

> Shaping the  
telecom future



BrainRoots.com



## COMPANY PROFILE

BrainRoots Solutions (Pvt.) Ltd. is an IT Product and Consulting Organization promoted by IIT/IIM alumnus, focusing on Convergent Billing & Customer Care and e-Security.

The company has clients across US, Japan, South East Asia, Australia, New Zealand and Sweden, and is actively partnering with hardware vendors like IBM & Sun, as well as other major system integration partners to provide turnkey, end-to-end solutions.

## PRODUCTS & SERVICES

### UltraBill

UltraBill, the BrainRoots Billing and Customer Care product.

### UltraVoIP

**UltraVoIP is the BrainRoots product for rating Voice over IP usages. This can be done based on distance through the Zone Mapper functionality. UltraVoIP provides the reseller functionality through its Branding module. This gives tiered access levels to CSRs, Reseller, Admin and Customers. It also provides functionality for settlement between the service provider and reseller.**

### UltraRadius

it is used for provisioning and authentication of service. This module also comes with an LDAP or any other directory interface plug-in, which would enable the authentication to be done through LDAP.

### UltraConnect

UltraConnect is a powerful solution for Interconnect billing and Settlement.



recognized  
experts



[www.brainroots.com](http://www.brainroots.com)

## PRODUCTS

### UltraBill

UltraBill is a secure, scalable, robust, configurable, platform independent and database independent convergent billing solution capable of billing for VoIP, broadband, IP, cable, etc. It can easily handle both pre-paid and post-paid billing.

UltraBill is 100% java based standards compliant product having a 4 tier Modular architecture and uses the MVC (Model View Controller) framework.

#### Features

##### Pricing

Create complex tariff plans based on time slabs, resource slabs, events

##### Rating

Real-time/batch rating

Extensible modules to rate any type of usage

Handles multiple parameters like duration, bytes, QoS, Point of Origin

##### Billing and Invoicing

Cyclic (weekly, monthly, quarterly etc.) or Immediate billing

Highly configurable and customizable invoices

Run sample invoices before actually creating one

##### Account Management

Tiered access levels, comprehensive customer self care, CRM Support

##### Reporting

Tabular and graphical reports, for analyzing data

Plug-in based extensible architecture to import new reports.

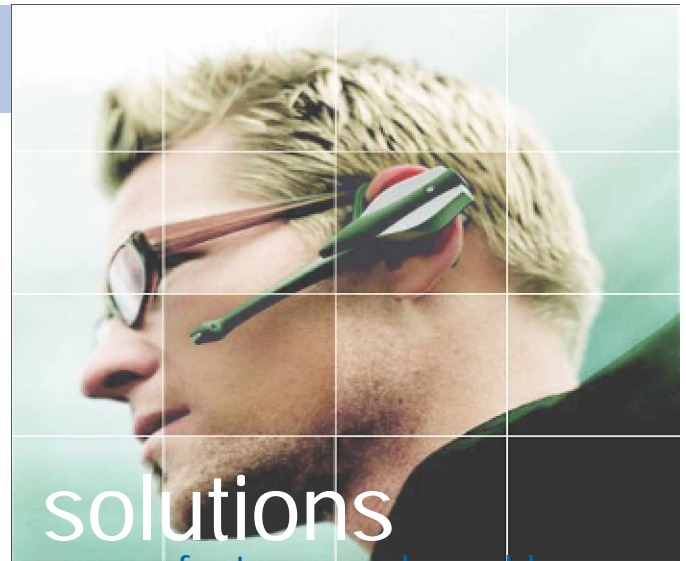
##### Interfaces

Smoothly interfaces with Radius, LDAP, bandwidth manager, UltraConnect, Legacy billing systems.



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### UltraRadius

UltraRadius is RFC 2865/2866 compliant Radius. It is 100% java based, platform independent, multi-threaded product tuned for performance.

#### Features

Extensive server controls.

Separate Accounting and Authentication servers. Run either or both.

Maximum packet thresholds.

Dynamic NAS configuration.

Dynamic Proxy configuration.

Dynamic proxy rerouting.

Session thread pool for faster processing.

Message-Authenticator support in both client and server.

Extended Message Types: Message types beyond Access-Request, Access-Accept, Access-Reject, Access-Challenge, Accounting-Request & Accounting-Response. Packet types like Password Request, Change\_Filters\_Request, Accounting Status and any other packet type are supported.

