Dr. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,

CHHATRAPATI SAMBHAJINAGAR (M.S.)

In-Plant Training Report

In

Tata Communication LTD, Pune

Submitted by:

Ms. Purva Deepak Joshi

[B4434]

Under the guidance of

Ms. Akanksha Somani

In partial fulfilment of the award of

Bachelor of Technology (Electronics & Telecommunication Engineering)

Department of Electronics & Telecommunication Engineering

Maharashtra Institute of Technology,

(An Autonomous Institute)

Chhatrapati Sambhajinagar (Maharashtra)

2023-2024

CERTIFICATE

This is to certify that the In-Plant Training Progress report, submitted by **Purva Deepak Joshi**, is the bonafide work completed under my supervision and guidance in partial fulfilment for the award of Bachelor of Technology **Electronics &Telecommunication Engineering** of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (M.S.).

Place: Chhatrapati Sambhajinagar
Date: /2/2024

Ms. Akanksha Somani	**Ms. Akanksha Somani**	**Dr. S. J. Nandedkar**
IPT Guide	IPT Co-ordinator	Head of Department

Dr. N.G. Patil
Director
Maharashtra Institute of Technology
(An Autonomous Institute)
Chhatrapati Sambhajinagar (M.S.) – 431005

ACKNOWLEDGEMENT

It is indeed a great pleasure and moment of immense satisfaction to present In-plant report on "**Understanding the Webex Contact Centre and its services**" under the guidance of **Ms. Shweta Dhole**, I take the opportunity to thanks those who gave us their indeed assistance.I wish to extend our cordial gratitude with profound thanks to our internal guide for their everlasting guidance. It was her inspiration and encouragement which helped us in completing our internship.Our sincere thanks and deep gratitude to head of the department, **Dr.S.J.Nandedkar** and training and placement department, Tata Communications Limited(TCL) and also to all those individuals involvedboth directly and indirectly for their help in all aspect of the In-plant training, At last butnot the least we express our sincere thanks to our Institute's Director **Dr.N.G.Patil,** for providing us infrastructure and technical environment.

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1. INTRODUCTION

Tata Communications Limited along with its global subsidiaries (Tata Communications) is a leading global provider of the new world of communications. The company leverages its Tata Global Network, vertical intelligence and leadership in emerging markets, to deliver value-driven, globally managed solutions to the Fortune 1000 and mid-sized enterprises, service providers and consumers.

The number one global international wholesale voice operator and number one provider of International Long Distance, Enterprise Data and Internet Services in India, the company was named "Best Wholesale Carrier" at the World Communications Awards in 2006 and was named the "Best Pan-Asian Wholesale Provider" at the 2007 Capacity Magazine Global Wholesale Telecommunications Awards for the second consecutive year. Becoming the leading integrated provider to drive and deliver a new world of communications, Tata Communications became the unified global brand for VSNL, VSNL International, Teleglobe, Tata Indicom Enterprise Business Unit and CIPRIS on February 13, 2008. Tata Communications Ltd. is a part of the $100.09 billion Tata Companies; it is listed on the Bombay Stock Exchange and the National Stock Exchange of India and its ADRs are listed on the New York Stock Exchange (NYSE: TCL).

1.1 Company Profile / Background

Tata Communications currently carry 40 billion minutes of international wholesale voice traffic annually and 1,600 Penta bytes of Internet traffic, with offerings ranging from very high speed connections and global MPLS virtual private networks to managed Tele-presence services and media and entertainment solutions**.**

Tata Communications, part of the $67.4 billion Tata Group, is a leading global communications provider that has undergone a critical transformation over the past three years to globalize its innovative service offering.

The Tata Communications brand, launched in February 2008, encompasses VSNL, VSNL International, Teleglobe, CIPRIS and Tata Indicom Enterprise Business Unit into one umbrella brand.

Fuelled by the financial stability and long-term strategic vision of the Tata Group, the company launched operations in the North America, EMEA and APAC to establish the local knowledge and presence to support a burgeoning global client base.

A global infrastructure forms Tata Communications' core foundation, which includes:

- An undersea cable network that represents one of the world' s largest and most advanced networks
- A Tier-1 IP network that provides a seamless Internet backbone worldwide, now ranked No. 6
- 42 data centres and colocation centres that represent over 1 million square feet of space

On top of this robust backbone, sits Tata Communications' voice and data businesses, serving service providers, multi-national corporations and large & medium-sized enterprises globally. Tata Communications currently carry 40 billion minutes of international wholesale voice traffic annually and 1,600 Peta-bits of Internet traffic, with offerings ranging from very high speed connections and global MPLS virtual private networks to managed Telepresence services and media and entertainment solutions

1.2 Core Value Proposition

A one of the leading Indian conglomerates, the Tata Group has a long and highly respectedhistory of achievement and contribution to the many markets, industries and communications .Tata Communications acts as the flagship global telecommunications and technology solution leader, leveraging its track record of successes, global investments and emerging market strengths to continue to forge new global ground and create additional successful ventures as part of the Tata Group success story.

1.3 Strategic Relationships

Tata Communications is a truly global communications provider with operations, infrastructure and partnership across established and emerging markets. The company' s strategy is based on its strong presence in the emerging markets, its portfolio of IP and Cloud services, it strategic partnerships and its transformation to a Managed Services business model.

