

Title: Communication system, relay device, service providing device, relaying method, service providing method and program product

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ABSTRACT

A communication system preferable to a technique of allowing only an ISP (151) connecting a user terminal to the Internet to manage information about the charging for the service provided to the user by an ASP (132) in the Internet so as to prevent credit card information on the credit card of the user from leaking into the Internet and preferable to dial-up server for providing connection with access limit to a computer communication network such as the Internet to a terminal, a relay device, a service providing device, a relay method, a service providing method, and a program product for realizing them. The feasibility of the relay between a terminal (111) and an ASP (132) by an ISP (151) is determined on the basis of the relay condition (for example, the condition determined by the IP address and the port number) correlated with the user using the terminal (111). The system inquires of the ISP (151) if the ASP (132) provides a service to the terminal (111). If the user of the terminal (111) is registered in the ISP (151), the ISP (151) carries out the charging of the service in place of the ASP (132), and the ASP (132) provides the service to the terminal (111) through the ISP (151).

TECHNICAL FIELD

The present invention relates to a communication system, a relay device, a service providing device, a relaying method, a service providing method, and a program product.

Particularly, the present invention relates to a communication system, a relay device, a service provider, a relaying method, a service providing method, and a product for realizing them. They are preferable to a technique of allowing only an ISP (Internet Service Provider) connecting a user terminal to the Internet to manage information about the charging for the service provided to the user by an ASP (Application Service Provider) in the Internet so as to prevent credit card information on the credit card of the user from leaking into the Internet and the ASP and preferable to a dial-up server for providing connection with access control to a computer communication network such as the Internet.

BACKGROUND ART

Conventionally, relay devices for connecting each terminal to a computer communications network, such as the Internet, etc. are provided. This type of relay device is called a "dial-up server" or a "dial-up router" in the case where the terminal is connected to the relay device through a telephone line, etc., and is called a "gateway" in the case where the terminal is connected to the relay device through a network cable (including the radio).

The enterprises or companies, which provide users of the terminal with access right for connecting to the Internet, using this type of relay device, are called ISPs. In a computer communications network, such as the Internet, there are ASPs which are included in the computer communications network and provide the user of each terminal with services.

Each user connects to the Internet through the ISP, and receives a service from the ASP using a Web browser. This service includes providing of electronic information (image information, voice information, information representing a search result of various databases, etc.). The service may include mail-order selling, etc.

In the field of such ISP business, various researches have been developed, in accordance

with people's recent interest on the WWW (World Wide Web) and advancement of in WWW-related enterprise.

However, with a relay device used by the current ISPs, connections to the computer communications network, such as the Internet, etc. is provided to the user terminal. Hence, the connection to the ASP, providing electronic information which should not really be shown to kids, can not be controlled.

When receiving a chargeable service from an ASP, the user needs to inform the ASP about his/her name and number information on his/her credit card. In this case, the name and number information of the credit card is transmitted in the Internet. This transmission may result in that the user may suffer a swindle using the user's credit card. It is highly demanded that not only the information regarding the user's credit card, but also credit information, such as the user address, name, phone number, etc., be prevented from flowing over the computer communications network.

There is a technique for transmitting the credit information using SSL (Secure Socket Layer) protocol. Even in this case, the credit information still flows over the communications network.

In many cases, the user has made a contract with an ISP, so that the connection charges are paid through a credit card. Hence, if the ISP can collect the charges for the service provided to the user by an ASP, without giving the credit card information to the ASP, it is safe and convenient for the user.

A computer communication network is built between an ASP and an ISP, which are in a cooperative relationship with each other, in the Internet excluding their competitors. In this network, while services are provided to terminal users, it is highly demanded that customers be adequately selected and that the advertisement effect be enhanced.

Further, it is also highly demanded that, in a case where such a form can be realized, that a free network connection service be provided, while an ASP pays the charges for using the ISP for the user.

An object of the present invention is to provide a communication system, a relay device, a service provider, a relaying method, a service providing method, and a program product for realizing these, which are suitable for a dial-up server; wherein billing information, for a service to be provided from an ASP in the Internet to a user, is managed only by an ISP for connecting a terminal of the user to the Internet; and which is preferable for managing user-credit-card information not to be leaked into the Internet and for providing terminals with connection having access control toward a computer communications network, such as the Internet, in order to solve the above.