

Chapter 5

Scheduling Services on a Solaris Platform

This chapter describes how to manage service schedules for your SRC configuration with the SRC configuration applications that run only on Solaris platforms. You can also use the SRC CLI that runs on Solaris platforms and the C-series platform to configure service schedules. See *Chapter 4, Scheduling Services with the SRC CLI*. For information about service schedules, see *Chapter 3, Managing Service Schedules*.

Topics in this chapter include:

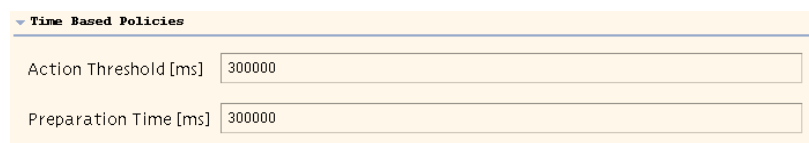
- Setting the Action Threshold and Preparation Time on a Solaris Platform on page 114
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Setting the Action Threshold and Preparation Time on a Solaris Platform

You can set the action threshold and preparation time for all schedules; you cannot set these values for individual schedules.

To use SDX Configuration Editor to set the action threshold and preparation time for an SAE:

1. In the navigation pane, select a configuration file for the SAE.
2. Select the **Miscellaneous** tab, and expand the **Time Based Policies** section.



Time Based Policies	
Action Threshold [ms]	300000
Preparation Time [ms]	300000

3. In the Time Based Policies section, edit or accept the default values for the fields.

See *Time Based Policies Fields* on page 114.

4. Select **File > Save**.
5. Right-click the configuration file, and select **SDX System Configuration > Export to LDAP Directory**.

Time Based Policies Fields

In SDX Configuration Editor, you can modify the following fields in the Time Based Policies section of the Miscellaneous tab in a SAE configuration file.

Action Threshold [ms]

- Maximum delay that the service allows for a time-related change to occur.
- Value—Number of milliseconds in the range 0–9223372036854775807
- Guidelines—The recommended range is 60000–300000 milliseconds. The minimum value supported is 60000 milliseconds.
- Default—300000
- Property name—DelayedActions.ActionThreshold

Preparation Time [ms]

- Preparation time permitted for a state transition.
- Value—Number of milliseconds in the range 0–9223372036854775807
- Guidelines—When you set a value for the preparation time, take into consideration system load and performance. Factors such as the number of subscribers, the number of active services, the number of schedule services, the speed of the processor on the system, as well as other conditions might affect the amount of time to process all the scheduled actions at a specified scheduled time.
- Default—300000 (5 minutes)
- Property name—DelayedActions.PreparationTime

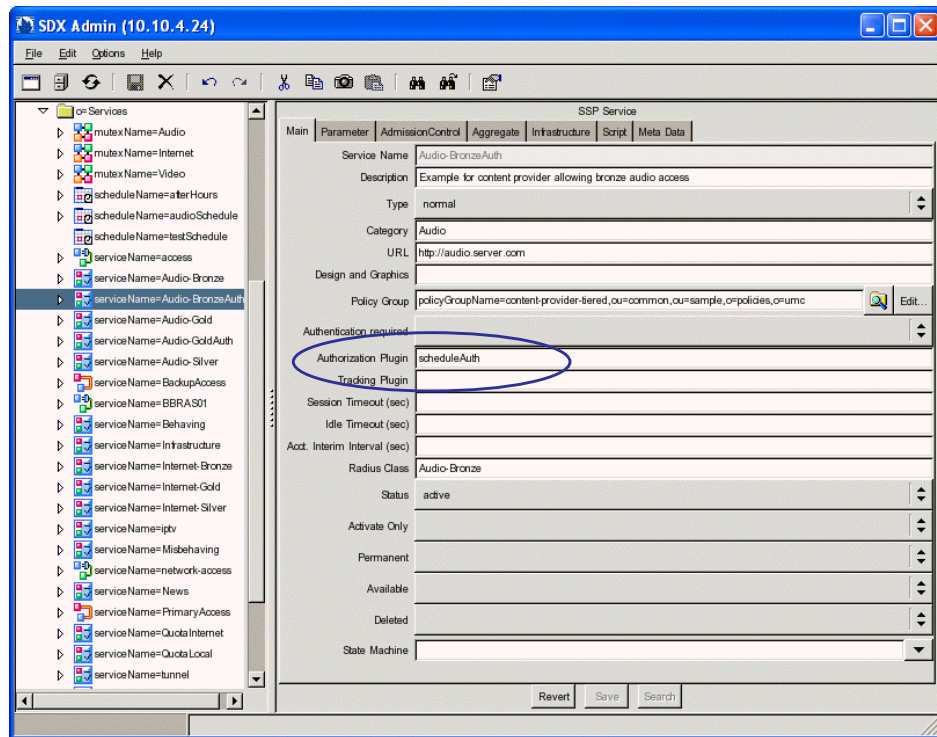
Authorizing Scheduled Services on a Solaris Platform

You can configure an authorization plug-in to authorize a scheduled service by specifying the name of the plug-in that authorizes the schedule in the service definition. The default schedule authorization plug-in is named `scheduleAuth`.