Tata Communications focuses on serving key vertical segments, including banking & financial services and media & entertainment, as well as providing catalyst services such as Telepresence, Content Delivery Networks and Ethernet solutions.

The company' s scale of transformation services partnerships include:

- 1,600 service providers
- 785 mobile operators
- 650 IP customers
- 480 direct voice bilateral
- 55 IP peering partners
- 40+ Network to Network Interfaces

999Tata Communications has forged partnerships spanning the consortium of cable operators, including SEACOM, SEA-ME-WE 4, C2C, SAFE, EAC, APCN-2, Americas 2, CANTAT 3, 121 and others.

For global bandwidth exchange across Asia, Europe and the U.S ,Tata Communications manages alliances with BT, C&W, France Telecom, T-System, Telecom Italia, AT&T, Verizon Business, Sprint, SingTel, NTT, Telstra, KDDI, Telecom Malaysia and many more.

Tata Communications is a partner of the Metro Ethernet Forum (MEF), the pre-eminent industry organization dedicated to facilitating the adoption of Ethernet networks and services. Tata Communications' Ethernet Private Line and Dedicated Global Ethernet. Tata Communications acts as the flagship global telecommunications and technology solution leader, leveraging its track record of successes, global investments and emerging market strengths to continue to forge new global ground and create additional successful ventures as part of the Tata Group success story. The Company enables the digital transformation of enterprises globally, including 300 of the Fortune 500 – unlocking opportunities for businesses by enabling borderless growth, boosting product innovation and customer experience, improving productivity and efficiency, building agility and managing risk. With its solutions orientated approach, proven managed service capabilities and cutting-edge infrastructure, Tata Communications drives the next level of intelligence powered by cloud, mobility, Internet of Things (IoT), collaboration, security and network services. Tata Communications carries around 30% of the world's internet routes and connects businesses to 80% of the world's cloud giants and 4 out of 5 mobile subscribers. The Company's capabilities are underpinned by its global network, the world's largest wholly owned subsea fibre backbone and a Tier-1 IP network with connectivity to 190+ countries.

1.4 Brief History Of TCL

In 2003, Tata Communications (then VSNL) decided to pursue international expansion and in 2003 formed a wholly-owned subsidiary, VSNL America. The company built its first international cable between India and Singapore that +year, Part of VSNL' s global expansion strategy was to grow through acquisitions

In 2004, VSNL acquired the narrowband and broadband businesses of Dishnet's ISP division. In 2005, it acquired Tyco Global Network (US) submarine cable network, and in 2006 acquired Teleglobe (Canada) an international mobile, data and voice Network Company, and also acquired the Indian ISP, Direct Internet Ltd

In 2007, the VSNL's name was changed to Tata Communications Limited (Tata Communications) Subsequent global strategic investments were made in operators in South Africa (Neotel), Sri Lanka (Tata Communications Lanka Limited), and Nepal (United Telecom).

In 2008, Tata Communications launched the first truly global CDN service on a state-of-the-art, single ASN global IP network throughout Europe, Asia, North America and India. Tata Communications' next-generation CDN service, powered by Bit Gravity's technology, delivers the highest performance and reliability in the industry while providing immediate access to content, including High-Definition Video, without delay or jitter, and the highest levels of throughput for end users. Following this, Tata Communications acquired Bit Gravity in February 2011 as part of its long term media and entertainment strategy.

Also in 2008, Tata Communications launched Tele presence Exchange Services, the world' s first to offer both private and public Telepresence rooms to businesses across the world. This ground breaking service enables a broader ecosystem of connected rooms and provides a powerful collaboration tool that transformed the way enterprises do business.

Today, Tata Communications is the market-leading provider of Telepresence services. The service includes public Telepresence rooms located in hotels and business

services. Each public and private Telepresence room is then linked to a wider Tata Communications Telepresence network via its Global Meeting Exchange (GMX). The GMX enables meetings to take place between any private or public room on its network as well as rooms on the networks of Tata Communications' Inter carrier- Exchange partners, BT and Telefonica, and the National Lambda Rail network, which links leading US universities.

Tata Communications currently has the largest global network of public Telepresence rooms and is present in 30 major cities across five continents, with its 33 rooms spanning 17 countries.

Both the Global Meeting Exchange and Inter-carrier Exchange initiatives with other operators have been industry firsts and have enabled Tata Communications to continue to provide the broadest number of connections, regardless of service provider or operator.

In 2009, Tata Communications completed the US $250 million TGN-Intra Asia Cable System, a 6,700 km multi-terabit cable system, connecting Singapore, Hong Kong, Japan, Vietnam and the Philippines. The cable system is part of a major expansion initiative in the APAC market.

The company is constructing a new TGN Eurasia System linking Mumbai directly to Paris, London and Madrid via Egypt. When combined with Tata Communications' strategic significant capacity ownership on other cable systems and its privately owned TGN Atlantic and TGN India Asia systems, the TGN Eurasia System will enable the company to offer seamless and diverse connectivity between India, South East Asia, South Africa, Western Europe and the USA.

Tata Communications also upgraded its high-capacity Trans-Pacific submarine cable network to a 1-terabit capacity to serve increased customer demand between Asia and the United States.

