



IVR Technology and Value Added Services (A Business Perspective and Technical Overview)

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IVR Technology

Abbreviated for *interactive voice response*, a telephony technology in which someone uses a touch-tone telephone to interact with a database to acquire information from or enter data into the database. IVR technology does not require human interaction over the telephone as the user's interaction with the database is predetermined by what the IVR system will allow the user access to. The Telephone user activates IVR System by dialing in a pre-assigned number; the call is routed to the computer system, which plays pre-recorded voice menu to the user. The user responds by selecting menu option using DTMF dial pad or answering with a simple voice response (Yes or No) or more detail response e.g name, city etc. if voice recognition system is supported. Upon the user response the computer analyzes and plays appropriate message to the user. Lastly the system may prompt for more response from the user or provide the requested information.

For example, call centers and maintenance control centers use IVR systems so that their customers can complain and query instantly and easily with interacting with the operators, similarly banks and credit card companies use IVR systems for their customers to receive up-to-date account information instantly and easily without having to speak directly to a person. IVR technology is also used to gather information, as in the case of telephone surveys in which the user is prompted to answer questions by pushing the numbers on a touch-tone telephone.

The system technology composes as below,

- **Telephony Infrastructure**
 - Standard PSTN, digital ISDN lines or E1s
 - These lines are connected on one side to the IVR platform and, on the other to Switching equipments including telecom switches, Voice over IP gateways, and corporate PBX's;
- **IVR Platforms**
 - Hardware and Software platforms on which IVR solutions run.
 - Provides the ability to play and record prompts and Gather touch-tone (DTMF) input
 - May also offer the ability to recognize spoken input from callers (voice recognition), translate text into spoken output for callers (text-to-speech), transfer IVR calls to any telephone or call centre agent.
- **IVR Applications**
 - Programs that control and respond to calls on the IVR platform
 - prompt callers
 - gather input
 - Also call on existing back-end database and application servers to retrieve records and information required during the course of a call
 - IVR programs can either be developed by an enterprise, by an IVR development shop, or from companies that offer canned IVR applications
- **Back-end Servers**
 - Existing enterprise servers on which the required customer or corporate data can be found which includes:



- Databases,
- Mainframes,
- Java or
- other application servers,
- information services

IVR-Business Perspective

IVR technology makes phone a powerful business tool, with quick turnaround times, no capital expenditures, rapid deployment and end-to-end management.

IVR solutions adds value to the existing telephone service providing efficient, customer-friendly, and tolerant human voice interface and interaction with customers, strengthening customer loyalty. Answered phones help keep customers on board, too. IVR solutions are suitable for a multitude of different entertainment and informative applications.

One of the key advantages of IVR is that it can free companies from maddening human resource-intensive tasks, particularly repetitive functions such as registering fault complains, routing callers to the right person, delivering answers to frequently asked questions and providing the status of a customer orders. IVR can take the pressure off small staffs by winnowing away the grunt work, and still provide callers with options that let them reach the appropriate people to address more pressing issues

1. For Telecom Company

- Changed Number Announcement:
- Automatic Payment Reminder System
- Automatic Telephone Complaint Handling System
- Automatic Fault Retrieve and Down Handling System
- Message Broadcasting Service
- Duplicate Bill by Fax / Email

2. For Government

- Taxation and Revenue
 - PAN Number validity; Payment information
 - Income tax information & Income tax status tracking; Payment and billing information
- Elections
 - Candidate details and place
 - Request polling place address and centers
 - Election results

3. For Banks

- Account Balance Inquiry

- Transactions

4. For Airlines

- Flight departure/arrival information
- Airline terminal
- Airport rules and regulations
- Airport information
- Frequent fliers

5. Anyone can take advantage

- Event Based Polling
 - Miss Nepal
 - Nepali Tara etc
- Informational Services:
 - National and International News/Breaking News
 - Weather Forecast
 - Horoscope (daily/weekly horoscope)
 - Sporting activities
 - Promotions and Broadcast services

IVR Technology and Nepal Telecom

IVR technology was introduced to Nepal Telecom in 2004 for SLC Result Enquiry purchased from Alliance Info Tech India, with the unexpected huge popularity further expansion was urgently needed, in successive year under the contract with M/S Pulse Software & Consulting Inc., Canada addition of IVR system was done.

