# Enhancing Business Partnerships with the B2B Gateway

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*Abstract* — **Business-to-business (B2B) partnerships bring a need for a B2B platform as a middle-ground solution that enables the information exchange and interaction between operators' and business partners' applications. The article discusses the market need for communication between partners' applications, classes of exchanged information and topics connected with revenue management, customer-centric and telco-centric business models, and the B2B gateway concept in the Mobile Virtual Network Enabler (MVNE) - Mobile Virtual Network Operator (MVNO) business case. The classes of information exchanged and managed by the discussed B2B gateway concept includes service usage data, profile management, provisioning, Electronic Bill Presentment and Payment (EBPP), data and system security, as well as charging and AAA.**

***Keywords: B2B; B2B gateway; integrations; business-to-business; MVNO; MVNE; revenue management; revenue sharing***

## I. INTRODUCTION

The increasing number of service providers on the telecommunication market has not only increased the competition, but also brought new business opportunities. Typical methods of cooperation on the telco market can be e.g. cooperation between virtual network operator (selling of white-labeled services) and actual network operator, or cooperation between network operator and service/content provider. These kinds of business-to-business (B2B) partnerships create the need for enabling information exchange and interaction between operators' and business partners' applications.

## II. MARKET NEED FOR COMMUNICATION BETWEEN PARTNERS' APPLICATIONS

To provide services for end subscribers, the business partner (service provider) of the telco operator needs to have access to the underlying platform of the telco operator. The telco operator that can manage the limited back-end operations on behalf of the service provider can also offer various functionalities via interfaces, such as service provisioning, billing data delivery and resource management. The functionalities that the service provider needs to use from the telco operator's B2B platform should be automatable, meaning that the service provider should be able to use its own applications in order to perform the selected operations on the underlying platform. An example of this kind of functionality can be when a reseller modifies customer data on the underlying platform. In addition to those functionalities, the business partners should be able to automate their common B2B-related business processes (interfacing, AAA, revenue management) to the greatest possible extent in order to reduce operational costs and attain benefits for both parties.

Customization is another key issue – the telco operator may host multiple service providers on its B2B platform, having different services available for individual service providers. Thus the service providers may require different types of data (e.g. billing data, service usage data, subscriber profiles, subscriptions etc.). These different needs typically occur in situations like data models, interfaces or frequency of data updates. That is why it is not enough merely to provide access for the service providers to the underlying platform – the platform must be customizable for individual needs.

## III. CLASSES OF EXCHANGED INFORMATION

General trends in the business environment (such as outsourcing and software as a service), and not exclusively on the telco market, are forcing companies to integrate their business processes with external business partners, to share data and even applications. To integrate the business processes, the internal applications of the companies should be able to participate in the supply chain processes by having common business processes and shared data with the business partners.

To be able to exchange information electronically, business partners need to have one common business language. The lack of standards can cause problems during the system integration and can bring further difficulties – not only inside the companies but also for the third party systems. By following common standards, the business processes can be automated and the communication between various systems becomes robust.

The interface classes and data models that can be used in the B2B integration in telecommunication environments can be divided into the following segments:

- Service usage data exchange interfaces
- Profile management interfaces
- Provisioning interfaces

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- Electronic Bill Presentment and Payment (EBPP) interfaces
- Charging and AAA interfaces

Data exchange interfaces for service usage define how to exchange information regarding the used services between partners. These interfaces contain information about how to transfer the event details between parties. The exchanged service usage data can include information such as service duration and start time. When a business partner is providing services to another party via the B2B Gateway, these interfaces make it possible to attain the data that can then be charged.

Profile management interfaces can be used to transfer information regarding the profiles of the business partners. The profile data also contains the agreements of the specific business partner. For each business partner, the communication profile should be managed individually for the B2B integration. The business partner's profile can also include details about the supported data exchange standards.

Provisioning interfaces can be used to perform provisioning actions within the underlying system. An example is the activation of a specific service by a business partner for a specific customer. The business partner can use its own Customer Relationship Management (CRM) system for interaction with the customer, and the CRM system then uses the provisioning interface of the B2B Gateway to activate the service that the customer has ordered. This can be, for example, the activation of a SIM card for a certain Mobile Virtual Network Operator (MVNO) subscriber.

EBPP interfaces enable the transfer of invoicing data electronically, basing on specific standards such as EDIFACT. It is possible to send the invoices for printing to an external party such as a printing house or to provide the invoicing data electronically to another company.

