FractalRouting is an extremely flexible and powerful rules-based call routing engine that enables dynamic, centralized routing and carrier management on disparate voice gateways and switches. Designed on an open architecture, FractalRouting is capable of interfacing with any voice gateway or switch using GKTMP, RADIUS and other middleware, and exchange data for efficient call routing. When combined with FractalBilling, it provides a complete solution for call routing and billing that would meet the requirements of carriers of all sizes.

The primary purpose of FractalRouting is to reduce costs and improve profitability by building intelligence into the call routing engine that automates and streamlines operations while ensuring quality. FractalRouting enables intelligent least cost routing (LCR) taking into account quality parameters such as answer seizure ratio (ASR), post-dial delay (PDD) and average call duration (ACD). It offers a variety of additional routing capabilities based on peak/off peak hours, weekends, holidays, and various other rules-based scenarios. Additionally, it supports conventional call routing using parameters such as ANI, DNIS, source carrier, time of day, day of week, date and time series, round-robin, percent-wise distribution, and priority lists.

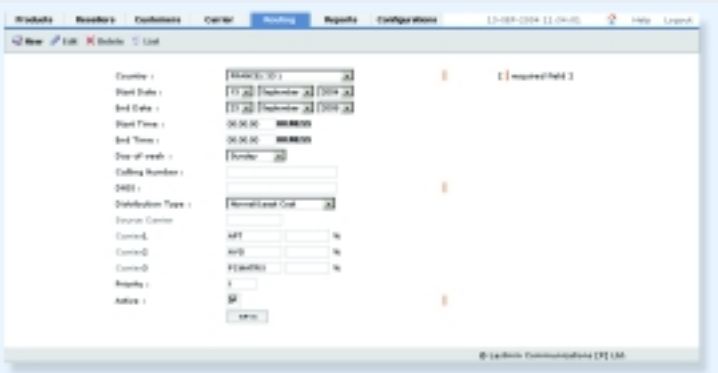
FractalRouting allows platform owners to provide hosted call routing services to third parties on an application service provider (ASP) model. These third parties, called hosted service providers, can bring their own routes and use the platform for intelligent call routing. They can administer all aspects of the service through a web-based intuitive and comprehensive Self-Provisioning Interface.

Highlights

Highly flexible rules-based routing

An unlimited number of routing rules can be defined using a combination of all routing parameters for highly granular control. The first matching rule is used to route the call. A prefix of any length can be defined in the rules to match the destination number. Rules can be used even to selectively block calls to a carrier. Currently, FractalRouting supports the following parameters in routing rules:

- Time of Day
- Day of Week
- Date and Time Series
- Quality of Service (ASR, ACD, PDD)
- Source Carrier
- Automatic Number Identification (ANI)
- Dialed Number Identification System (DNIS)



Routing Rule

A matching rule can select carriers and distribute calls among the carriers in the following ways:

- **Percent-wise Distribution:** Calls can be distributed among pre-defined carriers for a particular rule on a percentage basis.
- **Round Robin:** If least-cost routing is selected for a particular rule, calls are distributed evenly among the carriers with the same termination rate for that destination.
- **Strict Priority List:** The service provider can define a list of carriers in decreasing priority to be used to route calls that match the rule.
- **Least Cost Routing (LCR)**

ASR Report

Real-time dynamic call routing with fail-over

When the routing engine is queried for the destination carrier to route a particular call, in real-time, FractalRouting determines the carriers based on the matched rule and passes them to the querying gateway or switch in decreasing preference. It supports mechanisms that enable failover routing to the next carrier, if required.

Flexible destination code management

Different carriers have different breakouts and codes for the same destinations. FractalRouting is able to accommodate these differences as well as provide tools to manage destination codes and breakouts.

Rules-based destination number translation

FractalRouting supports rules-based destination number translation. This is necessary for prefix manipulation and can enable call forwarding or redirection services.

Built-in Data Replication, Redundancy and Failover

FractalRouting exists as a server-side application running on Oracle. The tight integration with Oracle using native Oracle functions makes FractalRouting extremely fast and robust with powerful capabilities. FractalRouting features a multi-server architecture with built in redundancy at multiple levels. Real-time database replication with disparate servers for routing and administration ensures high processing speed and complete data integrity. Seamless and real-time failover with automatic recovery on proven industrial strength Oracle RDBMS guarantees telco-grade reliability. A full-featured version of FractalRouting is also available for open source database, PostgreSQL.

Open Architecture and Integration Ready

FractalRouting has been integrated with voice gateways from Quintum and Cisco using RADIUS and Cisco-proprietary GKTMP protocol. It can seamlessly integrate with any other voice gateway or switch through customized middleware available through Fractalcom.

