B2B and IP VPN

A crucial success factor in ***e-Business*** operation is easy ***integration and management of inter-enterprise interaction***.

In ever increasing competitive markets, organisations are focusing on their own key market competencies and seeking *outsource managed solutions* for non-core competencies.

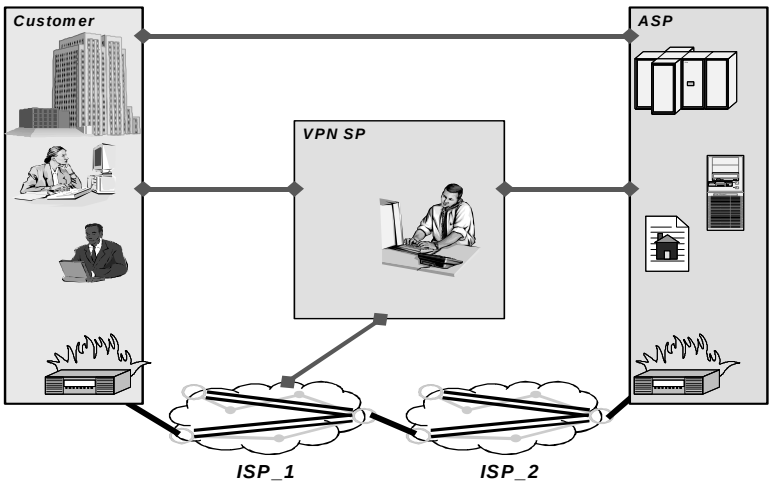
Such e-Business requirements provide new opportunities and challenges for The Next Generation Internet and Telecommunication Service Providers. To support e-Business across a supply/value chain, these Service Providers must offer

dynamic negotiation of services and automated management processes across customer organisations.

In such a market an IP VPN service is the foundation.

Users can benefit of the public Internet framework to constitute a Virtual Private Network as an economic alternative to a leased line network. One main advantage of VPN solutions, compared to leased lines, is flexibility, enabling dynamic cooperation between organisations.

B2B Business Model



B2B Business Model supports outsourcing of interactions management between organisations to a third party, called:

Inter-Enterprise Service Provider (IESP).

An IESP can be an extension of a Telecom Operator or ISP, providing value added services to enterprises, for example IP VPN.

The customer of the IESP can be an organisation as well as an ***Application Service Provider (ASP)***.

This Business Model can be applied to most business cases relevant to B2B: intranet, extranet, remote access VPN or ASP support.

IP VPN Service requirements

End-user requirements for IP VPN service are:

- **Dynamic service activation**. A B2B context requires a high level of flexibility regarding set up and activation of communication links.
- **Guaranteed QoS**. A requirement from the B2B market segment is connections with guaranteed end-to-end QoS.
- **Specific level of security**. The end-user should be able to select the level of security on the fly based on the business context.
- **Outsourcing**. More and more organisations focus on their core business and therefore prefer to outsource functionality such as communication links management.

The ***IESP*** requirements:

- **Automatic mapping from End-user requirements to network configuration**. Dynamic service activation based on end-user input requires transformation of such input into a specific network configuration as well as enforcement of such a configuration at network level.
- **Possibility to map business requirement to different tunnelling mechanisms,** (e.g. IPSec, L2TP, MPLS). This allows the IESP to adapt the VPN service to the changing context of the underlying network. Moreover, different tunnelling mechanisms allow accumulating benefits from each such as provision of guaranteed QoS in combination with security.
- **Guaranteed QoS over multiple ISPs**. End-to-end QoS even across external domains which may use different types of network equipment
- **Outsourcing CPE management for set up of tunnels**. As organisations want to focus on their core business, support for outsourcing of CPE management must be provided.
- **Customisation of the VPN service**. The service needs to be adaptable in order to accommodate changes in the market as in the network technology.
- **Full operation of the VPN service from an administrative console**.