The installed old IVR system from Alliance Info Tech is of 2 servers each have 1 PCM-R2 (30 circuits), totally rigid with its application built for SLC Result Enquiry only. And the latter purchased IVR System from Pulse Software is of 2 servers each with 8PCMs (240 circuits), recently upgraded to 8PCMs with addition of 2 more servers in total 16PCMs (480 circuits), a highly flexible system with variable applications.

Though the system was purchased with SLC Result Enquiry service but from last year Class 11 and 12 Result Enquiry has also been put up, which is once a year but has been a attractive service with high potentiality.

Nepal Telecom has implemented this flexibility of the IVR system in Automatic Telephone Complaint Handling Service (198) and Automatic Fault Retrieve and Down Handling Service (192), connecting to the existing SD database system by which a customer directly books his/her fault complains through IVR 198 service; Outside Technicians and Lineman can retrieve these fault complain and fault down the complained numbers through IVR 192 service. In other words IVR



192 Service will dispatch such complains booked by the customer to their corresponding Outside Team members. Both of these services do not require any human operator giving 7days, 24hours service.

Addition to the flexibility of the system, company has implemented PSTN Bill Enquiry Service (1606) using CLI Base (Calling Line identification) service

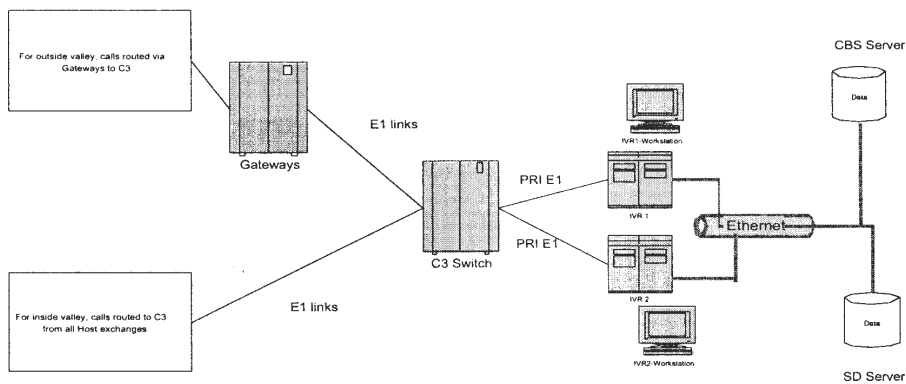
through IVR connecting to CBS database system. By this service customer can find out details of Monthly Bill Amount and Pending Dues along with due date for payments. Recently introduced VOIP call Complain Service (188) so that our good will customers can complain for telephone numbers giving illegal services to incoming International calls.

On-Going Services in IVR

S. No.	Service	System used	PCMs / Channels allocated	Dial code	Charge	Occupancy (start date)
1.	SLC Result Enquiry (1600)	Alliance Pulse	10 PCMs	1600	1 pulse @ 10 sec	2 weeks in 1 year
2.	Class 11 and 12 Result Enquiry (1601)	Pulse	4 to 7 PCM depending on traffic	1600	1 pulse @ 10 sec	6 results in 1 year (Two weeks each result)
3.	SLC Supplementary (1600)	Pulse	4 PCMs	1600	1 pulse @ 10 sec	2 weeks in 1 year
4.	Telephone Fault Booking (198)	Pulse	15 channels	198	Free	Permanent (Sept 2006)
5.	Lineman Fault Down (192)	Pulse	15 channels	192	Free	Permanent (Nov 2006)
6.	PSTN Bill Enquiry (1606)	Pulse	20 channels	1606	Local charge	Permanent (Jan 2007)
7.	VOIP Call Complain (188)	Pulse	4 channels	188	Free	Permanent (Dec 2007)

Note: The allocated channels can vary upon traffic and back-end server capacity. Present network for On-Going Services