To use SDX Admin to define an authorization plug-in for a service:

1. In the navigation pane, select the service.
2. In the Main tab of the content pane, in the Authorization Plugin field enter the name of the authorization plug-in that will authorize the schedule for this service.
3. Click **Save**.

In the following configuration example, an Internet-Bronze service uses the `scheduleAuth` authorization plug-in.



Adding a Service Schedule on a Solaris Platform

Table 9 lists the objects for which you can create a service schedule in SDX Admin.

Table 9: Objects for Service Schedules

Type of Directory Object	Distinguished Name
Scopes	<i>o = umc, o = Scopes, l = <Scope></i>
Services	<i>o = umc, o = Services</i>
Retailers	<i>o = umc, o = Users, l = <Retailer></i>
Enterprises	<i>o = umc, o = Users, l = <Retailer>, l = <Subscriber Folder></i>
Users in an Enterprise	<i>o = umc, o = Users, l = <Retailer>, l = <Subscriber Folder>, l = <User></i>

To use SDX Admin to add a service schedule:

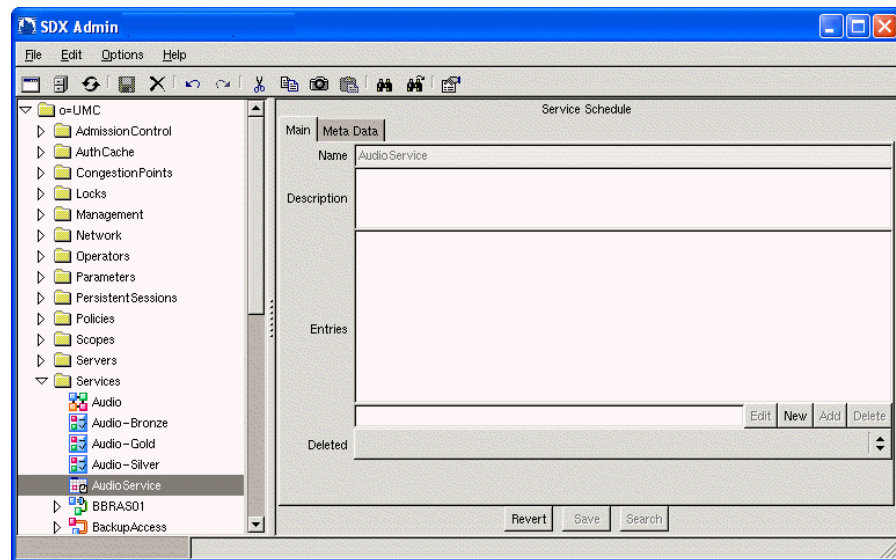
1. In the navigation pane, right-click one of the objects listed in Table 9, and select **New > Service Schedule**.

The New Service Schedule dialog box appears.

2. Enter a unique name for the service schedule, and click **OK**.

An object for the new service schedule appears in the navigation pane, and basic details for the service schedule appear in the Main tab of the Service Schedule pane.

In the Main tab of the Service Schedule pane, you can edit a service schedule by adding, editing, and modifying entries to the service schedule.



3. Edit or accept default values for the service schedule fields.

See *Service Schedule Fields* on page 117.

4. Click **Save**.

Service Schedule Fields

In SDX Admin, you can modify the following fields in the content pane for a service schedule.

Description

- Describes the service schedule.
- Value—Text
- Default—No value

Entries

- Lists each scheduled entry.

An entry consists of the schedule time, any excluded times, and a list of actions.

To add an entry, see *Creating an Entry for a Schedule on a Solaris Platform* on page 118.

Deleted

- Specifies the availability of this entry to other SRC components connected to the directory.
- Value
 - Blank—Other SRC components can access this entry in the directory.
 - True—Other SRC components cannot use this entry in the directory, although the object still exists.
 - False—Other SRC components can access this entry in the directory.
- Default—Blank

Creating an Entry for a Schedule on a Solaris Platform

A number of schedule entries, or rules, comprise each service schedule.

To use SDX Admin to create an entry:

1. In the Service Schedule pane, click **New**.

The Schedule Event dialog box appears.

2. In the Schedule tab of the Schedule Event dialog box:
 - Edit the From date and time information.
 - (Optional for services that have an authorization plug-in configured) Edit the To date and time information.
 - (Optional) Specify time exclusions.

