

Praxa

SWITCHgate Rel 8.1

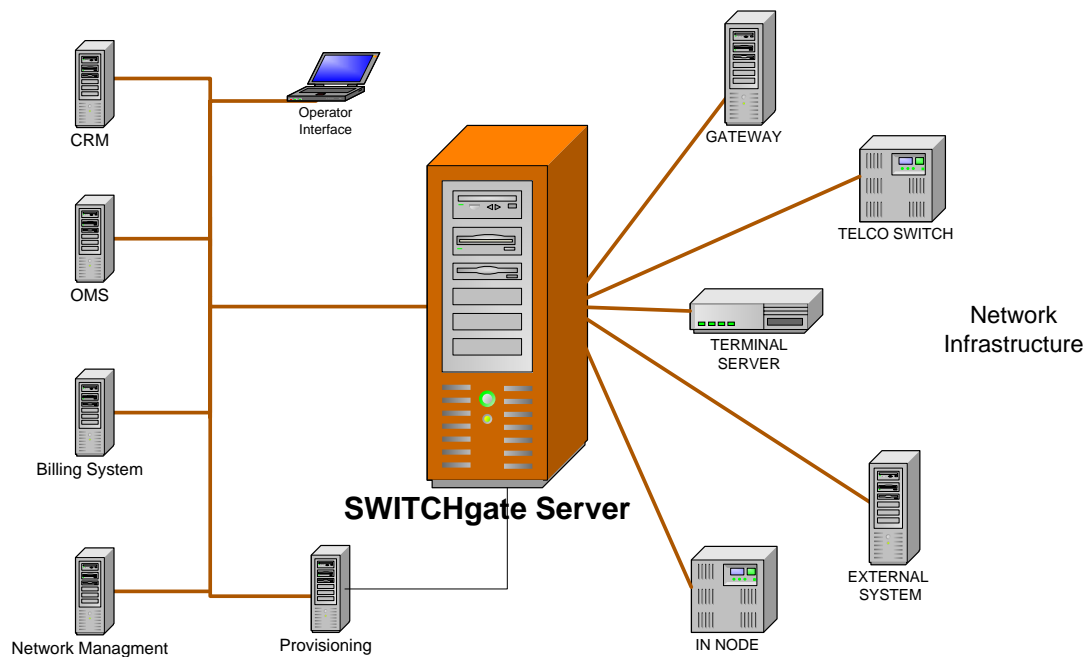
Intelligent Integration Infrastructure

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SWITCHgate OVERVIEW

SWITCHgate is a mediation product for the Telecommunication industry. SWITCHgate consists of a library of generic mediation components developed specifically to handle the complex mapping of services to network elements. Based on requirements, appropriate SWITCHgate components are combined to implement a specific solution and deployment configuration.

SWITCHgate provides mediation for commercial systems (eg. CRM, OMS, Billing, etc.) to provision and integrate components such as telephone switches, IN systems and external gateways.



An implementation of SWITCHgate is made up of core components and customised components. The core components consist of SWITCHgate processes and their deployment infrastructure. The customised components include configuration for the core processes and any enhancements made to the core components for a specific implementation.

Product Summary

SWITCHgate reflects Praxa's experience since 1994 in providing mediation solutions to Telecommunication companies in Australia, UK and New Zealand.

SWITCHgate provides reliable, efficient, cost effective and low maintenance solutions to fulfil mediation requirements in the telecommunication industry.

Rapid deployment is a key advantage of SWITCHgate.

SWITCHgate solution components are designed for Unix environment have been developed in C, C++ and Java.

