templates. Corrective Actions were also added to the monitoring templates to enable Enterprise Manager to automatically execute common alert resolution scripts when alerts were detected. These monitoring templates were eventually deployed via groups to all managed targets.

For critical alerts on production systems, Enterprise Manager needed to generate priority 1 tickets to an in-house ticketing system. Using Enterprise Manager’s extensible notification system, a custom notification method was created to integrate Enterprise Manager with the ticketing system and to enable auto-generation of tickets when alerts were detected. Since different

targets had different notification requirements based on their usage and deployment, groups were also used to combine targets with common notification requirements. Different notification rules were then setup for each of the groups to match their specific notification requirements (email, ticket, etc.) Finally, Enterprise Manager System Dashboards were configured for each high level group to enable the support staff to proactively monitor the health of critical systems.

Managing the datacenter explosion through automation

When the time to integrate acquired datacenter assets became a reality, Combs and his team were ready. They had already laid the groundwork in Enterprise Manager to quickly integrate and monitor new targets as they came onboard. This meant provisioning a new database target and setting up its monitoring in Enterprise Manager became a matter of discovering the target in Enterprise Manager, putting it in the right groups and applying the right monitoring template...all of which were done automatically via EMCLI (Enterprise Manager Command Line Interface) scripts. This took only 15 minutes, providing proactive monitoring in a matter of minutes vs. an hour manually. Using the groups and monitoring configuration that they had already implemented in Enterprise Manager, they were able to rapidly integrate new datacenter assets and expand their monitoring scope from 4000 targets to 7000 targets in 2 months.

Improved availability even at larger scales

In spite of the rapid growth of the infrastructure, overall system availability has improved. Proactive monitoring of leading indicators of performance issues has enabled the prevention of unplanned downtime by 30%. Historical data in Enterprise Manager has enabled them to watch for trends and potential problems areas. For example, upon reviewing the data of beacon transactions that were periodically monitoring critical web sites, they've noticed a network hiccup that was unnoticeable to end users but indicative of a potential problem. Through Enterprise Manager, they were able to pinpoint this to be problem in the java mid-tier and resolve it before it impacted their end users. All of these have resulted in being able to improve system availability

by 25% and to deliver and maintain Service Level Availability of 99.9+ percent since the implementation of Enterprise Manager for the team 3 years ago.

Increased staff productivity: doing more in less time

Using Enterprise Manager, Combs and his team have been able to streamline and optimize many administrator tasks. With Enterprise Manager monitoring in place, they no longer have to maintain custom monitoring scripts which required maintenance and specialized knowledge. The use of Corrective Actions to automatically resolve alert conditions has saved administrators 30% of operations time. The use of database diagnostic features such as ADDM performance findings in Enterprise Manager has likewise reduced the time to triage application performance issues “big time”, as Combs puts it. He estimates performance triage time has been reduced by at least 30% on the average. Ongoing maintenance tasks such as password changing, etc. have also been automated using Enterprise Manager’s command line tool (EMCLI). This time saved has enabled their team to be more productive and focus on more strategic tasks. Today, Combs and his global team of 5 are supporting the technology stack (database and midtier targets) consisting of some 7000 targets in all and even have time to work on other key projects for the business.