Hewlett Packard Enterprise

Case Study

中国海洋石油总公司
CHINA NATIONAL OFFSHORE OIL CORP.

Objective
Establish a centralized testing management platform to improve test efficiency and ensure system security

Approach
Looked for a supplier capable of providing the tools, support and consultancy to create a complete solution

IT Matters
- Enables testing personnel to view progress and KPIs at any time using HPE Application Lifecycle Management
- Shortens test cycles, reducing cost and saving resources
- Reduces the risk of operational failure with HPE LoadRunner performing stress tests

Business Matters
- Meets the regression testing and performance testing requirements, reducing operating costs and improving test quality
- Establishes a Case Studies Database for automated SAP ERP testing, enabling application recycling
- Creates a set of management, operation and maintenance processes, improving consistency in test output

CNOOC establishes leadership in IT test quality

HPE creates an application testing platform, with single view of KPIs

With the help of software testing tools from HPE, CNOOC has created a professional, efficient application testing platform. This allows the business to automate regular inspections while ensuring the necessary system security

Challenge

Establish a centralized, regression testing platform

China National Offshore Oil Corporation (CNOOC) is the largest offshore oil and gas production company in China. It is headquartered in Beijing, and employs close to 100,000 people. Since its establishment, CNOOC has evolved from an upstream oil & gas company to an integrated energy company with overseas acquisitions and downstream integration.

As early as 2004 CNOOC began to utilize ERP in accordance with international standards. CNOOC has since embarked on a journey of fostering industrialization led by information technology, completing the large-scale construction of its SAP ERP system in 2009, linking the systems of various CNOOC businesses for integrated operations. This has become a central and unified management platform commonly shared at the various stages of operation in the company - both in upstream and downstream.

"Testing platforms should become a category of IT asset. Not only do they bear the Group's internal management, such as quality and system security, but they also provide additional support services for second-tier units and external organizations."

– XIANG Dong, Deputy Director, CNOOC Information Technology Centre

The construction of the CNOOC's SAP system was a process that started from scratch, implemented in batches, and gradually improved. As the business grew, and technology advanced, the company needed to carry out a technical upgrade to its SAP system. Without adjusting the original server architecture, the SAP system was upgraded from SAP ECC 5.0 to SAP ECC 6.0. Meanwhile, the back-end database, Oracle 9.0, was upgraded to Oracle 10.0.

After the upgrade was completed, all units having implemented SAP would use the upgraded SAP ERP system. Existing business processes and enhanced development and interface were not affected.

With the acquisition and expansion of CNOOC, the ERP system inevitably requires a new unit to promote the implementation of the ERP during its operation and maintenance, or to perform large-scale system changes to the original system with patch/upgrade packages. If the client is unable to simulate the various business environments in which the company operates on the daily basis, for effective testing, there could be a time lag in the release of the system, possibly due to a system crash caused by the inability to bear the traffic load, or a failure of part or all of the functions / features of the software due to poor quality, among many other problems. Such a system change requires the organization of a group-wide regression test to verify whether the change will have an impact on the operations of the business units concerned.

The CNOOC Group is comprised of four listed companies, 15 Tier-2 business units and numerous holding, equity-participation and joint venture companies. 80% of the Tier-2 business units have undergone unified implementation of the CNOOC SAP system. Each regression test needed to mobilize the key users of each module of each of the Tier-2 business units, particularly those involved in the regression testing of their own business units. Such work takes a great deal of time, which inevitably impacts other work.

Previously, the CNOOC ERP system testing lacked a unified management platform. All the tests were manual tests, with paper-based document management. Defects in the testing process were not documented. CNOOC urgently needed to establish a centralized testing management platform that could both strengthen the management of the testing processes and improve its safety and reliability, as well as the quality of new project implementation.

Solution

Building an IT application system
SCNOOC assigned specialists to look into the current application state of such testing management software, and compare the different test management tools available in the market. With a very high market share and a relatively comprehensive product line, the software testing products from Hewlett Packard Enterprise were attractive to CNOOC.

HPE technical staff began by examining CNOOC pain points. HPE recommended a series of integrated software solutions, including HPE Application Lifecycle Management, functional testing automation software QuickTest Professional and the application performance testing software LoadRunner.

These solutions are in accordance with the testing needs of the CNOOC SAP system, enhancing the level of testing management, and raising the efficiency of teamwork. Through unified test assets and asset version management, the system can help customers minimize repetitive work and improve the test asset reuse rate, reducing the cost of testing throughout the entire lifecycle.