Supports authentication methods: PAP, CHAP, MS-CHAP, MS-CHAP2, EAP, EAP-MD5

UltraBill  
Convergent Billing Solution

## Convergent Billing Solution

The UltraBill product suit is highly scalable, reliable & web-enabled client-server based billing solution which can be used for pricing, rating, provisioning, billing, credit checking, data-validation, payments, debit-credit, accounting & reporting.

It supports advanced customer care & CRM support with real time viewing of transactions, accounts summary, history of account detail changes, bills & payment history & payment allocation details.

UltraBill comes with an inbuilt Radius and is also capable of interfacing with other available Radius. It supports directory interface (LDAP) for provisioning, interfaces with bandwidth management devices & VoIP Gatekeepers for real time rating of VoIP calls.

## Features

Convergent Billing for various services like VoIP, broadband, cellular, etc.

Platform and database independent, standards compliant java solution.

Notification on events such as expiry of credit limit, loyalty points and non-payment of bills.

Prepaid calling card service. Generation and management of bulk pins and re-charging the account using the pins.



## Modules and Functionality

## Account Management

## Tiered access level for CSRs

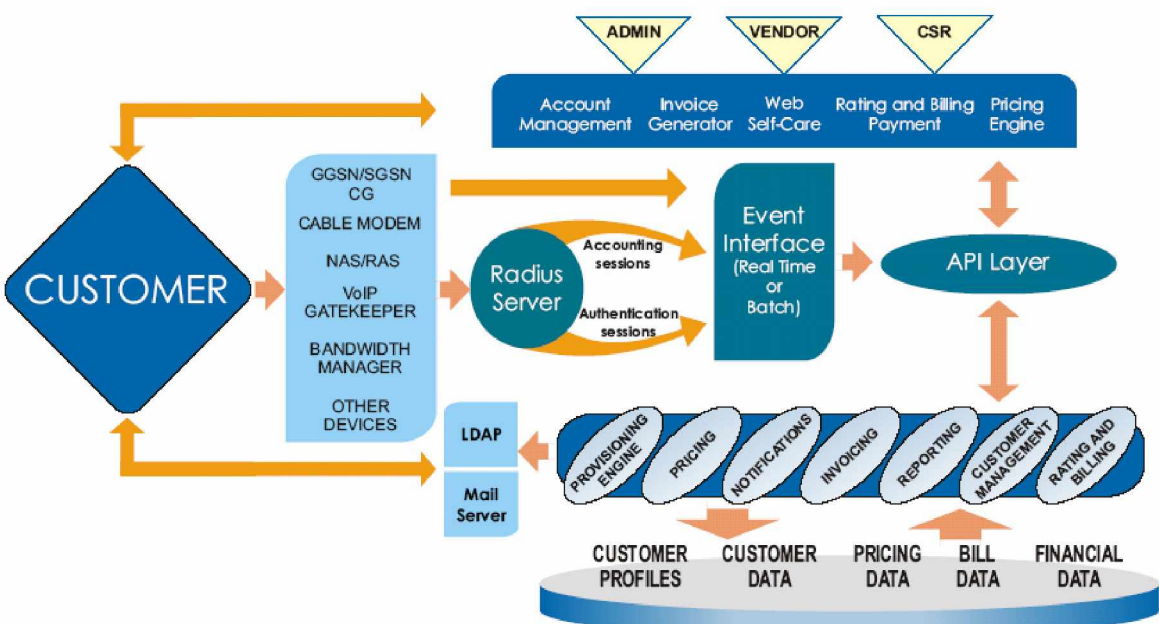
Upgrade/ Downgrade plans. Assign new services and products.

Audit trail of all customer management activity

[View usage details, invoices, payments and allocation details.](#)

Complete Service Management for the account.

Modification of account billing type, billing frequency etc.





## Self care

Web interface for end users to modify their customer information. Customers can view usage data real-time and view past invoices. Customers can view the payment allocation details for bills. Tiered access level for CSRs

## Rating Engine

Rating based on multiple parameters like duration, bytes downloaded, volume, QoS etc.

Zone based rating, import zoning data from flat files.

