

IBM Cloud Identity Service

*Reporting*

**IBM**



IBM Cloud Identity Service

*Reporting*

**IBM**

**Federated Single-Sign on management**

© Copyright IBM Corporation 2015.

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

---

# Contents

<b>Reporting . . . . .</b>	<b>1</b>	Creating report parameters . . . . .	11
Reports overview . . . . .	1	Query parameters . . . . .	12
Viewing reports . . . . .	2	List parameters . . . . .	13
Scheduling reports . . . . .	2	Date parameters . . . . .	14
Report schedule settings . . . . .	3	Text parameters . . . . .	14
Exporting reports . . . . .	4	Audit tables . . . . .	15
Creating reports . . . . .	4	Audit events . . . . .	17
Report settings . . . . .	5	Report templates . . . . .	36
Adding reports to a report group . . . . .	6	<b>Notices . . . . .</b>	<b>39</b>
Adding parameters to a report . . . . .	6	Trademarks . . . . .	40
Creating chart definitions . . . . .	7		
Chart definitions . . . . .	7		
Drill-down charts . . . . .	10		



---

# Reporting



Cloud Identity Service has a set of predefined reports, including graphical, text, query, and drill-down reports. You can run any predefined report or build your own report for on-demand usage.

---

## Reports overview

Cloud Identity Service provides ad hoc reporting capabilities on all audit event data within the Cloud Identity Service audit repository. You can use a number of predefined reports, and you can define your own reports.

Cloud Identity Service provides the following reporting features:

- Export formats that include CSV, Excel, and PDF
- Administration of reports, charts, and report parameters
- Scheduling of reports, including daily, weekly, and monthly with the option to send to multiple recipients.
- Report parameter support for date, text, list, and query parameters.
- Report auditing of start time, duration, status, and user of every report generated.
- Drill down reports.

### Cloud Identity Service reports

Cloud Identity Service has a number of predefined reports. There are two types of reports, query reports and chart reports. Query reports are displayed as tables, and support sorting by column header, and paging. Chart reports are based on chart definitions. A chart definition must be created before it can be used in a report. Charts support drill-downs to more detailed reports. Reports are viewed from the Reports page.



Name	Description
<b>Failed Logins (24 Hours, Chart)</b>	Failed Logins (24 Hours)
<b>Failed Logins (24 Hours, Detail)</b>	Failed Logins (24 Hours)
<b>New Logins Chart (24 Hours)</b>	New Logins Chart (24 Hours)
<b>Services (All)</b>	All defined services.
<b>User Audit History</b>	Audit history for a user.
<b>User Count</b>	User Count
<b>User Groups (All)</b>	All defined user groups.
<b>Users (All)</b>	All defined user and identity accounts.
<b>Users (Invalid Accounts)</b>	All defined user accounts with an invalid account status.

## Reports administration

The Report Administration page is used to manage reports, including creating reports, chart definitions, and report parameters.

Report Administration	General Administration
 <b>Charts</b> Add or Modify Charts.	 <b>Search</b> Search for reports, report groups and users using tags.
 <b>DataSources</b> Add or Modify DataSources.	 <b>Settings</b> General Settings including mail host and report directory.
 <b>Reports</b> Add or Modify Reports, Upload Report Templates, Assign Reports to Groups.	 <b>View Logs</b> View report activity logs by date, report, user, or status.
 <b>Report Parameters</b> Add or Modify Report Parameters.	
 <b>Report Groups</b> Add or Modify Report Groups.	

## Report data source

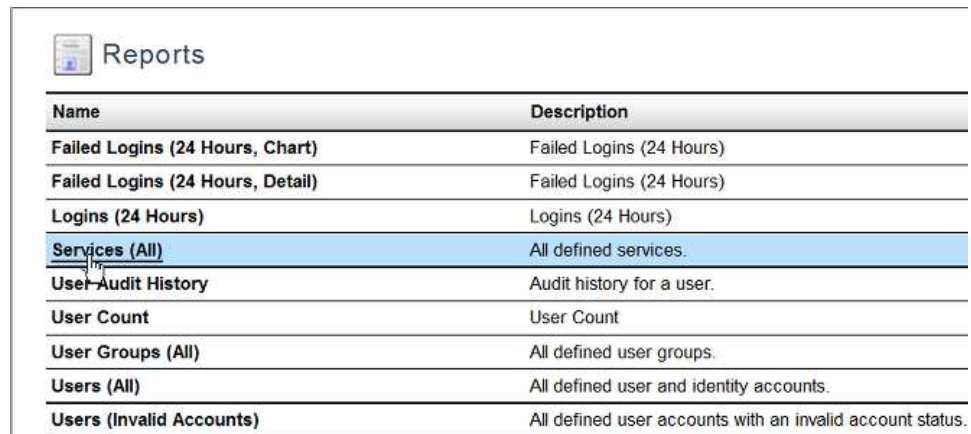
The data source that is used for reporting is defined during the initial configuration of Cloud Identity Service for your organization. A data source specifies the connection parameters for the database to be used for report queries. You must not change the data source.

## Viewing reports

You can view all Cloud Identity Service reports including predefined reports and custom reports.

### Procedure

1. In the navigation pane, click **Intelligence > Reporting**.



Name	Description
Failed Logins (24 Hours, Chart)	Failed Logins (24 Hours)
Failed Logins (24 Hours, Detail)	Failed Logins (24 Hours)
Logins (24 Hours)	Logins (24 Hours)
<b>Services (All)</b>	All defined services.
User Audit History	Audit history for a user.
User Count	User Count
User Groups (All)	All defined user groups.
Users (All)	All defined user and identity accounts.
Users (Invalid Accounts)	All defined user accounts with an invalid account status.

2. Click the report that you want to view.

## Scheduling reports

You can schedule a report to be sent by email to a list of recipients.



## Procedure

1. In the navigation pane, click **Intelligence > Reporting**.
2. Open the report that you want to schedule.
3. Select one of the following report types:
  - For charts, click **Schedule ChartReport**.

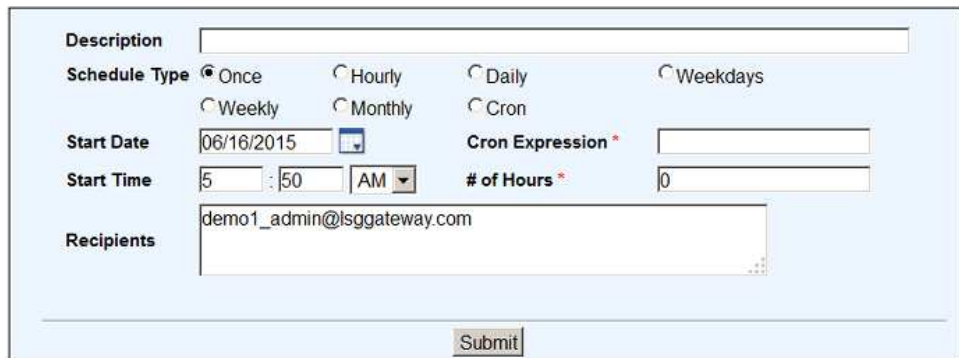
 [Schedule ChartReport](#)

The report is sent to the email recipients as a JPG image.

- For table-based reports, click the format option that you want to send to the email recipients, for example **CSV**, **Excel**, or **PDF**.

Schedule Report: **CSV** | **Excel** | **PDF**

4. Enter the schedule settings that you want.



5. Click **Submit**.

## Results

The report is sent at the scheduled time. Scheduled reports are listed in the **Scheduled Reports** page, where you can delete and update schedules.

### Scheduled Reports

Report	Description	Start Date	Schedule Type	Next Run	
Logins (24 Hours)	Logins 24 hours	06/16/2015 5:23 AM	Once	06/16/2015 5:23 AM	<a href="#">Update</a> <a href="#">Delete</a>

If the report is scheduled to run once only, after the report is sent it no longer appears in the Scheduled Reports page.

## Report schedule settings

Use report schedule settings to create a schedule for sending reports, including frequency and recipients.

*Table 1. Report schedule settings*

Setting	Description
<b>Description</b>	The description is entered as the subject of the email.
<b>Schedule type</b>	Determines the frequency with which the report is sent. If the schedule type is set to <b>Once</b> , after the report is sent it no longer appears in the <b>Scheduled Reports</b> page.
<b>Start Date</b>	Date on which to start sending the report.

Table 1. Report schedule settings (continued)

Setting	Description
Start Time	Time at which to start sending the report. The time is the local time of the Cloud Identity Service service host environment.
Recipients	Comma-separated list of email addresses. If no address is entered, the default address of the current user is entered.
Condition	Available only in Cloud Identity Service Reports Professional. A required condition for the execution of the schedule. The condition consists of an alert, an operator, and a threshold value that triggers the schedule.

---

## Exporting reports

You can export a report to a number of different formats, including CSV, PDF, and Excel. You can export query reports only, you cannot export chart reports.

### Procedure

1. In the navigation pane, click **Intelligence > Reporting**.
2. Open the report that you want to export after clicking **View > Repository**. If the report has a number of levels, you can drill down to the level you want to export.
3. Click the format option that you want to export the report to: **CSV**, **Excel**, or **PDF**.

