Test Environment Management

Providing a robust and elegant solution to manage your test environments

Introduction
The scope of testing in today’s test environments is increasing rapidly, greatly due to the growth and distribution of the ways people can access core systems, technology and architectures across multiple new interfaces, endpoints and access points.

But a test environment not solely managed by a test environment team — or, in the case of many organizations, not having a dedicated test environment or a test environment management team — can cause significant risk in quality and productivity.

A poorly managed test environment often results in less end-to-end testing and test managers having to test on an environment that hardly resembles the production environment, which can also increase test and deployment cycles.

This lack of accountability and quality of testing compromises the quality of the product, increasing the probability of releasing buggy, unreliable software products to the market. Some other key risks and challenges are:

- The test infrastructure is under- or over-utilized
- Best practices are not defined or implemented
- Dependencies and impact assessment practices are weak
- Operating models are silo and resource dependent
- Most testing activities are manual

In this white paper, we’ll discuss how having an accountable, centralized, single ownership model to test environment management, such as Dell Test Environment Management (TEM), can help your organization overcome business risks and test in a production-like environment, thus resulting in releasing a superior software product.
For the utmost productivity of an organization, it must have an integrated and robust test.

**Stage 1: Access and analyze**

In this stage, we assess your current testing environment to identify gaps, such as:

- The existing application/data landscape environments and infrastructure across the organization
- The frequency of the environments shared/re-used across the landscape
- Test environment deployments and environment downtimes

Our team will recommend the best approach and process that fits your requirements, aligned to Dell TEM processes and tools. We will also highlight the potential benefits of implementing the Dell TEM processes and tools, such as helping reduce the overall testing cost and increasing the productivity and quality of the product.

**Stage 2: Design**

During this stage, the Dell TEM team transforms the test environment by:

- Eliminating manual processes via automation using Dell-defined accelerators
- Integrating application health checks and environment monitoring via a dashboard

**Stage 3: Implementation**

In this stage, we implement tailor-made processes, control measures and tools based on your requirements. This includes:

- Tools and processes are aligned with the IT Infrastructure Library (ITIL) framework
- Application- and infrastructure-level health checks are onboarded to the Dell TEM dashboard
- Efficient use of your test infrastructure is achieved by using Dell capacity management techniques
- The test data management structure and approach are defined
- Deployment rollouts to test environments are controlled and defined

**Stage 4: Manage and optimize**

During this stage, we optimize your test environment landscape to provide high availability. This is accomplished by:

- Centralizing and monitoring the management of test environment services via the Dell TEM dashboard
- Defining metrics and governance
- Providing proactive and effective monitoring via the Dell TEM dashboard
- Building new test environments to provide additional capacity
Our service offerings
Backed by our years of experience delivering end-to-end testing services, Dell offers a wide variety of test environment management solutions.

Capacity management
To ensure high performance, we strongly recommend efficient infrastructure use. Hence, capacity management plays a vital role in test environment management. We can help you with efficient infrastructure use by:
- Creating and maintaining an infrastructure inventory for the applications in your test environment
- Constantly monitoring server performance and load using available in-house tools or creating necessary scripts to log this information
- Measuring test data and data volume increase as part of new releases
- Analyzing performance tuning to ensure the most efficient use of the infrastructure
- Providing capacity planning

Environment monitoring
To facilitate and increase test environment availability and readiness, our team focuses on proactive environment monitoring. We do this by providing real-time monitoring solutions and a personalized dashboard for the test environment, including:
- Start-of-day application health checks to ensure application availability, as well as to facilitate user and business testing for both front- and back-end services
- Infrastructure health checks to minimize infrastructure-related incidents and application downtime
- Effective intraday and end-of-day job monitoring techniques
- Automated health check updates and reports to the test environment user community

Environment maintenance
To ensure optimal quality of service for your products, it’s important to keep up with the maintenance of your environment throughout the application lifecycle. We can help you by:
- Supporting and coordinating infrastructure activities performed across the testing environment
- Ensuring test environment servers and applications are available post-maintenance
- Providing incident, problem and change management

Entitlement management
Entitlement management plays a vital role in defining, enforcing and tracking changes in an active test environment. We can help you:
- Restrict test environment access to only the support team and test users (in compliance with ITIL framework)

Test data management
In an active test environment, test data management is essential to provide an up-to-date, production-like environment and to facilitate effective user/business testing. We can help you:
- Plan, schedule and deliver data into the test environment
- Coordinate test data refresh with the respective database teams
- Mask data and test data conversion
- Acquire and administer test data (including backups and data purging)
- Extract data and coordinate test data preparation with various testing teams
**Conclusion**
Dell has in-depth knowledge into the challenges of test environment management. With our Test Environment Management solution, your business can gain efficient use of your test environment infrastructure through enhanced capacity management techniques, as well as:

- Use of ITIL framework to provide production-like support for test environments
- Increase test environment readiness and availability
- Reduce test cycles and increase development productivity
- Quickly deploy code into test environments

**Suggested reading**
- “Software Testing as a Service” by Leo van der Aalst
- “The Next Generation of Test Environment Management” by Wayne Ariola

**About the author**
Devadarshan Akshintala works as a service delivery lead for Dell international services. Currently, Devadarshan is managing the test environment at a leading global wealth management firm. He has designed the TEM dashboard for effective test environment availability monitoring and to provide a one-stop portal for test and business users. Devadarshan has also defined and implemented best practices for test environments.

**Case study:**
Increased test environment availability for leading global wealth management firm.

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<tr>
<th>Challenges</th>
<th>Solutions</th>
<th>Benefits</th>
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<tr>
<td>Lack of environment availability caused continual delays in multiple projects</td>
<td>Integrate technical architecture, application architecture and data architecture into a compatible data system to replace silo-based, resource-dependent operating model</td>
<td>Gained efficient use of infrastructure through enhanced capacity management techniques</td>
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<td>Ad hoc requests to the test environment team to support multiple applications were not being managed</td>
<td>Define a process-based automation solution to reduce various people-dependent manual tasks across the test environment</td>
<td>Increased test environment availability by 30 percent with production-like support for sub-production environments with the ITIL framework</td>
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<td>Multiple manual daily health checks were performed for applications across the landscape</td>
<td>Implement better knowledge management practices to replace ill-defined and unmanaged knowledge base</td>
<td>Integrated a tailor-made, user-friendly dashboard to provide a one-stop solution for business/test users to track batch status, health checks, the environment calendar and infrastructure activities</td>
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**Benefits**
- Gained efficient use of infrastructure through enhanced capacity management techniques
- Increased test environment availability by 30 percent with production-like support for sub-production environments with the ITIL framework
- Integrated a tailor-made, user-friendly dashboard to provide a one-stop solution for business/test users to track batch status, health checks, the environment calendar and infrastructure activities
- Implemented robust knowledge management practices

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For more information about any of our services, visit Dell.com/Testing or contact Application_Services@dell.com.