Pulse based rating, specifying different beats and thresholds for sessions

The rating can be a combination of flat rate (cyclic), usage based, and set-up charge based.

Complex price plans based on time-of-day, day-of-week or quantity tiers.

Quantity tiers based on event quantity or total usage.

Real-time billing provides the opportunity to create pre-paid plans as accounts can be automatically deactivated based on certain events such as exceeding the credit limit.

Tax rates can be specified at product level.

Account level discounts can be given to each specific account.

## Pricing Tool

Easy to use Pricing Tool for creating new tariff plans

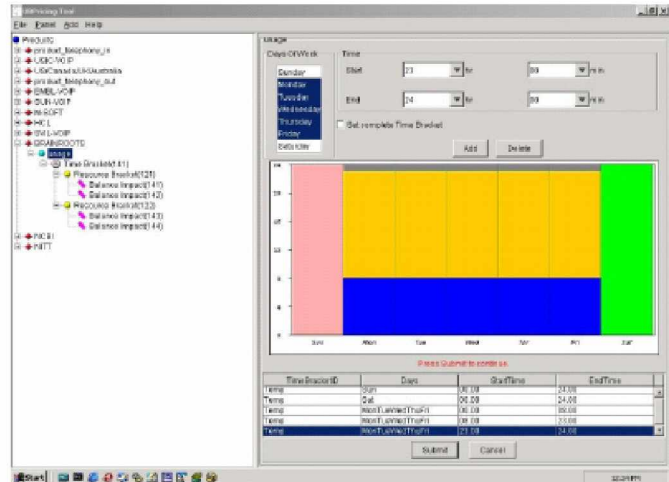
Import and export of pricing data in flat files.

Copy Product functionality to facilitate speedy product creation.

Validations to prevent loading of wrong data.

Pricing information gets updated real-time.

Bundling of various services under same plan with pre-defined access policies.



## Automated Billing and Invoice Generation

Support for both prepaid and postpaid accounts.

Different billing cycles weekly, monthly, quarterly or annually. Different kinds of accounting open item or balance forward. Customers can be given different billing dates and billing cycles.

Automated invoice generation. New formats can be specified using XSLT stylesheets.

Ability to do cyclic billing, bill immediately and set a random future billing date.

Ability to rollback usages up to last bill.

## Reporting

Client based reporting tool to increase performance.

Line graph, bar charts to show usage behaviour and network behaviour statistics.

A/R Reports can be generated which can also be integrated with the Accounting and Financial package that the enterprise is currently using.

Usage and aging reports, which show the outstanding amount for each account.

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## UltraConnect

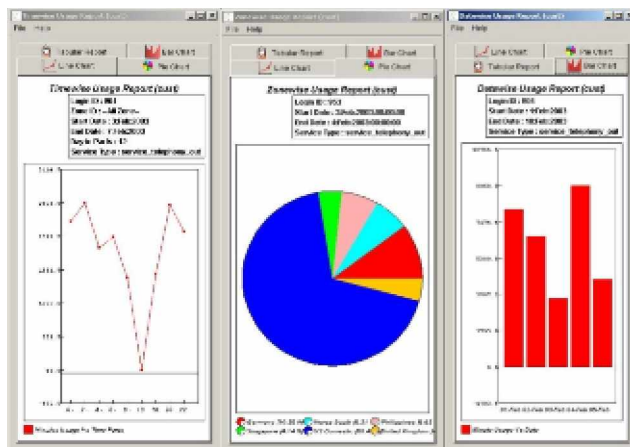
### Powerful solution for interconnect billing and settlement

UltraConnect is a high-performance, fault tolerant, flexible, powerful and a reliable system for the interconnect settlements and billing. The software is highly scalable and is capable of supporting high call volumes. It can be implemented rapidly for handling the voice and data products and services. This product is platform independent and has been tested on



### Features

- Support for multiple services.
- Flexible rate-plan handling with time-models, zone-models, Network-models, etc.
- Extensible modules to support any CDR format
- Detection mechanism for duplicate or invalid CDRs
- Aggregation of CDRs based on rules.
- Re-rating of the CDRs
- Import the zone details from flat files.
- Reconciliation reports
- Usage Reports comparing zones, customers, time of day, etc.
- Automated interconnect billing for sophisticated interconnect agreements.
- Handles the complexity of multi-carrier, multi-switch, and dynamic network environments.
- Does in-memory rating.



