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The Overview of Discovery and Reconciliation of LTE Network

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Abstract - *Discovery and Reconciliation of LTE Network describes the web-based discovery and reconciliation tool used to discover and reconcile discrepancies between two entities, in particular, between the network and Adaptive Inventory (AI).It is necessary to keep records of each and every device in network for the company by which it can keep the details about the devices recorded in the network as per the status of presence or failure of that device. Discovery and Reconciliation of LTE Network supports the discovery of physical and logical network assets. The discovered objects are then compared with objects stored in a system, typically the Adaptive Inventory. Discrepancies are identified, along with recommended ways to resolve the discrepancies. This paper provides the overview of system flow of Discovery and Reconciliation of LTE Network and also includes the existing system and the proposed system.*

Key Words: **Long Term Evolution, Universal Mobile Telecommunication System, Home Subscriber Server, Packet Data Network, Mobility Management Entity.**

1. INTRODUCTION

The primary function of Discovery and Reconciliation[1] is to keep the Adaptive Inventory database and a variety of different types of networks in synchronization with one another. Discovery and Reconciliation uses the Adaptive Inventory with the Adaptive Inventory XML Gateway to provide a complete data discovery and reconciliation solution.

It performs the following tasks:

Discovery - It collects data from both logical and physical networks and other sources of discovered data, in real time or as scheduled by the carrier. It provides the data in a normalized format.

Reconciliation - It suggests specific reconciliation actions to resolve these discrepancies, and allows the user to select which objects shall be reconciled – manually or automatically.

Discovery and Reconciliation works with any network equipment. New equipment types can be added quickly as a carrier's network expands. Discovery and Reconciliation can also interact with NMS/EMS (Network Management System/Element Management System) or with any other system that contains network data to upload and transform the network data and limit additional touch-points into the network.

2. EXISTING SYSTEM

In case of existing system the organization is using a tool in conjunction with the Bulk Loader utility which discovers the network elements in bulky manner and the results produced are not that efficient as per the organization standards[3]. When new device get added to network then they manual enter it into their data and the next time when discovery will run that device will be identified. Existing system does not allow end user to reconcile the discovered information.

3. PROPOSED SYSTEM

In this system we are providing Range based discovery, Individual discovery & Device based discovery of network elements from which Device Based Discovery is absent in existing system. This will be advantageous if any new device that has been added will get discovered at the time of Range Based Discovery and gets added in the main inventory. This will save lot of time & will improve the efficiency of the system by reducing the efforts of manual entry.

Our system also has options by which the user can perform the selection for updating the database either through automatic update functions or it can be done by user manually after the discovery of network elements. Our system also provides the Individual Device Discovery by which the user can search any one specific standalone device by its IP address.

4. SYSTEM ARCHITECTURE

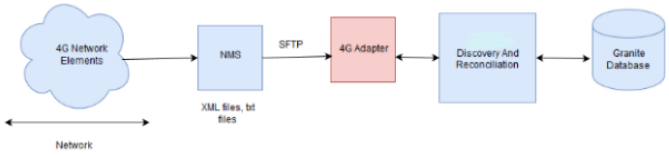

Fig -1: Architecture of the 4G discovery adapters

The above diagram illustrates the architecture of the 4G discovery adapters and the flow of data from sample NMS to Granite. The NMS creates equipment files, which are called export files. In the case of 4G technologies, these export files are XML-based. When jobs are initiated in the Discovery and Reconciliation, via the Orchestration Module or via the Site, NMS Sweep, or EH Modules, the Discovery and Reconciliation module sends an appropriate Request message to the 4G Adapter. Based on the Request that comes from the Discovery and Reconciliation, Parser reads the appropriate extract file and creates an MTOSI response based on the contents of the extract file and the "instructions" present in the Site/Sweep/EH Config file. This MTOSI response is used to discover and reconcile against the inventory contained within Granite Inventory.

4.1 Hardware and Software requirements

1. Granite Inventory
2. Oracle Web Logic Server
3. Granite Admin Client
4. Granite User Client
5. Oracle Database
6. Java JDK
7. Eclipse
8. Adapter Tool Kit – Provides libraries to develop LTE adapter.

5. SYSTEM FLOW

The Northbound system for Discovery is the Database. All jobs start with Discovery querying the database and getting information that would aid in executing jobs. The Network is considered the Southbound system for Discovery and communications to the southbound system is done via Adapter.

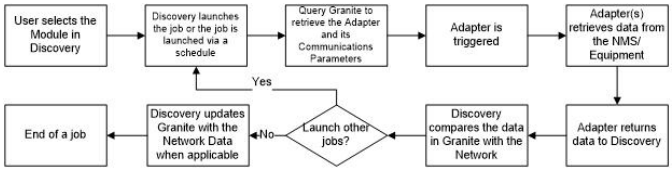

Fig -2: System Flow for Discovery job

The above figure depicts a typical system flow for a Discovery job .The cycle of Discovery from start to updating Granite is called a job. Inside a job, multiple tasks are executed within a job. Once a job is finished, the output of the jobs can be updating the database, publishing a JMS event, both or No Action. Depending on the job type, Discovery might spawn off other jobs to complete the job that was executed.

