

Recommendation

ITU-T M.3111.1 (03/2025)

SERIES M: Telecommunication management, including
TMN and network maintenance

Telecommunications management network

**X-interface between telecom operation system
and Internet e-commerce platform – Protocol
neutral requirements**

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Recommendation ITU-T M.3111.1

X-interface between telecom operation system and Internet e-commerce platform – Protocol neutral requirements

Summary

With the current trend of digital transformation, information and communications service providers (ICSPs) need to expand their e-commerce ecology to improve customer experience and increase opportunities for ICSPs to provide services to customers. Recommendation ITU-T M.3111.1 provides the protocol neutral requirements for the X-interface between the telecom operation system (TOS) and the Internet e-commerce platform (IEP), following the interface specification methodology presented in Recommendation ITU-T M.3020.

History *

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Internet e-commerce platform, management interface, protocol neutral, requirements, telecom operation system.

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Recommendation ITU-T M.3111.1

X-interface between telecom operation system and Internet e-commerce platform – Protocol neutral requirements

1 Scope

This Recommendation specifies the requirements for the X-interface between the telecom operation system (TOS) and the Internet e-commerce platform (IEP). In general, the interactions of the TOS and the IEP include product support and readiness, customer management, order handling, order bill invoice, product renewal and customer service. During these interactions, the exchange of information between the TOS and the IEP is required. This Recommendation focuses on the requirements of this interface which cover all of these interactions. The requirements are provided using the management interface specification methodology described in [ITU-T M.3020], in a protocol neutral manner.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [[ITU-T M.3010](#)] Recommendation ITU-T M.3010 (2000), *Principles for a telecommunications management network*.
- [[ITU-T M.3020](#)] Recommendation ITU-T M.3020 (2023), *Management interface specification methodology*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

- 3.1.1 customer** [b-ITU-T M.3050.1]: The customer buys products and services from the enterprise or receives free offers or services. A customer may be a person or a business.
- 3.1.2 e-commerce** [b-ITU-T M.3050.1]: e-commerce is Internet presence and business buying and selling transactions over digital media.
- 3.1.3 information and communications service provider (ICSP)** [b-ITU-T M.3050.1]: A service provider enterprise that sells information and/or communications services to other parties.
- 3.1.4 operation system** [ITU-T M.3010]: A physical block which performs operations systems functions (OSFs).
- 3.1.5 operation systems function (OSF)** [ITU-T M.3010]: A function block that processes information related to the telecommunications management for the purpose of monitoring/coordinating and/or controlling telecommunication functions including management functions (i.e., the TMN itself).
- 3.1.6 partner** [b-ITU-T M.3050.1]: A partner has a stronger profit and risk-sharing component in their business agreement with the enterprise than a supplier would have. A partner generally is more

visible to the enterprise's customer than a supplier would be. A partner might be part of an alliance, a joint service offering, etc.

3.1.7 platform [b-ITU-T X.1149]: A hardware or software system that serves as a foundation or base for realizing a certain functionality.

3.1.8 product [b-ITU-T M.3050.1]: Product is what an entity (supplier) offers or provides to another entity (customer). Product may include service, processed material, software or hardware, or any combination thereof. A product may be tangible (e.g., goods) or intangible (e.g., concepts) or a combination thereof. However, a product ALWAYS includes a service component.

3.1.9 service provider [b-ITU-T M.3050.1]: See under information and communications service provider (ICSP). Throughout this Recommendation, the terms "service provider" and "ICSP" are synonymous.

3.1.10 telecommunication service [b-ITU-T M.60]: That which is offered by an Administration to its customers in order to satisfy a specific telecommunication requirement.

3.1.11 X interface [ITU-T M.3010]: An interface applied at x reference points.

3.1.12 x reference points [ITU-T M.3010]: A reference point located between OSF function blocks in different TMNs.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 stock keeping unit (SKU): The unit of measure in which the stocks of a material are managed, which is a distinct type of item for sale, purchase, or tracking in inventory (such as a product or service).