### UltraConnect can support

- Standard Telephony
- Freephone and Premium Rate Services
- Mobile
- National and International
- Radio Paging
- Hubbing and Refile
- International Simple Resale
- Indirect Access
- Virtual Private Networks
- Callback
- Zero Duration Calls
- Internet Services
- Number Portability
- International Settlements based on ITU rules
- Pulse and Minute based Calls

Winning Tool

File Edit View Help

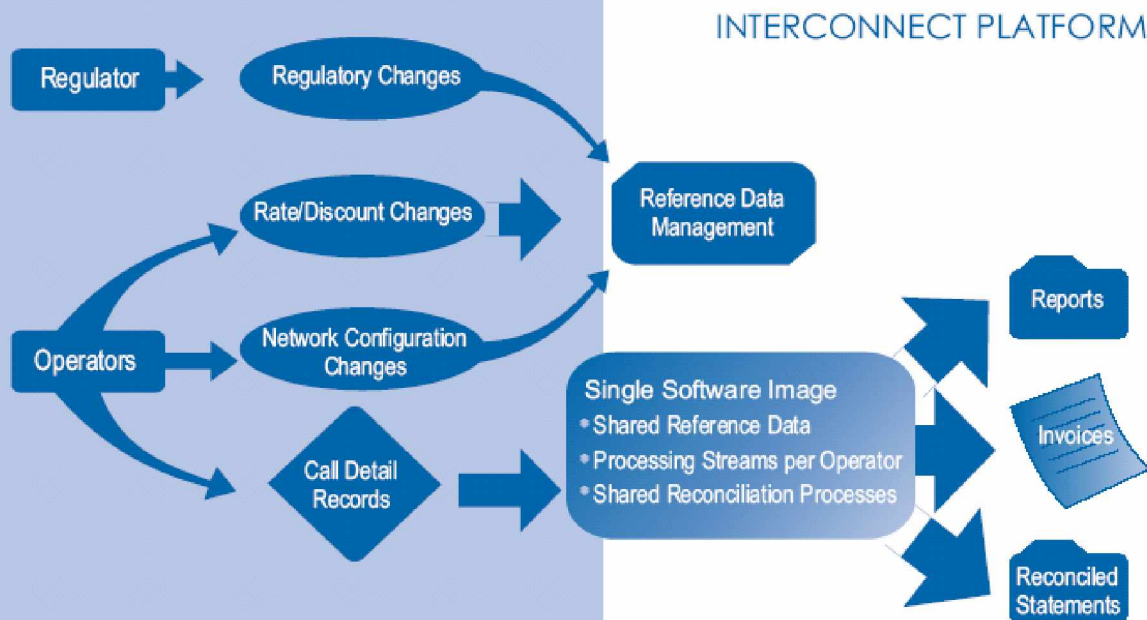
Address Book (1)

Network Model

Product	Product Type	Index	Index	Index	Index
Product 1	Product Type 1	Index 1	Index 1	Index 1	Index 1
Product 2	Product Type 2	Index 2	Index 2	Index 2	Index 2
Product 3	Product Type 3	Index 3	Index 3	Index 3	Index 3
Product 4	Product Type 4	Index 4	Index 4	Index 4	Index 4
Product 5	Product Type 5	Index 5	Index 5	Index 5	Index 5
Product 6	Product Type 6	Index 6	Index 6	Index 6	Index 6
Product 7	Product Type 7	Index 7	Index 7	Index 7	Index 7
Product 8	Product Type 8	Index 8	Index 8	Index 8	Index 8
Product 9	Product Type 9	Index 9	Index 9	Index 9	Index 9
Product 10	Product Type 10	Index 10	Index 10	Index 10	Index 10

Find List Help

Search Cancel



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# INDUSTRY



## Prepaid calling cards

Complete solution with functionality for pin generation, RADIUS interface, self care to view usages

- Interfaces with any AAA compliant device
- Real time authentication and authorization
- Automatic inactivation when the amount runs out

## PIN Management

- PIN generation based on different zones and denomination
- PIN return/refund functionality
- Start date from date of first use
- Bulk activation and deactivation of unused PINs

## Vendor Management

- Vendor specific pins
- Vendor can view and modify only his accounts
- Vendor invoicing

## Bandwidth Management

- Complete module to provision and manage bandwidth customers
- Manage upload - download bandwidths, quotas and
- Traffic control using HTB queues to maximize efficient use of available bandwidth. Restrictions based on IP address, MAC address or login
- Real-time accounting and deactivation of accounts.
- Service Parameters can be modified near real-time using LDAP Interface.