Tata Communications owns and operates data centres on three continents and occupies approximately 1 million square feet of space. The company' s hosting capabilities integrate directly into its global IP network to offer maximum traffic capacity into and out of facilities.

In 2010, Tata Communications added two new state-of-the-art data centre facilities located in Singapore and Pune to its global portfolio. These global data centres are centrally managed to provide consistent service delivery allowing customers to scale seamlessly as

their needs develop. Also in 2010, Tata Communications launched its next-generation Ethernet network in 24 nodes around the world, marking the industry' s first use of 802.1ah Provider Backbone Bridging (PBB) on a global scale.

1.5 Company View

Tata Communications is a leading global communications and enterprise IT service provider that owns and operates the world' s most advanced subsea cable network, delivering first class infrastructure, enterprise solutions and partnerships to carriers and businesses worldwide.

Tata Communications' network is truly global, extending from developed markets to the World' s fastest growing emerging economics. The $2.75 billion company is the flagship Telecoms arm of the $100.09 billion Tata group. Core to everything Tata Communications does, is the laying of a global infrastructure consisting of one of the largest and most sophisticated subsea optic fibre cable networks; its tier 1 IP network.

World-class data centres in key business capitals around the world. On top of this robust backbone, sites Tata Communications' voice and data businesses and its comprehensive portfolio of managed enterprise services. These include high speed connections and global MPLS virtual private networks, the world' s largest network of Telepresence services, the world' s most extensive DDoS mitigation and detection service, content delivery networks, and cloud offerings. This large portfolio of services is designed to serve Tata Communications' customers in key vertical markets, including manufacturing, oil and gas, banking, financial services and insurance, media and entertainment and the IT sectors.

Tata Communications is a global company with its roots in the emerging markets. Headquartered in Mumbai and Singapore, it has offices in more than 80 cities across 33 countries. Tata Communications Limited is listed on the Bombay Stock Exchange and the National Stock Exchange of India. It ADRs are listed on the New York Stock Exchange.

2. SERVICES BY TATA COMMUNICATIONS

Tata Communications provides following services:

- Global VPN
- Content delivery network
- Enterprise adaptive network services
- Internet access
- Private line
- WAN Ethernet setting
- Cloud & data centre services
- Managed security services
- Cloud Services
    - Infrastructure-as-a-Service
    - Insta Compute
- Software-as-a-Service
    - Insta CRM
    - Insta ECM
    - Insta Office powered by Google Apps
- Collocation Services
    - Cage, cabinet, power, cooling
    - Network services
    - On-net services (IP, Ethernet, MPLS) and carrier diversity
- Value-added services
    - Remote hand services
    - Storage and backup services
- Managed Hosting Services
    - Managed servers
    - Managed load balancing
    - Database management
    - Virtualization services

3. Global Services provided by TCL

3.1 Internet Leased Line

A Leased line is a wired dedicated circuit provided by the Service Providers like BSNL, MTNL, and Bharati etc. & usually leased on a yearly basis to the subscriber. The circuit may a 2 wire (1 pair) or4 wire (2 pairs) or 6 wires (3 pairs) depending on the requirement. The speed of the circuit may range from 64 kbps to 2 Mbps.

A Leased line is more reliable More Cost effective compared to Wireless Less prone to external disturbance and has a range from 2 Kms. to 20,000 Kms.

3.4.1.1 Components of Leased Line Circuit

The major components of a Leased line circuit are

1. A 2 wire / 4 wire / 6 wire connectivity from Customer premises to the nearest exchange & the same type of connectivity at the other end
2. Two pairs of modems for a Point-to-Point connectivity (a typical Head office toBranch office connectivity) or 1 pair of modems for ISP Connectivity. A pair here refersto V.35& G.703 interfaces in the modem.
3. A router / switch for connecting to the LAN

- Devices in Detail

Leased line modems: Basically, comes in 2 types /models, the first one caters to data transfer speed up to 144 kbps & the second one takes care of data transfers up to 2 Mbps.

- Problems Resolved by ILL
    1) A & PTR reverse record creation
    2) Acceptable Use policy enforcement
    3) Website Blocking
    4) High Utilization
    5) Shifting for link
    6) Scheduled testing-media test
    7) Schedule testing-auto failover
    8) Schedule testing-throughput checking
    9) Earthing issue
    10) IP blacklisted
    11) Circuit Monitoring
    11) Router username and password
    12) Firewall Policy Required

3..2 Service Assurance Team (SAT)

The concept of Service Assurance Team came into existence when it was decidedto serve the customer centrally. Earlier the customer requirement could be met from local operation centres as their business was not scattered, now with globalisation of economy customer' s network has grown and needs have changed and the customer wants a central place from where the co-ordination can be done. As it was decided to serve the customer from a NOC.

3.3 Global Virtual Private Network (GVPN)

- Planned Activity at customer end
- No problem observed on the link
- Need Assistance of L2
- Failover testing
- Performance /circuit monitoring.
- Require Router's Configuration & its access
- IOS up gradation
- Advertising IP Pool
- Customer want to change router
- UPS /MUX/Modem issue
- ISDN testing
- QOS configurations details
- Scheduled testing-media test
- Schedule testing-auto failover
- Earthing issue
- Mask height to be increased
- Related to server in IDC
- LOS or feasibility

3.4 Multiprotocol Label Switching (MPLS)

MPLS is a Layer-2 switching technology. MPLS-enabled routers apply numerical labels to packets, and can make forwarding decisions based on these labels. The MPLS architecture is detailed in RFC 3031. MPLS reduces CPU-usage on routers, by allowing routers to make forwarding decisions *solely* on the attached label, as opposed to parsing the full routing table.