Export options: **CSV** | **Excel** | **PDF**

4. Open or save the file to a location of your choice.

---

## Creating reports

You can create your own reports to add to your predefined reports. You can create query reports and chart reports.

### Before you begin

To create your own reports, you must have good knowledge of using SQL to create database queries.

### About this task

Query reports are presented in table format, and charts are presented in graphical format as pie, bar, date, or XY charts. When you create a query report, you must enter a query for the report. When you create a chart report, you base the report on an existing chart definition. The chart definition includes a query.

To make a report available in the Reports page, the report must be added to a report group. You can also add parameters to a report to limit the data set of the report.

### Procedure

1. In the navigation pane, click **Intelligence > Reporting**.
2. Click **Administration**.

- Click **Reports**, and click **Add Report**.

- Enter the report settings for the report,
  - For a query report, as a minimum you must enter the name, description, data source, and query for the report.
  - For a chart report, as minimum you must enter the name, description, and chart. You do not enter a query. The query is taken from the chart definition.
- Click **Save**.
- Return to the Administration page, click **Back to Admin Menu**.

## What to do next

Add the report to a report group.

## Report settings

Settings that are used to schedule sending reports, including frequency and recipients.

*Table 2. Report schedule settings*

Setting	Description
<b>Name</b>	Report name.
<b>Description</b>	Report description.
<b>Tags</b>	Search tags that can be used to search for the report.
<b>DataSource</b>	The data source that is used for the report data. The data source is defined during the initial configuration of Cloud Identity Service for your organization.
<b>Query</b>	Report query SQL. For information on the most commonly used audit tables in Cloud Identity Service, see audit tables.
<b>Chart</b>	Chart reports only. The chart definition on which to base the report. For more information on chart definitions, see chart definitions.

Table 2. Report schedule settings (continued)

Setting	Description
Query	Query reports only. Comma-separated list of email addresses. If no address is entered, the default address of the current user is entered.
Report Template	For more information on report templates, see report templates.
Hidden	The report does not appear in the Reports console.
Use Virtualization	Not used.
Export types	Export formats for the report. Not all formats are supported. Supported formats are PDF, CSV, and Excel.

## Adding reports to a report group

To enable the report to be available in the Reports page, you must add the report to a report group.

### Procedure

1. In the Administration page, click **Report Groups**.

Name	Description	
<u>Gateway Common Reports</u>	Gateway Common Reports Group	Delete

2. Select the group that you want to add the report to.

3. Click **Add Reports**.

You can search for the report, by entering search criteria in the **Filter** field. You can search on the report name or report search tags.

4. Select the report to add and click **Add**.
5. Verify that the report is added to the report group in the Selected Group window, and click **Save**.

## Adding parameters to a report

You can add report parameters to a report. Parameters are used to set the scope of a report. For example, limiting the data set by using a range of dates, or by using user UIDs. When a report is run, the user must enter values for report parameters.

## Before you begin

If you are creating a new report, the report must be saved before you can add parameters.

## Procedure

1. If you are not already in the Administration page, click **Reporting > View Reporting**. Click **Administration**, and open the report that you want to add parameters to.

Report Parameter	Required	Step	Sort Order		
group_name	<input checked="" type="checkbox"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/>	<input type="button" value="Delete"/>
service_name	<input checked="" type="checkbox"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="button" value="Update"/>	<input type="button" value="Delete"/>

uid

Add New displays a popup dialog for manually adding a new parameter to the list of available parameters.

2. Select the parameter that you want to add from the drop-down list, and click **Add**.

Report Parameters can be given a step and a sort order. The **Step** field is used to require the user to enter parameters in a series of steps, or pages. The **Sort Order** field sets the order of parameters within a step. You can mark the step and sort order as **Required**.

**Important:** A compound parameter is built from the values of a previous chosen parameter. To use compound parameters, the first parameter must be added to the report in a step before the dependent parameter.

3. Return to the **Report Definition** tab, and click **Save**.

---

## Creating chart definitions

You can create bar, pie, ring, time, and XY chart definitions. In order for a chart definition to be made available as a report, it must be selected in a chart report.

## Before you begin

To create your own chart definitions, you must have good knowledge of using SQL to create database queries.

## Procedure

1. In the navigation pane, click **Intelligence > Reporting**.
2. Click **Administration**.
3. Click **Charts**, and click **Add Chart**.
4. Enter the chart definition settings you want for the chart.
5. Click **Save**.

## Chart definitions

Cloud Identity Service supports bar, pie, ring, time, and XY charts. Any number of charts can be defined.

The most important properties of a chart definition are chart type, query, and data source. These properties are used to generate the chart dynamically at run time by using a query. Each chart type requires a specific query format to generate a valid data set for the chart. The chart queries can also include parameters to be selected by the user at run time.

The screenshot shows a configuration window for a chart. The fields are as follows:

- Name:** New Logins (24 Hours)
- Description:** Logins (24 Hours)
- Chart Type:** Pie
- Overlay:** -- None --
- Width:** 600
- Height:** 400
- Show Title:**
- Show Legend:**
- Show Values:**  (with a lightbulb icon)
- X Axis Label:** (empty field with a lightbulb icon)
- Y Axis Label:** (empty field with a lightbulb icon)
- Plot Orientation:** Horizontal
- Query:** group by ae.audit\_event\_definition\_id,aed.info\_text order by ae.audit\_event\_definition\_id,aed.info\_text;
- DataSource:** Audit DataSource
- Drilldown Report:** Failed Logins (24 Hours, Detail)

At the bottom, there are buttons for **Save**, **Duplicate**, and **Validate**.

The **X-Axis Label** and **Y-Axis Label** fields are not used with pie or ring charts. The **Plot Orientation** field is used to determine the orientation of bar and XY charts. If the **Show Values** option is checked, a table that contains the chart values is displayed below the chart.

## Bar chart definitions

Bar charts represent and compare data that is grouped in bars. Bar charts require a value, series, category, and five clauses to work correctly. The following format is required for bar charts:

```
SELECT value, series, category
FROM
WHERE
GROUP BY
ORDER BY
```

The following query produces a bar chart of the number of Logins and failed Logins for the past 7 days. The value, series, and category in this example are count(\*), ae.audit\_event\_definition\_id, and aed.info\_text.

```
SELECT count(*), ae.audit_event_definition_id, aed.info_text FROM audit_event ae,
audit_event_definition aed WHERE (ae.audit_event_definition_id = 15
or ae.audit_event_definition_id = 16) and (ae.audit_event_definition_id
= aed.audit_event_definition_id) and (ae.time_stamp >
```

```

current_timestamp - interval '7 day') and (ae.time_stamp < current_timestamp)
GROUP BY ae.audit_event_definition_id,aed.info_text
ORDER BY ae.audit_event_definition_id,aed.info_text;

```

The following query produces a bar chart of the number of Logins and failed Logins from a date that is passed into the report. To use a parameter with a chart query, the matching report parameter must be added to the report. The value, series, and category in this example are count(\*), ae.audit\_event\_definition\_id, and aed.info\_text.

```

SELECT count(*), ae.audit_event_definition_id, aed.info_text FROM audit_event ae,
audit_event_definition aed
WHERE (ae.audit_event_definition_id = 15 or ae.audit_event_definition_id = 16)
and (ae.audit_event_definition_id = aed.audit_event_definition_id) and
(ae.time_stamp > CAST({date1} AS date) - interval '7 day') and
(ae.time_stamp < current_timestamp)
GROUP BY ae.audit_event_definition_id,aed.info_text
ORDER BY ae.audit_event_definition_id,aed.info_text;

```

## Pie and ring chart definitions

Pie and ring charts represent and compare data that is grouped into segments of a sphere or ring. Pie and ring charts require a value, key, and five clauses to work correctly. The following format is required for pie and ring charts:

```

SELECT value, key
FROM
WHERE
GROUP BY
ORDER BY

```

The following query produces a bar chart of the number of Logins and failed Logins for the past 24 hours. The value, and key in this example are count(\*), and aed.info\_text.

```

SELECT count(*), aed.info_text FROM audit_event ae, audit_event_definition aed
WHERE (ae.audit_event_definition_id = 15 or ae.audit_event_definition_id = 16) and
(ae.audit_event_definition_id = aed.audit_event_definition_id) and (ae.time_stamp >
current_timestamp - interval '1 day') and (ae.time_stamp < current_timestamp)
GROUP BY ae.audit_event_definition_id,aed.info_text
ORDER BY ae.audit_event_definition_id,aed.info_text;

```

## XY chart definitions

XY charts are used to display values for two variables for a set of data, with relative positions on the X axis and Y axis. The following format is required for XY charts:

```

SELECT series, value1, value2
FROM
WHERE
GROUP BY
ORDER BY

```

## Time chart definitions

Time charts are used to display values over a specified time. The following format is required for time charts:

```

SELECT series, time, value

```

FROM  
WHERE  
GROUP BY  
ORDER BY

## Drill-down charts

Drill down charts are used to give another level of detailed reporting to charts. The chart must be a bar, pie, or ring chart. Users click a specific bar or segment of a chart to drill-down to a more detailed report.

To create a drill-down chart report, create the drill-down report and then create the master chart definition. The following report definition illustrates an example drill-down report.