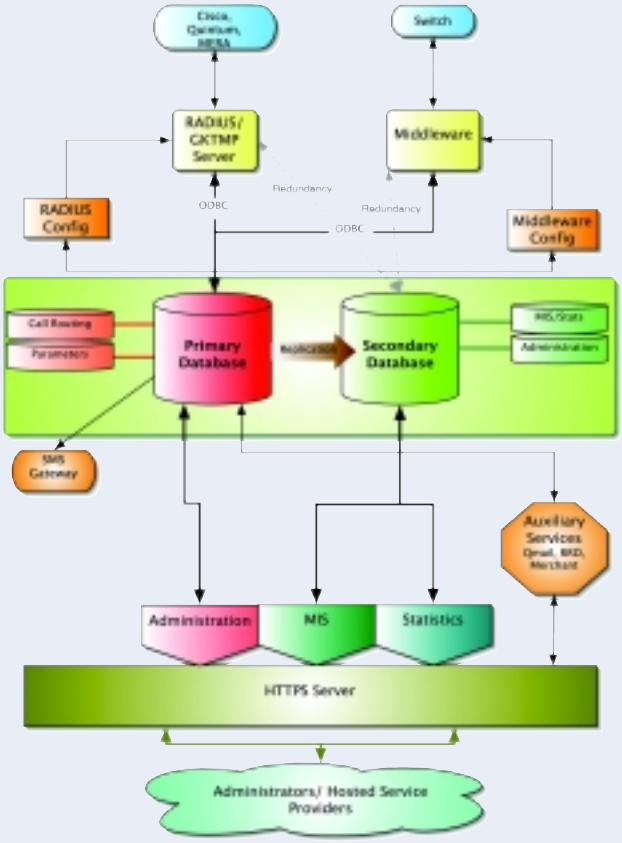
FractalRouting includes a full-featured advanced RADIUS module that provides RADIUS-based routing for the MERA softswitch and Quintum voice gateways. This high performance multi-threaded server fully supports the standard as well as Vendor Specific Attributes (VSAs) for call routing. FractalRouting also includes a multi-threaded GKTMP middleware that supports RIP on a persistent pipelined TCP architecture with built-in redundancy and load balancing functions.

System Components

Hardware

- Two Linux Servers. Recommended configuration: Intel Pentium Xeon 2.8 GHz, 1 GB RAM, 100 GB of RAID storage
- Voice Gateway (Cisco, Quintum) or softswitch (MERA)

FractalRouting System Architecture

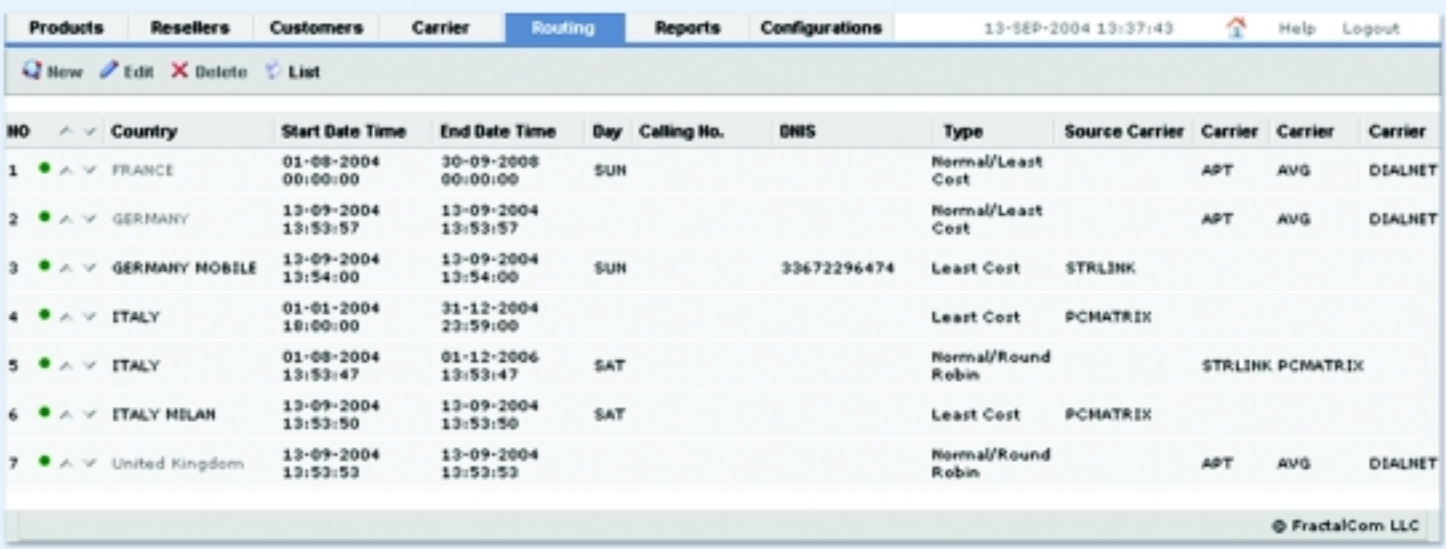


System Software

- FractalRouting
  - FractalBilling or any other software that can supply quality metrics for quality-based routing
- Apache Web Server with modules
- Oracle Database Server or PostgreSQL Database Server

Client Software

Browser: Internet Explorer 5.5 or higher, Netscape 6.2 or higher, Mozilla 1.1 or higher



NO	Country	Start Date Time	End Date Time	Day	Calling No.	DNIS	Type	Source Carrier	Carrier	Carrier	Carrier
1	FRANCE	01-08-2004 00:00:00	30-09-2008 00:00:00	SUN			Normal/Least Cost		APT	AVG	DIALNET
2	GERMANY	13-09-2004 13:53:57	13-09-2004 13:53:57				Normal/Least Cost		APT	AVG	DIALNET
3	GERMANY MOBILE	13-09-2004 13:54:00	13-09-2004 13:54:00	SUN		33672296474	Least Cost	STRLINK			
4	ITALY	01-01-2004 18:00:00	31-12-2004 23:59:00				Least Cost	PCMATRIX			
5	ITALY	01-08-2004 13:53:47	01-12-2006 13:53:47	SAT			Normal/Round Robin		STRLINK	PCMATRIX	
6	ITALY MILAN	13-09-2004 13:53:50	13-09-2004 13:53:50	SAT			Least Cost	PCMATRIX			
7	United Kingdom	13-09-2004 13:53:53	13-09-2004 13:53:53				Normal/Round Robin		APT	AVG	DIALNET

List of Routing Rules

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