Monitoring Business Services

SL1 version 8.12.2

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Chapter 1

Introduction to Business Services

Overview

This manual describes how to use SL1 to create and manage business services for your company. Business services let you gauge the availability, health, and risk of your services and the devices that provide those services.

Use the following menu options to navigate the SL1 user interface:

- To view a pop-out list of menu options, click the menu icon ( ).
- To view a page containing all of the menu options, click the Advanced menu icon ( ).

This chapter includes the following topics:

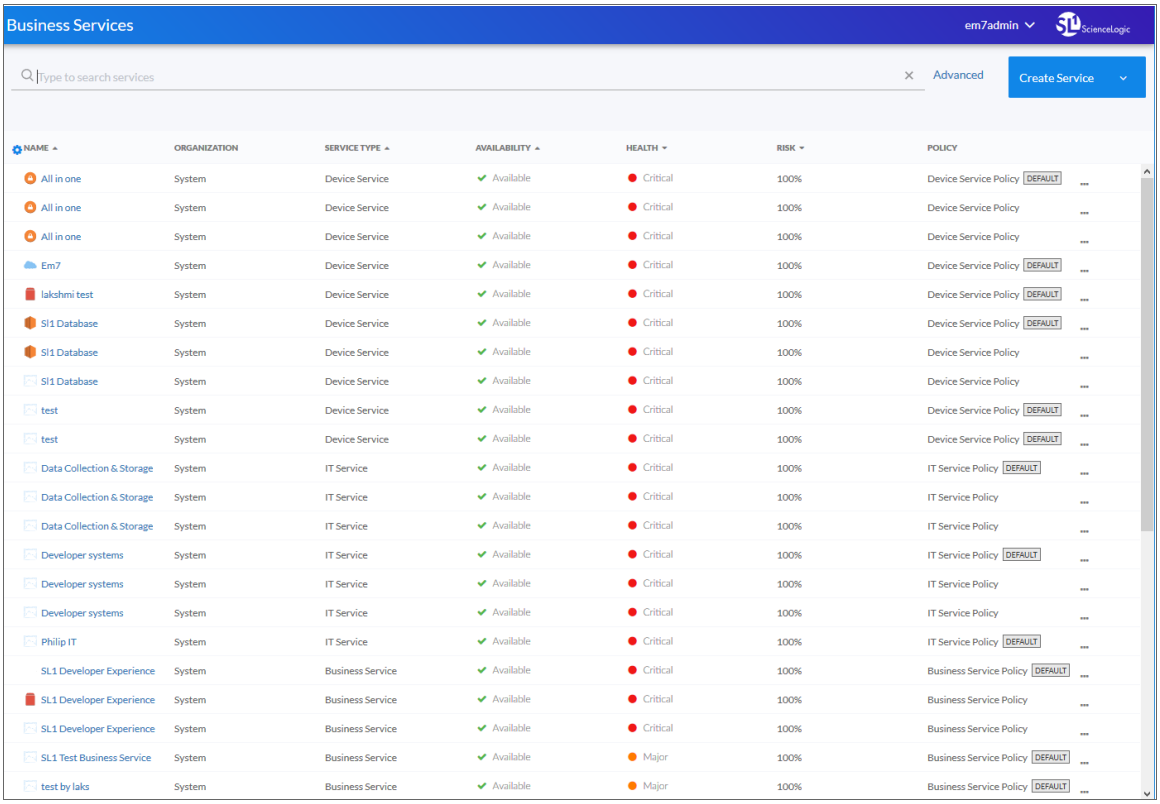
What is a Business Service?

A ***business service*** includes one or more technical services that provide value to internal or external customers. Some examples of business services include verifying Internet access or website hosting, online banking, remote backups, and remote storage. Usually a business service includes an associated Service Level Agreement (SLA) that specifies the terms of the service.

Create the following types of services on the **Business Services** page, in the following order:

1. ***Device Service***. Monitors a set of related devices, such as all devices from a specific region.
2. ***IT Service***. Monitors a service that IT provides to your organization. An IT service is made up of one or more device services.
3. ***Business Service***. Monitors a service your organization provides to your customers. A business service is made up of one or more IT services.

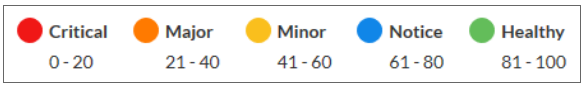
To navigate to the **Business Services** page, click the **Business Services** icon ( ):



These business services let you gauge the health, availability and risk of your services or the devices that provide those services. On the **Business Services** page, these values display in the following format and order:

1. ***Availability***: Displays whether a device, like a website or a server, is available to be used by customers. A service or device is considered unavailable if SL1 is not able to collect data from the device or service, or if device is usable or not usable. A value of *0* means a device or service is unavailable, and a value of *1* means a device is available. Availability uses the following icons:

2. ***Health***: Displays a "severity" icon that represents a numerical value between 0 and 100, which indicates the current status of a device or service to show if its health is worsening or improving. For example, the Health value could indicate when a device is intermittently unavailable because of a power problem and falls below the required level of performance. Health uses the following icons by default:



3. ***Risk***: Displays a percentage value between 0 and 100 that indicates how close a service or a device is to being in an undesirable state. The safest possible risk value is 0%, while the worst risk value is 100%.

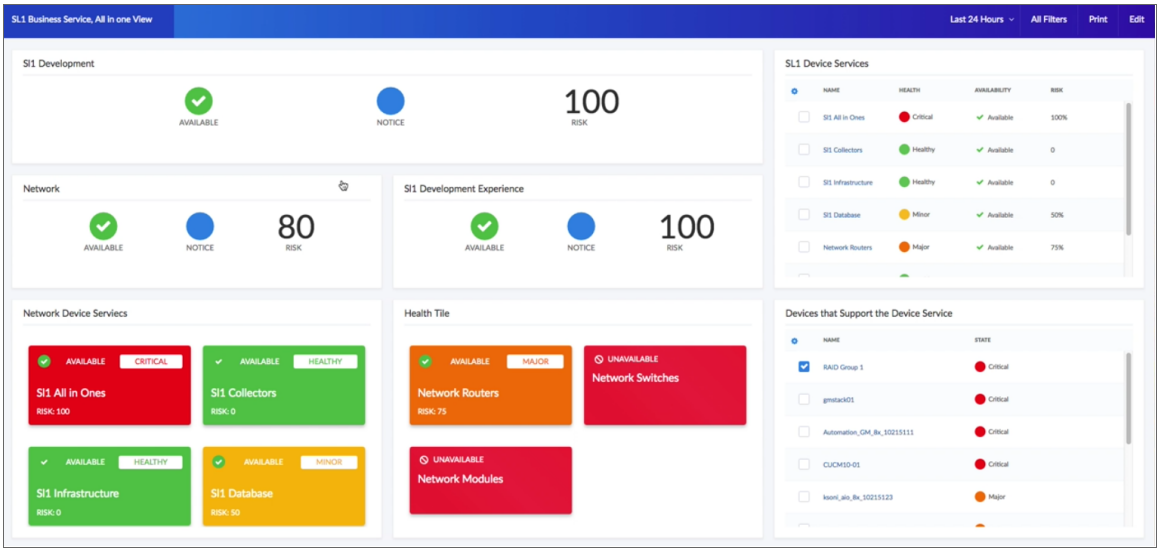
These values are computed in this order because SL1 uses *Availability* values to compute *Health* while SL1 uses both *Availability* and *Health* values to compute *Risk*.

You can define metrics for *device services* based on:

- availability
- latency
- event count
- event severity
- device state
- Dynamic Application data collected by SL1

NOTE: IT services created in the classic user interface are *not* included in the new user interface, and "classic" IT services are not related in any way to the new business services, IT services, and device services.

You can also create dashboards for business services that display information about the state, availability, risk, events, metrics, and other information about a business service. For more information, see the ***Dashboards*** manual.



Example: Retail Banking

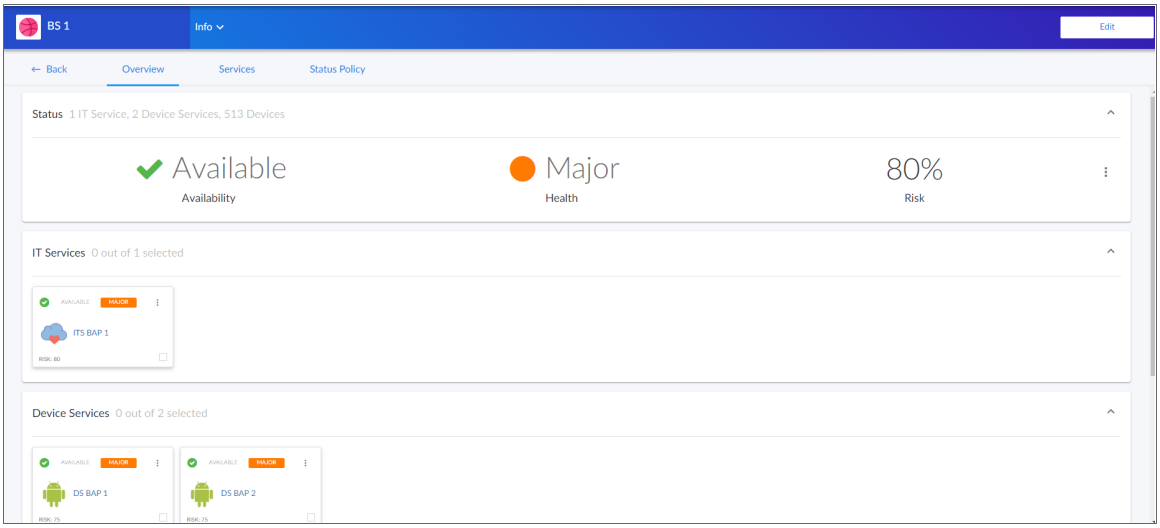
Using SL1 to monitor a business service lets you quickly see whether the service is available and working as expected for a customer or end user. For example, a banking company wants to ensure that their retail banking service is available around the world. They would use the following workflow to set up their services in SL1:

1. Because the company has offices around the world, they create multiple ***device services*** that organize devices based on location or region. The company adds all of its devices to the relevant device services.
2. The company then creates multiple ***IT services*** to monitor the device services (from step 1), including separate IT services for online banking, teller systems, and ATM networks.
3. Next, the company creates a ***business service*** for its retail banking business, and this business service includes all of the IT services (from step 2) that deal with retail banking.

NOTE: As needed, the banking company repeats steps 1-3 to create additional business services (made up of IT services and device services) to monitor their commercial banking and investment banking devices and services.

Using the Service Investigator

When you select a service from the list of services on the **Business Services** page, the **Service Investigator** page appears:



The Tabs on the Service Investigator Page

The **Service Investigator** page contains three tabs:

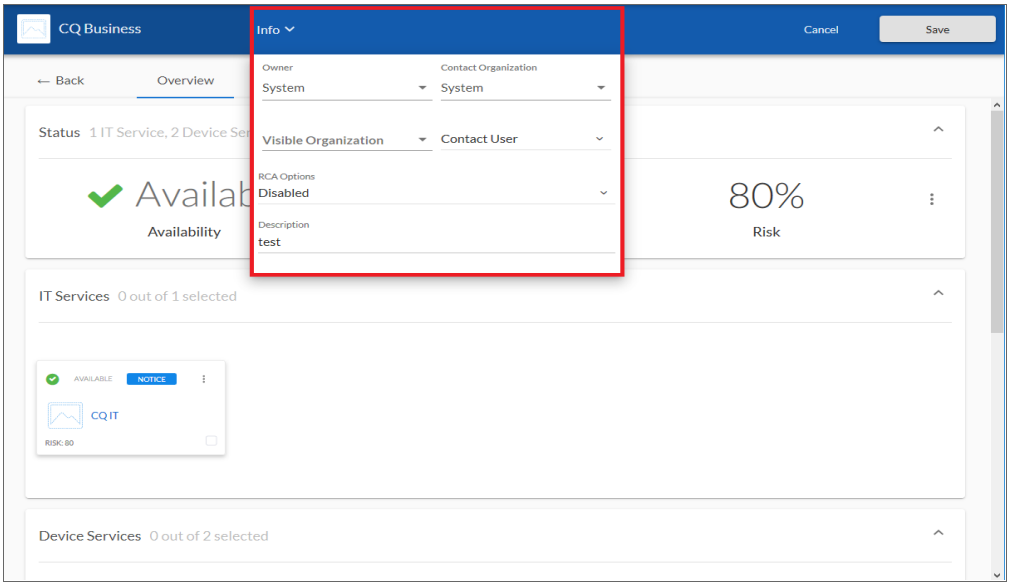
- **[Overview]**. Displays a "big-number" dashboard version of the most recent Availability, Health, and Risk values for the service. Below that, the tab displays a summary tile view similar to a dashboard widget for any "constituent" IT Services and Device Services that might belong to the top-level Business Service. For more information, see *Constituent Services on the Service Investigator Page*.

TIP: To view Root Cause Analysis information for a specific service, click the Actions icon (⋮) on the tile for that service. If the Root Cause Analysis option is enabled, you can review data related to troubleshooting for that service. For more information, see *Using the Root Cause Analysis Feature*.

- **[Services]** or **[Devices]**. Displays the services currently used in a business service or IT service, or the devices included in a device service. You can edit the search query at the top for the services or devices in the ***Search*** field at the top of the tab.
- **[Status Policy]**. Displays a list of all policies of that service type currently in the system and can be chosen to associate with the service being viewed. Depending on the thresholds you configured on the **Business Services Thresholds** page (Business Services > Thresholds), SL1 generates an alert message if a threshold is crossed. On this tab, you can change the policy used by a service, and you can also create a new service policy. A **Default** label appears next to the default policies.