The screenshot shows a web-based interface for defining a report. It has two tabs at the top: "Report Definition" (selected) and "Report Parameters". The main area contains several fields and options:

- Name:** Failed Logins (24 Hours, Detail)
- Description:** Failed Logins (24 Hours)
- Tags:** (empty text box)
- DataSource:** Audit DataSource (dropdown menu) with an "Add DataSource" button.
- Query:** A text area containing a SQL query: 

```
select user_name as "Name", time_stamp as "Time", (select value_string from audit_event_data where audit_event_data.audit_event_id=ae.audit_event_id and data_key='user_ip_address') as "IP" from audit_event ae where (time_stamp > current_timestamp - interval '1 day') and (time_stamp < current_timestamp) and audit_event_definition_id in (15,110)
```
- Chart:** A dropdown menu set to "-- None --" with an "Add Chart" button.
- Report Template:** A dropdown menu set to "-- None --" with an "Add Report Template" button.
- Hidden:** A checkbox that is unchecked.
- Use Virtualization:** A checkbox that is unchecked.
- Export Types:** A set of checkboxes for PDF, HTML, CSV, XLS, RTF, TEXT, EXCEL, and IMAGE. The PDF checkbox is checked.
- At the bottom, there are "Save" and "Duplicate" buttons.

The following report definition illustrates an example chart definition.



<b>Name</b>	<input type="text" value="New Logins (24 Hours)"/>
<b>Description</b>	<input type="text" value="Logins (24 Hours)"/>
<b>Chart Type</b>	<input type="text" value="Pie"/>
<b>Overlay</b>	<input type="text" value="-- None --"/>
<b>Width</b>	<input type="text" value="600"/>
<b>Height</b>	<input type="text" value="400"/>
<b>Show Title</b>	<input checked="" type="checkbox"/>
<b>Show Legend</b>	<input checked="" type="checkbox"/>
<b>Show Values</b>	<input checked="" type="checkbox"/>
<b>X Axis Label</b>	<input type="text"/>
<b>Y Axis Label</b>	<input type="text"/>
<b>Plot Orientation</b>	<input type="text" value="Horizontal"/>
<b>Query</b>	<pre>select count(*), aed.info_text from audit_event ae, audit_event_definition aed where ae.audit_event_definition_id in (15,16,109,110) and (ae.audit_event_definition_id = aed.audit_event_definition_id) and</pre>
<b>Data Source</b>	<input type="text" value="Audit DataSource"/>
<b>Drilldown Report</b>	<input type="text" value="Failed Logins (24 Hours, Detail)"/>

## Creating report parameters

Parameters are used to set the scope of a report. For example, limiting the data set by using a range of dates, or by using user UIDs. When a report is run, the user must enter values for report parameters.

### Before you begin

To create your own report parameters, you must have good knowledge of using SQL to create some types of report parameters.

### About this task

A limited number of report parameters are supported. The following parameters are supported:

- Query
- List
- Date
- Text

### Procedure

1. In the Administration console, click **Report Parameters**, and click **Add Report Parameter**.
2. Enter the settings that you want for the parameter.
3. Click **Save**.

## Query parameters

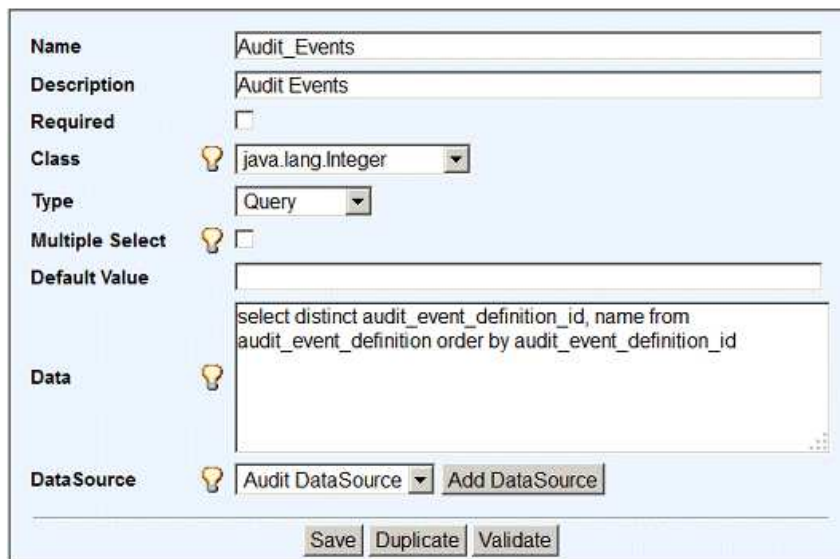
Query parameters are used to provide a user that runs a report with a list of values that are returned from a query. When the report is run, the user must enter a value from the list.

The following example illustrates a list that is used when a report is run.



The query that is used in this example, demonstrates how to query the database and return a list of all audit event names and audit event definition IDs.

```
select distinct audit_event_definition_id, name from audit_event_definition order by audit_event_definition_id
```



**Note:** If the query contains two columns, Cloud Identity Service displays the value of the second column as the parameter, and sends the value of the first column to the report. For example, the query `select distinct audit_event_definition_id, name from audit_event_definition` shows the list of audit event names as available parameters, and sends `audit_event_definition_id` of the chosen audit event to the report.

### Multiselect

Multiselect displays a list of possible values, allowing the user to select more than one value. The selected values are passed to the report as a string in the following format, value 1, value 2, value 3, and so on.

To pass multiselect values in this example, the following sample SQL might be used.

```
select ae.user_name as "who", (select name from audit_event_definition where audit_event_definition.audit_event_definition_id = ae.audit_event_definition_id) as "what", (select auditeventdetail(ae.audit_event_id)) as "where",
```

```
aed.event_timestamp as "when" from audit_event_data aed, audit_event ae
where aed.audit_event_id=ae.audit_event_id
and ae.audit_event_definition_id=($P!{Audit_Events})order by aed.event_timestamp
```

## List parameters

List parameters are used to provide a user that runs a report with a list of values that are contained in a pipe delimited data string. When the report is run, the user must enter a value from the list.

The following example illustrates a list that is used when a report is run.

This example, demonstrates how to use a pipe delimited data string to create a list with three values: 50000, 75000 and 150000.

Optionally, a description for each value can be specified by using a colon delimited string. For example, to display Small, Medium, Large to represent values in a list, enter 50000:Small|75000:Medium|150000:Large in the **Data** field.

## Multiselect

Multiselect displays a list of possible values, allowing the user to select more than one value. The selected values are passed to the report as a string in the following format, value 1, value 2, value 3, and so on.

To pass multiselect values in this example, the following sample SQL might be used.

```
select ae.user_name as "who", (select name from audit_event_definition where
audit_event_definition.audit_event_definition_id = ae.audit_event_definition_id)
as "what", (select auditeventdetail(ae.audit_event_id)) as "where",
```

```
aed.event_timestamp as "when" from audit_event_data aed, audit_event ae where
aed.audit_event_id=ae.audit_event_id
and ae.audit_event_definition_id=($P!{Audit_Events})order by aed.event_timestamp
```

## Date parameters

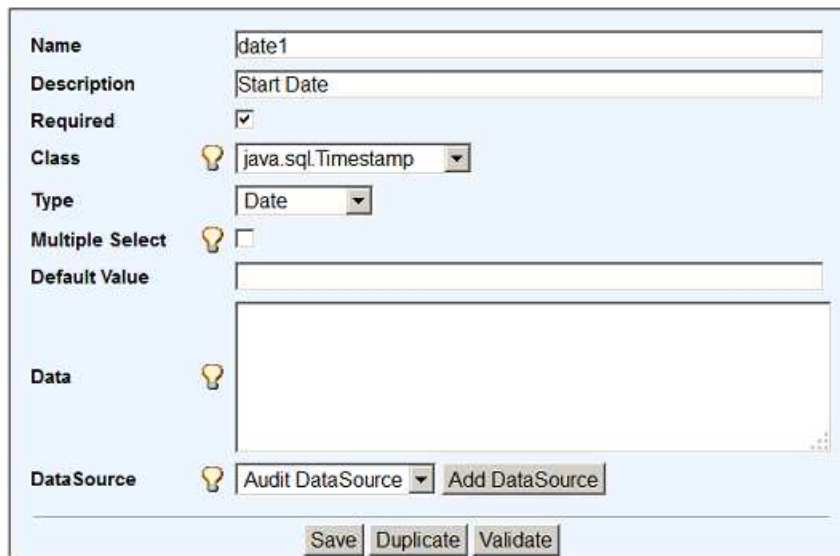
Date parameters are used to provide a user that runs a report with a calendar from which to select a date. When the report is run, the user must enter a date or range of dates from the calendar. Using a calendar ensures that dates are submitted in the proper format.

The following example illustrates a calendar that is used when a report is run.



A screenshot of a dialog box with a light blue background. It contains two text input fields. The first is labeled "Start Date: \*" and the second is labeled "End Date:". Each field has a small calendar icon to its right. Below the fields is a horizontal line, and at the bottom center is an "Ok" button.

This example illustrates a date parameter definition.



A screenshot of a parameter definition form with a light blue background. The form has several fields and sections:

- Name:** date1
- Description:** Start Date
- Required:**
- Class:** java.sql.Timestamp
- Type:** Date
- Multiple Select:**
- Default Value:** (empty text box)
- Data:** (empty text box)
- DataSource:** Audit DataSource (with an "Add DataSource" button next to it)

At the bottom of the form are three buttons: "Save", "Duplicate", and "Validate".

