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Telecom Operations in Cloud Computing

Natarajan.R[1]
Department of Unified Communications, Accenture solutions Private Limited, Chennai, India

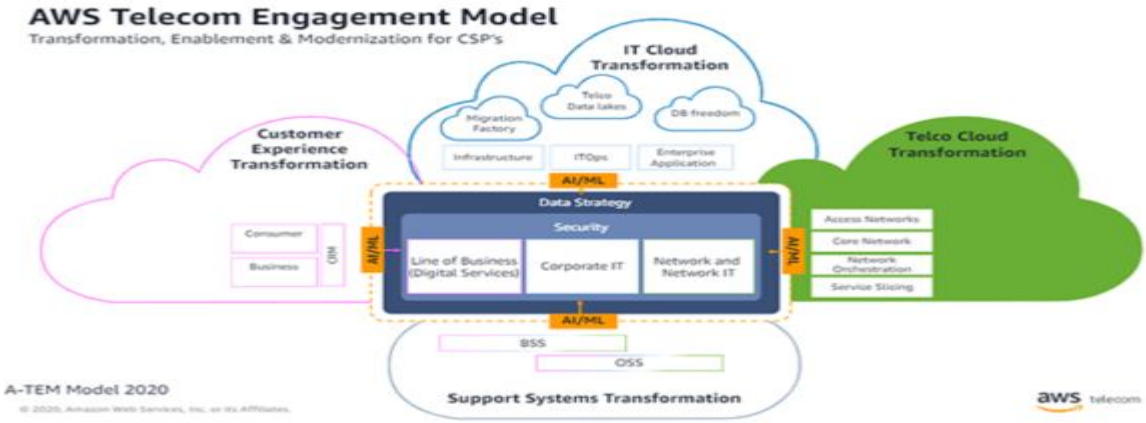
Abstract: ***Previous generations of wireless connectivity have focussed on voice and data capabilities, 5G is architected to better enable consumer business models. Edge compute (both on-prem / device-edge and provider edge) and related services to support 5G use-cases appears to be the leading driver behind recent announcements. These use-cases will need to be managed by our OSS/BSS for the telco operators and their customers.***
Keywords: AWS Telecom, Google Telecom, VMware Telecom, Red hat Telecom

I. INTRODUCTION

This Paper speaks about various Cloud Telecom service providers Which simplified the telecom operations in Cloud Environment.

II. AWS TELECOM

The Following diagrams come from the Amazon Telco Symposium. The first diagram shows the AWS Telecom Engagement Model (noting the OSS/BSS bubble). The Following is AWS telecom Engagement Model Diagram Which clearly shows the telecom operations in AWS Cloud.



The latter diagram provides some insight into important offerings in AWS' push into the 5G / telco edge such as Greengrass, SiteWise, Sagemaker and more.