See *Setting the Time Schedule* on page 119.

3. In the Action tab of the Schedule Event dialog box, fill in the fields.

See *Setting the Action* on page 124.

4. To add another action to the entry, in the Action tab click **Add Action**.
5. To remove an action from the entry, in the Action tab, click **Remove Action**.
6. After you complete entries in the Schedule Event dialog box, click **OK** to return to the Service Schedule pane.
7. To add the entry to the list of entries in the service schedule, click **Add**.
8. After you enter all schedules and actions, click **OK** in the Schedule Event dialog box.

The completed schedule appears in the Service Schedule pane.

Setting the Time Schedule

When you set up a time schedule, you specify:

- For event schedules—Time at which an action is to occur
- For schedules for services that have authorization configured—Beginning and end of the interval
- Times to be excluded from that schedule

Sample Time Definitions

Table 10 provides descriptions of common schedule configurations.

Table 10: Sample Schedules

Type of Event to Schedule	Sample Configuration Description
One-time event	Specify all time parameters except day of the week. Specify the time zone if it is different from the time zone for the SAE.
Recurring time-of-day event, such as a service that is activated every morning at 8:00 AM	Specify only the hour and minute parameters. All other parameters should have an *. Specify the time zone if it is different from the time zone for the SAE.
Working-hours service	Define two schedules: one to activate the service and one to deactivate the service. In each schedule, specify the hour and minute, and specify the day of week as mon-fri. All other parameters should have an *. Specify the time zone if it is different from the time zone for the SAE. NOTE: Subscribers must be logged in at the time that the service is activated.
No service restrictions on holidays	Define schedules for working-hour services as described above, and add exceptions for specified holidays, such as the first of January.

Configuring the Time Schedule

To configure the time schedule:

1. Enter information in the fields in the Schedule tab in the Schedule Event dialog box.

Use the guidelines in *Guidelines for Entering Time Values* on page 121 and the field descriptions in *Time Values* on page 122.

2. To specify an exclusion from the schedule, in the Schedule tab of the Schedule Event dialog box, click **New** under Exclusion Entries.

The Schedule Exclusion dialog box appears.

3. Enter information in the fields in the Schedule Exclusion dialog box; then click **OK**.

Use the guidelines in *Guidelines for Entering Time Values* on page 121 and the field descriptions in *Time Values* on page 122.

Guidelines for Entering Time Values

When you enter information in the Schedule Event and Schedule Exclusion dialog boxes, you can use the values in the following list. See *Time Values* on page 122 for a description of the fields.



NOTE: Dates in the To section of the dialog box apply only to services that have an authorization plug-in configured. If an authorization plug-in is not configured for the service associated with the schedule, the entries in the To section are ignored.

- *—Asterisks are interpreted as follows:
 - Minutes and hours:
 - 0 if used in the From or To fields of a scheduled event
 - First or last if used in the Time Spec field of a schedule exclusion
 - Time zones—Local SAE time zone
 - All other fields—First through last
 - For fields in the To section of the dialog box, * for the end time is equivalent to “deny service activation after this start date.”
 - For dates in the From section of the dialog box, * is equivalent to “deny service activation before this end date.”
- Range of numbers or letters separated by a hyphen. The range is inclusive; for example, 1-5 for the hour specifies hours 1, 2, 3, 4, and 5. A range of mon-wed specifies Monday, Tuesday, and Wednesday.
- List of numbers, letters, or ranges separated by commas. For example, 1,2,5,9 or 0-4,8-12 or mon-wed,fri-sat.
- Skip values in ranges:
 - To skip a number’s value through the range, follow a range with /<number>. For example, 0-23/2 used in the Hour field specifies that the event occurs every other hour.
 - Skip values with *. If you want to specify every two hours, use */2.



NOTE: If you set both a day of the month and a day of the week, the day of the month is used.

Time Values

In SDX Admin, you can modify the following fields in the Schedule Event and Schedule Exclusion dialog boxes. For information about general guidelines that apply to these fields, see *Guidelines for Entering Time Values* on page 121.

