servicenow

Performance Analytics Fundamentals

participant guide

© 2023 ServiceNow, Inc. All Rights Reserved

© COPYRIGHT 2023 SERVICENOW, INC. ALL RIGHTS RESERVED.

ServiceNow provides this document and the information therein “as is” and ServiceNow assumes no responsibility for any inaccuracies. ServiceNow hereby disclaims all warranties, whether written or oral, express or implied by law or otherwise, including without limitation, any warranties of merchantability, accuracy, title, non-infringement or fitness for any particular purpose.

In no event will ServiceNow be liable for lost profits (whether direct or indirect), for incidental, consequential, punitive, special or exemplary damages (including damage to business, reputation or goodwill), or indirect damages of any type however caused even if ServiceNow has been advised of such damages in advance or if such damages were foreseeable.

TRADEMARKS

ServiceNow and the ServiceNow logo are registered trademarks of ServiceNow, Inc. in the United States and certain other jurisdictions. ServiceNow also uses numerous other trademarks to identify its goods and services worldwide. All other marks used herein are the trademarks of their respective owners and no ownership in such marks is claimed by ServiceNow.

© 2023 ServiceNow, Inc. All Rights Reserved

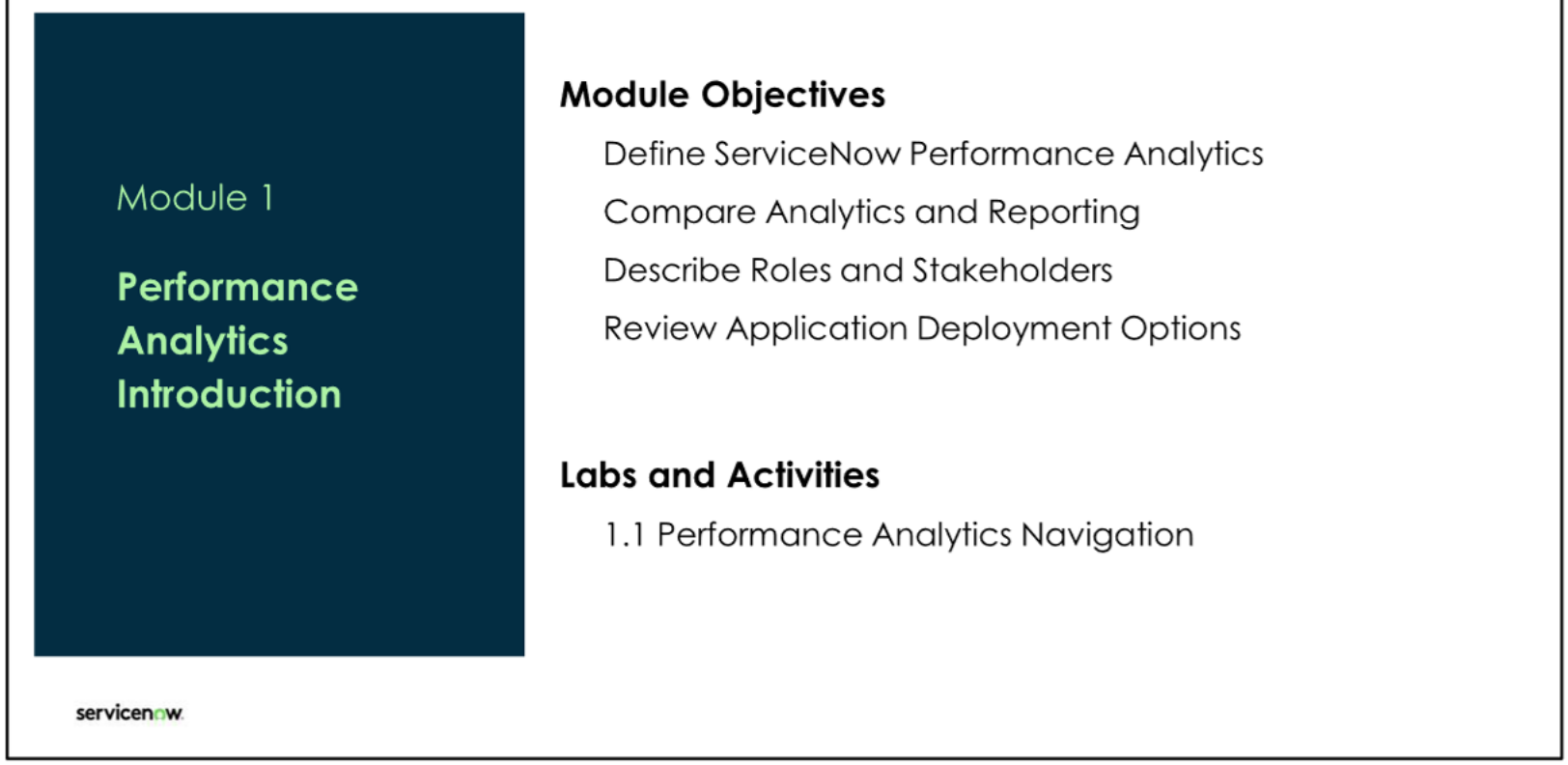
© 2023 ServiceNow, Inc. All Rights Reserved

ServiceNow Performance Analytics Fundamentals

Table of Contents

© 2023 ServiceNow, Inc. All Rights Reserved

© 2023 ServiceNow, Inc. All Rights Reserved

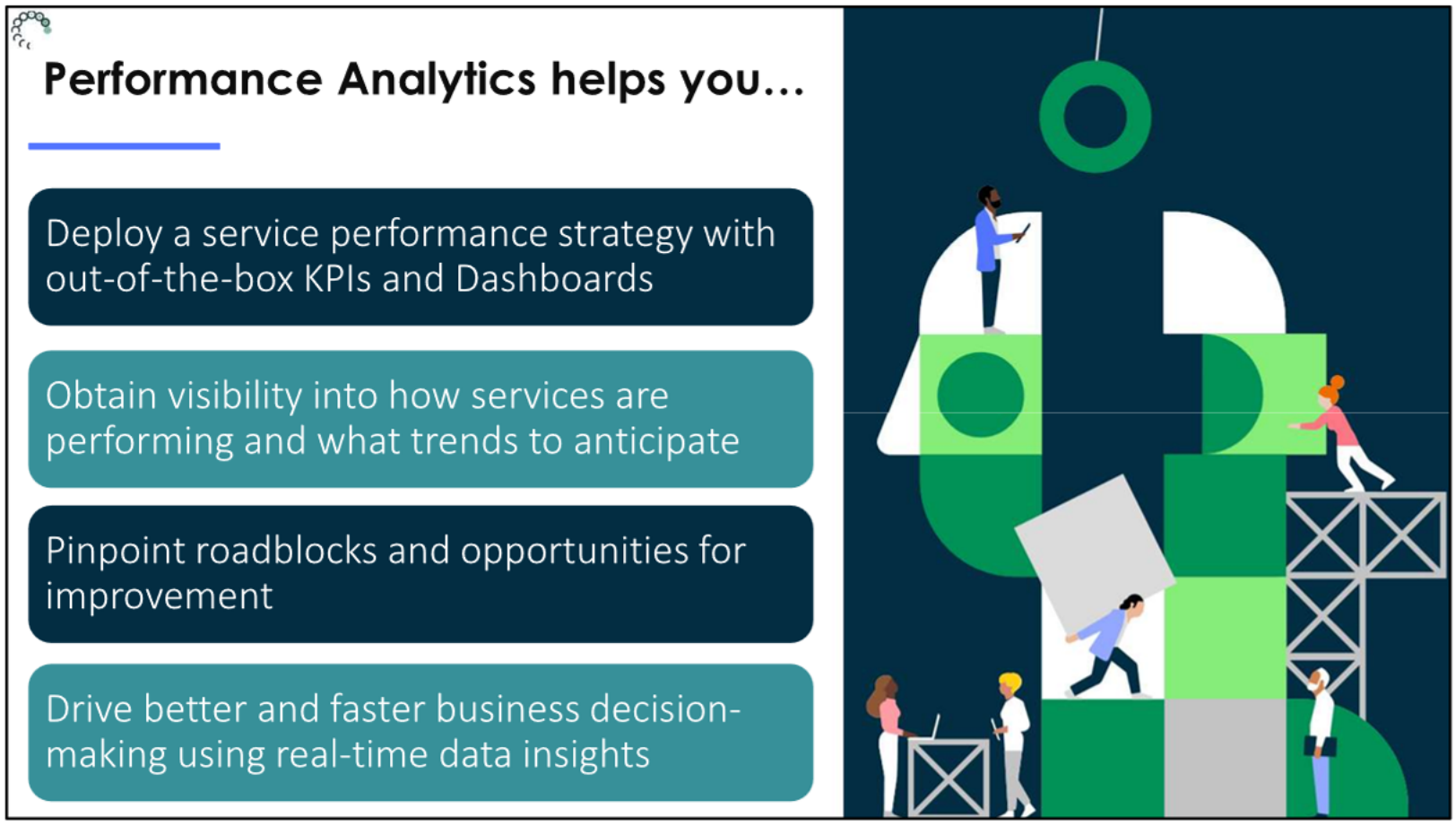


Performance Analytics visualizes business process data that is collected over time. This data reveals trends, which can be used to make real-time adjustments for continual service improvement.

You can use Performance Analytics to help in decision making when aligning resources, systems, and employees to strategic objectives and priorities.

This module introduces the ServiceNow Performance Analytics application, compares the Analytics and Reporting applications, discusses the Performance Analytics personas and reviews the deployment process.

© 2023 ServiceNow, Inc. All Rights Reserved



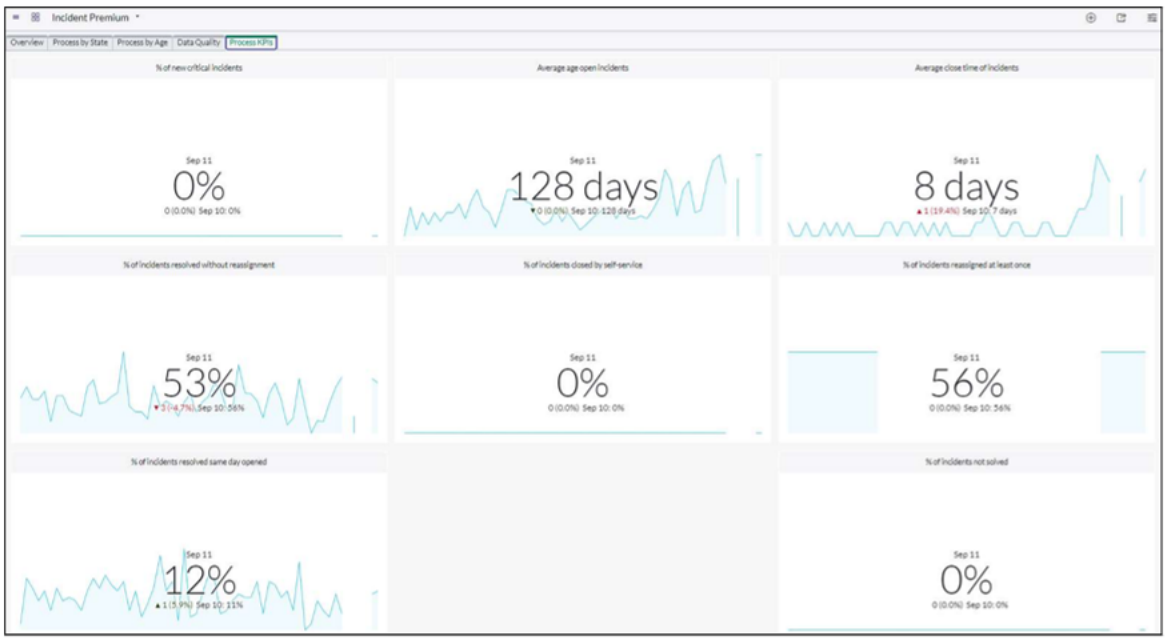
The following are some of the key characteristics of ServiceNow Performance Analytics:

- Performance Analytics helps improve process performance and efficiency.
- It uses KPIs (Key Performance Indicators) to measure process health and show how the business is performing against measurable objectives.
- Pre-packaged KPIs and visualizations for different applications are available in Analytics Solutions (aka Content Packs). These bundles speed up the deployment of Performance Analytics for different application domains.
- It offers insights to various functional roles and stakeholders using role-based dashboards.
- The historical data used in KPI trends is extracted from ServiceNow Process tables and never leaves the ServiceNow platform making the entire solution 100% native and secure.

© 2023 ServiceNow, Inc. All Rights Reserved

How do you achieve Continual Improvement?

Activity:
Optimize Performance by measuring behaviors that impact process health



servicenow

Performance Analytics is a process improvement solution. It helps improve process performance by tracking and measuring the behaviors and activities that impact the business process health.

As an example, here are some of the trends that impact the health of the Incident Management process:

- Average Age of open incidents
- Average Close time of incidents
- Percentage of new Critical incidents
- Percentage of incidents that are Overdue, etc.

Once you identify the activities and behaviors that impact your process, create corresponding indicators, and visualize them on a Dashboard. Collectively, all Dashboard widgets, present a real-time view of the state and health of your business process.

Most applications have corresponding Content Packs which prepackage best practice KPIs and their visualizations for a quicker and more prescriptive Performance Analytics deployment.

© 2023 ServiceNow, Inc. All Rights Reserved

What is an Indicator?

A Business Process health Measurement recorded over time

servicenow

The following are some key characteristics of Business Process Indicators:

- An Indicator is a performance measurement defined to continually measure a business service, an activity, or organizational behavior. Looking at the Indicator trend, you can answer whether or not the business process has improved over time.

- Indicators are defined by process owners and support the business process needs of customers, users, employees, and various stakeholders. In the above example, the *Average resolution time of resolved incidents* tracks the time it takes, on average, to resolve Incidents. Each point along the trend line is the average of all Incident Resolution Times resolved on that particular day. This indicator contributes to the overall health of the Incident Management process.

- The Indicator data is continually compared against goals, company strategy, and business targets to assure alignment and optimize performance. Stakeholders can define thresholds and targets for visual comparison to business goals.

- Indicator visualization can optionally display a forecast. The forecast is a mathematically calculated projection of future indicator values based on the Indicator's historical performance. Forecasts help anticipate trends and be proactive.

© 2023 ServiceNow, Inc. All Rights Reserved

What is a Dashboard?

Collection of related process visualizations illustrating process health

servicenow

Dashboards combine one or more related Indicator visualizations and Reports in a single view. Dashboards are designed for different stakeholder roles and contain business process information required by the respective job function/role. The example Dashboard shown here presents multiple trends and summaries related to the Incident Management process. Dashboard content and layout are easily customizable. Dashboards can also be shared with select users, groups, and roles.

© 2023 ServiceNow, Inc. All Rights Reserved

Building a Performance Data Trend

A trend is built by daily process measurement collections.

Each point in a trend line represents the value of the indicator at that specific point in time.

A Trend is an ordered sequence of process measurements taken continuously over a period of time

servicenow

ServiceNow Performance Analytics collects process performance information at regular intervals. The example here tracks the **Number of open incidents** indicator. Each point along the line represents the number of open incidents for that day.

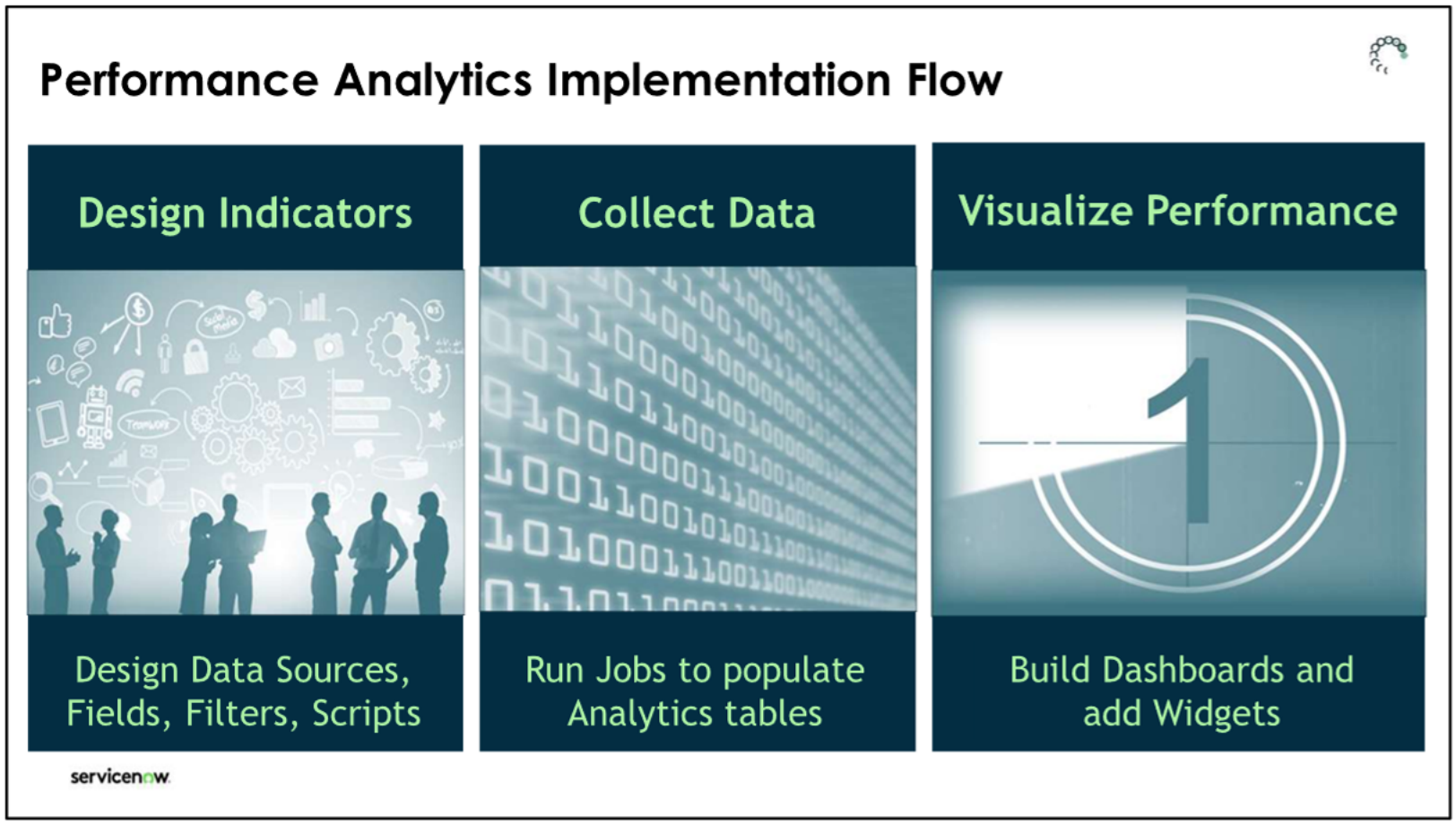
Due to the chronological organization of performance data, the most appropriate visualization is the **Time series**. A Time series is an ordered sequence of measurements collected at regular intervals.

Common use of the Time series graph is when charting stock symbol performance or temperature levels over time. The terms **Trend** and **Performance Trend** are other common terms used to describe a series of measurements recorded over a period of time.

The Indicator time series is displayed in a context-rich interface called **Analytics Hub**. The following chart details allow for maximum insight into the process:

- Latest available score and change of score compared to previous score
- Target level and gap to target
- Process Trend Line
- Thresholds
- Comments and notifications

© 2023 ServiceNow, Inc. All Rights Reserved



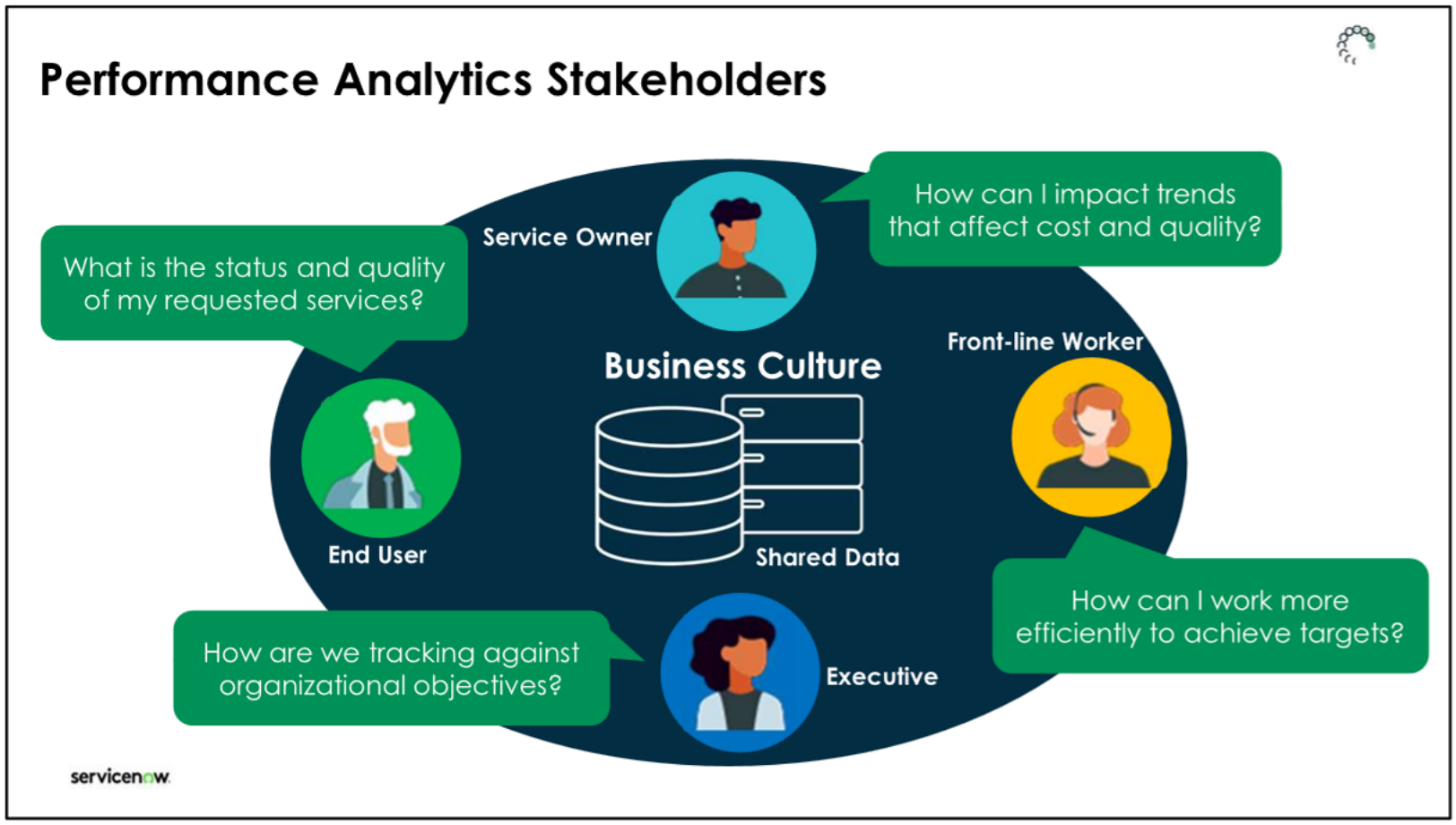
The following are required implementation steps to deploy Performance Analytics and begin achieving continual service improvement:

- **Design Indicators** – The ServiceNow table architecture is visible and highly configurable. Service Owners and administrators can easily define the Business Process metrics they need to track and build the corresponding Indicators to capture performance information.

- **Collect Data** - In ServiceNow, process and analytics data co-exist on the same platform. The collection process captures the Indicator performance data used by the analytics engine. This data is never duplicated and never leaves the enterprise cloud.

- **Visualize Performance** - The Performance Analytics application offers a range of trend visualizations presented as widgets on shareable dashboards. Existing reports can also be leveraged to present real-time and trend-over-time information on dashboards.

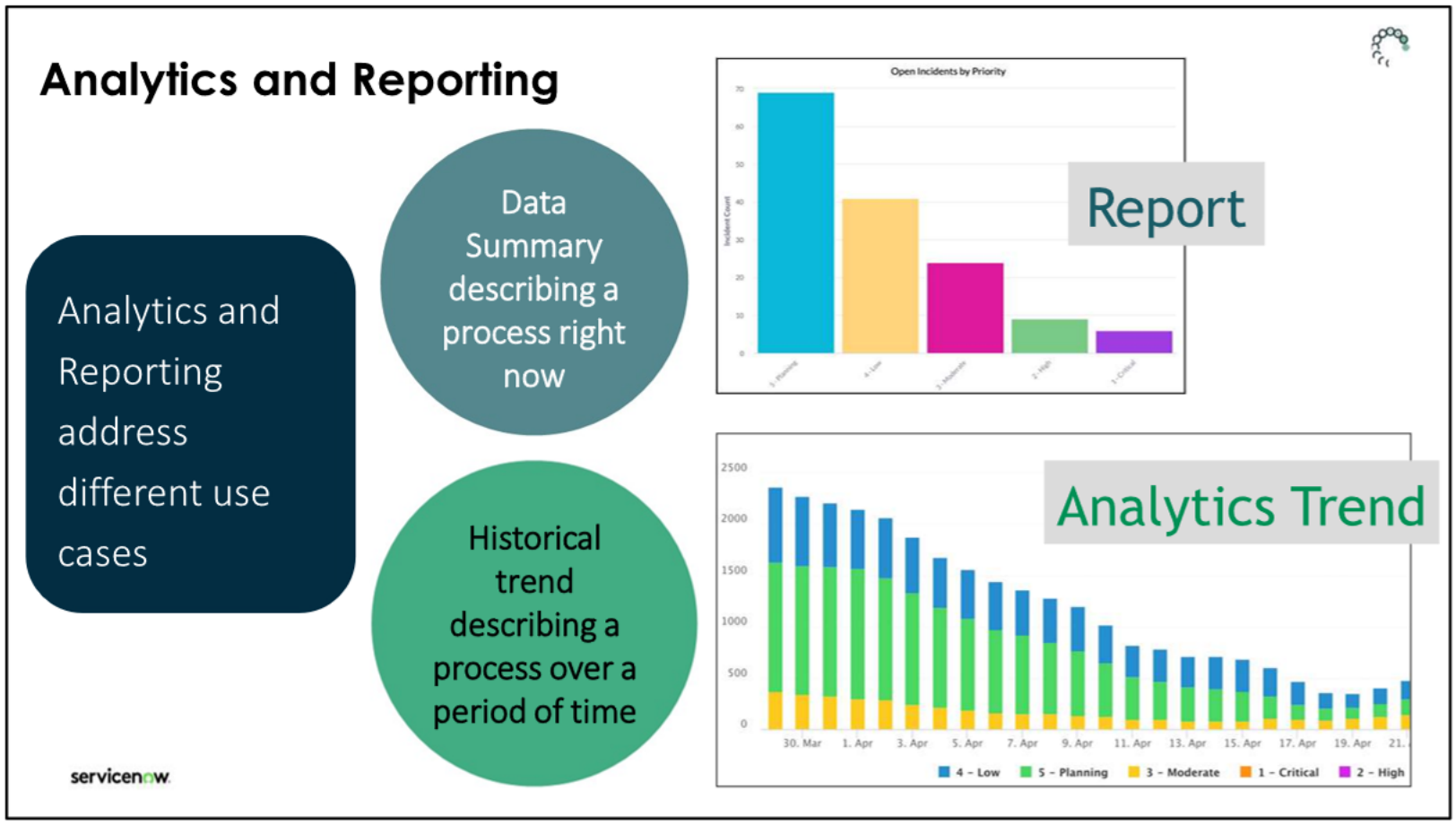
© 2023 ServiceNow, Inc. All Rights Reserved



The most common personas that benefit from the deployment of a Performance Analytics solution are Service Owners, Executives, Front Line workers, and, of course, the end users or customers. These personas have varying objectives and pain points:

- End Users need status and quality information about submitted requests and services they use.
- Front Line Workers need relevant targeted information that would help them make the right decisions quickly and result in more efficient and better service.
- Service Owners are looking for information that will help to better understand what drives the quality and the cost-of-service delivery.
- Executives need information about governance and a higher-level overview of process indicators to make better informed decisions.

© 2023 ServiceNow, Inc. All Rights Reserved



Performance Analytics complements and expands the ServiceNow reporting capabilities. Here are some key characteristics of each:

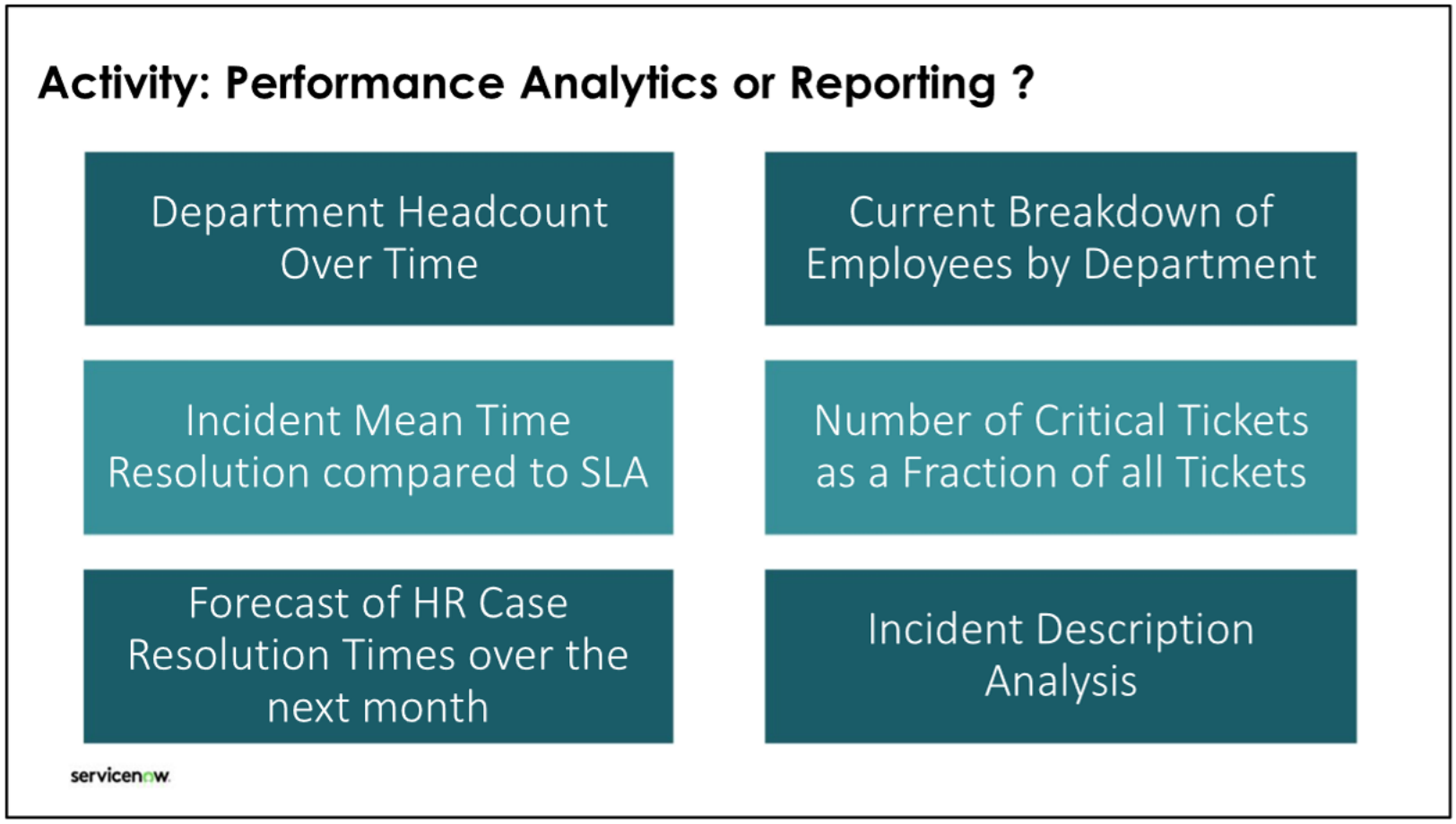
Reporting:

- A Report is a data summary measured at a specific time. It describes a process at the current moment.
- Reports are best for measuring process outputs when no historical trend is required.
- Reports provide real-time status updates and summaries of past information. Examples:
  How many incidents are open currently?
  How many incidents were resolved last week?

Performance Analytics:

- An Analytics widget presents an Indicator Trend – a series of measurements collected over time. The trend describes how a process has changed and evolved over a period of time.
- Analytics visualizes performance trends against targets and uses notifications. This allows a Process Owner to take action as soon as performance degradation is detected.
- Analytics is able to correlate multiple business processes and derive new metrics. Example: What is the percentage of Critical incidents not worked on in the last 24 hours?
- Using Forecasting algorithms, Analytics can help businesses anticipate trends.

© 2023 ServiceNow, Inc. All Rights Reserved



Which of the above are appropriate use cases for Performance Analytics? Which are better to address with Reporting?

Answers:

Department Headcount Over Time - Historical Performance Trend, use Analytics

Current Breakdown of Employees by Department - Real-Time information, use Reporting

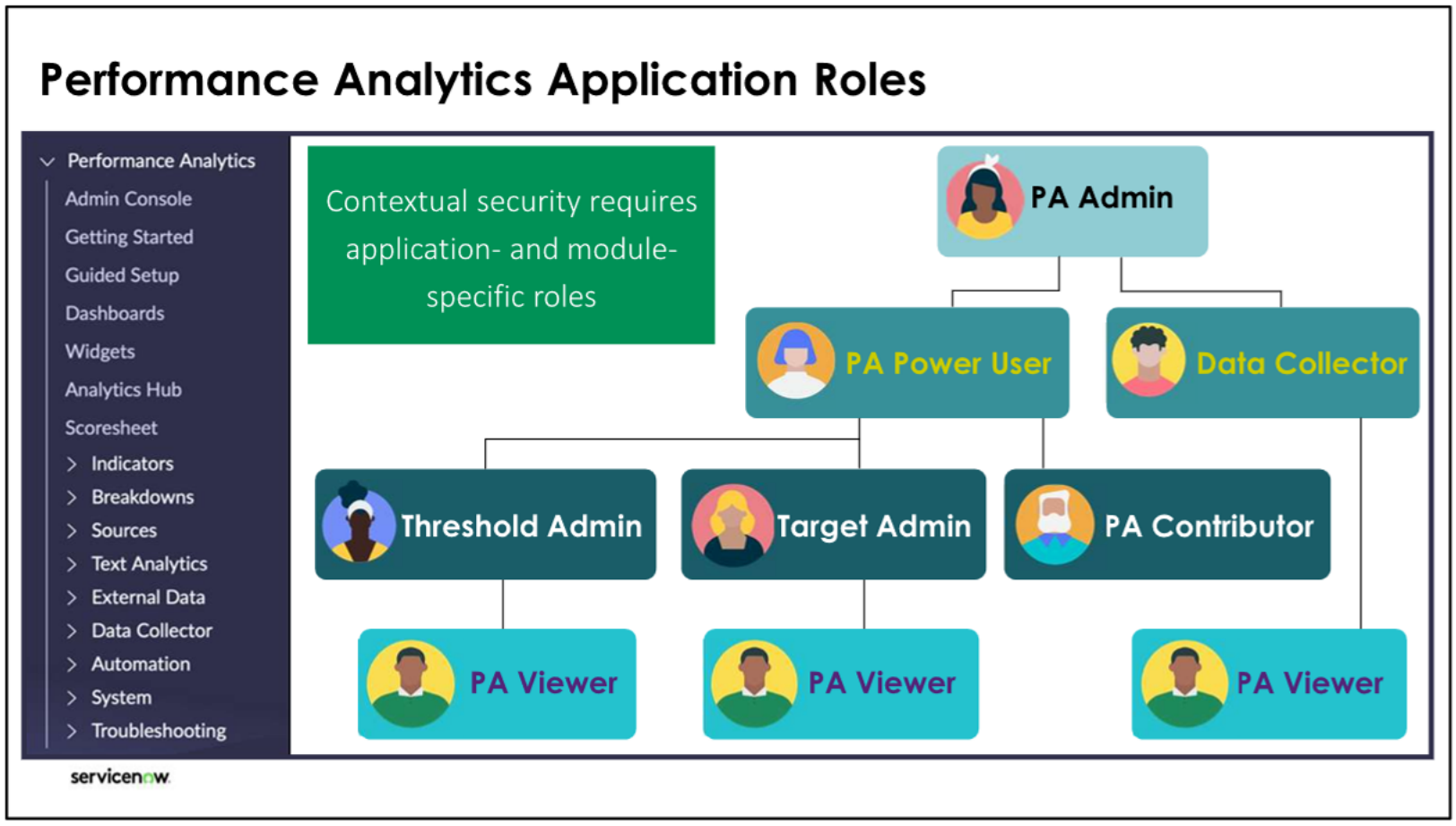
Incident Mean Time Resolution compared to SLA - Score to Target Comparison, use Analytics with Targets

Number of critical tickets as a fraction of all tickets - Metric Inference, use Analytics and Formula Indicators

Forecast of HR Case Resolution Times over next month - Predictive Analytics

Incident Description Analysis - Text Analytics, a feature of Performance Analytics

© 2023 ServiceNow, Inc. All Rights Reserved



Here are the application roles that interact with Performance Analytics:

PA Administrator: Creates Indicators, Breakdowns, and Dashboards. Manages data collection, configures jobs and sources, and edits Performance Analytics system properties. Contains the pa_data_collector and pa_power_user roles.

PA Power User: Creates Indicators, Breakdowns, and Dashboards. Cannot create or edit data, configure collection jobs or sources, and has limited ability to edit PA system settings. Contains pa_threshold_admin, pa_target_admin, and pa_contributor.

PA Data Collector: Cannot create or view indicators and Breakdowns but can create and edit data collection jobs and Indicator / Breakdown sources. Has some limited ability to edit PA system properties. Contains the pa_viewer role.

PA Contributor: Can access and modify select Scoresheets to which they are given access.
PA Threshold Admin: Can create Thresholds in the Analytics Hub.
PA Target Admin: Can create Targets in the Analytics Hub.
PA Viewer: Can only access Dashboards and the Analytics Hub.

© 2023 ServiceNow, Inc. All Rights Reserved

Deployment Options

Complimentary	Premium
• ~15 Incident KPIs • Limited History – 180 days • No New Indicators	• Library of 350+ Best Practice KPIs and Dashboards • Unlimited creation of Indicators, Breakdowns, Sources, Dashboards • Unlimited History • Guided Workflows • Interactive Analysis

servicenow

The ServiceNow platform offers free complimentary usage of Performance Analytics for Incident Management. Performance Analytics for Incident Management comes with 2 dashboards visualizing 15-20 best practice KPIs with up to 180 days of scores.

The full version of Performance Analytics is a premium add-on for ServiceNow. It bundles performance scorecards and management dashboards that automate KPI reporting and deliver advanced analytical capabilities. When purchased, customers can add, modify, or delete indicators for any application that runs on the ServiceNow platform. 100+ KPIs are included with the Premium version.

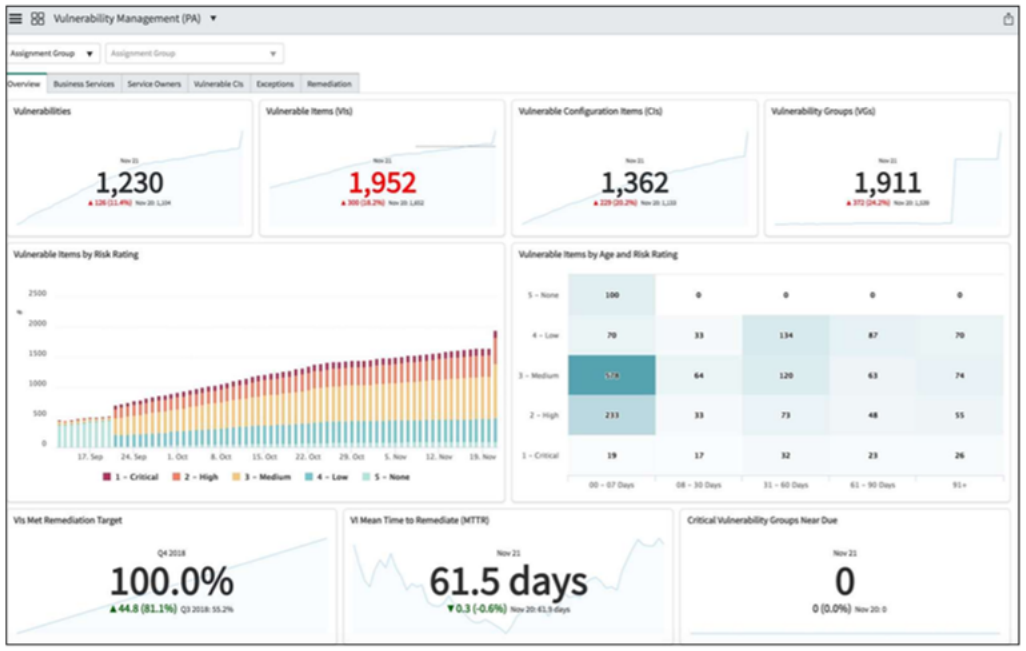
License activation: System administrators can activate the plugin for the licensed version of Performance Analytics. The specific plugin you activate depends on the product area for which you have purchased a subscription. For more information, see **Getting Started with Performance Analytics** on the Platform Analytics Community page.

Link: https://www.servicenow.com/community/platform-analytics-articles/getting-started-with-performance-analytics-platform-analytics/ta-p/2469736

© 2023 ServiceNow, Inc. All Rights Reserved

What are Analytics Solutions aka Content Packs?

Bundles of application specific Indicators, Collection Jobs, and Dashboard visualizations



A Vulnerability Management dashboard is available with the Performance Analytics - Content Pack - Vulnerability Response

50+ Analytics Solutions (Plugins) exists for ITSM, ITOM, CSM, HR, etc.

servicenow

Performance Analytics complements most in-platform applications with readily available Indicators and Dashboards bundled in process **Content Packs**. Many Content Packs are available as plugins in the baseline ServiceNow instance.

Content Packs provide content for 350+ KPIs / 200+ reports / 50+ dashboards tailored for specific ServiceNow business applications.