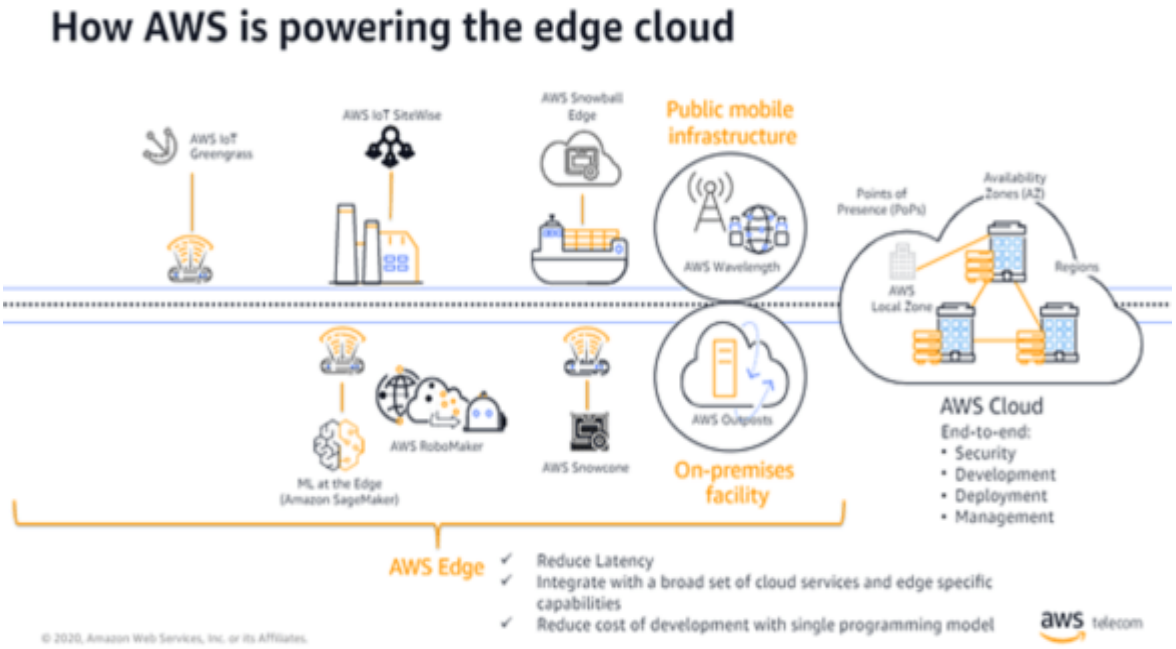
AWS services such as the following have been used as part of home-grown offerings for years

1) Wavelength (low latency), Lambda (serverless) or EC2 – compute services for processing applications/code
2) S3, EFS, Glacier, Elastic, Snow Family, etc – data storage for collecting logs, etc
3) EKS or ECS – for Kubernetes / Docker container / cluster management
4) VPC – for separate environment deployments
5) VPN – to tie VPCs to networks / clouds / DCs
6) ELB – for load balancing
7) ELK – for log management consisting of three open-source projects: Elasticsearch, Logstash, and Kibana
8) Aurora, RDS, Redshift, DynamoDB, Neptune, KDB, etc – databases
9) Cassandra, Kibana, etc – data visualisation
10) Sage Maker, Augmented AI, Lex, etc – AI / ML tools
11) And much more

These have been leveraged by telco architects to build home-grown OSS/BSS tools that leverage commercial and open-source products like Apache's Kafka, NiFi, Spark, etc.

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The Following Diagram Depicts AWS powering the edge Cloud.



However, there's been an increasing trend for OSS/BSS vendors to publish their offerings on the AWS marketplace too, including:

a) Microsoft
b) Zoho / ManageEngine (eg OpManager, Network Config Mgr)
c) Solarwinds
d) Domotz Pro
e) Lumeta CloudVisibility
f) Flowmon
g) Hyperglance
h) Mphasis InfraGraf (Forecasting & Planning)
i) KloudGin (Work Order Mgmt)
j) Kx (network performance)
k) AND Bosch, ThingsBoard, ThingPark, ThingLogix, etc, etc (if we extend into IoT device management)

AWS Marketplace tends to show the solutions that are more standardised / fixed price in nature (Telecoms section in Marketplace). Many other OSS/BSS vendors such as Netcracker, CSG, Intraway and Camvio don't appear in the AWS marketplace but have customisable, AWS-ready solutions for clients. These companies have their own sales arms obviously, but also train the AWS global salesforce in their products.

III.GOOGLE TELECOM

Google Helping telecommunications companies monetise 5G as a business services platform, including:

1) The **Global Mobile Edge Cloud (GMEC)** strategy, which will deliver a portfolio and marketplace of 5G solutions built jointly with telecommunications companies; an open cloud platform for developing network-centric applications; and a global distributed edge for deploying these solutions
2) **Anthos for Telecom**, which will bring its Anthos cloud application platform to the network edge, allowing telecommunications companies to run their applications wherever it makes the most sense. Anthos for Telecom—based on open-source Kubernetes—will provide an open platform for network-centric applications.