Charging and AAA interfaces provide additional functionalities for the platform – it is possible for the B2B platform provider to offer charging and AAA functionalities to external business partners. The external service providers can provide prepaid services for their users and the interfaces provide real-time credit control.

To provide a secure communication channel between business partners, the B2B platform must support encrypted traffic, authentication of the business partners (through use of digital signatures) and encryption of the actual messages (that can be stored in the gateway for later delivery) between business partners.

In addition to the above listed interface types, as an essential requirement it should be possible to introduce new interfaces and data models to the current systems. This makes the B2B platform extensible and supportive of new business models, as the interfaces and data models can be updated at a later stage.

## IV. Revenue Management in B2B

An important requirement of the B2B platform is the revenue management functionality. When the platform handles B2B transactions, the host of the platform must be able to perform charging and revenue sharing in order to transform the B2B platform into a source of revenue. This revenue sharing functionality is essential for B2B cooperation because it enables new business models: the hosted business partners are able to offer services to third parties – via the B2B gateway.

The biggest challenge that revenue sharing brings to the underlying systems is the management of the settlement processes between different parties. The host of the B2B platform should be able to manage the settlements with the parties, thus the partners of the B2B platform provider do not need to perform the billing between themselves – the B2B platform can perform the appropriate charging scenarios, based on rules defined in the system. The platform must support various charging scenarios and tariff types to be used as a basis for charging.

The revenue management functionality on the B2B platform should take care of charging and revenue sharing, basing on the defined business rules. The platform should not only enable maintaining partner-related data and performing revenue sharing and billing, but also delivering reporting and exchanging financial data with external systems as well as enabling direct access for the business partners to their billing accounts via web browser.

The host of the B2B platform can provide an API for the billing services. This is especially useful in the telecommunications environment, where the business partners of service providers can use the API to bill the subscribers for the service usage. The B2B platform provider will perform the actual billing operations and can claim a share of the revenues.

## V. Customer-centric vs. Telco-centric Business Model

The term "Telco 2.0" refers to the IP-based telecommunications environment. How to make money in this new environment has been a major concern for telecom operators. With IP-based services gaining popularity the role of telco operators transforms from the traditional service provider into a service provider, content provider and data pipe provider simultaneously. However, it is a challenge for telco operators to act as more than a data pipe provider and attain access to the revenues of the new services as shown in the figure below. This change on the telco market is inevitable and the first operators who will perform the appropriate adjustments to their business models can reap the benefits before their competitors.

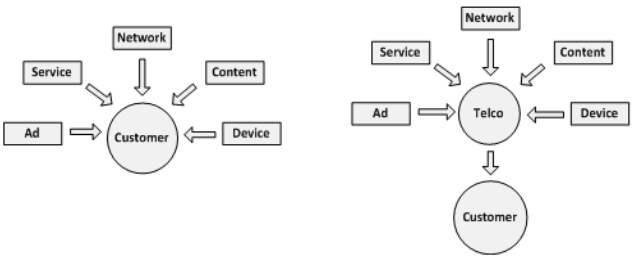


Figure 1. Customer-centric and telco-centric business models.

Telco 2.0 transforms the traditional business models. Rather than still trying to attain more revenue from the subscribers (directly), the telco 2.0-based business model focuses on increasing revenues by building capabilities supporting third parties that wish to interact with the telco user base. The potential market opportunity for telco is significant, but it requires changes to retail and wholesale systems and new systems to support B2B value added services such as advertising or payments. Wholesale becomes the new growth engine, as the telco operators enable third parties to bundle minutes, messages and megabytes with their own products and services.

Operators need to open their underlying platforms to third parties in order to stay competitive. The more personalized the services that can be offered to the customers the more revenues the operator can attain. The operators can relinquish control of some elements of their underlying platform. This way the telco operators can generate more traffic, value and revenue.

When the operator has a B2B Gateway class platform, it can provide many types of services that can be monetized as shown in the figure below. For example, if the operator can offer an API for billing functionalities, the upstream customer (e.g. content provider) can charge the end user a specific amount of money for watching the content.