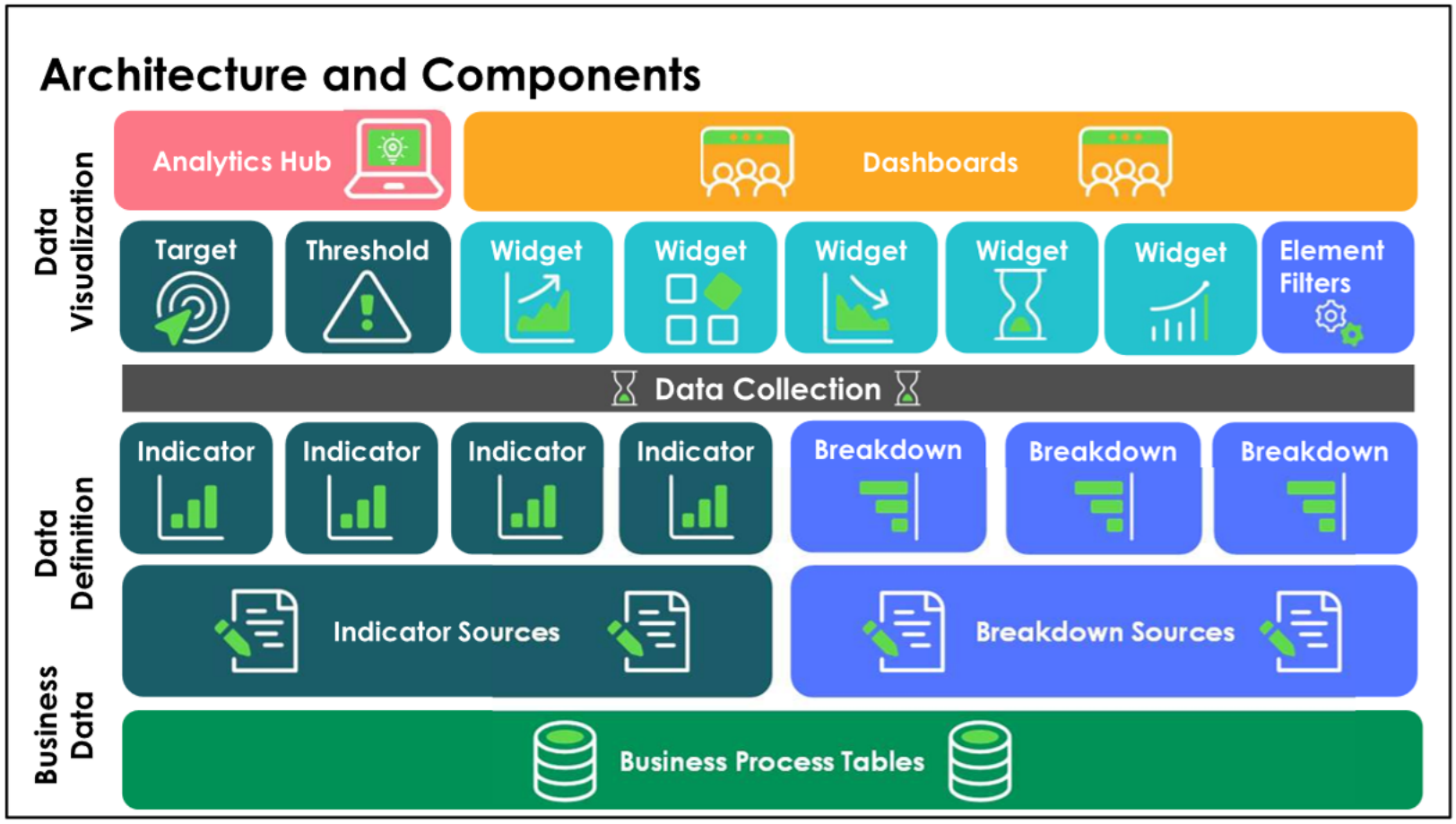
Content Packs allow for the quick onboarding of applications such as HR, Facilities, Financial Management, Knowledge Management, Request Management, Service Desk Chat, Cloud Management, Vendor Management, Customer Service, etc.

Content Packs are available for many applications such as:

- Service Management
- IT Operations Management
- Project & Financial Management
- Human Resources Management
- Customer Service Management
- Security Operations Management
- Service Strategy

Visit the Performance Analytics Community for the most up-to-date information on Content Pack availability.

© 2023 ServiceNow, Inc. All Rights Reserved



Here is a high-level look at the Performance Analytics architecture and components:

- At the lowest level, your business activities populate the **Process Tables** such as incident, problem, etc.
- **Indicator Sources** are created using the Conditions that extract specific records from process tables, such as Open Incidents, or New Problems.
- **Indicators** are created using Indicator Sources and define actual KPIs to measure, such as Incidents resolved by first Assigned group.
- Indicators can have **Targets** (goals) and **Thresholds** (critical or boundary conditions).
- **Breakdown Sources** and **Breakdowns** allow for dimensional analysis of indicator data.
- **Data Collection Jobs** run on a scheduled basis and populate the Indicator Sources and Indicators as well as Breakdown Sources and Breakdowns.
- **Widgets** are created to visualize Indicator data.
- **Element Filters** apply to Breakdown Trends as filters.
- Once the collection is complete, data can be viewed in the **Analytics Hub** and **Dashboards**. Multiple widgets are placed on dashboards and shared with stakeholders.

© 2023 ServiceNow, Inc. All Rights Reserved

Performance Analytics Resources

Community – Landing Page

- Ask Questions
- Read Blogs
- Stay Informed

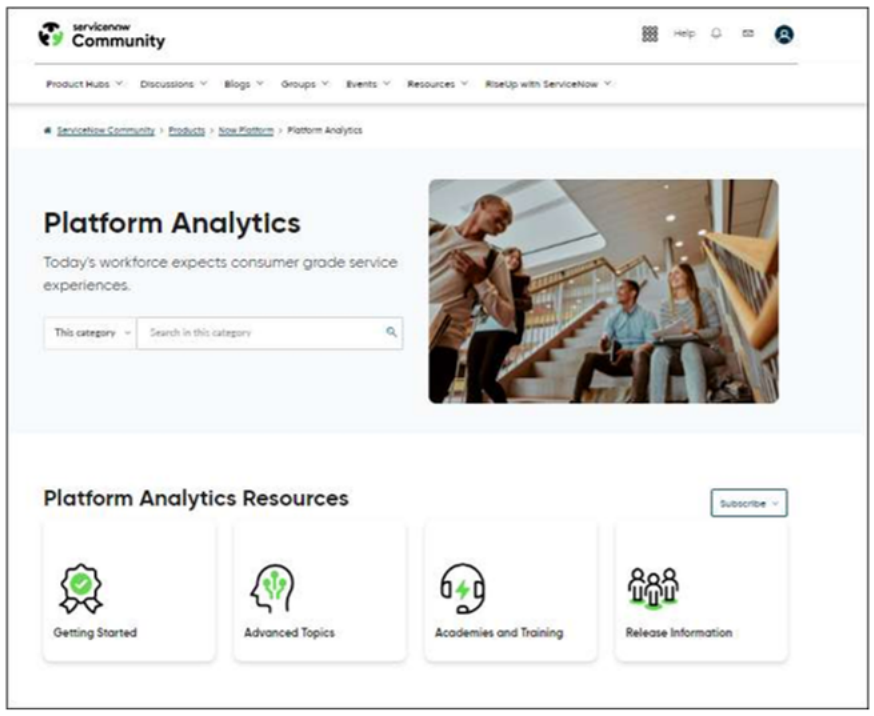
Documentation Portal

- Release Notes and Docs

Developer Portal

- Request a Personal Instance

servicenow



Make sure to bookmark the following URLs:

Platform Analytics URL: Platform Analytics - ServiceNow Community

Getting started Performance Analytics URL: Getting Started with Performance Analytics – Platf... - ServiceNow Community

Subscribe for email updates on articles, blog posts, and events.

Other useful resources:

Developer Program: ServiceNow Developers

Latest Release Notes: Vancouver release notes (servicenow.com)

Product Documentation: Product Documentation | ServiceNow

© 2023 ServiceNow, Inc. All Rights Reserved

Performance Analytics Introduction Lab

Lab 1.1
Performance
Analytics Navigation

1.1 Performance Analytics Essential Concepts

In this lab you navigate the User Interface and become familiar with application modules.

- Impersonate various Performance Analytics roles
- Review Performance Analytics Applications and Modules

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Performance Analytics Navigation

Lab 1.1

15 minutes

Lab Objectives

As the Glide Haven Performance Analytics Administrator, you need to familiarize yourself with the ServiceNow interface and the Performance Analytics application. To accomplish this task, perform the following activities:

- Explore Performance Analytics
- Practice role-based navigation
- Install a Content Pack from the Admin Console

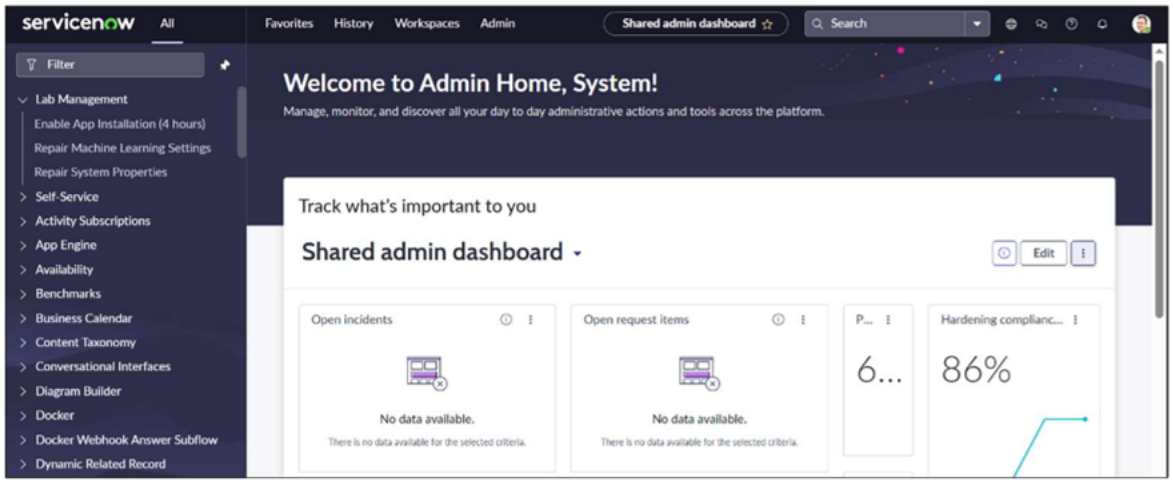
A. Navigating Applications and Modules

Instance Access

The Performance Analytics application contains modules that let you view and configure the different components required by business service analytics. In this section, you access the instance and practice module navigation.

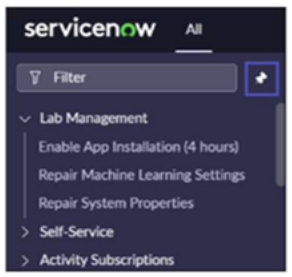
1. Log in to the ServiceNow **personal lab environment** using the instance URL and administrative credentials provided by your instructor.

2. Confirm that the System Administration homepage is displayed before proceeding.



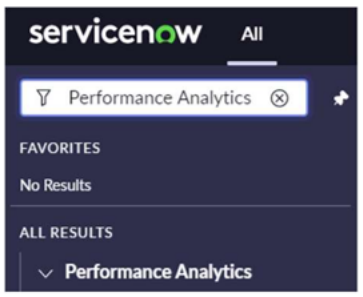
© 2023 ServiceNow, Inc. All Rights Reserved

> ***Note:*** *For more convenience and navigation, click the pin icon to pin the* ***All*** *menu.*



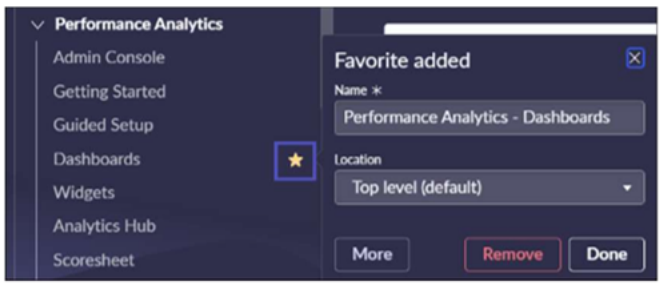
Module Navigation

1. Type in **Performance Analytics** in the **Filter navigator** field.

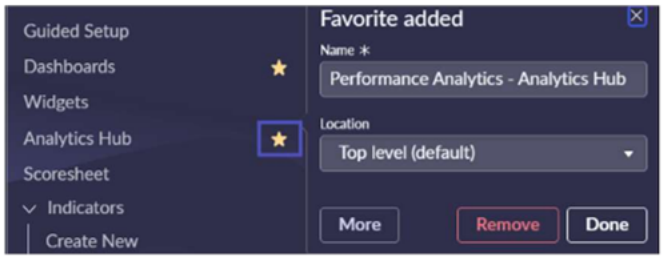


> ***Note:*** *This action displays only those modules and applications with* ***Performance Analytics*** *in the title, such as Performance Analytics.*

2. Hover over the **Dashboards** module and select the **Star** icon to create a favorite.



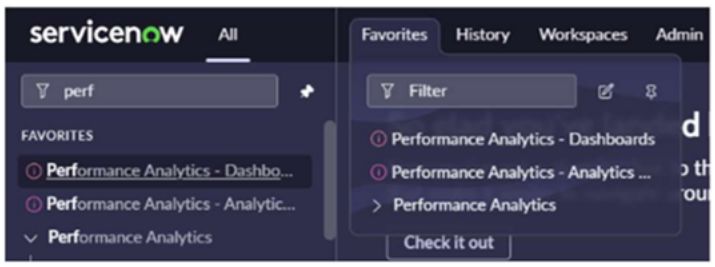
3. Hover over the **Analytics Hub** module and select the **Star** icon to create another favorite.



4. Create a favorite for the entire Performance Analytics application by clicking the **Star** icon next to the **Performance Analytics** module.

© 2023 ServiceNow, Inc. All Rights Reserved

5. Click the **Favorites menu** to view only your favorites.



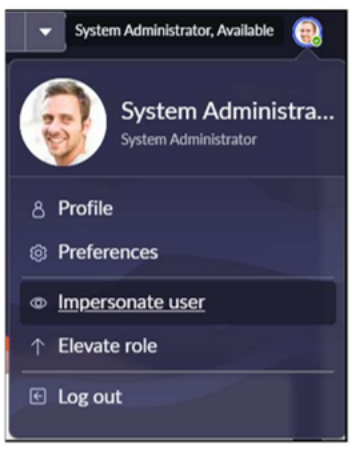
Note: *You can also view your favorites in the filter navigator panel.*

B. Performance Role-Based Analytics Navigation

Different Performance Analytics roles are restricted to specific functionality of the application. In this section, you practice role impersonation.

PA Admin Navigation

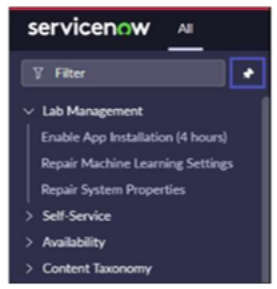
1. Click the **System Administrator avatar** to expand the **User menu** in the Unified Nav and click **Impersonate user**.



2. Type **PA Admin** in the **Search for user** field. Select the **PA Admin** from the list and click **Impersonate user.** The application automatically refreshes as per the roles and privileges of the currently logged-in user.

© 2023 ServiceNow, Inc. All Rights Reserved

3. Close the pop-up window by selecting '**X**'.



> ***Note:*** *For more convenience and navigation, click the pin icon to pin* ***All*** *menu.*

4. Type **perf** in the **Filter** navigator field and review the contents of the **Performance Analytics** application.

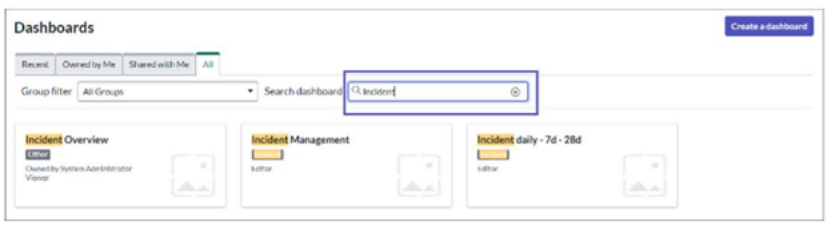
> ***Question:*** *Do you see any of the favorites created earlier? Why or why not?*

5. Confirm that the **PA Admin** user has access to the following modules – Dashboards, Admin Console, Widgets, Analytics Hub, Scoresheet, Indicators, Breakdowns, Sources, Data Collector, Automation, System, and a few others.

6. Create Favorites for these two modules: **Dashboards** and **Analytics Hub**.

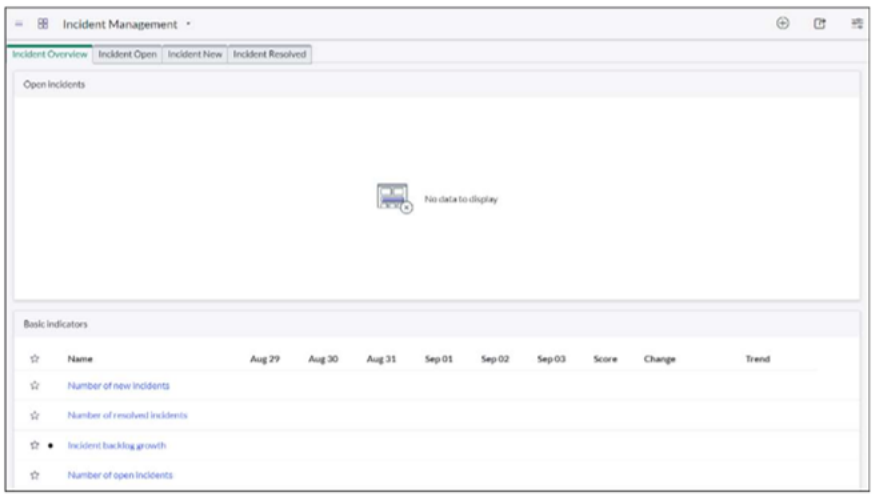
7. Navigate to **Performance Analytics > Dashboards**.

8. Type **Incident** in the **Search by name or group** box.



> ***Note:*** *Shown above are Dashboards that belong to the* ***Incident*** *group or have* ***Incident*** *in their name.*

9. Select the Dashboard card of the **Incident Management** dashboard.



> ***Question:*** *What needs to happen to have data in a Performance Analytics dashboard?*

© 2023 ServiceNow, Inc. All Rights Reserved

PA Power User Navigation

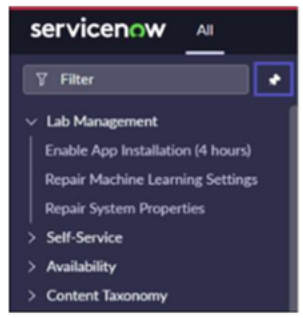
1. Expand the **User menu** in the Polaris Unified Nav and select **Impersonate another user.**

   Note: *Polaris is the default theme for instances with Next Experience enabled.*

2. Impersonate **PA Power User.** The application automatically refreshes as per the roles and privileges of the currently logged in user.

3. Close the pop-up window by selecting '**X**'.

   Note: *For more convenience and navigation, click the pin icon to pin **All** menu.*



4. Type **perf** in the **Filter** navigator.

5. Create a favorite for the **Performance Analytics** application.

6. Confirm that the **PA Power User** has access to the following modules – Dashboards, Widgets, Analytics Hub, Scoresheet, Indicators, Breakdowns, Automation, System, and a few others.

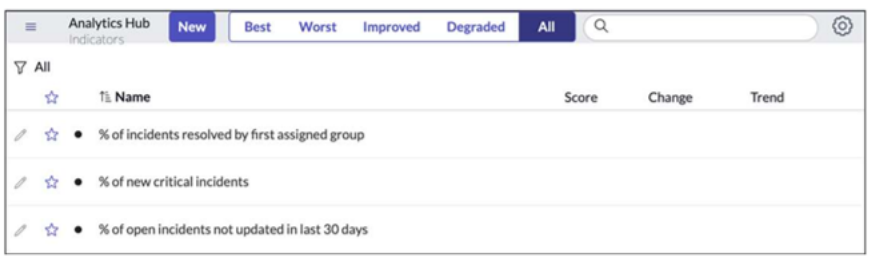
7. Navigate to **Performance Analytics > Indicators > Automated Indicators**.

   Note*: The default deployment of Performance Analytics consists of multiple Indicators designed to monitor the Incident Management processes.*

   Question*: Which KPIs are dedicated to trending resolved Incidents Information?*

8. Navigate to **Performance Analytics > Analytics Hub.**

   Question: *Do the Incident Indicators have any Score, Change, and Trends data yet? What needs to happen for analytics data to show?*



© 2023 ServiceNow, Inc. All Rights Reserved

Data Collector Navigation

1. Expand the **User menu** in the Polaris Unified Nav and select **Impersonate another user.**

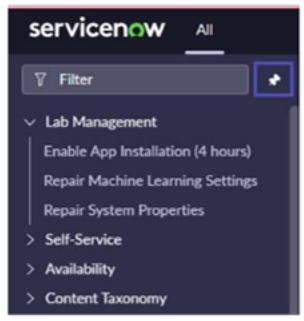
2. Type **PA Data Collector** in the **Search for user** field.

3. Select the **PA Data Collector** user.

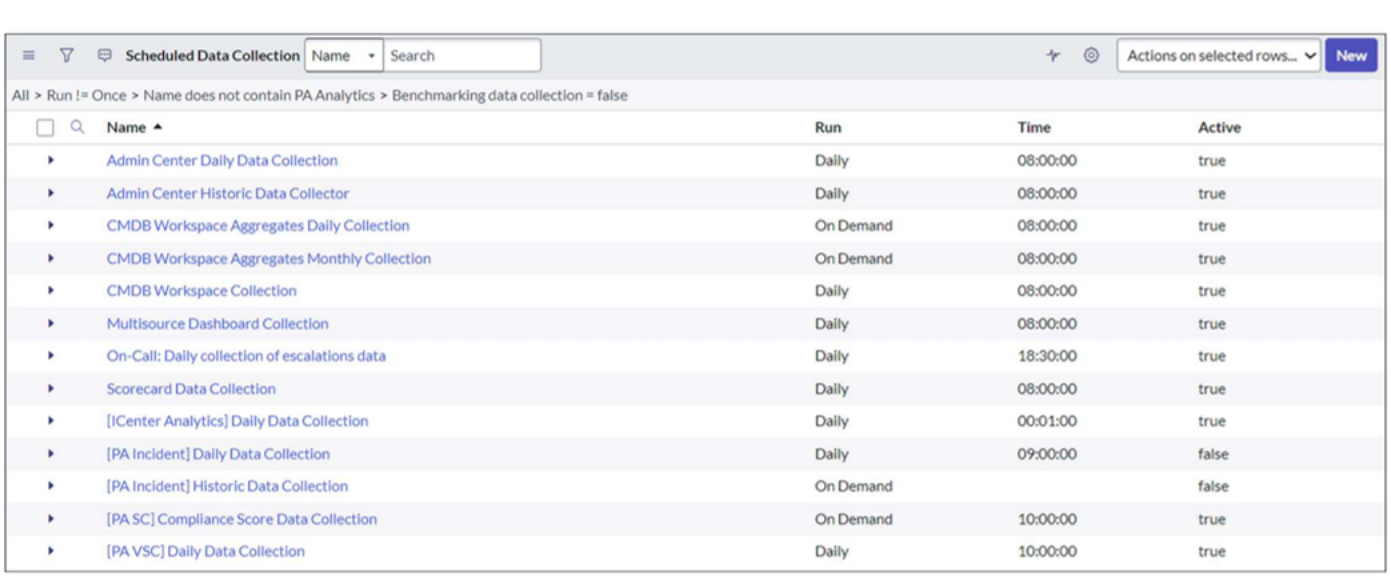
4. If a pop-up window appears, close the window by selecting '**X**'.

   ***Note**: The PA Data Collector is the only user, other than PA Admin, with access to data collection and data sources.*

   ***Note:** For more convenience and navigation, click the pin icon to pin **All** menu.*

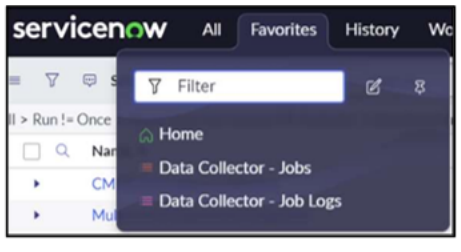


5. Navigate to **Performance Analytics > Data Collector > Jobs**.



***Questions**: What all jobs have been configured for data collection? Are any of the collection jobs active?*

6. Create Favorites for the **Jobs** and **Job Logs** modules.

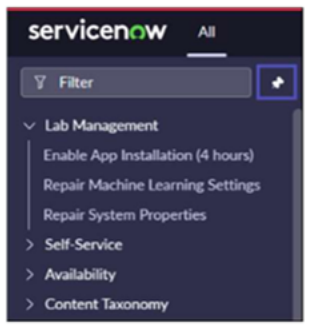


© 2023 ServiceNow, Inc. All Rights Reserved

Contributor Navigation

1. Expand the **User menu** in the Polaris Unified Nav and select **Impersonate another user.**
2. Type **PA Contributor** in the **Search for user** field and select the **PA Contributor** user.
3. If a pop-up window appears, close the window by selecting '**X**'.

> ***Note:*** *For more convenience and navigation, click the pin icon to pin **All** menu.*



4. Type **perf** in the **Filter** navigator and review the contents of **Performance Analytics**.
5. Select the **Analytics Hub** module.

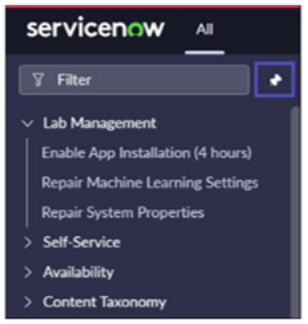
> ***Note****: A contributor needs to be explicitly added to an indicator to have access to its detailed score information in the Analytics Hub.*

6. Create a favorite for the **Scoresheet** and **Analytics Hub** modules.

Viewer Navigation

1. Expand the **User menu** in the Polaris Unified Nav and select **Impersonate another user.**
2. Type **PA Viewer** in the **Search for user** field and select the **PA Viewer** user.
3. If a pop-up window appears, close the window by selecting '**X**'.

> ***Note:*** *For more convenience and navigation, click the pin icon to pin **All** menu.*

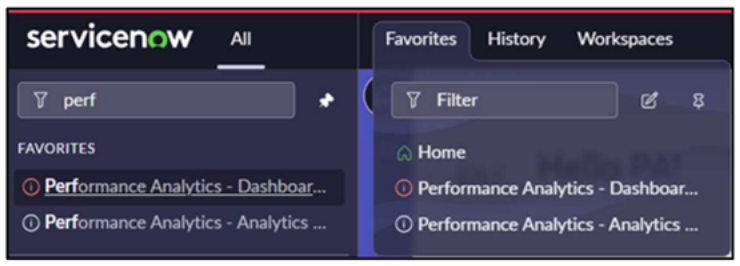


© 2023 ServiceNow, Inc. All Rights Reserved

4. Type **perf** in the **Filter** navigator and review the contents of **Performance Analytics**.

   ***Question**: How does the PA Viewer access compare to the PA Contributor access?*

5. Create Favorites for the **Analytics Hub** and **Dashboards** modules.



C. Content Pack Installation

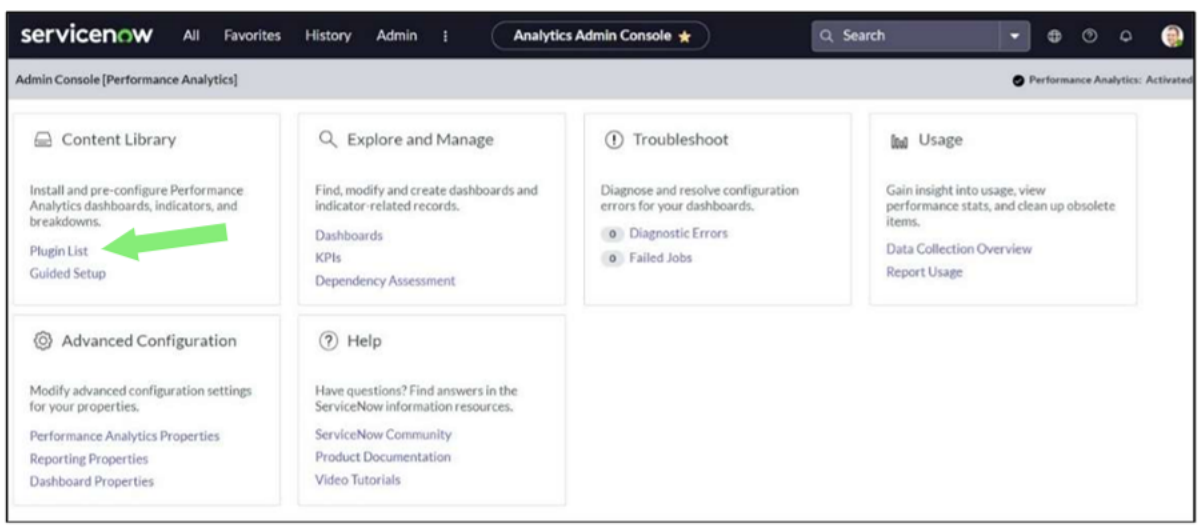
In this section, you install an additional Content Pack to deploy KPIs for the Incident SLA Management process.

Content Pack Activation

1. Expand the **User menu** and click **End impersonation** to resume the identity of **System Administrator**.

2. Navigate to **Performance Analytics > Admin Console**.

3. Select **Plugin List** under **Content Library**.



4. Review the list of ~60 solutions and Content Packs.

   ***Question:** What content packs do you see that relate to processes and applications you manage and may be helpful to add to your Performance Analytics deployment?*

5. Select the **Show/hide natural language filter** button.

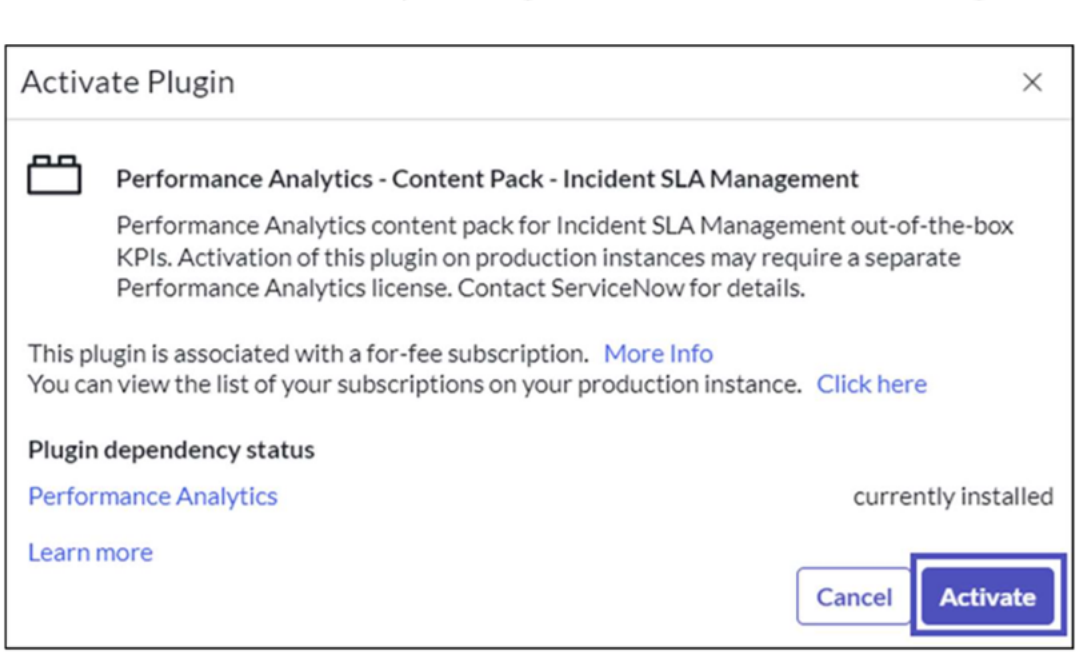
© 2023 ServiceNow, Inc. All Rights Reserved

6. Type “**name contains sla management”** and press **Ask** or the Enter key.

7. Open the **Performance Analytics – Content Pack – Incident SLA Management** plugin.

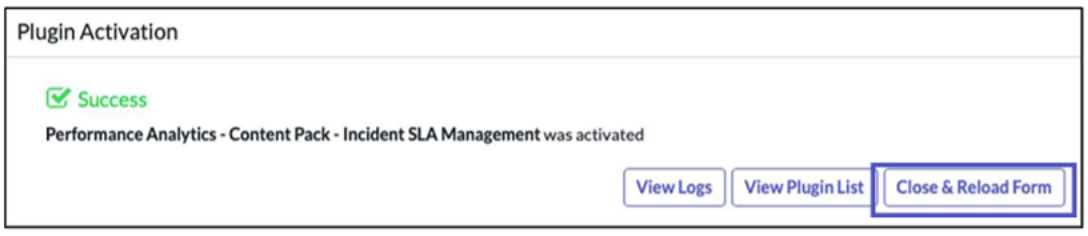
8. Select the **Activate/Repair** Related Link.

9. Proceed with activation by clicking **Activate** in the Activate Plugin dialog.



10. Wait till the activation completes successfully.

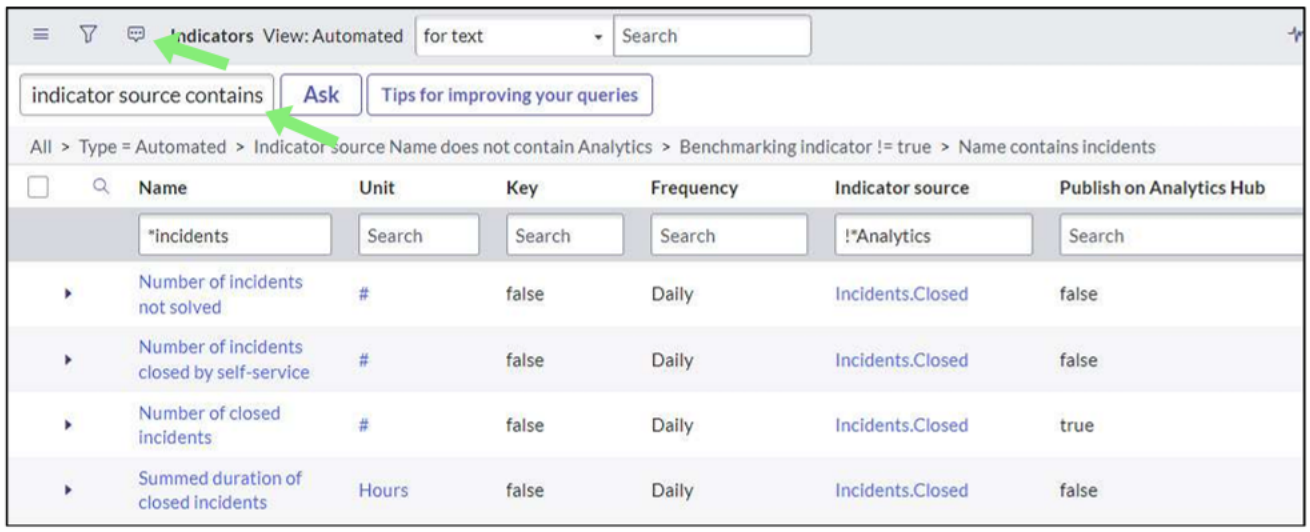
11. Once complete, press **Close & Reload Form** to exit Plugin Activation.



© 2023 ServiceNow, Inc. All Rights Reserved

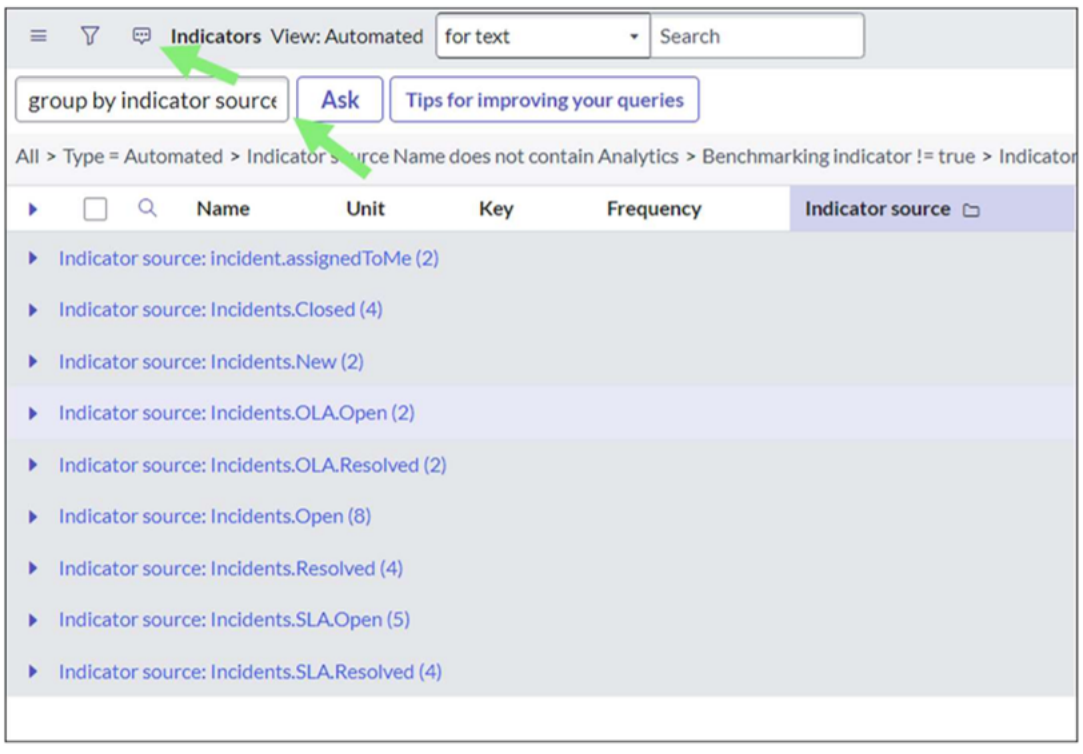
Preview New Content

1. Navigate to **Performance Analytics > Indicators > Automated indicators**.
2. Select the **Show/hide natural language filter** button.
3. Type **“indicator source contains incident”** and press **Ask** or the Enter key.



4. Next, type “**group by indicator source”** and press **Ask** or the Enter key.

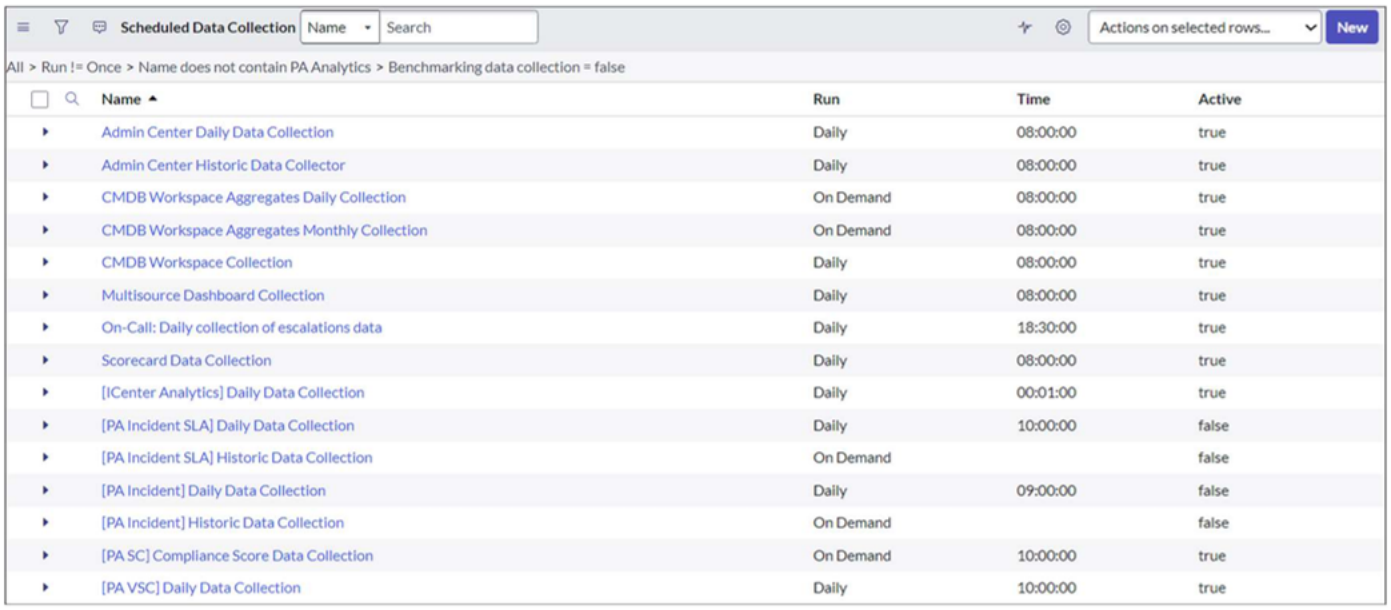
Question: *Can you tell which additional indicators were installed with the Incident SLA Management Content Pack?*



Hint: *The Performance Analytics – Content Pack – Incident SLA Management installs indicators with source containing OLA and SLA.*

© 2023 ServiceNow, Inc. All Rights Reserved

5. Navigate to **Performance Analytics > Data Collector > Jobs**.



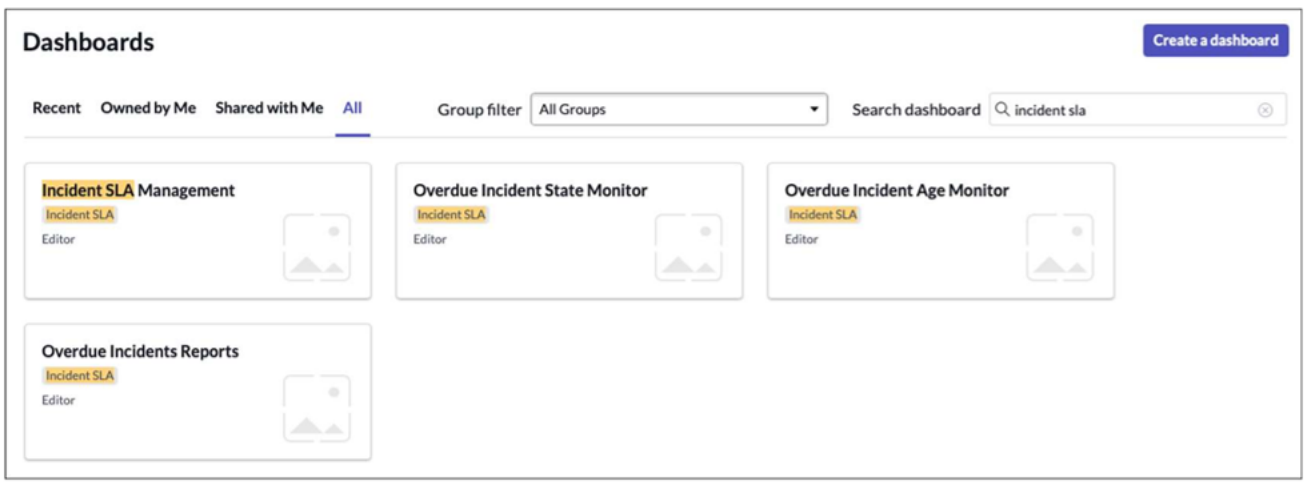
Name	Run	Time	Active
Admin Center Daily Data Collection	Daily	08:00:00	true
Admin Center Historic Data Collector	Daily	08:00:00	true
CMDB Workspace Aggregates Daily Collection	On Demand	08:00:00	true
CMDB Workspace Aggregates Monthly Collection	On Demand	08:00:00	true
CMDB Workspace Collection	Daily	08:00:00	true
Multisource Dashboard Collection	Daily	08:00:00	true
On-Call: Daily collection of escalations data	Daily	18:30:00	true
Scorecard Data Collection	Daily	08:00:00	true
[ICenter Analytics] Daily Data Collection	Daily	00:01:00	true
[PA Incident SLA] Daily Data Collection	Daily	10:00:00	false
[PA Incident SLA] Historic Data Collection	On Demand		false
[PA Incident] Daily Data Collection	Daily	09:00:00	false
[PA Incident] Historic Data Collection	On Demand		false
[PA SC] Compliance Score Data Collection	On Demand	10:00:00	true
[PA VSC] Daily Data Collection	Daily	10:00:00	true

Question: *What additional jobs were installed with the new Content Pack?*

Hint: *Look for 'Incident SLA' in the job name.*

6. Navigate to **Performance Analytics > Dashboards**.

7. Display **All** dashboards belonging to the **Incident SLA** group.



Hint: *Select 'Incident SLA' in the Group filter drop-down.*

Congratulations!
You have now completed the Performance Analytics Navigation Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

Module Recap

Core Concepts

- Performance Analytics trends business performance for continual service improvement
- Indicators track key processes and visualize performance trends
- Performance Analytics and Reporting complement each other
- The Premium license unlocks the full Performance Analytics capabilities

Review Questions

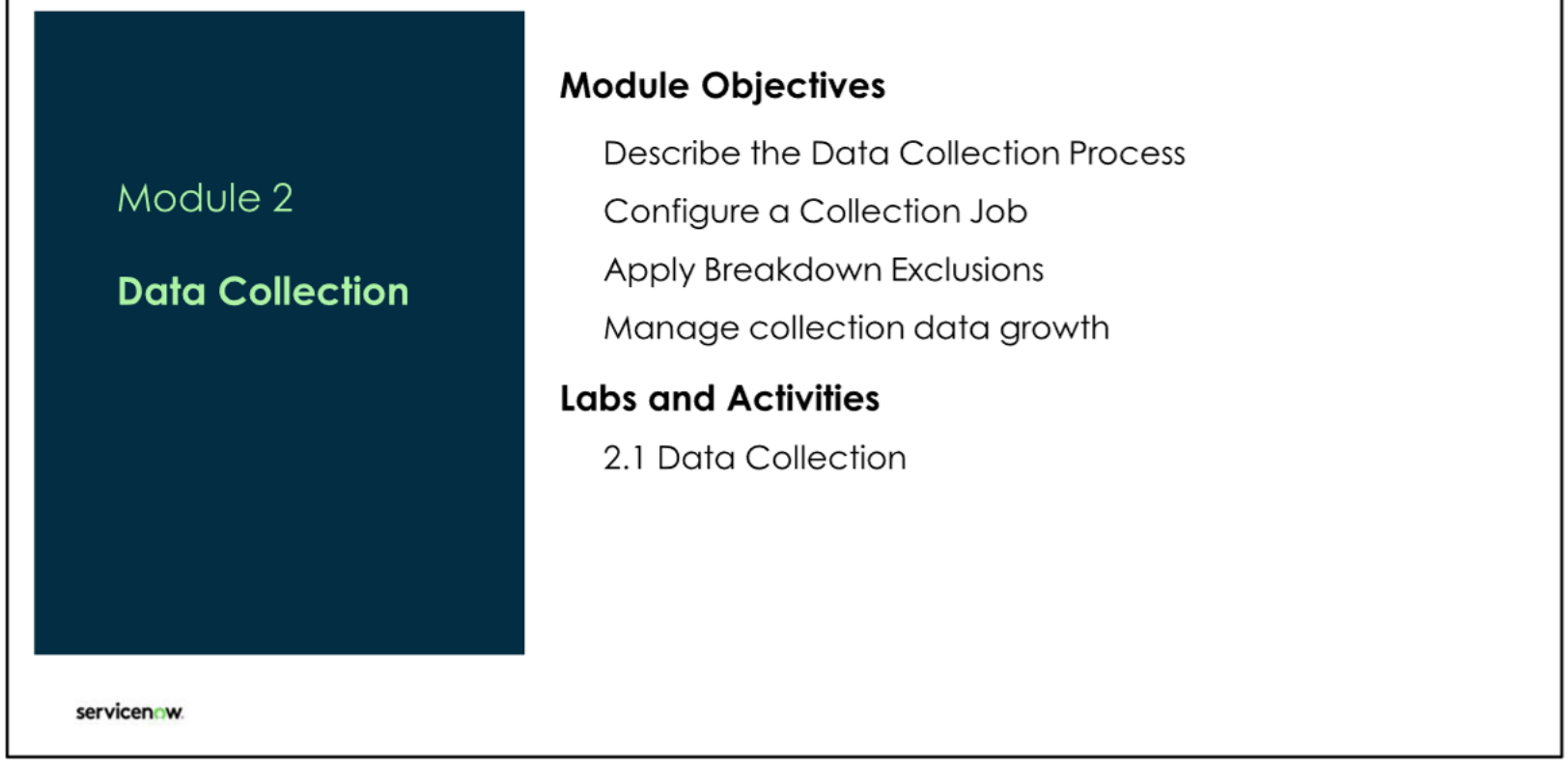
- What is an Indicator?
- What is a Dashboard?
- How are Reporting and Performance Analytics different?
- Which business processes do you plan to optimize using Performance Analytics?