Labels can base on a variety of parameters:

- Destination IP network
- Source IP address
- QOS parameters
- VPN destination
- Outgoing interface

MPLS is not restricted to IP, or any specific Layer-2 technology, and thus is essentially protocol-independent.

4.Introduction to product/service/software

Product 1

GVPN (Global Virtual Private Network)

Global Virtual Private Network service from cooperating carriers that provides international digital communications for multinational companies.

ILL (Internet Leased Line) Internet Leased Line (ILL) is a dedicated link between thecustomer premises and the service provider's Network Operating Centre or NOC.

A leased line is a dedicated data connection with a fixed bandwidth. It enables small, medium, and large

businesses to connect to the internet in a secure, reliable, and highly efficient manner, with maximum

download capacity, resilience, and uptime.

Services

• Network Services

• Network Security

• Internet Services

• Mobile Communications Services

• Cloud Telephony

• Cloud Networking Software

• Service Now

Service Now is a cloud based workflow automation platform that enables enterprise organizations to improve

operational efficiencies by streamlining and automating routine work tasks.

• PAM Privileged Access Management is an information security mechanism that safeguards identities.

• VMware Virtual Machine Software well known in the field of system virtualization and cloud computing.

• Putty Putty is a open source SSH and telnet client that allows user to connect to other systems remotely.

• Cisco Jabber Jabber provides instant messaging, presence, video calling, voice messaging, desktop sharing and

conference capabilities.

• Spotlight It monitors real time transmission network flow.

• Wireless One Wireless One provides the RF devices base station and subscribe station information with their

uptime and top view.

4.1 Introduction of work Assigned

Internships, apprenticeships, learner-ships, are all terms used to define gaining of workexperience before being employing full-time. Internship mean to enable the transfer of learning and knowledge.

- Task During The Internship

• Assigning the morning queue.

• Assigning tickets to available agents.

• Maintain the TAT of all tickets.

• Tracking Pending with Customer cases.

- Types Of Tickets

• CSP tickets are generated by the system or portal or bot.

• CSR tickets are generated by customer through portal or Mail.

- States of the Tickets

• New When the tickets are generated then they are in a new state.

• Work in Progress A team is working on the customer end issue then it is in a work in progress state.

• Pending with Customer Customer details is unavailable or some details are pending at customer side, then it is in A pending with customer state.

• Resolve Customer end issue is resolved, then after 4 hrs it is in resolved state.

• Close After 4 hrs timeline, if customer is not facing any connectivity issue then it is in close state.

- Severity Of Tickets

1 Sev-1 Total loss In this case, customer is facing link down issue. No network at the customer end location.

2 Sev-2 Partial loss/ Latency/ Link Flapping In this case, some packets are missed or dropped at customer end

3 Location Customer is fully using or utilized the link more than the its original bandwidth.

4 Sev-3 On Customers Request Customers created these tickets on their personal request.

Power Over Ethernet (PoE)

Power over Ethernet (PoE) is a technique for delivering DC power to devices over copper Ethernet cabling, Eliminating the need for separate power supplies and outlets. While PoE doesn't add Ethernet data capabilities, it does offer expanded options for how and where Ethernet end devices can be placed. Power over Ethernet (PoE) is a technology for implementing wired Ethernet local area networks (LANs) that enables the electrical current necessary for operating each device to be carried by Ethernet data cables instead of standard electrical power cords and wiring.

4.2 Introduction to WEBEX

WebEx by cisco is an American company that develops and sells web conferencing, videoconferencing and contact center as a service applications. It was founded as WebEx in 1995 and taken over by Cisco Systems in 2007. Its headquarters are in San Jose, California Its software products include WebEx App, WebEx Suite, WebEx Meetings, WebEx Messaging, WebEx Calling, WebEx Contact Center, and WebEx Devices. All WebEx products are part of the Cisco Systems collaboration portfolio.

WebEx Contact Center supports text / SMS and social media as a customer engagement channels.