Exclusion Type

- Interval to exclude from the schedule specified in the Schedule Event dialog box.
- Value
 - one-time—Exclusion for a single time; for example, for a holiday
 - period—Exclusion for a time range; for example, a number of days
- Guidelines—This field applies only to the Schedule Exclusion dialog box. Effective periods do not apply to schedules for excluded times.
- Default—one-time

Hour

- Hour of the day in the indicated month in which to schedule the event or exclusion.
- Value—0–23
- Default—*

Minute

- Minutes past the indicated hour in which to schedule the event or exclusion.
- Value—0–59
- Default—*

Day of Month

- Day of the month in which to schedule the event or exclusion.
- Value—1–31
- Default—*

Day of Week

- Day of the week in which to schedule the event or exclusion.
- Value
 - 0–6, with 0 representing Sunday and each subsequent number representing the next day of the week.
 - First three letters of the name of the day
- Default—*
- Examples—For Saturday and Sunday, specify one of the following:
 - sat, sun
 - 6, 0

Month

- Month of the year in which to schedule the event or exclusion.
- Value
 - 1–12
 - First three letters of the name of the month
- Default—*
- Examples—For January, specify one of the following:
 - jan
 - 1

Year

- Year in which to schedule the event or exclusion.
- Value—Four integers that indicate the year
- Default—*

Effective Period

- Interval after the associated From or To time during which the scheduled action can be initiated by a subscriber who is logging in to a subscriber session.
- Value—Number of minutes in the range 0–153722867280912
- Guidelines—The effective period applies only to schedules configured for an object under *o = Users*.
The effective period does not apply to schedules for excluded times; the entry is not present in the Schedule Exclusion dialog box.
- Default—*

Time Zone

- Name of the time zone to use in the schedule.
- Value
 - * —Local time zone of the SAE.
 - An offset to GMT in the format:
GMT (+ | -) (hh:mm | hh mm | hh)

hh— < hour >

mm— < minute >
- Default—Time zone for the SAE
- Examples
 - Canada/Eastern or America/New York
 - GMT +5—Sets the time zone to 5 hours ahead of GMT

Setting the Action

In SDX Admin, you can modify the following fields in the Action tab of the Schedule Event dialog box.

Action

- Type of action.
- Value
 - activate—Service is activated at the time specified in the entry schedule.
 - deactivate—Service is deactivated at the time specified in the entry schedule.
 - deny—New activation requests for this service during the specified entry period are denied; current sessions are not affected.
 - deny&deactivate—New activation requests for this service during the specified period are denied; in addition, current sessions are deactivated when the specified time occurs.
- Guidelines—The deny and the deny&deactivate values apply only to services that have an authorization plug-in configured.
- Default—No value

Service

- Name of the service.
- Value—Text

You can type the name of the service or click the folder icon to display the Select Service dialog box. Select the service in the dialog box, and click OK.
- Default—No value

Substitutions

- Substitutions to be used when the service is activated. Substitutions apply only to service activations.

For more information, see the activateService method of the SAE external interface in the SAE CORBA remote API documentation in the SRC software distribution in the folder *SDK/doc/idl* or on the Juniper Networks Web site at <http://www.juniper.net/techpubs/software/management/sdx/api-index.html>

For more information about substitutions and schedules, see *Changing or Removing the Name of a Service Associated with a Schedule* on page 125.
- Value—An entry in valid substitution format.

For information about the syntax for substitutions see *Chapter 15, Defining and Acquiring Values for Parameters*.
- Default—No value

Attributes

- Defines attributes that are set before the service is activated.
Subscription attributes apply only to service activations.
For more information about subscription attributes, see the *Subscription.html* file in the SAE core portal API documentation in the *SDK/doc/sae/net/juniper/smgmt/sae/portal* directory in the SRC software distribution or on the Juniper Networks Web site at <http://www.juniper.net/techpubs/software/management/sdx/api-index.html>
- Value—Use the Up or Down arrow below the Attributes box to select an attribute, and then click **Add** to add the attribute to the action.
 - sessionName—Name of the service session.
 - sessionTag—Tag that can be used for accounting purposes.
 - sessionTimeout—Session timeout to be used when the service is activated. The service session is deactivated when this timeout expires.
 - downstreamBandwidth—Attribute used by SRC Admission Control Plug-In (SRC-ACP) to specify the rate of traffic between the network and the subscriber.
 - upstreamBandwidth—Attribute used by SRC-ACP to specify the rate of traffic between the subscriber and the network.

Changing or Removing the Name of a Service Associated with a Schedule

If you change or remove the name of a service that is referenced by a schedule, the SRC software treats this case like one in which no subscribers have a subscription to this service. In both cases, the action for the service is not taken. The software does not regard either case as an error in the schedule; a failure is not reported.

Deleting a Schedule Entry

To delete a schedule entry:

- In the Service Schedule pane, right-click an item in the Entries box, and click **Delete**.

Deleting a Schedule Exclusion Entry

To delete an exclusion entry:

- In the Schedule Event dialog box, right-click an exclusion under Exclusion Entries, and select **Delete**.

Editing a Schedule Entry

To edit a schedule entry:

1. In the Service Schedule pane, click an item in the Entries box.

The entry appears in the box below the Entries field.

