Research Paper—Computer Science

APPLICATION OF INFORMATION TECHNOLOGY FOR CUSTOMER CARE CENTER OF POWER UTILITIES

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A B S T R A C T

M3, GUI, ODBC, VLAN, PRI, VoIP, LAN, WAN, MPLS, VPN, IP, ISDN, DTMF, SaaS, CRM, PBX, PSTN, Mbps, OLAP

Objective

The objective of this research is to provide state of the art technology to Power Utilities for call center management. This research suggests two type of design architecture which could be used for the better implementation of the call center hardware and software 1.The Proposed SolutionThe research will provide JVVNL with the most advanced interactive, innovative, proven solution based on unified IP technologies that address the complex issues of contact centers faced in the industry today. Research is proposing Aspect based Unified IP solution at three different locations to cater their respective zonal customers which specifically meets the requirements laid out in the Request for Proposal document issued by JVVNL under RAPDRP. This site at Jaipur has been proposed with 25 seater call centre.

The USP of the solution designs would be:

· Unified Administration – UIP provides Administrator interface to control the running of call centre · Unified Routing – Routing is the process where call gets routed to the available agent based on the skill set routing logic (longest idle, Circular, terminal). · Reporting –Unified Reporting provides the Historical reports for the JVVNL CCC. · ACD (Automatic Call Distribution) – Customer calls are answered and intelligently routed to available agents based on the customer profile, service level goals and agent availability · AOD (Automatic Outbound Dialing) – AOD enriches the JVVNL CCC to connect to their customer by making an outbound dialing. · IVR (Interactive Voice Recording) – JVVNL CCC will have Interactive voice recoding solution where call will be routed based on the input. It would automate the call centre where customer call will be routed as per the input options where the IVR solution will increase connect for the site. · Recording – JVVNL will have Aspect Unified IP recording solution to analyze the performance of the agent on the call as well as analyze the quality of the call for quality control or compliance purposes. · Monitoring: - Monitoring of the business line, agent, table or searching for specific penetration of the list that is available on UIP Monitoring tool. This would also help JVVNL supervisor to monitor and mentor their agents. · Authentication: - Dialer user's agent, supervisor or Administrator will be JVVNL authentic LDAP or AD user. The proposed contact center solution is the optimal choice for JVVNL as that requires a unified inbound/outbound, multi-channel contact center solution which can be integrated or interfaced to the existing infrastructure of JVVNL. The solution is being implemented based on proven and established capabilities, while offering maximum opportunity for responding to future needs such as additional agents; enhanced capabilities; and new business process of JVVNL.

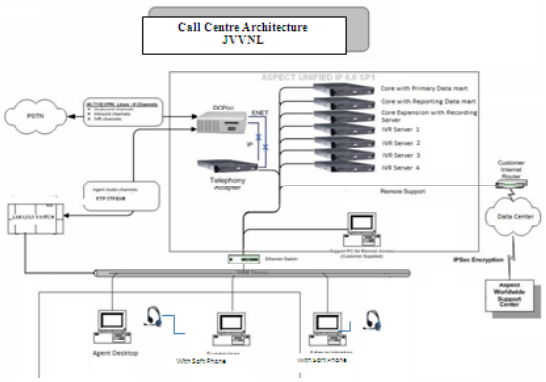
Solution Overview

RESEARCH is proposing a complete contact center solution based on Aspect Unified IP that has been designed and built from the ground up to deliver the advanced functionality required by today's multichannel contact centers. JVVNL can reap the leading-edge benefits of a unified platform which is more flexible, more comprehensive, more cost-effective, and more reliable. The solution enriches JVVNL with numerous functionalities where in customer can contact the CCC or CCC can reach their customer, administration of the call centre, monitoring of the call centre and historical reports, recording for quality purpose, and details of the calls. Monitoring and Reporting not only gives the current status of the customer but also provides details, that, analysis and practical approach could be more useful in maintaining better customer relationship.