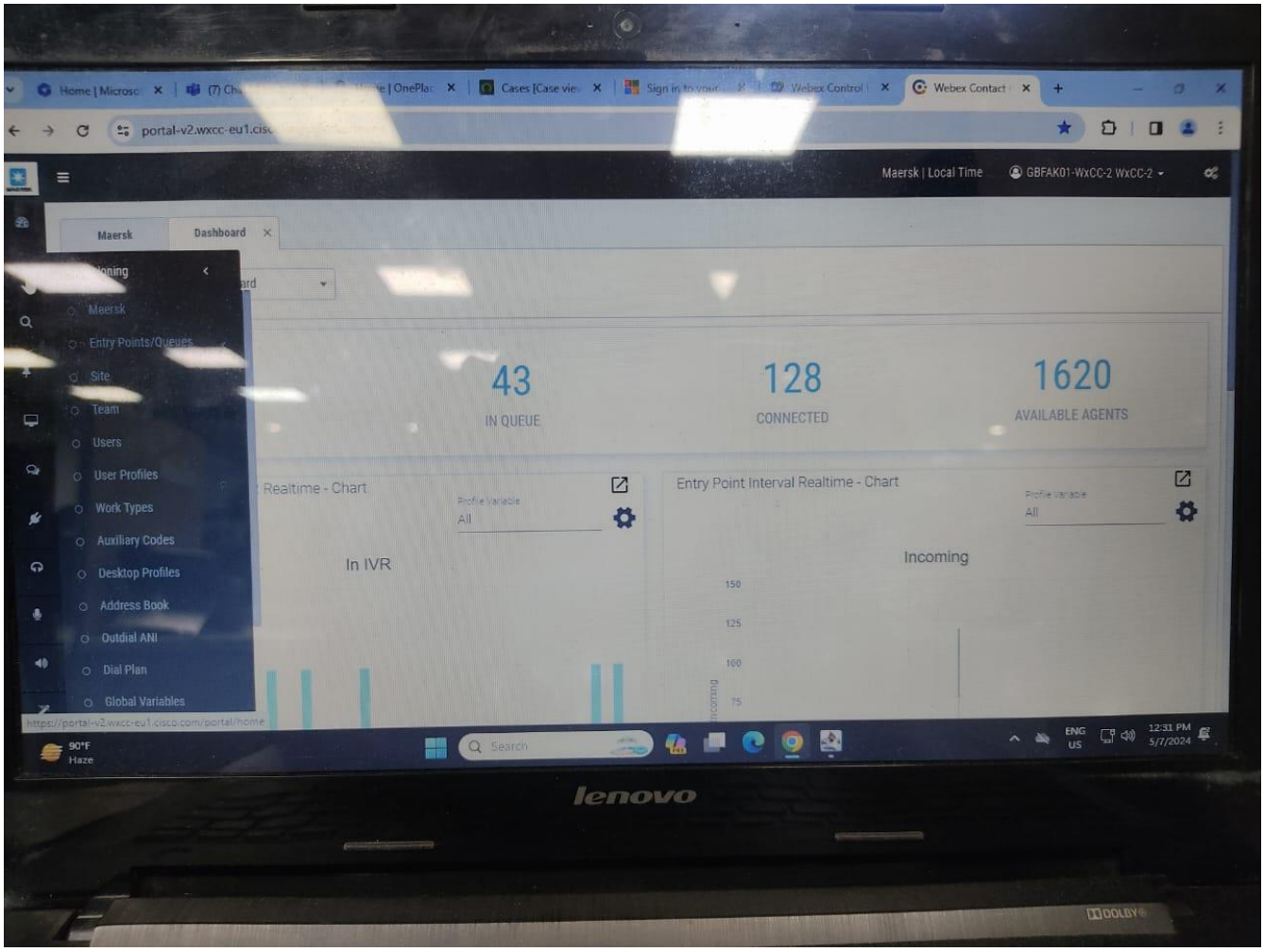


Fig.1.1 Webex Dashboard

4.3 Webex Control Hub

We can add users means we can do agent creation deletion, and their email ids in the webex control hub we can give them supervisor and admin access as per our need. In control hub main thing we need for agent creation is the agent's first name last name and email ID's. We can see the status of the agents and manage the users.