2. Click **Edit** to display the Schedule Event dialog box for the entry.
3. Fill in the Schedule Event dialog box. See *Creating an Entry for a Schedule on a Solaris Platform* on page 118.
4. Click **Modify** to replace the selected entry with the entry that you have just edited.

Editing a Schedule Exclusion Entry

To edit an exclusion entry:

1. In the Schedule Event dialog box, highlight an exclusion under Exclusion Entries, and click **Edit**.
2. Make changes in the Exclusion Schedule dialog box, and click **OK**.

Example: Configuring Different Service Tiers for Different Days

This example shows how to configure a schedule for an audio service to provide:

- Gold level of service on weekends
- Bronze level of service on weekdays

The sample schedule:

- Uses the Audio-Gold and Audio-Bronze services in the sample data.
- Activates the Audio-Gold service and denies the Audio-Bronze service on Saturday.
- Activates the Audio-Bronze service and denies and deactivates the Audio-Gold service on Monday.
- Does not have a preparation time configured for the SAE.

For demonstration purposes, the sample schedule is configured under *o = Services* to make the service schedule available to all subscribers to the two audio services. It is assumed that subscribers are continuously logged in to the system to access the audio services.

To configure a schedule to make the Audio-Gold service available on Saturday and Sunday and the Audio-Bronze service available for the rest of the week:

1. In the SDX Admin navigation pane, right-click *o = Services* and select **New > Service Schedule**.
2. In the New Service Schedule dialog box, enter a name for the schedule; for example, audioSchedule.

The name of the service appears in the Service Schedule pane.

3. In the Description field of the Service Schedule pane, enter a description of the schedule.
4. In the Service Schedule pane, click **New**.

The Schedule Event dialog box appears.

5. In the Schedule tab, specify the day of the week as 6 for Saturday.

6. Click the **Action-1** tab, and specify **activate** for the Audio-Gold service.

The screenshot shows the 'Schedule Event' dialog box with the 'Action-1' tab selected. The 'Action' dropdown menu is set to 'activate'. The 'Service' dropdown menu is set to 'Audio-Gold'. Below the service dropdown, there is a table with columns: Fixed, Name, Role, Value, and Description. The 'Substitutions' section is empty. The 'Attributes' section is also empty. At the bottom right, there are buttons for 'Add Action', 'OK', and 'Cancel'.

7. Click **Add Action**, and then click the **Action-2** tab. Specify **deny and deactivate** for the Audio-Bronze service.

The screenshot shows the 'Schedule Event' dialog box with the 'Action-2' tab selected. The 'Action' dropdown menu is set to 'deactivate'. The 'Service' dropdown menu is set to 'Audio-Bronze'. Below the service dropdown, there is a table with columns: Fixed, Name, Role, Value, and Description. The 'Substitutions' section is empty. The 'Attributes' section is also empty. At the bottom right, there are buttons for 'Add Action', 'OK', and 'Cancel'.

8. Click **OK**, and then in the Service Schedule pane click **Add** to add the schedule entry.
9. In the Service Schedule pane, click **New** to add another schedule entry.

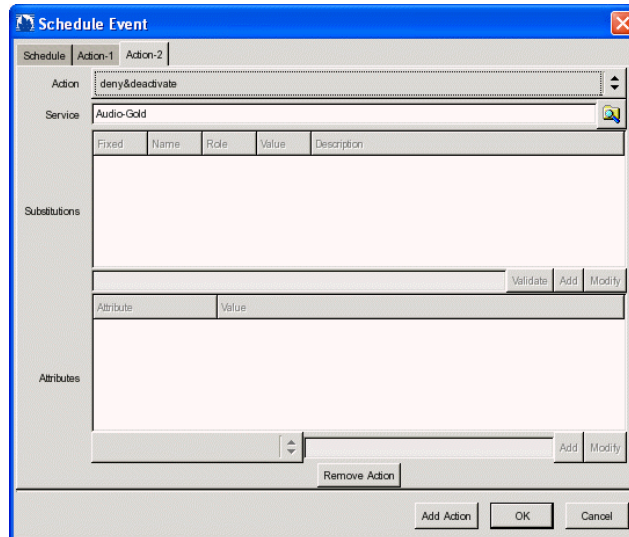
10. In the Schedule tab of the Schedule Event dialog box, specify the day of the week as 1 for Monday.

The screenshot shows the 'Schedule Event' dialog box with the 'Schedule' tab selected. The 'Action-1' sub-tab is active. The 'From' section has fields for Hour, Minute, Month, Year, Day of Month, Time Zone, Day of Week (set to 1), and Effective Period. The 'To' section has similar fields. Below these is an 'Exclusion Entries' list with buttons 'Edit', 'New', 'Add', and 'Modify'. At the bottom are 'Add Action', 'OK', and 'Cancel' buttons.