## Content Based Billing

A complete module for content billing, that can interface with the legacy pre-paid and post-paid billing solutions or can be a stand alone system.

- ▶ Billing for data Services
  - Location Based Services
  - MMS, SMS
  - Mobile/WAP Browsing
  - M-Commerce
- ▶ Real-time or Data Record based billing
- ▶ Settlement with content partners
- ▶ Time or event based billing
- ▶ Interfaces with payment gateways for pre-paid scenario.
- ▶ Works with PKI solutions for secure transactions

## Conditional Access TV

Two-way interface with the head-end/CAS unit.

Set-top box inventory management

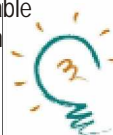
Activation and deactivation of set-top boxes

Modification of set-top box parameters

Flat rate, time based or event based billing

Synchronize facility with the CAS head-end database.

Service Parameters can be provisioned using LDAP interface.



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## Solution Partners

### Portal

Portal Software develops customer management and billing software for communications and content service providers. Portal's software is licensed by the world's largest communications providers to deliver voice, data, video, and content services across wireless, wireline, cable, and satellite networks.

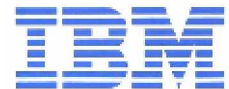
Visit: <http://www.portal.com>

### Fiorano Software Inc.

Founded in 1995, Fiorano Software, Inc. is a leading provider of enterprise-level technology platforms for application integration, messaging, and e-commerce needs. Fiorano's high-performance and scalable enterprise products are used by leading companies worldwide.

Visit: <http://www.fiorano.com>

## Technology Partners



## Our Clients

### Telcos

Vodafone, New Zealand & Sweden  
Data Access, India  
Pure Telecom, UK

### ISPs

NOW India  
Pacific Convergence, India  
Data One, Singapore  
GMO, Japan  
NEC, Japan  
Estel Communications, India

### Startups

Idilia  
An L.A.-based e-com startup

### Others

Matahari Indonesia's largest retail chain.  
(Implemented Data Warehousing and



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## Case Study

### Interconnect Implementation on Portal Infranet

#### Customer

The client is the third biggest operator in Philippines providing fixed line, national long distance and international long distance services and ISP services in all provinces of Manila.

#### Challenge

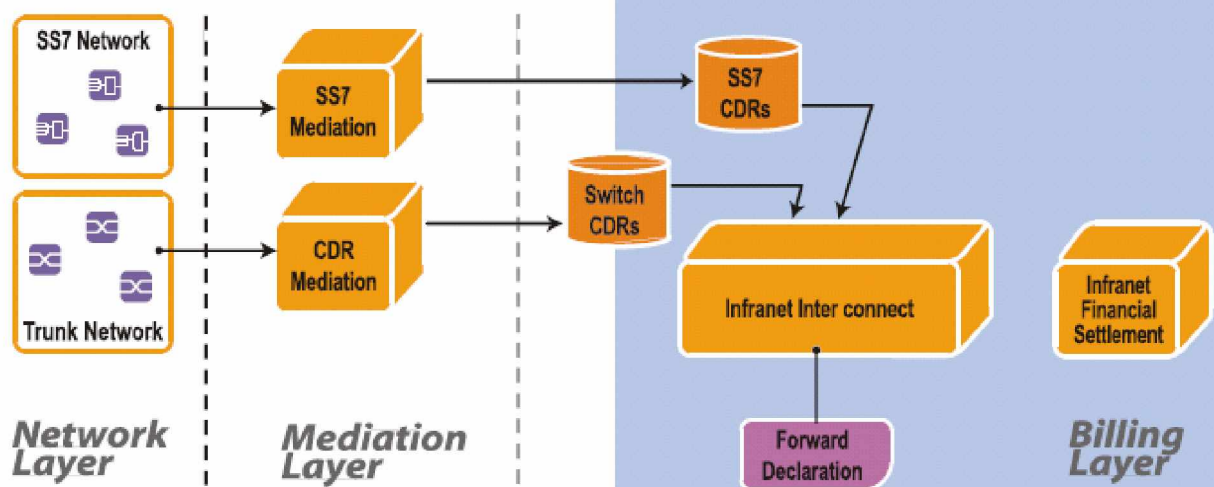
The client was operating three different in-house systems for interconnect settlement with over 110 partners with over 15 million CDRs per month.