The Info Drop-down on the Service Investigator Page

The **Info** drop-down at the top of the **Service Investigator** page displays the following:

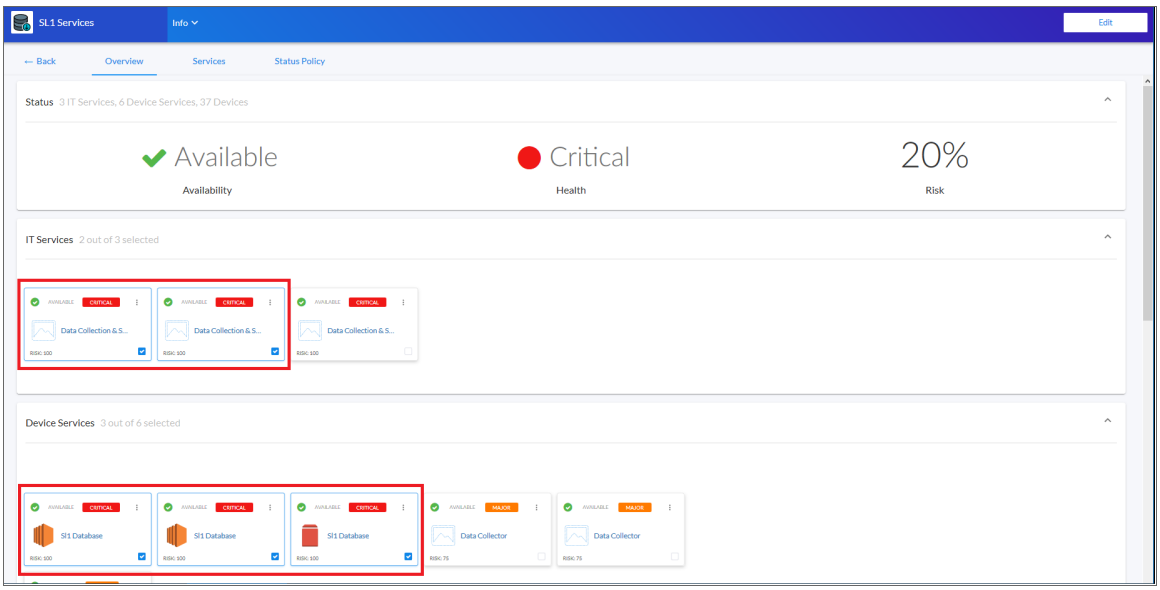


- ***Owner***. The organization that owns the service.
- ***Contact Organization***. A contact organization for the service.
- ***Visible Organizations***. A list of organizations from which you can select devices to use in Device Services or IT Services. For example, if you selected *Acme* for this field, then any service that is aligned with Acme can access devices in the Acme organization.
- ***Contact User***. The contact user for the service.
- ***RCA Options***. Allows the user to enable or disable the Root Cause Analysis feature, an advanced feature for troubleshooting. For more information, see *Using the Root Cause Analysis Feature*.
- ***Description***. A description of the service.
- ***Include devices from visible organizations***. This option lets you enable or disable the ability to include devices from other organizations in a device service. This option appears only on **Service Investigator** pages for devices.

NOTE: Click the **[Edit]** button to edit the content on all three tabs and to edit the fields on the **Info** drop-down. You can also edit the service name and the icon associated with the service. Click **[Save]** to save your changes.

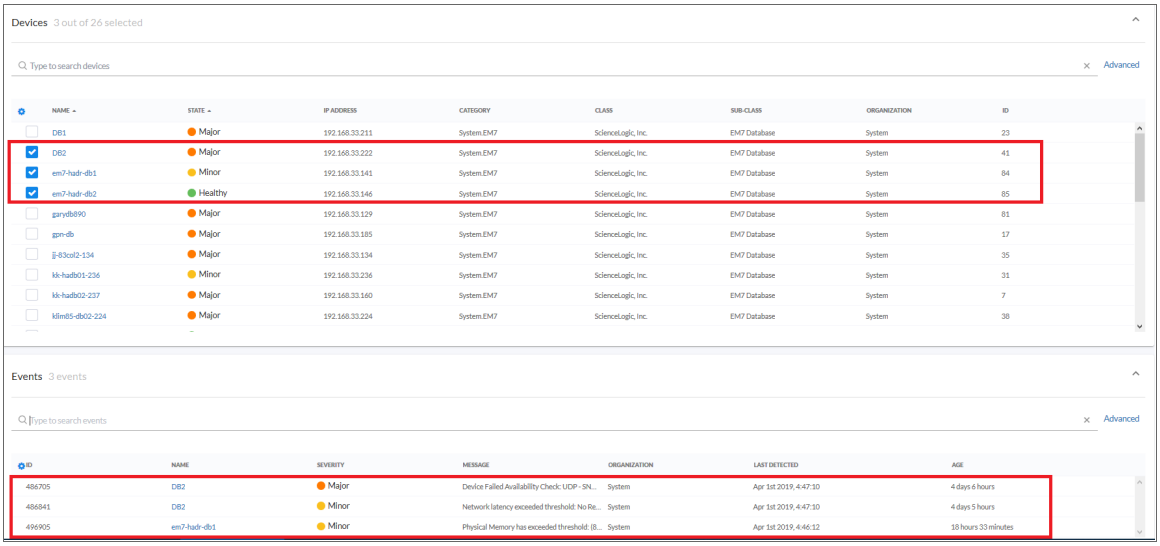
The Constituent Services on the Service Investigator Page

The **[Overview]** tab on the **Service Investigator** page for a business service contains a set of tiles that represent the "constituent" services that are part of the top-level service:



Selecting the checkbox of a service tile controls which constituent service you see in the tile view below it. For example, if you have a Business Service with three IT Services, and each of those IT Services has two Device Services, selecting the checkbox of one of the IT services will filter the Device Service tile panel down to only the Device Services that belong to the selected IT service.

At the bottom of the **[Overview]** tab, you can review a list of devices that belong to the services you selected on the various tiles. You can then select one or more devices to see events for those devices:



NOTE: The **Service Investigator** page for an IT service displays device services, devices, and events, while the **Service Investigator** page for a device service displays devices and events.

Chapter 2

Creating Services and Service Policies

Overview

This chapter describes how to create the three types of services you can monitor with SL1: business services, IT services, and devices services. This chapter also describes how to create and use policies for each service to assist with monitoring those services.

Use the following menu options to navigate the SL1 user interface:

- To view a pop-out list of menu options, click the menu icon ( ).
- To view a page containing all of the menu options, click the Advanced menu icon ( ).

This chapter includes the following topics:

Creating a Service

You can create a new business service to monitor a specific set of IT services and devices for Availability, Health, and Risk values. To create a new business service, you should first determine:

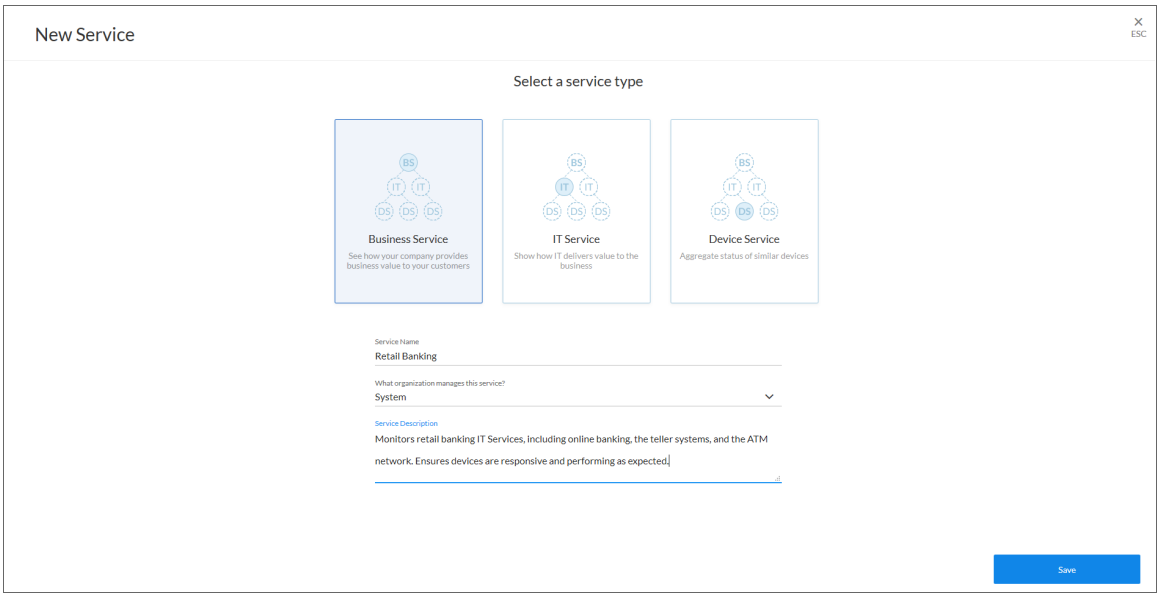
- The devices that impact the business service.
- The IT services that impact the business service.
- The specific conditions that you want to monitor, based on your business processes.

For example, if you provide email service, then a failure of your primary SMTP server and backup SMTP server would constitute a Critical status.

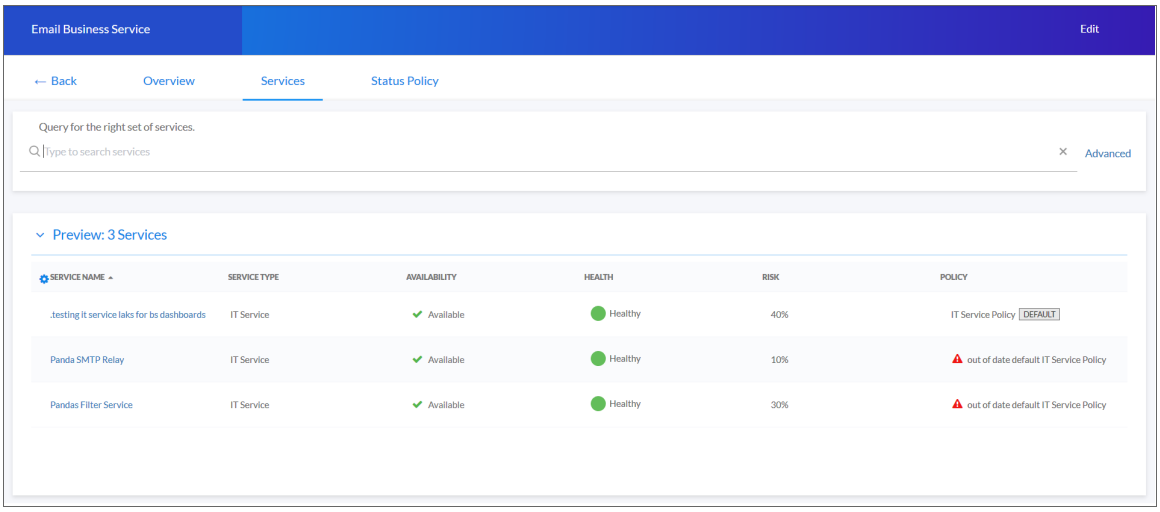
TIP: You can *copy* an existing service on the **Business Services** page by clicking the **[Actions]** button (⋯) for that service and selecting *Duplicate*.

To create a business, IT, or device service:

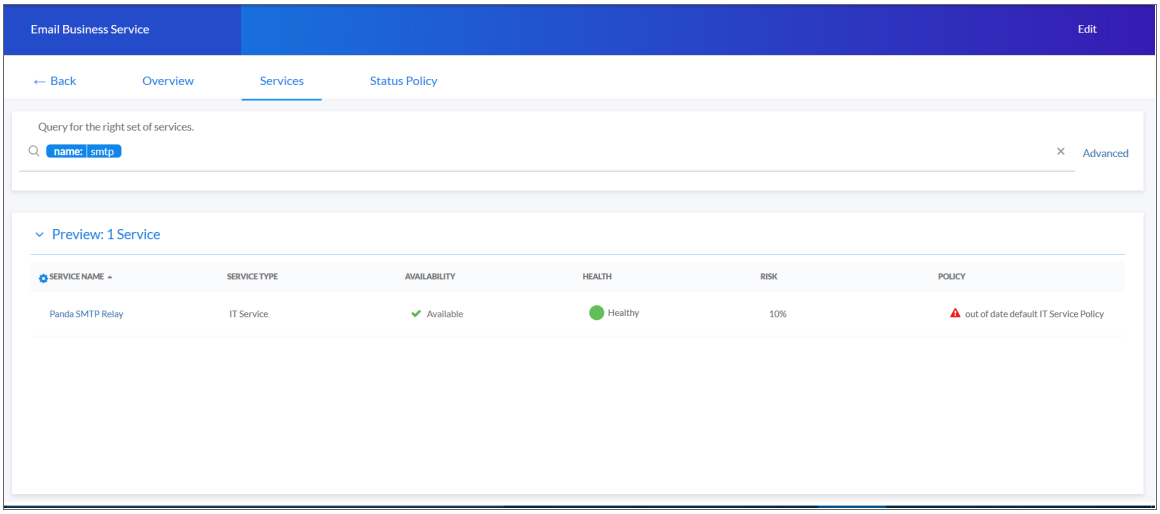
1. On the **Business Services** page, click the **[Create Service]** button. The **New Service** page appears:



2. Select a service type. You should start by creating your device services, then your IT services, and then finally your business service. Your options include:
    - ***Device Service***. Monitors a set of related devices.
    - ***IT Service***. Monitors a service that IT provides to your to your organization. An IT service includes one or more device services.
    - ***Business Service***. Monitors a service your organization provides to your customers. A business service includes one or more IT services.
3. Complete the remaining fields:
    - ***Service Name***. Type a unique name for this service.
    - ***What organization manages this service?***. Select the name of the organization that owns this service.
    - ***Service Description***. Type a short description of this service and its purpose. You can use the text in this description to search for this service on the **Business Services** page. Optional.
4. Click the **[Save]** button. If you selected *Device Service* in step 2, the **[Devices]** tab appears, with a list of available devices in the ***Preview*** section. If you selected *Business Service* or *IT Service* in step 2, the **[Services]** tab appears, with a list of available services in the ***Preview*** section.