## Text parameters

Text parameters are used to provide a user that runs a report with a field to enter a value in. When the report is run, the user must enter a value in the field. Using a calendar ensures that dates are submitted in the proper format.

Text parameters are useful for searching on attributes such as first name, last name, and UID. The following example illustrates a field that is used when a report is run.



A screenshot of a dialog box with a light blue background. It contains a single text input field labeled "User UID \*". Below the field is a horizontal line, and at the bottom center is an "Ok" button.

**Note:** To search on partial UIDs, you must use a `like` statement in your SQL queries instead of `=`. You must also pass in the `%` at the end of the UID, for example `cmil%`.

This example illustrates a text parameter definition.

The screenshot shows a form for defining a parameter named 'uid'. The fields are as follows:

- Name:** uid
- Description:** User UID
- Required:**
- Class:** java.lang.String
- Type:** Text
- Multiple Select:**
- Default Value:** (empty field)
- Data:** (empty text area)
- DataSource:** Audit DataSource

Buttons at the bottom include Save, Duplicate, and Validate.

## Audit tables

Commonly used report tables, columns, and data types in Cloud Identity Service.

### AUDIT\_EVENT

PK designates a primary key. FK designates a foreign key. IDX designates an indexed column.

Table 3. AUDIT\_EVENT table

Column	Data type	Sample value
audit_event_id [PK]	integer	3454343
audit_event_definition_id [FK]	integer	36
client_id	integer	3
successful	boolean	True/False
user_name	varchar	ds_admin
time_stamp	timestamp	2012-04-12 11:05:59.932
event_source	varchar	webseald-Gateway
event_host_ip	varchar	GATEWAY-APPDEV-WebSEAL1

### AUDIT\_EVENT\_DATA

PK designates a primary key. FK designates a foreign key. IDX designates an indexed column.

Table 4. AUDIT\_EVENT\_DATA table

Column	Data type	Sample value
audit_event_data_id [PK]	integer	11596430
audit_event_id [FK]	integer	3454343
client_id	integer	3
event_timestamp	timestamp	2012-04-12 11:05:59.932
data_key	varchar	http_url
value_string	text	https://172.16.8.121
value_timestamp	timestamp	2012-04-12 11:05:59.932
value_numeric	numeric	200
value_boolean	boolean	True/False

## AUDIT\_EVENT\_DEFINITION

PK designates a primary key. FK designates a foreign key. IDX designates an indexed column.

Table 5. AUDIT\_EVENT\_DEFINITION table

Column	Data type	Sample value
audit_event_definition_id [PK]	integer	2
name	varchar	ADD_ACL
retention_period_days	integer	1825
customer_visible	boolean	True/False
info_text	varchar	Add ACL

## AUDIT\_GROUP

PK designates a primary key. FK designates a foreign key. IDX designates an indexed column.

Table 6. AUDIT\_GROUP table

Column	Data type	Sample value
audit_group_id [PK]	integer	44
group_name	varchar	Testgroup1
group_desc	varchar	Test group 1
last_update	timestamp	2012-04-12 11:05:59.932

## AUDIT\_GROUPUSER

PK designates a primary key. FK designates a foreign key. IDX designates an indexed column.

Table 7. AUDIT\_GROUPUSER table

Column	Data type	Sample value
audit_group_id [PK]	integer	44

Table 7. AUDIT\_GROUPUSER table (continued)

Column	Data type	Sample value
audit_user_id [FK]	integer	31

## AUDIT\_SERVICE

PK designates a primary key. FK designates a foreign key. IDX designates an indexed column.

Table 8. AUDIT\_SERVICE table

Column	Data type	Sample value
audit_service_id [PK]	integer	28
service_name	vvarchar	GatewayWAMService
service_desc	vvarchar	
owner_audit_user_id	integer	205
no_members	boolean	True/False
service_parent	vvarchar	
last_update	timestamp	2012-04-12 11:05:59.932

## AUDIT\_SERVICEUSER

PK designates a primary key. FK designates a foreign key. IDX designates an indexed column.

Table 9. AUDIT\_SERVICEUSER table

Column	Data type	Sample value
audit_service_id [PK]	integer	44
audit_user_id [FK]	integer	31
manual	boolean	True/False

---

## Audit events

Cloud Identity Service records a number of audit events that can be used in reports.

Table 10. Audit events

Event	Event items
ADD_ACL	ACL_NAME_KEY
ADD_DPE_POLICY	DPE_POLICY_NAME_KEY DPE_POLICY_SCRIPT_KEY
ADD_GROUP	GROUP_NAME_KEY
ADD_JUNCTION	JUNCTION_NAME_KEY
ADD_POP	POP_NAME_KEY
ADD_SERVER	SERVER_NAME_KEY
ADD_USER	USER_UUID_KEY
ADD_USER_TO_GROUP	USER_UUID_KEY

Table 10. Audit events (continued)

Event	Event items
	GROUP_NAME_KEY
APPROVE_SELF_REGISTRATION_REQUEST	USER_UUID_KEY
	SS_APPLICANT_INFO
ATTACH_ACL_TO_RESOURCE	RESOURCE_NAME_KEY
	ACL_NAME_KEY
ATTACH_AUTHZ_TO_RESOURCE	RESOURCE_NAME_KEY
	AUTHZ_NAME_KEY
ATTACH_GENERIC_POLICY_TO_RESOURCE	RESOURCE_NAME_KEY
ATTACH_POP_TO_RESOURCE	RESOURCE_NAME_KEY
	POP_NAME_KEY
AUTHENTICATION_FAILURE	USER_IP_ADDR_KEY
	FAILURE_REASON_KEY
AUTHENTICATION_SUCCESS	USER_IP_ADDR_KEY
AUTHENTICATION_TERMINATE	USER_IP_ADDR_KEY
DELETE_ACL	ACL_NAME_KEY
DELETE_ACL_ENTRY	ACL_NAME_KEY
	ACL_ENTRY_NAME_KEY
	ACL_ENTRY_TYPE_KEY
DELETE_DPE_POLICY	DPE_POLICY_NAME_KEY
DELETE_COMPANY_CONTACT	COMPANY_CONTACT_NAME_KEY
DELETE_GROUP	GROUP_NAME_KEY
DELETE_IP_AUTHENTICATION	IP_AUTH_NETWORK_KEY
	POP_NAME_KEY
DELETE_JUNCTION	JUNCTION_NAME_KEY
DELETE_POP	POP_NAME_KEY
DELETE_SERVER	SERVER_NAME_KEY
DELETE_USER	USER_UUID_KEY
	USER_UID
	USER_GTWAY_PRINCIPAL_NM
	USER_GIVEN_NM
	USER_SN
	USER_CN
	USER_MAIL
DETACH_ACL_FROM_RESOURCE	RESOURCE_NAME_KEY
DETACH_AUTHZ_FROM_RESOURCE	RESOURCE_NAME_KEY
DETACH_GENERIC_POLICY_FROM_RESOURCE	RESOURCE_NAME_KEY
DETACH_POP_FROM_RESOURCE	RESOURCE_NAME_KEY
DPE_PROCESSING_ERROR	DPE_POLICY_NAME_KEY
	DPE_EXECUTION_FAILURE_MESSAGE_KEY
	USER_UUID_KEY



Table 10. Audit events (continued)

Event	Event items
	GROUP_NAME_KEY
	ROLE_TYPE
ENDED_DPE_POLICY	DPE_POLICY_ID_KEY
	DPE_POLICY_NAME_KEY
ERROR_DPE_POLICY	DPE_POLICY_ID_KEY
	DPE_POLICY_NAME_KEY
	DPE_EXECUTION_FAILURE_MESSAGE_KEY
HTTP_EVENT_FAILURE	USER_IP_ADDR_KEY
	HTTP_URL_KEY
	HTTP_METHOD_KEY
	HTTP_RESPONSE_KEY
	FAILURE_REASON_KEY
HTTP_EVENT_SUCCESS	USER_IP_ADDR_KEY
	HTTP_URL_KEY
	HTTP_METHOD_KEY
	HTTP_RESPONSE_KEY
MODIFY_DPE_POLICY_SCHEDULE	DPE_POLICY_NAME_KEY
	DPE_POLICY_CRON_KEY
REJECT_SELF_REGISTRATION_REQUEST	USER_UUID_KEY
	SS_APPLICANT_INFO
	JUSTIFICATION
REMOVE_USER_FROM_GROUP	USER_UUID_KEY
	GROUP_NAME_KEY
STARTED_DPE_POLICY	DPE_POLICY_ID_KEY
	DPE_POLICY_NAME_KEY
	DPE_POLICY_EXECUTION_TYPE_KEY
UPDATE_ACL	ACL_NAME_KEY
UPDATE_ACL_ENTRY	ACL_NAME_KEY
	ACL_ENTRY_NAME_KEY
	ACL_ENTRY_TYPE_KEY
UPDATE_COMPANY_CONTACT	COMPANY_CONTACT_NAME_KEY
UPDATE_DPE_POLICY	DPE_POLICY_NAME_KEY
	DPE_POLICY_SCRIPT_KEY
UPDATE_GLOBAL_USER_POLICY	
UPDATE_GROUP	GROUP_NAME_KEY
UPDATE_IP_AUTHENTICATION	IP_AUTH_NETWORK_KEY
	IP_AUTH_LEVEL_KEY
	POP_NAME_KEY
UPDATE_JUNCTION	JUNCTION_NAME_KEY
UPDATE_POP	POP_NAME_KEY

