



renovau
TELCO FOR TELCOs



Public Switched Multiplay Telephony



Genesis

Internet bubble during late 90s kick-started massive investments in Internet infrastructure that created the Internet backbone to deliver massive bandwidths to home and businesses. During the last few years, there is a general availability of high speed WAN access or broadband delivered over



ADSL/Cable/Ethernet/WiMAX, GPRS, EDGE or 3G. Broadband that is 145 times faster than 56 Kbps dial-up connections. This increase cannot be "consumed" entirely by faster web browsing or email downloads. TELCOs started feeling the need for substantial number of value added services; amidst severe competition in the broadband markets and issues related to high customer acquisition costs and extremely low customer loyalty levels.

This entails killer applications that are bandwidth hungry. The obvious solution would be Media applications/Multi-media telephony over the Internet. The serious bottleneck that the technology world has been facing is that the Internet was not designed to carry media/Multi-media telephony, but to carry emails and data packets.

Renovau' Solution – Multi-Play Telephony

Multi-media Telephony is round the corner, to storm the telecom market. A new model for video usage is emerging that is adhoc, on demand and generally inexpensive. Users receive the benefits video can bring with the ease and reliability of placing a phone call.

Desktop videoconferencing has been around for at least a decade, and statistics indicate that the adoption rate is still very low. One may legitimately ask why video telephony will take off and why it will be any different from desktop video conferencing.

A number of technological developments and events are making a compelling case for video telephony to succeed: high speed broadband, Wireless LANs, DSP Chip technology, powerful PCs, Open SIP Standards, Maturing Open source software, maturing standards for video compression and video switching. The key for the success of video telephony is the deployment of cost effective Packet Switched Video networks with Carrier Grade QOS.

Multi-Play and Carrier Grade

QOS:

Last couple of years has seen maturity in Voice over IP technologies and the related protocols like SIP, RTP, RTCP and xRTCP. As the Internet was not initially designed to carry this type of IP traffic, Quality of Service related issues have become the key challenge for delivering carrier grade VoIP. Even though Multi Play services are currently being planned by the TELCOs; again QOS has become the key to deploy these services.

The key QOS related issues are Network latencies, Bandwidth Contention ratios and packet delays during traffic congestion. Compelling solutions are being rolled out now, to ensure QOS and that is making Multi-Play viable. While this network up-gradation itself demands massive investments, each of the value added services are demanding substantial CAPEX. This is putting the TELCOs and ISPs in a fix; while disruptive technologies like Skype are making these CAPEX decisions more difficult to make.

When the services are centralized, based on the currently available technology there is a massive requirement of bandwidth at the server end. This means expensive cost of delivery. The costs will be at both the ends – at the server end as well as the user end. When a 100,000 users are communicating with each other over Video Telephony, then there is a need for 25 GB bandwidth requirement

at the server end considering low quality - 256KB video transfer rates at each user end. For higher quality MPEG2 video, the requirement will be four fold. With heavy traffic at the server end, QOS related issues take the front seat. As the Video traffic has to be routed through the servers, the delivery becomes more of carrier oriented CAPEX/OPEX intensive value added services business.

TELCOs and ISPs are looking at cheaper Carrier Grade (CG) solutions to deploy these value added services in order to reduce CAPEX risks and maximize ROI. They are looking more at COTS (Commercial Off The Shelf) products and open source software like Linux; as a key approach to deliver cost effective next generation value added services over broadband, to reduce Cost per port. In spite of these initiatives the per port cost to deliver CG Multi play is still very high, due to the high costs of the core IMS Server Software (Call Session Controller, Media gateway, Border gateway, AAA servers etc).

Renovau' Products address some of these issues that are being faced by the telecom industry – The key issues of Per-port-cost, Bandwidth and QOS. Renovau considers its technology to be a disruptive technology like Skype™.