5. In the ***Search*** field, type search criteria for the services or devices you want to monitor. A list of services or devices that match your search criteria appears in the **Preview** section:



TIP: : If you are looking for a very specific set of services or devices, click the gear icon (⚙) to the right of the **Search** field and select *Advanced*. In this mode you can create an advanced search using AND or OR for multiple search criteria. For example, to search for devices with a Device Class of "network.router", use: `deviceClass has (deviceCategory has (name contains 'network.router'))` For more information, see the "Advanced Search" chapter in the ***Introduction to SL1*** manual.

6. When you have the right combination of services or devices, click the **[Save]** button. The default policy for the type of service you selected is automatically added to the new service.
7. If you want to use a different business policy with the new service, see *Selecting a Business Service Policy*.
8. If you want to create a *new* business policy to use with the new service, see *Creating a Business Service Policy*.
9. Repeat this process until you have the right combination of device services and IT services in your business service (or business services, if needed).

Selecting a Service Policy

Each service type (device service, IT service, and business service) requires a ***policy*** that determines what it monitors. A business service policy contains a set of rules and conditions that define the Availability, Health, and Risk values for the service, depending on your business needs. Each service requires that one policy be associated with a service at a time.

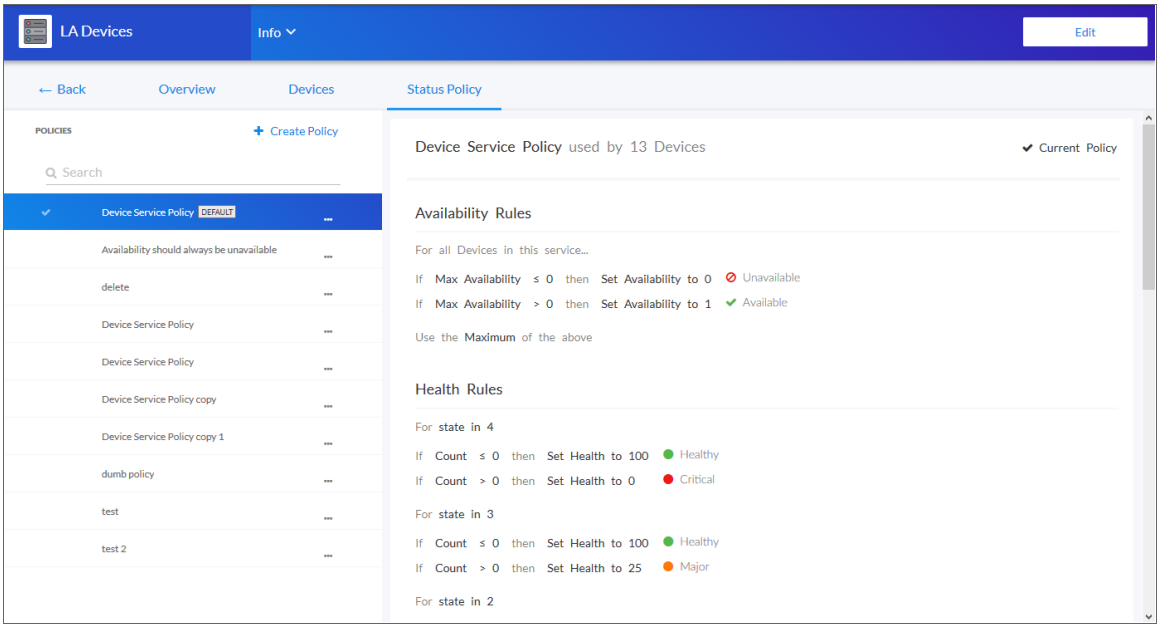
NOTE: The *PowerPack for Business Service Event Policies* contains a set of new business service policies you can use for your services.

When you create a business service of any type, SL1 automatically uses the *default* policy for that particular type of business service. You can remove the default policy after you create a new policy. The default policies cannot be edited.

TIP: If a policy contains errors, an error icon ( ) appears next to the policy name. To view details about what makes the policy invalid, select the policy and hover over the error icon next to the policy name in the right-hand section. A pop-up window lists the problems with the policy.

To select an existing business service policy:

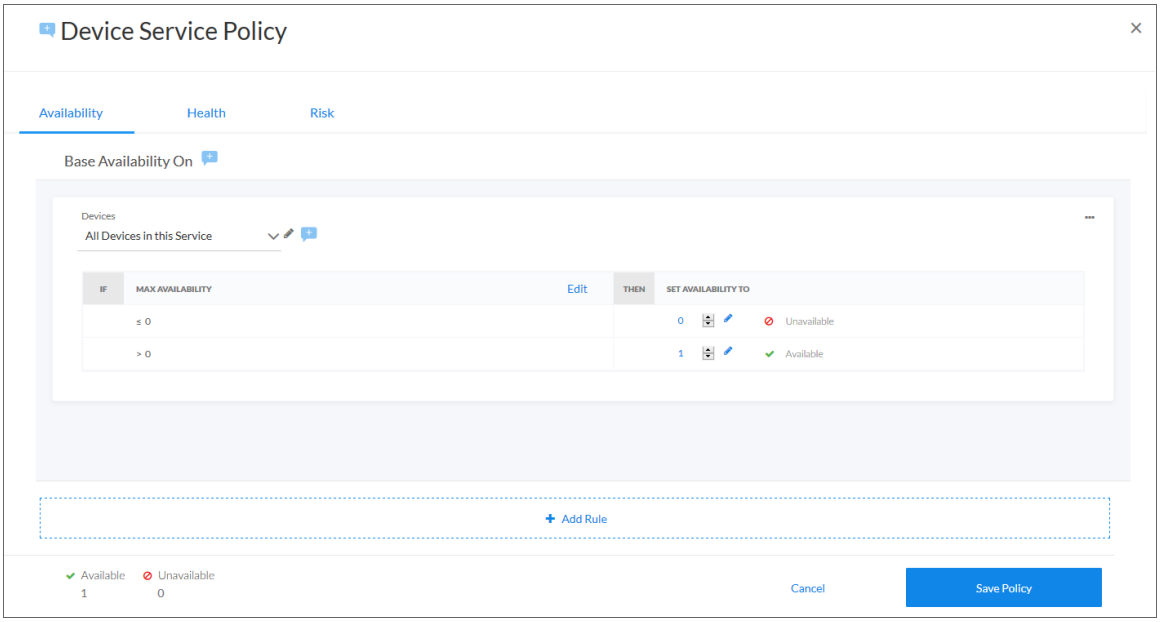
1. On the **Business Services** page, select the service that needs a policy. The **[Overview]** tab for the service appears.
2. Click the **[Status Policy]** tab:



3. In the **Policies** section on the left, select the policy you want to use.

TIP: You can type basic search criteria in the ***Search*** field to locate a specific policy in the list.

4. To view the details of a selected policy, click the **[Actions]** button (⋯) for that policy and select *Edit* (or *View* for the default policy). The **Policy Editor** page appears:



5. Click the **[Cancel]** button when you are done viewing the details for that policy.

> **TIP:** You can *copy* an existing service policy on the **Business Services** page by clicking the **[Actions]** button (⋯) for that policy and selecting *Duplicate*.

6. To add a policy to the service, select the policy in the **Policies** section and click the **[Use Policy]** button in the right-hand section. A check mark icon (☑) appears next to that policy in the **Policies** section, and the words "Current Policy" replace the **[Use Policy]** button in the right-hand section.
7. To make a copy of a policy, click the **[Actions]** button (⋯) for that policy and select *Duplicate*.
8. To *delete* a policy you no longer want to use, click the **[Actions]** button (⋯) for that policy, select *Delete*, and then click **[Delete Policy]**. If that policy is used by any other services, those services are assigned the default policy type. You cannot delete a default policy.

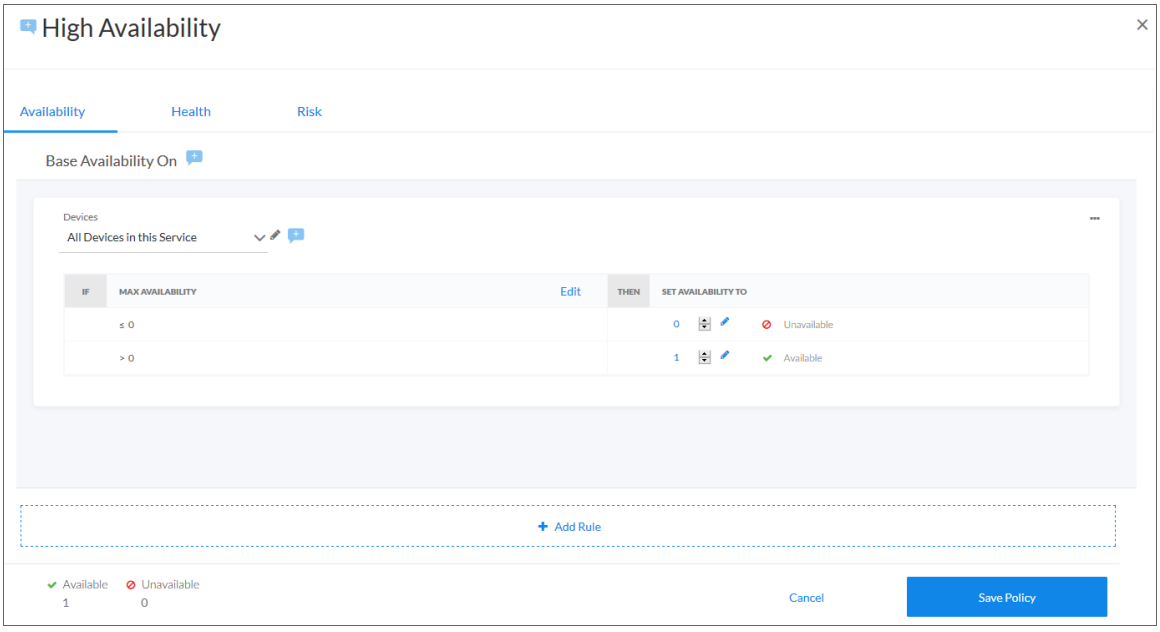
Creating a Service Policy

When you create a business service of any type, SL1 automatically uses the *default* policy for that particular type of business service. You can create a new policy to replace the default policy. When you create a new policy, the new policy uses the values from the default policy for that type of service as a starting point.

A policy includes a set of ***rules***, and each rule can include one to three ***conditions***. If you have multiple rules and conditions, *all* rules and conditions on a tab must be met to generate the Availability, Health, or Risk value. In other words, if a rule had three conditions, you would set up the conditions for that rule as an IF, AND, AND, THEN statement.

To create a policy:

1. On the **Business Services** page, select the service for which you want to create a policy. The **Service Investigator** page appears.
2. Click the **[Status Policy]** tab, and then click **Create Policy** in the ***Policies*** section. A **Create Policy** window appears.
3. Type a policy name and click the **[Create Policy]** button. The new policy is added to the ***Policies*** section on the **[Status Policy]** tab.
4. Click the **[Actions]** button (⋯) for the new policy and select *Edit*, or click the **[Edit Policy]** button. The **Service Policy Editor** page appears, with a default rule already configured on each tab for Availability, Health, and Risk:

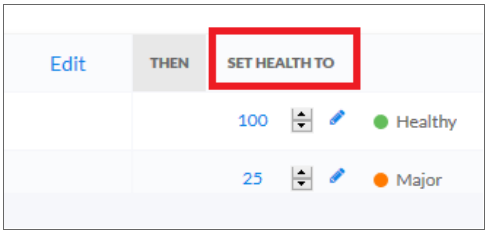


5. On the **[Availability]**, **[Health]**, and **[Risk]** tabs, edit the rules and conditions for each of the three values that make up this policy. Each tab uses the same layout.

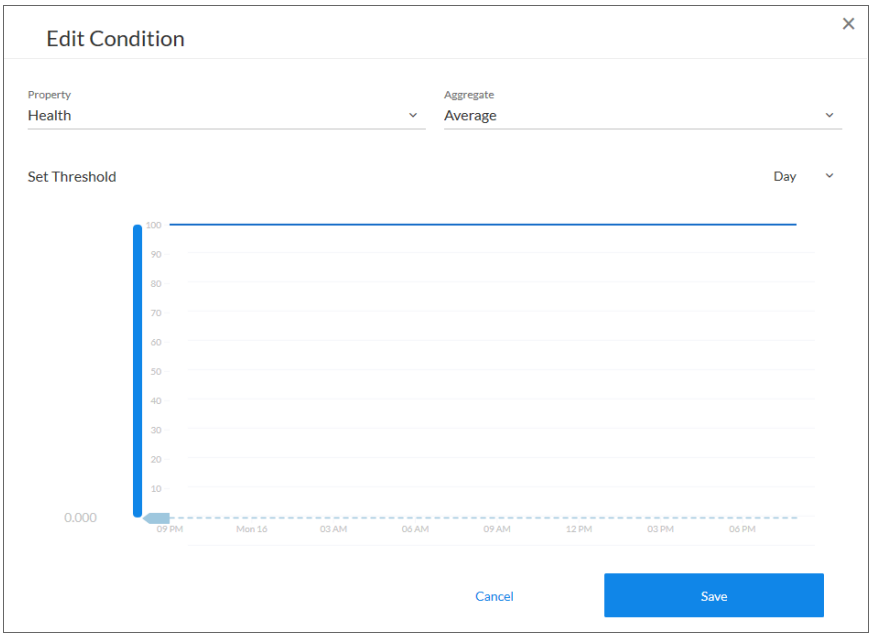
6. In the **Services** or **Devices** drop-down list, select one of the following options to filter the services for this policy, as needed:

   - *All Services in this Service* or *All Devices in this Service*. This default setting uses all services or devices that are included in the service.
   - *Queried Services* or *Queried Devices*. This setting uses only the devices or services you specify in the ***Search*** field that appears when you select this option. This setting lets you filter the list of devices or services for this policy.