NOTE – An example of SKU is an annual 300 Mbit/s home broadband package.

3.2.2 standard product unit (SPU): The unit of product aggregation, which is a set of reusable and easily retrievable standardized information that describes the characteristics of a class of products.

NOTE 1 – An example of SPU is home broadband. The attribute of this SPU may include bandwidth: 300 Mbit/s / 1 000 Mbit/s, charging period: monthly / annual.

NOTE 2 – One SPU may include multiple SKUs. In the above SPU example, there can be four SKUs. The first SKU is a 300 Mbit/s monthly home broadband package. The second SKU is a 300 Mbit/s annual home broadband package. The third SKU is a 1 000 Mbit/s monthly home broadband package. The fourth SKU is a 1 000 Mbit/s annual home broadband package.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

CM	Customer Management
CS	Customer Service
FS	Function Set
ICSP	Information and Communications Service Provider
IEP	Internet e-commerce Platform
Mbit/s	Mega bits per second
OBI	Order Bill Invoice
OH	Order Handling
OS	Operations System

OSF	Operations Systems Function
PR	Product Renewal
PSR	Product Support and Readiness
SKU	Stock Keeping Unit
SPU	Standard Product Unit
TMN	Telecommunications Management Network
TOS	Telecom Operation System
URL	Uniform Resource Locator

5 Conventions

In this Recommendation:

The keywords "is required to" indicate a requirement which must be strictly followed and from which no deviation is permitted, if conformance to this Recommendation is to be claimed.

The keywords "is recommended" indicate a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance.

For the qualifiers of a use case in the specification-level requirements, "M" stands for "Mandatory" and "O" stands for "Optional".

6 Concepts and background

With the current trend of digital transformation, information and communications service providers (ICSPs) need to respond to customers' increased demands for superior customer services. They have therefore been expanding their ecological cooperation, especially with Internet companies, to broaden their e-business. An ICSP needs to launch product onto external Internet companies for new customer development and for customers to order product more conveniently.

According to the market sales demand, the ICSP decides what products need to be published to an Internet e-commerce platform (IEP) for sale and what product related information needs to be sent across the interface between the telecom operation system (TOS) and the IEP. When the products in the IEP are ready for sale, customers can browse the product information, order the product in the IEP, request for billing invoices from the IEP and submit complaint problems to the IEP. Related information needs to be exchanged across the interface between the TOS and the IEP.

As described in [ITU-T M.3010], the X-interface is used to interconnect two telecommunications management networks (TMNs) or to interconnect a TMN with other systems which accommodate a TMN-like interface. The interface between the TOS and the IEP specified in this Recommendation is an X-interface, as shown in Figure 1.

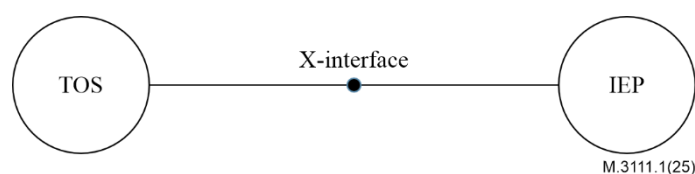


Figure 1 – Position of the X-interface between the TOS and the IEP

This Recommendation contains requirements for the X-interface between the TOS and the IEP. In general, the information that needs to be exchanged across this interface between the TOS and the IEP includes the following function set (FS): product support and readiness, customer management, order handling, order bill invoice (OBI), product renewal and customer service:

- Product support and readiness FS ensures that the product from the ICSP is available and ready to support Internet presence and business for buying and selling transactions over the IEP.
- Customer management FS ensures that customers from the IEP can complete the authentication and credit worthiness in the TOS.
- Order handling FS ensures that order actions initiated by customers in the IEP, such as order submission, order status inquiry and order cancellation, can be issued to the TOS for handling, and that the TOS can respond to the order handling result.
- Order bill invoice FS ensures that customers in the IEP can inquire and obtain bill invoices from the TOS.
- Product renewal FS ensures that customers in the IEP can continue to order the product which is used previously by the customers.
- Customer service FS ensures that customers in the IEP can initiate product consultation or complaints to the TOS.