The client was facing revenue leakage problems because of hardwired preprocessing of data, inaccurate dispute management and limited reporting capabilities. There were no reconciliation features also among the international carriers, domestic carriers and the retail billing system.



#### Solution

BrainRoots implemented the pipeline rating engine in a very short time frame to provide Bayantel with one billing solution to replace all the three legacy systems. The new system cut down the invoicing delay from 40 days after the completion of billing period to 5 days. A set of tools was implemented to maximize interconnection carrier settlement efficiency, supplying reliable, comprehensive information for precise control of interconnection traffic.



### Post Mediation and Rating

Over 10 different CDR formats coming from about 15 switches were used for rating. Functionality was provided to run test rating before moving new rate plans in production. Settlement functionality was provided for Toll-Free, Operator assisted paid/collect, PCO and calling card calls also.

### Billing

Partners had volume commitment as well as volume discounts to be applied on quarterly or half yearly basis. Different invoice formats were generated for domestic and international partners.

### Dispute Management

A multi-step dispute management process was implemented for partners. Partner invoices were also captured in the system and disputes were created based on a recovery rate ratio. Amendments could be generated from the system and a process for CDR bashing for each service was also provided.

### Transit - Refiling

Bayantel provided refiling service for voice traffic to international carriers throughout the world. The system was configured so that carriers could upload new termination rates directly in the system after verification from the traffic management group. Real time reports were generated for measuring traffic volume and routing profitability.

### Revenue Assurance

CDRs from the retail billing system and from probes on trunks were reconciled against CDRs from switches used for calculating invoices in the system.

### Reporting

Various reports as required by the management like aging, general ledger, profitability and disputes handling reports were provided from the system.

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## Case Study

### CDR based billing

#### Introduction

BrainRoots is a leading provider of Convergent Billing and Customer Care Solutions in the Indian Telecom and ISP space. Its flagship product UltraBill has been deployed as a convergent billing system delivering real-time as well as CDR based billing options.

Estel is a leading provider of wholesale services, especially to other ISP and Call Centers. It has a wide presence in the North Indian market and delivers leased line and broadband access solutions to its clients. It also delivers VoIP calling services to call centers.

After the deregulation of Managed VoIP service in April 2002, Estel has started the corporate VoIP service for corporates as well as call centers. This enables them to make international voice calls through the Internet at a fraction of the cost of the ISD call charges.

#### CDR Billing for Corporate Clients

To bill their customers for the VoIP service, Estel had to deploy a solution that would take the Call Data Records from their remote Gateways, and load the usages and generate the bills. The solution had to be able to provide Mediation functions also, so that the raw CDRs could be converted to standard formats and then processed.

Estel chose UltraBill, the convergent billing platform of BrainRoots solutions to effectively bill for their VoIP service. UltraBill was able to take any format of CDRs and load them into the system to generate accurate usages and invoices for the clients.



Zone based rating for different kind of CDR formats

Ability to create bill for an account any time

Customer care interface with ability to view invoices with drill down functionality to view usages