7. To update an Availability, Health, or Risk value for a rule, edit the value in the **SET <*VALUE*> TO** column:

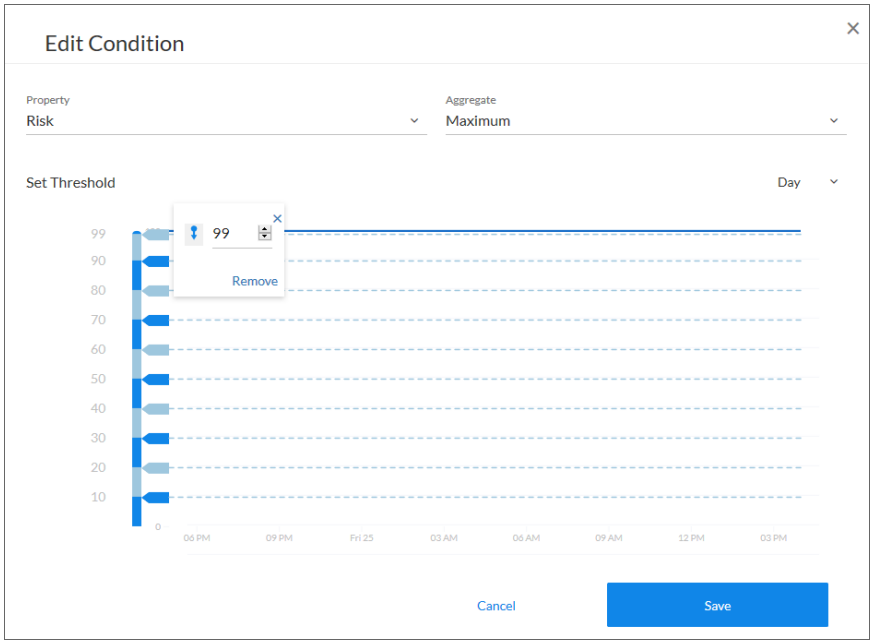


8. To edit the default conditions for an existing rule, click the **[Edit]** button for that rule. The **Edit Condition** window appears:



9. Complete the following fields:
    - ***Property***. Select the metric you want to monitor for this condition:
        - If this is a business service or an IT service, your options include *Availability*, *Health*, and *Risk* for the services you want to monitor.
        - If this is a device service, select a device metric, such as Vitals like *Availability* and *Latency*, performance metrics, metrics collected by the SL1 Agent, or Dynamic Application metrics.
    - ***Aggregate***. Select an aggregation method for the data for this condition. Your options include *Average*, *Minimum*, *Maximum*, *Count*, and *Sum*.
    - ***Day***. Select a time frame for the data in the graph in the ***Set Threshold*** section, below. You can use this graph to select reasonable thresholds for your condition. Your options include *Day*, *Week*, and *Month*.
10. In the ***Set Threshold*** section, click and drag the slider to specify a threshold for this condition. A small **Threshold** window appears, where you can specify the following threshold details:
    - The upper threshold icon () lets you set the highest acceptable number for that condition, including any numbers less than that number. For example, x <= 80.
    - The lower threshold icon () lets you set the lowest acceptable number for that condition, including any numbers greater than that number. For example, x >= 60.
    - The equals icon () in conjunction with a number lets you set a specific number only for this condition. For example, x = 75.
    - You can specify a range of values by clicking to add a second slider to the ***Set Threshold*** graph. For example, 40 < x < 60.
    - You can type a number in the ***Threshold*** window instead of using the slider.

- If needed, you can add a threshold that extends past the existing Y-axis of the table. The scale of the table automatically adjust to the new value.
- The different ranges for your conditions display in alternating shades of dark blue and light blue:



TIP: If the line below the number in the ***Threshold*** window is red, then your current threshold is invalid. Click the icons or adjust the slider to make sure the line is not red under the threshold value.

11. To save the conditions and threshold settings and close the **Edit Condition** window, click the **[Save]** button.
12. To add more conditions to a rule, click **Edit** on the **Service Policy Editor** page and follow the instructions in steps 8-11.

TIP: To *remove* a condition from a rule, click the **[Actions]** button (⋯) for that condition and select *Delete*. To *copy* a condition, click the **[Options]** button (⋯) for that condition and select *Duplicate*.

13. If you have more than one rule, select the type of aggregation you want to use in the **Use <type> of rules** field. You can choose to use the minimum, maximum, or average value for the rules.

NOTE: The Availability value calculates only the minimum and maximum values for rules.

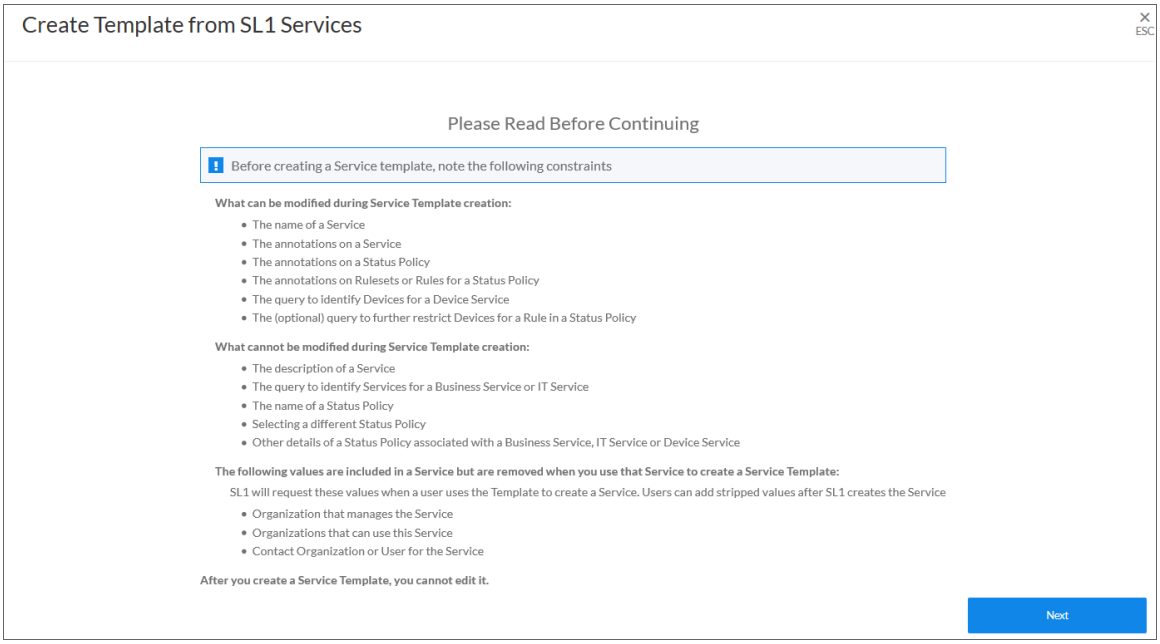
14. Edit any additional conditions or rules on the remaining tabs for this policy, and then click the **[Save Policy]** button.

Creating a Service Template

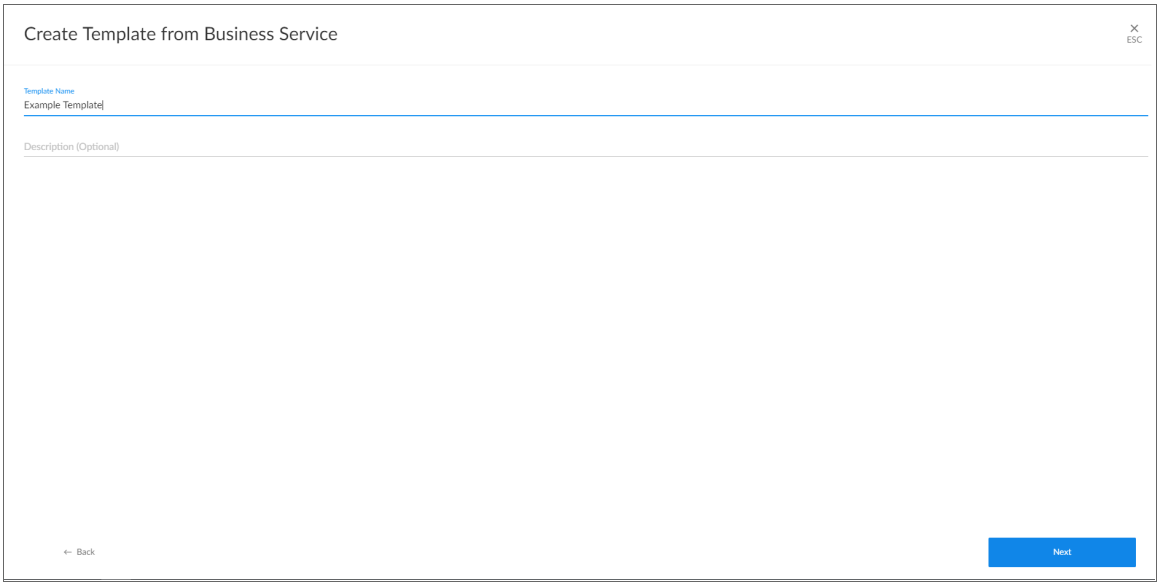
You can create a ***service template*** from an existing service to simplify the process of replicating an entire service or service hierarchy on another SL1 system. For example, if you want to create the same service hierarchy, but only change the owner of the service hierarchy, creating a service template from an existing service streamlines this process.

To create a service template:

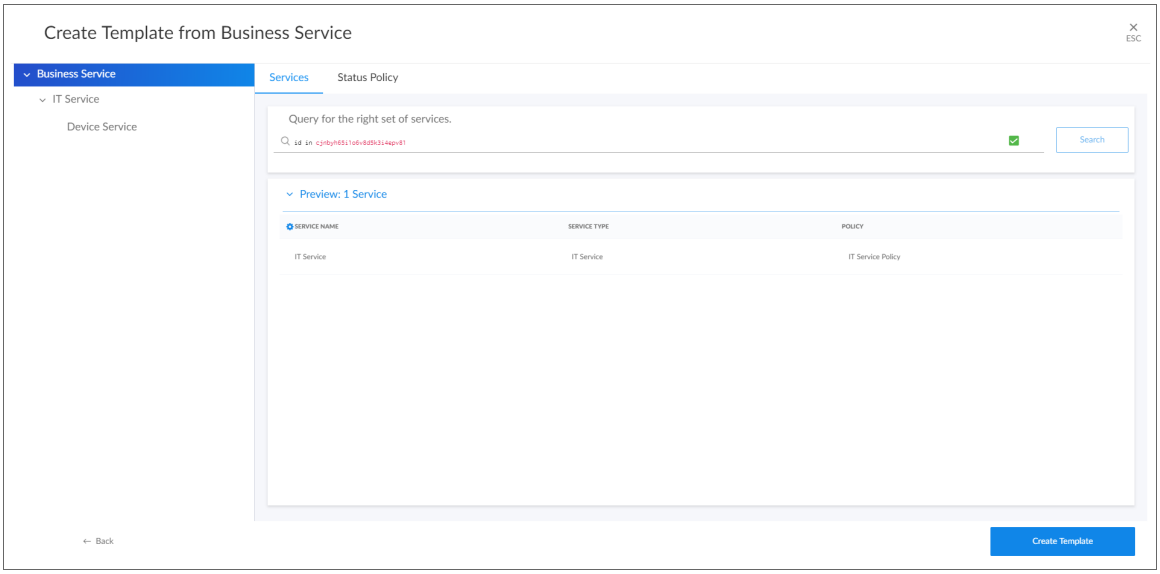
1. On the **Business Services** page, click the **[Actions]** button (⋯) for the service you want to use as the basis for your template and select ***Create Template***. The **Create Template From Service** window appears:



2. This window contains important information about what you can and cannot do with a service template. After reading this information, click **[Next]**. The next **Create Template From Service** window appears:

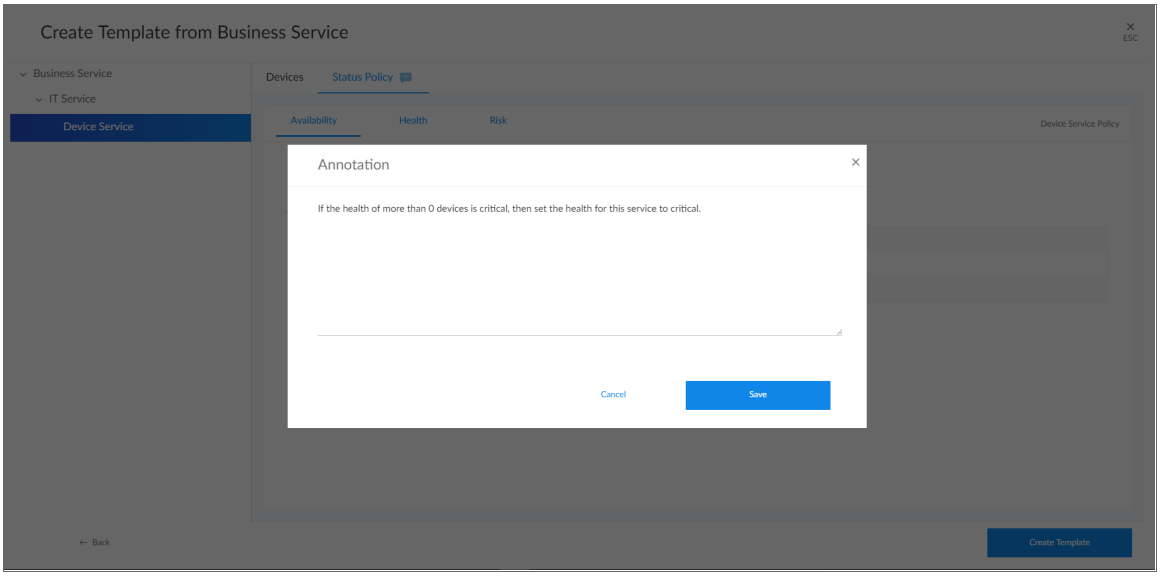


3. Type a name for the template in the ***Template Name*** field, and type a description of the template in the ***Description*** field, if needed. Click **[Next]**. The next **Create Template From Service** window appears:



4. The left side of the window displays the tree for the service hierarchy that is being made into a template. You can select each service in the tree to see information related to that service on the right side of the window. For example, if you select a device service, the **Devices** tab displays the search query used for the devices included in that service. If you select a business service or an IT service, the **Services** tab displays the search query for that service.

