Service Provisioning in a Multi-Provider Environment

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Abstract: All service industries are concerned with supplying the right service to the customer in an effective manner. In the telecommunication service industry this process is being complicated by a number of factors that together change the nature and structure of the industry. A key issue to be understood by service providers is how service provisioning will be affected by these changes. This paper proposes a definition for the service provisioning process and places the definition in the context of a service lifecycle model and a market player model. These contexts are then used to illustrate how the service provisioning process will change as market structure, customer demands and technology change.

1. Introduction

All service industries are concerned with supplying the right service to the customer in an effective manner. In the telecommunication service industry this process is being complicated by a number of factors that together change the nature and structure of the industry. The Commission of European Communities has initiated a number of directives aimed at deregulating the European telecommunications market [1]. The Open Network Provisioning directive concentrates on developing a common market for telecommunication services and equipment. This will be open both from a technology viewpoint with increasing standardisation of interfaces and from a market viewpoint with providers competing in the supply of services. The shift from a market consisting of monopolistic PTTs to a liberalised one with many competing providers has wide implications on how services are created, provisioned and used. Technological developments will allow a far greater diversity of services to be supported and will allow new types of services to be introduced rapidly.

These changes require a revision of the traditional views of what a telecommunication service is, and how it is created, provisioned and used. This paper proposes definitions for the service provisioning process and the related processes of service creation and service customisation. The definitions given are believed to be both general enough to cope with future evolution of the telecommunications industry and detailed enough to be of use in providing a framework for the development of service management systems. The definitions are placed in the context of a service lifecycle model and in the context of the market environment. The definition and contexts then provide a firm basis to understand how future trends will affect the service provisioning process.
2. Definition of Service Provisioning

This section provides unambiguous definitions of service provisioning and the processes of service creation and service customisation with which it is often confused. These definitions form the basis of the discussion in the remainder of the paper.

It is important to initially clarify our understanding of what a service is before the creation, provisioning and customisation processes are described. A distinction is made between a service instance, a service template, a service usage instance, and a management service instance where:

- A service instance is a group of functions that an organisation has made available for use by a user.

- A service template is a description\(^1\) of how to build a service instance of a particular type\(^2\). The template provides a means of re-use which can be used to build many service instances. A service template would be parameterised so that different service instances produced from that service template may differ in structure and behaviour.

- A service usage instance is created whenever a service instance is used by a user. (In a telephony service this is a call.)

- A management service instance is a service instance whose function is to perform some management action such as controlling a service\(^3\).

Collections of service instances and templates can be defined based upon a common customer or provider, where:

- A service package is a combination of service instances all belonging to the same customer.

- A service portfolio is the collection of service templates currently available from a provider.

Having defined the various views of a service, it is possible to define service creation, service provisioning and service customisation.

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\(^1\) This paper is not concerned with how the template is described. For example, the template could be a particular set of parameterised service elements, [13].

\(^2\) A service type is a logical predicate which when applied to similar service instances is true. It provides a way of grouping service instances and is needed to define service template.

\(^3\) Similarly we can define a management service template and management service usage instance.