FROM DAYS
TO HOURS

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

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Overview

Any voice and/or data service provider's production environment will typically have a hybrid environment. It will have a mix of hardware (usually for the core network part) and software (usually for BSS/OSS) components, designed and commissioned together to achieve their business objective. Almost always, all components within this environment will have different OEMs/vendors. To ensure high availability of services, and to maintain a high degree of flexibility and reliability while remaining competitive, it is essential for Service Providers (SPs) and enterprises to conduct rigorous and thorough testing of their solutions.

Business Drivers and Risks

One of the key challenges, like any other industry would face, is to keep up with the technological enhancements and changes. Customers demand the latest technologies/features to be available to them and usually, they demand it them to come at very competitive prices. As a business driver, it is imperative for service provider to keep upgrading their infrastructure. An upgrade would usually be triggered by one of the following two factors:

1. Capacity upgrade (expansion)
2. Technology upgrade

In both the cases, the upgrade will introduce new elements into existing proven solution matrix. These elements may either be entirely new introductions altogether (for instance a new edge router) or it may be the replacement of an existing element with a new element (for instance replacing an EOL core switch with next generation switch – this may or may not have capacity expansion).

Each change in the existing solution introduces risks to business. The changes may or may not be compliant with the intended design goals of the original solution. In order to mitigate these risks, it is essential that all such changes be validated in test labs.

"Market drives production changes.
*With each change, emerge new risks!"*

Testbed Setup Challenges

Recreating the production environment in lab is a huge task. Quite often, it is neither necessary nor practical to replicate the production environment in its full capacity. Instead, a scaled-down version of the production environment is replicated in the lab to carry out testing. One such example can be to have two to three core routers along with three or four edge routers configured in exactly same manner as they would be in actual production (in production, there could be 10s of core routers and 100s of edge routers).

Identification of production environment for test-setup is depends upon the business objective aimed to be achieved
out of this setup. This may be for re-production of a production issue that may or are being reported by field engineers or customers. Or this may be for conformance testing with any new element in the network - this could be an upgraded NE (Network Equipment) or new a NE altogether (for instance a new Edge or Core router being added to the network).

1. A complex setup process in labs typically involves following challenges:
2. Identification of test setup topology.
3. Identification of test bed configuration for each device against their designated role.
4. Arrange the required DUTs (Device Under Test) for test bed.
5. Testbed setup and verification.
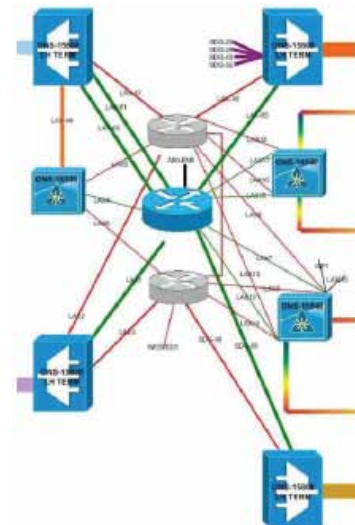
Testbed setup TAT (Turn Around Time)

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:

1. Knowledge of test topology - qualified personnel having complete understanding of test bed requirements.
2. Availabilities 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

The Solution

A high turn-around time is simply unacceptable in today's fast paced market. Fortunately, there are tool/technologies available which, once combined with best practices, yields much reduced setup times. Following tools chain is what a lab/test manager needs in order to ensure most optimal usage and fastest turnaround 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

''Replicating the production environment in test labs is a challenging task. The time needed to setup a test lab can be long and the process is error prone.''
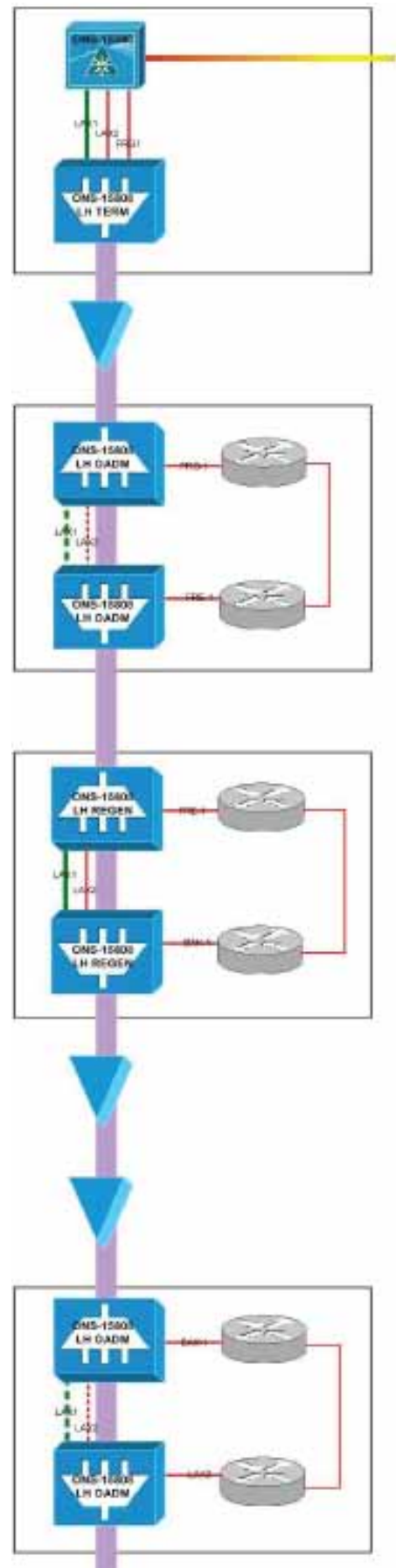
Device Inventory Management

All of the above tools MUST work together cohesively in order to achieve the best results. A "Device Inventory Management" solution should keep all physical inventory in a lab. The optional features here shall be devices 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 action (like allocation and cheduling). 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 meet any urgent business needs.

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.

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.
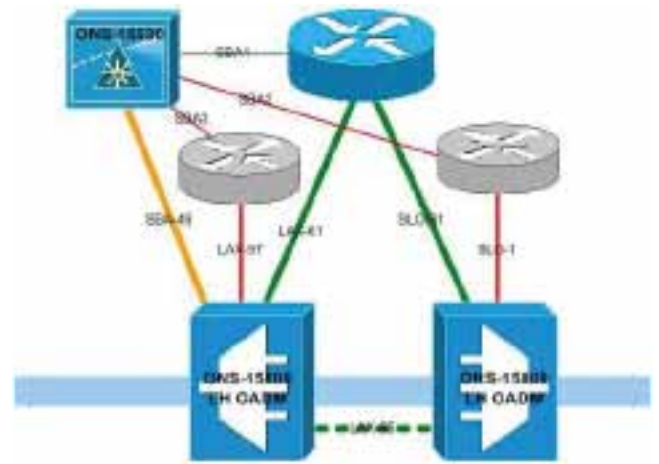
''In one of our projects, we cut down the setup time of two weeks to less than two hours!''

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.

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