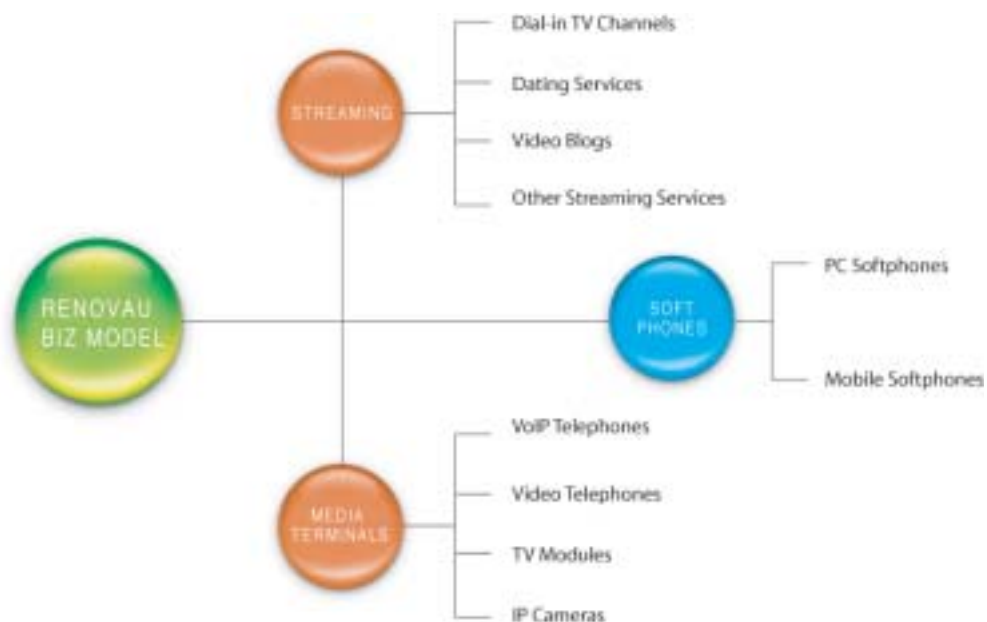


Renovau Paradigm:

Renovau' Convergent Communications product portfolio primarily revolves around ultra high density Carrier Grade Class 5 and Class 4 packet switches. This includes Call Session Controllers, Media Gateways, Authentication & Routing Servers, Voice Mail Servers, Multicasting Servers, Test and Provisioning Servers, V2oIP/Network QOS management Software and terminal equipment solutions to customers' evolving lifestyle needs.

Renovau Convergent Communication solutions support converged networks and hybrid environments — providing a smooth bridge between existing and emerging networks. Our scalable end-to-end solutions support flexible deployment models, including in-network, hosted and managed services, to meet partner specific unique marketing, technology and business requirements.

The Convergent Communication experience envisioned by Renovau is an Open Services highly clustered and networked carrier-grade packet switching environment - an open, IP-based, modular architecture on which a wide variety of communication and content services can be provided. Through this packet switching Network, video/voice calls can be terminated to within the Renovau Network cloud as well as to wired and wireless network clouds; hence increased revenues, strengthened customer loyalty, improved operational efficiencies and leverage the built-in synergies between services.



RTPL' Multi-Play Telephony Services

RTPL utilizes its proprietary product line to deliver Multi-Play Telephony Services to its customers in India. The customers will include the Local Governments, Large & Medium Businesses, Public Call Offices, Remote video surveillance for small business owners, Video blogs, Dial-in Video streaming businesses, Dating agencies, and Households.

RTPL's Carrier Grade Class 5 & Class 4 switches power its Convergent Communication Services; based on Renovau' proprietary packet switching technology.



Renovau' Uniqueness

Highly Scalable Public Switched Multimedia Network

- Scalable Clusters
- Distributed Network – Multiple POPs
- Call handling up to 500,000 concurrent calls per Switch & 5million registered users
- High reliability, Availability and Performance

Very Low Cost Per Port

- Leverages the GPLs and COTS Hardware

Supports existing and future Class 5/4 services

Rapid deployment of new services

Multiple popular access technologies

Open standard protocols for all external/internal interfaces

Uses H264, G729, G723.1, GSM Video/Audio CODECs over Open SIP, R-SIPTM and H323 protocols

Crisp DVD quality video images

Proprietary Enhanced RTCP (xRTCP) and RTCP protocols for better Audio/Video QOS

Very Low Bandwidth requirement @ server end

Strategic Partnerships with Industry leaders

- Network QOS Management Error Detection and Call Re-routing
- Testing Tools
- Terminal Equipment
- Trans-coding Technologies

Enhanced Terminal Equipment based on R-SIPTM

- Video Phones
- Soft Phones
- Wall Mount Video Terminals
- Surveillance Cameras
- Hybrid Phones

Wimax/3G Gateways-Seamless





Renovau Solutions Spectrum

a. Public Switched Video Network Solutions

Renovau' Public switched Video Network is a subset application of the prized Public Switched Multimedia Network of Renovau. In PSVNs, video devices like video telephones, video terminals and surveillance cameras are tied to the Carrier Grade Class 5 packet switch just as a plain old telephone (POT), Which is with PSTN (Public Switched Telephone Network). Moreover, like audio telephony, video telephony typically revolves around a person's individual workspace with video being displayed on a user's video telephone, or on dedicated video terminal equipment, or on a Renovau' soft phone enabled mobile device.