What is an Indicator?
A business process health measurement is recorded over time.

What is a Dashboard?
An arrangement of related process visualizations illustrating process health.

How are Reporting and Performance Analytics different?
A Report is a data summary measured at a specific time. It describes a process only at the current moment. Performance Analytics tracks a business process using Indicators - series of measurements collected over time. Using Performance Analytics trends (Indicators), you can describe how a process has changed and evolved over time.

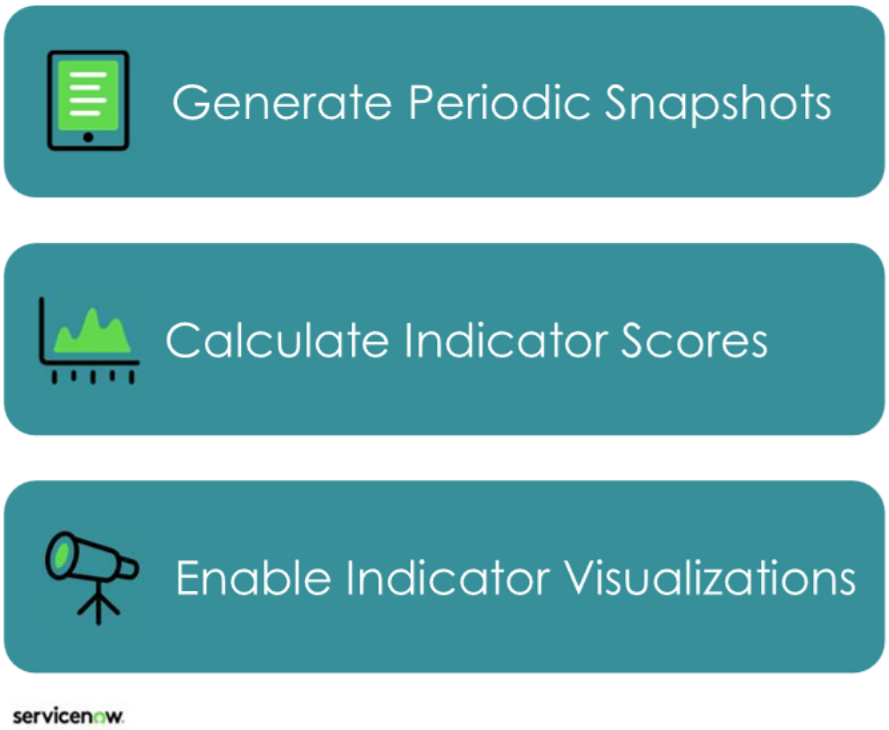
© 2023 ServiceNow, Inc. All Rights Reserved



This module introduces ServiceNow Performance Analytics Data Collection – the core process that feeds raw measurement data into Performance Analytics score tables. Performance Analytics score tables are used to provide data for Analytics Hub and Dashboard widgets

© 2023 ServiceNow, Inc. All Rights Reserved

What does Data Collection do?

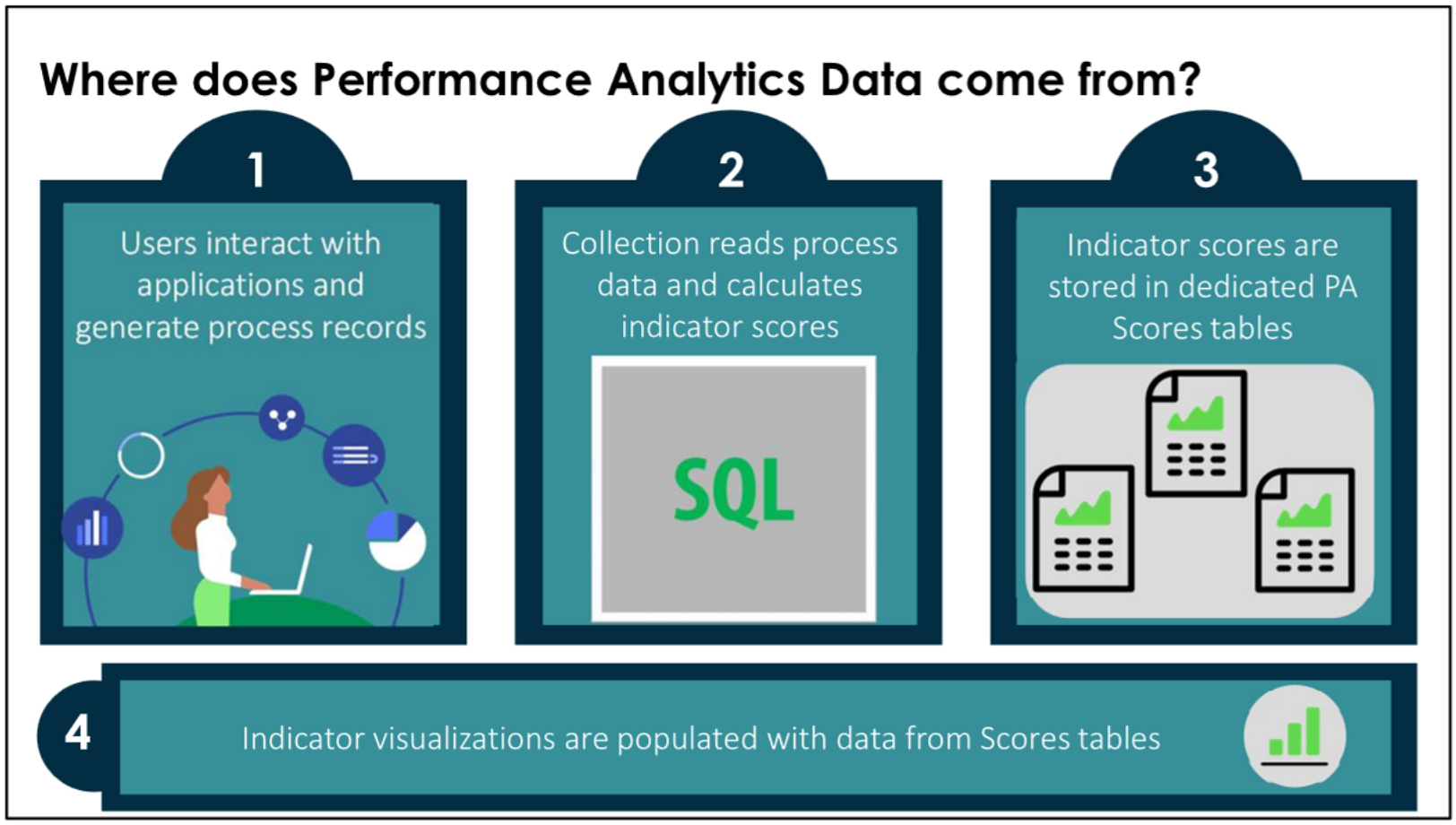


Indicator	Date	Score
Open Cases	9/10	45
Open Cases	9/11	53
Open Cases	9/12	65

Unlike reporting, collection does not directly query the business process tables in real-time. Rather, it generates periodic snapshots (often daily) so that an accurate trend of the process can be constructed.

Performance Analytics snapshots are the lists of records (sys_ids) that are collected at the time that the scores for those records are collected.

© 2023 ServiceNow, Inc. All Rights Reserved



Analytics data and application process data coexist on the same instance. Collection jobs read process tables and apply a filter defined by the Indicator Source. The resulting data set calculates the Indicator Score, which is saved to dedicated score tables. Widgets use the score tables to visualize Indicator trends.

The core PA data tables that store Indicator scores are:

- Snapshots [pa_snapshots] – stores sys_ids of records included in the collection period
- Scores Level 1 [pa_scores_l1] – stores scores for indicators and 1st level breakdowns
- Scores Level 2 [pa_scores_l2] – stores scores 2nd level breakdowns

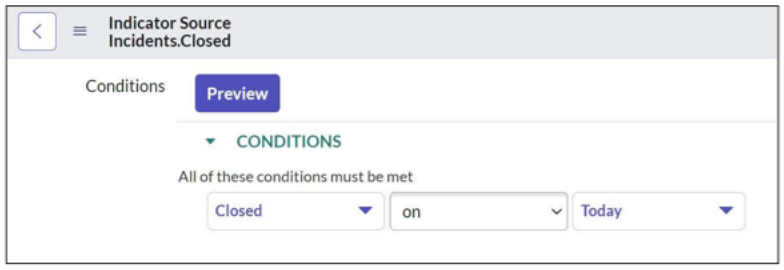
Additional tables include definitions (Indicator, Breakdowns, etc.) and visualization tables (widget, dashboard, etc.). In total, there are over 50 additional Performance Analytics tables dedicated to supporting various analytics processes – data definition, collection, and visualization.

© 2023 ServiceNow, Inc. All Rights Reserved

Sources and Indicators

Indicator Sources define the sub-set of data you want to see from business tables

Indicators calculate the exact measurement you want to track from Indicator Sources:



Indicators based on the **Incidents.Closed**:

- Number of closed incidents
- Number of incidents closed by Self Service
- Number of incidents not solved
- Summed duration of closed incidents

Collection retrieves the Indicator Source data and calculates the Indicator Score by summing or aggregating records in the Indicator Source and applying additional conditions

Similar Indicators share a common **Indicator Source**, which defines the base data set. Indicator scores are calculated during collection using the Source (base data) and applying aggregates and additional conditions. A detailed explanation of Indicators and Sources is provided in Module 4 of this course.

These Indicators are all based on the **Incidents.Closed** source:

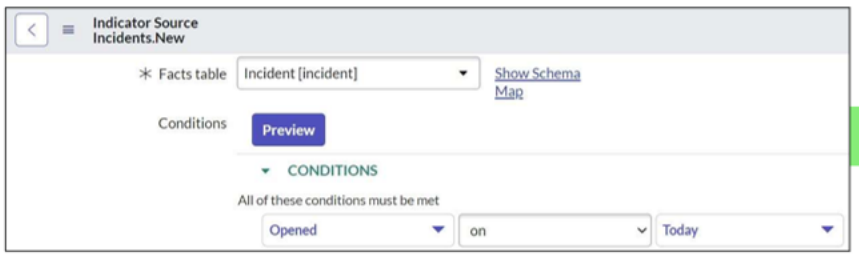
- **Number of closed incidents** - calculated as a count of all records in the Indicators Source.
- **Number of incidents closed by Self Service** - calculated as a count of all records in the Indicators Source that have been resolved by Caller.
- **Number of incidents not solved** - calculated as a count of all records in the Indicators Source that have not been solved.
- **Summed duration of closed incidents** - calculated as a sum of the duration of all records in the Indicators Source.

© 2023 ServiceNow, Inc. All Rights Reserved

Date Processing During Collection

Every Indicator Source has a DATE condition

During Collection, **Today** is REPLACED by the respective date:



The dates in the query are dynamic and correspond to the respective collection period

```
SELECT sys_id FROM task
WHERE sys_class_name = 'incident'
AND
(opened_at >= '2020-08-13 00:00:00'
AND opened_at <= '2020-08-13
23:59:59')
```

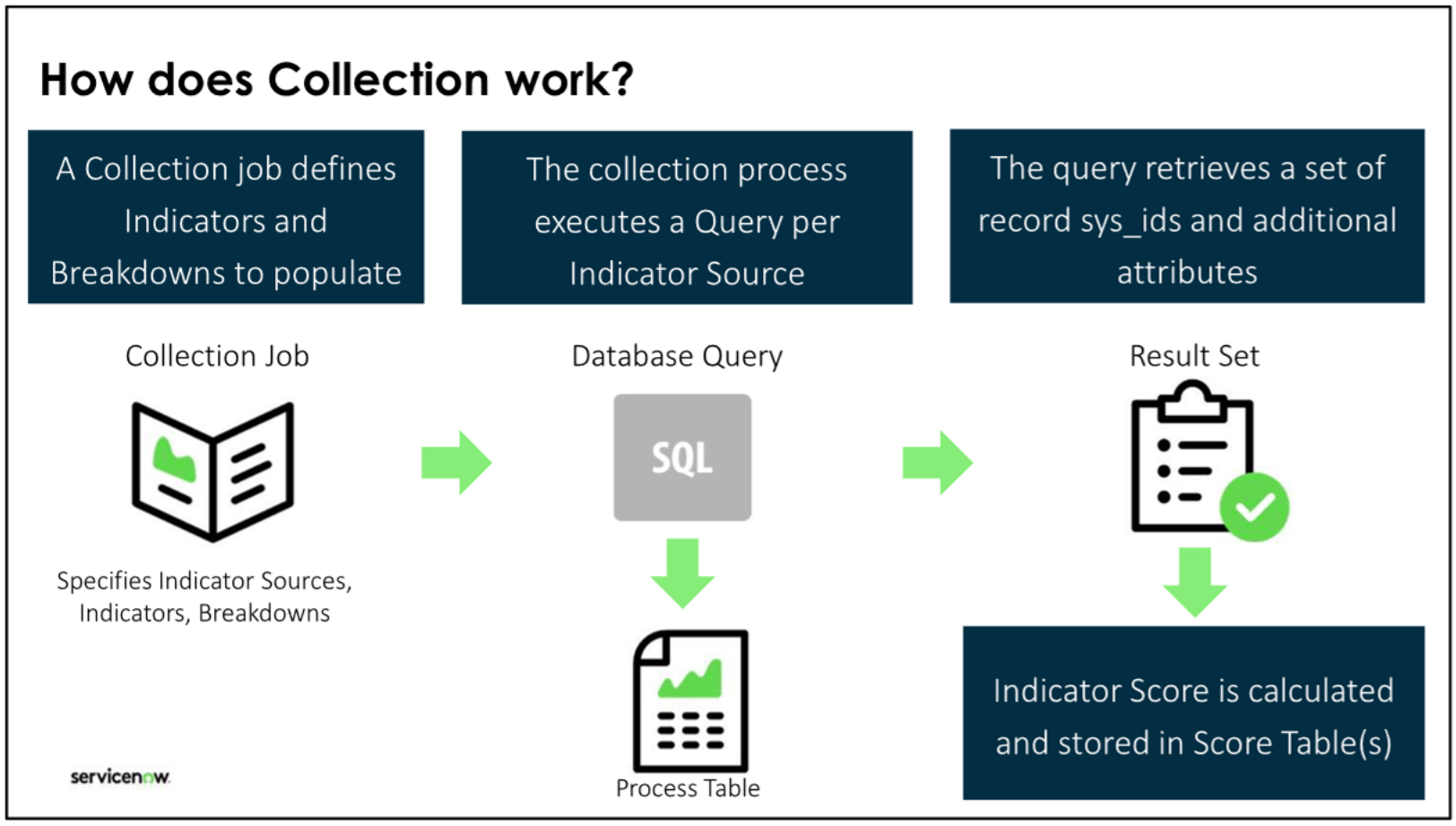
servicenow

Important: Every Indicator Source has a **DATE** condition. That Condition is built on a **Date/Time** field such as: Created, Opened, Updated, Resolved, or Closed. During collection, the Indicator Source is retrieved using the Source conditions. The dynamic **Today** operator is replaced by the respective date as in the example shown in the slide.

The Collection process runs a single query per Indicator Source per period. This is the first step in the collection process. For instance, if you have configured a job to run for 30 days and the job collects records for the **Number of open Incidents** and **Number of new incidents** indicators, the job will execute 2 queries (one for Incidents.New and one for Incidents.Open indicator sources) for each day it runs, which is 30 x 2 or 60 queries to the incident table in total.

Additional conditions or aggregates are handled in memory and do not trigger additional queries.

© 2023 ServiceNow, Inc. All Rights Reserved

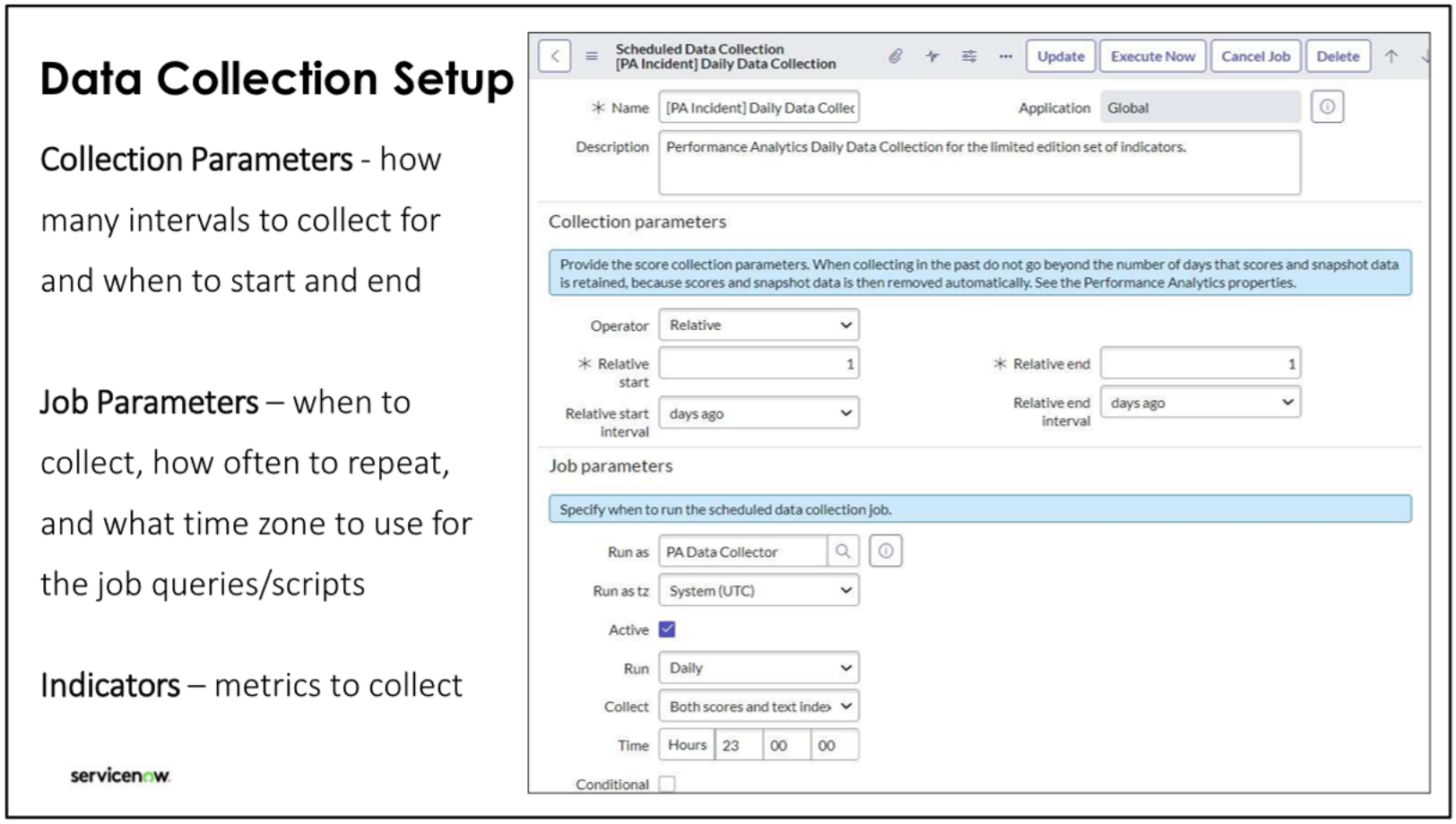


Data collection jobs run against ServiceNow process tables to retrieve Indicator scores. The scope of a collection job is defined by the specified Indicators and Breakdowns. In addition, every indicator is based on an Indicators source. The condition of the Indicator Source is used to execute a database query and return a set of records. Then, for each Indicator and Breakdown combination, the respective score is determined by applying a Map/Reduce function.

Scores are stored in the pa_scores_l1 and pa_scores_l2 tables.

The pa_snapshots table is a related table used to store the respective records (sys_ids) represented by the score or the snapshot. A snapshot is made only for indicators with **Collect records** selected. For each time period for which the collection runs, a list of sys_ids is generated based on the Indicator definition.

© 2023 ServiceNow, Inc. All Rights Reserved



Collection jobs define the period (interval), schedule (frequency), and metrics (indicators) to collect.

Collection parameters -

- **Operator**: Fixed or Relative.

  For a **Fixed** collection, you define the **Fixed start** and **Fixed end** of the collection.

  For a **Relative** collection, you defined the following:

  - Number of **Relative start** and **Relative end** intervals.
  - **Relative Start interval** and **Relative End interval**: days, weeks, months.

In the example, the job collects scores for yesterday (starting 1 day ago and ending 1 day ago).

Job Parameters -

- **Run as -** a **dedicated** account to run collection as.
- **Run as tz -** the time zone to use when evaluating job scripts and queries.
- **Active** - enable or disable the job.
- **Run -** repeat frequency: Daily, Weekly, Monthly, Periodically, and On Demand.
- **Collect** - numeric scores, text patterns, or both.
- **Time -** the time, in the logged-in user time zone, that the job will run. Uses UTC if not set.

© 2023 ServiceNow, Inc. All Rights Reserved

How Often Should you Collect?

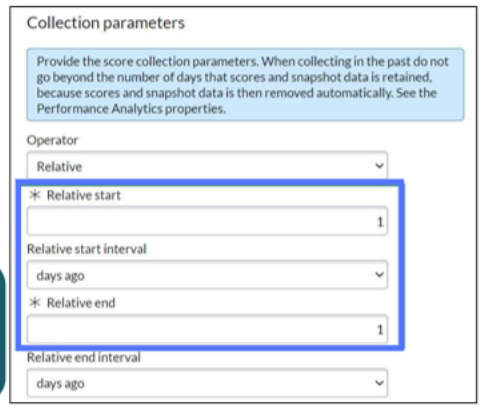
ALWAYS: Scheduled Periodic Collection

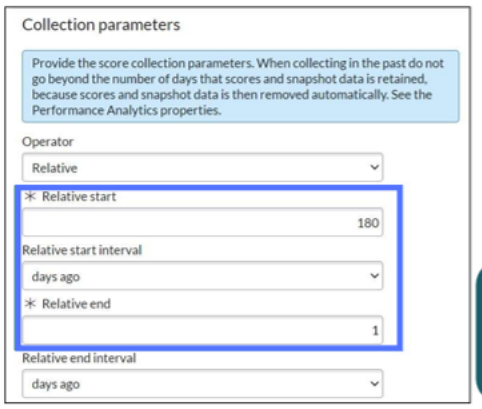
- Each run calculates a score for the past period
- A historical trend is built over time
- Daily is the smallest available job frequency
- Scheduled as recurring, single-period collection

IF NEEDED: On-demand Historic Collection

- A single run generates scores for multiple periods
- Historical trend available right after job execution
- Configured as a one-time or on-demand
- Run only when no past period data is available

Single period – 1 day





Multiple periods – 180 days

Configure a **Scheduled Data Collection** to collect snapshots of data at regular intervals and build a process trend over time. Every indicator with a Daily frequency (aka monitoring daily activity) should be added to a Daily scheduled data collection. Weekly and Monthly indicators should be added to periodic scheduled jobs with that respective frequency.

The first job shown here collects scores for a single day (yesterday), starting 1 day ago and ending 1 day ago. This job runs every day.

A **Historic Data Collection** collects snapshots from several days of historic data. It is typically only run once for an Indicator, and the Run interval is set to On Demand. Only run historic collection if missing historical data, as the job will override any previously collected daily scores.

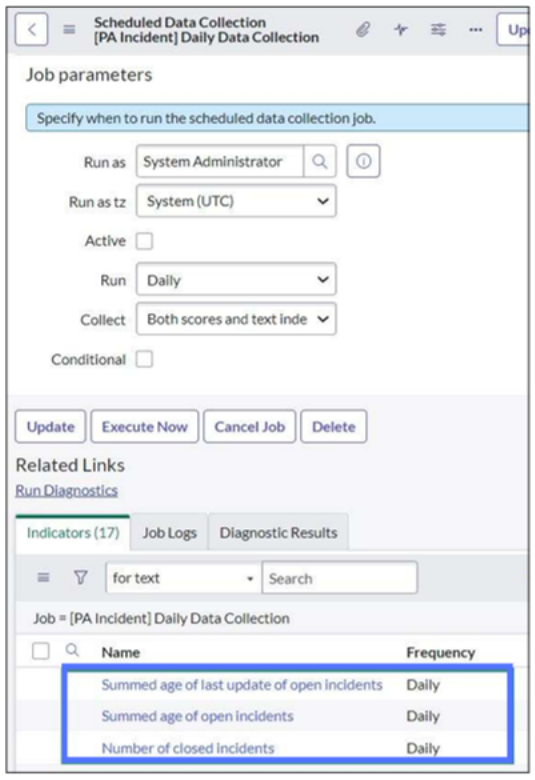
The second job shown here collects scores for a multiple days, starting 180 days ago and ending 1 day ago. This job should only run on-demand, typically at the start of the Performance Analytics deployment, when you need to collect historical data about the past.

© 2023 ServiceNow, Inc. All Rights Reserved

How to Schedule a Data Collection Job?

Good Practices

- Set **Run as** to a dedicated account
- Run daily jobs between midnight and 6am for the **Run as tz** time zone
- Stagger the start time so jobs do not overlap
- Add all daily indicators to only one collection job scheduled Daily



Collection jobs can only be configured by the pa_data_collector role or the pa_admin role.

As a best practice, create a dedicated account to run the collection. Note that the collection job does not consider the permissions of the **Run as** user, so this can be a user with no roles. Having a dedicated collection account simplifies debugging and ensures that the job will still run even if a user is disabled or deleted.

Notes on ACLs:

- Data collector bypasses ACLs.
- When scripts are run, they execute as the **Run as** user, in scripts ACLs are honored.
- When displaying records, the user's ACLs are enforced.

Notes on time zones:

- The logged-in user always sees the scheduled job time in his or her time zone. If the user's time zone is not set, the system uses UTC.
- The **Run as tz** parameter is used only to set the time zone when evaluating job queries and scripts.

© 2023 ServiceNow, Inc. All Rights Reserved

Collection Process Phases

Collection follows an ETL (Extract – Transform – Load) approach:

Extract:

Retrieve Indicator Source

Information	Collecting for 20200813 on Indicator Source Incidents.New
Information	Fetching "sys_id,assignment_group,priority,category" from "incident" using DBQuery
Information	SELECT task0.`sys_id` FROM task task0 WHERE task0.`sys_class_name` = 'incident' AND (task0.`opened_at` >= '2020-08-13 00:00:00' AND task0.`opened_at` <= '2020-08-13 23:59:59')
Information	Fetched 3 rows from Indicator Source Incidents.New (facts table: incident)

Transform:

Calculate Indicator Score

Information	Applying map/reduce function for indicator source Incidents.New

Load:

Store Scores

Information	Storing collected results for indicator source Incidents.New
Information	Scores stored: 3
Information	Stored collected results

This process is repeated for every Indicator Source and every period in the Collection configuration

servicenow

Navigate to **Data Collector > Job Logs** and review the list of available Job Logs. Each entry has a State (Collected or Collecting), Completed Timestamp, Run Time, and number of Inserts/Deletes/Warnings and Errors.

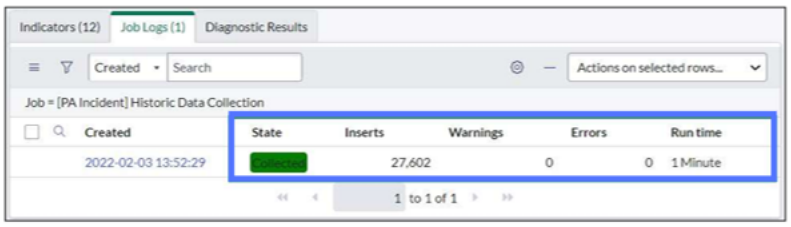
For a more detailed review and to verify if any errors or warnings are present, open the job log and filter out the Informational messages.

At times, you may wish to verify the collection flow. For each indicator daily score, the system performs a predefined sequence of steps to read the data, store it in a temp table, aggregate, and copy it to the pa_scores_l1, pa_scores_l2, and pa_snapshots tables. When validating sources, review the fields and queries to confirm that the correct query is being run.

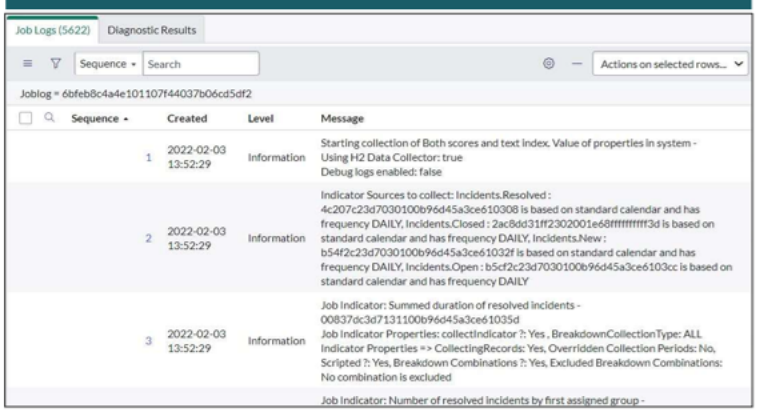
© 2023 ServiceNow, Inc. All Rights Reserved

Collection Logs

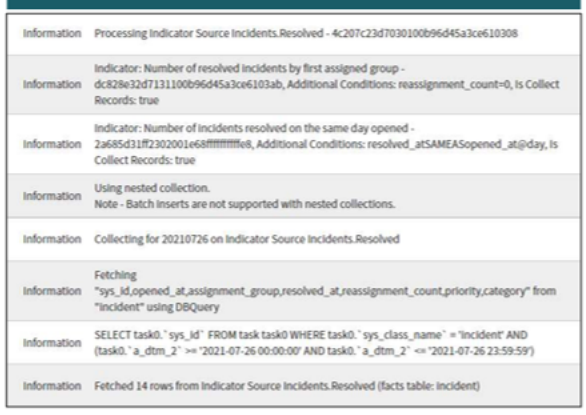
- Navigate to Data Collector > Job Logs or look in the Job Logs related list
- Check for Errors and Warnings



General Properties and specific Job Indicator Settings:



Source and Indicator Processing:



Typical Warnings are due to exceeding configured collection limits. Common errors have to do with a script or query issue.

To troubleshoot collection, navigate to **Data Collector > Job Logs** and review the list of job runs. Each job has a State (Collected or Collecting), Completed Timestamp, Run Time, and the number of Inserts/Deletes/Warnings and Errors.

For a more detailed review and to verify if any errors or warnings are present, open the job log and filter out the Informational messages.

The first few job entries list the currently configured collection properties. Then, the specific job configuration of each indicator is logged.

For each indicator daily score, the system performs a predefined sequence of steps to read in the data, store it in a temp table, aggregate (apply map/reduce), and copy to the pa_scores_l1, pa_scores_l2, and pa_snapshots tables. All of these steps are logged with detail on the Source query, breakdowns, additional conditions, etc.

© 2023 ServiceNow, Inc. All Rights Reserved

Historic Collection Limitations

It is not possible to retrieve accurate historical scores on **OPEN** records, so exclude those from Historical Collections

- **Indicators** that focused on fields that change during the lifecycle of the open record

  Example: last update date, reassignment count, breached

- **Breakdowns** on fields for which the values change during the lifecycle of the open record

  Example: assignment group, state

servicenow

Certain Indicators and breakdowns do not make sense to collect historically because their values change, and ServiceNow does not track these changes. When the changes are not tracked, Historical collection can only "see" the current value and cannot provide reliable breakdown information.

Consider the *Number of Open incidents* indicator with *Assignment Group* and *State* breakdowns.

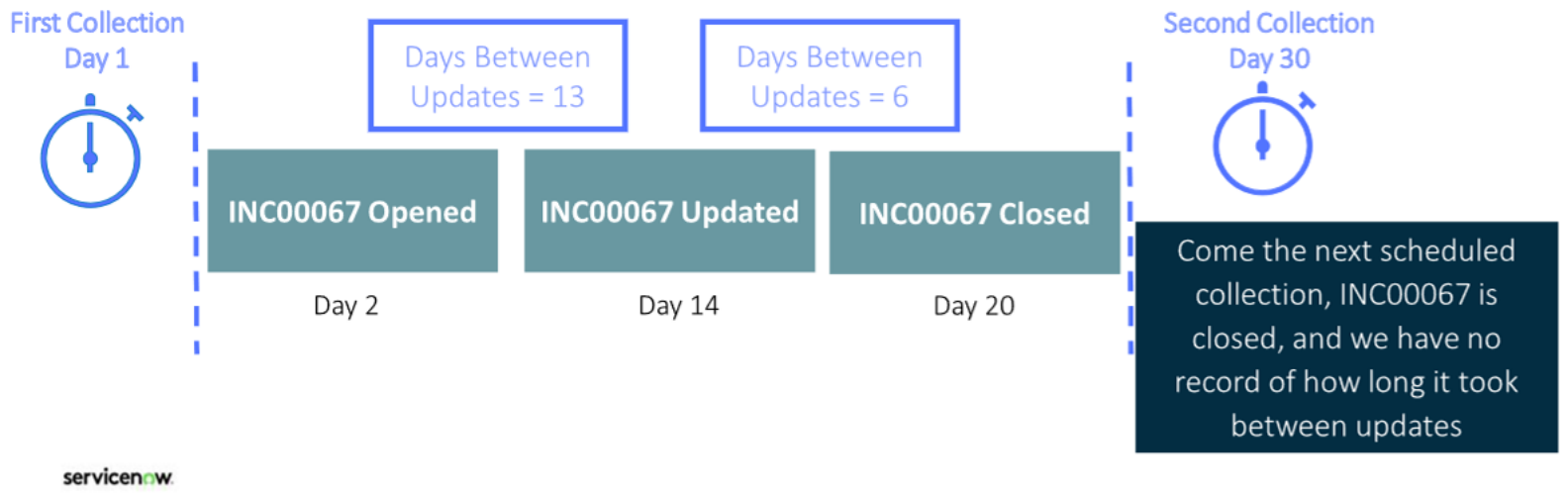
Historical collection retrieves the *current* Assignment Group and State values and cannot provide an accurate historical trend of what these values were a week ago, a month ago. Therefore, the Assignment Group and State should be excluded from historical collection. Configure daily collection to trend changes in assignment groups and states.

© 2023 ServiceNow, Inc. All Rights Reserved

When to Remove Indicators from Historic Jobs

Certain Indicators cannot be accurately calculated between Historic Runs

Example: **Number Incidents Not Updated in Last 5 Days** – Its value cannot be captured if Collection runs Weekly or Monthly

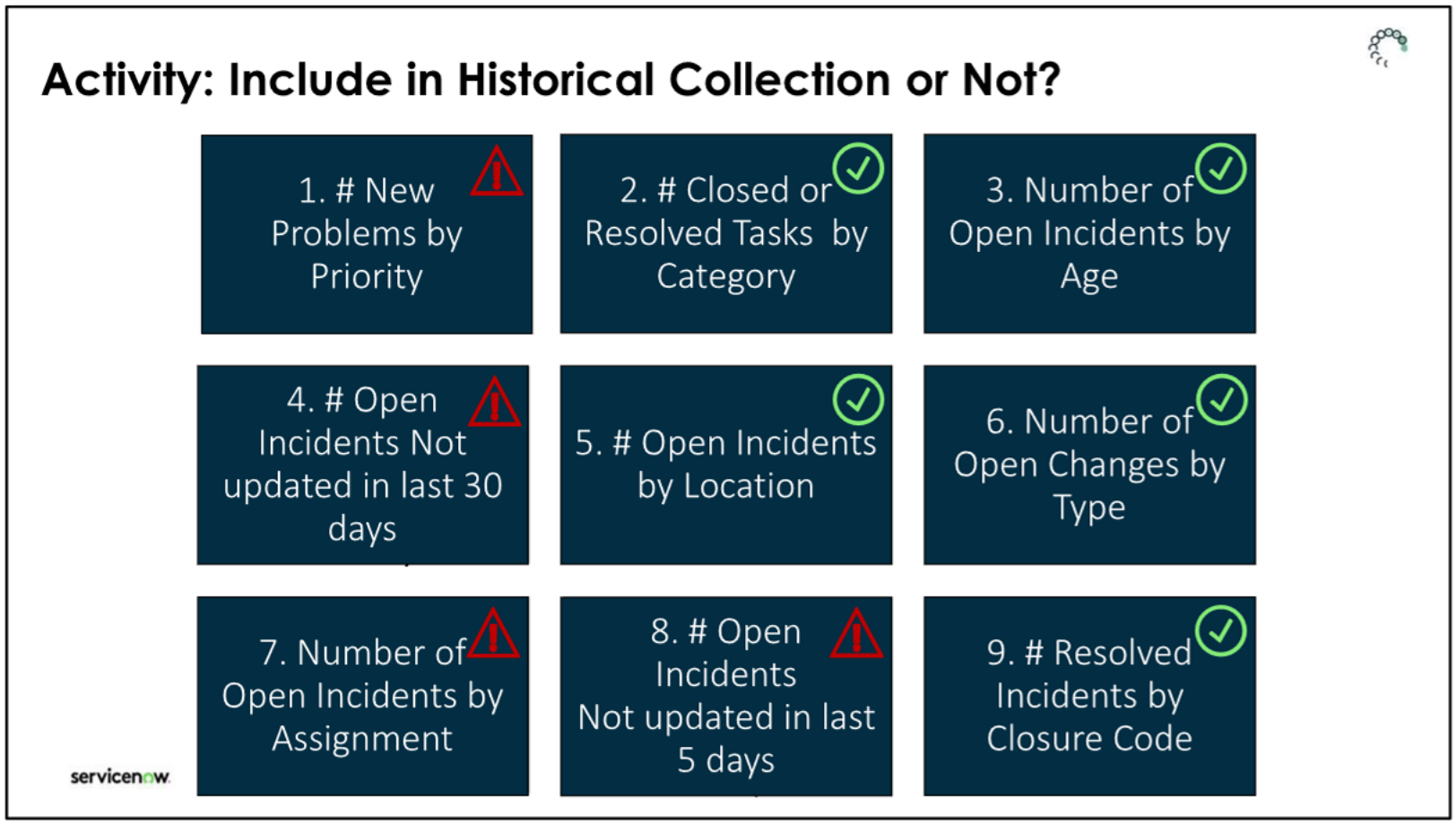


Consider the example of the Number of Incidents Not Updated in the Last 5 days. If included in a daily job, the system counts all of today's incidents with an Updated time stamp older than 5 days and produces meaningful daily data that you can trend.

If, however, this Indicator is included in a 30-day historic job, the results are very unreliable. For example, Incident **INC000067** was opened on **Day 2** after data collection. It was next updated on **Day 14**. So, the time between updates was 13 days. A daily collection job can detect this. However, the 30-day historic collection misses it. The same incident was finally resolved on **Day 20**. The time between the last update and the resolution (next update) was 6 days. Again, Historic collection misses this as it is not scheduled to run for another 10 days. When it finally runs on Day 30, it finds Incident INC000067 in good standing, as it has already been closed.

As a best practice, do not include similar indicators in Historic data collection jobs.

© 2023 ServiceNow, Inc. All Rights Reserved



Are these scenarios suitable for Historical Collection or not?

Answer key:

1. Do not include if expecting the Priority to change over the lifetime of the Problem.
2. Include, as the Category for closed/resolved incidents will likely not change after closure.
3. Include. Age can be calculated based on the Created/Opened field.
4. Do not Include! Historic Collection cannot accurately capture updates between collections.
5. Include, as the Location will likely not change over the lifetime of the Incident.
6. Include, with the assumption that the Change record Type will stay constant.
7. Do not include as Incidents are likely to get reassigned.
8. Do not Include! Historic Collection cannot accurately capture updates between collections.
9. Include. Close code will not change after Incident resolution/closure.