Business Usage

SWITCHgate systems have been used in a variety of mediation scenarios; the following list briefly describes some of SWITCHgate implementations:

- Order Management System, Customer Care GUI and a Billing System connect to SWITCHgate to provision services on an IN platform. SWITCHgate presents an abstract view of the services that hides the complex IN interface from the applications.
- A Billing System connecting through SWITCHgate simultaneously provisions wireline service bar/unbar provisioning on fifteen identical switches from a single application request.
- Front End Systems, Customer Care GUI and a Data Bulk Load System connect to SWITCHgate to provision GSM subscriber service distributed over multiple GSM switches. SWITCHgate presents a different abstract view of the same service to suit different applications requirements.
- Order Management System connects to SWITCHgate over web service interface for full VOIP subscriber provisioning on Nortel CS2K switch accessed via Nortel OSSgate.

Go Forward

Praxa offers SWITCHgate licensing, implementation and runtime support services to suit different scales of implementation.

A SWITCHgate system is controlled by scalable deployment configuration. The system behaviour, its capacity and throughput can be easily configured to suit end-to-end requirements and limitations.

Praxa provides consultants to assist in defining requirements such as mapping of business transactions to network instructions. Praxa also offers product configuration, training, integration testing, product deployment and support services.

- Application managing wireline/mobile number portability connects to SWITCHgate over web service interface to simultaneously provision HOC on multiple Nortel DMS and Broadworks VOIP switches. Employs SWITCHgate's Store & Forward functionality for guaranteed application of all transactions in their original sequence on all switches.
- Upstream SMS Paging application connects to a SWITCHgate based system to provision a local subscriber database. Multiple downstream external Paging Bureaus connect to this system and query subscriber records to operate the service. The system employs SWITCHgate's Store & Forward functionality to ensure all transactions are replicated to a backup (redundant database) in their original sequence.

SWITCHgate systems have a provisioning interface with a variety of Telco switching elements such as Nortel DMS100, Nortel CS2K via OSSgate, Broadworks VOIP, Nortel DMS-SDM, DSC SMS (IN), Nortel IN, Nortel GSM, Nortel HLRPS, Nokia GSM, Ericsson AXE and Lucent Voicemail.

BENEFITS

The deployment of SWITCHgate will:

- Greatly simplify service provisioning from upstream applications. Achieved by presenting complex switch data as logical service views
- Simplify and greatly reduce time/effort required for upstream application development, implementation and system integration.
- Improve end-to-end service reliability and integrity via built-in transaction management and recovery processes
- Reduce time to market for new services via fast configuration changes
- Easily fulfil business requirements by providing multiple application interface options
- Reduce maintenance costs via self monitoring and self recovery
- Reduce maintenance costs by insulating upstream applications from downstream changes and vice versa.
- Reduce solution implementation effort through SWITCHgate tools for testing, data conversion, bulk loading, etc
- Provide best fit solutions by allowing customisation at all levels
- Delivers greater reliability and lower maintenance cost. SWITCHgate components are built using program blocks that are re-used by other SWITCHgate components.
- Reduce network requirements by allowing multiple service types to be provisioned over a single network element session.
- Helps resolve disputes, monitor transaction throughput and system utilization with help of web based utilities to search, view and chart transaction data stored in an internal data base.

FEATURES

The main features of SWITCHgate can be grouped under the following architectural components:

Data Abstraction

A Data Dictionary enables abstraction of services and provisioning action into a database schema. The database defined by the Data Dictionary is transient and exists in memory only for the duration of a transaction and is called the Virtual Database (VDB).

Applications manipulate services defined in the Data Dictionary by performing permitted SQL operations. SWITCHgate uses configured rules to interpret these SQL commands into operations on external network elements such as telephone switches.

The Data Dictionary and the VDB are optional in a SWITCHgate implementation.

Common Messaging Infrastructure

The messaging infrastructure supports a common definition and mechanism for handling and transport of messages.

The messaging infrastructure is integrated with the Data Dictionary and supports the encoding and transmission of SQL request/response messages for services defined in the Data Dictionary.