Table 10. Audit events (continued)

Event	Event items
UPDATE_SELF_REGISTRATION_SETUP	SELF_SERVICE_ALIAS_KEY
	LANGUAGE_ID_KEY
UPDATE_SERVER	SERVER_NAME_KEY
UPDATE_USER	USER_UUID_KEY
	USER_PASSWORD_UPDATE_KEY
UPDATE_USER_POLICY	USER_UUID_KEY
UPDATE_PWD_RESET_SETUP	SELF_SERVICE_ALIAS_KEY
	LANGUAGE_ID_KEY
USER_REGISTRATION	USER_UUID_KEY
USER_PWD_RESET	USER_UUID_KEY
CREATE_IDM_CATALOG	IDM_CATALOG_NAME_KEY
UPDATE_IDM_CATALOG	IDM_CATALOG_NAME_KEY
	IDM_CATALOG_NEW_NAME_KEY
DELETE_IDM_CATALOG	IDM_CATALOG_NAME_KEY
CREATE_IDM_STORE	IDM_STORE_NAME_KEY
UPDATE_IDM_STORE	IDM_STORE_NAME_KEY
	IDM_STORE_NEW_NAME_KEY
DELETE_IDM_STORE	IDM_STORE_NAME_KEY
CREATE_IDM_CONNECTION	IDM_CONNECTION_NAME_KEY
UPDATE_IDM_CONNECTION	IDM_CONNECTION_NAME_KEY
DELETE_IDM_CONNECTION	IDM_CONNECTION_NAME_KEY
START_IDM_CONNECTION	IDM_CONNECTION_NAME_KEY
STOP_IDM_CONNECTION	IDM_CONNECTION_NAME_KEY
UPDATE_IDM_CONNECTION_STATE	IDM_CONNECTION_NAME_KEY
	IDM_CONNECTION_ORIG_STATE_KEY
	IDM_CONNECTION_NEW_STATE_KEY
APPROVE_INBOUND_IDENTITY_REQUEST	IDM_INBOUND_IDENTITY_INFO
REJECT_INBOUND_IDENTITY_REQUEST	IDM_INBOUND_IDENTITY_INFO
APPROVE_INBOUND_GROUP_REQUEST	IDM_INBOUND_GROUP_NAME
REJECT_INBOUND_GROUP_REQUEST	IDM_INBOUND_GROUP_NAME
PROMOTE_IDENTITY_TO_ACCOUNT	USER_UUID_KEY
DEMOTE_ACCOUNT_TO_IDENTITY	USER_UUID_KEY
ADD_SERVICE	SERVICE_NAME_KEY
	SERVICE_OWNER_UUID
	SERVICE_MANAGER_APPROVAL_AUTO
	SERVICE_MANAGER_APPROVAL_MANUAL
	SERVICE_OWNER_APPROVAL_AUTO
	SERVICE_OWNER_APPROVAL_MANUAL
	SERVICE_APPROVAL_GRACE_PERIOD
	SERVICE_APPROVAL_REMINDER_ACTION_ID

Table 10. Audit events (continued)

Event	Event items
	SERVICE_OWNER_RECERT_AUTO
	SERVICE_MANAGER_RECERT_AUTO
	SERVICE_OWNER_RECERT_MANUAL
	SERVICE_MANAGER_RECERT_MANUAL
	SERVICE_RECERT_GRACE_PERIOD
	SERVICE_RECERT_REMINDER_ACTION_ID
	SERVICE_SOD_CALLOUT_REQUIRED
	SERVICE_MEMBER_NOTIFICATION
	SERVICE_HIDE_FROM_SELF_CARE
	SERVICE_NO_MEMBERS
	SERVICE_DESTROY_ID_ON_REVOKE
UPDATE_SERVICE	SERVICE_NAME_KEY
	SERVICE_OWNER_UUID
	SERVICE_MANAGER_APPROVAL_AUTO
	SERVICE_MANAGER_APPROVAL_MANUAL
	SERVICE_OWNER_APPROVAL_AUTO
	SERVICE_OWNER_APPROVAL_MANUAL
	SERVICE_APPROVAL_GRACE_PERIOD
	SERVICE_APPROVAL_REMINDER_ACTION_ID
	SERVICE_OWNER_RECERT_AUTO
	SERVICE_MANAGER_RECERT_AUTO
	SERVICE_OWNER_RECERT_MANUAL
	SERVICE_MANAGER_RECERT_MANUAL
	SERVICE_RECERT_GRACE_PERIOD
	SERVICE_RECERT_REMINDER_ACTION_ID
	SERVICE_SOD_CALLOUT_REQUIRED
	SERVICE_MEMBER_NOTIFICATION
	SERVICE_HIDE_FROM_SELF_CARE
	SERVICE_NO_MEMBERS
	SERVICE_DESTROY_ID_ON_REVOKE
DELETE_SERVICE	SERVICE_NAME_KEY
REQUEST_ADD_USER_TO_SERVICE	SERVICE_NAME_KEY
	USER_UUID_KEY
	JUSTIFICATION
APPROVE_ADD_USER_TO_SERVICE	SERVICE_NAME_KEY
	USER_UUID_KEY
DENY_ADD_USER_TO_SERVICE	SERVICE_NAME_KEY
	USER_UUID_KEY
	JUSTIFICATION
PROCESS_ADD_USER_TO_SERVICE	SERVICE_NAME_KEY

Table 10. Audit events (continued)

Event	Event items
	USER_UUID_KEY
REMOVE_USER_FROM_SERVICE	SERVICE_NAME_KEY
	USER_UUID_KEY
STARTED_RECERT_POLICY	RECERT_POLICY_ID_KEY
	RECERT_POLICY_NAME_KEY
	RECERT_POLICY_EXECUTION_TYPE_KEY
RECERT_PROCESSING_ERROR	RECERT_POLICY_NAME_KEY
	RECERT_EXECUTION_FAILURE_MESSAGE_KEY
	USER_UUID_KEY
	SERVICE_NAME_KEY
ENDED_RECERT_POLICY	RECERT_POLICY_ID_KEY
	RECERT_POLICY_NAME_KEY
ERROR_RECERT_POLICY	RECERT_POLICY_ID_KEY
	RECERT_POLICY_NAME_KEY
	RECERT_EXECUTION_FAILURE_MESSAGE_KEY
APPROVE_RECERT_RECORD	SERVICE_NAME_KEY
	USER_UUID_KEY
DENY_RECERT_RECORD	SERVICE_NAME_KEY
	USER_UUID_KEY
	JUSTIFICATION
MODIFY_RECERT_POLICY_SCHEDULE	RECERT_POLICY_NAME_KEY
	RECERT_POLICY_CRON_KEY
ADD_RECERT_POLICY	RECERT_POLICY_NAME_KEY
	RECERT_POLICY_SCRIPT_KEY
DELETE_RECERT_POLICY	RECERT_POLICY_NAME_KEY
UPDATE_RECERT_POLICY	RECERT_POLICY_NAME_KEY
	RECERT_POLICY_SCRIPT_KEY
UPDATE_SELF_CARE_SETUP	
UPDATE_TRANSLATIONS	
UPDATE_KBA_CONFIGURATION	
ADD_SELF_SERVICE_ALIAS	SELF_SERVICE_ALIAS_KEY
	USER_TYPE_KEY
UPDATE_SELF_SERVICE_ALIAS	SELF_SERVICE_ALIAS_KEY
	USER_TYPE_KEY
DELETE_SELF_SERVICE_ALIAS	SELF_SERVICE_ALIAS_KEY
DELETE_SELF_REGISTRATION_SETUP	SELF_SERVICE_ALIAS_KEY
	LANGUAGE_ID_KEY
DELETE_PWD_RESET_SETUP	SELF_SERVICE_ALIAS_KEY
	LANGUAGE_ID_KEY
USER_USERNAME_RECOVERY	USER_UUID_KEY

Table 10. Audit events (continued)