PSVN users simply dial a number, much like they would when dialing any POT in a PSTN. The CG Class 5 packet switch in the Renovau' Network Cloud do the translation from the digits dialed to an IP address and make sure the audio and video are properly routed to the called party's video device with Carrier Grade QoS.

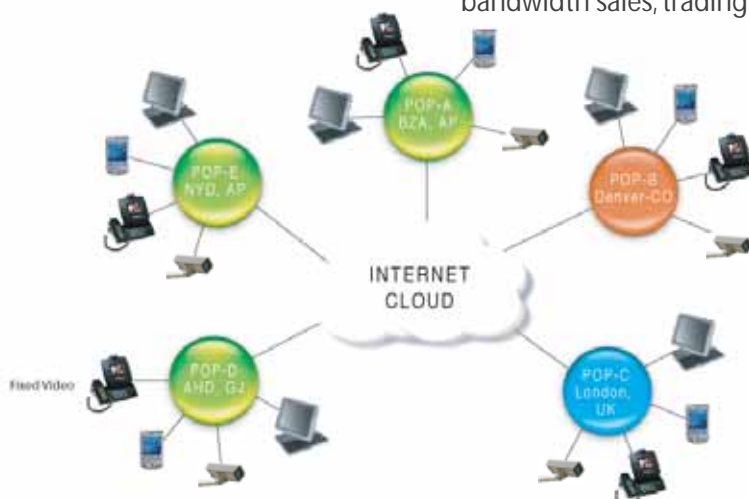
Key Enablers: The key enablers of the service are ultra high density Carrier Grade Switching and Broadband Access.

While the Switching is provided by Renovau' high capacity Class 5 switch, the access need to be managed by the ISPs (Internet Service Providers).

For example, there are 358 ISPs providing access to a few million users in India. Since the service is limited to Web & email access, the service contention ratio is very large and peak hour access speed is very low and can be as low as less than dial up speeds.

Today, all the Indian users put together are using 15GB (1.5 Lambda) of bandwidth. In order to increase this 1000 fold killer applications are needed. Renovau' applications are some of the very few applications/ services in the horizon that can empower the ISPs to achieve this, increase customer loyalty, increasing broadband user growth and maximize profitability.

The ISPs can work with Renovau' applications team and have product differentiators so that each of these ISPs can deliver unique value added services to their customers. This is one such application that can provide a totally different dimension for the bandwidth sales, trading and usage.



b. Public switched Video Surveillance Networks

There are immediate needs for automated surveillance systems in commercial, law enforcement and military applications. Although surveillance cameras are already prevalent in banks, stores, and parking lots, Renovau' solution is radically different. Renovau' services deliver on demand dial-in access to security cameras; and offer a fool proof system of public surveillance. Also, the users will be able to control the camera, zoom in and out and also listen to the conversations, irrespective of the distance/location. Renovau' technology is more relevant in the current day terror threatened world. Another key advantage is that governments can deploy large scale surveillance networks of the size of 100,000 camera locations, in a city at a fraction of the cost when compared to the currently available surveillance solutions. Using this solution, local



governments will be able to deploy thousands of cameras across their towns/cities to ensure security in the area.

Countries like United Kingdom have large scale surveillance camera population, where a common man gets captured by a video camera at least 300 times a day. Even though these deployments are non IP switching based they are effective but expensive.

Renovau' product offerings will change all this. The deployments costs per location will come down to as low as 10% of existing prices, it will also make it so versatile that the enforcement hierarchy can dial in to a particular camera, zoom/pan and at the same time listen to what is happening in that area.