© 2023 ServiceNow, Inc. All Rights Reserved

Refine Collection Scope with Breakdown Exclusions

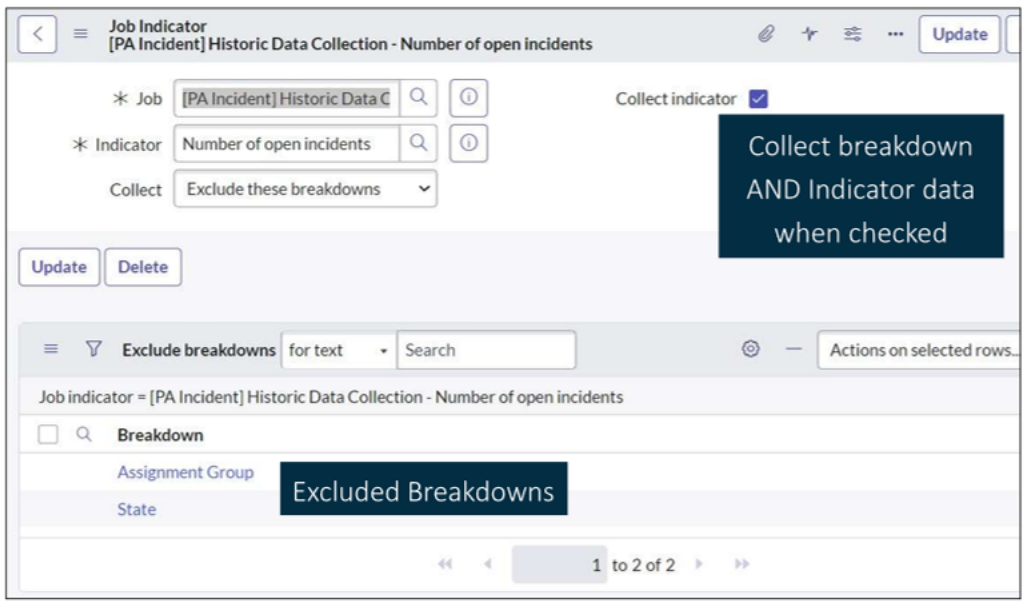
Breakdowns may be dynamically excluded from the collection for any reason

Consider removing Breakdowns from Historic Collection if their value changes between Collection Runs

Example: Open Incidents by Assignment Group – Exclude the Assignment Group as it will likely change multiple times

To Exclude, set **Collect** to **No Breakdowns** or to **Exclude these breakdowns**

servicenow



To modify collection details for an individual indicator, open the Job Indicator from the Indicators Related List and adjust the **Collect indicator** and **Collect** configuration as follows:

- **Collect indicator** checkbox: Select the checkbox to collect data for the indicator itself (this is enabled the default).
    - **Clear this check box if you want to collect data for breakdowns alone, like when collecting for a new breakdown on an existing Indicator.**

- **Collect** dropdown - Depending on the setting in Collect, data is collected for all breakdowns, no breakdowns, or none. Breakdowns to exclude are specified in the Exclude Breakdowns Related List.

In the example above, the job will not collect breakdown information for the Assignment Group and State breakdowns.

© 2023 ServiceNow, Inc. All Rights Reserved

Data Growth Management

Scheduled Job - Clean PA Collections

- Cleans **aged** scores and snapshots
- Removes data not associated with indicators and breakdowns

Data retention varies depending on the indicator frequency:

- Scores for **daily** / **weekly** / **bi-weekly** indicators are retained for **2 years**
- Scores for **monthly / bi-monthly** indicators are retained for **5 years**

Data collection does not collect scores older than the specified retention limits

View default retention settings in **Performance Analytics > System > Properties**

servicenow

Since the scores and snapshots tables may grow over time, a scheduled job is provided which cleans up these tables daily. The **Clean PA Collections** job removes old data as per the configuration properties. The job automatically deletes scores and snapshots that do not have an associated indicator or breakdown (i.e., if an Indicator or Breakdown was deleted).

A number of properties are configurable for increased control over retaining scores and snapshots. These retention properties specify the number of periods to retain per frequency. They can be reviewed by navigating to **Performance Analytics > System > Properties** and can be overridden at the indicator level.

Default retention periods and the equivalent time in years for Scores and Snapshots:

Indicator Frequency	Score Periods	Score Years	Snapshot Periods	Snapshot Years
daily	732	2.1	183	0.6
weekly	105	2.1	26	0.5
bi-weekly	53	2.1	13	0.5
monthly	60	5	15	1.3
bi-monthly	30	5	8	1.4
quarterly	20	6.6	5	1.7
half-yearly	20	10	5	2.5
yearly	10	10	3	3

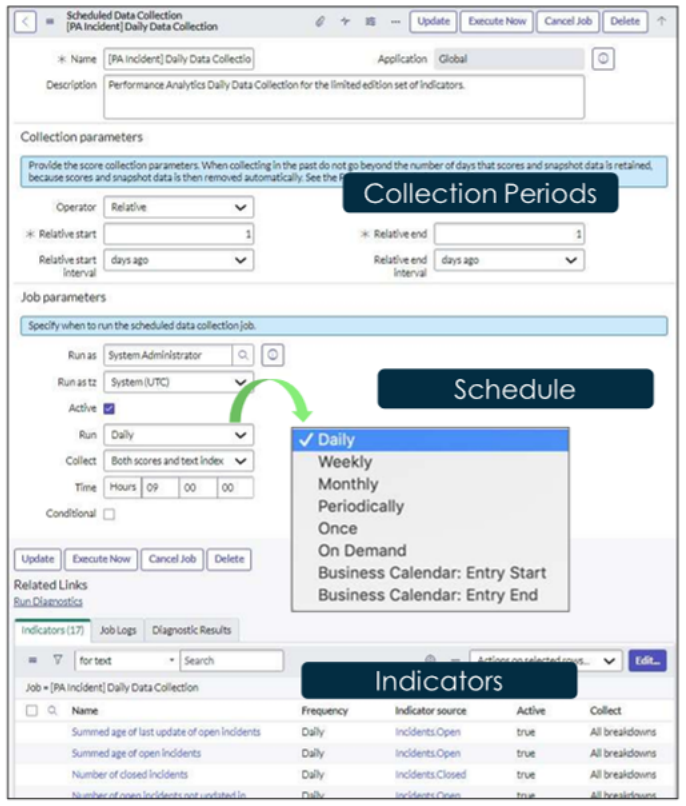
© 2023 ServiceNow, Inc. All Rights Reserved

Collection Best Practices

Good Practices

- Validate Indicator Sources before running Collection
- Group same-source Indicators in one job
- Exclude Indicators and Breakdowns that are not meaningful in a historical collection
- Check Data Collection Job Logs
- Run Historical collection only if needed as it overrides existing scores

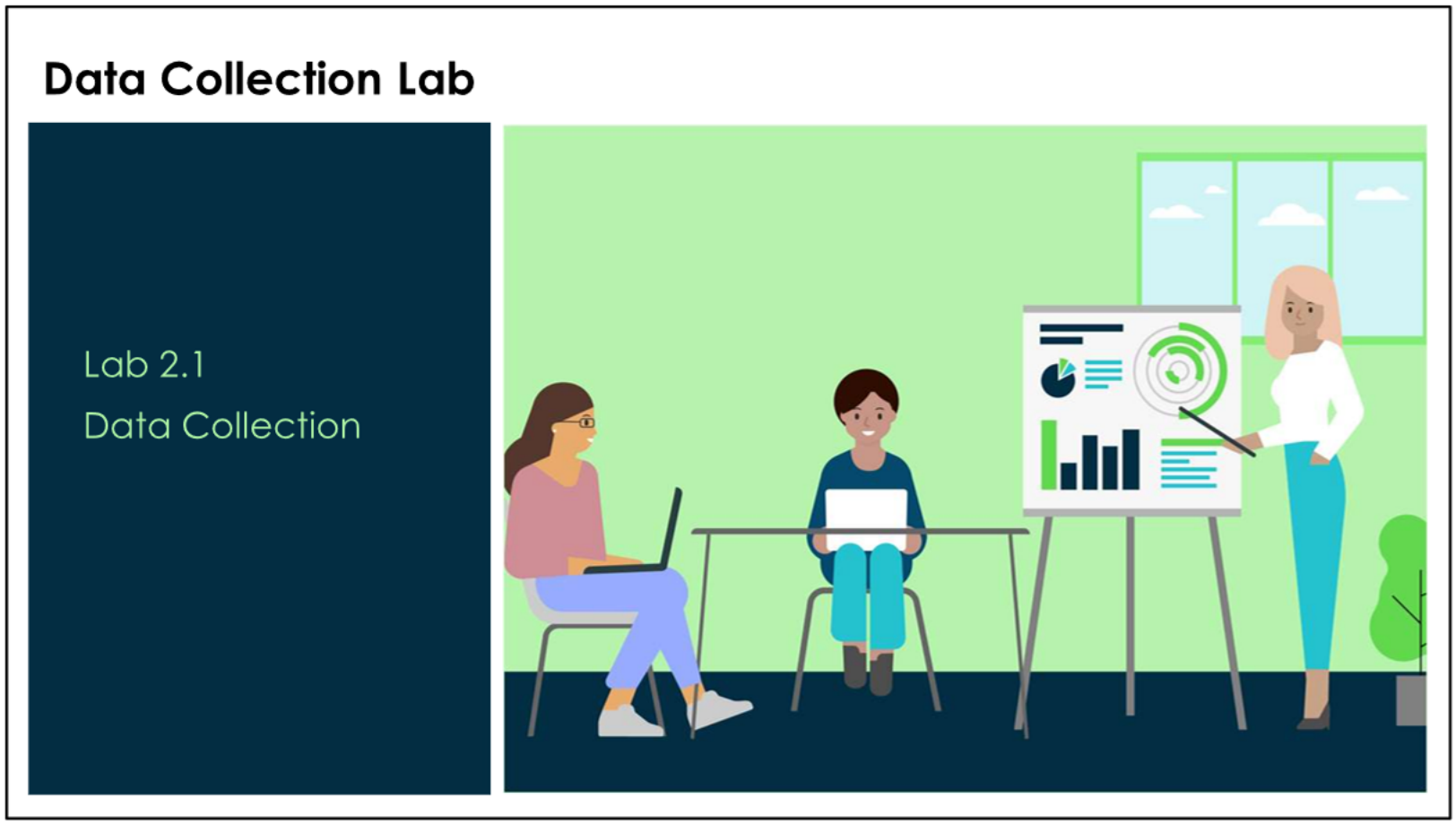
servicenow



Above are some best practices to consider when running the Collection process.

Tip for source collecting: Indicator Sources are populated once per collection job, storing the results in memory and providing the data for all Indicators associated with them. Indicators then use the same query results from memory rather than querying the score tables multiple times. With that in mind, create “smart” indicator sources that can be shared across many Indicators for optimal system performance.

© 2023 ServiceNow, Inc. All Rights Reserved



2.1 Performance Analytics Data Collection Lab:

- Configure and execute historic data collection to gather data from the last three months.
- Enable Daily Data Collection Jobs to collect Performance Analytics data going forward.

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Data Collection

Lab 2.1

15 minutes

Lab Objectives

The PA Implementation team at Glide Haven plans to automate the Data collection process to generate past historical data and populate dashboards on an ongoing basis. In this lab, you perform these activities:

- Configure and execute the Historic data collection jobs for Incident and Incident SLA
- Configure and execute the Daily collection jobs for Incident and Incident SLA
- Verify job execution statuses and explore Job Logs

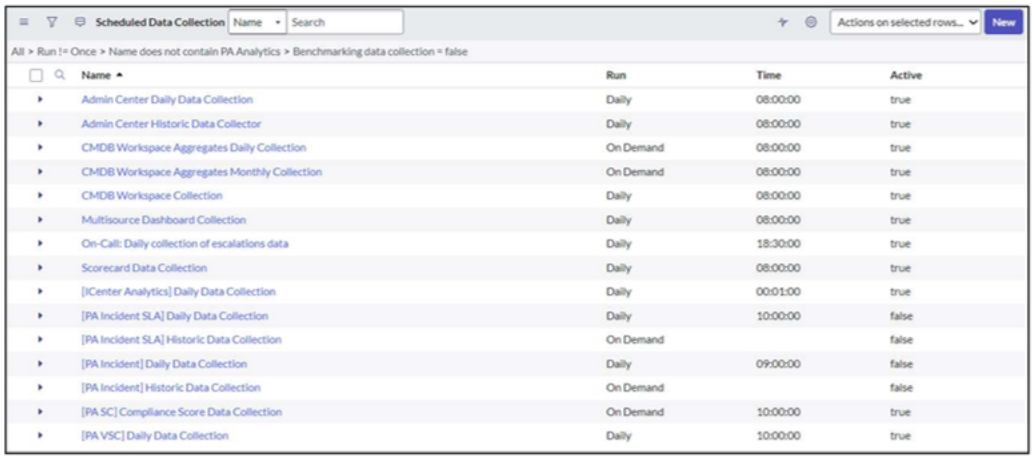
A. Historic Data Collection

PA Incident Historic Data Collection Configuration

1. Navigate to your personal lab instance.

2. Impersonate the **PA Data Collector** user to perform the remaining activities as the pa_data_collector role.

3. Navigate to **Performance Analytics > Data Collector > Jobs** (or use the Favorite created earlier) and review the list of configured jobs.



Name	Run	Time	Active
Admin Center Daily Data Collection	Daily	08:00:00	true
Admin Center Historic Data Collector	Daily	08:00:00	true
CMDB Workspace Aggregates Daily Collection	On Demand	08:00:00	true
CMDB Workspace Aggregates Monthly Collection	On Demand	08:00:00	true
CMDB Workspace Collection	Daily	08:00:00	true
Multisource Dashboard Collection	Daily	08:00:00	true
On-Call: Daily collection of escalations data	Daily	18:30:00	true
Scorecard Data Collection	Daily	08:00:00	true
[ICenter Analytics] Daily Data Collection	Daily	00:01:00	true
[PA Incident SLA] Daily Data Collection	Daily	10:00:00	false
[PA Incident SLA] Historic Data Collection	On Demand		false
[PA Incident] Daily Data Collection	Daily	09:00:00	false
[PA Incident] Historic Data Collection	On Demand		false
[PA SC] Compliance Score Data Collection	On Demand	10:00:00	true
[PA VSC] Daily Data Collection	Daily	10:00:00	true

© 2023 ServiceNow, Inc. All Rights Reserved

> ***Notes:***
> ***Run*** *describes the job frequency.*
> ***On Demand*** *means a job is not scheduled to run regularly.*
> ***Time*** *contains the scheduled time of the job.*
> ***Active*** *indicates whether the job is active or not.*

4. Click to open the **[PA Incident] Historic Data Collection** job.

5. Review the **Collection parameters** section.

> ***Questions****:*
>
> *How many **days** does the job collect data for?*
> *If the job is run today, what would be the **start** and **end** of the collection period?*

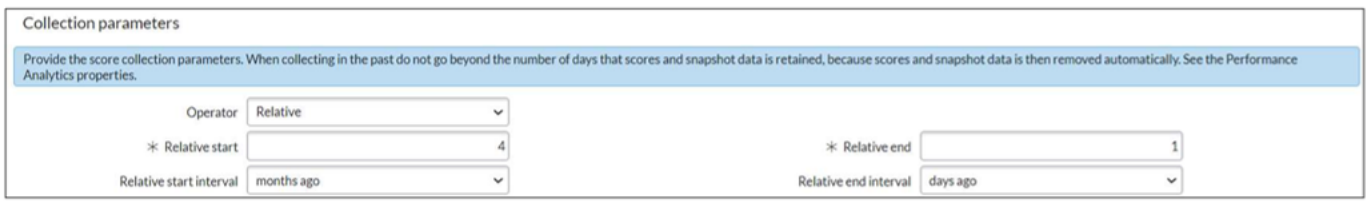
6. Review the **Job parameters** section.

> ***Questions****:*
>
> *Is the job **active**?*
> *What is the current **frequency** of the job?*

7. Make the following **Collection parameters** changes:

Relative start: **4**
Relative start interval: **months ago**

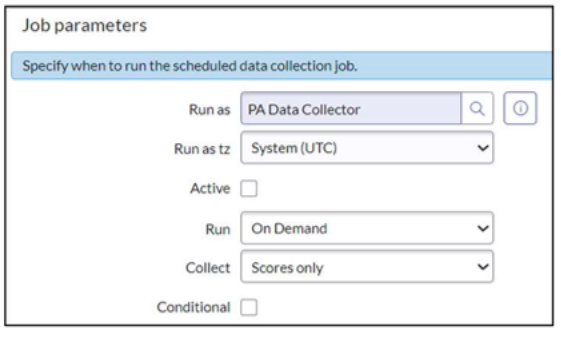
Relative end: **1** (unchanged)
Relative end interval: **days ago** (unchanged)



8. Make the following **Job parameters** changes:

Run as: **PA Data Collector**

Collect: **Scores only**



© 2023 ServiceNow, Inc. All Rights Reserved

> ***Note**: Text indexes are only collected when Text Analytics is configured.*

9. Scroll down the form to review the **Indicators** Related list.

> ***Questions:***
>
> *How many **Indicators** will be populated for each day in the collection period?*
> *Which **Indicator Sources** will be populated during the collection?*

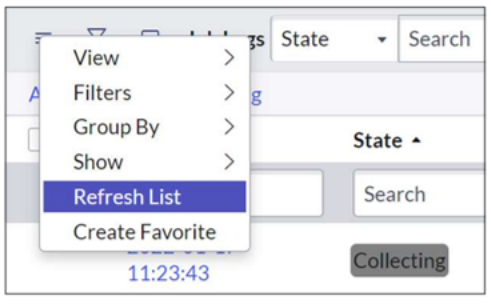
10. Click **Execute Now** to trigger the immediate job execution and save all changes.

> ***Note**: According to best practice, multi-day historic jobs should be configured with the Active property set to false and only run manually (on-demand).*

11. Navigate to **Performance Analytics > Data Collector > Job Logs** or use the Favorite created earlier.

12. Use the natural language search to confirm that there is an entry for the **[PA Incident] Historic Data Collection** job with an initial **State** set to **Collecting**.

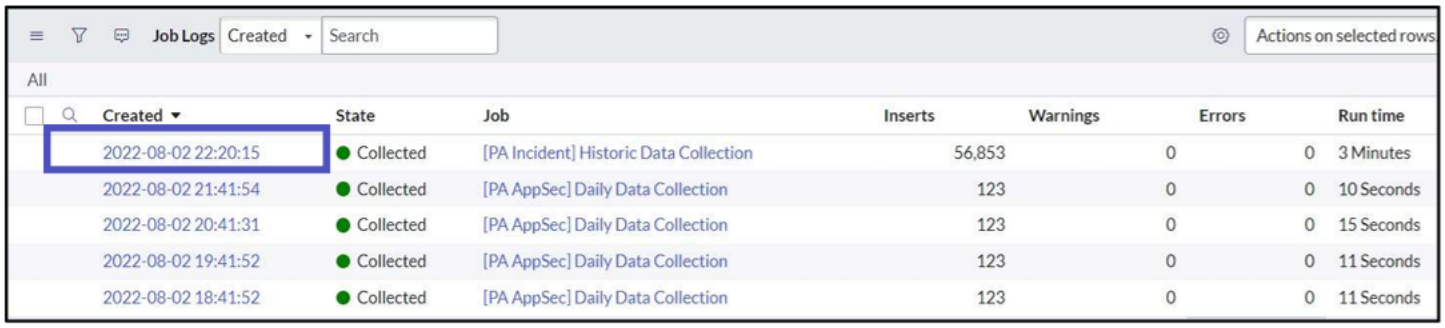
> ***Note:** Allow **~4 minutes** for the job to complete. Refresh the list to view latest status as shown:*



13. Confirm that the job has finished execution without **Warnings** or **Errors**.

© 2023 ServiceNow, Inc. All Rights Reserved

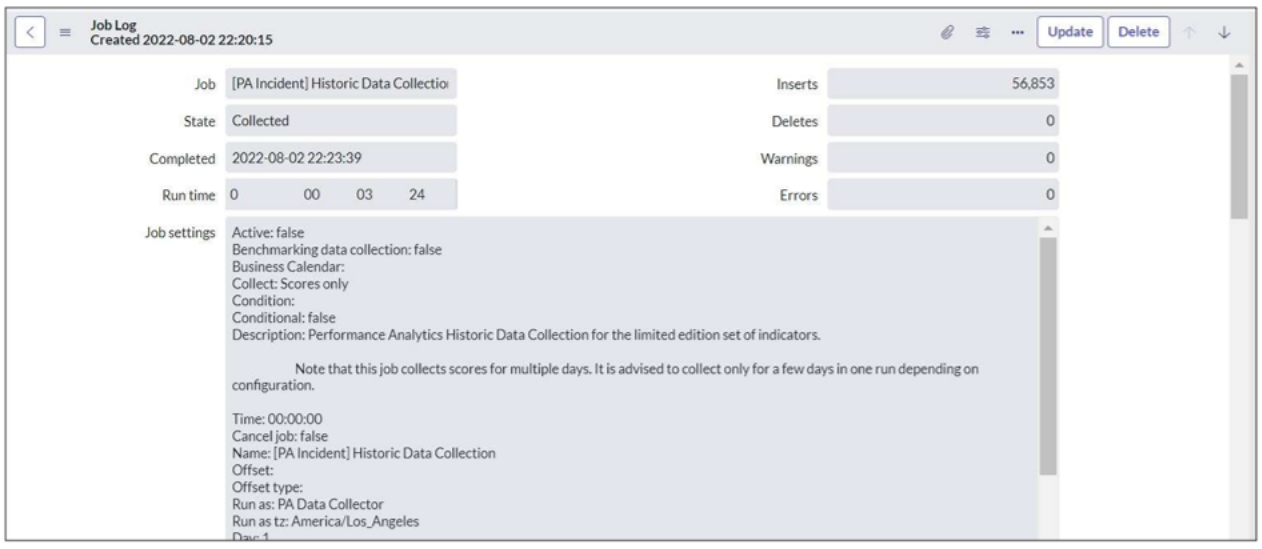
14. Click the **Created** time field to open the Job Log record.



15. Review the information and answer the following questions:

Questions:

What is the current state, and how long did the job run?
How many Inserts/Deletes/Warnings/Errors have been generated?
Which user ran the job?



***Note**: Your actual **Inserts** number may vary slightly.*

PA Incident SLA Historic Data Collection Configuration

In this section, you configure and run the [PA Incident SLA] Historic Data collection job.

1. Navigate to **Performance Analytics > Data Collector > Jobs** or use the Favorite created earlier.

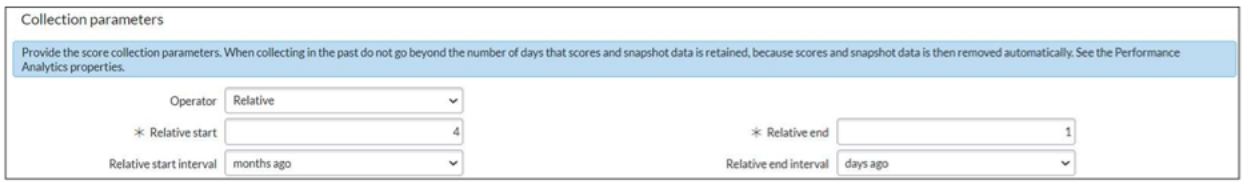
2. Click to open the **[PA Incident SLA] Historic Data Collection** job.

© 2023 ServiceNow, Inc. All Rights Reserved

3. Make the following **Collection parameters** changes:

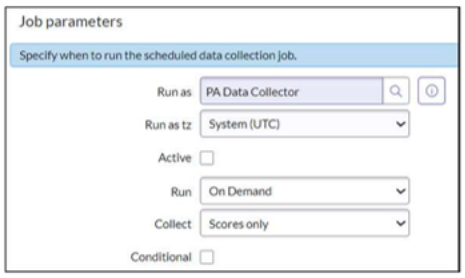
Relative start: **4**
Relative start interval: **months ago**

Relative end: **1** (unchanged)
Relative end interval: **days ago** (unchanged)



4. Make the following **Job parameters** changes:

Run as: **PA Data Collector**
Collect: **Scores only**

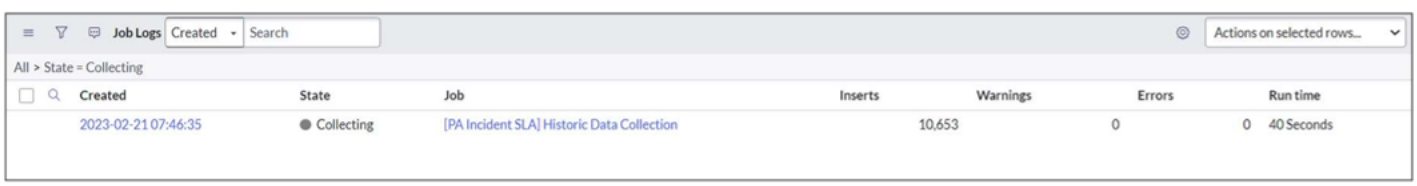


5. Scroll down the form to review the **Indicators** Related list.

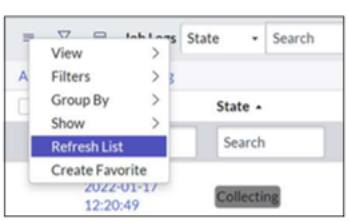
> ***Questions:***
>
> *How many Indicators will be populated for each day in the collection period?*
>
> *Which Indicator Sources will be populated during the collection?*

6. Click **Execute Now**. The job should take ~3+ minutes to complete.

7. Navigate to **Performance Analytics > Data Collector > Job Logs** (or use the Favorite created earlier) to monitor the job execution status.

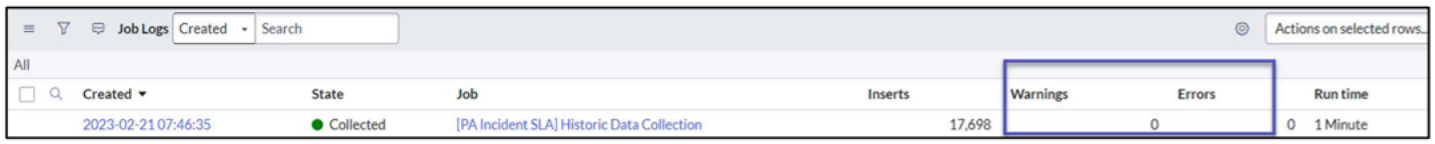


> ***Tip:*** *Refresh the list to view latest status as shown:*



© 2023 ServiceNow, Inc. All Rights Reserved

8. Confirm that the job has finished execution without **Warnings** or **Errors**.



B. Performance Analytics Daily Data Collection

[PA Incident] Daily Data Collection

In this section, you configure Daily Data collection for the Incident Management process.

1. Navigate to **Performance Analytics > Data Collector > Jobs** or use the Favorite created earlier.

2. Click to open the **[PA Incident] Daily Data Collection** job.

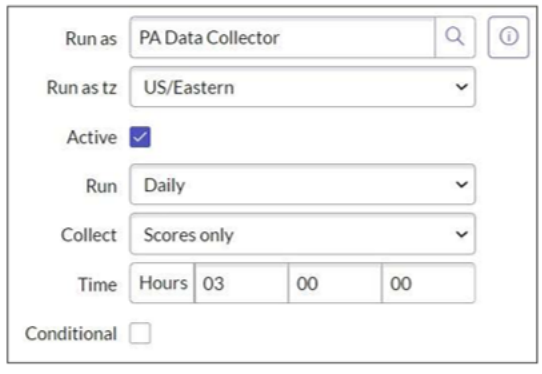
> ***Questions**:*
>
> *How many days does the job collect data for? If the job is run today, what would be the start and end of the collection period?*

3. Review the **Job parameters** section.

> ***Questions**:*
>
> *Is the job active? What is the current frequency of the job?*

4. Update the **Job parameters** as follows:

   - Run as: **PA Data Collector**
   - Run as tz: **[appropriate time zone]**
   - Active: **[checked]**
   - Run: **Daily**
   - Collect: **Scores only**
   - Time: **03:00:00**
   - Conditional: **[unchecked]**



© 2023 ServiceNow, Inc. All Rights Reserved

> ***Note:*** *As a best practice, it is recommended to select a time that is off-hours to minimize any potential performance impact.*

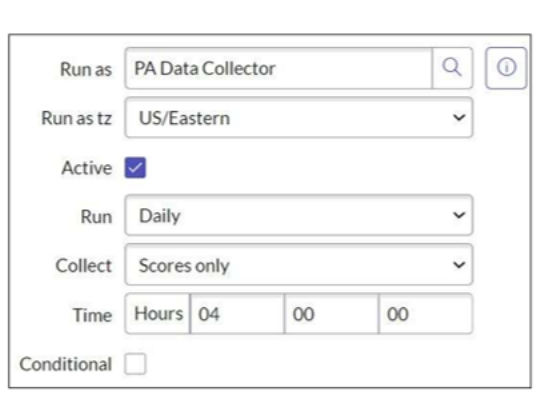
5. Click **Execute Now** which saves all property changes and runs the job immediately.

> ***Note:*** *Executing a Daily job immediately after a Historic job overwrites yesterday's scores.*

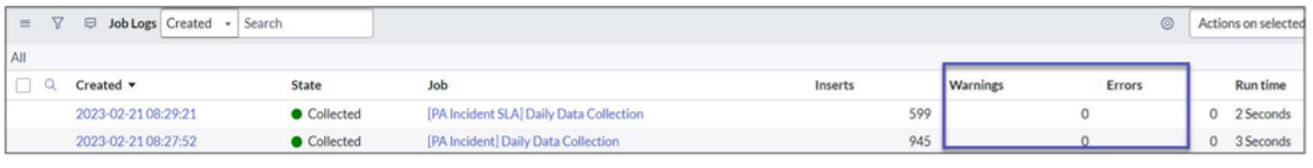
[PA Incident SLA] Daily Data Collection

Here you configure Daily Data collection for the Incident SLA Management process.

1. Navigate to **Performance Analytics > Data Collector > Jobs** or use the Favorite created earlier.
2. Click to open the **[PA Incident SLA] Daily Data Collection** job.
3. Review the **Job parameters** section.
4. Update the **Job parameters** as follows:
   - Run as: **PA Data Collector**
   - Run as tz: **[appropriate time zone]**
   - Active: **[checked]**
   - Run: **Daily**
   - Collect: **Scores only**
   - Time: **04:00:00**
   - Conditional: **[unchecked]**



5. Click **Execute Now**.
6. Navigate to **Performance Analytics > Data Collector > Job Logs** (or use the Favorite created earlier) to monitor the job execution status.
7. Confirm that the daily collection jobs have completed without errors.



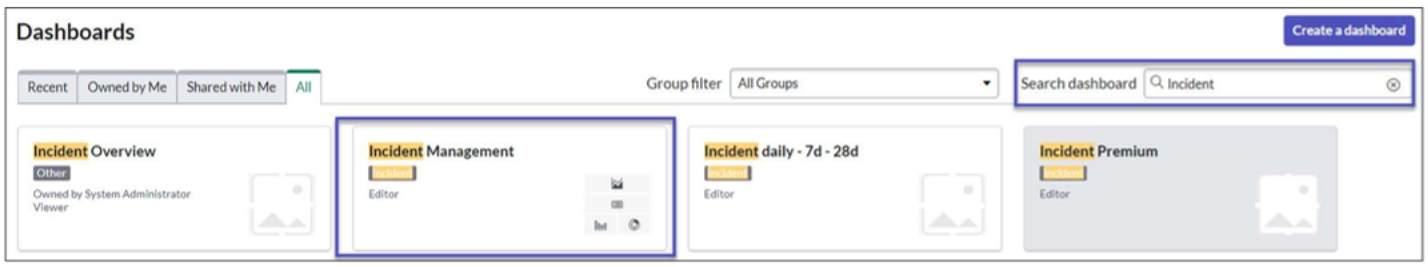
© 2023 ServiceNow, Inc. All Rights Reserved

> ***Note**: Your actual Inserts number may vary slightly.*

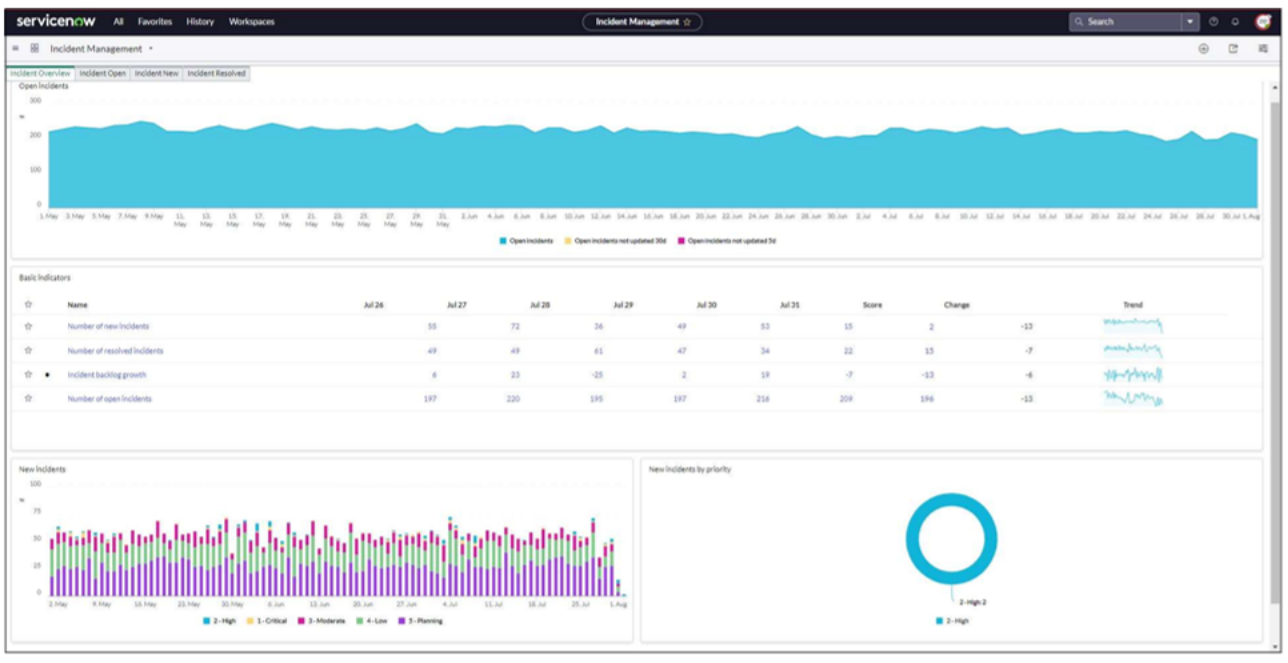
C. Dashboards Verification

In this section, you access a dashboard as a viewer to confirm data availability.

1. Expand the **User menu** in the Polaris Unified Nav and click **Impersonate another user.**
2. Impersonate the **PA Power User**.
3. Navigate to **Performance Analytics > Dashboards**.
4. Search for and open the **Incident Management** dashboard.



5. Confirm that the Dashboard widgets present recent data.



Congratulations!
You have now completed the Data Collection Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

Module Recap

Core Concepts

- Collection populates Analytics score tables with process statistics extracted from application tables
- Collection jobs should be run daily in order to build trends over time
- Historic data collection is run to retrieve indicator data spanning a multi-day range
- When breakdown values change frequently between collection runs, exclude them from Historic collection

Review Questions

- What is the difference between a Daily and a Historic collection?
- True or False. Indicator trends display data from respective process tables.
- Which tables store Performance Analytics scores?

What is the difference between a Daily and a Historic collection?
A Historic Data Collection collects snapshots for multiple periods. It is typically only run once for an Indicator, and the Run interval is set to On Demand.

A Daily Data Collection collects scores for a single day (yesterday), starting one day ago and ending one day ago. This job runs every day.

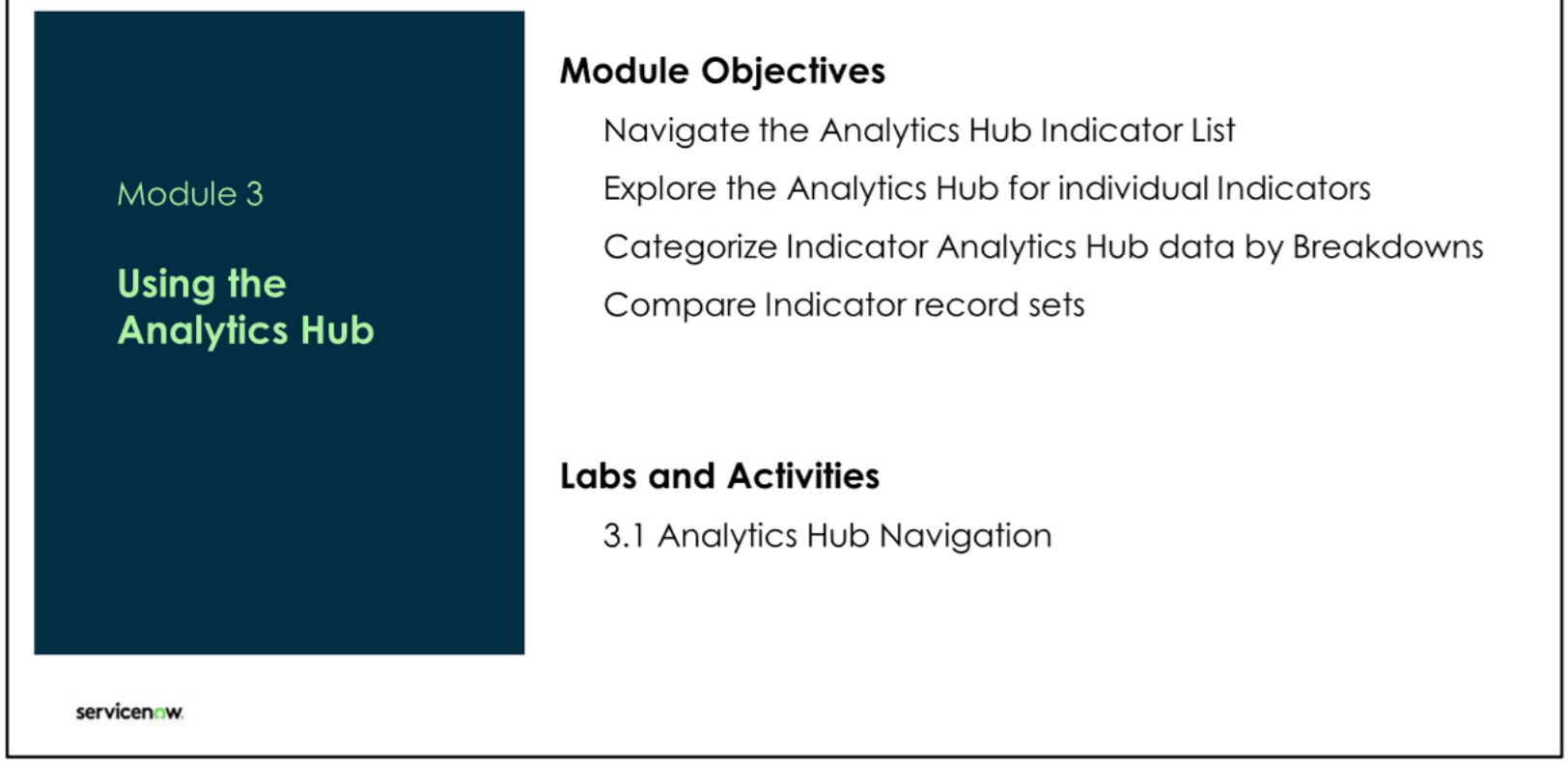
True or False. Indicator trends display data from respective process tables.
False. The data in indicator trends comes from Performance Analytics scores tables.

Which tables store Performance Analytics scores?
The core PA data tables that store Indicator scores are:

- Snapshots [pa_snapshots] – stores sys_ids
- Scores Level 1 [pa_scores_l1] – stores scores for indicators and 1st level breakdowns
- Scores Level 2 [pa_scores_l2] – stores scores 2nd level breakdowns

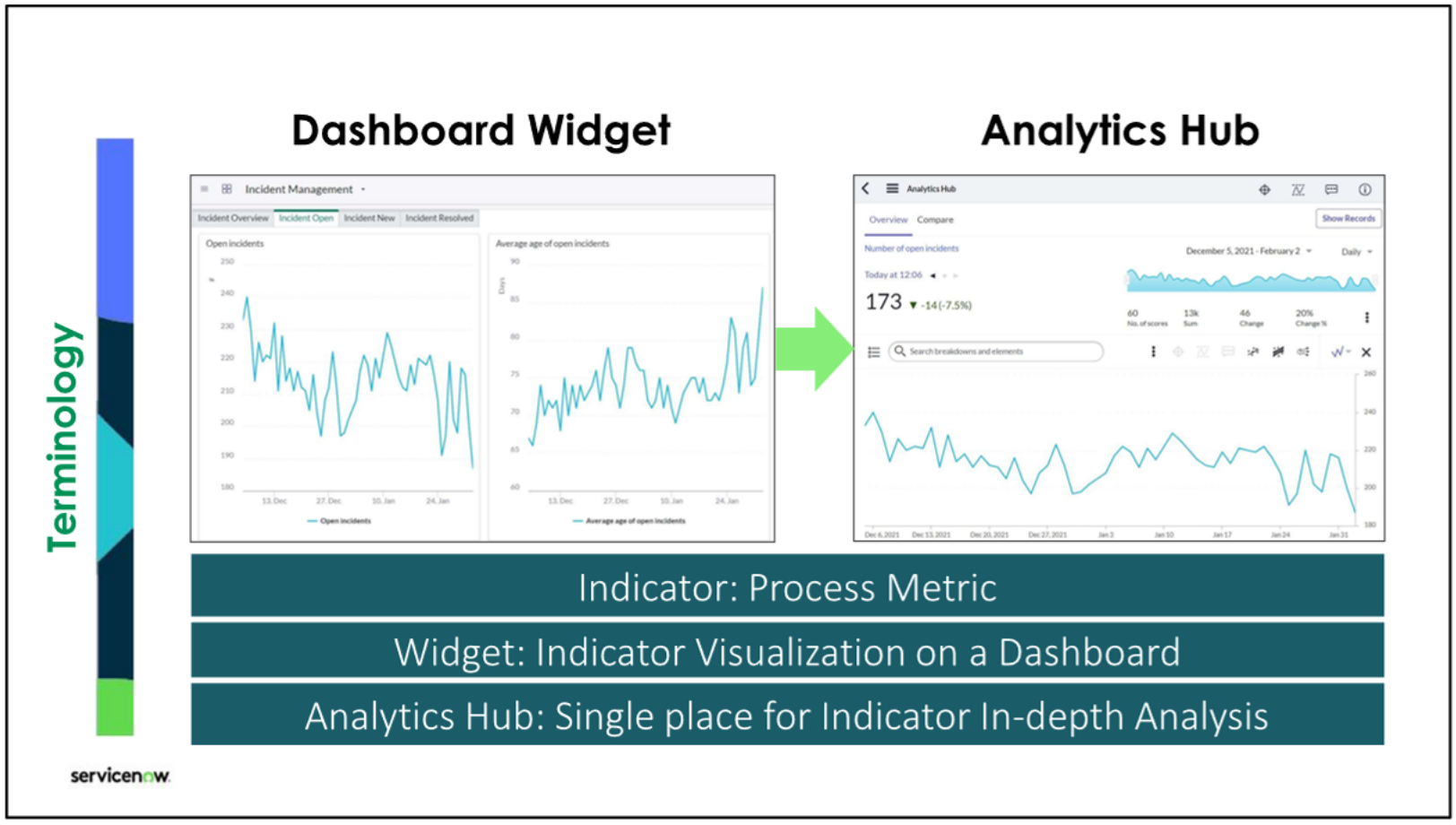
© 2023 ServiceNow, Inc. All Rights Reserved

© 2023 ServiceNow, Inc. All Rights Reserved



The Analytics Hub is a comprehensive tool for visualizing and analyzing the performance of a PA indicator. This module explores Analytics Hub navigation, how to use different visualization options and statistics, and provides a comparison for deeper process behavior insights.

