IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

FLEXIBLE CONSUMPTION MODELS A DATA CENTER SYNOPSIS

A Brief Overview

[1]Payal Sharma, [2]Dr. R. Nagaraja
[1]Student, [2]Professor PG and Research Coordinator,
Information Science and Engineering (ISE)
Bangalore Institution of Technology, Bangalore, India

Abstract: A Data Center Environment Setup for a large Manufacturing Company, wherein every internal business unit needs certain levels of IT resources such as Servers, Storage, Network etc. to perform their day to day operations like, HR department, Finance, R&D, Production Unit, Education Services etc. Company follows metered solution for IT resources so that, their resource utilizations can be cross charged by end of each month on a consumed capacity basis, in order to meet company's overall IT budget, Operational expenditures and future IT asset procurements. Thus, company can manage tech refresh and new technology adoptions effectively and efficiently. Internal IT division follows a flexible consumption model to meet this requirement and uses latest technologies to have a robust system.

Index Terms - **Data Centre Environment, consumed capacity, IT Budget, Operational Expenditures, Asset procurement**

I. INTRODUCTION

Company provides the flexibility to buy what is needed today to have access to the capacity needed tomorrow. The initial setup of storage includes all required and potential incremental storage (or "buffer") for an agreed period from each business units. With a commitment to core capacity of storage, company offers capacity on need so that it can manage planned and unplanned storage growth. It offers:

i. Lower upfront acquisition costs with large capital needs and eliminate operating expense of under-utilized capacity as the IT resources will be shared across the business units.
ii. Operational and Financial Control: Transform IT to an internal service product model, reduce procurement approvals
iii. Reduce Over Deployment than the forecasted volume, additional expenses in the data center is shared across.

Company provides the flexibility to buy what each business units need today to have access to the capacity they will need tomorrow. The initial shipment of storage includes all required and potential incremental storage (or "buffer") for an agreed period. With a commitment to core capacity of storage, company offers customer capacity on need so they can manage planned and unplanned storage growth. The main purpose of this is to minimalize the initial large acquisition costs and eliminate the operating expense of under-utilized capacity. This solution allows company to transform their IT to an internal service product model and helps to reduce the procurement related approvals. The BU is charged only for the utilized resources and the capex cost upfront. There is always a storage buffer installed in case of over-utilization that gives bandwidth for the BU to expand if needed.

II. OBJECTIVE

The objective of the project is to successfully collect the billing data metrics from the assets deployed on the customer's site by either deploying collector scripts in customer environment or by using external collector centrally. The scripts written in python language should be successfully pulling the data when run through the command prompt. The raw data pulled from the deployed assets, should be successfully reaching the shared site as source files to process the billing information and produce bills as per the client's billing cycle contract.

The information collected is very specific, data is output in such a way to allow for automation, post-processing and reporting. Data collections are scheduled to run automatically, without any human intervention. No actual customer data is collected by collector. The information collected includes asset configuration and utilization "metadata" e.g. system usage information. All metadata collected at a customer site is encrypted prior to being transmitted via Secure Remote Services or Secure FTP. After configuration is complete, collector will perform scheduled OpenScale asset data collections, sending data back to company via a Secure Remote Services Gateway. If Secure Remote Services is not available, it is possible for the collector to be configured to use SFTP instead. The collector is configured on the customer's environment as a Virtual Machine.

III. PROBLEM STATEMENT

The collector is solely responsible for collecting the billing metric data from the customer environment and transferring it into the data warehouse.

From here the data is fed into the Billing Application that produces the bill for the billing period. The main purpose of this is to minimalize the initial acquisition costs and eliminate the operating expense of under-utilized capacity. The openscale solution allows user to transform their IT to an internal service product model and helps to reduce the procurement related approvals. The project aims to develop a collector script which when run from the Billing Specialist's environment, provides an automated billing data collection from the customer's environment. The script calls the APIs which are responsible for the data collection. Collection of the data from the assets poses to be a challenging task as the data collected from the customer's environment needs to be in the encrypted form. Once the data is collected, then the validation of the collected data is done. The validation includes collection/ data format, new asset and contract alignment, metric trending and contractual compliance.

IV. ARCHITECTURE

The architecture of the Project is shown in the Figure 1. The figure describes the overall process of the Billing Metric collection from the customer's environment. The asset installed at the customer's environment contain the raw Data that is collected is pulled by the data collector. This data collector then uploads the data to the Data Upload. This collected data is transferred to the company database via the secure channel via Secure File Transfer Protocol SFTP. This is then ingested by the Billing application to product the bill invoice.