11. Click the **Action-1** tab, and specify **activate** for the Audio-Bronze service.

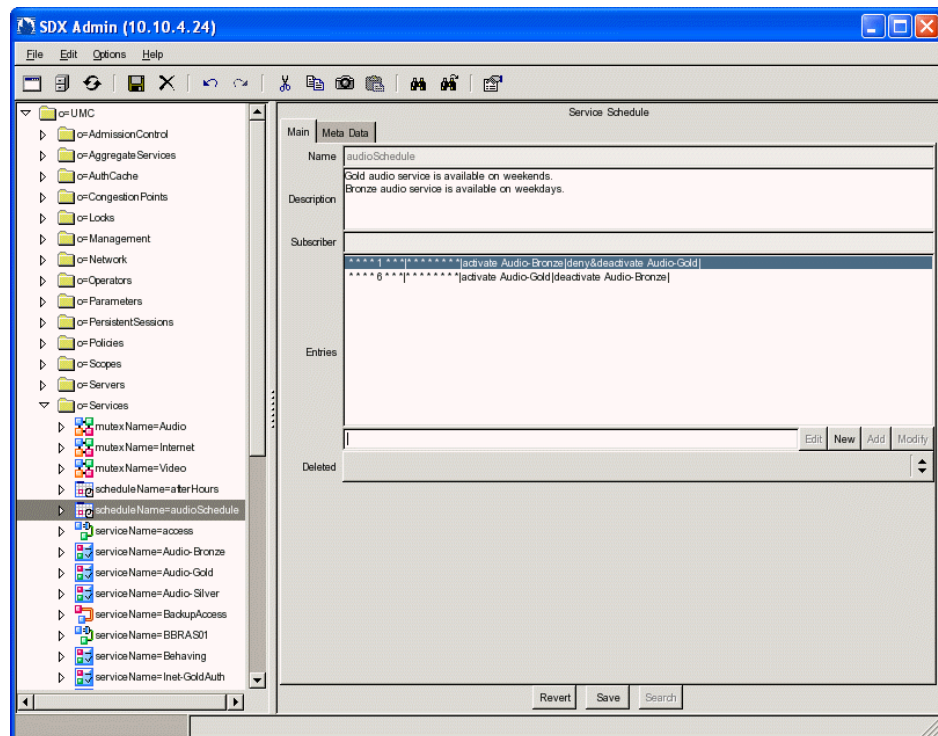
The screenshot shows the 'Schedule Event' dialog box with the 'Action-1' sub-tab active. The 'Action' dropdown is set to 'activate'. The 'Service' dropdown is set to 'Audio-Bronze'. Below these is a table with columns 'Fixed', 'Name', 'Role', 'Value', and 'Description'. There are 'Validate', 'Add', and 'Modify' buttons. Below the table is an 'Attributes' section with 'Attribute' and 'Value' fields, and 'Add' and 'Modify' buttons. At the bottom are 'Remove Action', 'Add Action', 'OK', and 'Cancel' buttons.

12. Click **Add Action**; and then click the **Action-2** tab. Specify **deny and deactivate** for the Audio-Gold service.



13. Click **OK**, and then in the Service Schedule pane click **Add** to add the schedule entry.

The Service Schedule pane displays the new schedule:



14. Click **Save** to save the schedule.

Example: Configuring a Service to Be Active During Nonwork Hours

This example shows how to configure a schedule for an Internet gold service to be active:

- Monday–Friday outside the 8:30 AM to 4:30 PM work day
- January 1 of the following year—All day

The example uses the Internet-GoldAuth service. This service is based on the Internet-Gold service in the sample data with the addition of the scheduleAuth plug-in defined as the authorization plug-in for the service.

The sample schedule:

- Deactivates the Internet-GoldAuth service from 8:30 AM through 4:29 PM.
- Activates the service at 4:30 PM.
- Does not have a preparation time configured for the SAE.

This configuration avoids schedule overlap.

For demonstration purposes, the sample schedule is configured under *o = Services* to make the service schedule available to all subscribers to the Internet-GoldAuth service.

To configure a schedule to make a service available outside work hours and on January 1:

1. In the SDX Admin navigation pane, right-click *o = Services* and select **New > Service Schedule**.
2. In the New Service Schedule dialog box, enter a name for the schedule; for example, afterHours.

The name of the schedule appears in the Service Schedule pane.

3. In the Description field of the Service Schedule pane, enter a description for the schedule.
4. In the Service Schedule pane, click **New**.