© 2023 ServiceNow, Inc. All Rights Reserved



Here are some key definitions ahead of the Analytics Hub detailed overview:

Indicator

- A business process measurement (metric) used to track and optimize business service performance.

Analytics Hub

- Enables statistical analysis, data drilldowns by attribute, and comparisons over time.

Widget

- Visualizes Indicator data on a Dashboard in various formats – single score, bar charts, trend lines, pies, pivot tables, etc.

From a dashboard, double-click the data to drill into the Analytics Hub of the corresponding indicator.

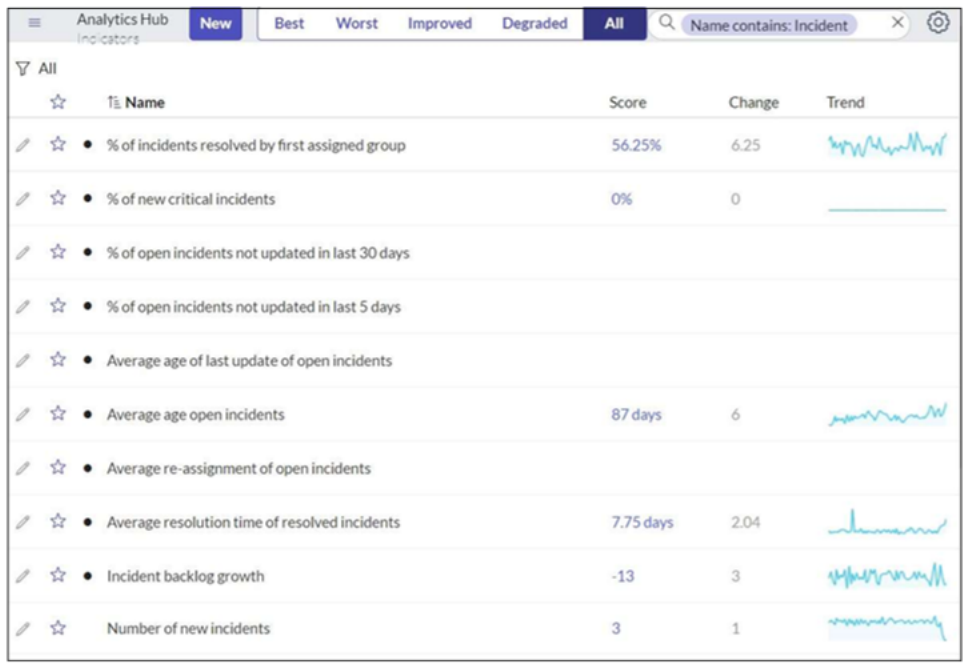
© 2023 ServiceNow, Inc. All Rights Reserved

Analytics Hub – Indicator List

A list of all viewable Indicators

- View score, change, and trend
- Search for indicator or group

- Create Favorites
- Sort by Attribute or Favorite



The **Analytics Hub** Indicator List gives a quick overview of trends and changes. This view displays only Indicators that have their **Publish to Analytics Hub** property enabled.

Clicking the **star icon** next to an indicator lets you create a favorite. Clicking the star again de-selects it as a favorite.

Indicators with a **dot** beside their name are **Key Indicators** and will appear when the Key Indicators filter option is toggled on. The list displays these attributes by default:

- **Score:** The latest value of an indicator. This could represent a number of records (Open Incidents), an aggregation of an attributes (Average Reassignment Count), or a percentage (% Incidents resulting in Escalation).
- **Colored:** If a target is defined, the current score is displayed using a color scheme.
- **Change:** Reflects the increase or decrease from the previous measurement.
- **Trend:** A small chart to visualize the scores for the Indicator.

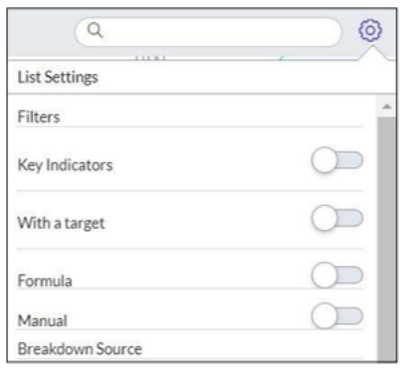
The **Search box** on top of the Analytics Hub Indicator List can help you quickly find the Indicators you want. When a keyword is typed in the Search field, a filtered dropdown list appears, which enables you to search by Indicator name or Indicator group.

© 2023 ServiceNow, Inc. All Rights Reserved

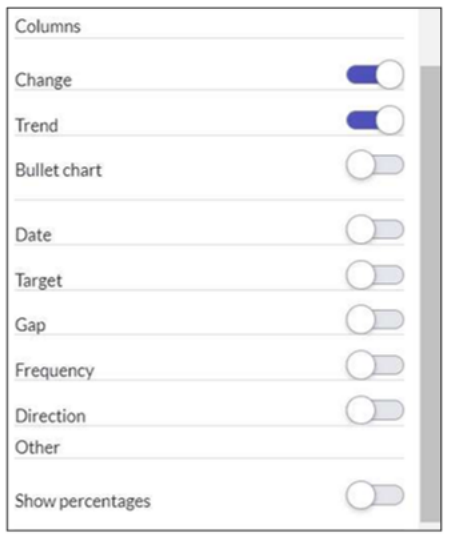
Analytic Hub – List Personalization

List Filters:

- Key Indicators
- Indicators with Target
- Formula Indicators
- Manual Indicators



List Columns:



Change: Raw or Percentage change from Yesterday's Score

Trend: Historical data chart line

Bullet Chart: Shows range, current score, and target

Target: Show Desired Score

Gap: Show Deviation to Target

Frequency: Daily, Weekly, etc.

Direction: Preferred Movement: up or down

servicenow

The list settings **gear** controls Filters and Columns to display. The following display settings can be used to tailor the display:

- **Filters**: Choose to display only Key indicators, indicators with a Target, indicators based on a Formula, or Manual Indicators. If an indicator has been marked as Favorite, both the criteria in the filter and the favorite criteria have to be met for it to appear in the Analytics Hub Indicator List.

- **Breakdown Source**: Select indicators that can be navigated by a specific attribute, such as Category, or Assignment group.

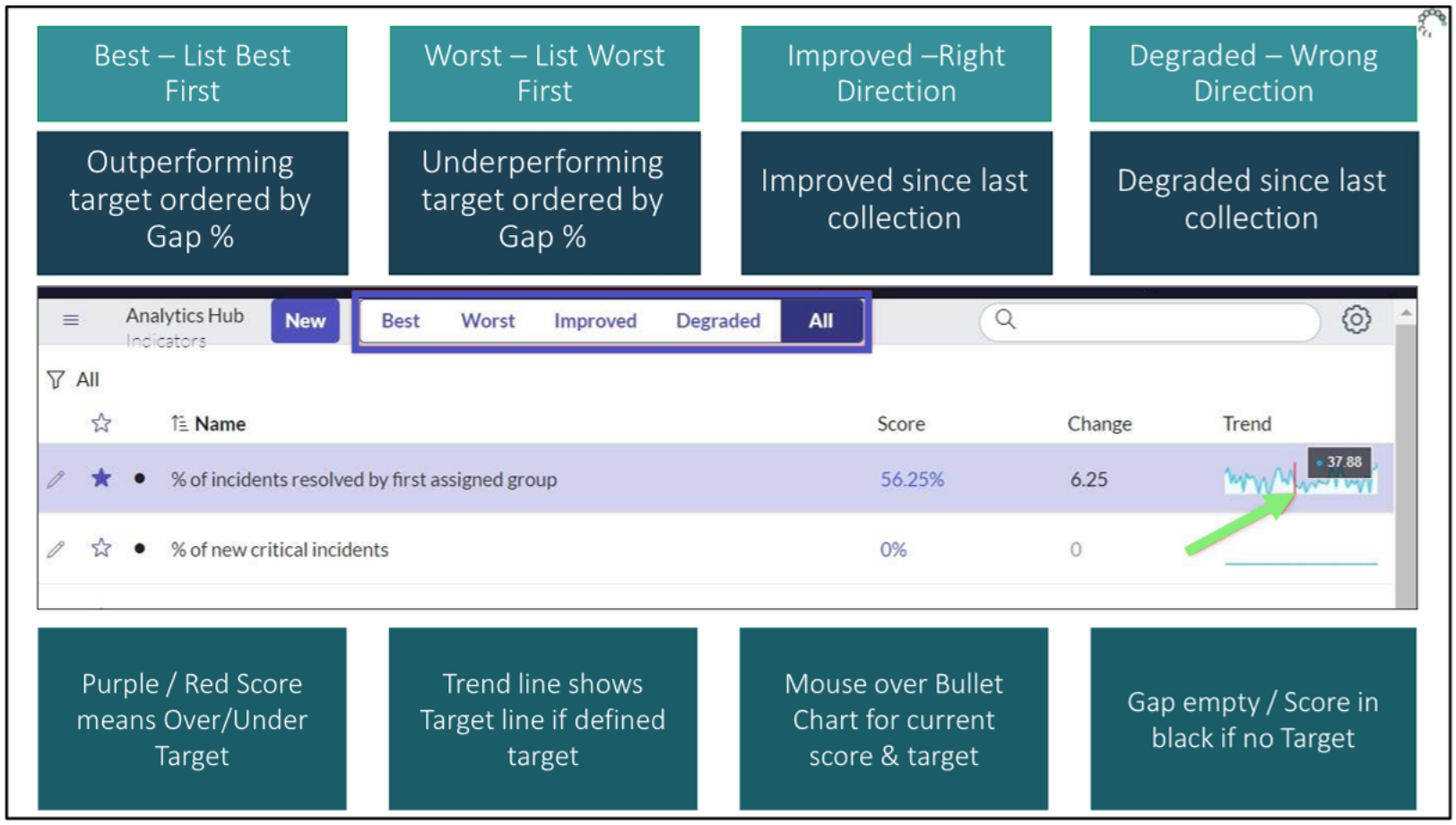
- **Element** (only shows if a Breakdown is selected): if a breakdown source is selected, you can identify a specific breakdown value here. Such as Software (category breakdown) or Help Desk (Assignment group breakdown).

- **Columns**: Choose which attributes to display: Change, Trend, Bullet chart, Date, Target, Gap, Frequency (for example, daily or weekly), or Direction (none, minimize, or maximize).

- **Other**: Select Show percentages to display the change column as a percentage instead of a value.

- **Bullet charts**: Only available for indicators with an active target.

© 2023 ServiceNow, Inc. All Rights Reserved



The Analytics Hub list displays an overview of available indicator score results. The following actions filter the Indicator list based on performance: Best, Worst, Improved, and Degraded.

For example, if an indicator has a score of 150, a previous score of 200, a target of 100, and a "maximize" direction, that indicator will appear in two lists:

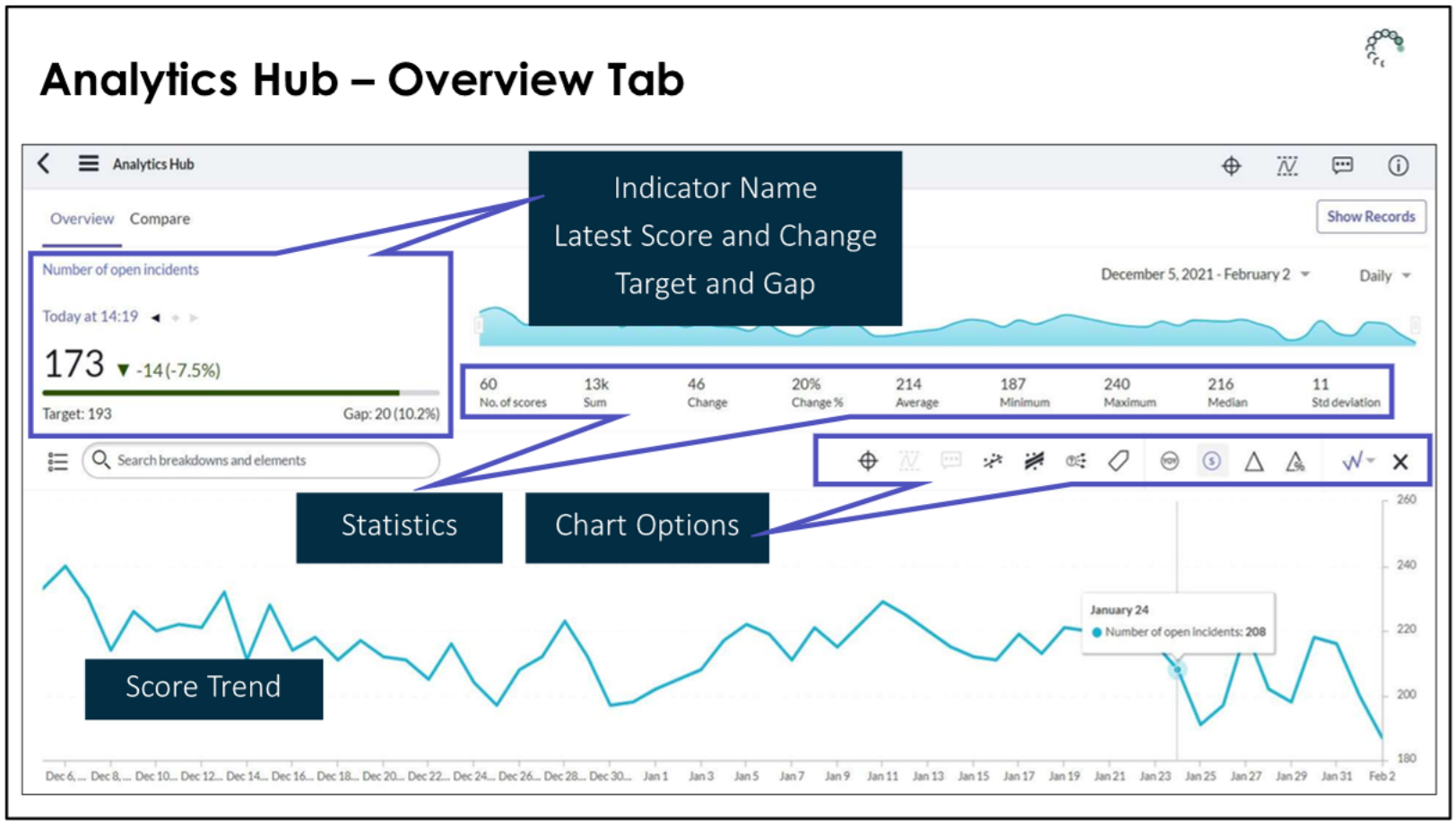
- **Best**: because it is 50% above target.
- **Degraded**: because the score has degraded by 25% since the previous score.

The definitions of all lists are as follows:

- **Best:** Shows indicators that are outperforming their target (green), ordered by Gap % (best performers on top).
- **Worst**: Shows indicators that are under performing their target (red), ordered by Gap % (worst performers on top).
- **Improved**: Shows indicators that have improved compared to the previous data collection (moving in the right direction).
- **Degraded**: Shows indicators that have degraded compared to the previous data collection (moving in the wrong direction).

Note: Targets are measurements of your personal or organizational goals.

© 2023 ServiceNow, Inc. All Rights Reserved

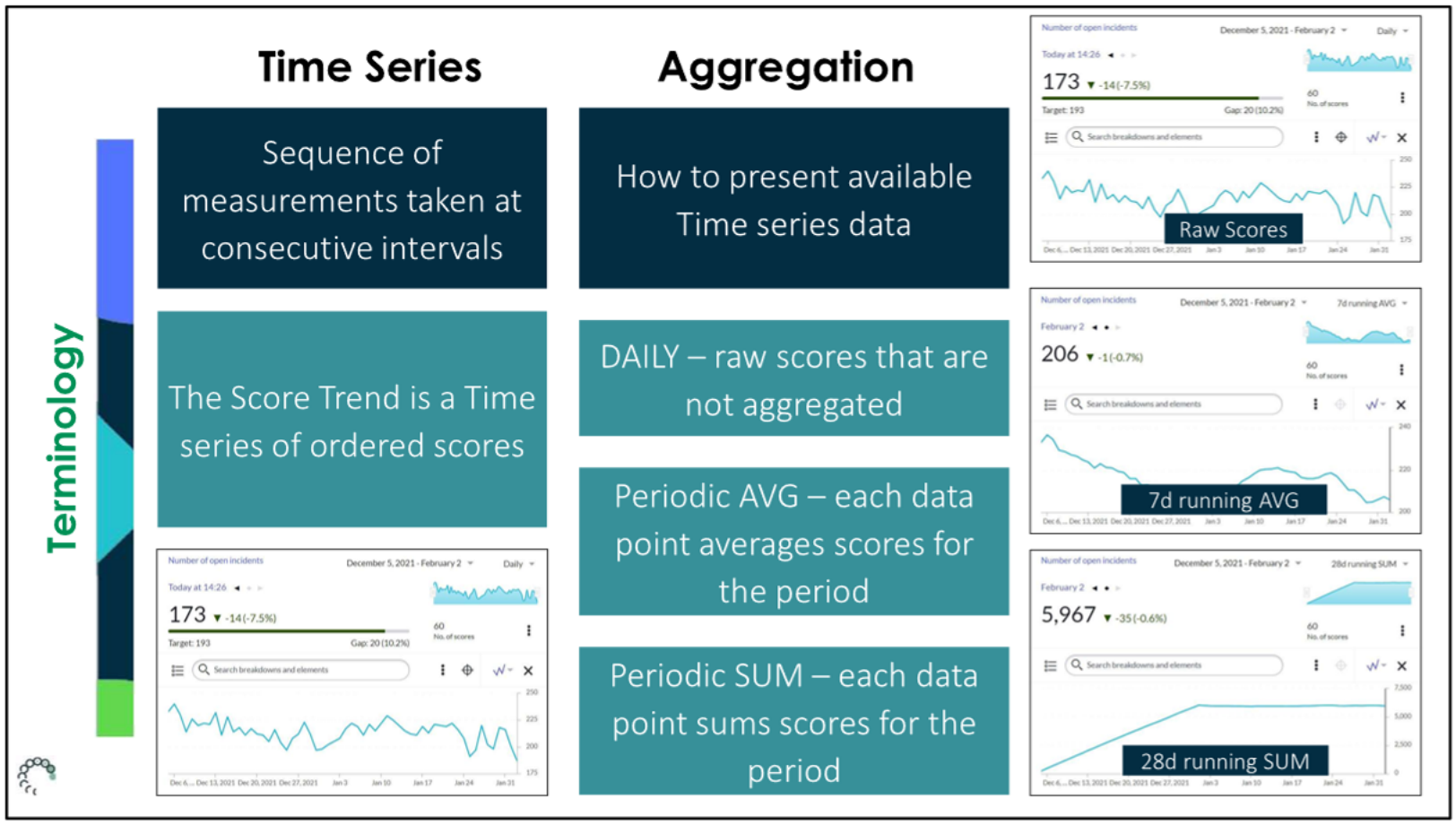


The Indicator Analytics Hub view displays a historic trend in an interactive chart. It lets you visualize and interact with the results for a single Indicator.

The **Chart** portion contains the historic performance trend of the Indicator:

- The **latest available score** is presented at the top of the chart. This score is obtained from the last data collection job that was run. A date and change/percentage change since the previous score is also presented.
- If a target exists, the Target, Target Gap, and Percentage Target Gap are also calculated. The Change and Target bars are colored to indicate movement direction as defined in the Target color scheme.
- A **real-time score** may be displayed for some Indicators. Real-time scores can be displayed for Indicators that get their data from an active ServiceNow table, such as Incident. **Note:** Real-time score display requires the **Real-Time Score property** to be enabled in the Indicator configuration.
- Mouse over any points on the performance line to see the exact score and target for that day, if set. To show the score for an indicator on a specific collection date, point to the date on the chart. Further details display above the data point.
- The **Statistics** ribbon shows a number of data points, sum, change, change %, average, minimum, maximum, median, and standard deviation for the selected date range.
- The **Chart Options** ribbon contains controls that toggle the display of additional chart elements such as targets, comments, labels, etc.

© 2023 ServiceNow, Inc. All Rights Reserved



A **Time series** is a mathematical term that describes a sequence of metrics or measurements that are taken at regular time intervals and arranged in chronological order.

An **Aggregation** can be applied to the data in the Analytics Hub. The Analytics Hub overview presents a **Daily** trend consisting of the absolute values for the indicator score (raw scores).

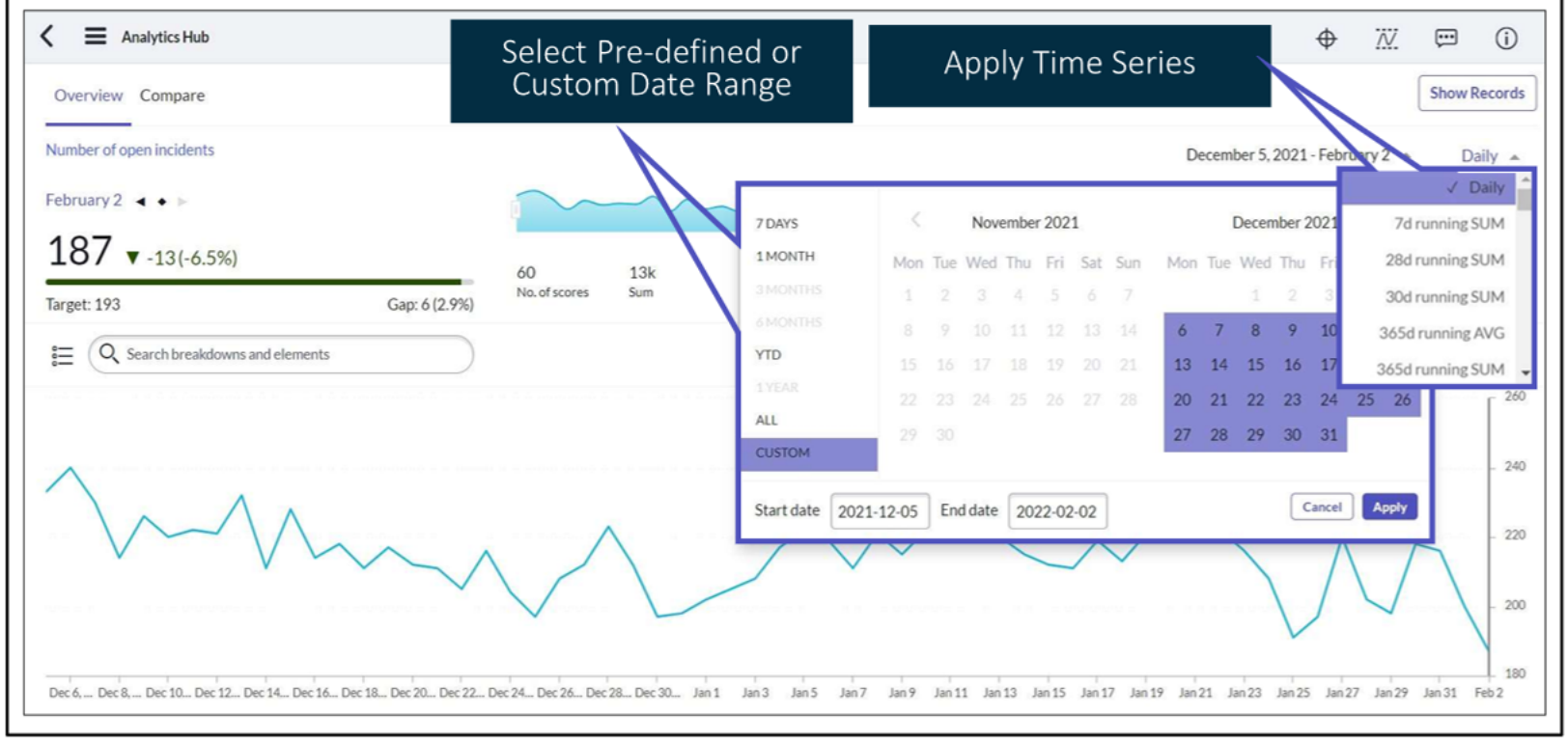
Aggregations sum up, or average data for a given period like a Week, Month, Quarter, or Year. There are over 50 pre-defined Time Series options in the base configuration. Some additional Time Series choices are 28d running AVG, 7d running SUM, By Week AVG, by Month SUM, etc. Daily is shown by default for Indicators with a Daily frequency.

Examples:

- To view the weekly sum of resolved incidents, open the Resolved Incidents in Analytics Hub and apply the By week SUM aggregation.
- If you select the 7d running AVG Time Series, the chart will display each data point as a calculated average of the previous 7 days of data.

© 2023 ServiceNow, Inc. All Rights Reserved

Analytics Hub Overview – Range and Aggregation



To change the chart's time period, select the dropdown next to the current date range and perform one of the following:

- Select two dates, or
- Select one of the predefined periods: 7 days, 1 month, 3 months, 6 months, YTD, All, or
- Type in the two dates.

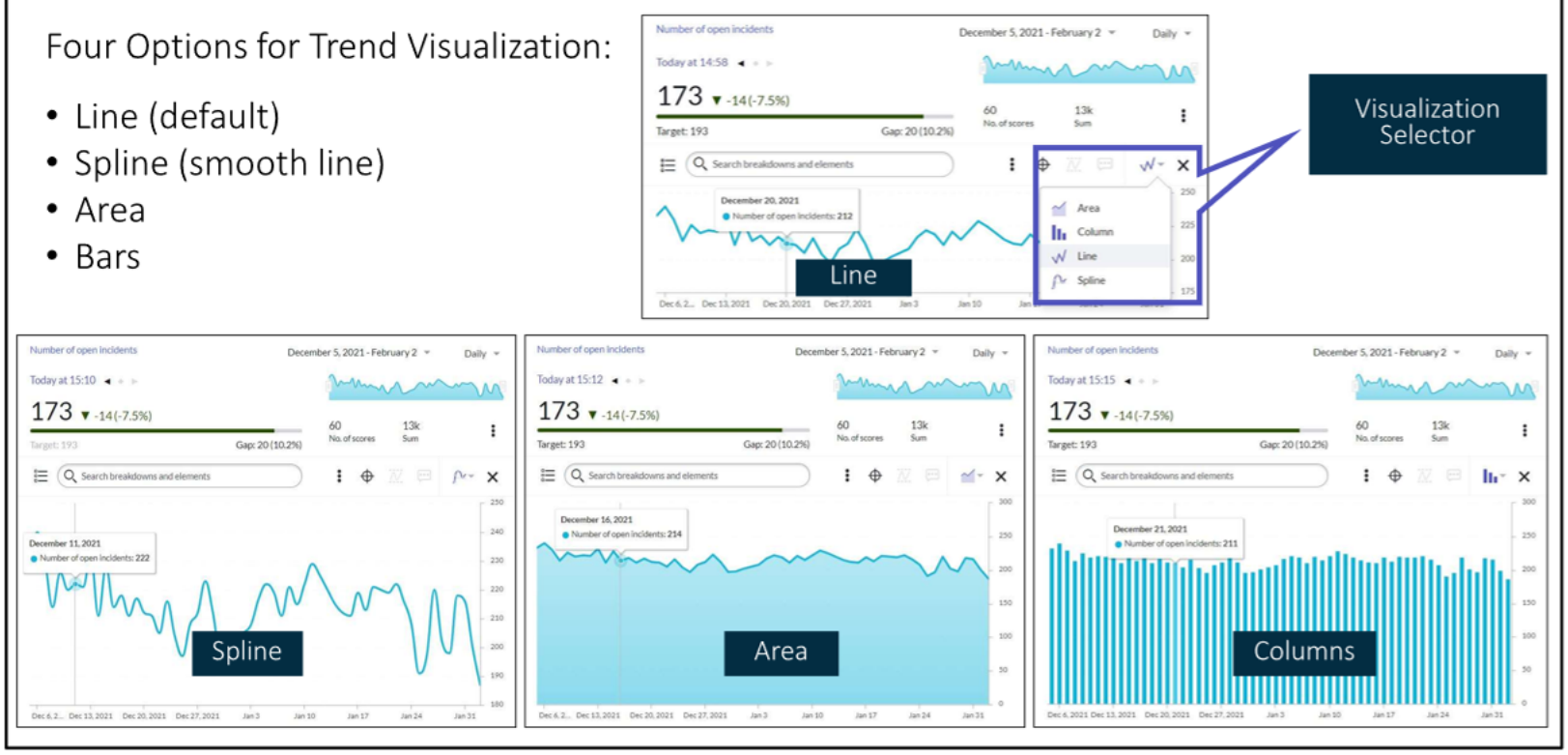
To change the Time series, select the dropdown next to the current Time Series (Daily by default) and pick another Time series.

© 2023 ServiceNow, Inc. All Rights Reserved

Analytics Hub Trend Presentation

Four Options for Trend Visualization:

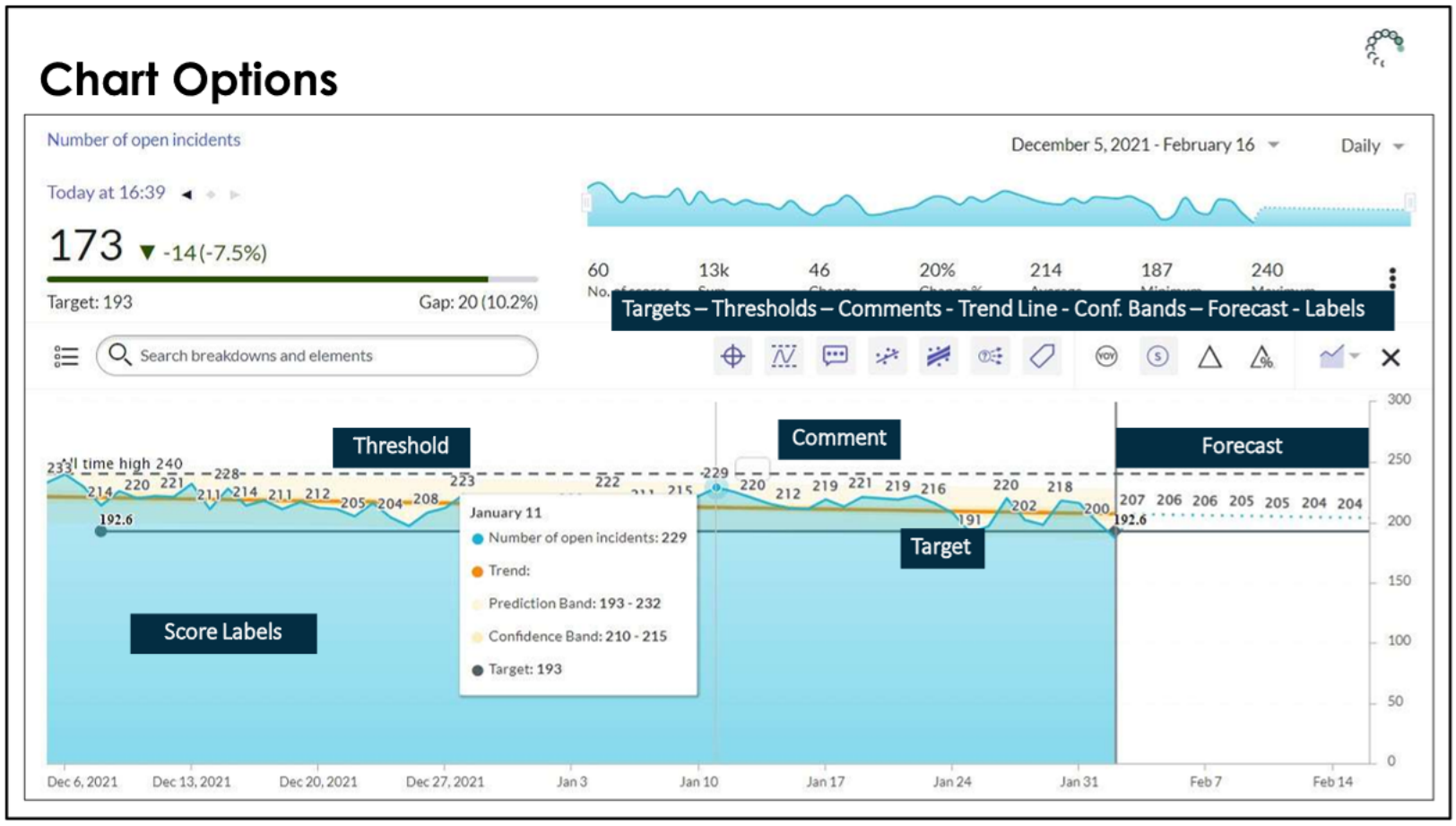
- Line (default)
- Spline (smooth line)
- Area
- Bars



The score trend is, by default, shown using a Line graph. Other options include Spline (smooth line), Area, and Columns (bars). To change, select the dropdown next to the visualization button.

The color of the score line is defined in the Property Settings using RGBA format. The default is: 106,183,239,1 (light blue).

© 2023 ServiceNow, Inc. All Rights Reserved



The **Chart Options** ribbon contains controls to toggle the display of these chart elements:

- **Targets**: The target line for the current target, if available.
- **Thresholds**: A threshold line for each defined threshold, if any.
- **Comments**: Available comments are presented as bubbles.
- **Labels**: The values for each chart data point are shown.
- **Trend:** A straight line approximating the score movement is drawn.
- **Confidence Band**: Additional Bands are drawn around the Trend representing statistical confidence intervals.
- **Year over Year:** Multi-year data is presented in the same chart.
- **Score line:** The actual sequence of scores is shown, by default.
- **Delta:** A time series with changes since the previous score is shown.
- **% Delta:** A time series with % changes since previous score is shown.

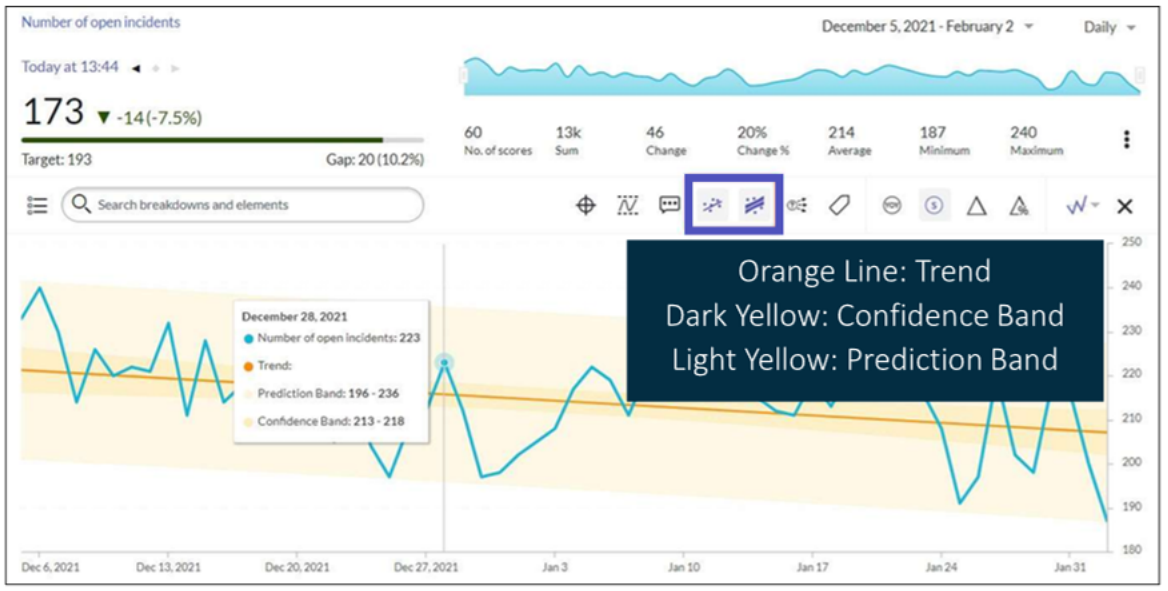
© 2023 ServiceNow, Inc. All Rights Reserved

Trend and Confidence Bands

Confidence Bands estimate the average score within a 5% margin

The Trend approximates the movement of a Time series

Trend and Confidence Bands highlight the general score direction and movement



Using Confidence bands allows for a smoother chart and helps focus on the overall trend.

- Darker (thinner) Band: Shows 95% confidence where the trend line will lie. This can be used to potentially "predict" where the future trend might go. The dark yellow band is the Confidence Band, and it displays where 95% of the scores in the selected date range fall.
- Lighter (wider) Band: Shows with 95% confidence where any data point may occur on the chart. This can also be used to potentially "predict" where a future value might appear on that same chart. The light yellow or prediction band is broader than the confidence band because there is less certainty in this prediction. Data points outside the confidence band may represent outliers that may need to be investigated further.

Investigate Scores that fall outside the Confidence Band range, as they are very unusual and may indicate a problem.

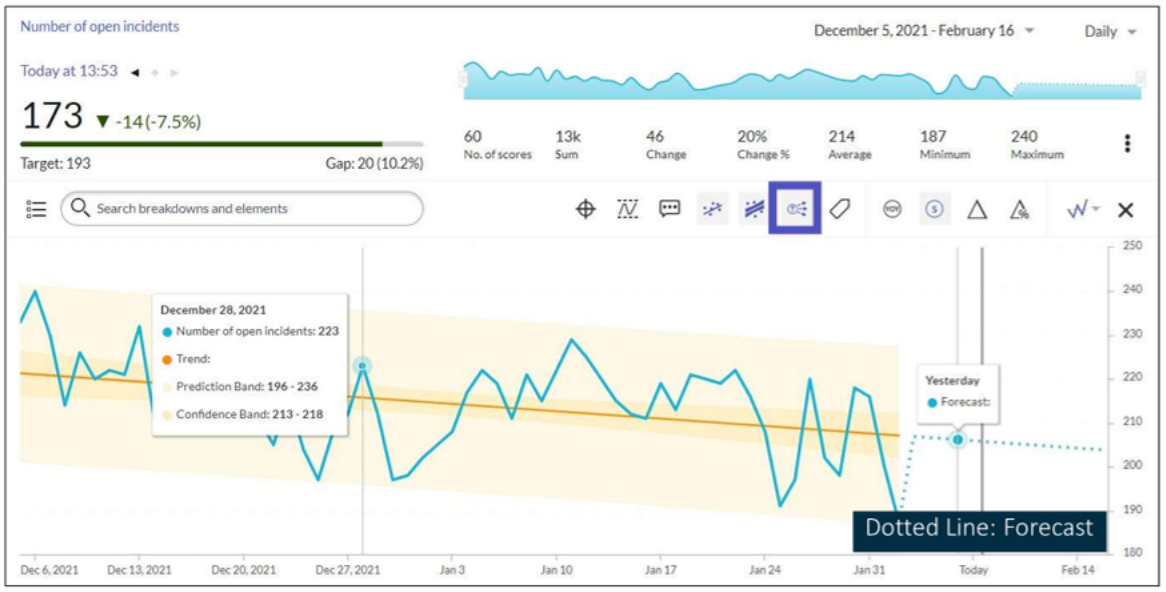
© 2023 ServiceNow, Inc. All Rights Reserved

Score Forecast

Forecasts use an algorithm and a range of data to predict future scores

Forecasts help anticipate and proactively manage trends

The Forecast is a trend continuation using predicted scores



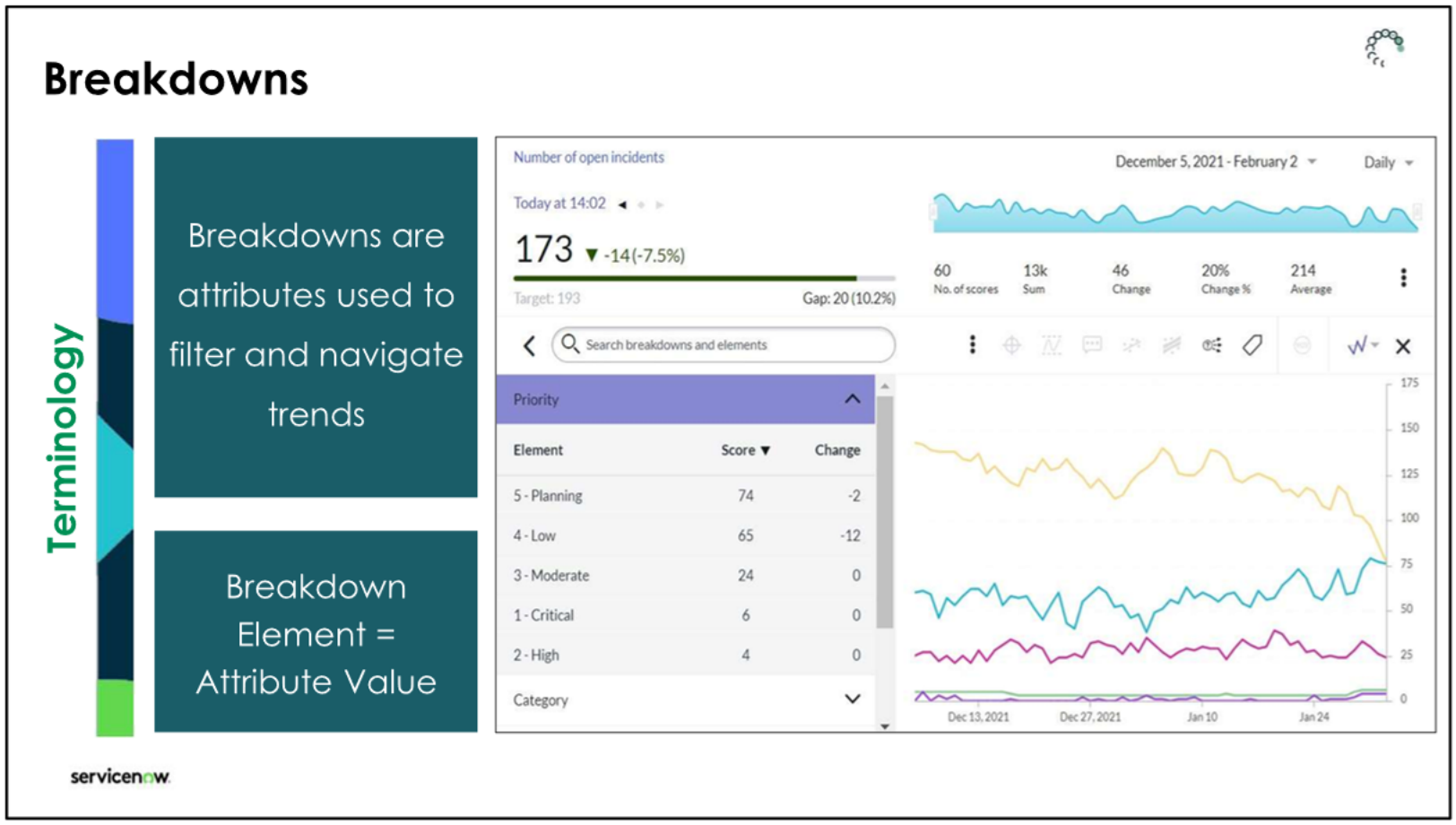
servicenow

To view the **Forecast** in the Analytics Hub, click **Forecast** in the Chart Options ribbon. By default, Forecasts use all collected scores for an Indicator to display a forecasted line for future scores. The Forecast data appears as a dotted line.

The number of data points included in the forecast depends on both the Indicator's frequency and its **Periods to forecast** property. For example, the 7d running SUM aggregation is a daily frequency, whereas the By week SUM aggregation is a weekly frequency. A daily frequency has seven data points per period, and the period length is one week. A weekly frequency has 13 data points, and the respective period length is one quarter.

Multiple algorithms are available for calculating the forecast. The Indicator can be configured to choose an algorithm, define the scores to use for forecasting, and how many periodicities to forecast. This information is addressed in the upcoming Module 4 of the class.