Empowering telecommunications companies to better engage their customers through data-driven experiences by:

a) Empowering telecommunications companies to transform their customer experiences through data- and AI-driven technologies. Google's **BigQuery** platform provides a scalable data analytics solution—with machine learning built-in so telecommunications companies can store, process, and analyze data in real time, and build personalization models on top of this data

b) Contact Center AI assists telecommunications companies with customer service. Contact Center AI gives companies 24/7 access to conversational self-service, with seamless hand-offs to human agents for more complex issues. It also empowers human agents with continuous support during their calls by identifying intent and providing real-time, step-by-step assistance

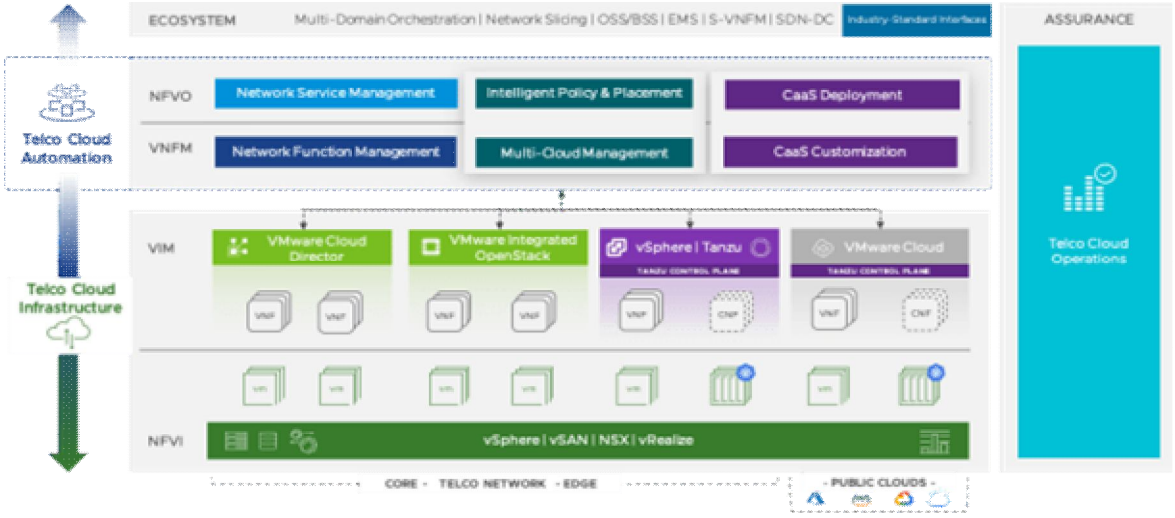
c) AI and retail solutions including omni-channel marketing, sales and service, personalisation and recommendations, and virtual-agent presence in storesAssisting them in improving operational efficiencies across core telecom systems. This allows operators to move OSS, BSS and network functions from their own environments to the Google Cloud

This LightReading report even highlights how Google has been engaged to provide extensive knowledge transfer to some telcos.This press release from March 2020 announced that Google would partner with Amdocs to support the telecom industry to:

- *Deliver Amdocs solutions to Google Cloud:* Amdocs will run its digital portfolio on Google Cloud's Anthos, enabling communications service providers (CSPs) to deploy across hybrid and multi-cloud configurations
- *Develop new Enterprise-focused 5G edge Computing Solutions:* Amdocs and Google Cloud will create new industry solutions for CSPs to monetize over 5G networks at the edge
- *Help CSPs Leverage data and analytics to Improve Services:* Amdocs will make its Data Hub and Data Intelligence analytics solutions available on Google Cloud. Amdocs and Google Cloud will also develop a new, comprehensive analytics solution to help CSPs leverage data to improve the reliability of their services and customer experiences.
- *Partner on Site Reliability Engineering (SRE) Services:* The companies will share tools, frameworks, and best practices for SRE and DevOps

IV. VMWARE TELECOM

Following Diagram is the architecture of VMware Telecom Cloud for their clients .



VMware's recently announced 5G Telco Cloud Portfolio has been designed to give network operators the platform to accelerate 5G and Edge implementation. Its key differentiator from the examples provided above is it allows operators to run containerised workloads across private, telco, edge and public clouds. This is seen as being an important feature allowing telcos to avoid cloud partner lock-in.

