FROM DAYS TO HOURS REDUCING OPEX FOR OEMS

TekMindz Explains How to Substantially Reduce Testbed Setup Turn-Around-Time and minimize Costs by Adopting Best Tools and Practices.

KMINDZ

Overview

As enterprises make their journey into a new horizon of futuristic delivery paradigms, adaptation to significant changes and the ability to thrive in a new expanse of competition - overcoming technology challenges and exploiting market opportunities - will become critical success factors. As such, extensive budgets are allocated by OEM (Original Equipment Manufacturer) to R&D to understand emerging strategic technology trends as the impact of these trends can cause a radical and broad shift across the industry and across enterprises.

One of the greatest challenges with upcoming products (either new or upgrades) is to ensure they are ready to work in multiple scenarios and potentially with many devices manufactured by various OEMs. Building up the right environment for functional and interoperability testing present their own challenges.

Business Drivers and Risks

The industry is continuing to mature rapidly, and almost all OEM vendors very well understand the importance to comply with (and often collaboratively define) the industry standards in order to promote wider adoption of their equipments in a competitive market landscape. The standards, although well defined, often do have gaps, which makes interpretation subjective for each manufacturer. At times, there are implementation gaps which do not conform to standards. There are independent test bodies that can carry out conformance testing for supplier products and certify the compliance. This kind of independent testing is often mandated by vendors who source equipments from manufacturers. Before any of the devices is certified for production readiness, the functional and interoperability testing is a must to ensure that it is accepted by the market. Especially, not testing for interoperability adds a huge risk to the revenue and reputation of an organization. Thus, with each new product or a new version of an existing product, the functional and interoperability testing becomes a requisite to ensure long term risk mitigation.

Each industry presents its own challenges. These challenges are usually functions of standards, maturity and diversification that exist within the industry. An IP network device will have to conform to stringent and a wide array of standards (for instance too many routing protocols for a layer 3 device). On the other hand, a SAN (Storage Area Network) device, comparatively, will have to conform to relatively lesser number of standards. Another distinction is the number of existing well-established players in the market with which the device will have to operate. Almost always, the device will be placed in a topology/solution that will comprise of equipments either from the same manufacture or of some other manufacture. Only just conforming to standards usually does not guarantee the device's readiness for this kind of interoperability. In order to minimize this risk, organizations carry out interoperability testing with well-established industry players. The testing time increases non-linearly with the introduction of new matured vendors in the market.

Testbed Setup Challenges

There is usually an exhaustive list of devices and/or configuration that any OEM device may be working in. The OEM device may have multiple operational modes (depending on how it is provisioned) and, like-wise, there are multiple operational modes that the surrounding devices can be configured in. One such example can be a router being terminated onto another router (from same or different vendor), or it may be connected to a layer 2 switch (from same or different vendors). Building up these combinations usually involves configuration at each end of the topology. This involves in-depth commissioning of DUT (Device-Under-Test) - OEM device which is being tested, as well as auxiliary devices with which interoperability is to be proven. It takes a great amount of time to properly setup and configure the entire testbed in order to start conducting functional and interoperability tests.

A complex setup process in labs typically involves following challenges:

- 1. Identification of test setup topology.
- Identification of alternatives present for specific auxiliary device (or a combination of auxiliary devices).
- 3. Identification of test bed configuration for each auxiliary device.
- Arrange the required DUTs (Device-Under-Test) and auxiliary devices for testbed.
- 5. Testbed setup and verification.

Testbed setup TAT (Turn Around Time)

The typical turn around cycle for such a setup is five to 15 working days depending on how large/complex the setup is and what methodologies/processes are already in place. Some of the most common challenges faced in working out such a test bed setup are:

- Knowledge of test topology qualified personnel having complete understanding of test bed requirements.
- Availability of DUTs in test lab usually driven by inefficient lab resource utilization and no visibility in (near or far) future time by when the devices will be available.
- 3. DUTs configuration as per their designated roles in the test bed topology.
- 4. For interoperability testing, setup time increases exponentially with each device combination. Each setup will involve setup, verification and tear down which is lengthy and finishing interoperability tests usually task.

The Solution

A high turn-around time is simply unacceptable in today's fast paced market. Fortunately, there are tool/technologies available which, when combined with

best practices, yield much reduced setup times.

Following tools chain is what a lab/test manager needs in order to ensure most optimal usage and fastest turn-around time for any setup

- 1. Device Inventory Management
- 2. Test Bed Topology Management
- 3. Configuration Management
- 4. Allocation and Schedule Management
- 5. DUT Abstraction Interface

All of the above tools MUST work together in a cohesive manner to achieve best results.

Device Inventory Management

A "Device Inventory Management" solution should keep all physical inventory in a lab. The optional features here will be device auto inventory in order to facilitate the lab manager with information of potentially new/missing inventory items. This helps in tracking these items pro-actively and prevents any occurrence of a mismatch at the time of inventory audits.

Test Bed Topology Management

"Test Bed Topology Management" will utilize information from the inventory management. Using the inventory available, a test engineer can create test bed topology and use it for future actions (like allocation and scheduling). The test bed topologies serve as central repositories that can be reused, over and again, for test bed setups and remove dependencies on SME for doing such setups (usually after first time setup).

Configuration Management

"Configuration Management" will facilitate configurations of various DUTs for them to be managed at a central place. Each testbed is able to pick and choose any configuration depending on their requirements. These configurations may be static or dynamic. In dynamic configurations, there are configuration segments which change themselves depending on either the "type of device" or the "role of DUT".

Allocation and Schedule Management

"Allocation and Schedule Management" acts as the heart of the overall system. Any test engineer is able to request a test bed topology and the allocation scheduler will find the DUTs which satisfy the topology requirements. The request can be made for instant allocation scheduled for a future time. Thus, there is a mechanism for planning your test bed setup pro-actively. Since all allocations are managed from a central location, there is full visibility into what is available when and who has reserved any DUTs. The lab manager, if needed, can shuffle priorities and make few devices available for test by canceling any existing allocation in order to any meet urgent business needs.

How TekMindz can help you

At TekMindz, we have extensive experience in building best tool chains to reduce the turn-around time for testbed setups. We strongly believe each lab has its own unique challenges which must be dealt with differently there is no silver bullet that can provide a solution to all problems. With our formidable experience, we are sufficiently equipped to design the right solution for meeting your testlab requirements and facilitating it with best processes and practices.

DUT Abstraction Interface

DUT Abstraction Interface" acts as the middleware that ensure that requested provisioning of DUT is performed at the time of allocation. This interface is responsible for communicating with devices using appropriate the interface (it may be a CLI or an API, as may be supported by the device) and have it prepared as the configuration request in the topology specification. "

About TekMindz

TekMindz is an IT consulting & technology services company with headquarters in India, serving clients across Asia/Pacific, Middle East, North America and Africa. Bringing together technology, people and processes across diverse sectors for organizations around the world, TekMindz enables business enterprises and governments to most effectively serve their customers and citizens.

Know more about us by visiting our website at www.tekmindz.com

India Headquarters Samin TekMindz India Pvt. Ltd. H-171, Ground Floor, Sector 63, Noida – 201307 (U.P.) India Tel : +91 120 6137000

The Americas Samin TekMindz, Inc. 2711 Centerville Road, Suite 400 Wilmington, DE 19808 Tel: +1-408-512-2275 +1-408-692-7621

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