This interface can provide the means for creating common practices for ICSPs to launch products onto external e-commerce platforms and for customers to be able to order product of ICSPs from the IEP.

7 Requirements for the X-interface between the TOS and the IEP

7.1 Business level requirements

7.1.1 Requirements

The general requirements include:

- product support and readiness (clause 7.1.1.1)
- customer management (clause 7.1.1.2)
- order handling (clause 7.1.1.3)
- order bill invoice (clause 7.1.1.4)
- product renewal (clause 7.1.1.5)
- customer service (clause 7.1.1.6)

7.1.1.1 Product support and readiness FS

REQ-PSR-FUN-101	The TOS is required to send the product classification catalogue to the IEP, so that the customer-oriented product catalogue in the IEP can be established more easily according to this product classification catalogue. An example of the catalogue is shown in Appendix I.
REQ-PSR-FUN-102	The TOS is required to send the product standard product unit (SPU) information to the IEP, so that the product SPU can be correlated to the appropriate catalogue item and then the product SKU can be correlated to the specific SPU in the IEP.
REQ-PSR-FUN-103	The TOS is required to send the product SKU information to the IEP, so that the SKU can be correlated to a specific SPU in the IEP.

7.1.1.2 Customer management FS

REQ-CM-FUN-201	The IEP is required to send the information of the newly created customer, who has ordered product in the IEP, to the TOS, so that the TOS can determine if this customer is new in its own system and needs to initiate real name authentication according to this information.
REQ-CM-FUN-202	The TOS is required to provide a real name authentication failure result back to the IEP, so that the IEP can require the customer to modify the customer newly created information.
REQ-CM-FUN-203	The TOS is required to provide the customer newly created success response to the IEP. See Notes 1 and 2 for more details.
REQ-CM-FUN-204	The IEP is required to send the credit worthiness verification request of the customer, who has ordered product in the IEP, to the TOS, so that the TOS can verify the customer's credit worthiness.

NOTE 1 – a) Authentication should be performed. If the real name authentication succeeds, the new customer ID of the TOS will be created and sent back to the IEP for recording through this interface.

b) The customer already existed in the TOS. In such cases, the customer may have already ordered some products in the telecommunication service hall offline. Then the TOS sends the existing customer ID of the TOS back to the IEP for recording through this interface. When this customer wants to order the TOS products in the future, he/she does not need to provide newly created information again.

NOTE 2 – The IEP and the TOS have two different sets of customer IDs, which need to establish a mapping relationship of the two sets of customer IDs in both the IEP and the TOS, because the TOS does not use the IEP customer ID set for its own order process and other operation and management activities. When a customer orders a product in the IEP, the IEP will first decide whether the customer needs to provide newly created information to the TOS based on the customer ID of the TOS. If the customer ID of the TOS already existed in the IEP, the IEP will associate this customer's order to his/her customer ID of the TOS, and will send this customer's order information along with his/her customer ID of the TOS.

7.1.1.3 Order handling FS

REQ-OH-FUN-301	The IEP is required to send the order information to the TOS, which has been submitted by the customer in the IEP.
REQ-OH-FUN-302	The TOS is required to send the order fulfilment result to the IEP, so that the customer will be informed whether the order fulfilment is successful or has failed.
REQ-OH-FUN-303	The IEP is required to send the order status inquiry to the TOS, so that the customer can track the process of the order handling.
REQ-OH-FUN-304	The IEP is required to send the cancel products in the order request to the TOS, so that the customer can cancel all the products in the order or part of the products in order before the order fulfilment is completed.

7.1.1.4 Order bill invoice FS

REQ-OBI-FUN-401	The IEP is recommended to send a bill invoice request to the TOS, so that the customer can inquire after the bill invoice in the IEP.
REQ-OBI-FUN-402	The TOS is recommended to provide a bill invoice response to the IEP.