Present network for On-Going Services



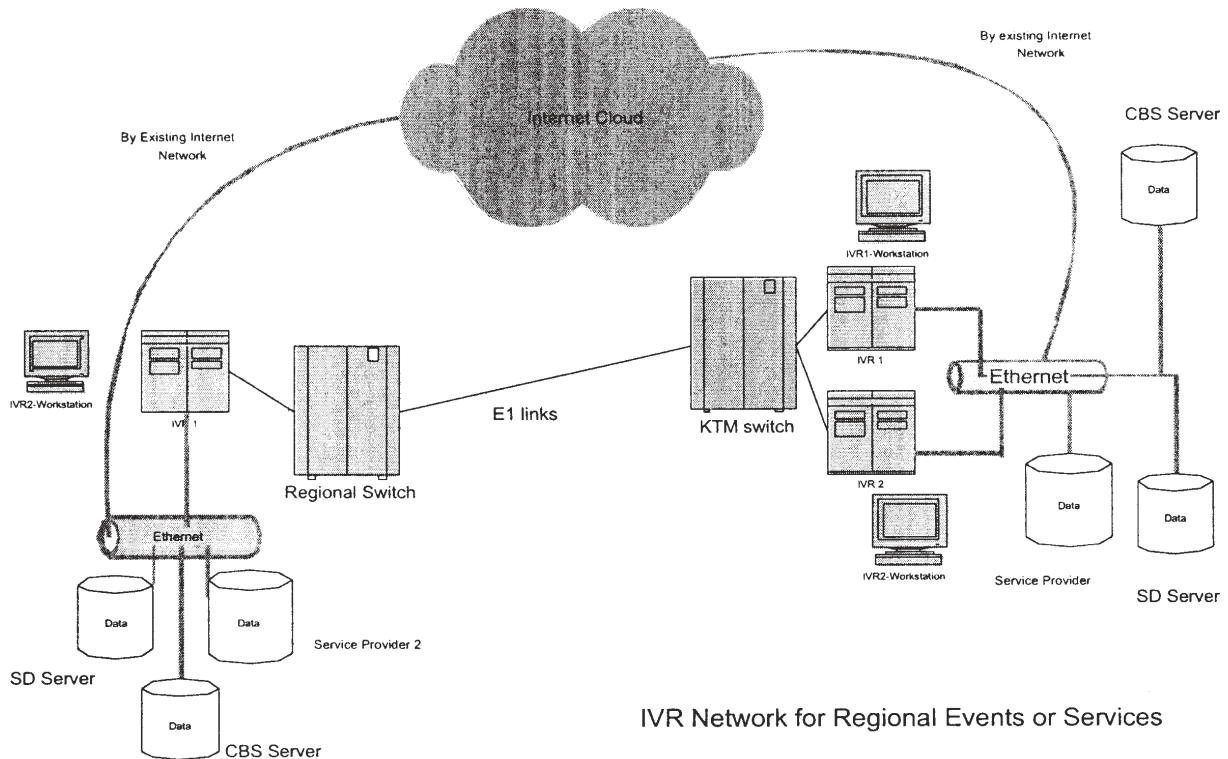


In the present scenario it can be seen the calls from outside the valley is routed to Kathmandu valley taking the National and International highway which is implicitly occupying create traffic. Also the 198 and 192 services via IVR have been given to Kathmandu Valley customers only. Since the IVR system is concentrated to Kathmandu Valley, it's a need now to expand the system regional wise, so that regional traffic can be systematically handled not hampering the National and International highway. Also expand the 198 and 192 services outside the valley bring uniformity to all our

customers. Also regional events and services can be given adding business to the company.

This can be simply handled technically by:

- KTM IVR Server to operate as an OMC
- All the regional IVR Servers will be connected to the KTM IVR Server
- Options for Connecting:
 - IP Backbone
 - CBS Existing Network
 - Existing Internet Network



IVR Network for Regional Events or Services

Being an incumbent operator with country wide huge PSTN customer base, strong infrastructure and rich with technical expertise, in today's materialistic market Nepal

Telecom should go with flexible internal management polices and strong marketing taking lead with IVR technology as a strong business tool. ●

The bee is more honored than other animals, not because she labors, but because she labors for others.

- St. Chrysostom