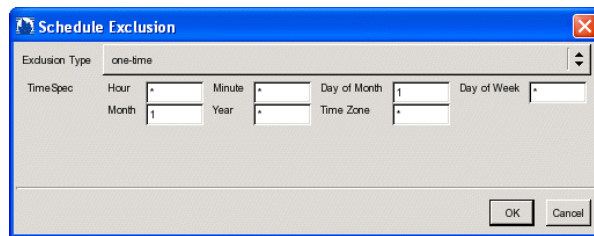
The Schedule Event dialog box appears.

5. In the Schedule tab, specify that the schedule start at 8 AM on Monday through Friday and end at 4:29 PM (that is, 16:29) on Monday through Friday.

6. Under Exclusion Entries, click **New**.

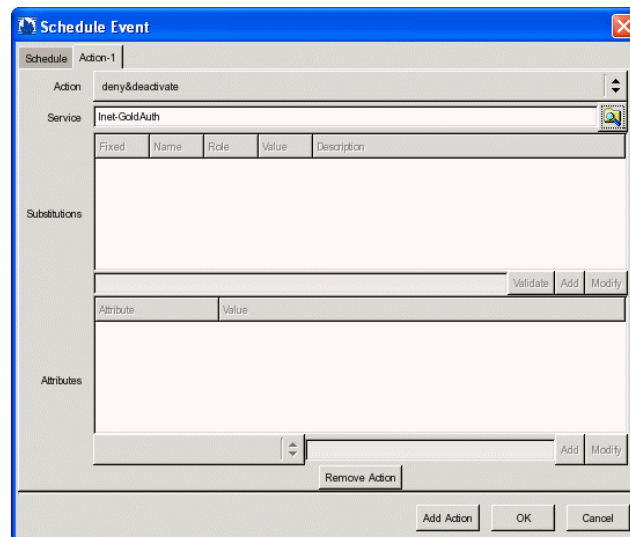
The Schedule Exclusion dialog box appears.

7. In the Schedule Exclusion dialog box, specify a one-time exclusion for January 1, and click **OK**.



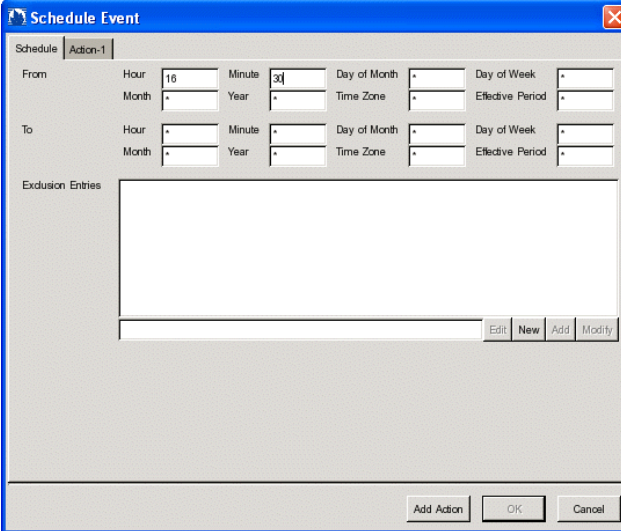
By excluding January 1 from the schedule, the Internet-GoldAuth service is active all day.

8. Click the **Action-1** tab, and specify **deny and deactivate** for the Internet-GoldAuth service.



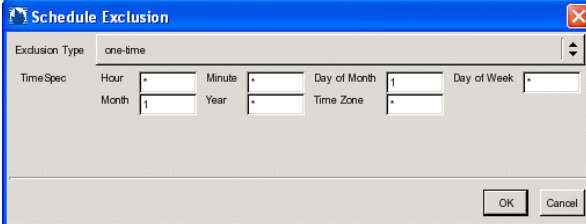
9. Click **OK**, and then in the Service Schedule pane click **Add** to add the schedule entry.
10. In the Service Schedule pane, click **New** to add another schedule entry.

11. In the Schedule tab of the Schedule Event dialog box, specify 4:30 PM (that is, 16:30).



The screenshot shows the 'Schedule Event' dialog box with the 'Schedule' tab selected. The 'From' section has 'Hour' set to 16 and 'Minute' set to 30. The 'To' section has all fields set to asterisks (*). The 'Exclusion Entries' list is empty. At the bottom right of the list are buttons for 'Edit', 'New', 'Add', and 'Modify'. At the bottom of the dialog are 'Add Action', 'OK', and 'Cancel' buttons.