1 High Level Design High Level Design includes following · Solution Architecture · Layout of Customer Care Centre ·Connectivity between Customer Care

Centre & DC · Power Requirements · Heat Dissipation and Air Flow

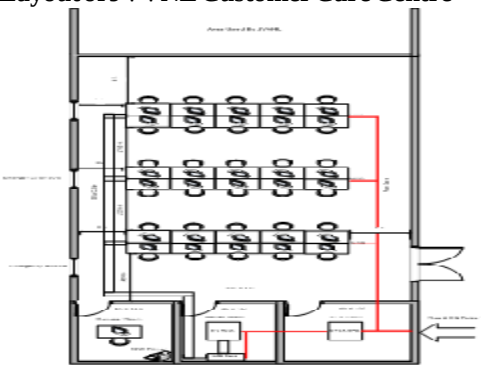
1.1 Solution Architecture



Call Centre Architecture JVVNL With Soft Phone With Soft Phone UIP dialer solution Architecture for JVVNL is based on server client architecture. The entire UIP server resides on the same VLAN. Only TA server is connected to LAN as well as with DCP box. DCP (Digital Communication Processor) is the telephony box. While booting it downloads the firmware from TA server and is the terminating point for agent audio and outbound / Inbound PRI. It has Master and slave cards. Master card has two ports, through one port it is directly connected to TA server while through the other port it will connect to JVVNL LAN. There is one VOIP card that is used for agent login and other slave card has five ports and is being used for Inbound/ Outbound PRI. It has been suggested for two Inbound and two Outbound PRI. This solution is very much scalable with the additional hardware and software.Support PC will reside in the same VLAN that will be ideal desktop for troubleshooting and all required UIP client software will be installed. CCC accessibility to RESEARCH Noida and Aspect Technical Support has been shown via VPN connectivity between CCC and RESEARCH Noida that will be extended to Aspect. Agent, Supervisor, Administrator is client machines and are equipped with required client software, soft phone and headset.Agent has access to login on to dialer and can attend Inbound or Outbound Service calls. Agent workstation has agent login tool. While Supervisor can monitor, control, barge supervise or even can attend the call in case required. Supervisor machine will be equipped with agent, director, enterprise monitoring tool, reportingtool. Administrator has the monitoring, administration, reporting and director rights of the system.Each CCC workstation will be equipped with **a soft phone and the communication between CCC and DC will occur through the 2MBPS connectivity.**

Basic Functionality:-Two PRI has been suggested for redundancy purpose. If one goes down due to any reason process can run with redundant PRI. Keeping separate inbound or outbound PRI is basically to increase the max customer connect for the CCC. Both the circuit will be in active mode and call can be distributed in both the circuit max up to 60.The solution is scalable based after observation of call flow or the utilization of the circuit or abandon report. Scalability can be achieved by the addition of agent, hardware and software

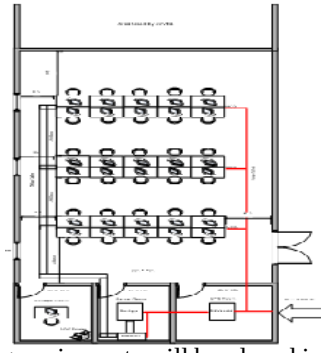
1.2 Layout of JVVNL Customer Care Centre



22ft*42 ft area has been identified for CCC production area. It has been designed by considering the maximum utilization of the space that shows a max strength of 30 seats however CCC has been proposed with 25 seater call centre. CCC workstations will be connected through LAN from the server room. 6ft*10ft area has been designed as server room. Servers and all networking equipments will be placed in the Server Rack. Power supply to Server room will be provided through the 5KVA UPS, All the Workstations will be provided with 600VA UPS separately. Raw Power & DG Power distribution will be done through MCB placed at the individual row. UPS room has dimension of 8ft*10ft and will have raw and DG power supply to the UPS. Manger room size is of 6ft*10ft and a network printer will be placed in this cabin for centralized printing purpose.