Event	Event items
USER_SEARCH	SEARCH_FILTER
VIEW_USER	USER_UUID_KEY
PASSWORD_CHANGE_SUCCESS	
PASSWORD_CHANGE_FAILURE	FAILURE_REASON_KEY
AUTHENTICATION_REMOVE_LOCKOUT	
AUTHENTICATION_LOCKOUT	FAILURE_REASON_KEY
USER_AUTHENTICATION_SUCCESS	AUTH_TYPE
USER_AUTHENTICATION_FAILURE	AUTH_TYPE
	FAILURE_REASON_KEY
REMOVE_USER_FROM_SERVICE_WITH_JUSTIFICATION	SERVICE_NAME_KEY
	USER_UUID_KEY
	JUSTIFICATION
PASSWORD_CHANGE_SUCCESS_GMA_API	OAuth_CLIENT_ID
	USER_UUID_KEY
PASSWORD_CHANGE_FAILURE_GMA_API	OAuth_CLIENT_ID
	USER_UUID_KEY
	FAILURE_REASON_KEY
VALIDATE_PASSWORD_SUCCESS_GMA_API	
VALIDATE_PASSWORD_FAILURE_GMA_API	
CREATE_USER_NO_APPROVAL_SUCCESS_GMA_API	OAuth_CLIENT_ID
	USER_NAME
	IS_ACCOUNT
	USER_UUID_KEY
CREATE_USER_NO_APPROVAL_FAILURE_GMA_API	OAuth_CLIENT_ID
	USER_NAME
	IS_ACCOUNT
	USER_UUID_KEY
	FAILURE_REASON_KEY
CREATE_USER_REQ_APPROVAL_SUCCESS_GMA_API	OAuth_CLIENT_ID
	USER_NAME
	IS_ACCOUNT
	APPROVER_UUID
	USER_UUID_KEY
CREATE_USER_REQ_APPROVAL_FAILURE_GMA_API	OAuth_CLIENT_ID
	USER_NAME
	IS_ACCOUNT
	APPROVER_UUID
	USER_UUID_KEY
	FAILURE_REASON_KEY
CREATE_USER_ACCOUNT_NO_APPROVAL_SUCCESS_GMA_API	OAuth_CLIENT_ID

Table 10. Audit events (continued)

Event	Event items
	USER_NAME
	IS_ACCOUNT
	USER_UUID_KEY
CREATE_USER_ACCOUNT_NO_APPROVAL_FAILURE_GMA_API	OAuth_CLIENT_ID
	USER_NAME
	IS_ACCOUNT
	USER_UUID_KEY
	FAILURE_REASON_KEY
CREATE_USER_ACCOUNT_REQ_APPROVAL_SUCCESS_GMA_API	OAuth_CLIENT_ID
	USER_NAME
	IS_ACCOUNT
	APPROVER_UUID
	USER_UUID_KEY
CREATE_USER_ACCOUNT_REQ_APPROVAL_FAILURE_GMA_API	OAuth_CLIENT_ID
	USER_NAME
	IS_ACCOUNT
	APPROVER_UUID
	USER_UUID_KEY
	FAILURE_REASON_KEY
CREATE_USER_OR_ACCOUNT_FAILURE_GMA_API	OAuth_CLIENT_ID
	USER_NAME
	IS_ACCOUNT
	APPROVER_UUID
	USER_UUID_KEY
	FAILURE_REASON_KEY
CHANGE_TO_USER_ACCOUNT_SUCCESS_GMA_API	OAuth_CLIENT_ID
	CONVERT_TO_ACCOUNT
	USER_UUID_KEY
CHANGE_TO_USER_ACCOUNT_FAILURE_GMA_API	OAuth_CLIENT_ID
	CONVERT_TO_ACCOUNT
	USER_UUID_KEY
	FAILURE_REASON_KEY
CHANGE_TO_USER_IDENTITY_SUCCESS_GMA_API	OAuth_CLIENT_ID
	CONVERT_TO_ACCOUNT
	USER_UUID_KEY
CHANGE_TO_USER_IDENTITY_FAILURE_GMA_API	OAuth_CLIENT_ID
	CONVERT_TO_ACCOUNT
	USER_UUID_KEY
	FAILURE_REASON_KEY
CHANGE_USER_ACCOUNT_STATUS_FAILURE_GMA_API	OAuth_CLIENT_ID

Table 10. Audit events (continued)

Event	Event items
	CONVERT_TO_ACCOUNT
	USER_UUID_KEY
	FAILURE_REASON_KEY
UPDATE_USER_SUCCESS_GMA_API	USER_UUID
	OAuth_CLIENT_ID
	USER_UUID_KEY
UPDATE_USER_FAILURE_GMA_API	USER_UUID
	OAuth_CLIENT_ID
	USER_UUID_KEY
	FAILURE_REASON_KEY
UPDATE_USER_DEMOTE_AND_CHANGE_UID_SUCCESS_GMA_API	OAuth_CLIENT_ID
	USER_UUID
	USER_UUID_KEY
UPDATE_USER_DEMOTE_AND_CHANGE_UID_FAILURE_GMA_API	OAuth_CLIENT_ID
	USER_UUID
	USER_UUID_KEY
	FAILURE_REASON_KEY
SEARCH_USERS_SUCCESS_GMA_API	
SEARCH_USERS_FAILURE_GMA_API	
DELETE_USER_KBA_SUCCESS_GMA_API	OAuth_CLIENT_ID
	USER_UUID_KEY
DELETE_USER_KBA_FAILURE_GMA_API	OAuth_CLIENT_ID
	USER_UUID_KEY
	FAILURE_REASON_KEY
CHECK_KBA_ANSWER_SUCCESS_GMA_API	
CHECK_KBA_ANSWER_FAILURE_GMA_API	
GET_USER_KBA_SUCCESS_GMA_API	
GET_USER_KBA_FAILURE_GMA_API	
UPDATE_USER_KBA_SUCCESS_GMA_API	OAuth_CLIENT_ID
	USER_UUID_KEY
UPDATE_USER_KBA_FAILURE_GMA_API	OAuth_CLIENT_ID
	USER_UUID_KEY
	FAILURE_REASON_KEY
GET_USER_SERVICES_SUCCESS_GMA_API	
GET_USER_SERVICES_FAILURE_GMA_API	
GET_USER_SUCCESS_GMA_API	
GET_USER_FAILURE_GMA_API	
DELETE_USER_SUCCESS_GMA_API	OAuth_CLIENT_ID
	USER_UUID_KEY
	USER_UUID

Table 10. Audit events (continued)

Event	Event items
	USER_GTWAY_PRINCIPAL_NM
	USER_GIVEN_NM
	USER_SN
	USER_CN
	USER_MAIL
DELETE_USER_FAILURE_GMA_API	OAuth_Client_ID
	USER_UUID_KEY
	FAILURE_REASON_KEY
PASSWORD_CHANGE_SYNC_ISSUE	USER_UUID_KEY
	FAILURE_REASON_KEY
ADD_MEMBERS_SUCCESS_GMA_API	OAuth_Client_ID
	GROUP_NAME_KEY
	USER_UUID_KEY
ADD_MEMBERS_FAILURE_GMA_API	OAuth_Client_ID
	GROUP_NAME_KEY
	USER_UUID_KEY
	FAILURE_REASON_KEY
ADD_MEMBER_SUCCESS_GMA_API	OAuth_Client_ID
	GROUP_NAME_KEY
	USER_UUID_KEY
ADD_MEMBER_FAILURE_GMA_API	OAuth_Client_ID
	GROUP_NAME_KEY
	USER_UUID_KEY
	FAILURE_REASON_KEY
REMOVE_MEMBERS_SUCCESS_GMA_API	OAuth_Client_ID
	GROUP_NAME_KEY
	USER_UUID_KEY
REMOVE_MEMBERS_FAILURE_GMA_API	OAuth_Client_ID
	GROUP_NAME_KEY
	USER_UUID_KEY
	FAILURE_REASON_KEY
REMOVE_MEMBER_SUCCESS_GMA_API	OAuth_Client_ID
	GROUP_NAME_KEY
	USER_UUID_KEY
REMOVE_MEMBER_FAILURE_GMA_API	OAuth_Client_ID
	GROUP_NAME_KEY
	USER_UUID_KEY
	FAILURE_REASON_KEY
DELETE_GROUP_SUCCESS_GMA_API	OAuth_Client_ID
	GROUP_NAME_KEY



Table 10. Audit events (continued)

Event	Event items
DELETE_GROUP_FAILURE_GMA_API	OAUTH_CLIENT_ID
	GROUP_NAME_KEY
	FAILURE_REASON_KEY
CREATE_GROUP_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	GROUP_NAME_KEY
CREATE_GROUP_FAILURE_GMA_API	OAUTH_CLIENT_ID
	GROUP_NAME_KEY
	FAILURE_REASON_KEY
CREATE_NEW_INSTANCE_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	INSTANCE_NAME_KEY
CREATE_NEW_INSTANCE_FAILURE_GMA_API	OAUTH_CLIENT_ID
	INSTANCE_NAME_KEY
	FAILURE_REASON_KEY
UPDATE_SELF_REG_OPTIONS_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPDATE_SELF_REG_OPTIONS_FAILURE_GMA_API	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
UPDATE_PW_RESET_OPTIONS_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPDATE_PW_RESET_OPTIONS_FAILURE_GMA_API	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
UPDATE_KBA_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPDATE_KBA_FAILURE_GMA_API	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
UPDATE_USERNAME_RECOVERY_OPTIONS_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPDATE_USERNAME_RECOVERY_OPTIONS_FAILURE_GMA_API	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
UPDATE_PORTAL_OPTIONS_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPDATE_PORTAL_OPTIONS_FAILURE_GMA_API	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
UPDATE_EMAIL_TEMPLATE_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPDATE_EMAIL_TEMPLATE_FAILURE_GMA_API	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
UPDATE_APPLICATION_ROLES_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	ROLE_NAME
	ROLE_UUID_KEY
UPDATE_APPLICATION_ROLES_FAILURE_GMA_API	OAUTH_CLIENT_ID
	ROLE_NAME
	ROLE_UUID_KEY
	FAILURE_REASON_KEY
UPDATE_ATTRIBUTE_ELEMENTS_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPDATE_ATTRIBUTE_ELEMENTS_FAILURE_GMA_API	OAUTH_CLIENT_ID