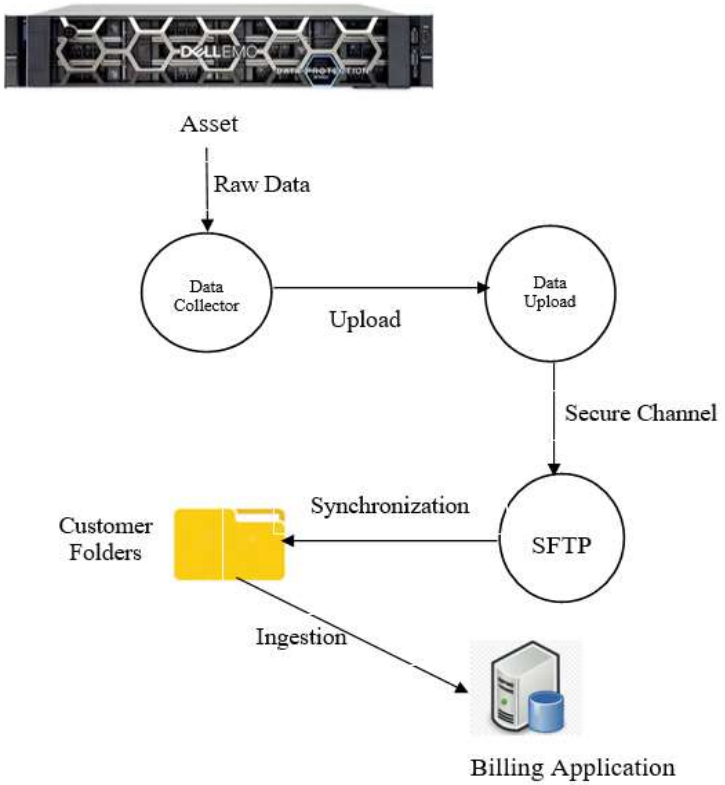

Figure 1: Architecture

The Figure 2 shows the overall data flow in the process. The collection script run in the BS's environment will commence the data collection process. This script varies with the asset and with the Parser associated to each asset.