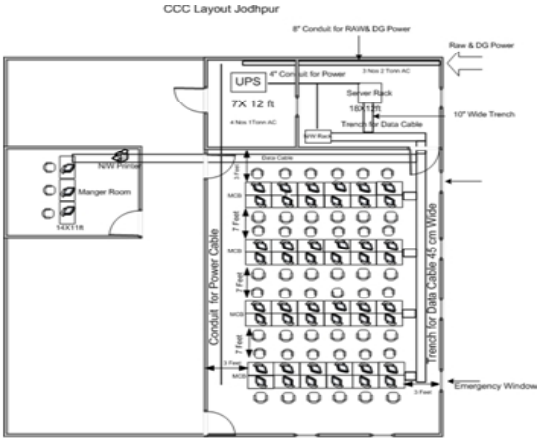
1.3 Layout of AVVNL Customer Care Centre

42ft*39ft area has been identified for CCC production area. It has been designed by considering the maximum utilization of the space that shows a max strength of 30 seats however CCC has been proposed with 25 seater call centre. CCC workstations will be connected through LAN from the server room. 12ft*13.9ft area has been designed as server room. Servers and all



networking equipments will be placed in the Server Rack. Power supply to Server room will be provided through the 5KVA UPS, All the Workstations will be provided with 600VA UPS separately. Raw Power & DG Power distribution will be done through MCB placed at the individual row. UPS room has dimension of 8ft*10ft and will have raw and DG power supply to the UPS. Manager room size is of 12.7ft*11.9ft and a network printer will be placed in this cabin for centralized printing purpose.

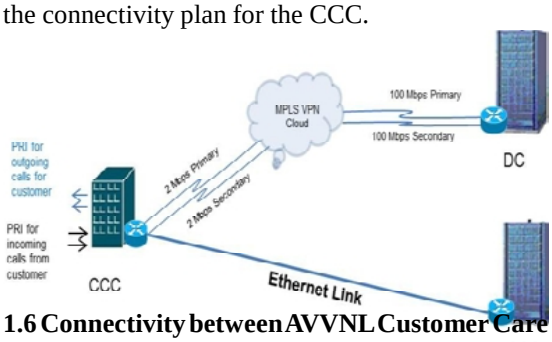
1.4 Layout of JdVVNL Customer Care Centre



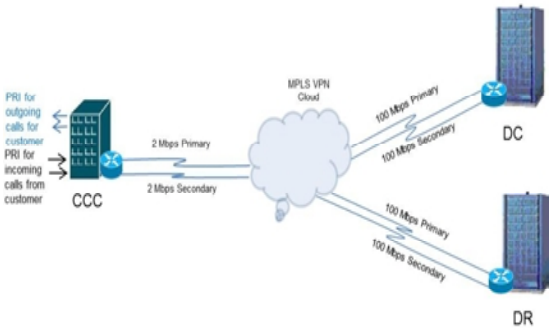
46.6ft*47.6ft area has been identified for CCC production area. It has been designed by considering the maximum utilization of the space that shows a max strength of 30 seats however CCC has been proposed with 25 seater call centre. CCC workstations will be connected through LAN from the server room. 18ft*12ft area has been designed as server room. Servers and all networking equipments will be placed in the Server Rack. Power supply to Server room will be provided through the 5KVA UPS, All the Workstations will be provided with 600VA UPS separately. Raw Power & DG Power distribution will be done through MCB placed at the individual row. UPS room has dimension of 7ft*12ft and will have raw and DG power supply to the UPS. Manager room size is of 14ft*11ft and a network printer will be placed in this cabin for centralized printing purpose.