6. HIGH LEVEL SYSTEM COMPONENTS OF DISCOVERY AND RECONCILIATION

The following are the major components of a Discovery Solution:

1. Database: Typically Granite is used. Other databases can be connected to Discovery.
2. Discovery and Reconciliation Product: the main component of a Discovery Solution, its main responsibility is to get the data from the Network and reconcile it in a Database.
3. ASI: Used to query Granite for the Core Discovery Modules. For custom modules, it is used to query and update Granite.
4. Gateway: A system used to update Granite. Discovery uses Gateway to update Granite for its Core Modules.
5. Discovery Designer Studio: A tool that can be used to create custom modules in Discovery.
6. Connectors – Used by Discovery to connect to Granite and other systems.

Adapters: Used to query the Network and return data to Discovery for reconciliation

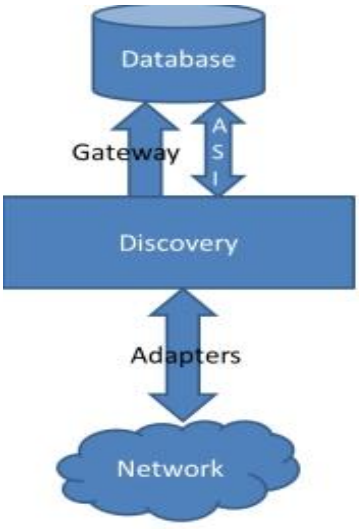

Fig -3: High level system components of discovery and reconciliation

7. DISCOVERY AND RECONCILIATION MODULES

Discovery and reconciliation contains various modules to discover and reconcile network.

7.1 NMS Sweep Module

This module facilitates the discovery of all nodes or containers that are managed within an NMS.

7.2 LTE (4G) Module

The LTE module allows you to discover and reconcile between Inventory and the Network the logical nodes of an LTE (4G) wireless network, starting at the NMS and eNode B. This module supports the hierarchical relationship between the logical nodes and the equipment relationships with the physical nodes.

7.3 Equipment Hierarchy Module

This Module discovers and reconciles physical network information. Physical Network information includes parameters that are directly associated with a physical component of a network element.

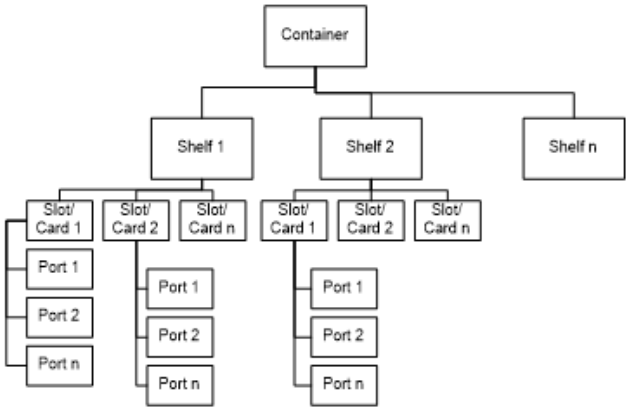

Fig -4: Equipment hierarchy module

8. SAMPLE EQUIPMENT STRUCTURE

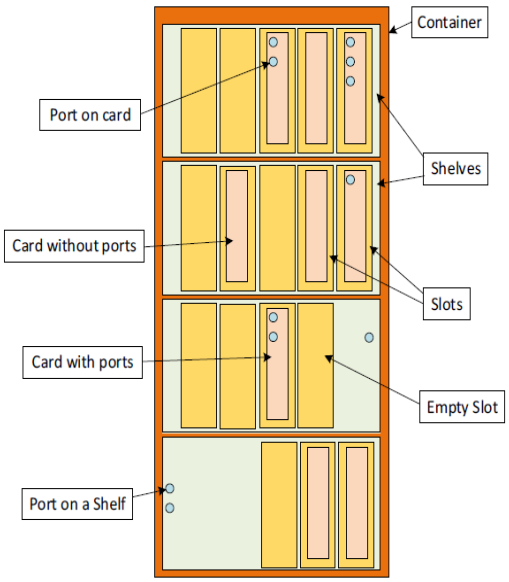

Fig -5: Sample Equipment Structure

In Inventory, network equipment is divided into two main subclasses: shelves and containers. Shelves are pieces of equipment that house slots with cards (and ports), such as multiplexors. Containers are pieces of equipment that house other containers or shelves, such as a rack or switch. A "card" is a board, drive or other piece of apparatus that sits in a shelf and may or may not contain sub-cards and/or ports. In Inventory, a card is always contained within a shelf (either directly or through a parent card).

Ports provide origin and termination points for segments, paths, networks, cables, and other equipment. They reside on cards and can be either logical or physical, depending on their application.

In Inventory, the path object is used to model a series of elements that facilitate the transmission of data at a specific bandwidth between two locations. It is an interconnection of elements, such as ports, cables, segments, and channels on higher bandwidth paths.

9. CONCLUSION

In this paper, Discovery system flow is proposed, which overcomes the limitation of previous static method. It will significantly improve the performance. Discovery also helps in keeping track of all the devices in network and performs fault detection and management. When combined with knowledge based search algorithms, its performance could be further improved. In conjunction with Discovery and Reconciliation of LTE Network, adapters are used to communicate with each vendor's Network Element (NEs) or Element Management Systems (EMS). This allows Adaptive Inventory users to query network equipment and synchronize the inventory data with the discovered results.

REFERENCES

[1] Discovery of Network Elements and Reconciliation by Ajay Chakkar, Ranjeet Ghodake, Tushar Nalawade, Tanaji Nathe.

[2] Ericsson Discovery and Reconciliation, User Guide.

[3] discovery of network elements and reconciliation Narendra Shewale1, Sharad Hadke2, Mayur Kharote3.