FORM IP VPN Solution

Four organisations developed an IP VPN Service Provisioning solution within the R&D project called FORM which was partially funded by the European Commission under the IST programme.

Main objective of ***FORM*** was to:

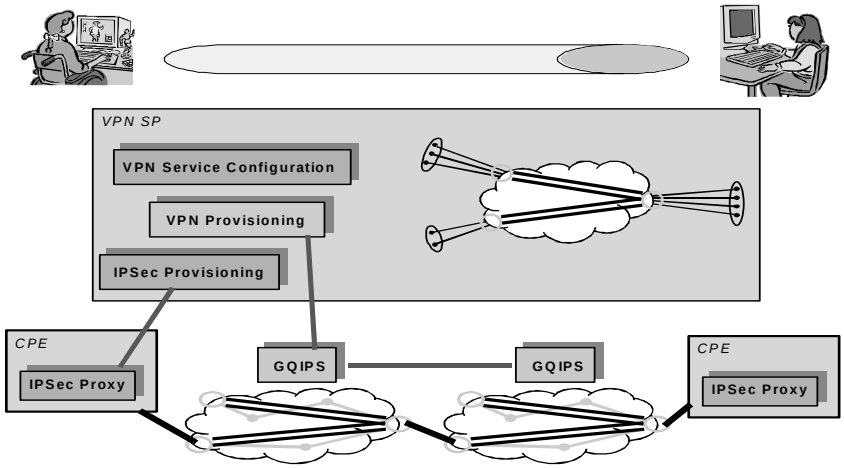
"Engineer an open, adaptable framework to support the management of trusted, 'Co-operative Inter-Enterprise Environments' encompassing telecommunication facilities and systems by an external provider.

The IP VPN solution has been developed based on the FORM ODF (Open Development Framework).

Main development principles are:

- The solution is ***open*** and it is based on available standards and work studies, such as:
  - *ITU-T M3208.x and M3108.x* providing VPN service interfaces and information models.
  - *The IPSec policy model* as defined by the *IETF*, basing configuration of IPSec tunnels on policies.
  - Provision of end-to-end QoS based on *Internet 2 Qbone* protocol.
- ***Use ODF principles*** **and guidelines**, ease integration to Service Provider OSS. Components of the solution are defined as Building Blocks and provide well-defined Contracts.
- The main principle in the VPN Service solution is ***to allow a Service Provider to provide end-to-end VPN service to its customers in a B2B context***, i.e. fulfilling requirements as defined on the first page. This implies a logical architecture based on different layers allowing mapping from the end user's logical view down to a specific network configuration.
- The solution is ***very flexible*** as it allows to use and mix different mechanisms, such as IPSec and Bandwidth Broker (GQIP).

Architecture



The architecture of the IP VPN Service Provisioning is based on 3 Building Blocks and can be integrated with a fourth:

- **VPN Service Configuration**: provides an interface to VPN customers and manages the virtual topology,
- **VPN Provisioning**: is in charge of the mapping, based on policy, between virtual entities and network resources,
- **IPSec Provisioning**: controls and manipulates IPSec tunnels through the use of IETF IPSec Provisioning Policies,
- **GQIPS:** (Guaranteed Quality IP Service) provides end-to-end QoS guarantee over ISPs.

Technologies

FORM IP VPN solution is based on state of the art technologies:

- J2EE: Our Building Block implementation is based on EJB, and notification services using JMS.
- XML/XML Schema: provides an open way for information exchange between components.
- Web based technologies provides ubiquitous access to GUIs.

Partners

IP VPN Service Provisioning solution has been developed by 4 organisations:

Atos Origin — Contact: Hervé Karp herve.karp@atosorigin.com

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Information and Contact

Further information on the FORM project are available at:

www.ist-form.org

Our VPN White Paper: "**Providing dynamic VPN service for B2B**" is available from this web site.

FORM is a research project partially funded by the European Commission in the IST program.