

Chapter 9

Overview of the Residential Portal

This chapter provides an overview of the SDX residential portal. The chapter contains the following sections:

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How Subscribers Use a Residential Portal

A residential portal is a Web application designed for use by individual subscribers who use their own computer to connect to the network, or households composed of multiple subscribers who use one or more computers and share the same network connection. The portal can be the single access point for subscribers to log in to the Internet. In addition to Internet access, a residential portal lets users manage subscriptions to services that supplement their basic Internet access package.

Residential portals can be used in wire-line, wireless, and roaming wireless environments:

- Fixed access environment—Subscribers can connect to a wholesaler or retailer using PPP, static IP, or DHCP through media such as cable, DSL, or telephone wire-line connections.

For DHCP connections that do not use equipment registration, PPP connections, or static IP connections, subscribers establish connections to a specific provider. If they want to connect to a different provider, subscribers log out of the current connection, and then log in to another one.

- Local wireless environment—Subscribers registered with the local wireless operator can connect to the location, typically by using DHCP.
- Roaming wireless environment—Subscribers can log in at a variety of wireless locations owned by service providers that participate in a roaming network agreement. Typically the connections use DHCP.

In each of these scenarios, the subscriber's experience is similar:

1. The subscriber connects to and logs in to an access point.
2. Based on the login, the subscriber's user profile is retrieved, and services are started on the router.
3. The subscriber's Web browser is redirected to a home or start page for the residential portal.
4. After logging in to the portal, subscribers can manage the services available from the provider.

Overview of a Residential Portal

Typically a residential portal is composed of dynamic Web pages that reference classes and methods from the Java packages and the Common Object Request Broker (CORBA) remote application programming interface (API) to:

- Authenticate subscribers, and log subscribers in to and out of the portal.
- Specify which value-added services are to be available to subscribers.
 - Specify whether scheduling is available to subscribers and, if so, which scheduling features are available.
 - Specify whether value-added services start automatically at portal login or whether these services are to be started manually by the subscriber.
- Show subscribers accounting statistics for value-added services that are active.
- Allow the subscribers to register their client devices to automatically obtain an authenticated IP address when they log in to the portal.

To use the SDX software to handle unauthorized requests to Web services and Web content sites, you install and configure the captive portal system. See *Redirecting Traffic to a Captive Portal Web Page* on page 225.

Subscriptions to Value-Added Services

A residential portal lets subscribers manage subscriptions to value-added services, additional services that a service provider makes available to subscribers. These services could provide additional bandwidth, access to specified content providers, or other value-added services configured in the SAE.

Using a residential portal simplifies how service providers deliver value-added services and how subscribers gain access to these services. The service provider can make services available to subscribers without directly contacting them, and subscribers can start and stop available services without contacting the service provider. Service providers can also charge for any value-added service that a subscriber uses, based on the type of service and how long the subscriber uses the service. Through a residential portal, the service provider can provide information to subscribers about the cost and use of these services.

Service Schedules in a Residential Portal

A residential portal can allow users to subscribe to a service at scheduled times. For example, if a subscriber regularly views video every morning, the subscriber can set up a schedule to turn on a video-on-demand gold service (that is available from the service provider) every weekday morning at 9 a.m., and turn it off on the same day at 10:30 a.m. This way the subscriber has access to additional bandwidth only for the interval needed and pays for this service accordingly.

Equipment Registration for DHCP Login

The residential portal provides support for equipment registration for DHCP connections. Registration lets a subscriber automatically obtain an authenticated IP address when logging in to the portal. The equipment can be a device other than a PC, such as an IP phone or a set-top box. If a subscriber uses equipment registration and enables persistent login, the subscriber's authentication remains valid until the subscriber logs out of the system.

Overview of the Sample Residential Portal

The sample residential portal is a demonstration portal that shows how to use some of the features available in the Common Object Request Broker Architecture (CORBA) remote application programming interface (API) to create a Web application. You can customize the sample residential portal for your environment, or create a new Web application using the SAE CORBA remote API.

Web Application Architecture

The sample residential portal uses the Jakarta Struts Web application framework. Although Struts provides an easy and extensible framework for building Web applications, it is not required for building portals that use the CORBA remote API.

Jakarta Struts supports the model-view-control design paradigm, which separates an application into three sets of components:

- Model—Contains the data and business logic.
- View—Contains the presentation to the subscriber.
- Control—Contains the interface procedures.

The strict separation of the three layers promotes reuse of the components and allows easy adaptation of the application to different requirements.

Model Components

The model provides an abstraction layer of the CORBA remote API and contains the business logic, which determines how the sample portal behaves. The sample residential portal includes several implementations of the model (which we call behaviors) to demonstrate some typical usage scenarios. See *Behaviors for the Sample Residential Portal* on page 188 for more information.

View Components

The view components of the Web application provide the HTML code sent to the subscriber's browser. The view is implemented by means of JavaServer Pages (JSP) and several tag libraries provided as part of Jakarta Struts.

The tiles tag library provides a template mechanism to build Web pages based on reusable partial pages. The general layout of all pages of the portal application is defined in a single JSP page.

Control Components

The control components provide the interactions between the subscriber and the mode through the Action and ActionForm classes.

Action classes implement the functionality for a single operation, such as “list the subscriptions of a particular service category,” or “activate a service.”

ActionForm classes encapsulate data provided by the subscriber on an input form. The Struts framework initializes these classes with data entered in an HTML form and passes them to the appropriate action. The ActionForms are then passed to a view component that uses the data to initialize the content of fields in an input form.

Behaviors for the Sample Residential Portal

The sample residential portal provides two user behaviors (scenarios) that integrate with the Merit RADIUS server:

- Equipment registration
 - Used by subscribers who use Dynamic Host Configuration Protocol (DHCP) connections to register their devices to receive an authenticated IP address.
- Internet Service Provider (ISP) service
 - Used by subscribers who use Point-to-Point Protocol (PPP), static IP, or unauthenticated DHCP connections to log in to the portal and receive an unauthenticated IP address.
- Cable
 - Used by subscribers who have assigned IP addresses in a PacketCable Multimedia (PCMM) environment.