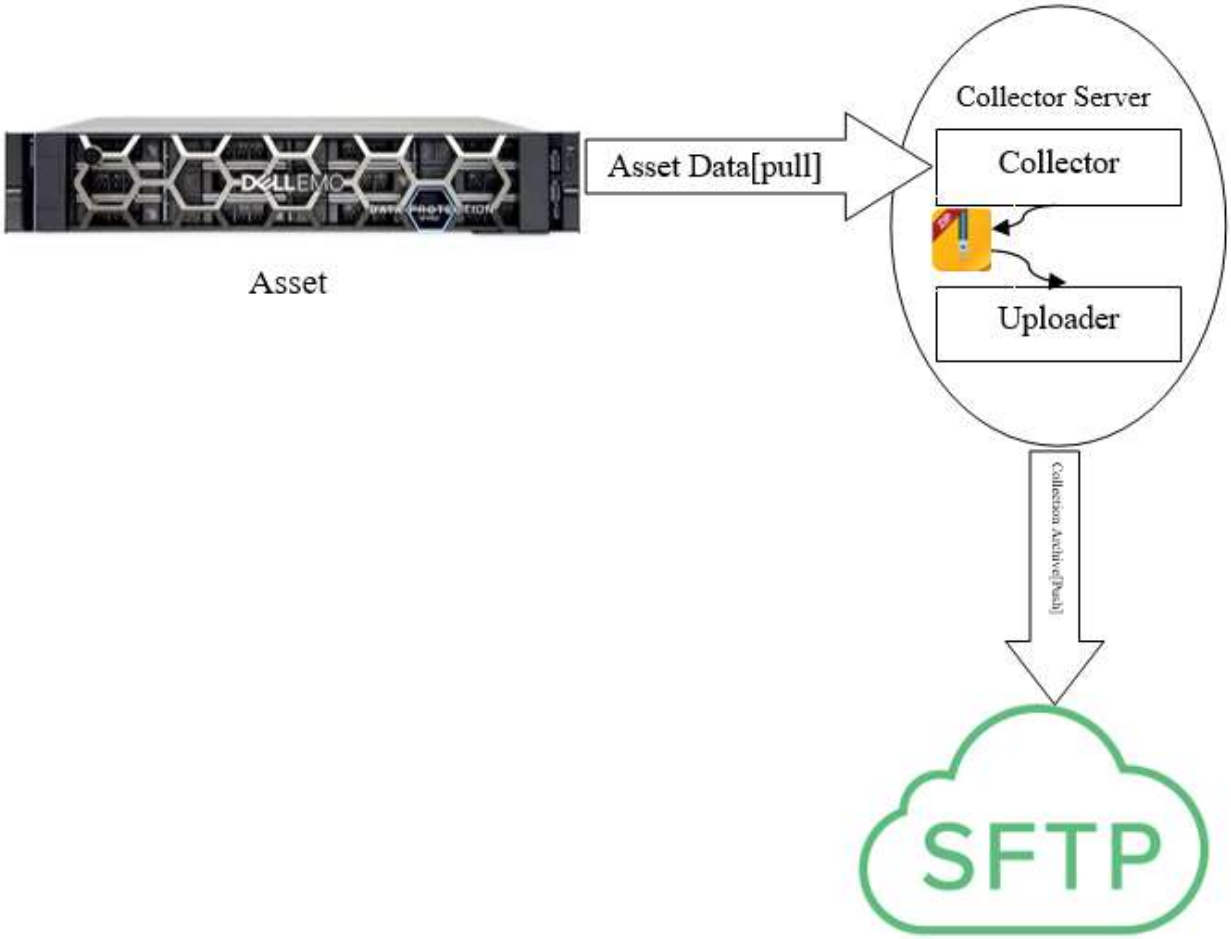

Figure 2: Data Flow Process

V. SERVER

A customer supplied server or virtual machine is required The server can be dedicated to both the collection and upload of data It is preferred that the scripts be installed on a dedicated billing server to remove any possibility of corruption of both the scripts and the collected data. The Collector server needs to be able to access the Utility asset via local network. This may require firewall ports to be opened. The Uploader needs to be able to access SFTP on the internet to be able to automatically transfer the data collections back to the company.

The Collector and Uploader components are split onto separate VMs or servers. The collector server exports the folder containing the output files. The uploader server then mounts this network drive to facilitate the upload. The upload process runs on the uploader VM using the data on the collector VM's exported network drive. This splits the firewall requests across multiple servers and also allows the consolidation of multiple collectors into a single upload server.

VI. ASSET SUPPORT

For various technical reasons, certain asset\product types are not supported by Collector. For example, due to available remote connectivity options, it is not possible to collect data using the tool. As it is deployed "on-premises" (at the customer site) it supports all products\technologies with one minor caveat; in order collect data, the application will need to communicate with an existing SYMAPI server that allows inbound SSH connections. If a suitable server is not already available, it is possible to deploy the 'Solutions Enabler Virtual Appliance' which can be configured to work in this respect.

VII. DATA TRANSPORT

The collector can transport data via an existing Secure Remote Services Gateway. In addition to this, it supports the transport of data via SFTP if that is more suitable option. Please note that data transport via SFTP (if required) will normally necessitate a Firewall exception.

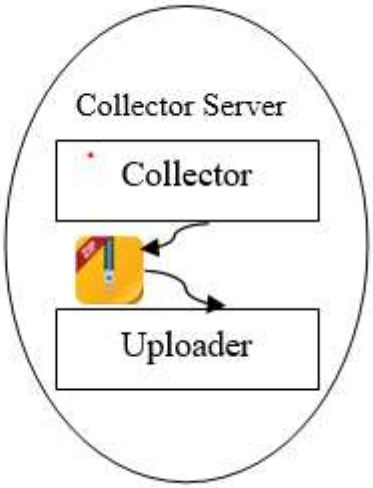

Figure 3: Collector Server

VIII. IMPLEMENTATION

The implementation of the collector script takes place in the following steps:

i. Collector Information
ii. Global Constant
iii. Parse and Validation of Input
iv. Target resource type for collection
v. Initialize the collector
vi. Precheck and prepare device list
vii. Create collection data integrity Check
viii. Generate reports
ix. Purge old logs

Collector Information

This step involves collection of the existing Collector on the customer's site and compare the same with the latest existing Collector implemented. Usually the script is updated from time to time, as and when the new collector script is created, but if the collector script on the customer's environment is outdated, then it is first updated, then the next steps are performed.

Global Constant

In this step, the global Constants for the collection of the scripts are defined and initialized.

Parse and Validation of Input

This step involves the parsing of the input received into the accepted format and its validation to ensure the input file provided contains the latest information.

Target resource type for collection

In this step, the resource type that has to be collected is targeted. The resource resides on the customer's environment from where the information has to be collected.