1.5 Connectivity between JVVNL Customer Care Centre and DC

Customer Care Center will be connected to the DC/ DR for accessing the CRM application, the database of customers, mails and other applications hosted as per the requirement. The Customer care center (CCC) is having Cisco 3845 router. It is proposed to have direct connectivity through Ethernet connectivity to Data Centre as both DC & CCC are proposed in the same building.It will be connected to the Disaster recovery site through a 2Mbps MPLS VPN link in case the DC failure. One 2 Mbps backup link is provisioned as backup of the primary link. Each CCC is having four Cisco 2960 switches for interconnecting the servers and desktops over LAN.Following will be the connectivity plan for the CCC.



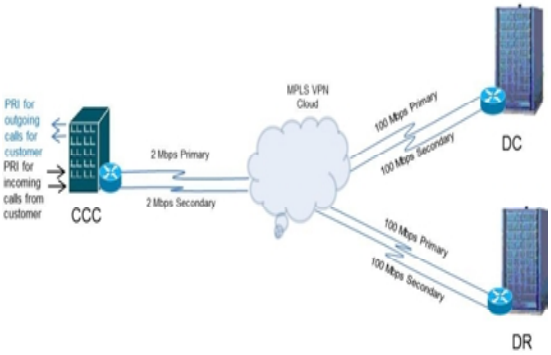
1.6 Connectivity between AVVNL Customer Care Centre and DC Customer Care Center will be connected to the DC/DR for accessing the CRM application, the database of customers, mails and other applications hosted as per the requirement.The Customer care center (CCC) is having Cisco 3845 router. It will be connected to the Data Center/Disaster recovery site through a 2Mbps MPLS VPN link. A 2 Mbps backup link is provisioned as backup of the primary link. Each CCC is having four Cisco 2960 switches for interconnecting the servers and desktops over LAN.



Following will be the connectivity plan for the CCC.

1.7 Connectivity between JdVVNL Customer Care Centre and DC Customer Care Center will be connected to the DC/DR for accessing the CRM application, the database of customers, mails and other applications hosted as per the requirement. The Customer care center (CCC) is having Cisco 3845 router. It is proposed to have direct connectivity through Ethernet connectivity to DR Centre as both DR & CCC are proposed in the same building. It will be connected to the Data Center site through a 2Mbps MPLS VPN link. A 2 Mbps backup link is provisioned as backup of the primary link. Each CCC is having four Cisco 2960 switches for interconnecting the servers and desktops over LAN.

Following will be the connectivity plan for the CCC



There is 5KVA UPS with power supply for the CCC server room. Approx Consumption of the power supply calculated is 4400. It has been considered with the backup time of 30 minutes. Individual desktop is provided with 600 VA UPS. DG Set must be started with in 5 min of Power failure to provide the uninterrupted power supply to the 5KVA UPS & the Workstation UPS. Heat dissipation for CCC server rack is 16400 BTU/Hr (approximately 1.4 Tone) and air flow will be from front to back. We recommend 2 Air Conditioner (of 2 Tone) in fail over/redundant mode for the Server Area. This is research is for High-level design, the low level of design and its implementation will be carried out ones the data center will be fully established and start working.

1.8 Power Calculation for DL 380 G6 Servers

Sr. No	Item Category	Qty at Site	Rated Peak Power Rating (W)	Power Rating (VA) based on Offered Configuration	TOTAL Power Req. (VA)
1	HP DL 380 G6 Server	8	750	400	3200
2	Networking and other Hardware load				1200
TOTAL					4400

BTU Calculation

Sr. No	Item Category	Qty at Site	Rated Peak BTU/Hr	BTU/Hr as per Offered Configuration	TOTAL BTU/Hr – Requirement
1	HP DL 380 G6 Server	8	2,812	1,400	11200
2	Networking and other Hardware load				5200
TOTAL					16400

REFERENCE

1. R-APDRP, Power Finance Corporation of India – 2009-10 2. Ministry of Power, Govt. of India – 2009-10 3.JVVNL, Jaipur, Rajasthan – 2009-10 4. ITIA, RAPDRP - 2010