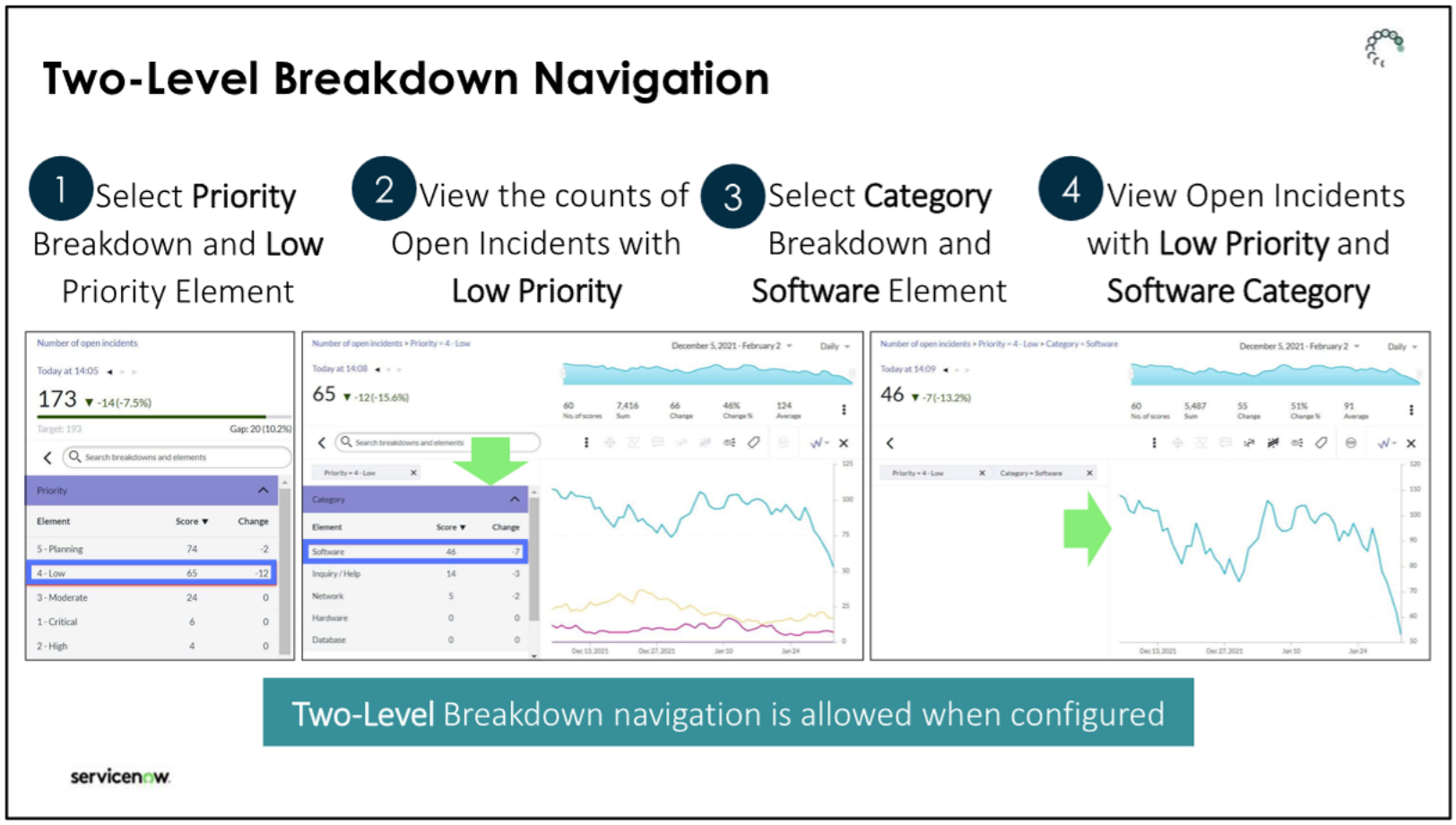
© 2023 ServiceNow, Inc. All Rights Reserved



Breakdowns allow you to navigate the Indicator by a specific dimension, such as Priority, Category, Assignment Group, State, Age, etc.

Expand the Breakdowns list to view all configured Breakdowns. Shown here is the **Priority** breakdown, which has the following **Breakdown elements**: 1-Critical, 2-High, 3-Moderate, 4-Low, and 5-Planning. You can further select an individual Breakdown element to view only those Priorities.

© 2023 ServiceNow, Inc. All Rights Reserved



Performance Analytics allows for a two-level Breakdown navigation when configured.

In the example above:

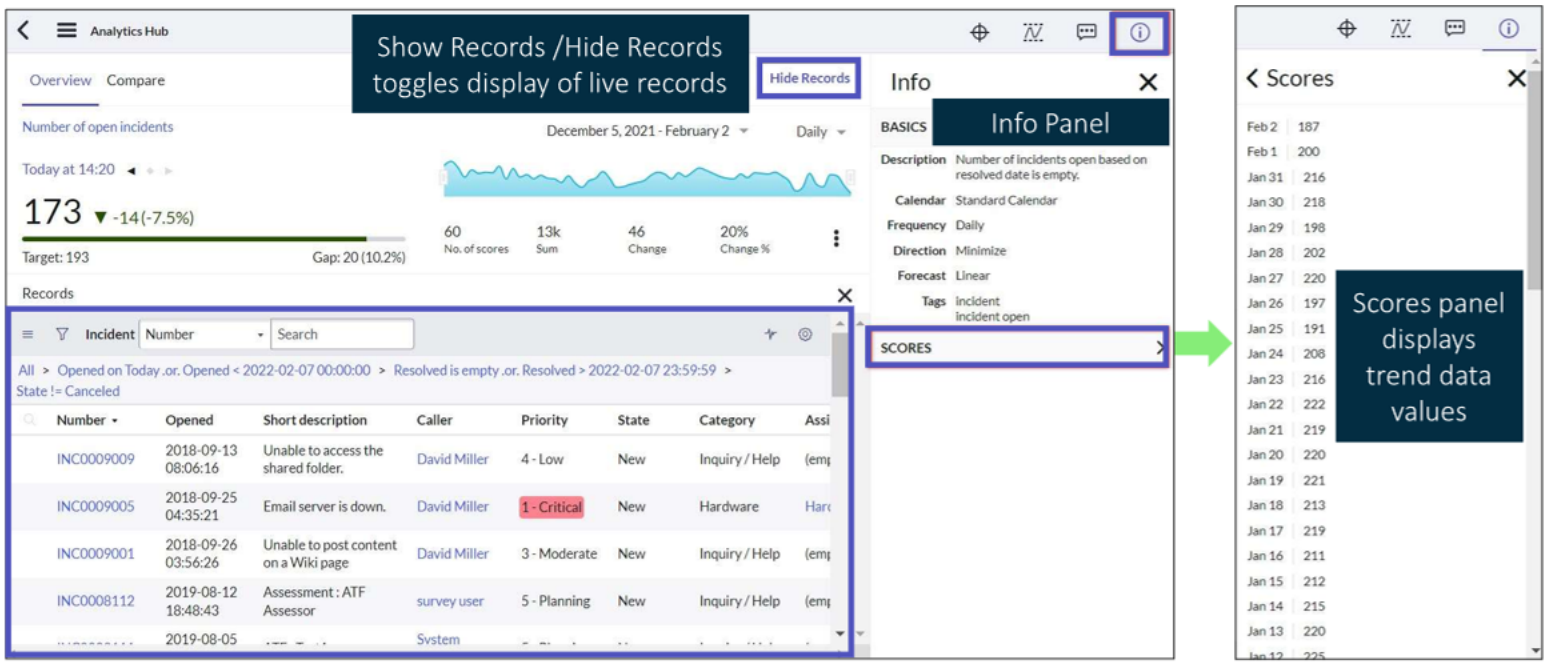
1. The Indicator data is filtered by Low Priority.
2. This provides a view of data based on the first breakdown.
3. Then, the Indicator data is filtered by the Software Category.
4. This two-level combination provides a view of data based on both Low Priority AND Software Category.

Note: Once the chart has displayed the 2nd level of breakdown, the breakdowns list is no longer available, so further drilldowns are not possible unless you remove one of the breakdown selections.

© 2023 ServiceNow, Inc. All Rights Reserved

Real-Time Records and Scores

The **Show Records** button displays the most recent process data record set



You can toggle between showing a Time series of scores (the main chart) or a list of records.

- Click **Show Records** to view the records collected for the respective time period. The records are filtered by any breakdown/element pairs that you have selected.
- Click **Hide Records** to display the Time series chart of the scores seen previously.

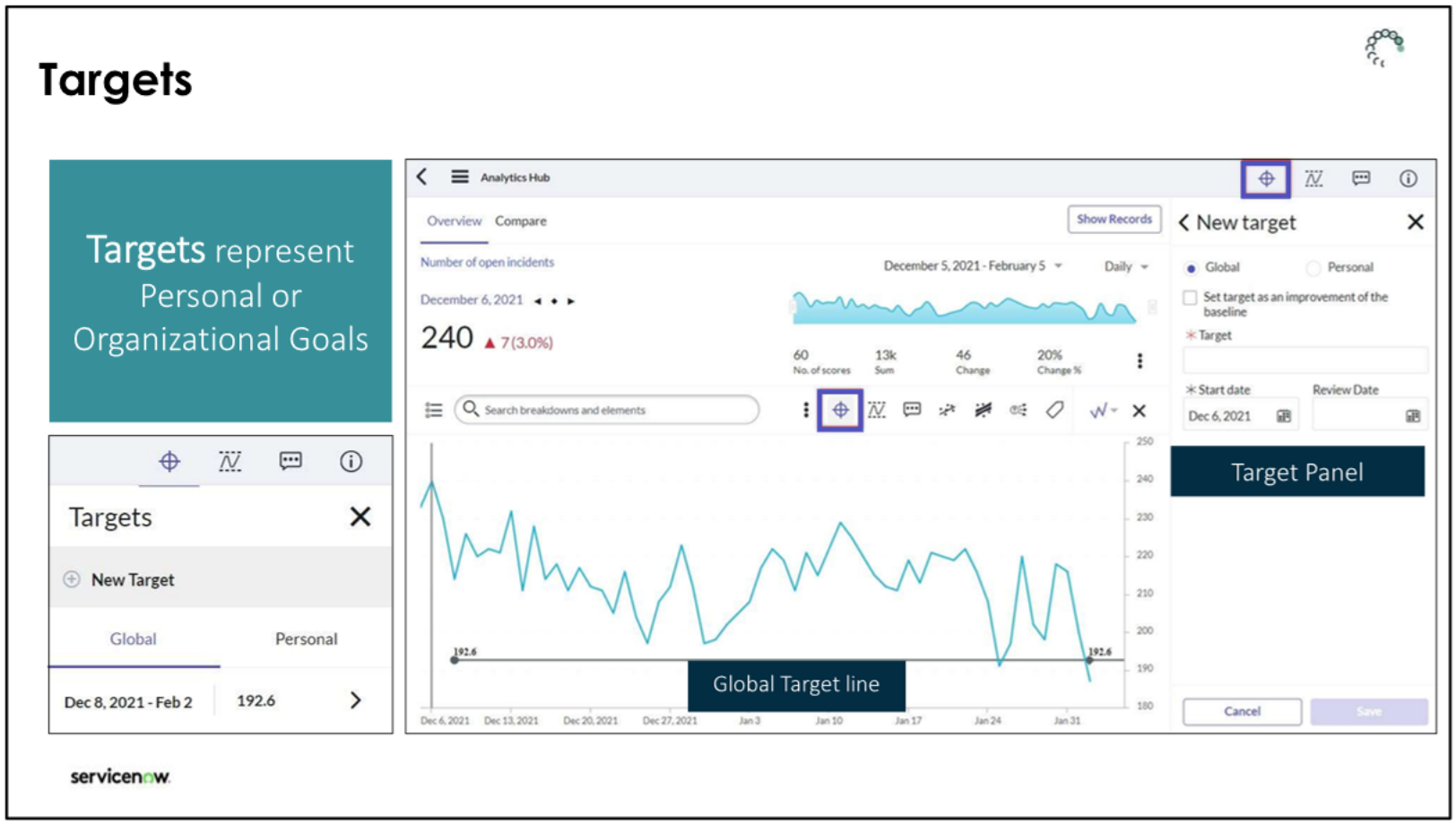
Note: that records can only be viewed for Automated Indicators with the **Collect Records** option enabled.

Click the **Info** icon to display the **Info** panel, which lists these Indicator configurations:

- Description
- Frequency of collection
- Forecast method
- Tags or groups to which the indicator belongs
- Formula – if a Formula indicators is being displayed.

Also, click the **Scores** tab in the **Info** panel to view a chronological listing of Indicator score values.

© 2023 ServiceNow, Inc. All Rights Reserved



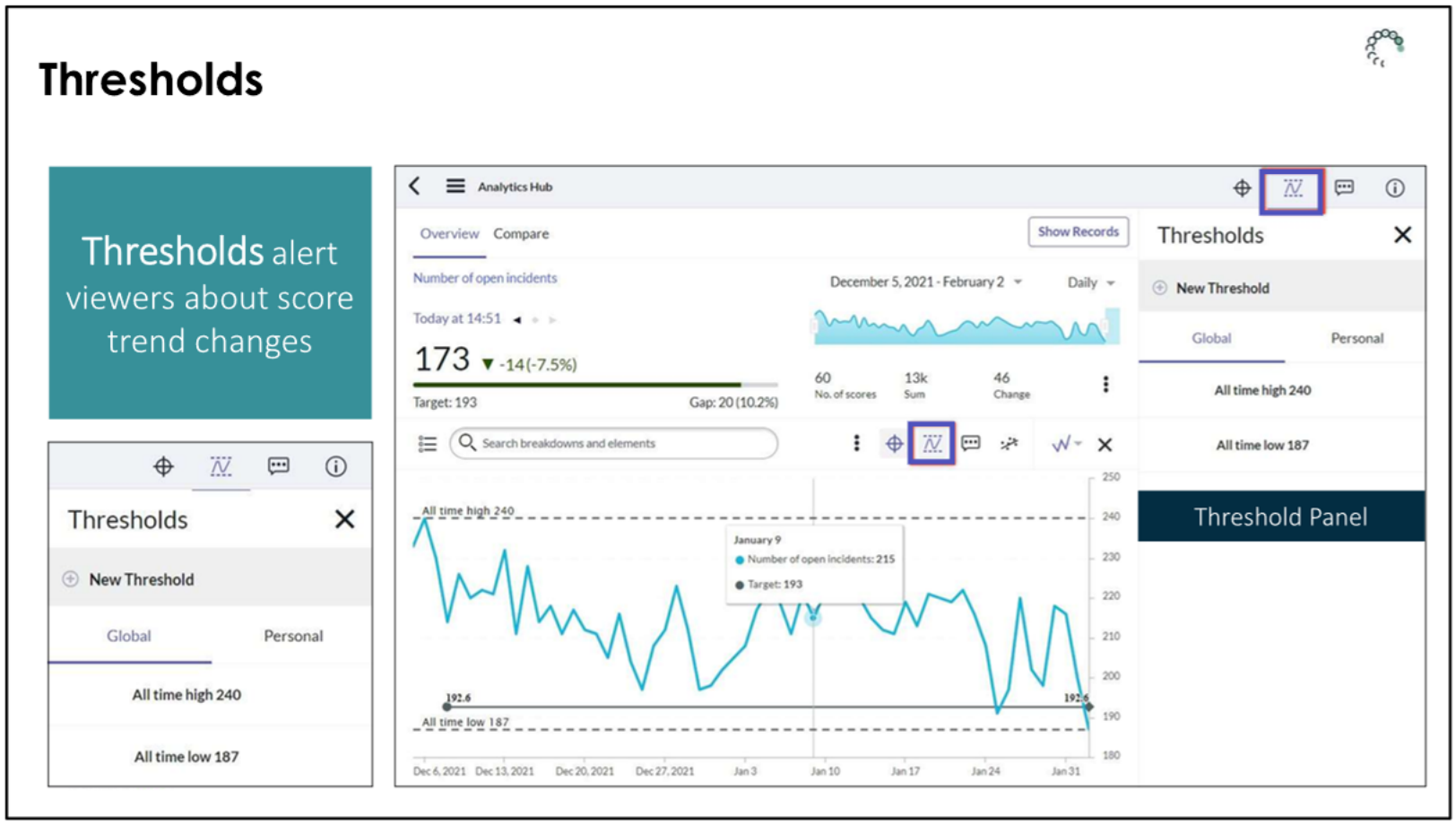
Targets can be established to track personal and organization (global) goals. Target display can be toggled in the chart using the Targets option. A target is displayed using a black (for global) or dark grey (for personal) solid line.

A Target has a start date and terminates when a new Target is added. Targets can be edited or deleted when no longer needed in the **Targets** panel.

Once a target is set, a Target and a Gap to Target is displayed in the Analytics Hub and visible on Widgets.

Note on permissions: Admins and Power users can configure global and personal Targets. Everyone else can configure Personal targets only.

© 2023 ServiceNow, Inc. All Rights Reserved



Thresholds can be added for a visual indication (as well as an automatic email notification) whenever the score crosses a predetermined level. Multiple thresholds can be configured and displayed at all times using the Thresholds toggle display option in the chart. Thresholds appear as a horizontal dashed line in the Analytics Hub. Personal thresholds are grey. Global thresholds are black in color.

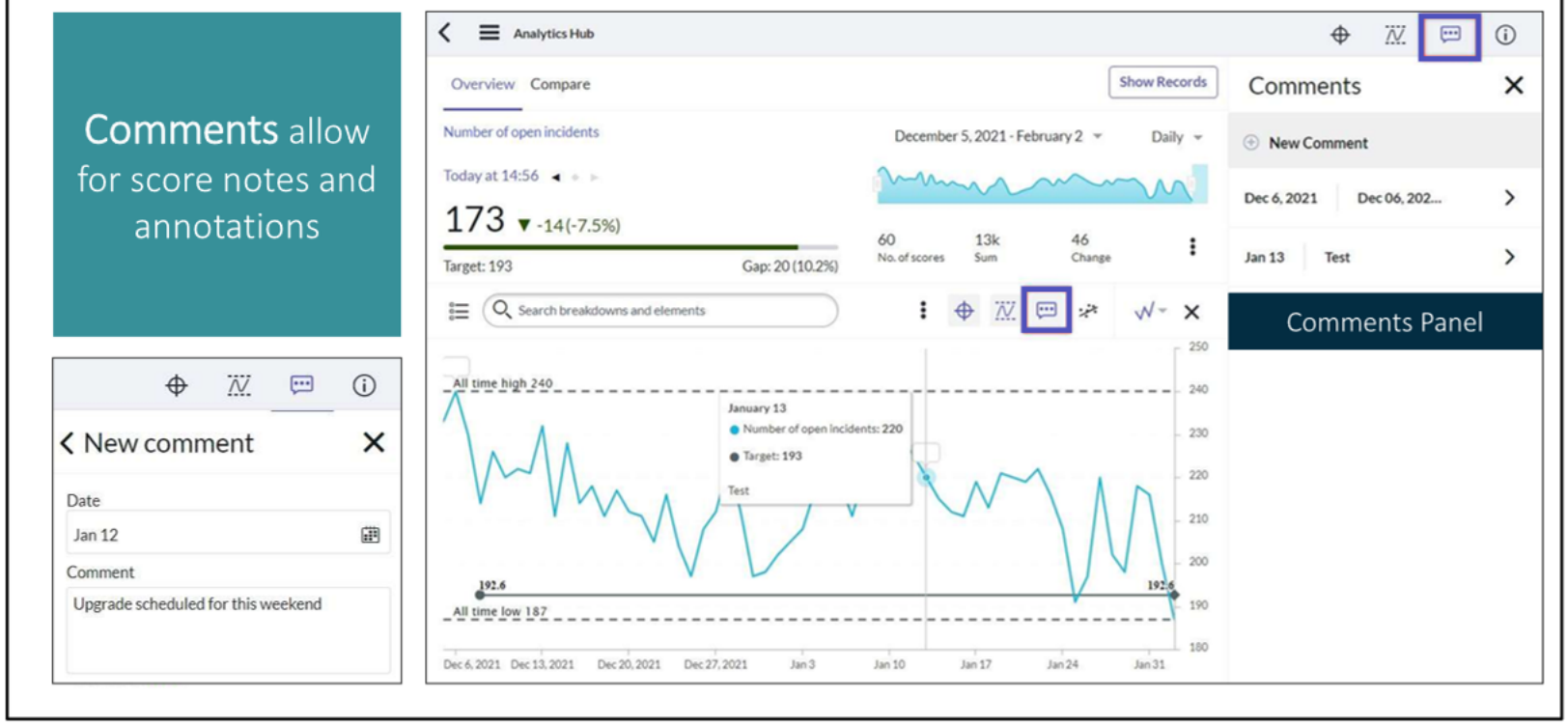
Use the Thresholds panel to configure and edit the following threshold types:

- More than
- Less than
- All time low
- All time high.

Note on permissions: Admins and Power users can configure global and personal Thresholds. Everyone else can configure Personal thresholds only.

© 2023 ServiceNow, Inc. All Rights Reserved

Comments



To add a **Comment**, navigate to the Comments panel and click **New Comment**. A comment will be added for the currently chosen time period. To view Comments, enable the Comments view option in the chart and mouse over that respective data point. Comments will also be visible and editable from the Comments panel.

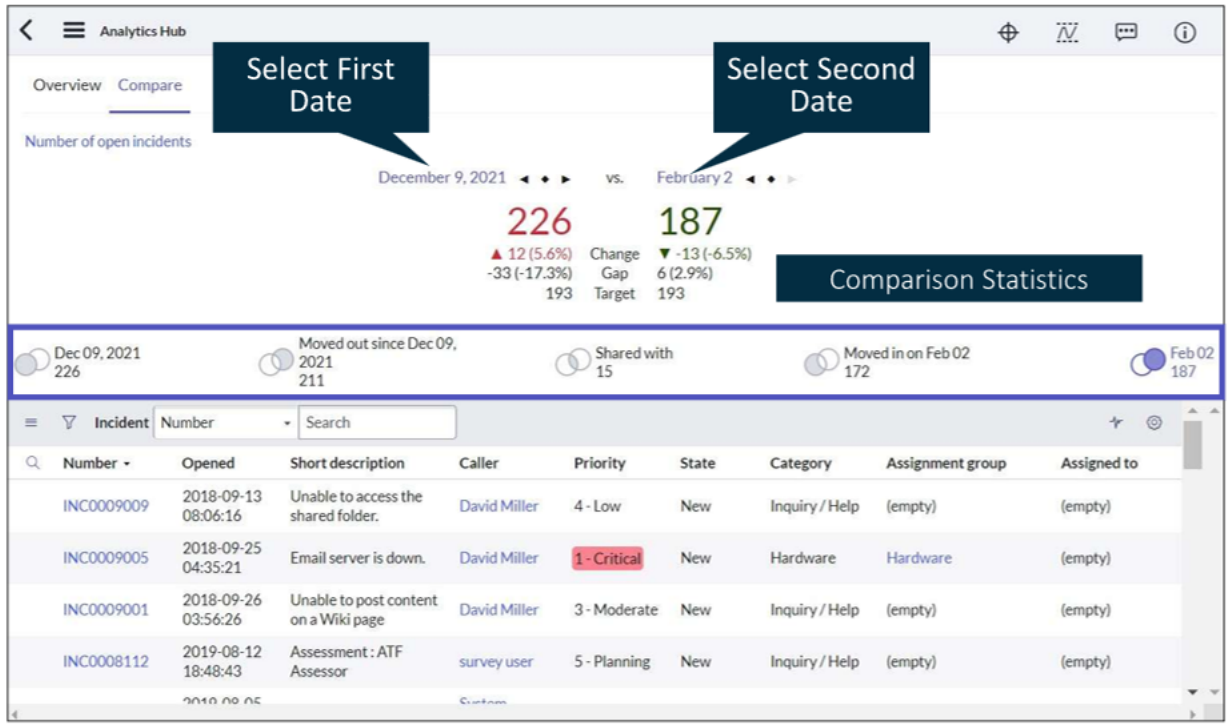
© 2023 ServiceNow, Inc. All Rights Reserved

Comparing Scores

Compare Stats:

- First Data Set
- Moved out from first data set
- Shared between both data sets
- Moved into the second data set
- Second Data Set

Click Statistic to display corresponding data set

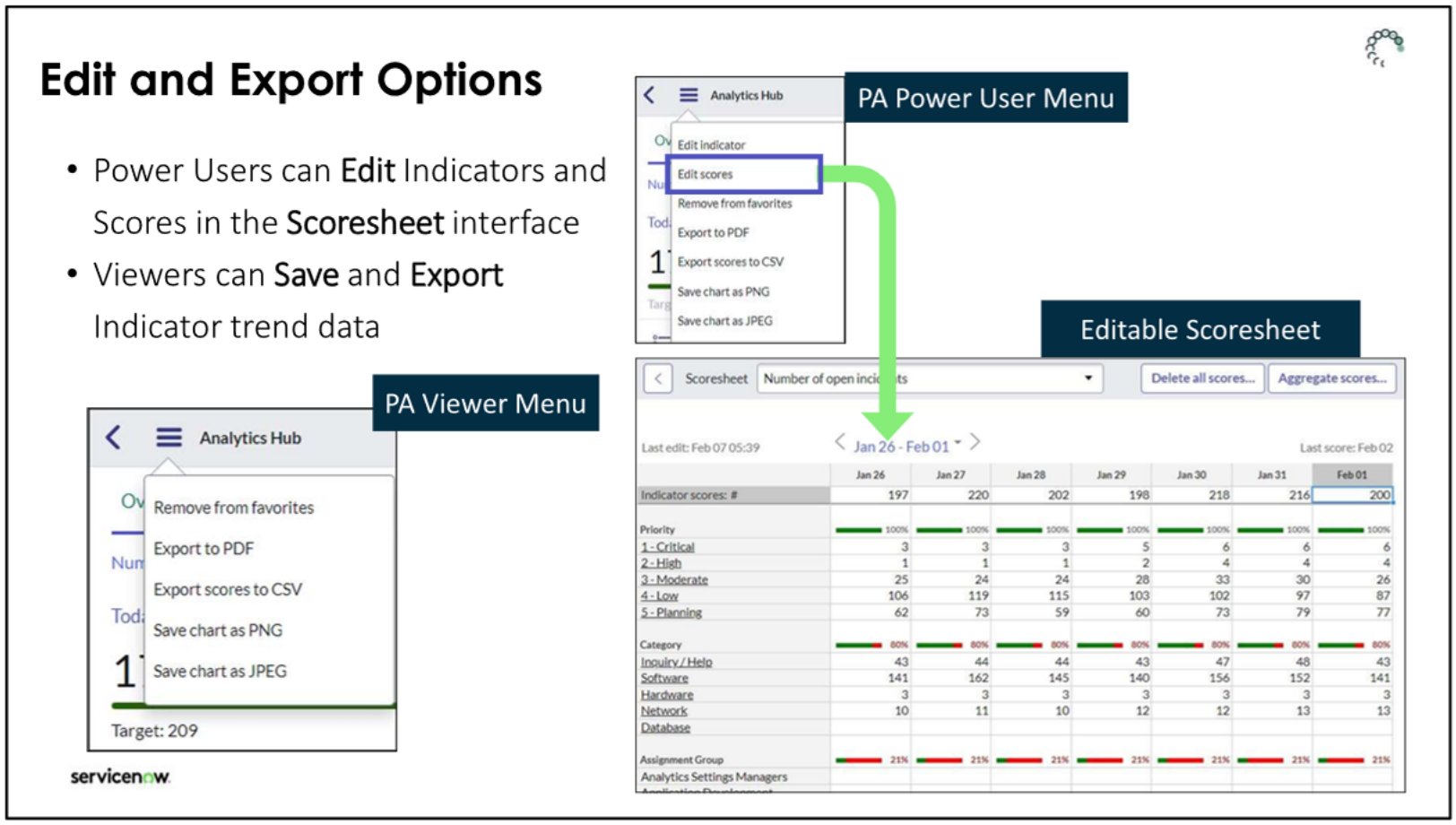


The **Compare** tab allows for comparing collected record sets from two different collection periods. Use the date selection controls to specify two distinct dates. The comparison records are categorized in the following groups. Click the corresponding statistic (Venn diagram icon) to display its list of records:

- **First data set**: All records collected on the first date.
- **Moved out from first data set**: List of records present on the first date but missing from the second collection.
- **Shared between the two data sets**: List of records collected on both dates.
- **Moved into the second data set:** List of records collected on the second date but missing from the first collection.
- **Second data set**: All records collected on the second date.

Note: The **Compare** tab is only available for Automated indicators.

© 2023 ServiceNow, Inc. All Rights Reserved



The following options are available for PA Power User but not for PA Viewer in the Analytics Hub Context Menu:

- **Edit Indicator**: opens the Indicator form where adjustments can be made. This option is available depending upon role privileges.
- **Edit Scores**: opens the Scoresheet for the Indicator where scores may be adjusted. This option is available depending on role privileges.

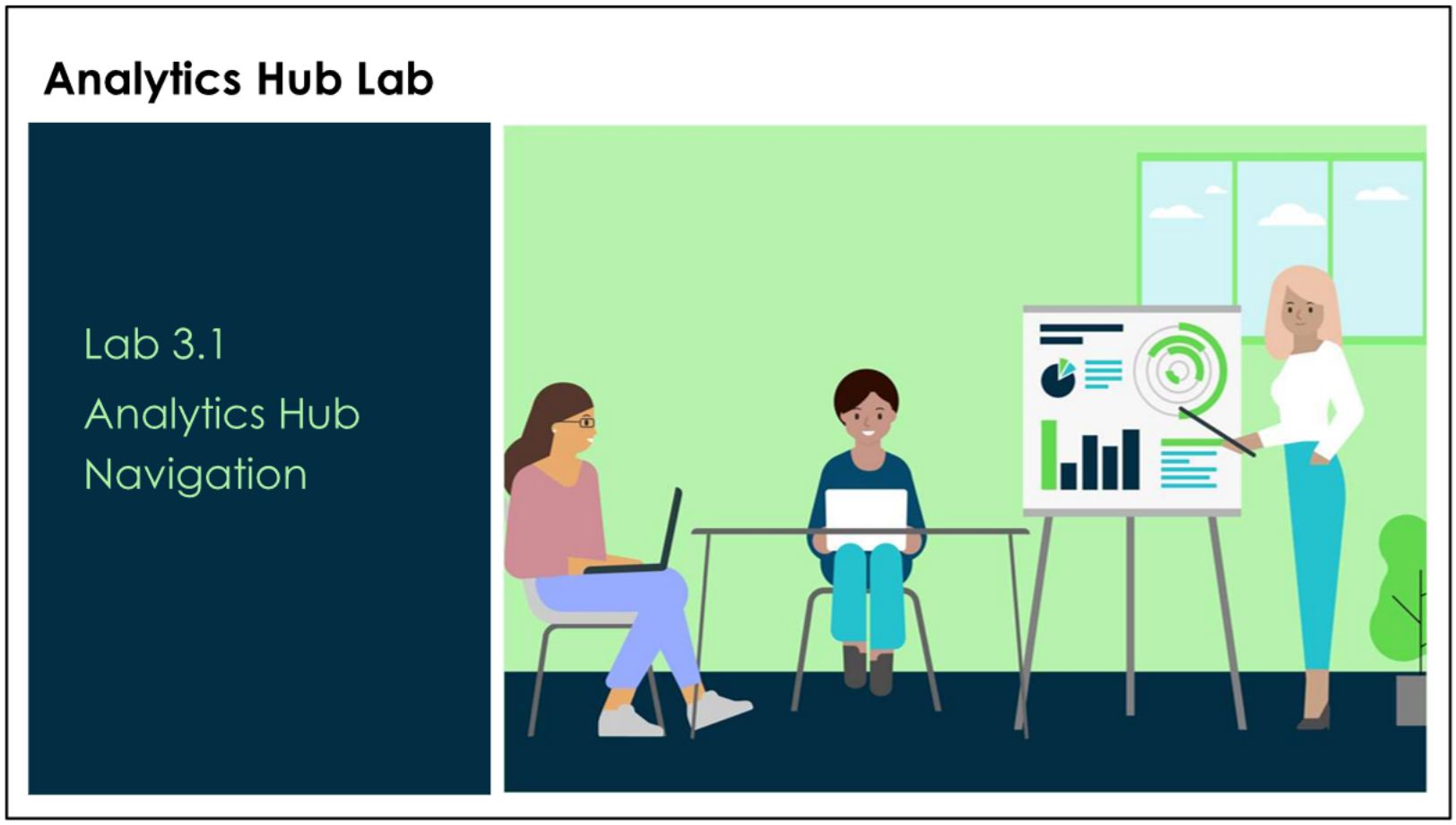
Technical Note: You can use the **Scoresheet** to view and manipulate scores; however, you should **not** adjust the scores for Automated Indicators. When scores for Automated Indicators are collected, the SysIDs for the records included in the collection are also captured. Adjusting Automated Indicator scores on the Scoresheet would result in a disparity between the score shown and the collected score and records.

The following options are available for both PA Power User and PA Viewer in the Analytics Hub Context Menu:

- **Save chart as PNG**: Save a copy of the chart in PNG format.
- **Save chart as JPEG**: Save a copy of the chart in JPEG format.
- **Export to PDF**: Export the detailed chart to PDF. Tables that list the scores by Breakdown may also be exported as part of this option.
- **Export scores to CSV**: Export all scores for this Indicator in CSV format.

Note: Everyone can change Remove the Indicator Analytics Hub from their Favorites list.

© 2023 ServiceNow, Inc. All Rights Reserved



3.1. Analytics Hub Navigation Lab:

- Explore the Analytics Hub Indicator list
- Navigate the Analytics Hub for an Individual Indicator

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Analytics Hub Navigation

Lab 3.1

25 minutes

Lab Objectives

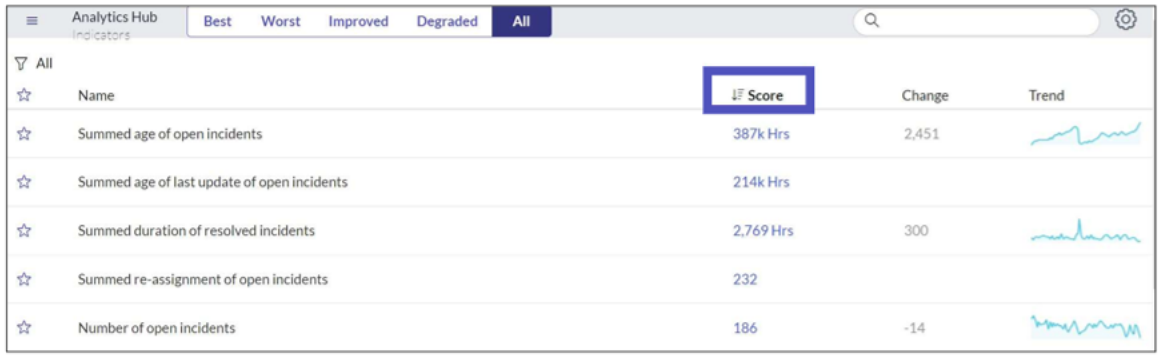
Advanced Analytics users at Glide Haven plan to use the Analytics Hub to assess, compare, and predict Indicator performance over time. This lab guides through the following:

- Analytics Hub - Indicator List
- Analytics Hub - Overview of a single Indicator
- Analytics Hub - Compare Indicator scores

A. Analytics Hub - Indicator List

Indicator List Navigation

1. Impersonate the **PA Viewer** user.
2. Navigate to **Performance Analytics > Analytics Hub**.
3. Confirm that you have 25 Indicators ordered by Name in A-Z order.
4. Click the **Name** attribute to sort in Z-A order.
5. Click the **Score** attribute to display KPIs with the highest score first.



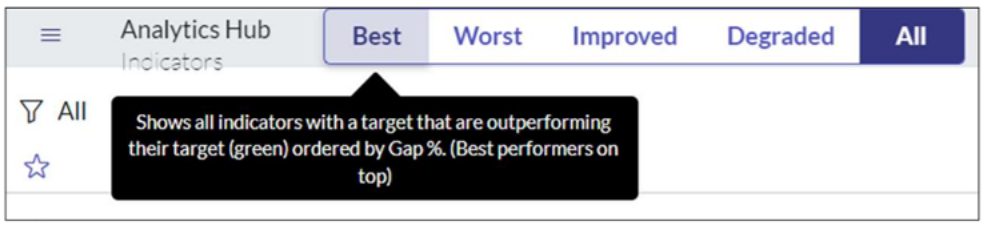
Tip: *If you do not see any scores, you need to complete lab 2.1 and run Collection jobs.*

Note: *Your scores may vary from the scores shown in the screenshot.*

© 2023 ServiceNow, Inc. All Rights Reserved

6. Locate the **Best**, **Worst**, **Improved**, **Degraded**, and **All** buttons at the top of the list.

7. Hover over each button to see how it filters the Indicators.



8. With the **All** button selected, click the **Name** attribute again to sort in A-Z order.

9. Click the **Star** icon of the following Indicators to make them Favorites:

   Incident backlog growth
   Number of new incidents
   Number of open incidents

10. Click the **Star** icon at the top of the Indicator list to display only the favorites.

***Note**: Previously viewed indicators are automatically made Favorites.*

11. Click the **Star** icon again to return to a view of all Indicators.

Indicator List Search

1. Type **incident sla** in the search text box located in the upper right corner of the Indicator list.

2. Select the **incident sla resolved** Indicator Group from the search suggestions.

© 2023 ServiceNow, Inc. All Rights Reserved

3. Review the Indicators belonging to the **incident sla resolved** group.

4. Add the word **Average** to the search criteria and select enter.

5. Confirm that the list now returns only the **Average Resolution Time In Hours For Resolved Incident SLA Tasks** Indicator.

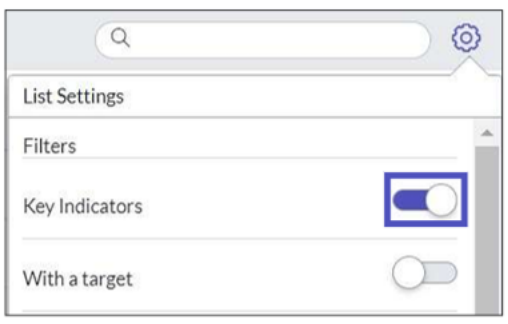
Note: You can add additional Name or Group search words as needed.

6. Select the '**X**' in the search box to clear the search results and view all Indicators.

Indicator List Settings

1. Click the **List Settings** gear at the top right of the Indicator list.

2. Turn on the **Key Indicators** filter to view Indicators defined as "Key".



© 2023 ServiceNow, Inc. All Rights Reserved

3. Confirm that only Indicators marked with a **black dot** (Key) are displayed.

4. Make the following adjustments in the **List Settings**:

   Key Indicators: OFF
   Date: ON
   Frequency: ON
   Direction: ON
   Show percentages: ON

   Note: You may need to scroll down to see all available settings.

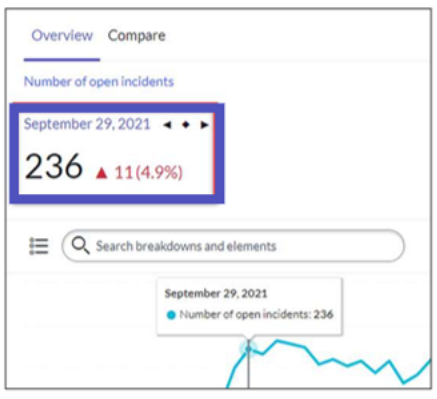
5. Confirm that the Indicator List displays the newly selected columns:

***Question:** How does the **Show percentages** option impact the format of the **Change** attribute?*

B. Analytics Hub Navigation

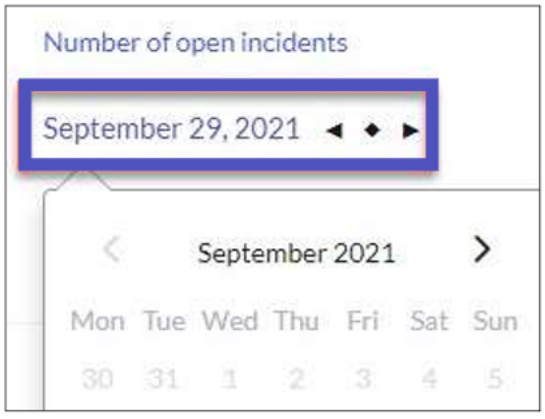
Indicator Chart and Statistics

1. Type **open incidents** in the search box to perform a search.
2. Click to open the **Number of open incidents** Indicator.
3. Confirm that the chart displays data for the past four months.
4. Select 1-2 points along the score line. Note that the score info is refreshed.



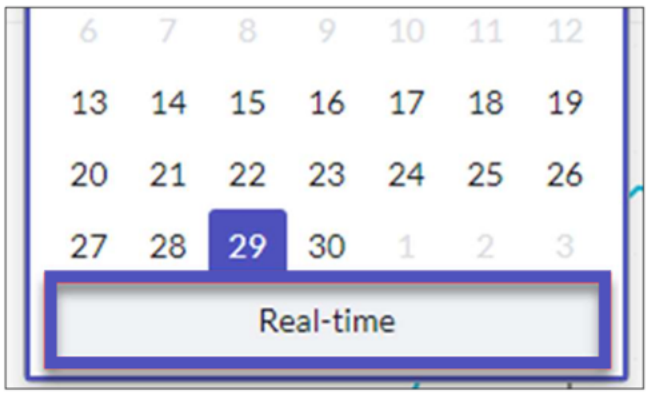
© 2023 ServiceNow, Inc. All Rights Reserved

5. Click the current date above the score to open the Calendar control.



***Note**: Dates shown in the images are old. Select the dates as per the instructions.*

6. Select the **Real-time** button in the Calendar as shown:

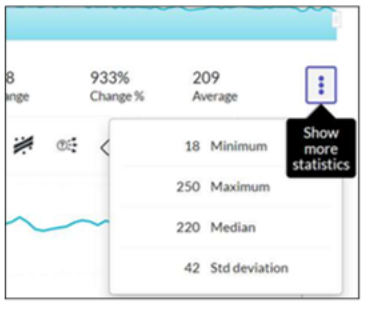
7. 

***Note:** The real-time score is only shown if the indicator has been configured to display it.*

8. Using the chart **statistics**, answer these questions:

***Question:** How many scores are available in the selected sample?*
What are the Minimum and Maximum scores?
What is the difference between the first and last score, e.g., the Change?
What are the sample's Median, Average (Mean), and Standard Deviation?

***Note:** Click the **Show more statistics** button if all statistics are not currently displayed.*



© 2023 ServiceNow, Inc. All Rights Reserved

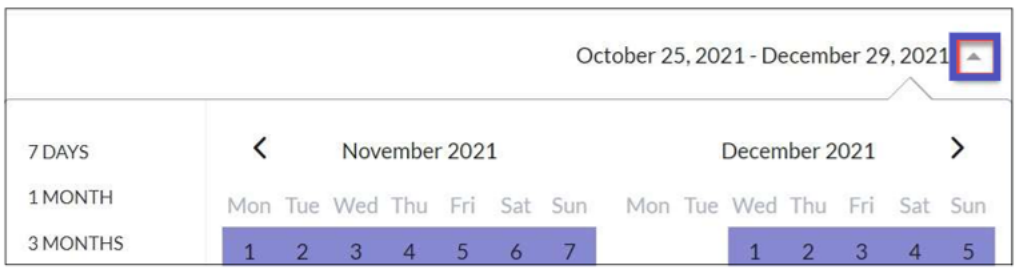
9. Using the sliders, display approximately a month of indicator data.

10. Using the updated chart **statistics**, answer these questions again:

Question: *How many scores are available in the selected sample?*
What are the Minimum and Maximum scores?
What is the difference between the first and last score, e.g., the Change?
What are the sample's Median, Average (Mean), and Standard Deviation?