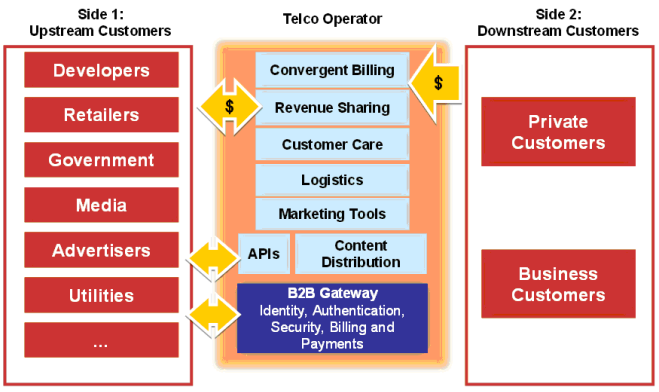


Figure 2. Environment for two-sided business model.

For operators that want to establish the two-sided business model, their existing Business Support Systems (BSS) platform may not be well-suited to white label or wholesale operations. The data may not be centralized into a single database, and there may be no means of tracking metadata such as "the user has given permission for us to give his location information to an external service provider". The BSS platform should also be able to generate and handle huge volumes of transactions when large amounts of upstream and downstream customers exist and interact with each other.

## VI. B2B Gateway Concept – Case Study of MVNE-MVNO Cooperation

The figure below presents the B2B Gateway concept using the Mobile Virtual Network Enabler (MVNE)-MVNO business case study as an example. The B2B Gateway is a central integration layer between the MVNE's BSS platform, MVNOs and external systems. The complexity of individual interfaces that the MVNE environment and external systems may have is hidden inside the B2B Gateway. This way, the number of interconnection points between MVNOs and MVNE is reduced to a minimum.

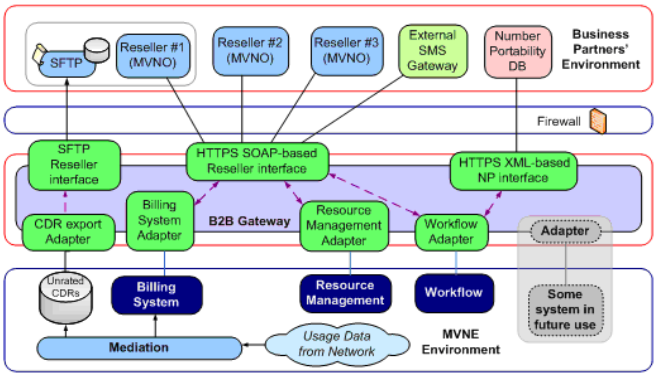


Figure 3. Usage of B2B Gateway in MVNE environment.

The MVNOs can use the MVNE platform's services via web services. The communication with the systems of the MVNE can be realized through reusing the existing workflows. Information about roaming tariffs can be delivered via web services. Once an end user crosses a country border, the Home Location Register (HLR) will update the external SMS gateway, which will then request the tariff information for the given customer and country via web services from BSS and send this information via SMS to the end customer. The delivery of usage and/or billing data can be realized by uploading it to the existing SFTP sites of the MVNO. For the MVNOs, it is also possible to perform the billing in the MVNE environment, without the need for sending unrated Call Data Record (CDR) files to the MVNO. For mobile number porting, the external number portability database can be integrated within the B2B Gateway.

The B2B Gateway provides secure communication between MVNO and MVNE environments. To secure the traffic between the entities, VPN and/or HTTPS can be used to encrypt the traffic, depending on which method the MVNO wants to use. The gateway is also secure on a logical level: Each MVNO only has access to the data that is related to that MVNO, thus it is not possible for the MVNO to perform any kind of actions for the data that belongs to another MVNO that the same MVNE is hosting. The MVNOs can also be further restricted to carry out only specific actions, meaning that the MVNE can restrict the MVNO access on two levels: Which actions (commands) are permitted, and which objects (customers, contracts, etc.) the MVNO has access to.

When the MVNE-MVNO business case study presented in this chapter is compared to the two-sided business model, many similarities can be identified. In the two-sided business model, the downstream customer is usually an end user, who wants to buy specific services from the upstream customers

such as a content provider. In the MVNE-MVNO business case, the MVNOs and SMS gateway provider can be considered as the upstream customer and the MVNE is the telco operator that makes it possible for the upstream customers to offer services to downstream customers.

## VII. CONCLUSIONS

The increasing need for collaboration between business partners brings a need for a B2B Gateway class solution that takes care of reducing the business process complexity by replacing the manual, time-consuming processes with repeatable, automated processes that can be linked with external business partners. The high level of standardization and appropriate revenue management functionality are the key issues to achieving the business benefits for the parties in the supply chain.