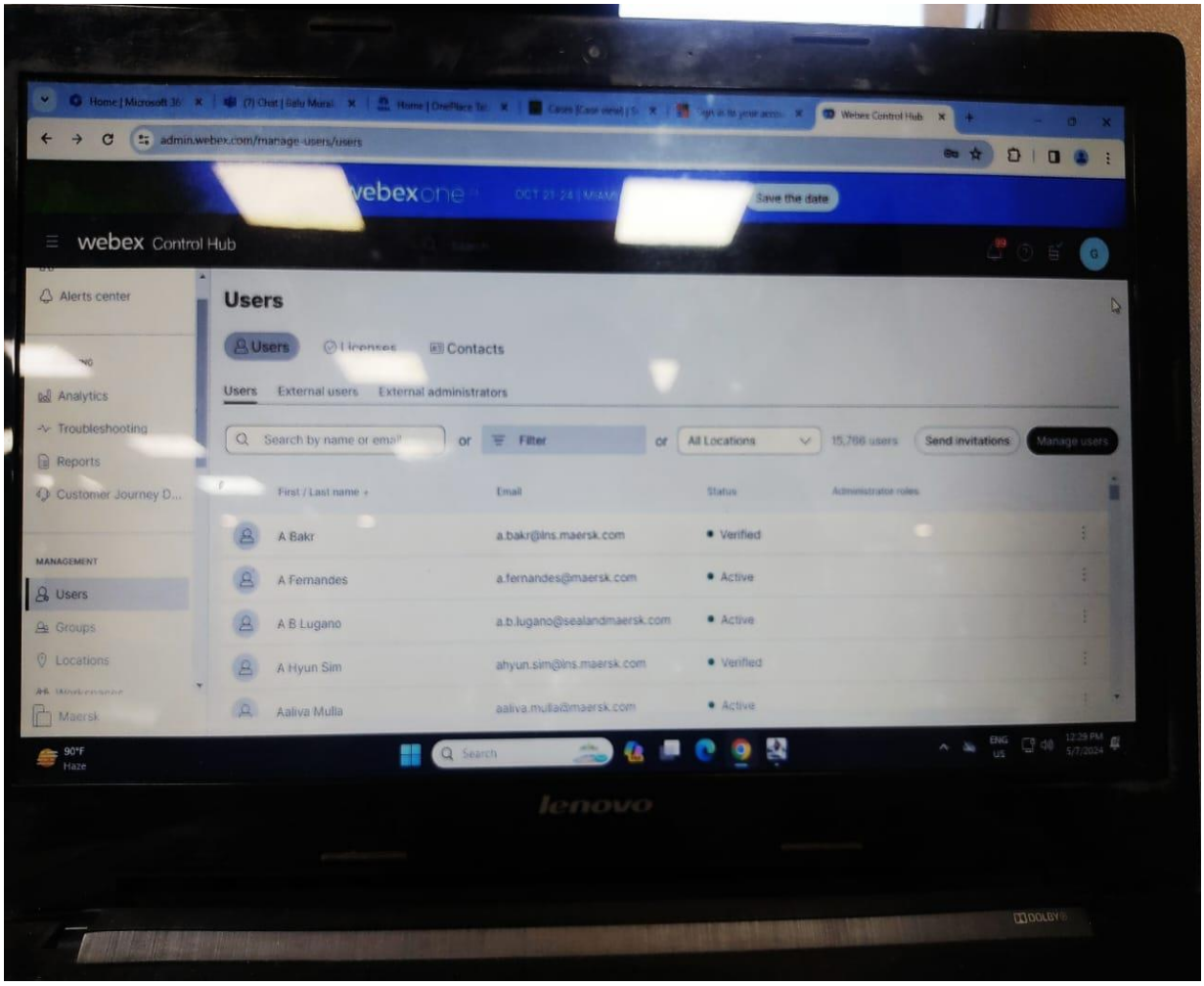


Fig. 1.2 Webex Control Hub

4.4 Introduction to RTDAS

RTDAS stands for Real Time Data Acquisition System.

In RTDAS Application, by doing the global scan, we can identify the real time data of any call.

IT shows us various information of the call and on the basis of that we can solve the CSP & CSR.

CSP stands for customer service provider and CSR stands for customer service request.

CSP tickets are assigned to TATA communication by agent ,the tickets are issued to resolve the call related issues such as if some call get abandoned or some fluctuations occurring during the call, etc.