The press release above indicates that, "VMware is evolving its VMware vCloud NFV solution to Telco Cloud Infrastructure, providing CSPs a consistent and unified platform delivering consistent operations for both Virtual Network Functions (VNFs) and Cloud Native Network Functions (CNNFs) across telco networks. Telco Cloud Infrastructure is designed to optimize the delivery of network services with telco centric enhancements, supporting distributed cloud deployments…

Tightly integrated with Telco Cloud Infrastructure, VMware's Telco Cloud Automation intelligently automates the end-to-end lifecycle management of network functions and services to simplify operations and accelerate service delivery while optimizing resource utilization. Telco Cloud Automation also now supports infrastructure and Containers-as-a-Service (CaaS) management automation to streamline workload placement and deliver optimal infrastructure resource allocation. It also significantly simplifies the 5G and telco edge network expansions through zero-touch-provisioning (ZTP) whenever capacity is required."

V. REDHAT TELECOM

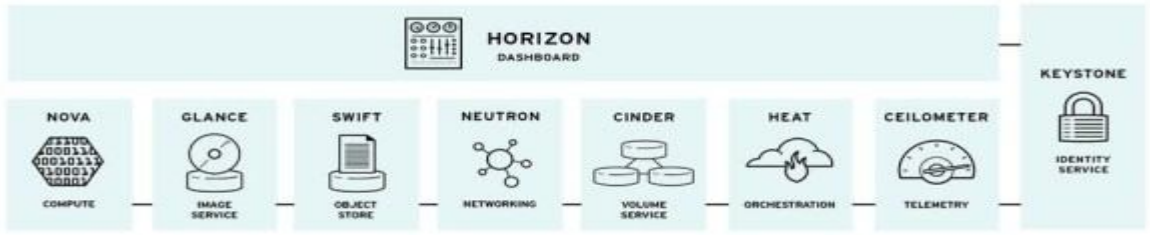
Red Hat's telco offerings are built upon the premise that service providers will use more open-source, multi-vendor solutions to underpin their OSS, BSS and networks of the future. Red Hat aims to offer open infrastructure to facilitate service provider initiatives such as NFV, 5G, OpenRAN and Edge Compute. This includes coordination of telco and IT infrastructure, but also the applications and data that are intertwined with them.

Red Hat's telco proposition is supported by:

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Red Hat's telco proposition is supported by:

1) *OpenShift:* A cloud compute platform as a service (PaaS), built upon Docker containers (containerised applications) that are managed by Kubernetes. This is particularly relevant to support telco cloud models that provide virtualised network functions. It also helps to deliver the edge compute infrastructure that's becoming synonymous with 5G
2) *OpenStack:* A set of components, mostly deployed as infrastructure as a service (IaaS) that help manage compute, storage and networks. Some of the components are shown in the diagram below sourced from redhat.com



3) *Ansible Automation Platform:* To automate network configuration, fault remediation, security updates, and more
4) *Marketplace:* To assist service providers in finding, buying and deploying certified, container-based software
5) *Telco Ecosystem Program:* That brings together enterprise and community partners to deliver integrated telco solutions. Partners include Affirmed, Altiostar, Atos, Cisco, Ericsson, Amdocs, MYCOM OSI, Zabbix, Metaswitch, Nokia, Juniper and more
6) *Consulting:* Offering service resources that include Innovation Labs, training and consulting