5. Click the **Status Policy** tab to view the status policy definition for Availability, Health and Risk for that service.
6. On the **Status Policy** tab for a device service, you can add annotations for the policies in the template. When a new user uses the template on another system, your annotations can help that user understand the purpose of this status policy.



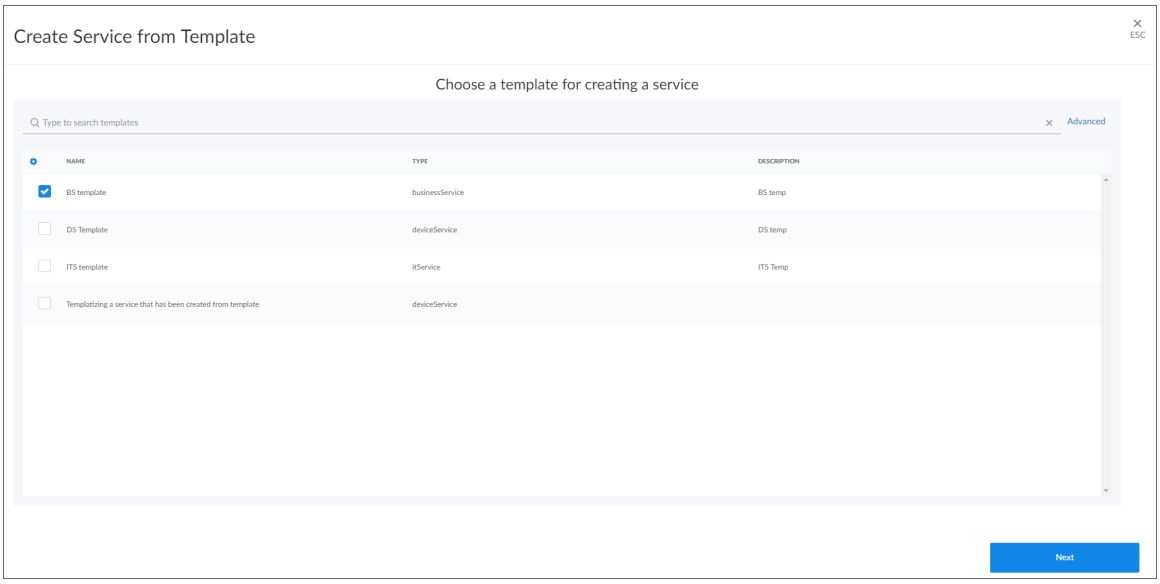
7. To leave an annotation for a status policy or rule, click the talk bubble icon ( ) next to the rule or tab. Type your annotation text in the **Annotation** window and click **[Save]**. The talk bubble icon now displays as solid blue, while empty talk bubble icons contain a plus sign.

8. Click **[Create Template]**. A confirmation window appears stating that you created the template. Click **[Close]**. The template appears on the **Service Templates** page (Business Services > Templates).

Creating a Service From a Template

To create a service from a template:

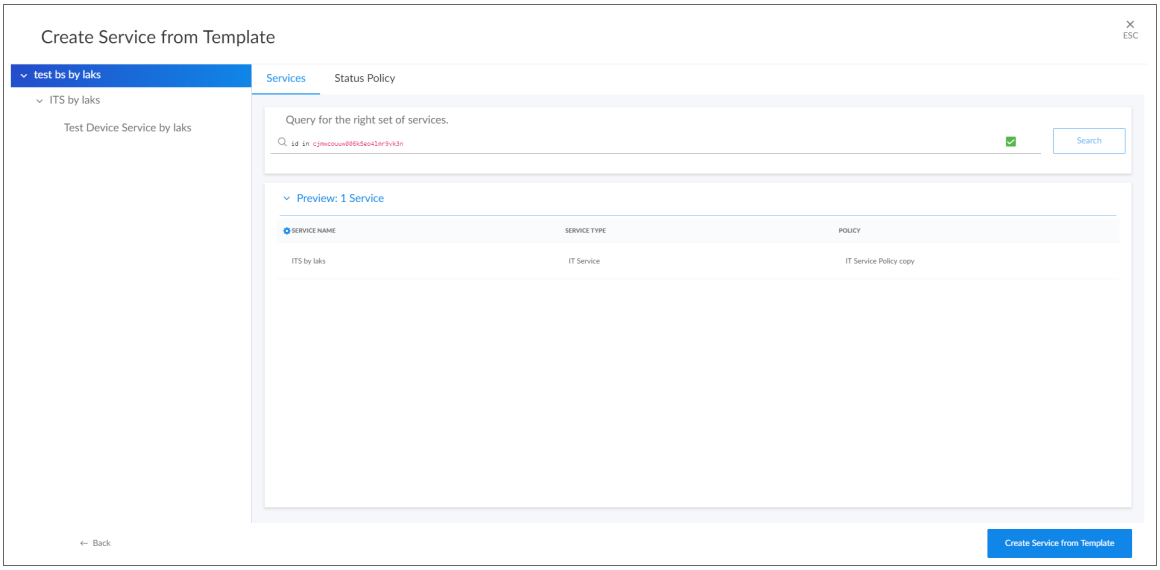
1. Go to the **Service Templates** page (Business Services > Templates) and click the **[Actions]** button (⋯) for the template you want to use and select *Create Service*. The **Create Service from Template** window appears:



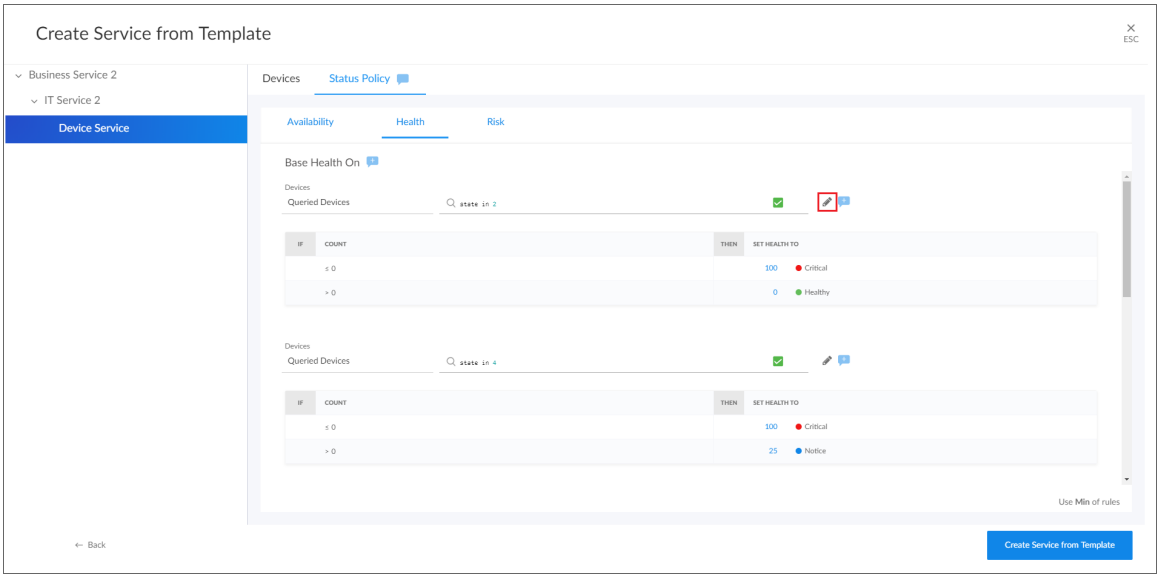
TIP: You can also go to the **Business Services** page, click the down arrow on the **[Create Service]** button, and select *Create Service from Template*.

2. Select a template and click **[Next]**. The next **Create Service from Template** window appears:

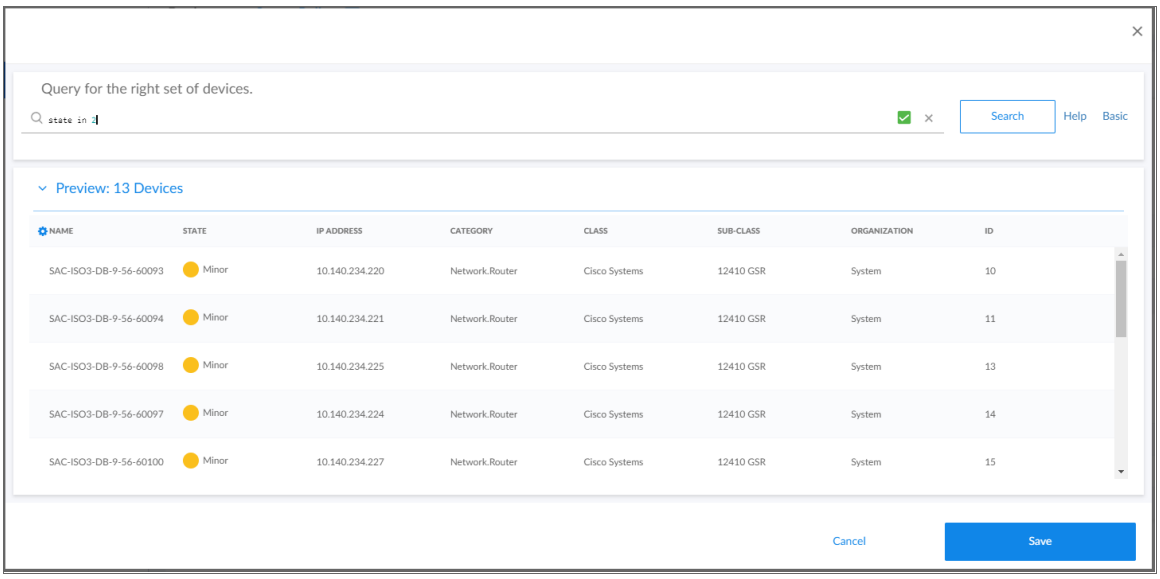
3. Select an organization from the ***What organization manages this service?*** drop-down list and click **[Next]**. The next **Create Service from Template** window appears:



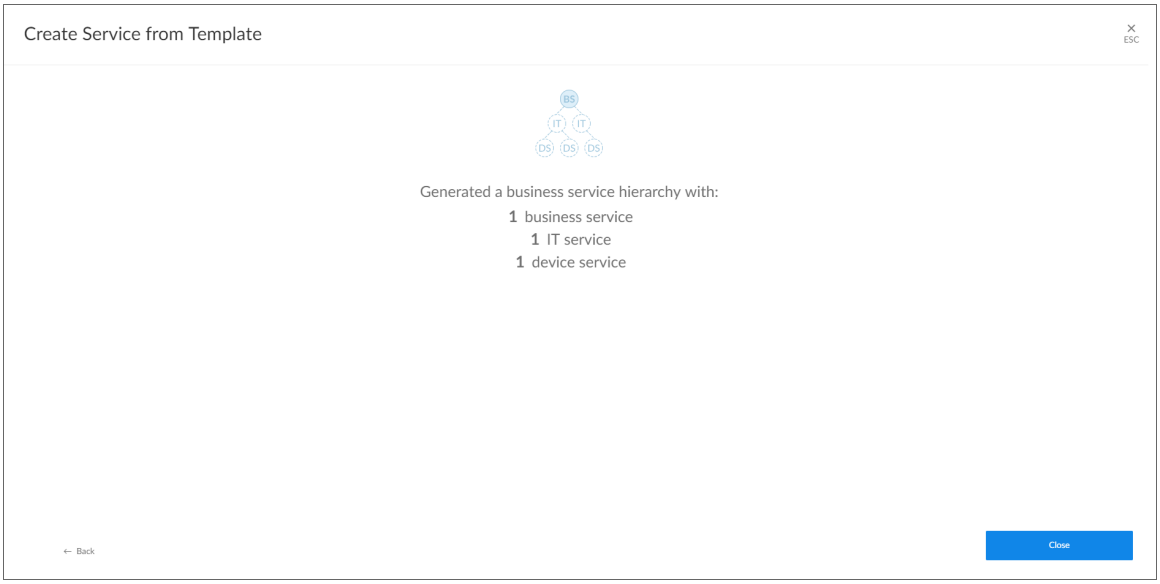
4. To edit the names of the services in the hierarchy at the left, click the service name and update the name. Updating the service names is recommended if you are creating the new service on the same system from which the template was created.
5. Any annotations for a device service that were added when the template was created will be present, and you can edit them and add new annotations.
6. You can edit the rules for Availability, Health, and Risk for a device service in the template.