In terms of testing management, HPE ALM automatically generates test reports, so CNOOC administrators may view the status, key quality indicators, and predict the optimal go-live time.

In functional automation testing, the effects of HPE QTP are more direct, as it significantly reduces labour costs. With the construction of a Base Case Studies Database, test cases can reuse the same or similar business processes and improve test coverage. As such, this maximizes the test range, reduces defects after go-live, accelerates the testing cycle, reduces project cycle time and costs, and improves the system's end-user experience.

For essential parts in the CNOOC SAP system before go-live and during the implementation process, HPE LoadRunner can perform a systematic and comprehensive load testing. Based on the system architecture, it can simulate the actual business scenarios and transaction throughputs. This is so as to assess the system response time as accurately as possible, and determine any performance inflection points in the system. It verifies operation and maintenance indicators, alarms, system recovery and performance diagnostic processes before system go-live, reducing the risk of an SAP ERP system go-live failure and unnecessary losses, as well as saving tremendous amount of manpower and resources.

According to Xiang Dong, Deputy Director of the CNOOC Information Technology Centre, the implementation process was full of challenges. For example, when converting the manual scripts to automated scripts, the parties involved encountered a great deal of confusion. The original manual scripts were written by CNOOC. During the writing process, some of the industry's common technical terms were missing in their respective fields. However, those responsible for transposing them into the HPE testing products did not understand these defaults. Staff at the CNOOC IT Centre, HPE technical staff and a project team under the CNOOC Services Support Unit worked in full collaboration and with coordinating resources, overcame many difficulties amidst repeated testing and adjustments. After four months of effort, a unified testing platform was built, and a CNOOC team was trained to carry out test execution, operation, maintenance and management, thereby enhancing the testing capabilities of the CNOOC IT Centre.

Case study
China National Offshore Oil Corporation (CNOOC)

Industry
Energy

Customer at a glance

Software
- HPE Application Lifecycle Management (ALM)
- HPE QuickTest Professional (QTP)
- HPE LoadRunner (LR)

Benefit

Reduced operating costs, improved management

Today, the automated test case database fully meets the needs of automated regression testing in the SAP system - and periodic automatic safety inspection testing in the group. HPE solutions have created a system for test application system platform management, operation and maintenance process.

In the project implementation process, Xiang Dong put forward the idea of building a Case Studies Database from the point of view of operation and maintenance management. Through the base cases, a Components Database was created, which then formed the Business Process Cases Database. Depending on the different units and different applications, these are further divided into General and Specific cases.

The goal of building the Case Studies Database is to recycle applications and reduce costs. Before the completion of the CNOOC testing platform's construction, the CNOOC Information Technology Centre conducted regression testing on the SAP ERP system, to make sure that the investment bears fruit in the same year.

In the absence of automated testing scripts, the eight core modules of the SAP ERP system would need 122 key users each time for the execution of regression testing. This would take two weeks to complete, without factoring the coordination and management work at all levels into account. Now, only five people are needed each time, and it takes only two days to complete all the regression testing work, meaning that labor efficiency has increased 18-fold. This also effectively guarantees the stability of large-scale use of the new system.

Moreover, according to the verification stress tests conducted based on the business development trends determined, CNOOC will now be able to advance its ability to predict and forecast its resources and capacities, and know in advance the processing power of the currently available resources for the simulation scenario, so as to uncover any hidden problems.

According to LI Xiao, Senior Director of Project Management at CNOOC Information Technology Centre, CNOOC's Application Testing Platform that was created with HPE integrated software solutions not only performs stress tests on the SAP ERP system, but also focuses on further improving the promotion of applications in non-SAP systems. It continues to expand, and is thus able to be involved in the life-cycle management of the performance of an IT system.

LI Xiao also stressed that CNOOC is preparing company-wide technical standards for IT practices, and all systems are required to undergo a performance testing prior to go-live. Meanwhile, the existing system will undergo regular stress testing and performance diagnosis in a planned manner, conduct system upgrades or parameter adjustments predictably, and reduce the costs of IT operation and maintenance, so as to ensure that management policies and procedures are more standardized.

For enterprises, IT is an ongoing process that breaks the existing concepts. Xiang Dong says that the testing platform is not just about building, but also about using: "We hope the Application Testing Platform and Case Studies Database can truly become IT assets. They not only support the group's internal technical management and control functions, but also provide more services and support for Tier-2 units and external organizations."

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