VI. CONCLUSIONS

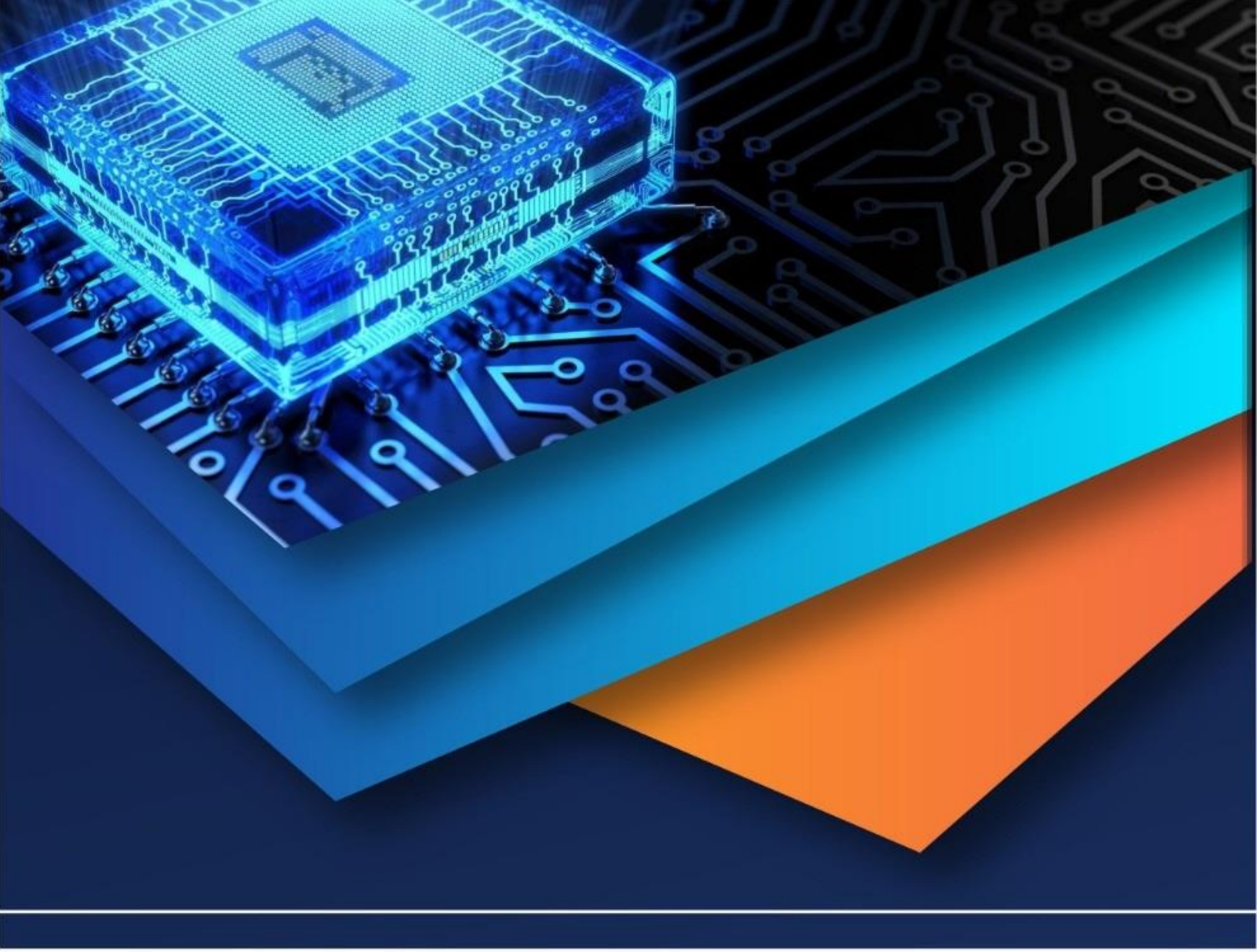
This paper concludes the telecom operations provided by various telecom cloud service providers to their clients. Telecom operations in Cloud Platform is simpler and more efficient than telecom operations in On Premises Environment. Telecom operations in Cloud platform is secure, cost effective and telecom solutions provide 100% Quality Assurance in Voice technology to their Clients.

VII. ACKNOWLEDGMENT

Special Acknowledgement to Cloud Telecom service providers such as AWS, Google, Vmware, Rehat

REFERENCES

[1] AWS White paper on Cloud Telecom,Jan 2021
[2] Google White paper on Cloud Telecom,Apr 2020
[3] Vmware White paper on Cloud Telecom,July 2021
[4] Red Hat White paper on Cloud Telecom,Dec 2019



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