7. To edit a rule, click the gray pencil icon ( ) next to the rule, and an edit window appears where you can update the rule:



8. Click the **[Save]** button to close the edit window.
9. Click the **[Create Service from Template]** button to save your service. A confirmation window appears:



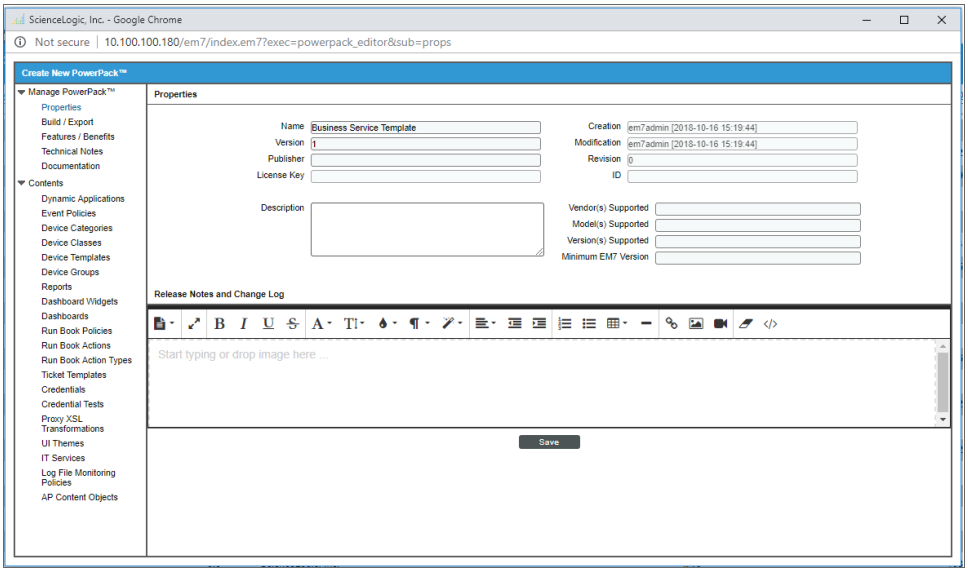
10. Click the **[Close]** button. The new services appear on the **Business Services** page.

Exporting a Service Template

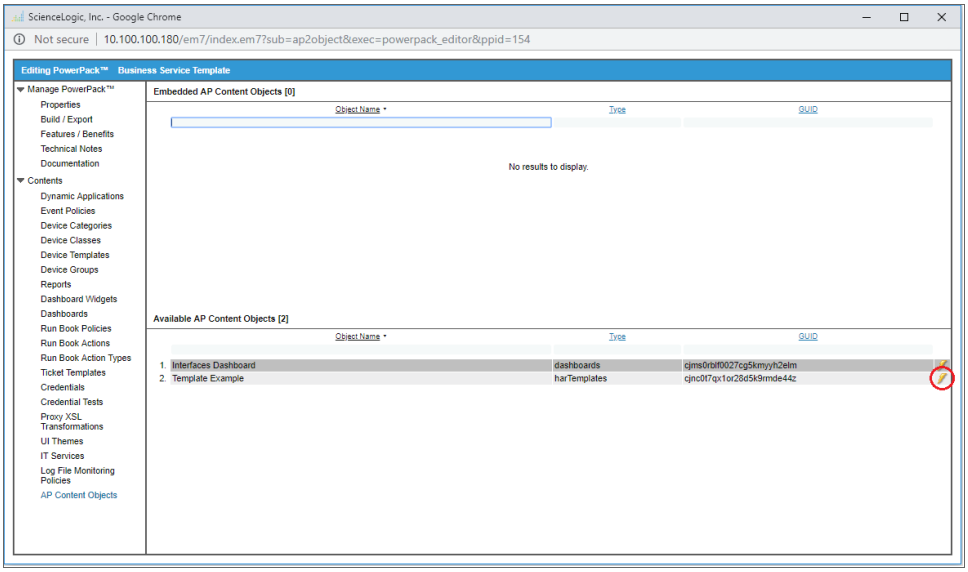
If you want to use a business service template on another SL1 system, you can package that template into a PowerPack and export it to the other system.

To package and export a service template:

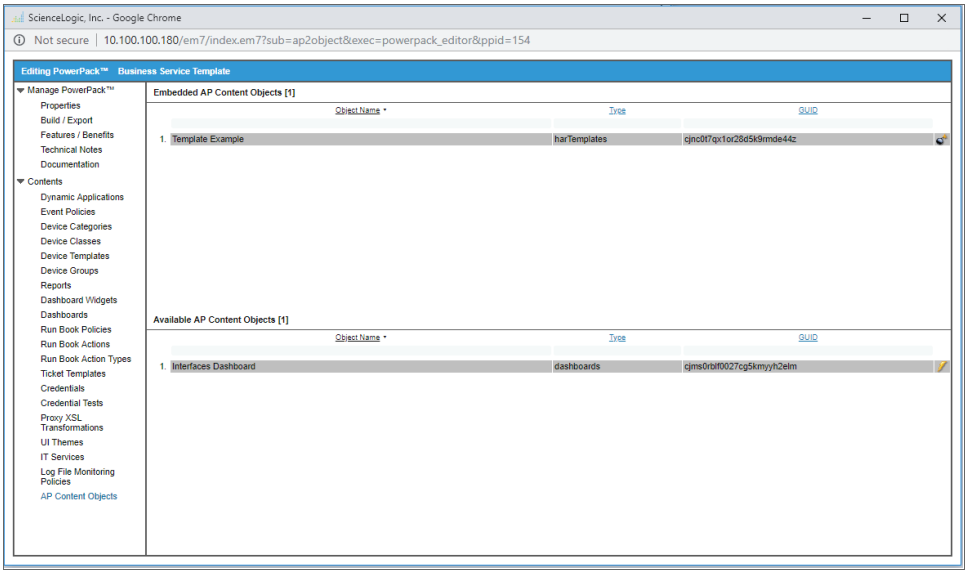
1. Go to **The PowerPack Manager** page (System > Manage > PowerPacks).
2. Click the **[Actions]** button and select *Create a New PowerPack*.
3. On the **PowerPack Properties** page, type a name for the PowerPack in the ***Name*** field and click **[Save]**.



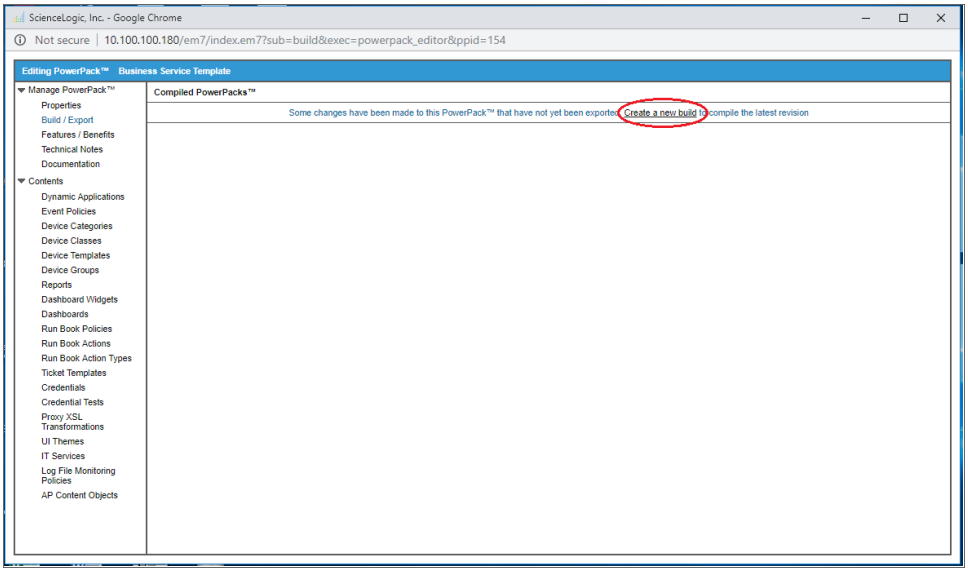
4. Select *AP Content Objects* from the left-nav on the **PowerPack Properties** page. Your template appears in the **Available AP Content Objects** pane:



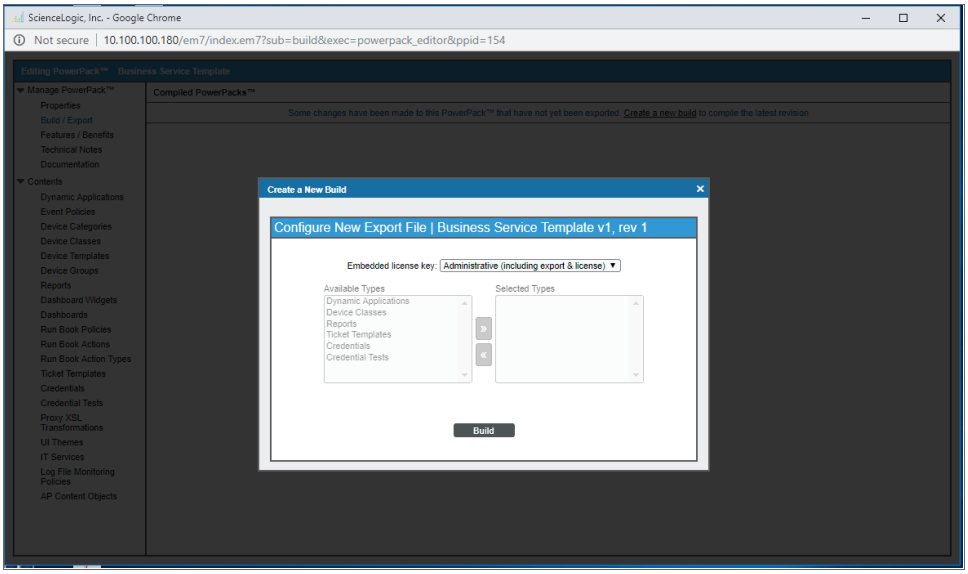
5. Click the lightning bolt icon ( ) next to the template to add it to the PowerPack. The template moves up to the **Embedded AP Content Objects** pane:



6. Select *Build/Export* from the left-nav to open the **Compiled PowerPacks** window, and then click the *Create a new build* link:



7. In the **Configure New Export File** window, select *Administrative (including export & license)* from the ***Embedded license key*** drop-down list. Click **[Build]**.



8. When the PowerPack finishes building, you can download the build with the download icon ( ) and use that file to upload the template to a new SL1 system.

Installing a Template from a PowerPack

1. On the SL1 system where you want to install the template, import the PowerPack on the **PowerPack Manager** page (System > Manage > PowerPacks).
2. After you have imported the PowerPack, click the **[Actions]** button and select *Install PowerPack*.
3. Locate the PowerPack you created in the **Imported PowerPacks** window and click its lightning bolt icon ( ).
4. When the **Install PowerPack** window appears, click the **[Install]** button.
5. After you install the PowerPack, you can access the template on the Service Templates (Business Services > Templates).

Default Service Policy Settings

The following sections describe how the three default service policies calculate Availability, Health, and Risk:

Device Service Default Policy

Availability: Maximum available: if one device is available, then all are available

Health: Based upon the worst device severity, then uses the following settings:

- Critical = 0-20
- Major = 21-40
- Minor = 41-60
- Notice = 61-80
- Healthy = 81-100

Risk: Based upon the worst device severity, then uses the following percentages:

- Healthy= 0-20%
- Notice = 21-40%
- Minor = 41-60%
- Major = 61-80%
- Critical = 81-100%

IT Service Default Policy

Availability: Maximum available: if one service is available, then all are available

Health: Average Health value of all services

Risk: Maximum Risk value of any service

Business Service Default Policy

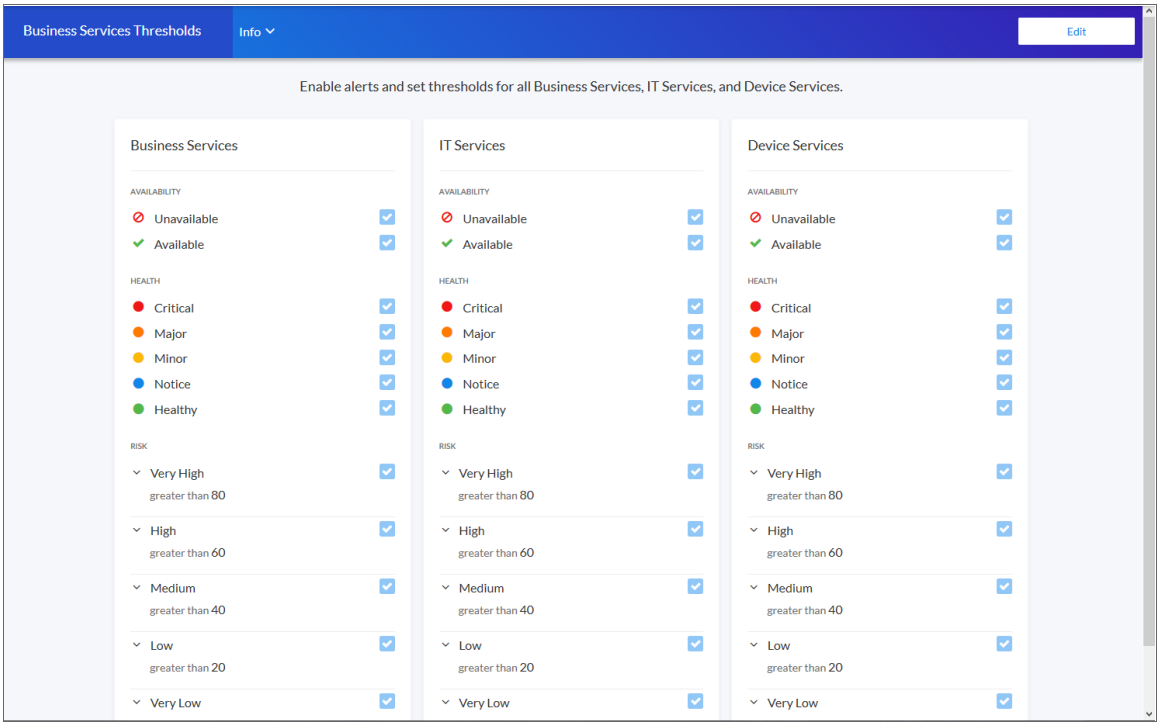
Availability: Maximum available : if one service is available, then all are available

Health: Average Health value of all services

Risk: Maximum Risk value of any service

Managing Service Thresholds

When SL1 evaluates the state of a service, it reviews the Health, Availability, and Risk values produced by your business services, IT services, and devices services. SL1 then compares those values against the alert thresholds that are defined on the **Business Service Thresholds** page (Business Services > Thresholds):



If any of the thresholds on the the **Business Service Thresholds** page are crossed, SL1 generates an alert message. For an event to be produced, you need to create or install an event policy that watches for that alert message and produces an event when it sees that alert message.