Tiered access interface in the company

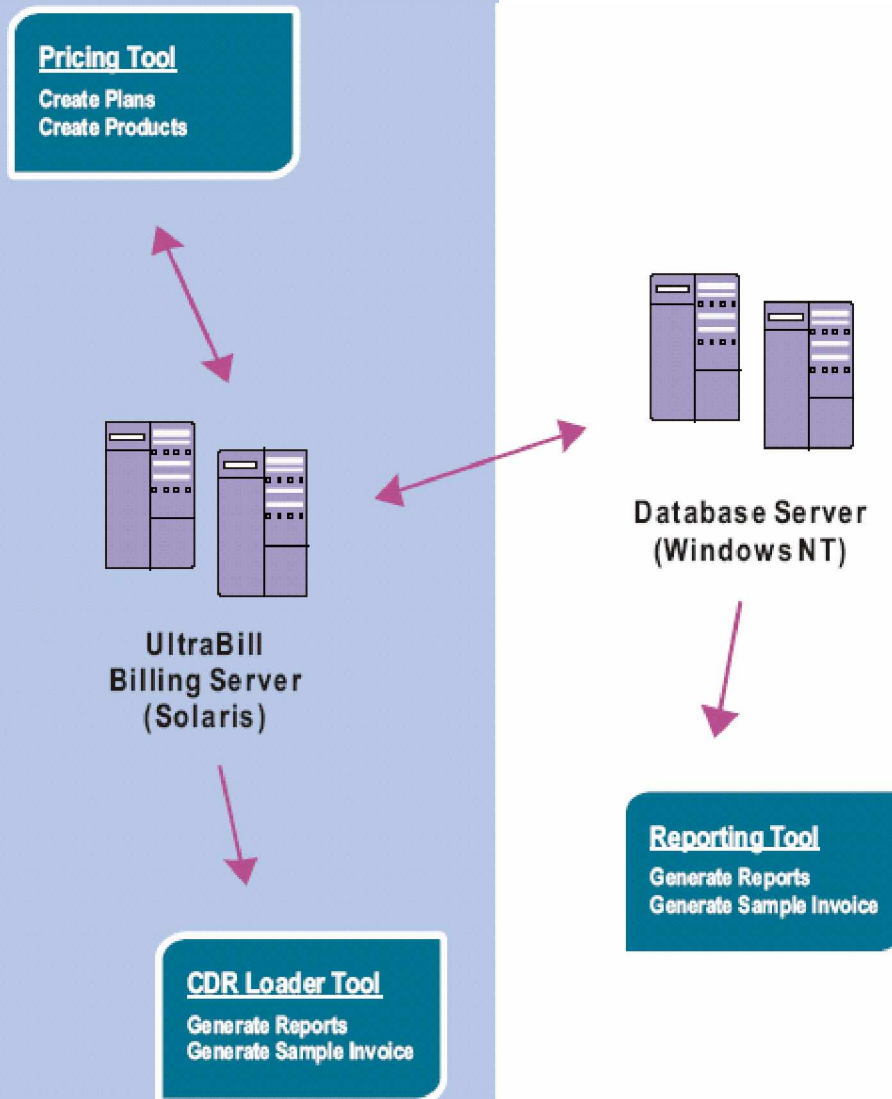
Different beats, and different rating models for each customer  
Scheduling process for automatically triggering the mediation activity

#### Unique Business Model

Estel was unsure of the potential of VoIP service at the time of the commencement of the services. Thus, it did not make economic sense for them to make significant investments in billing solutions upfront.

Keeping these constraints in mind, BrainRoots offered an attractive profit sharing model to Estel, based on the revenues generated by them. This gave a win-win situation to both parties, and kept the investment risk down to a minimum. These innovative models are in keeping with BrainRoots' philosophy of working closely with the client, understanding his needs, and delivering solutions to help the client enhance its operations and revenues.

## System Architecture At Estel



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## Case Study

### Portal Implementation for a Broadband and Infrastructure Provider

#### Client

The client was a leading infrastructure provider for Internet Services and offer services in over 100 locations in Japan. The client provides broadband access (DSL), dialup access (ISDN, PSTN), shared hosting, dedicated hosting services and domain registration services.

#### Challenge

The client was selling the service under three different brands. They were also using resellers and agents to market their services. The resellers would market under their own brand at their own defined prices with commissions.

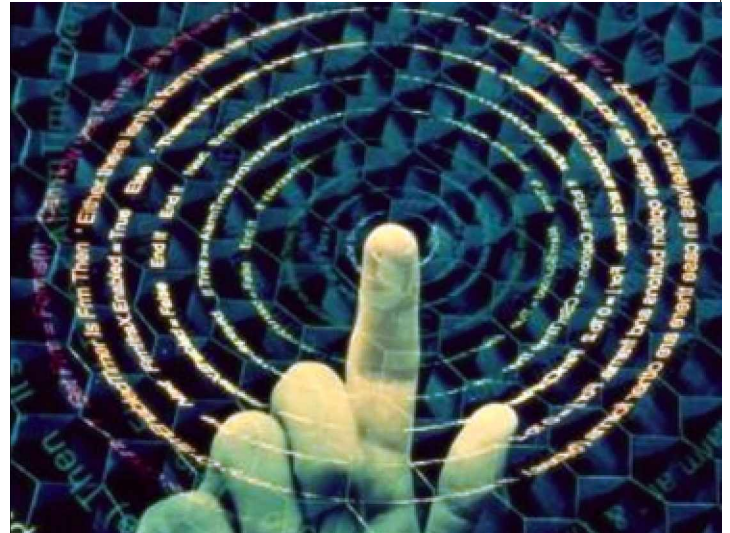
The client had also acquired two Infrastructure companies that were using a home grown billing system. The client wanted to