Table 10. Audit events (continued)

Event	Event items
	FAILURE_REASON_KEY
UPDATE_APPLICATION_TEXT_KEYS_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPDATE_APPLICATION_TEXT_KEYS_FAILURE_GMA_API	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
UPDATE_BRANDING_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPDATE_BRANDING_FAILURE_GMA_API	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
UPLOAD_BRANDING_FILE_SUCCESS_GMA_API	OAUTH_CLIENT_ID
UPLOAD_BRANDING_FILE_FAILURE_GMA_API	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
UPDATE_SERVICE_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
UPDATE_SERVICE_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	FAILURE_REASON_KEY
ADD_CHILD_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CHILD_SERVICE_NAME_KEY
ADD_CHILD_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CHILD_SERVICE_NAME_KEY
	FAILURE_REASON_KEY
ADD_CHILDREN_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CHILD_SERVICE_NAME_KEY
ADD_CHILDREN_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CHILD_SERVICE_NAME_KEY
	FAILURE_REASON_KEY
ADD_CONTAINED_SERVICE_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CONTAINED_SERVICE_NAME_KEY
ADD_CONTAINED_SERVICE_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CONTAINED_SERVICE_NAME_KEY
	FAILURE_REASON_KEY
ADD_CONTAINED_SERVICES_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CONTAINED_SERVICE_NAME_KEY
ADD_CONTAINED_SERVICES_FAILURE_GMA_API	OAUTH_CLIENT_ID

Table 10. Audit events (continued)

Event	Event items
	SERVICE_NAME_KEY
	CONTAINED_SERVICE_NAME_KEY
	FAILURE_REASON_KEY
SERVICES_ADD_MEMBERS_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	USER_UUID_KEY
	SERVICE_NAME_KEY
	ACTION
	GMA_ADMIN_REQUEST_KEY
SERVICES_ADD_MEMBERS_FAILURE_GMA_API	OAUTH_CLIENT_ID
	USER_UUID_KEY
	SERVICE_NAME_KEY
	ACTION
	GMA_ADMIN_REQUEST_KEY
	FAILURE_REASON_KEY
REMOVE_CHILD_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CHILD_SERVICE_NAME_KEY
REMOVE_CHILD_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CHILD_SERVICE_NAME_KEY
	FAILURE_REASON_KEY
REMOVE_CHILDREN_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CHILD_SERVICE_NAME_KEY
REMOVE_CHILDREN_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	FAILURE_REASON_KEY
	CHILD_SERVICE_NAME_KEY
REMOVE_CONTAINED_SERVICE_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CONTAINED_SERVICE_NAME_KEY
REMOVE_CONTAINED_SERVICE_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CONTAINED_SERVICE_NAME_KEY
	FAILURE_REASON_KEY
REMOVE_CONTAINED_SERVICES_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	CONTAINED_SERVICE_NAME_KEY
REMOVE_CONTAINED_SERVICES_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY

Table 10. Audit events (continued)

Event	Event items
	CONTAINED_SERVICE_NAME_KEY
	FAILURE_REASON_KEY
DELETE_SERVICE_SUCCESS_GMA_API	OAuth_CLIENT_ID
	SERVICE_NAME_KEY
DELETE_SERVICE_FAILURE_GMA_API	OAuth_CLIENT_ID
	SERVICE_NAME_KEY
	FAILURE_REASON_KEY
CREATE_SERVICE_SUCCESS_GMA_API	OAuth_CLIENT_ID
	SERVICE_OWNER_UUID
	SERVICE_NAME_KEY
	GMA_ADMIN_REQUEST_KEY
CREATE_SERVICE_FAILURE_GMA_API	OAuth_CLIENT_ID
	SERVICE_NAME_KEY
	SERVICE_OWNER_UUID
	GMA_ADMIN_REQUEST_KEY
	FAILURE_REASON_KEY
SET_TOKEN_CONFIG_SUCCESS_GMA_API	OAuth_CLIENT_ID
	TOKEN_TYPE_KEY
SET_TOKEN_CONFIG_FAILURE_GMA_API	OAuth_CLIENT_ID
	TOKEN_TYPE_KEY
	FAILURE_REASON_KEY
CREATE_TOKEN_SUCCESS_GMA_API	OAuth_CLIENT_ID
	TOKEN_TYPE_KEY
	USER_UUID_KEY
CREATE_TOKEN_FAILURE_GMA_API	OAuth_CLIENT_ID
	TOKEN_TYPE_KEY
	USER_UUID_KEY
	FAILURE_REASON_KEY
DELETE_TOKEN_SUCCESS_GMA_API	OAuth_CLIENT_ID
	TOKEN_VALUE_KEY
DELETE_TOKEN_FAILURE_GMA_API	OAuth_CLIENT_ID
	TOKEN_VALUE_KEY
	FAILURE_REASON_KEY
CREATE_CLIENT_SUCCESS_GMA_API	OAuth_CLIENT_ID
	CLIENT_ID
	CLIENT_ABBREV
	CLIENT_AUTHORITIES
	CLIENT_ACCESS_TOKEN_VALIDITY
	CLIENT_SEARCH_RESULT_SIZE_LIMIT
CREATE_CLIENT_FAILURE_GMA_API	OAuth_CLIENT_ID

Table 10. Audit events (continued)

Event	Event items
	CLIENT_ID
	CLIENT_ABBREV
	CLIENT_AUTHORITIES
	CLIENT_ACCESS_TOKEN_VALIDITY
	CLIENT_SEARCH_RESULT_SIZE_LIMIT
	FAILURE_REASON_KEY
PROCESS_REQUESTS_SUCCESS_GMA_API	REQUEST_ID
	APPROVER_UUID
	OAUTH_CLIENT_ID
PROCESS_REQUESTS_FAILURE_GMA_API	REQUEST_ID
	APPROVER_UUID
	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
REASSIGN_REQUESTS_SUCCESS_GMA_API	REQUEST_ID
	OLD_APPROVER_UUID
	NEW_APPROVER_UUID
	OAUTH_CLIENT_ID
REASSIGN_REQUESTS_FAILURE_GMA_API	REQUEST_ID
	OLD_APPROVER_UUID
	NEW_APPROVER_UUID
	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
SEND_REQUEST_REMINDER_SUCCESS_GMA_API	APPROVER_UUID
	OAUTH_CLIENT_ID
SEND_REQUEST_REMINDER_FAILURE_GMA_API	APPROVER_UUID
	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
FDS_FEED_ERROR	GLOBALDN
	CLIENT_ABBREV
	USER_UUID_KEY
	FAILURE_REASON_KEY
UPDATE_GROUP_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	GROUP_NAME_KEY
UPDATE_GROUP_FAILURE_GMA_API	OAUTH_CLIENT_ID
	GROUP_NAME_KEY
	FAILURE_REASON_KEY
SERVICES_REMOVE_MEMBERS_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	USER_UUID_KEY
	SERVICE_NAME_KEY
SERVICES_REMOVE_MEMBERS_FAILURE_GMA_API	OAUTH_CLIENT_ID

Table 10. Audit events (continued)

Event	Event items
	USER_UUID_KEY
	SERVICE_NAME_KEY
	FAILURE_REASON_KEY
UPDATE_SERVICE_SUCCESS_GMA_SERVICES_CONTROLLER	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	SERVICE_OWNER_UUID
	SERVICE_MANAGER_APPROVAL_AUTO
	SERVICE_MANAGER_APPROVAL_MANUAL
	SERVICE_OWNER_APPROVAL_AUTO
	SERVICE_OWNER_APPROVAL_MANUAL
	SERVICE_APPROVAL_GRACE_PERIOD
	SERVICE_APPROVAL_REMINDER_ACTION_ID
	SERVICE_OWNER_RECERT_AUTO
	SERVICE_MANAGER_RECERT_AUTO
	SERVICE_OWNER_RECERT_MANUAL
	SERVICE_MANAGER_RECERT_MANUAL
	SERVICE_RECERT_GRACE_PERIOD
	SERVICE_RECERT_REMINDER_ACTION_ID
	SERVICE_SOD_CALLOUT_REQUIRED
	SERVICE_MEMBER_NOTIFICATION
	SERVICE_HIDE_FROM_SELF_CARE
	SERVICE_NO_MEMBERS
	SERVICE_DESTROY_ID_ON_REVOKE
UPDATE_SERVICE_FAILURE_GMA_SERVICES_CONTROLLER	OAUTH_CLIENT_ID
	SERVICE_NAME_KEY
	SERVICE_OWNER_UUID
	SERVICE_MANAGER_APPROVAL_AUTO
	SERVICE_MANAGER_APPROVAL_MANUAL
	SERVICE_OWNER_APPROVAL_AUTO
	SERVICE_OWNER_APPROVAL_MANUAL
	SERVICE_APPROVAL_GRACE_PERIOD
	SERVICE_APPROVAL_REMINDER_ACTION_ID
	SERVICE_OWNER_RECERT_AUTO
	SERVICE_MANAGER_RECERT_AUTO
	SERVICE_OWNER_RECERT_MANUAL
	SERVICE_MANAGER_RECERT_MANUAL
	SERVICE_RECERT_GRACE_PERIOD
	SERVICE_RECERT_REMINDER_ACTION_ID
	SERVICE_SOD_CALLOUT_REQUIRED
	SERVICE_MEMBER_NOTIFICATION