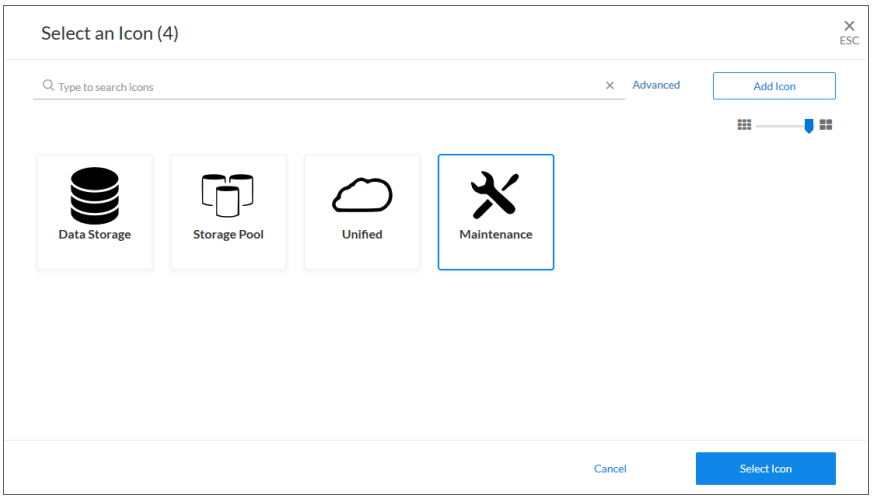
TIP: To update the thresholds on this tab, click the **[Edit]** button, select which thresholds should generate an alert message, and then click **[Save]**.

By monitoring the events tied to your business services, you can act quickly if one of your services is unavailable, unhealthy, or potentially at risk.

Assigning an Icon to a Service

To assign an icon to a service:

1. On the **Business Services** page, locate the service to which you want to add an icon.
2. Click the **[Actions]** button (⋯) for that service and select *Assign Icon*. The **Select an Icon** window appears:

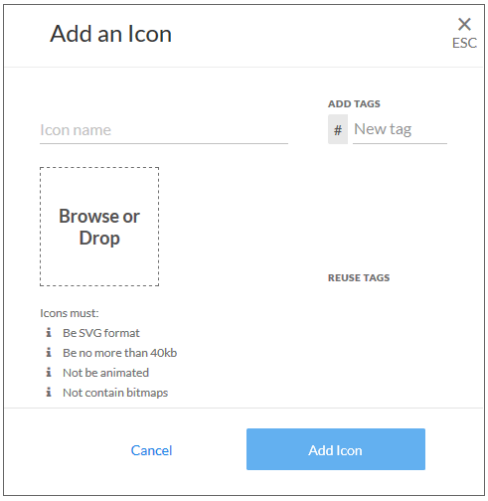


3. To use an existing icon, select that icon from the list of icons and click the **[Select Icon]** button.

TIP: If an icon includes a tag, you can search for that icon by typing some or all of the tag text in the ***Search*** field.

4. To upload an icon from your local drive, make sure that the image file meets the following criteria:
   - The image file should be in .SVG format.
   - The file should not be larger than 40 KB.
   - The file should not be animated.
   - The file should not contain bitmaps

5. To start the upload process, click the **[Add Icon]** button. The **Add an Icon** window appears:



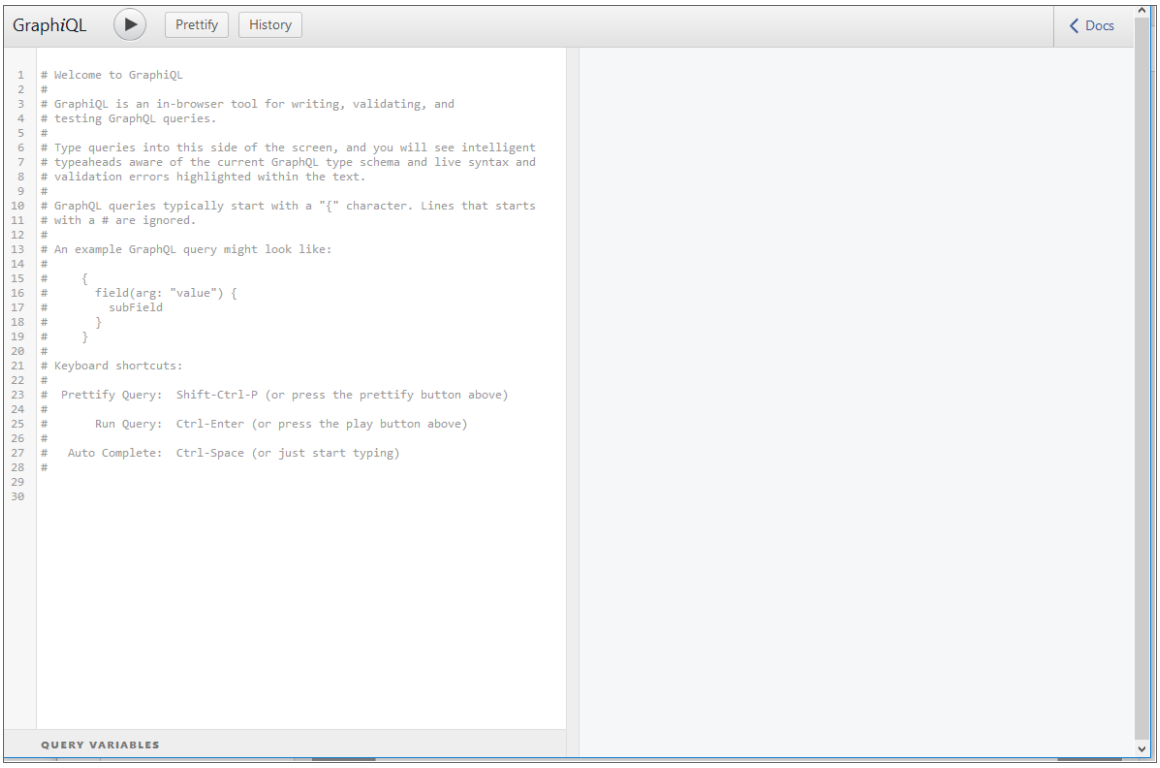
6. In the ***Icon name*** field, type a name for the icon you want to upload.
7. In the ***Add Tags*** field, type a short descriptor for the icon, without spaces. You can use this tag for searching later.
8. You can click the ***Browse or Drop*** area to browse for and select the icon, or you can drag and drop the icon file onto the **Add an Icon** window.
9. Click the **[Add Icon]** button. The icon is added to the **Select an Icon** window.
10. Click the **[Select Icon]** button to add the icon to the service.

Exporting Service Data with the ScienceLogic API

By navigating to the GraphiQL interface, you can export business service data with the ScienceLogic API. GraphiQL is a user interface for interactively exploring the capabilities of, and executing queries against, a GraphQL API.

To access the GraphiQL interface:

1. In a browser, type the URL or IP address for SL1.
2. Type **/gql** at the end of the URL or IP address. For example, you could type **https://sl1.sciencelogic.com/gql**. The GraphiQL interface appears:



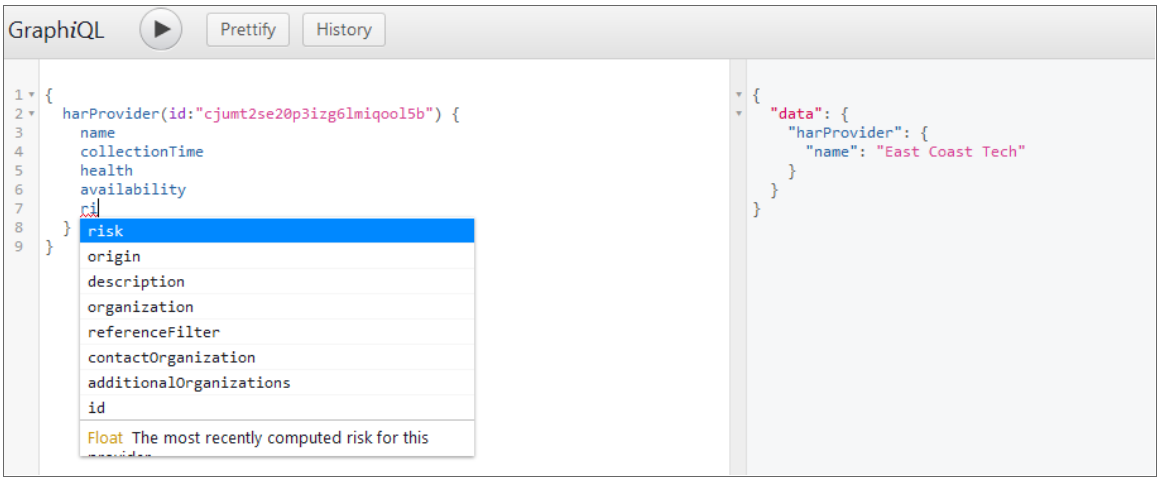
3. In SL1, make a note of the URL that displays for the service you want to export. For example, if you have a service named "East Coast Tech," and its URL in SL1 is **http://sl1.sciencelogic.com/inventory/services/cjumt2se20p3izg6lmiqool5b/overview**. Make a note of the unique value between **/services** and **/overview**. In this example, the value you need is ***cjumt2se20p3izg6lmiqool5b***.
4. In the GraphiQL interface, create a *harProvider* query for the service you want to export, using the following format:

```
query {harProvider (id:"<Service_URI>") { name} }
```

- where *Service_URI* is the value found in the URL for the Service you want to export.

5. Click the **[Execute Query]** (Play) button to tell GraphiQL to send the query to the GraphQL server and get the results. Using the example service from step 3, the query and its data appear in the following format:

6. To export additional data, use the filter-while-you-type capabilities of the GraphiQL interface to gather other information, such as the collection timestamp, health, availability, and risk:



7. After you finish updating your query, click the **[Execute Query]** button.

8. To return to the SL1 user interface, replace the "gql" and any text after it in the URL with "ap2", such as **https://sl1.sciencelogic.com/ap2**.

TIP: For more information about GraphQL and the GraphiQL user interface, see the ***ScienceLogic GraphQL API Quick Start Guide***.

Chapter 3

Troubleshooting Business Services

Overview

This chapter covers some of the issues you might encounter while working with services and policies on the**Business Services** page, and how to resolve those issues.

Use the following menu options to navigate the SL1 user interface:

- To view a pop-out list of menu options, click the menu icon ( ).
- To view a page containing all of the menu options, click the Advanced menu icon ( ).

This chapter includes the following topics:

Using the Root Cause Analysis Feature

Advanced SL1 users can use the ***Root Cause Analysis*** feature to determine what is causing a service to be unhealthy, troubleshoot that service, and refine your policies.