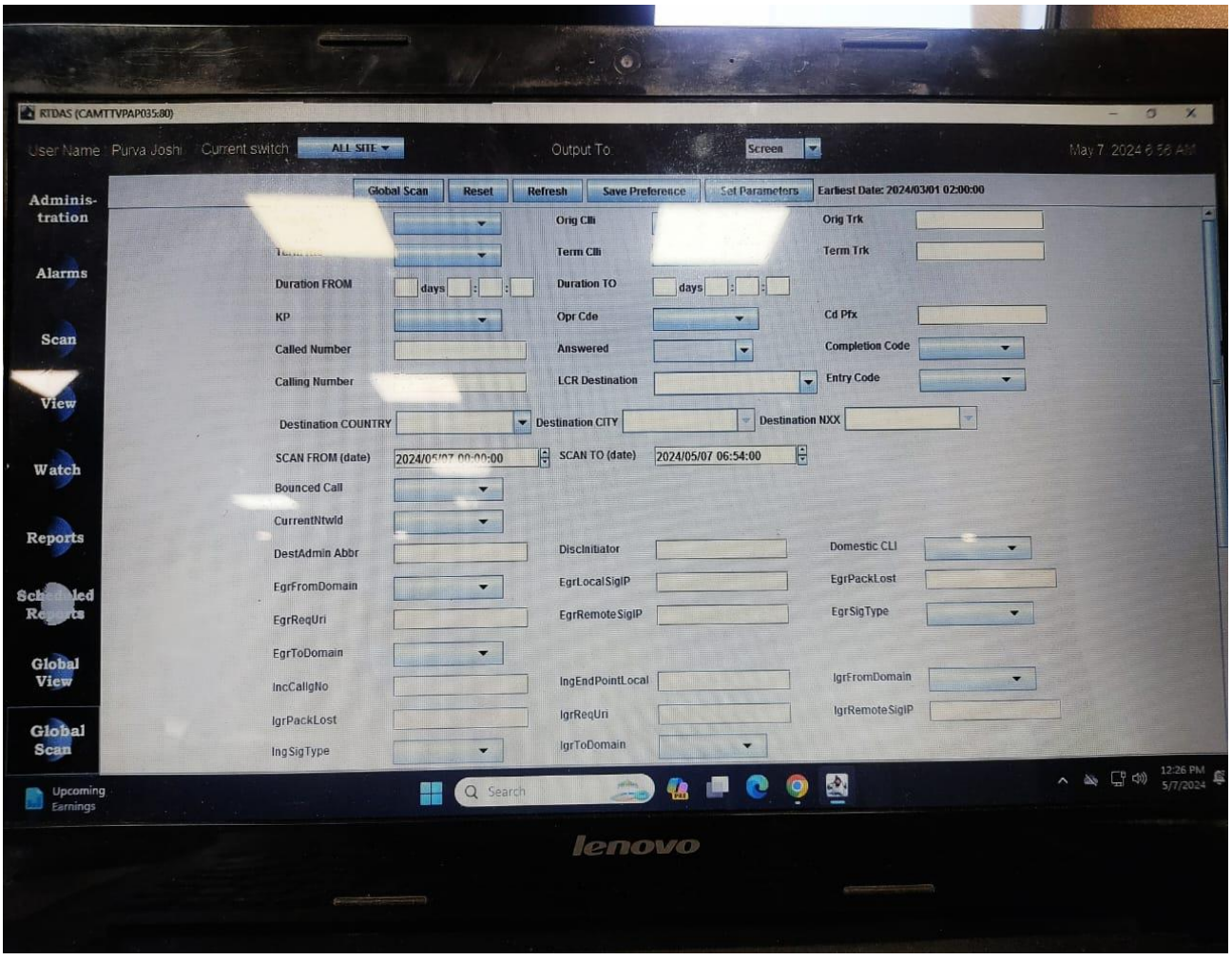
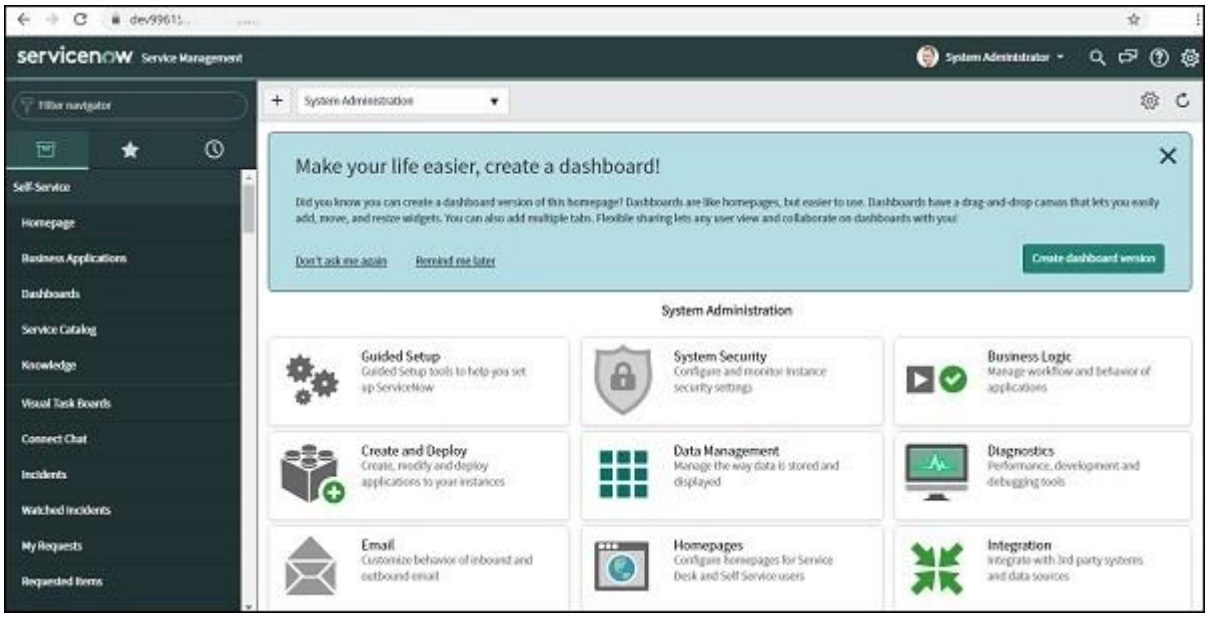


Fig.1.3 RTDAS CDR

4.5 Introduction to SNOW

ServiceNow is a cloud based platform, which was mainly developed for workflow and process automation as per the ITIL principles. However, it is highly customisable and also can be used for other purposes. ServiceNow is an American based company and was founded in 2004 by Fred Luddy. It has a unique way for naming its versions. They name the versions based on the major cities of the world. The latest version of ServiceNow is Orlando ServiceNow offers many ready to use solutions, workflows and products for an organisation. The organisation can develop the customised applications and modules as per the business requirement using the ServiceNow scripting and existing tools.