Table 10. Audit events (continued)

Event	Event items
	SERVICE_HIDE_FROM_SELF_CARE
	SERVICE_NO_MEMBERS
	SERVICE_DESTROY_ID_ON_REVOKE
	FAILURE_REASON_KEY
CREATE_ADMIN_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	ADMIN_UID
	ADMIN_GIVEN_NM
	ADMIN_SN
	ADMIN_MAIL
CREATE_ADMIN_FAILURE_GMA_API	OAUTH_CLIENT_ID
	ADMIN_UID
	FAILURE_REASON_KEY
UPDATE_ADMIN_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	ADMIN_UID
	ADMIN_GIVEN_NM
	ADMIN_SN
	ADMIN_MAIL
UPDATE_ADMIN_FAILURE_GMA_API	OAUTH_CLIENT_ID
	ADMIN_UID
	FAILURE_REASON_KEY
DELETE_ADMIN_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	ADMIN_UID
DELETE_ADMIN_FAILURE_GMA_API	OAUTH_CLIENT_ID
	ADMIN_UID
	FAILURE_REASON_KEY
JUNCTION_ADD_FAIL	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
	JUNCTION_NAME_KEY
JUNCTION_UPDATE_FAIL	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
	JUNCTION_NAME_KEY
JUNCTION_DELETE_FAIL	OAUTH_CLIENT_ID
	FAILURE_REASON_KEY
	JUNCTION_NAME_KEY
JUNCTION_ADD_SUCCESS	OAUTH_CLIENT_ID
	JUNCTION_NAME_KEY
JUNCTION_UPDATE_SUCCESS	OAUTH_CLIENT_ID
	JUNCTION_NAME_KEY
JUNCTION_DELETE_SUCCESS	OAUTH_CLIENT_ID
	JUNCTION_NAME_KEY

Table 10. Audit events (continued)

Event	Event items
ADD_PROTECTED_OBJECT_SUCCESS	PROTECTED_OBJECT_NAME_KEY
ADD_PROTECTED_OBJECT_FAILURE	FAILURE_REASON_KEY
	PROTECTED_OBJECT_NAME_KEY
UPDATE_PROTECTED_OBJECT_SUCCESS	PROTECTED_OBJECT_NAME_KEY
UPDATE_PROTECTED_OBJECT_FAILURE	FAILURE_REASON_KEY
	PROTECTED_OBJECT_NAME_KEY
DELETE_PROTECTED_OBJECT_FAILURE	FAILURE_REASON_KEY
	PROTECTED_OBJECT_NAME_KEY
DELETE_PROTECTED_OBJECT_SUCCESS	PROTECTED_OBJECT_NAME_KEY
ACL_ADD_SUCCESS	OAUTH_CLIENT_ID
	ACL_NAME_KEY
ACL_UPDATE_SUCCESS	OAUTH_CLIENT_ID
	ACL_NAME_KEY
ACL_DELETE_SUCCESS	OAUTH_CLIENT_ID
	ACL_NAME_KEY
ACL_ADD_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	ACL_NAME_KEY
ACL_UPDATE_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	ACL_NAME_KEY
ACL_DELETE_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	ACL_NAME_KEY
POP_ADD_SUCCESS	OAUTH_CLIENT_ID
	POP_NAME_KEY
POP_UPDATE_SUCCESS	OAUTH_CLIENT_ID
	POP_NAME_KEY
POP_DELETE_SUCCESS	OAUTH_CLIENT_ID
	POP_NAME_KEY
POP_ADD_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	POP_NAME_KEY
POP_UPDATE_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	POP_NAME_KEY
POP_DELETE_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	POP_NAME_KEY
CREATE_SCHEMA_ATTR_SUCCESS_GMA_API	OAUTH_CLIENT_ID



Table 10. Audit events (continued)

Event	Event items
	SCHEMA_ATTR_NAME
	SCHEMA_ATTR_DESCRIP
	SCHEMA_ATTR_TYPE
	SCHEMA_ATTR_MULTI_VALUE
CREATE_SCHEMA_ATTR_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SCHEMA_ATTR_NAME
	FAILURE_REASON_KEY
UPDATE_SCHEMA_ATTR_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SCHEMA_ATTR_NAME
	SCHEMA_ATTR_DESCRIP
	SCHEMA_ATTR_TYPE
	SCHEMA_ATTR_MULTI_VALUE
UPDATE_SCHEMA_ATTR_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SCHEMA_ATTR_NAME
	FAILURE_REASON_KEY
DELETE_SCHEMA_ATTR_SUCCESS_GMA_API	OAUTH_CLIENT_ID
	SCHEMA_ATTR_NAME
DELETE_SCHEMA_ATTR_FAILURE_GMA_API	OAUTH_CLIENT_ID
	SCHEMA_ATTR_NAME
	FAILURE_REASON_KEY
SETUP_BRANDING_INSTANCE_SUCCESS_GMA_API	OAUTH_CLIENT_ID
SETUP_BRANDING_INSTANCE_FAILURE_GMA_API	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
USER_PWD_RESET_FAILURE	USER_UUID_KEY
	FAILURE_REASON_KEY
GLOBAL_BRANDING_UPDATE_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	GLOBAL_BRANDING_CLIENT_NAME
GLOBAL_BRANDING_UPDATE_SUCCESS	OAUTH_CLIENT_ID
	GLOBAL_BRANDING_CLIENT_NAME
API_KEY_MANAGEMENT_CREATE_SUCCESS	OAUTH_CLIENT_ID
	API_KEY_OAUTH_CLIENT_ID
API_KEY_MANAGEMENT_CREATE_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	API_KEY_OAUTH_CLIENT_ID
API_KEY_MANAGEMENT_UPDATE_SUCCESS	OAUTH_CLIENT_ID
	API_KEY_OAUTH_CLIENT_ID
API_KEY_MANAGEMENT_UPDATE_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	API_KEY_OAUTH_CLIENT_ID

Table 10. Audit events (continued)

Event	Event items
API_KEY_MANAGEMENT_DELETE_SUCCESS	OAUTH_CLIENT_ID
	API_KEY_OAUTH_CLIENT_ID
API_KEY_MANAGEMENT_DELETE_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	API_KEY_OAUTH_CLIENT_ID
ADD_ATTRIBUTE_TO_PERSON_SUCCESS	OAUTH_CLIENT_ID
	SCHEMA_ATTR_NAME
	SCHEMA_ATTR_VALUE
	USER_UUID_KEY
ADD_ATTRIBUTE_TO_PERSON_FAILURE	FAILURE_REASON_KEY
	OAUTH_CLIENT_ID
	SCHEMA_ATTR_NAME
	SCHEMA_ATTR_VALUE
USER_REGISTRATION_REQ	USER_UUID_KEY
	USER_UID
	USER_GTWAY_PRINCIPAL_NM

## Report templates

Report templates are FreeMarker templates that are used to customize the output of query reports.

AllUsers.ftl is an example of a template that differs from a standard report in the following ways:

- The page size of the table is changed to 20 rows
- The column headers are customized
- The Groups by User columns are links to drill-down reports

The following changes are illustrated in the code example of the AllUsers.ftl template:

- The page size attribute in the table tag is changed
- The property and title tags are specified for each column
- The last columns use the UID tag to create drill-down report links by using the executeReport.action

```
<@display.table name="results" class="displayTag" sort="list" export=true pagesize=20
requestURI="queryReportResult.action">
<@display.column property="uid" title="UID" sortable=true headerClass="sortable"/>
<@display.column property="name" title="Name" sortable=true headerClass="sortable"/>
<@display.column property="email" title="Email" sortable=true headerClass="sortable"/>
<@display.column property="type" title="Type" sortable=true headerClass="sortable"/>
<@display.column property="account valid" title="Account Valid" sortable=true
headerClass="sortable"/>
<@display.column property="password valid" title="Password Valid" sortable=true
headerClass="sortable"/>
<@display.column value="Groups"
title="" href="executeReport.action?reportName=Groups by User"
paramId="uid" paramProperty="uid"/>
```

```
<@display.setProperty name="export.pdf" value="true"/>
<@display.setProperty name="export.xml" value="false"/>
<@display.setProperty name="export.pdf.filename" value="{report.name}.pdf"/>
<@display.setProperty name="export.csv.filename" value="{report.name}.csv"/>
<@display.setProperty name="export.excel.filename" value="{report.name}.xls"/>
</@display.table>
```



---

## Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing  
IBM Corporation  
North Castle Drive  
Armonk, NY 10504-1785 U.S.A.

For license inquiries regarding double-byte character set (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing  
Legal and Intellectual Property Law  
IBM Japan, Ltd.  
19-21, Nihonbashi-Hakozakicho, Chuo-ku  
Tokyo 103-8510, Japan

**The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:**

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation  
2Z4A/101  
11400 Burnet Road  
Austin, TX 79758 U.S.A

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this information and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, or any equivalent agreement between us.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

---

## Trademarks

IBM, the IBM logo, and [ibm.com](http://ibm.com) are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM® trademarks is available on the Web at "Copyright and trademark information" at [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

Java™ and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.





Printed in USA