To enable Root Cause Analysis:

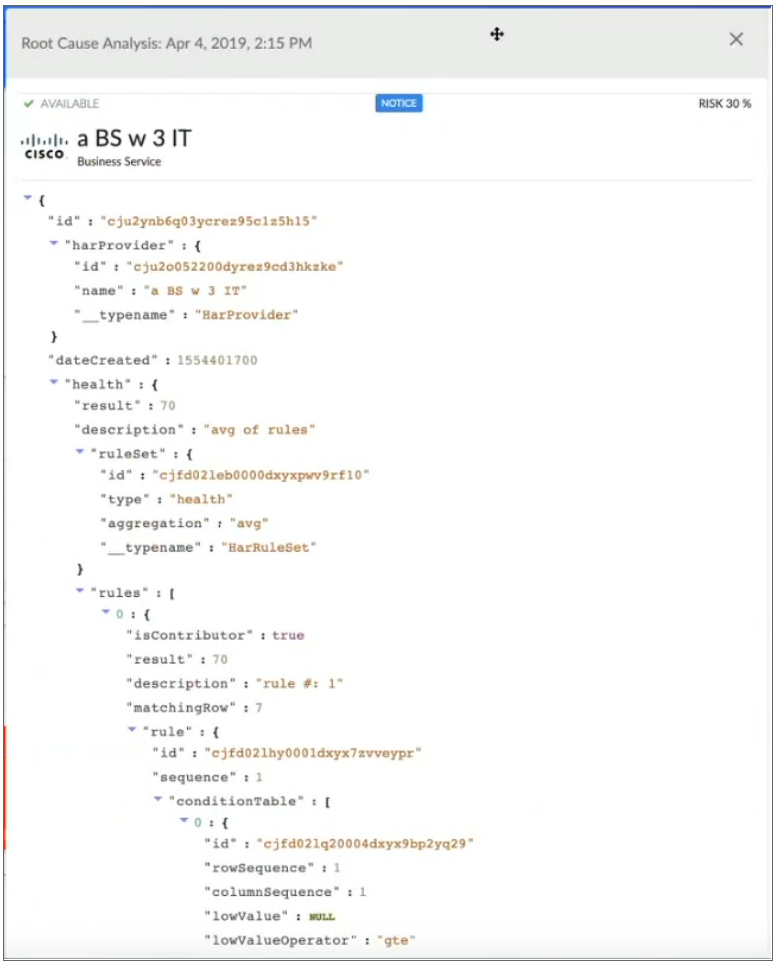
1. Open the **Service Investigator** page for a service and click **[Edit]**.
2. Click the ***Info*** drop-down and select one of the following from the ***RCA Options*** drop-down:

    - *Disabled*
    - *Enabled (contributors only)*
    - *Enabled (next run only)*
    - *Enabled*

NOTE: You might experience performance slowdown if Root Cause Analysis is continuously enabled.

3. Click **[Save]**.

You can view a **Root Cause Analysis** window by clicking the Actions icon (⋮) next to the service's **Status** panel on the **Service Investigator** page, or in a service tile. A **Root Cause Analysis** window appears with more data as a JSON object:



The data is a JSON object of the processing information that was used to compute the Health, Availability and Risk for that service. Within the Root Cause Analysis JSON object, the arrays named "contributors" describe which child services contributed in the calculation for the resulting Health, Availability or Risk for the current service.

Configuring Limits for Device Services and Constituents

You can configure the limit of device services processed and constituents in a service. The default limit for each is set at 100.

To configure the limit the number of device services and constituents in a service:

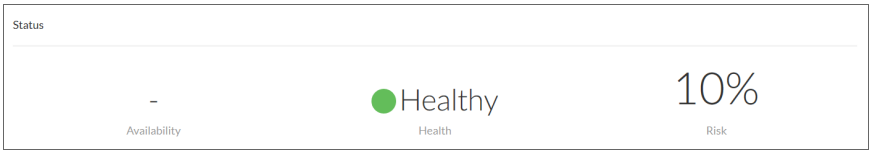
1. Open the `nextui.env` file by navigating to `/opt/em7/nextui/nextui.env`.
2. Edit the value for `BUSINESS_SERVICES_MAX_SERVICES` to set the maximum number of services processed.

3. Edit the value for `BUSINESS_SERVICES_MAX_CONSTITUENTS` to set the maximum number of constituents in any one service.
4. Save the file.

NOTE: Constituents can be devices in a device service or other services in a business or IT service.

Some services are not generating Health, Availability, or Risk values

In this situation, some services in SL1 do not generate any values for Health, Availability, or Risk. For example, a dash might appear instead of a value in the **Status** table on the **Service Investigator** page:



To address this issue, review the following settings and suggestions:

Step 1: Confirm you have the latest code for the new user interface:

1. Navigate to the **[Content Management]** page (Manage > Content Management).
2. Click the **[Install/Upgrade Packages]** button. The Install Packages page appears.
3. If needed, upgrade to the latest version of **@sciencelogic/ap2** to potentially resolve any issues that might have caused this issue.
4. For example, in the following image, the *installed* version of **@sciencelogic/ap2** is 5.38.4, while the *latest* version is 5.39.0:

Step 2: Turn up the log level to trace:

1. Either go to the console of the SL1 server or use SSH to access the SL1 appliance.
2. Log in as user **em7admin**.
3. Open the file */usr/local/silo/nextui/nextui.env* with vi or another text editor:

```
sudo vi /usr/local/silo/nextui/nextui.env
```

4. Change the log setting to the following: **NEXT_UI_LOG_LEVEL=all:trace**
5. Restart SL1 and GraphQL with the following command:

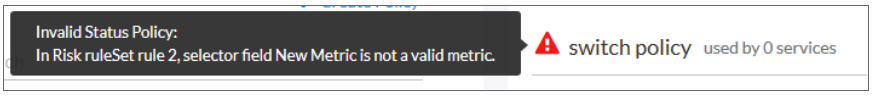
```
sudo systemctl restart nextui
```

6. Tail the log with the following command:

```
sudo journalctl -u nextui -f
```

Step 3: Ensure that your service policy is valid:

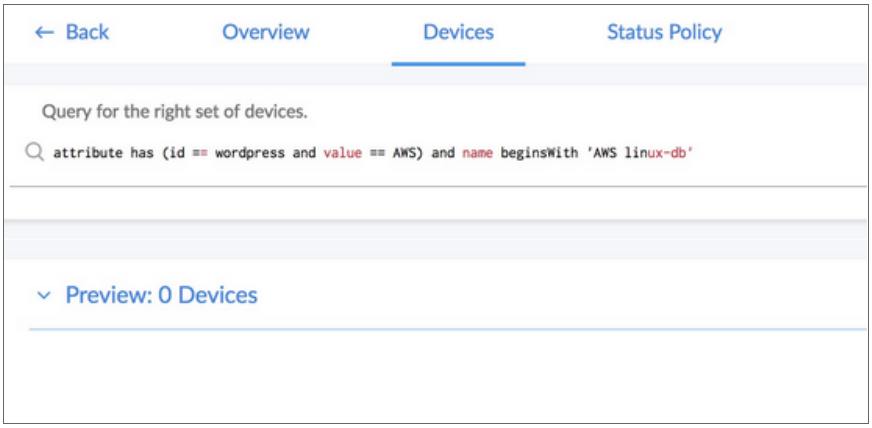
1. In SL1, navigate to your service on the **Business Services** page.
2. Review the policy used by that service for any validation errors, as in the following example:



3. Address any errors in the service policy.

Step 4: Ensure that your *service* contains at least one service or device:

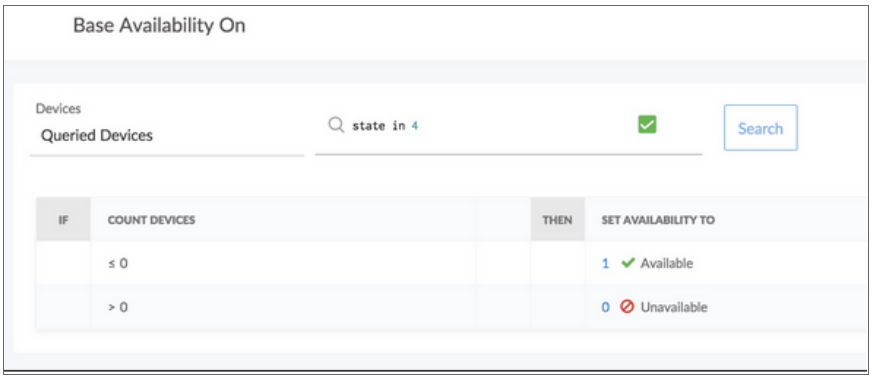
1. Navigate to the **Business Services** page.
2. Navigate to the **[Devices]** or **[Services]** tab for the service or services that are not displaying values.



3. Ensure that at least one device or service appears in the **Preview** section. If not, create a new search for devices or services.

Step 5: Ensure that your service policy *rules* contain at least one service or device:

1. Rule filters select a subset of the devices or services defined by the service filter. If a device service filter results in five devices, the rule filter selects some subset of those five devices. You might create rule filters that exclude all devices or services in the service, resulting in no metric values.
2. The following rule filter only selects the devices with a state of 4, or Critical. If no devices have a state of 4, the resulting list of devices for that filter will be empty, and you cannot get any device metric values:



3. In this case, we are counting devices, so the count is zero and produces a value based in the condition table.
4. If the metric had been a normal device metric like latency, the result would have been "null," because getting the average latency from zero devices results in null.

Step 6: Generate audit data by running onDemandProcessing with the GraphiQL interface:

1. In a browser, type the URL or IP address for the new user interface, and then type **/gql** at the end of the URL or IP address. The GraphiQL interface appears.
2. On the left side of the GraphiQL editor, type the following query:

```
query onDemand {
  harProviderOnDemandProcessing(ids: []) {
    results { serviceId timestamp health availability risk }
    auditHistory { serviceId ruleSetId ruleId timestamp sequence message }
  }
}
```

3. Click the **[Execute Query]** (Play) button to tell GraphiQL to send the query to the GraphQL server and get the results:

4. Review the resulting audit information on the right side of the GraphiQL editor:
5. If you know the service ID you are looking for, search for it by clicking inside the right pane and typing **cmd+f**. The GraphiQL interface highlights the services that match the ID you looked for:

6. Scroll down to see the audit information for this service (look for the highlighted information):

7. After running onDemandProcessing with the GraphiQL interface and updating the log settings on the server to do *all:trace*, you can now see trace-level log messages in the terminal where you ran `sudo journalctl -u nextui -f`.

8. Review the log messages for errors and warnings:

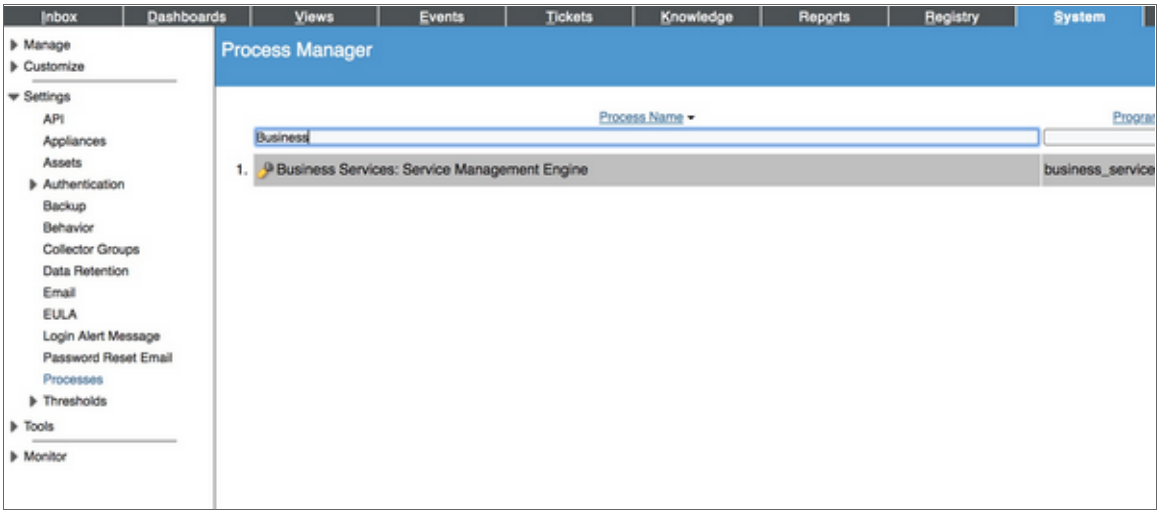
All services are not generating Health, Availability, and Risk values

In this situation, *all* of your services in SL1 fail to generate any values for Health, Availability, or Risk.

To address this issue, review the following settings and suggestions.

Step 1: Confirm that the Business Services process exists:

1. Go to the **Process Manager** page (System > Settings > Admin Processes) and start typing "Business" in the **Process Name** filter:



Step 2: Follow the steps in *Generate audit data using the GraphiQL user interface*, above. If the process times out, then the processing has taken more than two minutes to complete, and no computed results are stored.

Step 3: Look for logs from the python process:

1. The python process calls the onDemandProcessing GraphQL query. If python is having trouble connecting to GraphQL, it could be an authentication problem or some other code-related issue.
2. Look in */var/log/em7* for newly created logs, and `ls -lrt` to see if any new error logs were created with "business" in the file name.
3. Also check the ***silo.log*** for messages related to the business_service_management process:

```
grep service /var/log/em7/silo.log
```

503 errors, or Health, Availability, and Risk values that are all the same or inaccurate

In this situation, you might see 503 errors in logs or in the user interface. You might also see Health, Availability, and Risk values that are all the same or inaccurate.

To address this issue:

1. Confirm that the nginx config file has the `limit_conn perip` value set to 200 instead of 20:

```
sudo vi /etc/nginx/conf.d/em7_limits.conf
```

2. If needed, update the line to say:

```
limit_conn perip 200;
```

3. Run the following command:

```
sudo systemctl restart nginx
```

To avoid communication errors between SL1 and the ScienceLogic API, configure the *em7_limits.conf* file to limit the number of connections per IP on all SL1 appliances that communicate with the ScienceLogic API. Use this configuration if you are using a version of SL1 that is lower than 8.9.0, or if you used the patch to upgrade to 8.9.0 instead of using the ISO version of 8.9.0.

To configure communication on a SL1 appliance:

1. Either go to the console of the SL1 server or use SSH to access the SL1 appliance.
2. Log in as user **em7admin**.
3. Open the file */etc/nginx/conf.d/em7_limits.conf* with vi or another text editor:

```
sudo vi /etc/nginx/conf.d/em7_limits.conf
```

4. To limit the number of connections per IP, add the following line to the file:

```
limit_conn perip 200
```

5. Save your changes and exit the file (:wq).
6. Restart the SL1 appliance by executing the following command:

```
sudo systemctl restart nginx
```

7. Run steps 1-6 on all SL1 appliances that communicate with the ScienceLogic API.

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