Initialize the collector

In this step, the collector is initialized for the metadata to be collected. No actual customer data is collected by collector. The information collected includes asset configuration and utilization "metadata" e.g. system usage information.

Precheck and prepare device list

This step involves checking the availability of the assets deployed on the customer's environment.

Create collection data integrity Check

In this step, the mapping of the asset and its unique collector takes place and the metadata is collected. The collected metadata is converted into the form of a file and saved in the shared folders.

Generate Reports

This step involves the generation of the reports in the required format. The reports generated includes the metadata collected.

Purge old Logs

This step involves purging or elimination of the old logs collected to ensure that the metadata collected is the latest one.

IX. RESULTS AND DISCUSSION

The implemented collector script is successfully implemented and is used to collect the data from the customer's environment. This will successfully help the billing specialist to get all the important and required data to generate the billing invoice. The collector script is run through the command prompt to start the collection from the customer's environment as shown in the figure 4

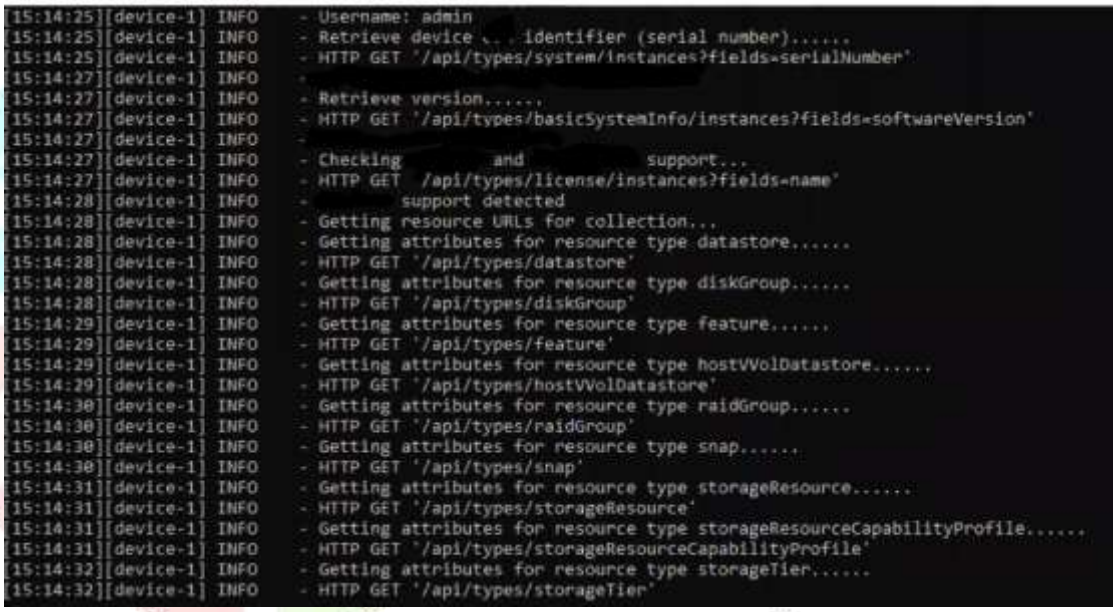

Figure 4: The collector starts collecting the data

CONCLUSION

Company provides the flexibility to buy what each business units need today to have access to the capacity they will need tomorrow. The initial shipment of storage includes all required and potential incremental storage (or "buffer") for an agreed period. With a commitment to core capacity of storage, company offers customer capacity on need so they can manage planned and unplanned storage growth. The main purpose of this is to minimalize the initial large acquisition costs and eliminate the operating expense of under-utilized capacity. This solution allows company to transform their IT to an internal service product model and helps to reduce the procurement related approvals. The BU is charged only for the utilized resources and the capex cost upfront. There is always a storage buffer installed in case of over-utilization that gives bandwidth for the BU to expand if needed.

FUTURE ENHANCEMENTS

One point for future enhancement could be to create one single script for the various asset types rather than scripting for the various assets. This will make the system more robust to changes and flexible. The optimized system will allow adding many assets in future and no load on the scripting.

REFERENCES

[1]. https://www.delltechnologies.com/en-us/payment-solutions/flexible-consumption/data-center-utility.htm

[2]. https://www.dellemc.com/en-us/collaterals/unauth/briefs-handouts/datacenter-utility-en.pdf

[3]. https://www.delltechnologies.com/en-us/payment-solutions/flexible-consumption/flex-on-demand.htm