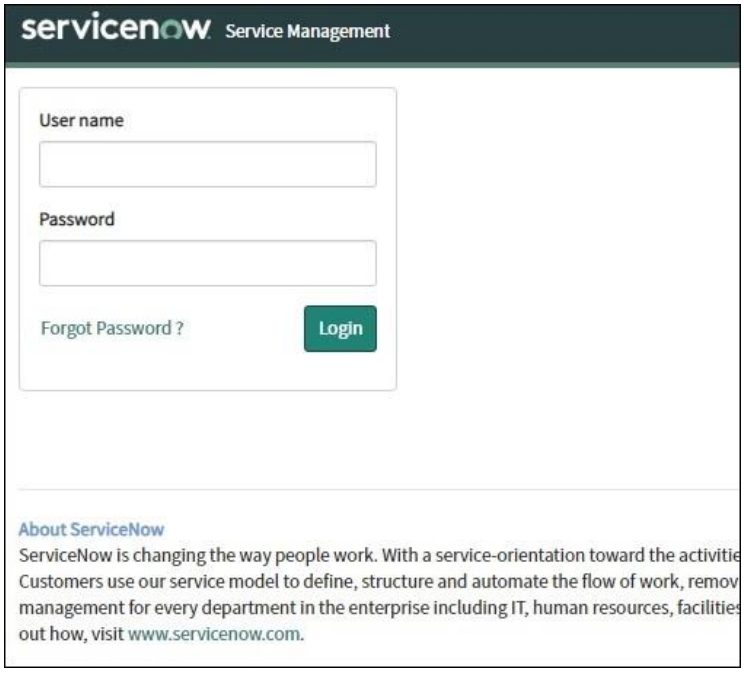


Fig.1.4 SNOW Dashboard

4.6 Introduction to CSP and CSR

- CSP stands for customer service provider and CSR stands for customer service request.
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- CSR tickets are generated by customer through portal or Mail. CSP tickets are generated by the system or portal or bot.
- New When the tickets are generated then they are in a new state.
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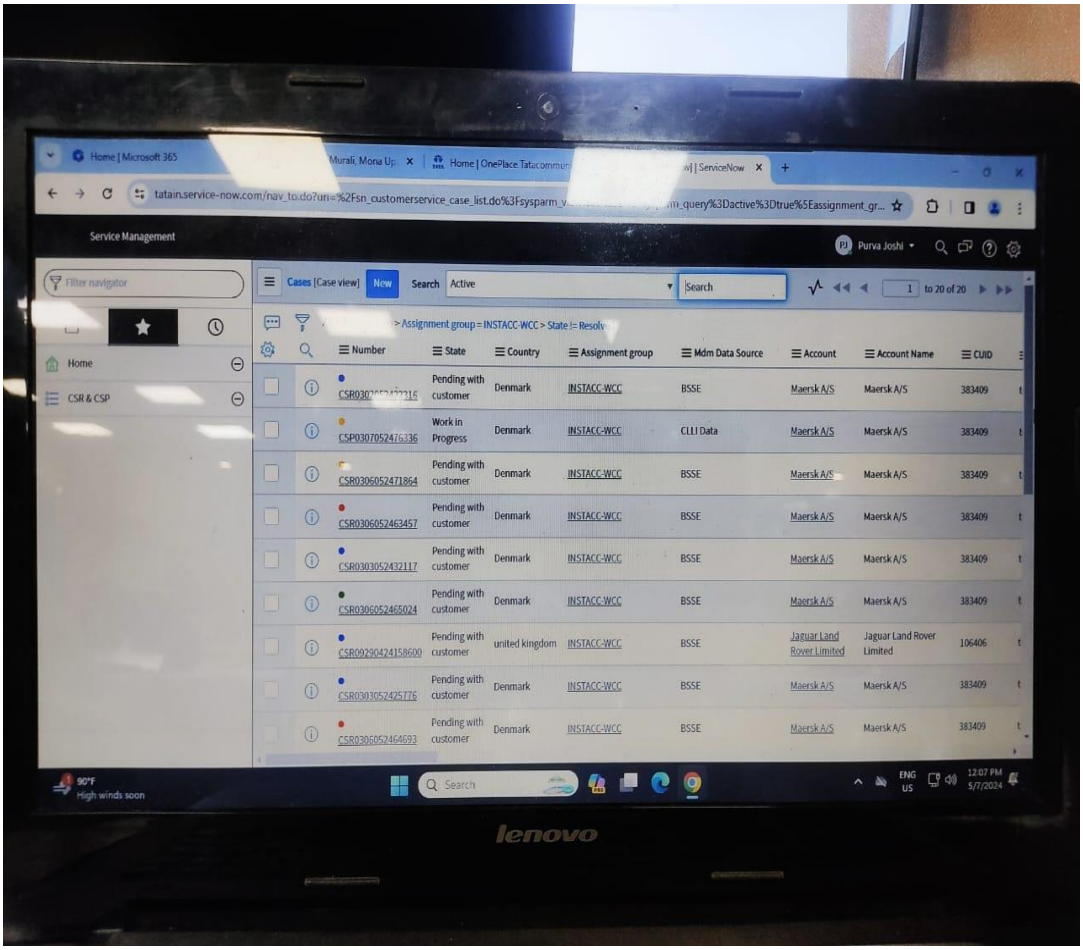

Fig.1.5 CSP's & CSR's

5.CONCLUSION

In Tata Communication as project trainee we are learning about Troubleshooting the network problem of customers as well as how to resolve them. Troubleshoot with call fluctuations. Tracing the problem in between the network from a provider to Customer. Giving RFO to customer, resolving cases, closing duplicate tickets. In Tata Communication as project trainee I have learnt about troubleshooting the network problem of customers as well as how to resolve them. Troubleshoot with routers logs. Monitoring the performance of links (Latency, Packet Drop, Flapping, and High bandwidth utilization) .Tracing the problem in between the network from a provider to Customer. (Local loop) .Giving RFO to customer, resolving cases, closing duplicate tickets. In a last four month, I have learnt various Webex CC terminologies All in one, this internship is a fantastic opportunity to gain hands-on experience and my skill in networking. I am grateful for all the lesson and experience I have gained during the last four month at Tata Communication Limited, Pune, which I can now confidently apply to any future roles .My experience at TCL, Pune has been an incredible rewarding and enriching experience. During my internship, I developed my technical skills and understand the operation of network. I have also made some connection in Cisco Packet Tracer that will be helpful in future. Overall, I have learnt so much from this experience, which will be benefit me in the future.

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