This application opens up a whole new opportunity dimension for the ISPs. Terra Bytes of bandwidth will be required to deploy these networks and now, another killer application/tool for the bandwidth providers to load their networks and maximize their profitability and phenomenal reach & flexibility for the security agencies.





c. Carrier Grade VoIP Telephony Services

RTPL's Packet switches enable VoIP Telephony subscribers to make calls over the internet:

Closed user group VoIP Telephony (With in the Renovau' Network and Partners' Network)

International Long Distance calls

- VoIP phones making international VoIP calls
- PSTN lines making cheap international VoIP calls
- Mobile Phone users making cheap international VoIP calls
- Aggregation of international calls from countries like US and UK and terminating into the PSTN networks in India

National Long distance Calls

- VoIP phones making calls to National PSTN telephone lines

Low Cost PCO services

- The Local call PCOs of TELCOs can be instantly converted into ISD enabled PCOs with an additional cost of just Rs.3000

Centrex VoIP Telephony Services for Corporate Houses

Outbound Call Center Solutions

The calls being VoIP calls are much cheaper than the local carrier call terminations. The users will be charged per minute or a fraction of a minute basis. Using Renovau' technology, making calls nationally or internationally will be the same cost. The only difference being the governmental levies and regulatory issues.

Using RTPL's services, the businesses will have access to high-end Centrex business communications, without the need for any investments in the Capital equipment like PABX/Key telephone systems etc. At the same time the businesses will have access to Multi-Play telephony technology and VoIP telephony.

Renovau' Video Telephony subscribers will be able to make calls to land lines as well as mobile phones; whether these calls are local, national or international. The calls being VoIP calls, will be much cheaper than the local carrier call terminations. Renovau' technology can reduce an international call to a simple local call. The users will be charged as per minute local call basis.

d. Multicasting Video Solutions

In the Renovau' Multicast Telephony system, one user can simultaneously have video communication with as many as 10,000 users. Multicast Telephony finds its use in Education, Business communication and Rural awareness programs etc.

Education (Urban/Rural):

In these days of teachers shortage, governments can have a centralized pool of teachers delivering education to large numbers of class rooms equipped with the Renovau' terminal equipment.

Business Communication:

Cost control and on-demand Multi-Play communication with Carrier Grade QoS is the key for business communications; particularly when the businesses are spread out or those having multiple offices.

Rural Awareness Programs:

Governments can effectively use Multicasting to communicate with the farmers, conducting Telemedicine programs at the PHCs, Rural education etc.

Multicasting applications are the need of the day in the resource crunched spaces like Education, Governance and Medicine. For example, high profile teachers and domain leaders can address large congregations of student communities in schools, where education & training is treated

through expertise and not through mediocrity. It is a no-brainer to say that Multicasting forms a killer application for an ISP to sell and provide large bandwidth capacities and improve its top-line and bottom-line.

e. Telemedicine Solutions

Telemedicine can be defined as the investigation, monitoring and management of patients, using systems which allow Multi-Play ready access to expert advice and to patient information, no matter where the patient or relevant information is located. This involves the transfer of medical information from one location to another. Increasingly, computer technology will allow much of the work currently being carried out in hospital, to be carried out in people's homes, in an effort not only to improve the efficiency and standards of patient care, but to reduce its cost drastically.

There are three main components of Multi-Play services, all of which are applicable to healthcare:

- Tele-Monitoring
- Tele-Video Conferencing
- Case Handling/Message Passing

Renovau' switching capability empowers the medical fraternity and the service delivering agencies to deliver quality medical services to over an extended wide area and even into the rural areas, given access capability for the ISPs.





f. Multimedia Streaming Solutions

Video Blogs

Video blog is the new hot way for people to stick their personal lives on the internet! Not just simple words, static pictures, or grainy Video. They invite you to join them wherever they go; meet their friends, their family, go on vacation, fall in love, and all vicariously from the comfort of your home. Renovau' solution is a whole new tool for the Video Blogs, where they give access to others through a dial in VT service.

Dating Services

The dating application will enable people looking for love to sign up to a dating service via their Video Telephone. It is designed to be easy to use, enabling daters to sign up, search for potential partners, view their pictures and videos and then make live video contact with each other. It can function as an add-on to existing dating services or as a stand-alone dating service in its own right.

Dial-a-Movie

This value added service of Renovau, will introduce new service providers into the market of video streaming. These new breed providers, on contract with Renovau; will be able to offer to the VT users Dial-a-movie services. This is a menu driven service, where, once the number is known, users can just dial a number to have a Movie streamed to their Video Terminals.



g. Multi-Unit Business Communications

Cost control and on demand effective communication is the key for business communications; particularly when the businesses are spread out or those having multiple offices. Using Renovau' services, the businesses will have access to high end business communications, without the need for any investments in the Capital equipment like PABX/Key telephone systems etc. At the same time the businesses will have access to video telephony technology and Voice call terminations.





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