maintain the branding of each company in every customer interface and still have one billing system do billing for all the services. The client also wanted to implement cross-selling of services of one Infrastructure provider division to customers under a different brand.

#### Solution

4-layer service architecture was

implemented to meet the client needs.



1. User Interface Layer: Infranet's Branding capabilities were used to provide the customers with different look and feel for each brand.

2. Business Policy, Billing Database Layer: Infranet's policies allow users to enforce various business, service and pricing rules. Marketing could create packages from the a-la-carte menu items of various services for each brand with desired pricing.

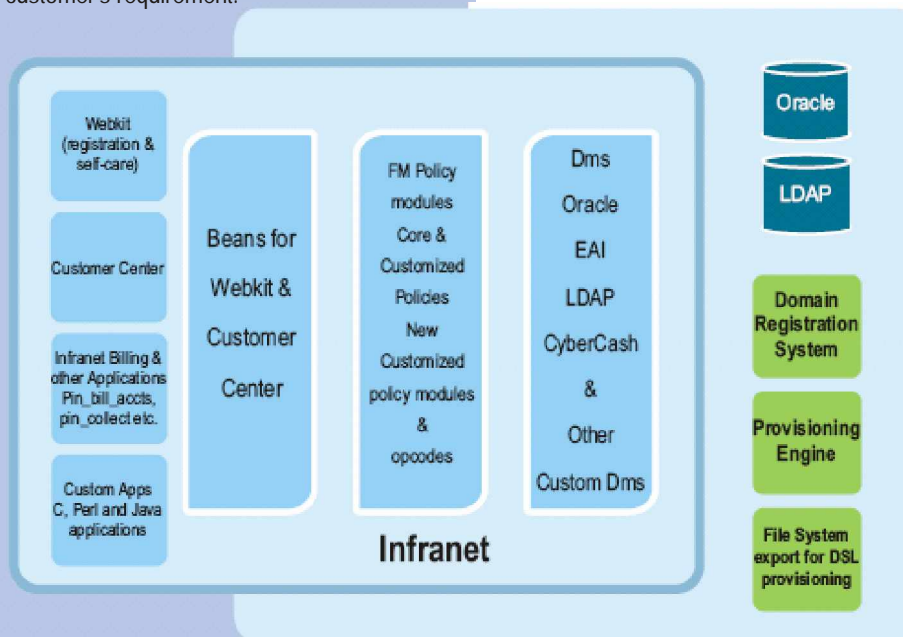
3. Provisioning Layer: Service provisioning could take place through either through LDAP for services which can read provisioning information from a directory like email, web and dialup. For hosting and domain registration services a provisioning engine was developed to send appropriate messages to set up a workflow based solution.

4. Services Layer: New services could be developed by the technical team and added on the services layer which would be added to the a-la-carte menu of services available to marketing for creating different pricing packages for different brands.

The above architecture was configured on a distributed system implemented on Sun platform with L4 switches and Oracle High Availability architecture for developing a production ready system.

### Functional Architecture

The following functional architecture in Infranet was used to implement the customer's requirement.



### Branding

GMO sold its own service and under different brands. Apart from that there were third party brands, who would sell GMO services under their name. They set their own packages, own prices, provide customer support and bill their customers. GMO provides customer and service management tools to these companies, so these companies can manage services for their customers.

In some cases GMO takes the responsibility of billing the end customers on behalf of these brands.

GMO uses third party services such as verio, eAccess, Flets ADSL/ISDN and makes them available to any of its brands for packaging.

These services are physically provided by third party companies but GMO takes the responsibility of provisioning them if a user signs up for a package



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# Responding

to a changed telecom environment



Ahead of times