Configurable Processing

SWITCHgate system consists of a group of co-operating processes. The Process Configuration enables the following aspects of SWITCHgate to be configurable:

- The number of processes that run in the SWITCHgate system.
- How SWITCHgate processes interact amongst themselves.
- How SWITCHgate processes interact with external systems.
- Run time environment of one or a group of processes. Individual process instance can be specifically configured even when multiple instances of the same process run in a SWITCHgate system.

Process Configuration enables SWITCHgate architecture to be scalable and flexible.

Layered Inter-process Communication

SWITCHgate supports transport independent inter-process communication.

Each process is designed to communicate by performing I/O on logical devices. The underlying layer contains actual description and configuration of each logical device, such as type of transport and its details, which is picked up at system start up.

The configurable inter-process communication is a part of SWITCHgate infrastructure used by all SWITCHgate processes. It is the principal feature upon which Process Configuration relies; it also enables easy testing of individual processes in isolation.

Several Processing Modes

SWITCHgate provides a choice of transaction processing modes such as:

- **On-line** – The application request is processed through to the external element and response from the external element is passed back to the waiting application.
- **Store & Forward** – The application request is validated and stored by SWITCHgate and a success response is sent back to the application. SWITCHgate then sends the request to the external element. If the external element is unavailable then the request is retried.

Store & Forward is suitable when the external element is not always available or where one transaction is to update multiple external elements.
- **Publish & Subscribe** – This is Store & Forward in both directions. Requests are supplied in the same manner as Store & Forward. The response from the external element is stored along with the request id. Responses are delivered when the subscribing application connects to SWITCHgate.
- **Batch** – The application supplies requests in a file copied into a designated directory.

The SWITCHgate Batch System processes the batch file through SWITCHgate and saves processing results formatted in a result file that may be automatically post-processed for reporting.

The Batch System can be easily configured for new requirements, and is therefore suited for ad-hoc bulk data loads, data conversion and data extraction jobs.

Also see Configurable Switch Interface.

Multiple Application Interface Options – now web services

SWITCHgate offers a variety of interface options to upstream applications.

The latest offering is the generic WSDL based web service interface that allows a single web service client access to all SWITCHgate services.

The web service interface is password protected and SSL encrypted. The web service is based on Apache Axis2-1.3 and deployed on Apache/Tomcat 6.

Other SWITCHgate interfaces are Java and C APIs, generic request/response messaging protocols and custom built protocols.

Interfaces via third party products can be provided if commercially viable.

Transaction History Database

SWITCHgate extracts data from transactions passing through and stores the data in an internal database.

This data can be searched, viewed and charted via a set of supplied web apps.

Configurable Switch Interface

SWITCHgate uses a generic client processes to handle interfaces to downstream network elements. Each generic client process interprets its allocated interface control configuration for all provisioning actions. The interface control configuration can encode complex logic to control the dialogue between the generic client process and the designated network elements.

The interface control configuration can be easily changed to add new provisioning actions.

The configurable switch interface feature enables easy and efficient implementation of complex provisioning actions required for strategic solutions and/or ad-hoc data uploads and bulk provisioning via SWITCHgate batch processing.

Rule-based Routing

SWITCHgate provides conditional routing of VDB requests and responses to appropriate generic client process. The routing rules are configurable and are normally loaded at system start up but may be changed at runtime.

Local Database Option

SWITCHgate provides an option to store service and/or transaction data in a local database system that is integrated with the Data Dictionary.

The local database is populated by data from transactions flowing through SWITCHgate.

The local database may be used for service enquiry, transaction history & statistics and data reconciliation across multiple external elements.

Event Logging

SWITCHgate provides logging of all request, response and alarm messages. The logged information is written to daily log files. The log files may be configured to be in a weekly, monthly or yearly cycle.

On-Line Administration

SWITCHgate provides means for administration and monitoring of all system processes at runtime without affecting performance.

Web based monitoring tool is also available.

SWITCHgate may be integrated with external systems for remote or centralised monitoring.

A detailed product specification document is available on request.

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