Time Period

1. To select a different time period, select the date dropdown.

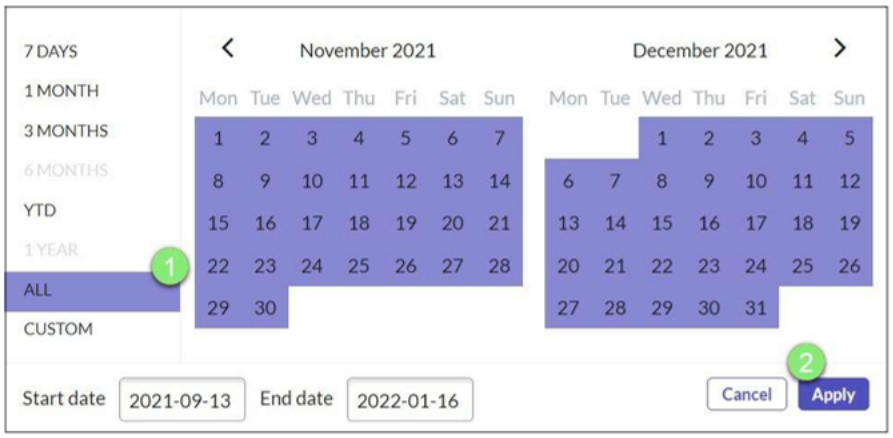


Note*: Dates shown in the images are old. Select the dates as per the instructions.*

2. Select two dates and then click **Apply** to define a new range of data to display.

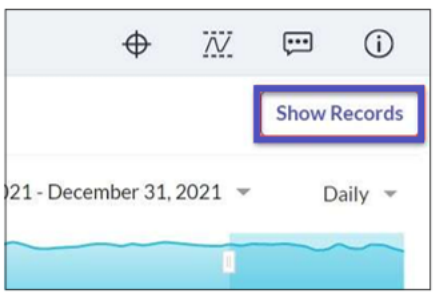
© 2023 ServiceNow, Inc. All Rights Reserved

3. Display all data using the sliders or by selecting **All** in the date dropdown.

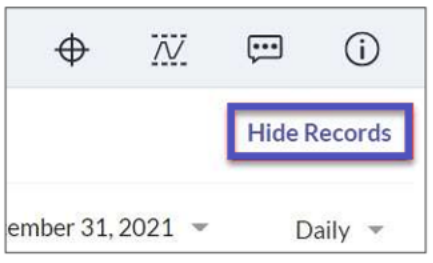


Records, Info, Scores, and Comments

1. Click **Show Records** to display the records for the currently selected date.



2. Click the **Hide Records** button to redisplay the Indicator chart.

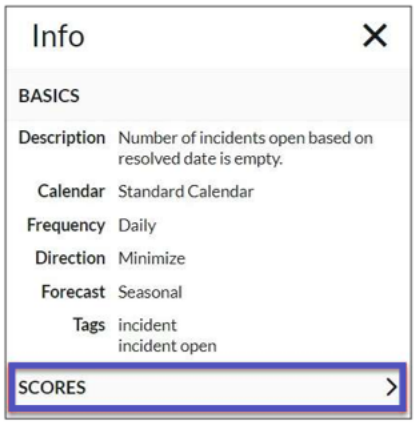


3. Select the **Info** button.

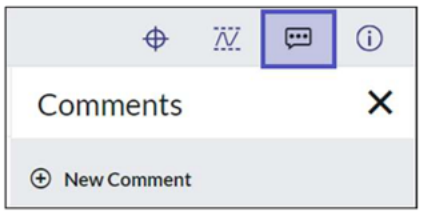
***Questions**: Based on the information shown, what type of records are being collected? How often is data collected for this Indicator?*

© 2023 ServiceNow, Inc. All Rights Reserved

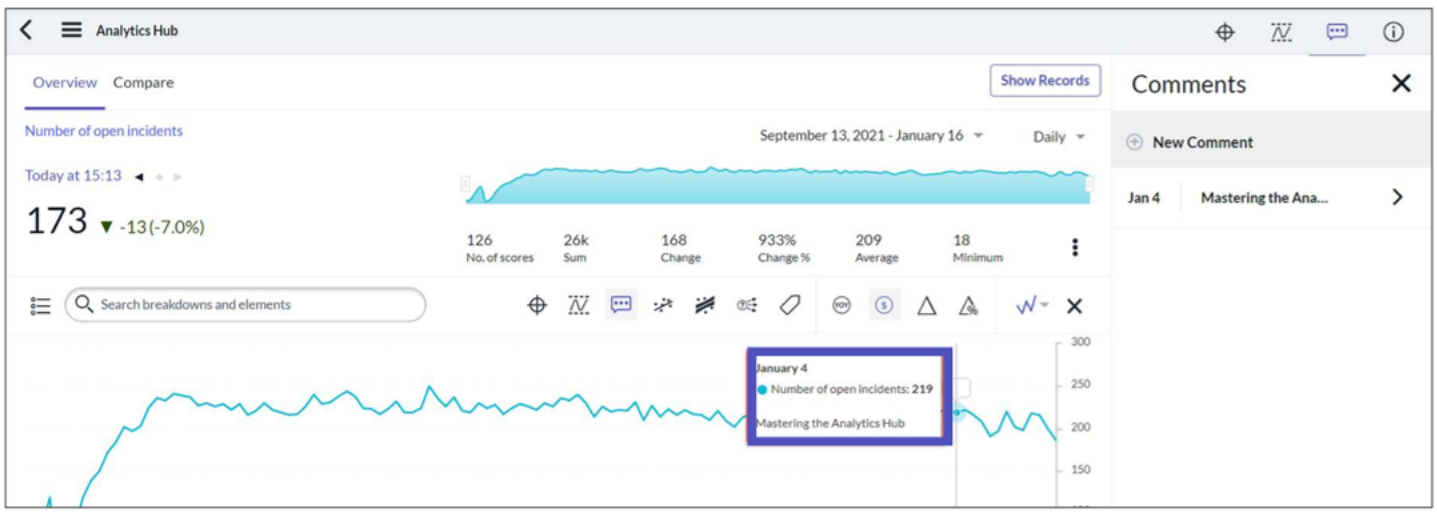
4. Select the **SCORES** to display the Indicator scores as a list.



5. Click the **Comments** button to open the Comments panel.



6. Click **New Comment** to create a new Comment as follows:
   a. Date: **Any date in the past week**
   b. Comment: **Mastering the Analytics Hub** (or any other personalized comment)
7. Click **Save** when finished.
8. View the comment by hovering over the respective date in the chart.

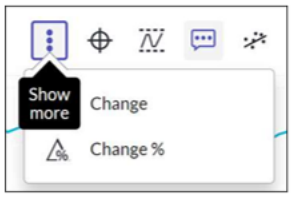


© 2023 ServiceNow, Inc. All Rights Reserved

Chart Options

1. Review the available chart options above the indicator chart.

***Tip**: Click the **Show more** button to view and enable additional options if not displayed.*



2. Practice clicking and activating each option as follows:

   a. Enable **Targets**. 
   What score are you trying to achieve?

   b. Enable **Thresholds**. 
   What is the score range? What boundary values are being monitored?

   c. Enable the **Trend** line. 
   Is the Number of open incidents growing or declining overall?

   d. Enable the **Confidence Band** line. 
   What is the expected range for the average Number of open incidents?

   e. Enable the **Forecast** line. 
   What is the predicted Number of open incidents in a week from today?

   f. Disable the **Forecast** line by clicking it once more.

   g. Enable the **Labels** line. 
   What additional information is added to the chart?

© 2023 ServiceNow, Inc. All Rights Reserved

h. Disable the **Labels** line by clicking it once more.

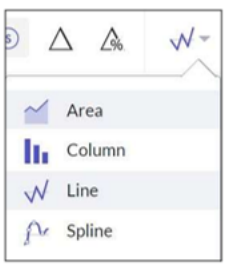
i. Disable the **Scores** line. 
How is the Indicator chart affected?

j. Enable the **Scores** again.

k. Enable both the **Change** and **%Change** trend lines. 
What additional Time series lines are displayed? How is Change different from Percentage Change?

l. Disable the **Change** and **%Change** trend lines.

m. Select the **Visualization** icon and then switch the visualization to **Area.** 



***Note**: Chart options are persisted for the specific Indicator.*

Time Series Aggregation

1. Change the **Daily** Time series to **7d running AVG**.

2. Confirm that the chart has been “smoothed” out and the statistics are updated.

3. Set the Time series to **30d running AVG**.

4. Confirm that the chart has been “smoothed” out even more.

5. Set the Time series to **By week AVG**.

***Questions:** How did the X-axis change? How many scores are shown in the chart?*

© 2023 ServiceNow, Inc. All Rights Reserved

6. Set the Time series to **By month AVG**.

   Question: *Which is the last month for which you have data in the chart?*

7. Set the Time series to **By month AVG+**.

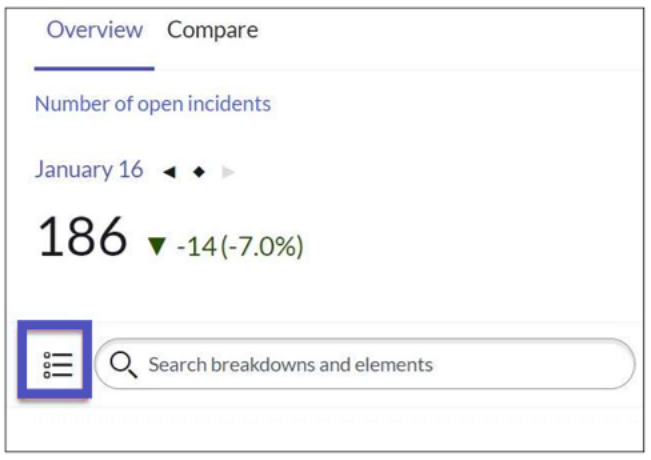
   Question*: Which is the last month for which you have data in the chart?*

8. Reset the Time series to **Daily**.

Breakdown Navigation

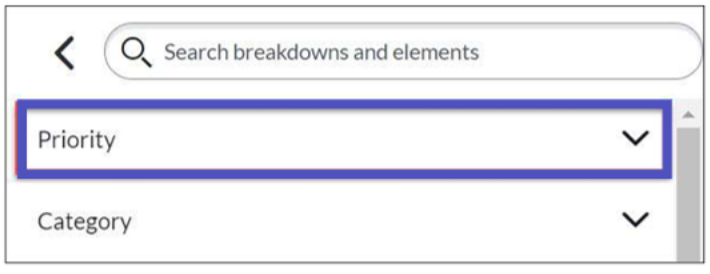
In this section, you explore the Indicator score trends by configured Breakdowns.

1. Click the **Breakdowns** button to display a list of available Breakdowns.



   Question: *Which Breakdowns are configured for this indicator?*

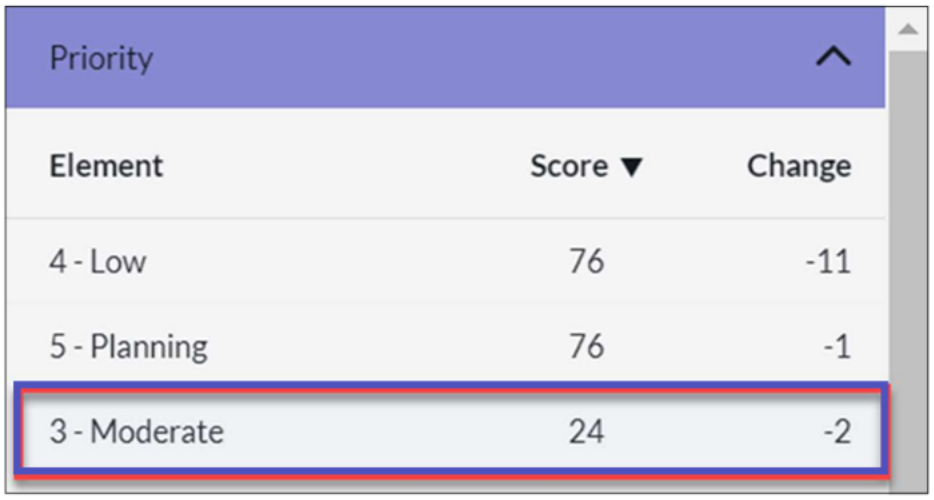
2. Expand the **Priority** Breakdown.



   Question: *Which Priority is the most common for Open incidents, overall?*

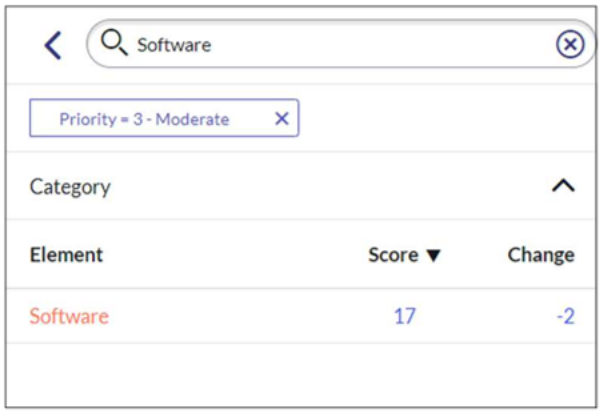
© 2023 ServiceNow, Inc. All Rights Reserved

3. Select the **3-Moderate** Priority element to see a trend chart of only the Moderate Priority subset of Open Incidents.



Question: *What is the latest score for Open incidents with Moderate priority?*

4. Type **Software** in the **Search breakdowns and elements** box.

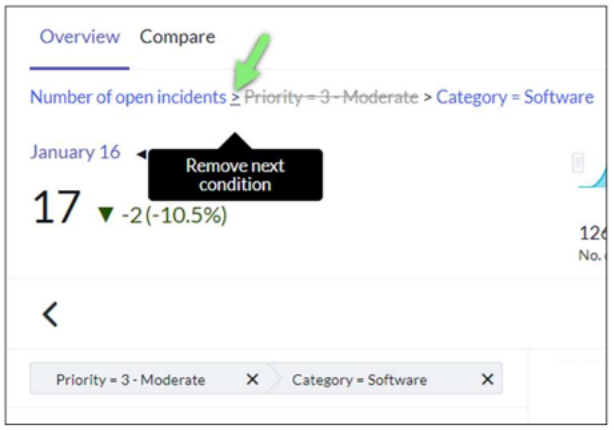


5. Select the **Software** Category element.

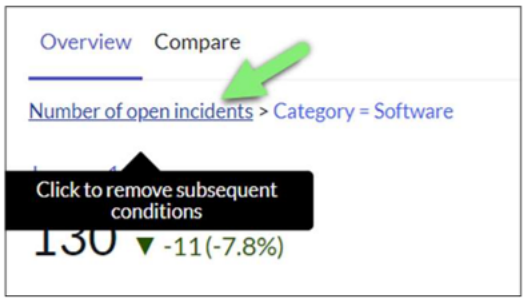
Note*: You are looking at a trend of all Open incidents with Priority= Moderate* ***and*** *Category = Software.*

© 2023 ServiceNow, Inc. All Rights Reserved

6. Remove the **Priority = 3-Moderate** condition from the breadcrumbs as shown:



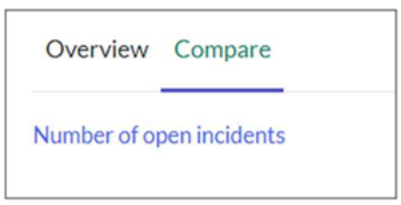
7. Remove all conditions by clicking **Number of open incidents** as shown:



Score Comparison

In this section, you compare Indicator scores collected on two different dates.

1. Select the **Compare** tab.



2. Select two dates about a week apart using **Go to Previous Day** and **Go to Next Day**.

Tip: *Click the date to use the popup calendar if needed. Also, the dates in the image below are old, select the dates as per the instructions.*

Question: *What is the percentage change in score between the two selected dates?*

© 2023 ServiceNow, Inc. All Rights Reserved

3. Click the **Shared with** list to view the records shared between the two sets.

4. Use the comparison summary to answer these questions:

   How many scores were moved out from the first result set compared to the second result set?

   How many scores were moved in the second result set compared to the first result set?

   How many records are shared between the two record sets?

Congratulations!
You have now completed the Analytics Hub Navigation Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

Module Recap

Core Concepts

- The Analytics Hub visualizes Indicators by charting the daily scores for a period of time
- A time series is the chosen aggregation of data over time – raw scores (Daily), 7-day running SUM, 28-day running AVG, etc.
- A trend line is a smoother visualization of time series direction

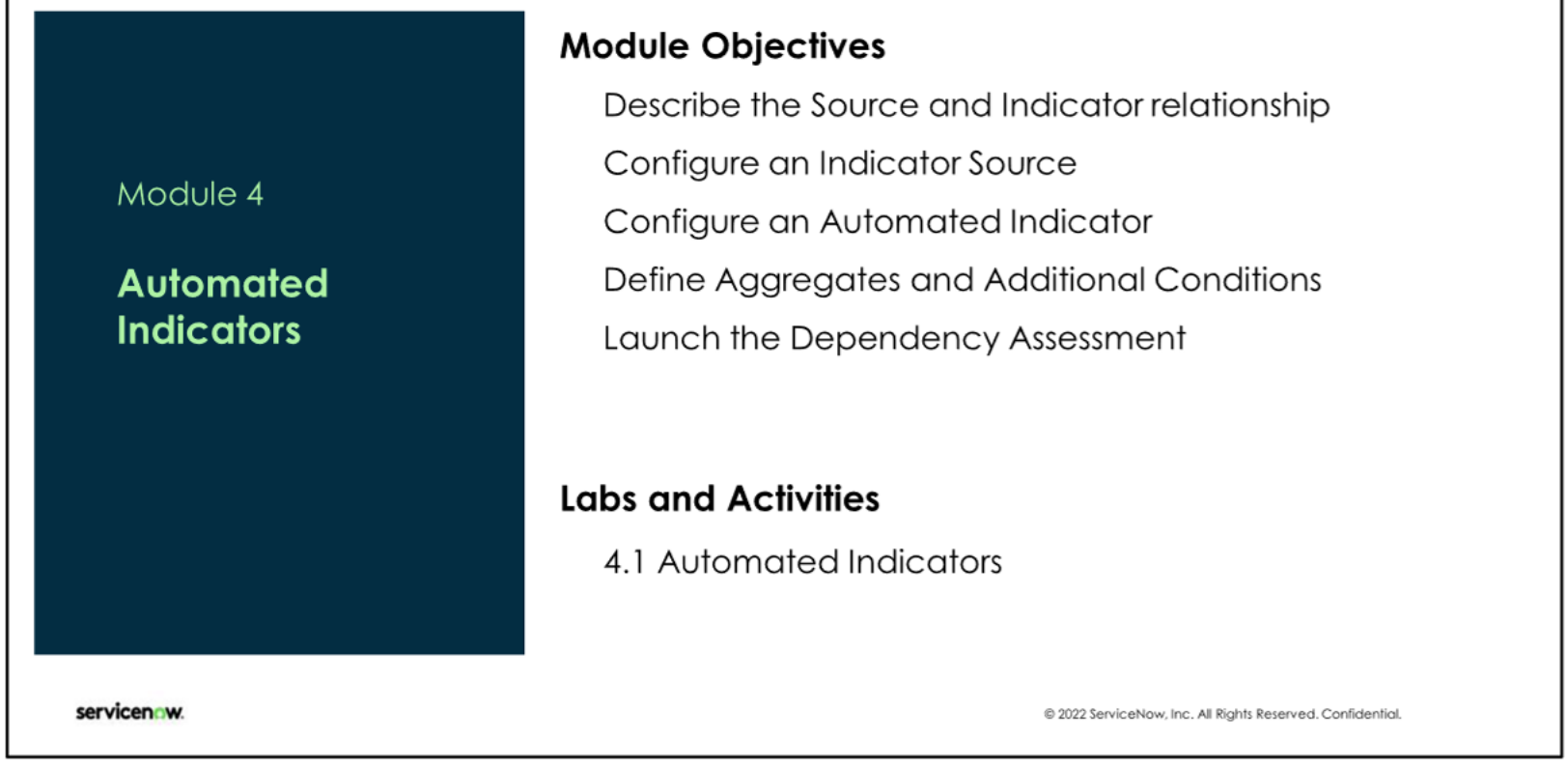
Review Questions

- Describe the relationship between a KPI and the Analytics Hub
- What are some ways that you can interact with the information in the Analytics Hub?
- What are some KPIs for which you would want to see performance information aggregated weekly or monthly?

Describe the relationship between a KPI and the Analytics Hub
The Analytics Hub is a comprehensive tool for visualizing and analyzing the performance of a KPI/PA Indicator.

What are some ways that you can interact with the information in the Analytics Hub?
Create Targets, Thresholds, and Comments
Apply Breakdowns
Apply Chart Options

© 2023 ServiceNow, Inc. All Rights Reserved



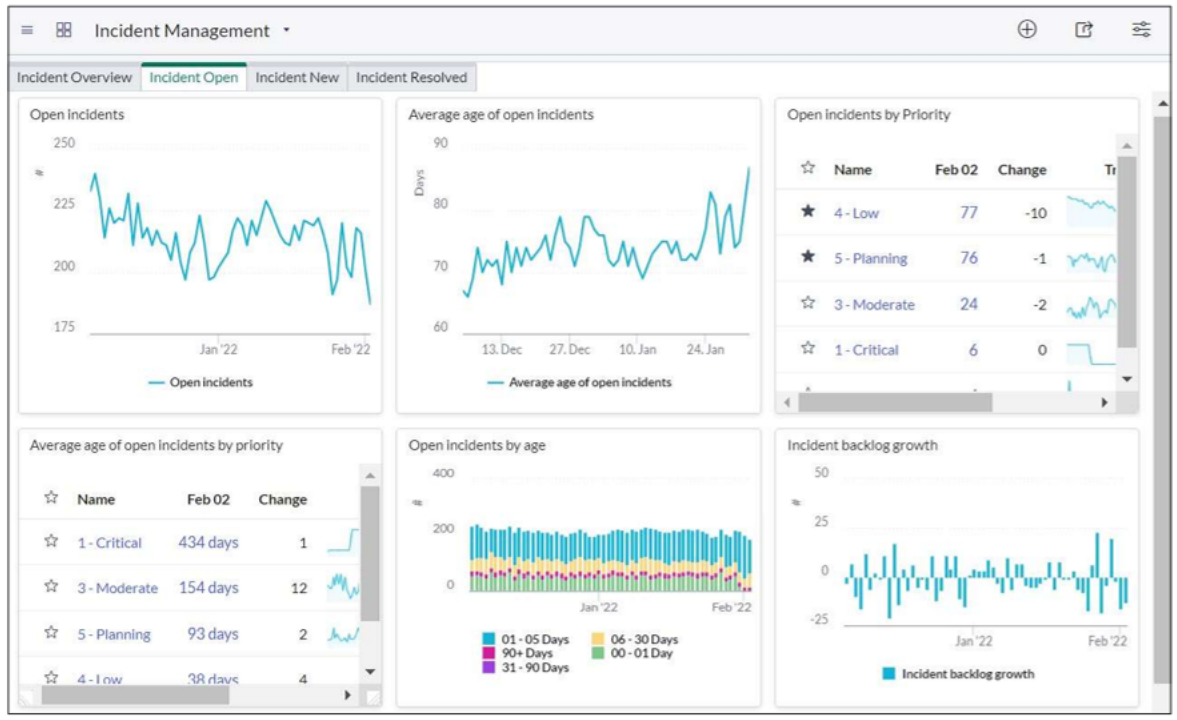
This module presents the configuration and administration of Automated Indicators and Indicator Sources.

© 2023 ServiceNow, Inc. All Rights Reserved

Indicators are Process Metrics

An Indicator defines and measures a specific process behavior

Multiple Indicator widgets visualize the overall Process Performance



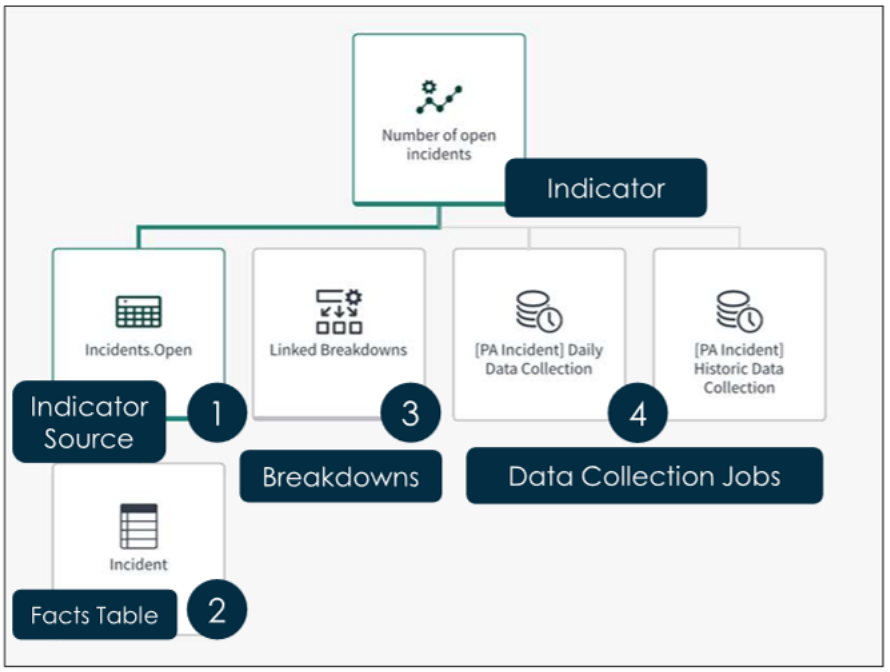
servicenow

An Indicator, or a KPI (Key Performance Indicator), is a process metric designed to continuously measure a specific process characteristic or behavior. For instance, in the context of the incident management process, you may be interested in: Number of Open Incidents, Incident Backlog growth, Incident Age, etc. To get the full picture and track all aspects of the Process Performance, multiple Indicator widgets (visualizations) are placed on a dashboard. Related Indicators may be placed on separate Dashboard tabs. Each Dashboard provides real-time insight into the health of a business process.

© 2023 ServiceNow, Inc. All Rights Reserved

Indicator Dependencies

1. An Indicator relies on an Indicator Source for records
2. An Indicator Source is a filter condition on a Table
3. Indicators may be linked to Breakdowns
4. Indicators are populated by one or more Collection jobs



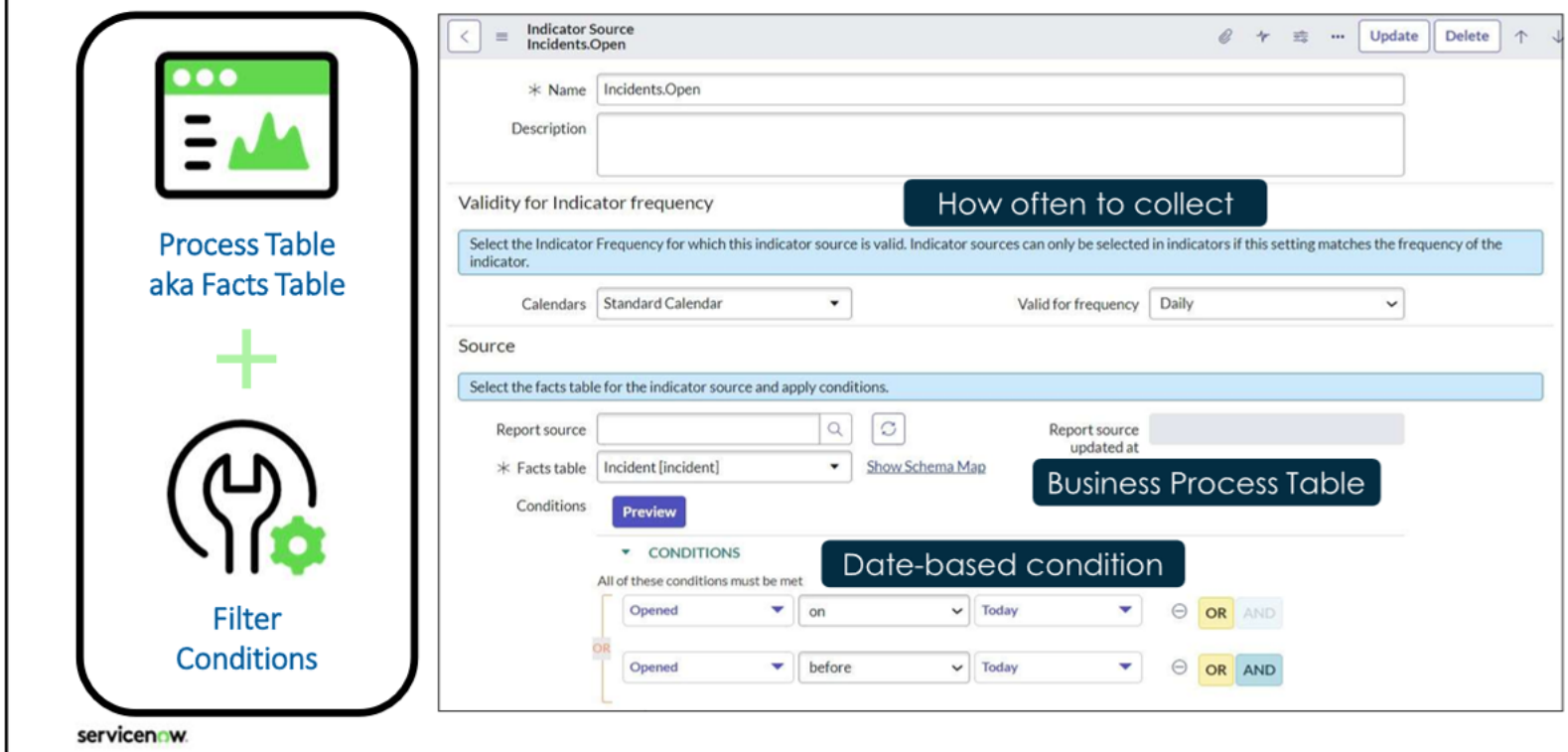
servicenow

This slide provides an overview of Indicator Dependencies:

1. An Indicator is based on an Indicator Source, as mentioned in the first module.
2. The Indicator Source defines a set of records specified by a condition on a process table. Many indicators can be defined using the same indicator source.
3. Existing Breakdowns may be linked to the Indicator. You learn about creating and configuring Breakdowns in the next module.
4. The indicator needs to be referenced by at least one collection job to build a trend of performance data. During collection, the Indicator Source is retrieved first.

© 2023 ServiceNow, Inc. All Rights Reserved

Indicator Source Configuration



Indicator Sources contain a subset of the business process data based on one or more conditions, such as “Incidents opened Today” or “Requests opened This Week.” Users with the pa_data_collect or pa_admin role may configure Indicator Sources.

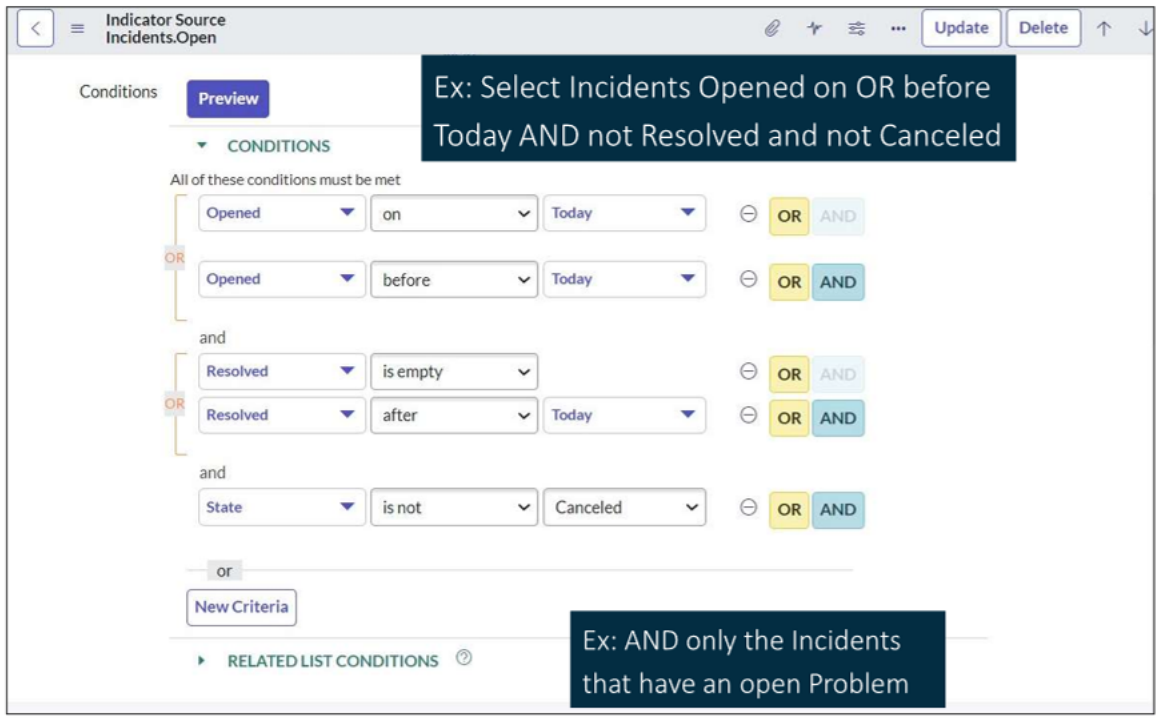
To define an Indicator Source, specify a **Facts table** (base ServiceNow process table) and a set of **Conditions** (extraction query). Alternatively, you can use an existing configured Report Source. Source Conditions are based on date(s) and should be kept generic so that multiple Indicators can be created based on the same indicator source.

Note: The term **Facts Table** comes from data warehousing and refers to a data source such as a data table or a view containing measurements (facts) of a business process.

© 2023 ServiceNow, Inc. All Rights Reserved

Source Conditions

- Filter Conditions limit the amount of Facts table data
- Any number of conditions can be linked by AND/OR
- Related List Conditions can check for **related records** in another table



servicenow

The conditions for selecting records from the Facts table or Report source can be comprised of multiple filter statements linked by AND/OR operators.

As a best practice, regularly validate that indicator sources are correctly configured. Use the **Preview** button to validate the data returned by the conditions you have configured.

Related List Conditions enable the selection of data from the Indicator Source Facts table depending on a condition based on another table.

For instance, the example would return all open and unresolved Incidents that also have a corresponding open Problem.

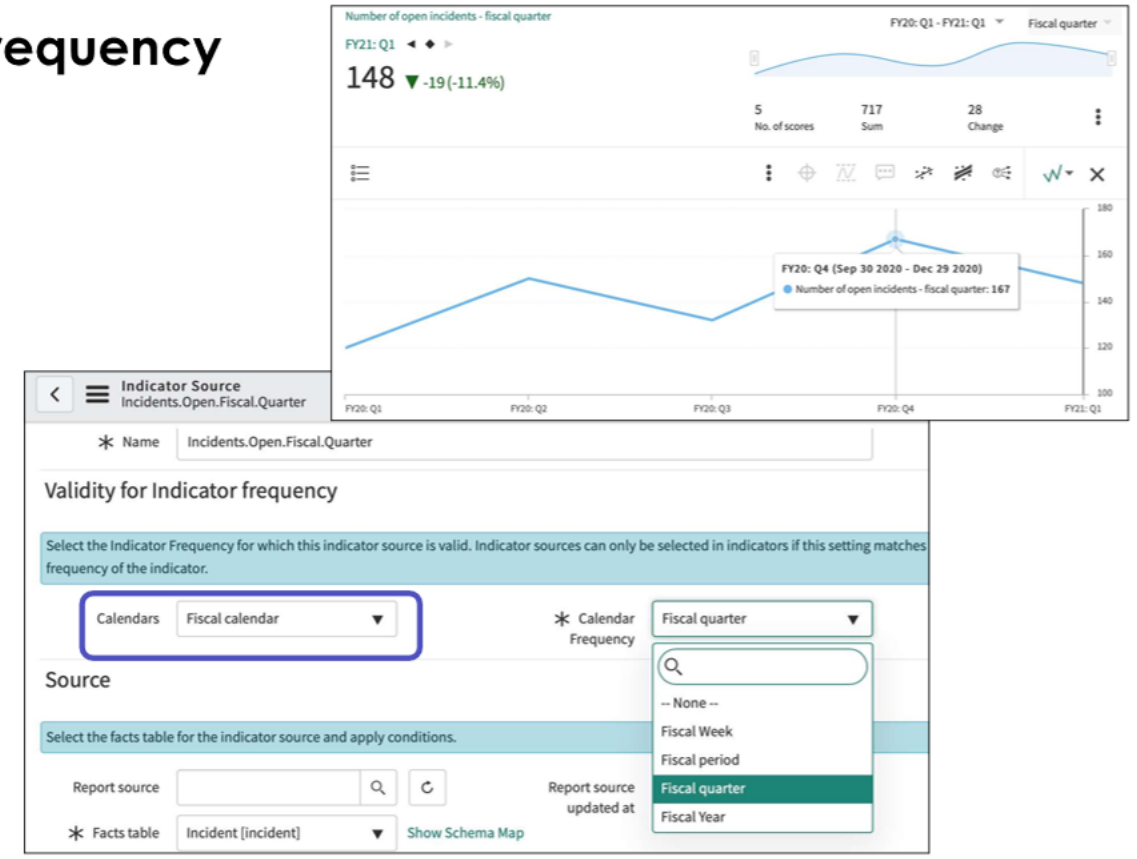
- As shown in the Conditions section, the initial set of records is identified by applying filters to the Incidents Facts table.
- The “Has Open Problems” filter (not shown in the slide) is defined through a Related List Condition. This condition joins the Incident and Problem tables to further refine the extraction query.
- Therefore, only those records identified by the primary conditions that also have open problems are returned.

Note: Related List Conditions can be defined for both Indicator Sources and Breakdown Sources.

© 2023 ServiceNow, Inc. All Rights Reserved

Calendars and Frequency

- The Standard Calendar lets you analyze scores in standard frequencies such as daily, monthly, etc.
- A custom calendar lets you analyze scores using business or custom time periods such as: Fiscal Year, Business Quarter, etc.



servicenow

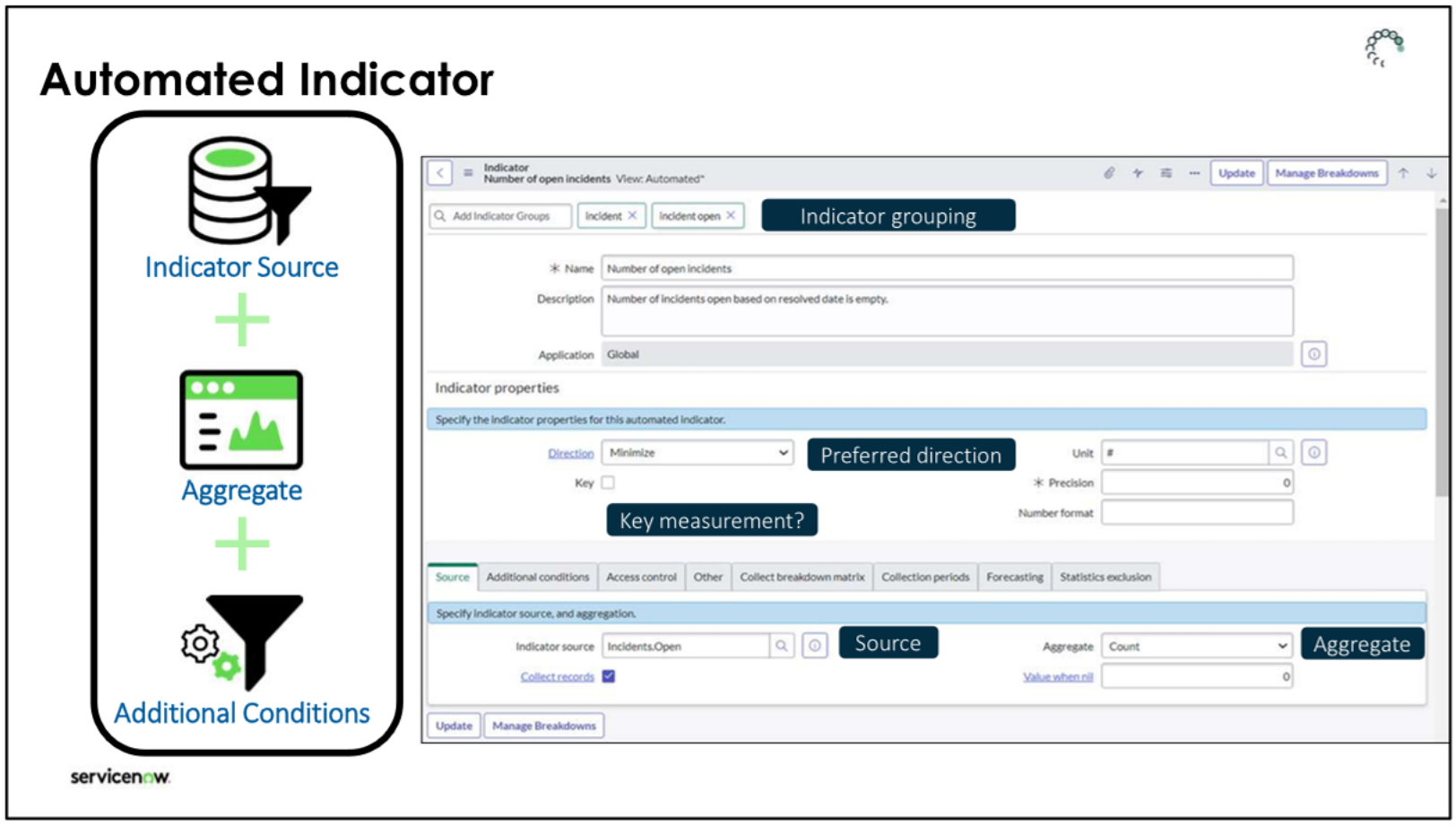
To select the interval for which to collect data (Daily, Weekly, Monthly, etc.,), from the **Calendars** field, select either the Standard Calendar or a business calendar that is defined in the instance.

If you select the **Standard Calendar**, you can select the frequency from a standard list of frequencies in the **Valid for Frequency** field. The default is **Daily.**

If you select a custom business calendar, the **Calendar Frequency** field appears. The business calendar you select determines the range of frequencies available.

Note: The frequency of data collection for any Indicator based on this Indicator Source should use the same frequency value. If you use a business calendar and later alter that business calendar's entries, you invalidate your Performance Analytics data. The scores you collected before changing the entries will not be compatible with the scores you collect after you change the entries.