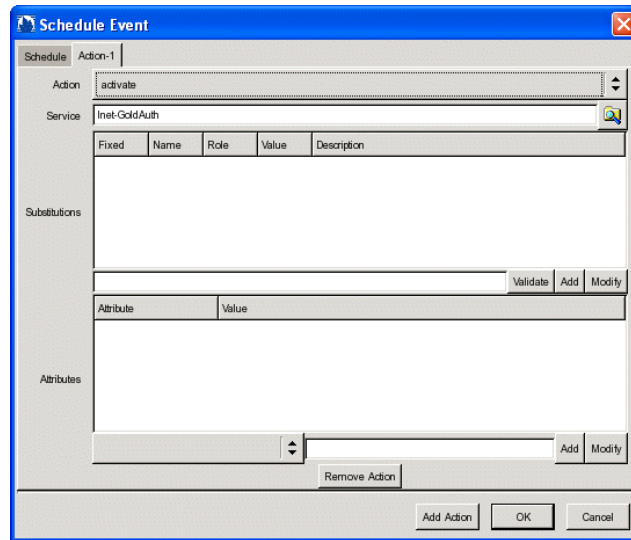
12. Under Exclusion Entries, click **New**.
13. In the Schedule Exclusions dialog box, specify a one-time exclusion for January 1, and click **OK**.



The screenshot shows the 'Schedule Exclusion' dialog box. The 'Exclusion Type' is set to 'one-time'. The 'TimeSpec' section has 'Day of Month' set to 1 and 'Month' set to 1. All other fields (Hour, Minute, Year, Time Zone, Day of Week) are set to asterisks (*). At the bottom right are 'OK' and 'Cancel' buttons.

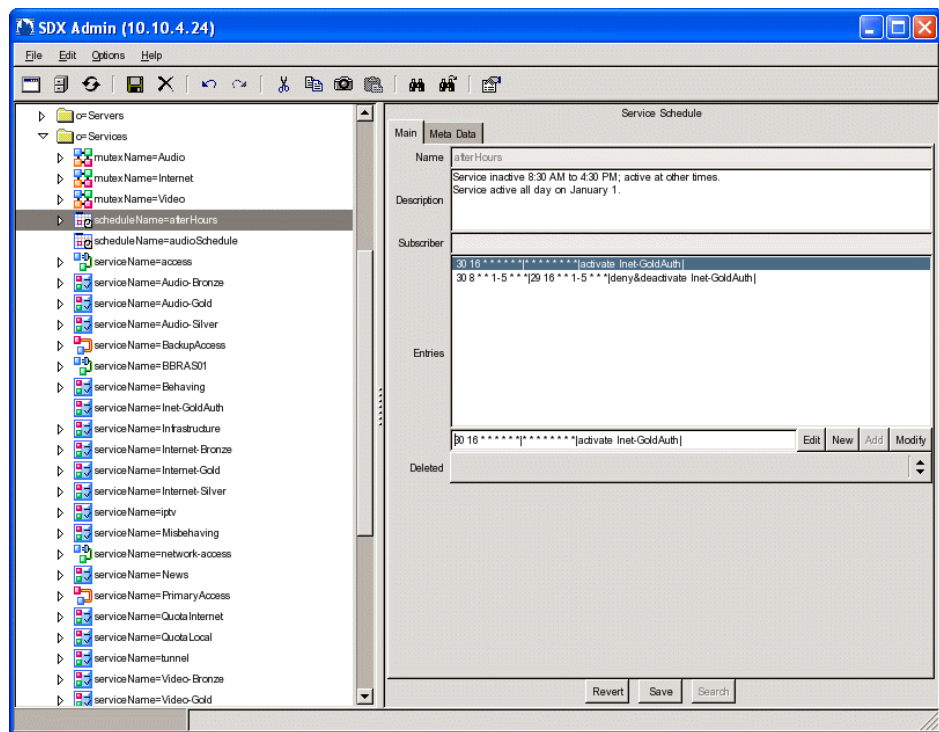
By excluding January 1 from the schedule, the Internet-GoldAuth service is active all day.

14. Click the **Action-1** tab, and specify **activate** for the Internet-GoldAuth service.



15. Click **OK**, and then in the Service Schedule pane click **Add** to add the schedule entry.

The Service Schedule displays the new schedule:



16. Click **Save** to save the schedule.

Example: Configuring a Service to Be Available for a Specified Interval

You can use an effective period for a schedule to make a service available to subscribers who log in during a specified time period. The following example shows how to configure a schedule to make a service available from 8 AM until 4 PM.

To make a specified service available from 8 AM until 4 PM:

1. Create a schedule by right-clicking *o = Services* in SDX Admin; then select **Service Schedule**.

The Schedule Event dialog box appears.

2. In the Schedule tab in the Schedule Event dialog box:
 - Specify the time when the service is first available—8.
 - Specify how long the service is to be available—480.

The schedule is to be available from 8 AM to 4 PM; that is, 8 hours, which equals 480 minutes.

3. In the Action-1 tab:
 - a. In the Action field, select **activate**.
 - b. In the Service field, select a service.
4. Click **OK** to add the schedule; then in the Service Schedule pane click **Add** to add the service.
5. Click **Save** to save the schedule.