© 2023 ServiceNow, Inc. All Rights Reserved



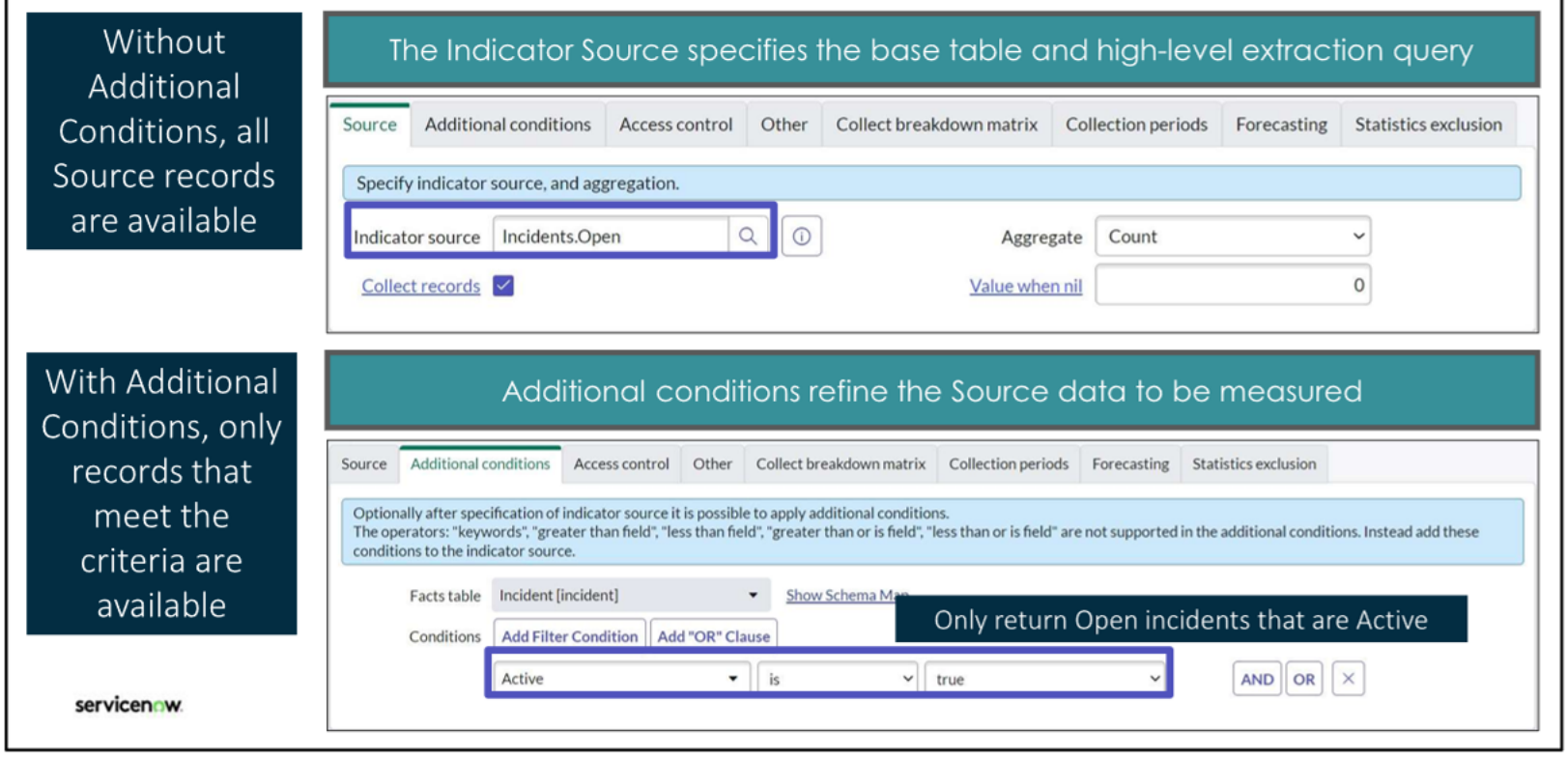
An Indicator requires an Indicator Source from which to obtain its data. Then, an aggregate is used to process the scores. Additional conditions may be used to further refine the source data. Multiple indicators can be created from the same indicator source varying the aggregate and/or the additional conditions.

To create and configure an automated Indicator, navigate to **Performance Analytics > Automated Indicators** > **New** and follow these steps:

- Add **Indicator Groups** to “tag” the indicator.
- Enter **Name** and **Description**. If no description is provided, it will be created automatically.
- Select a **Direction**: Is it better for scores trend up or down?
- Select a **Unit**: #, Day, %, etc.,
- Enter a **Precision** value, which is the number of decimal places.
- **Key**: Is this a key indicator? Displays with a ‘dot’ on the Analytics Hub Indicator list.
- **Indicator Source**: Select an appropriate existing Indicator Source.
- **Collect records**: Drill down to the records that determine a score and their details in the Analytics Hub.
- **Aggregate**: Select one of Count (default), Sum, Average, Minimum, Maximum, and Count Distinct.
- **Value when nil**: The value to display when the score is missing.

© 2023 ServiceNow, Inc. All Rights Reserved

Source and Additional Conditions



As mentioned previously, the Indicator Source extracts a predefined record set. When configuring an indicator based on that source, use the indicator **Additional conditions** to refine the data selection. This enables several Indicators to be created from the same indicator source and then differentiated via additional conditions.

Examples:

Number of open incidents not updated in last 30 days:

Indicator source: Incidents.Open

Additional conditions:

Facts table: Incident (same as the indicator source)
Condition: Updated on or before 30 days ago

Number of open and overdue incident assignments:

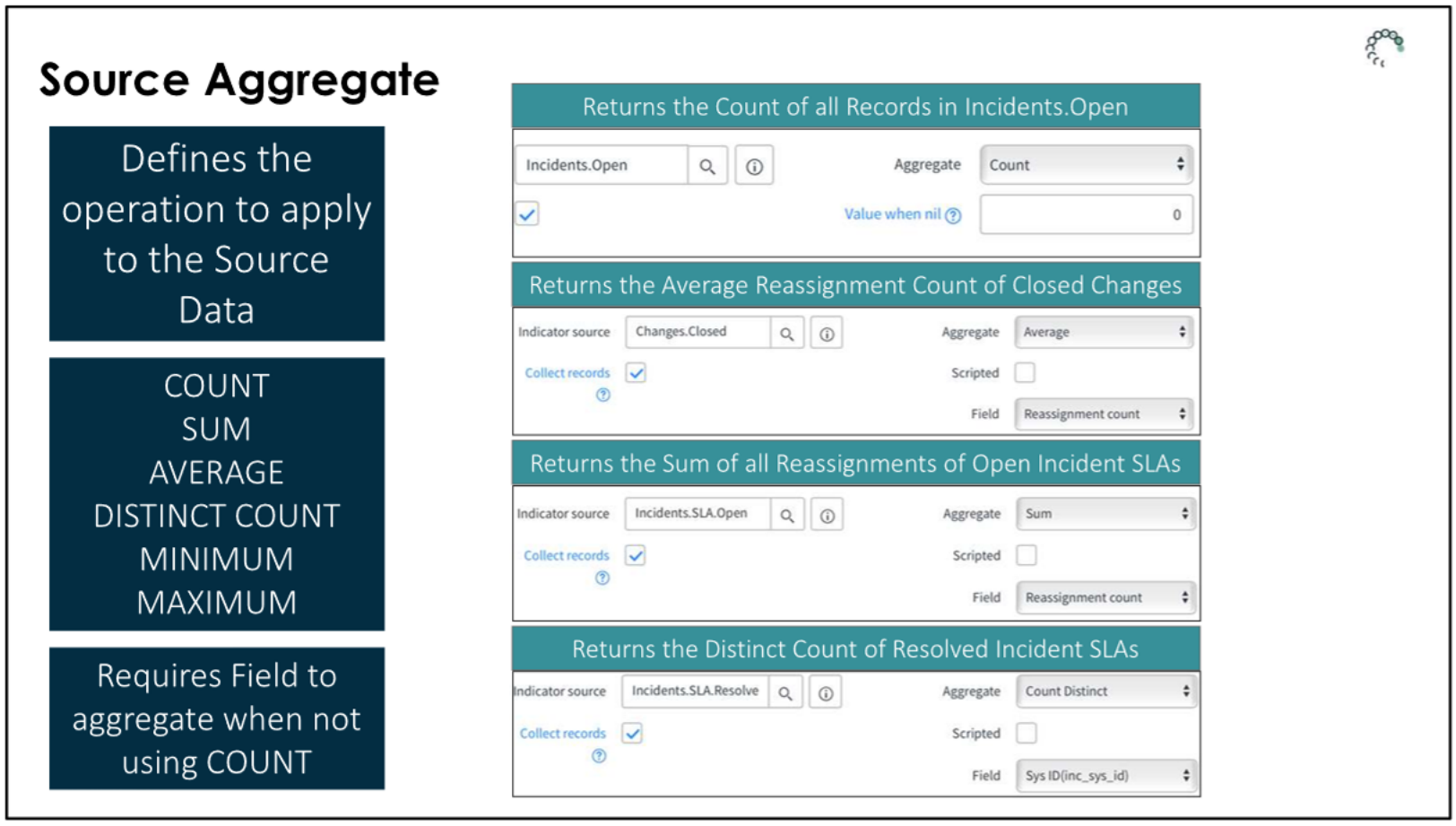
Indicator source: Incidents.Open

Additional conditions:

Facts table: Incident (same as the indicator source)

Condition: Escalation is Overdue

© 2023 ServiceNow, Inc. All Rights Reserved



The **Aggregate** is an operator which calculates the Indicator score. An Indicator configuration needs to apply an aggregate operation to the Indicator source so that a single metric can be obtained as the Indicator score.

Consider the Indicator “Number of Open Incidents” which runs daily. The Indicator Source returns the daily set of open incidents. To calculate the total number of Open incidents for that day, the **Count** aggregate is used.

When you calculate the Indicator score using any of these operations: **Sum**, **Average**, **Minimum**, **Maximum**, or **Count Distinct**, you also need to define the **Field** value.

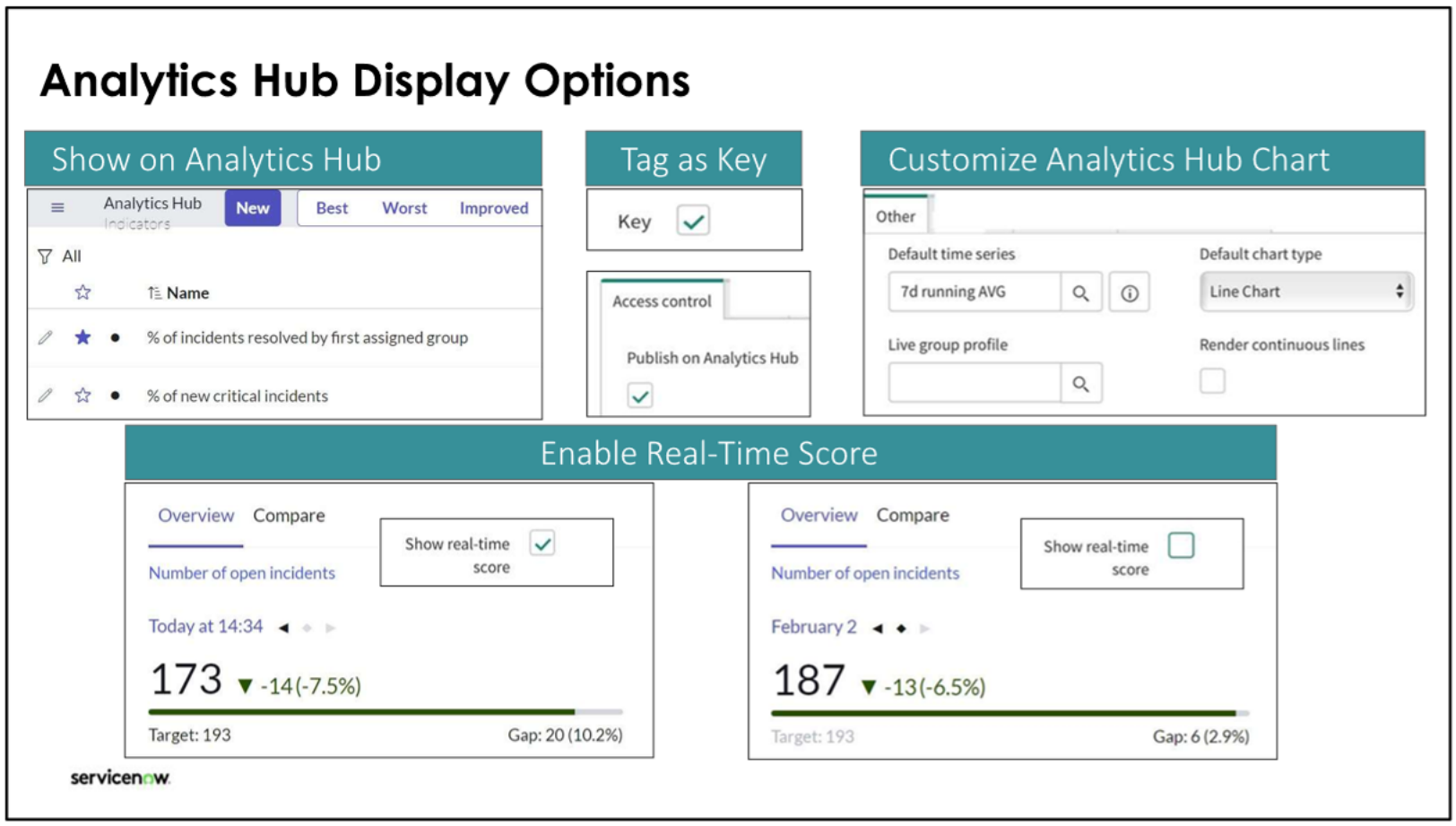
The first example returns a count of all **Open Incidents**.

The second example returns the **Average Reassignment Count** for all Changes.

The third example returns the total number of incident reassignments by summing up the **Reassignment Count** field.

The fourth example returns a count of unique unresolved incidents by using the **Count Distinct Aggregate** and the Sys_Id of the incident as a **Field**.

© 2023 ServiceNow, Inc. All Rights Reserved



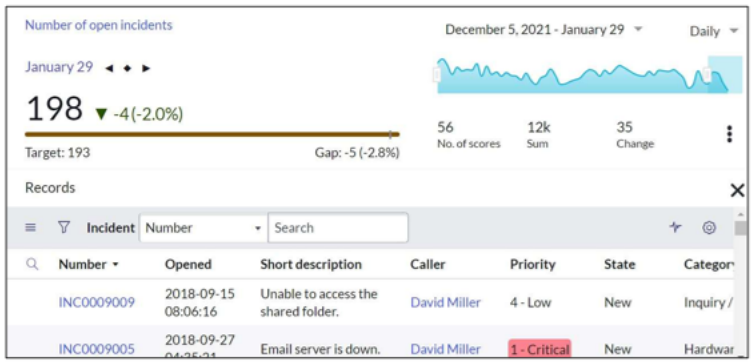
These additional viewing options are configured in the Indicator definition:

- Check **Publish on Analytics Hub** to make it visible in the Analytics Hub List.
- Check the **Key** checkbox to have the indicator show as 'key' in the Analytics Hub Indicator list (marked with black dot) and make it available within the search for Key indicators.
- **Default time series**: If set, the time series score is shown by default in the Analytics Hub. Exclusions can be applied.
- **Render continuous lines**: If no score is available for a specific date, the date is taken out when the chart is rendered so there will be no gaps in the chart.
- **Live group profile:** The live feed icon becomes visible and is related to the selected live feed group.
- **Order**: The order the indicator has in the Analytics Hub Indicator list. If no order is set, the order is alpha-numeric.
- **Default chart type**: The chart type (line, column, spline, area) when the indicator is viewed in the Analytics Hub.
- **Show real-time score:** It shows the score of this indicator in real-time, and the current state of associated records.

© 2023 ServiceNow, Inc. All Rights Reserved

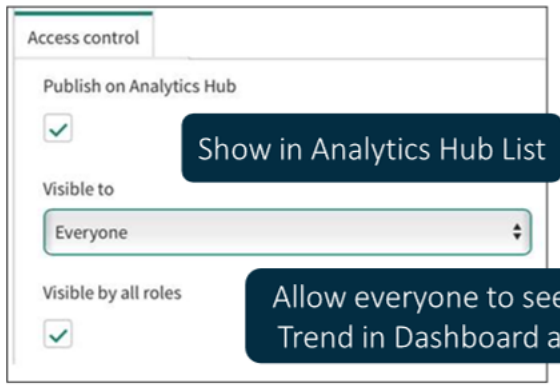
Access Control

Default Configuration: No viewing restrictions

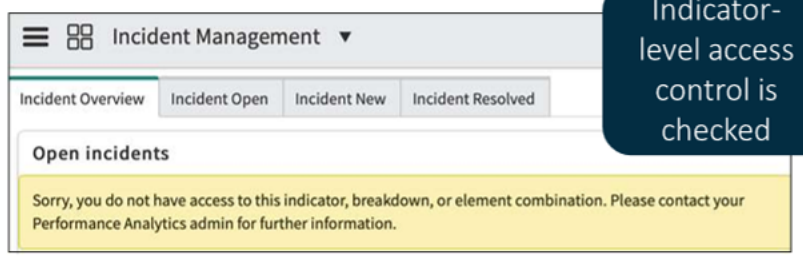


Facts table ACLs are checked

Score Trend is shown, but Record-level ACLs control the ability to Show Records in the Analytics Hub



When a user lacks the necessary Indicator Access control privilege, they cannot see Dashboard Widgets



Indicator-level access control is checked

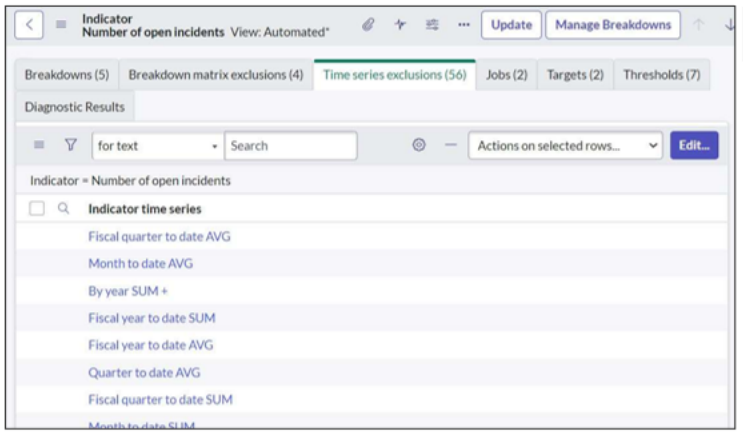
Access to an indicator's Score Trend is regulated by the Indicator's Access Control settings. In the default configuration, all users and roles are able to view an Indicator in a dashboard that is shared with them and drill down to its Analytics Hub. Only users with read access to the Indicator's Facts table are able to view the underlying records.

These visibility settings affect how an Indicator is presented in the Dashboard:

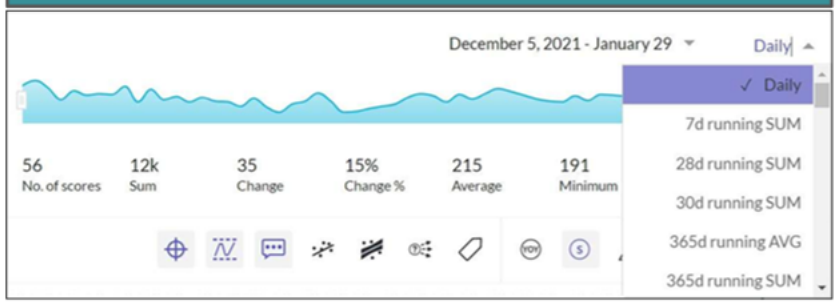
- Set Visible to **Everyone** and check **Visible by all roles** – this is the default configuration which allows anyone to view an indicator on a dashboard that is shared with them.
- Set Visible to **Everyone** and configure **Visible by all roles** to limit visibility to just the specified roles.
- Set Visible to **Groups and Users** and specify the groups and users that have access to this indicator.

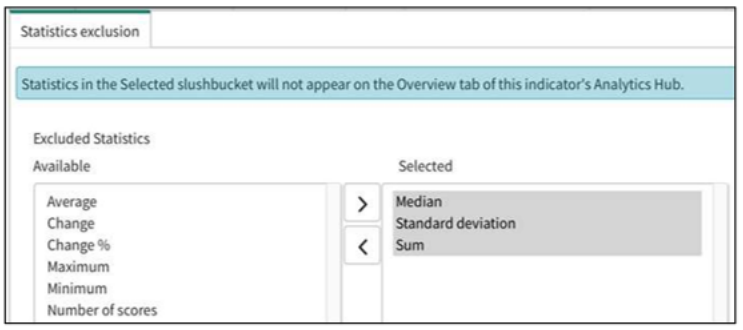
© 2023 ServiceNow, Inc. All Rights Reserved

Time Series and Statistics Exclusions

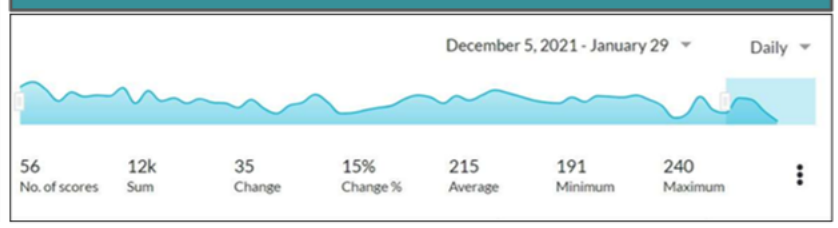


Exclude Aggregations that do not apply for this Indicator





Exclude unwanted Statistics



There are some situations when a SUM or an AVERAGE time series aggregation simply does not make sense. Consider these examples:

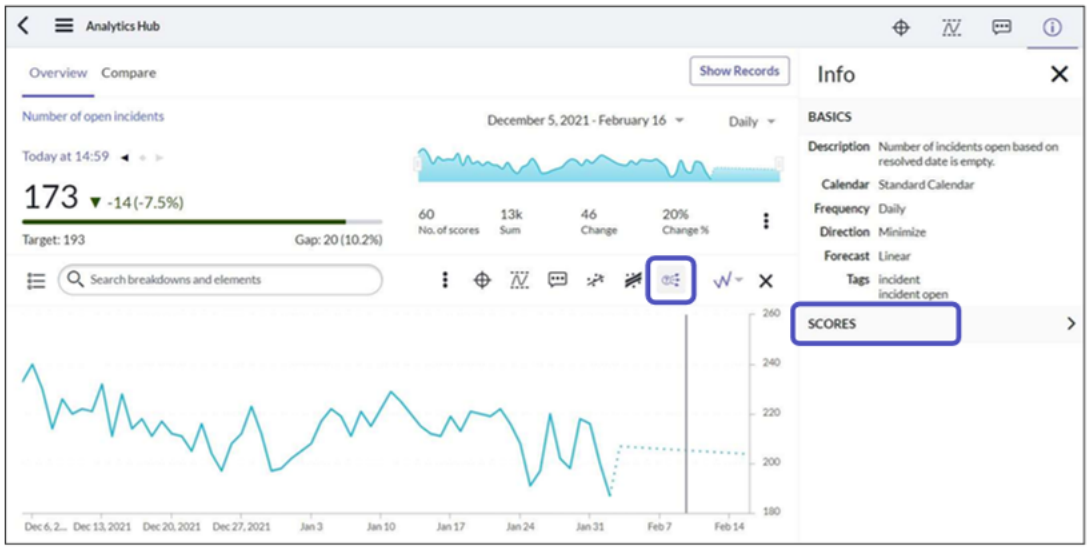
- The Number of Open Incidents indicator returns a count of all records that have been opened today or before today that are still open (not resolved or Canceled). Therefore, it would not make sense to present this information as a periodic SUM. To prevent Analytics Hub viewers from doing it, exclude all SUM time series aggregations.
- The Incident Average Age returns a current average age of all Open Incidents. A SUM of the Average Age would not be meaningful information. Therefore, it is recommended that you exclude all SUM time series aggregations for this Indicator.

Use the **Statistical exclusions** related list to prevent calculating specific statistics in Analytics Hub such as Median, Average, Min/Max, Change %, etc.,

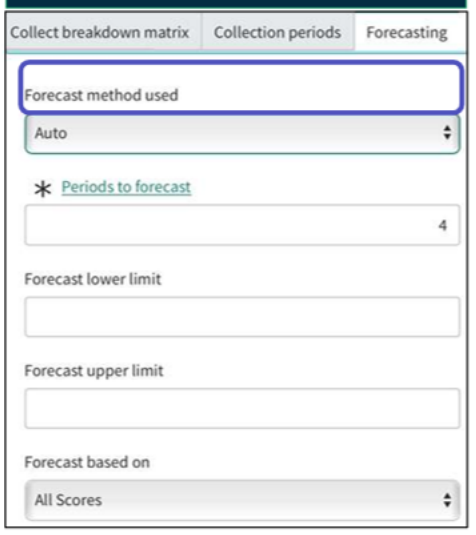
© 2023 ServiceNow, Inc. All Rights Reserved

Introduction to Forecasting

- Six different forecasting algorithms are available



Forecasting Methods:
- Linear
- Seasonal
- Seasonal Trend
- Seasonal Trend Loess
- Random Forest
- Autoregressive



The following forecasting algorithms are available:

- **Linear**: Generates a linear regression forecast based on the historical scores.
- **Seasonal**: Generates a seasonal forecast that is a copy of the previous season of data. Does not take trend data into account beyond the previous season.
- **Seasonal Trend**: Similar to Seasonal, but changes over time using the average historical records change.
- **STL (Seasonal Trend Loess)**: Generates a seasonal forecast based on a best-fit function, trend data, and a filter to exclude noise from random variation in the data.
- **Random Forest**: Based on decision trees.
- **Autoregressive**: Uses a linear combination of a trend, seasonal dummies, and past values.

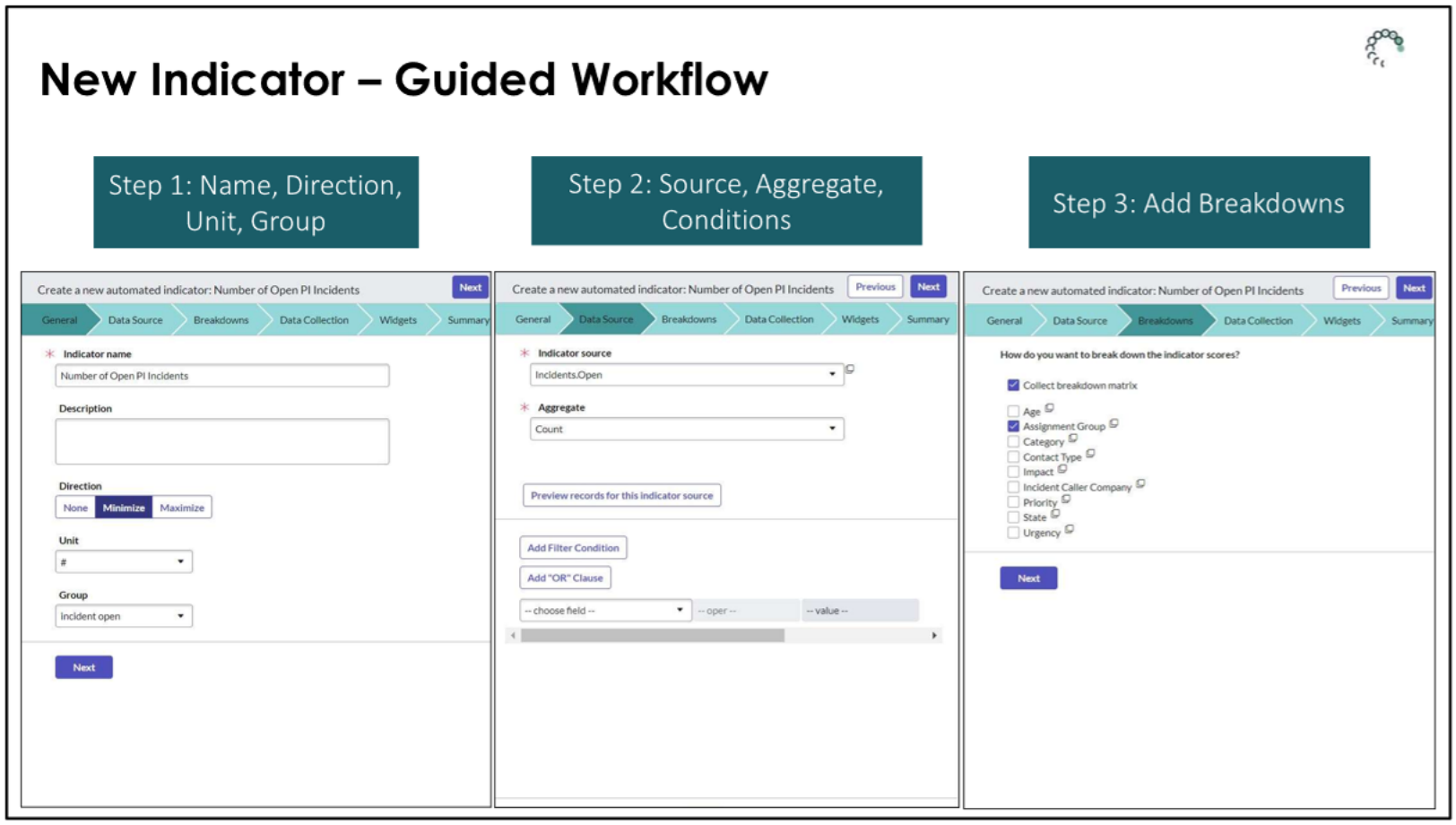
Period Length depends on Indicator Frequency. Daily Indicator period length is 7 days, Weekly is 13 weeks, and Monthly is 12 months, etc.

© 2023 ServiceNow, Inc. All Rights Reserved

As a best practice, always set the **Forecasting method used** property to **Auto**. When you do that, the engine calculates Forecasts for each method and compares them to the available historical data. Ultimately, the method with the best fit is selected.

The visuals above give an example of Forecast trends obtained when applying different Forecast methods to the same Indicator data.

© 2023 ServiceNow, Inc. All Rights Reserved

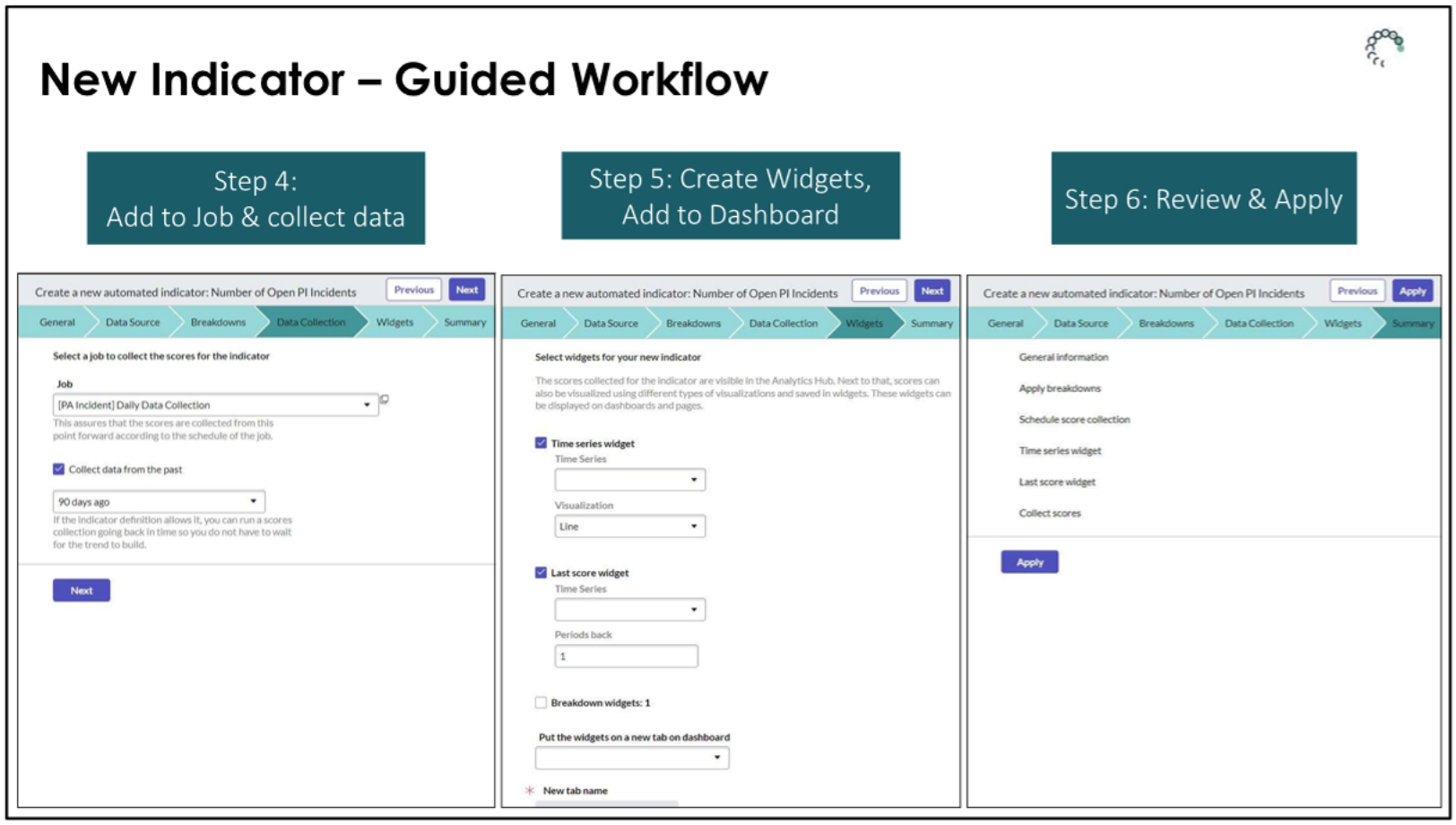


The guided indicator workflow allows you to create an Automated Indicator and its related Breakdowns, Data Collection Job, Widgets, and Dashboards using a step-by-step guided interface.

The benefit of using the guided indicator workflow, in addition to usability, is that non-admins can add the indicator to a job and automatically run data collection to collect historic metrics for the indicator they are building. Another benefit is the automatic creation of widgets and dashboard tabs.

Note: You learn about Breakdowns, Collection Jobs, Widgets and Dashboards in subsequent modules.

© 2023 ServiceNow, Inc. All Rights Reserved



The guided indicator workflow allows you to create an Automated Indicator and its related Breakdowns, Data Collection Job, Widgets, and Dashboards using a step-by-step guided interface.

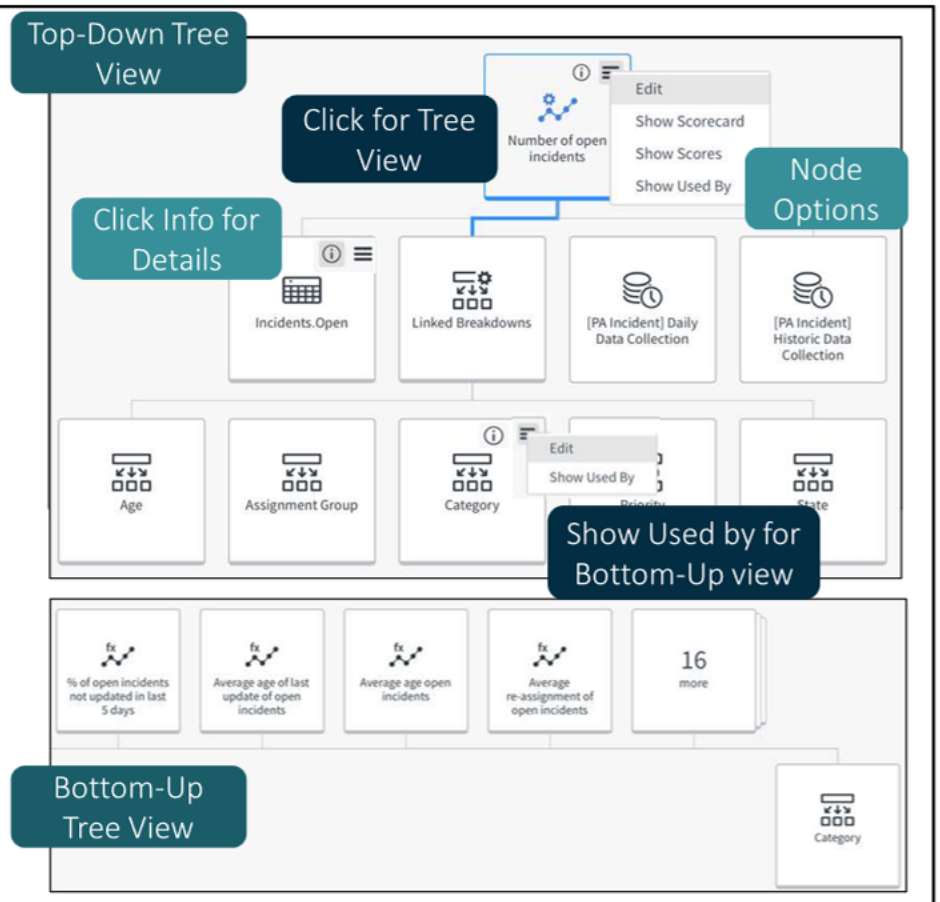
The benefit of using the guided indicator workflow, in addition to usability, is that non-admins can add the indicator to a job and automatically run data collection to collect historic metrics for the indicator they are building. Another benefit is the automatic creation of widgets and dashboard tabs.

Note: You learn about Breakdowns, Collection Jobs, Widgets and Dashboards in subsequent modules.

© 2023 ServiceNow, Inc. All Rights Reserved

Dependency Assessment

- Hierarchy of Performance Analytics components and their relationships
- Helps understand the impact of component changes
- It can be launched from Indicators, Sources, Widgets, Breakdowns, and Analytics Hub



The dependency assessment is a graphical UI that shows component relationships in a hierarchical view. It can be launched from most configuration forms and the Analytics Hub.

- Clicking a component icon opens a hierarchical Top-down tree view of all configured dependencies.
- Clicking the node menu and selecting **Show Used by** item shows all components that use the selected one – this is the Bottom-up view.
- Component context menus differ according to the component type. All components have the Edit, Show Used by, and Info menu options.

© 2023 ServiceNow, Inc. All Rights Reserved

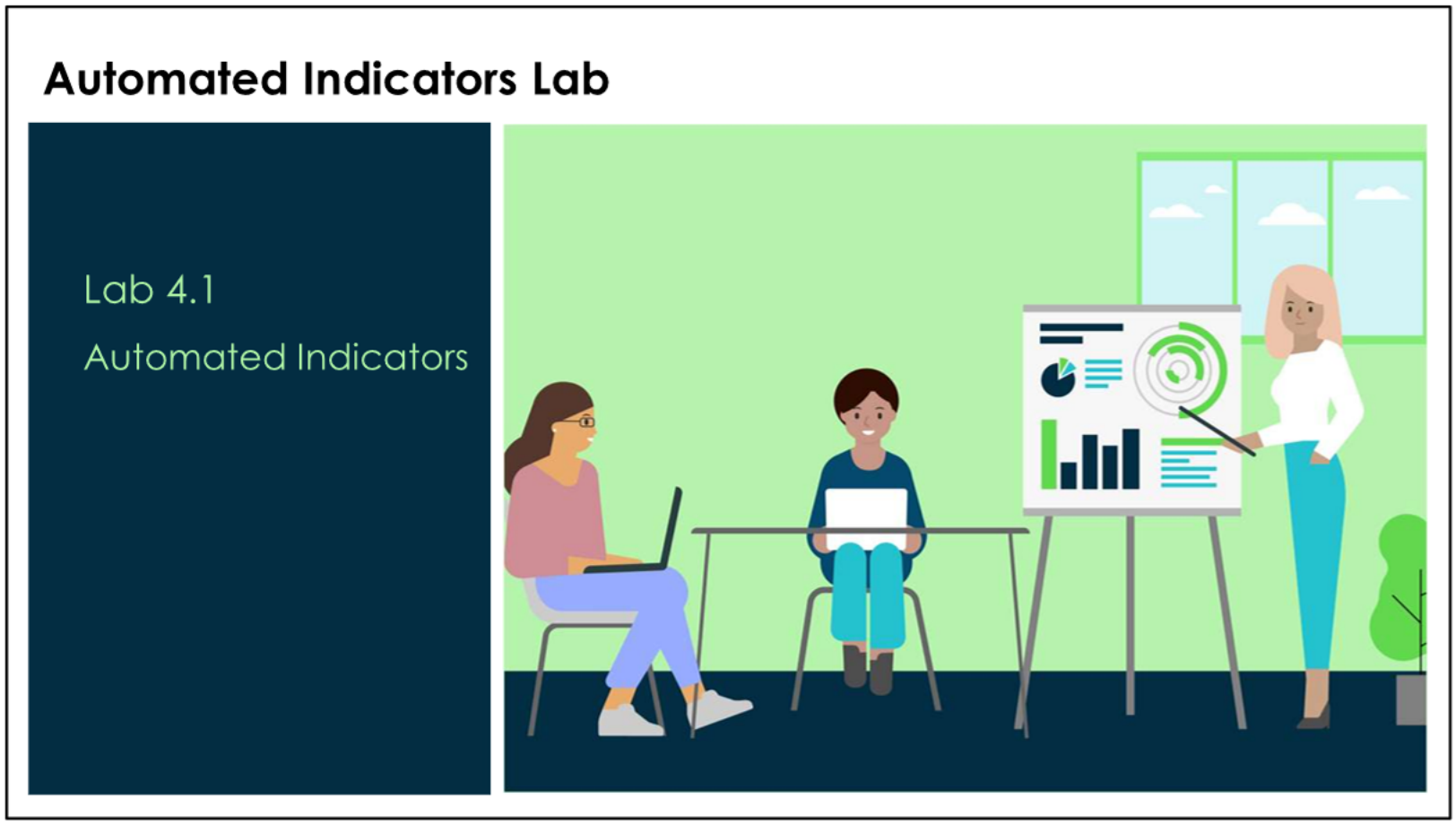
Indicator Source Management

- Validate the base-system Sources
- Always include a Date/Time field in the Source Condition
- Keep Source Conditions Generic
- Base Multiple Indicators on the Same Source and vary the Aggregate and/or the Additional Conditions
- Group Indicators with the same Source in one Collection job
- Use the Dependency Assessment to view existing dependencies

servicenow

Consider the above best practices when working with Indicators and Indicator Sources.

© 2023 ServiceNow, Inc. All Rights Reserved



4.1 Automated Indicators Lab

- Create a New Automated Indicator using the Guided Indicator Workflow
- Create a New Indicator Source
- Create an Automated Indicator using the Indicator Form

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Automated Indicators

Lab 4.1

⌛20 minutes

Lab Objectives

Performance Analytics Power Users at Glide Haven plan to implement KPIs to monitor the health of business processes and services. In this lab, you perform the following:

- Create a new indicator using the Guided Indicator Workflow
- Collect and view Indicator data in the Analytics Hub and on Widgets
- Create a new indicator source and an indicator manually

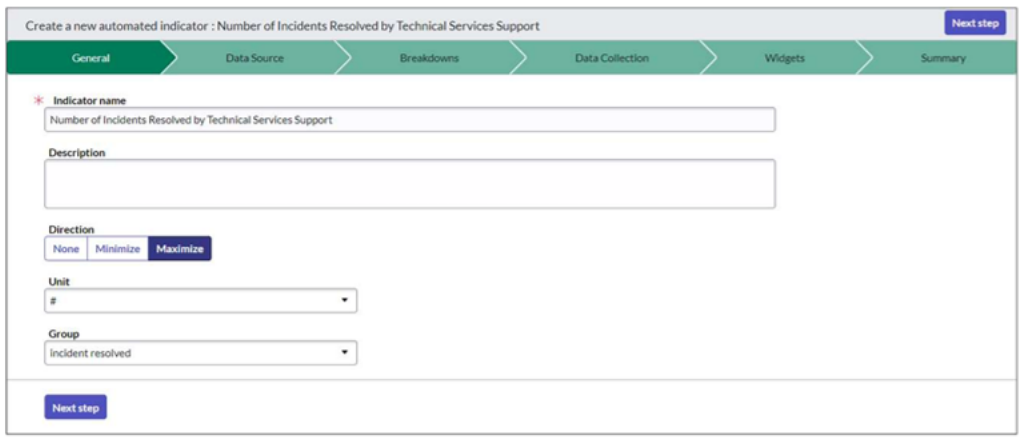
A. Automated Indicator Creation – Guided Setup

Guided Indicator Setup

In this section, you create a new automated indicator using the Guided Setup to track *incidents resolved by the Technical Services Support group*.

1. Access the lab environment and impersonate the **PA Power User**.
2. Navigate to **Performance Analytics > Indicators > Create New**.
3. Complete the **General** tab as follows:
   - Indicator name: **Number of Incidents Resolved by Technical Services Support**
   - Direction: **Maximize**
   - Unit: **#**
   - Group: **incident resolved**

Note: *Do not enter a Description as the system auto-completes the field once the Indicator is created.*



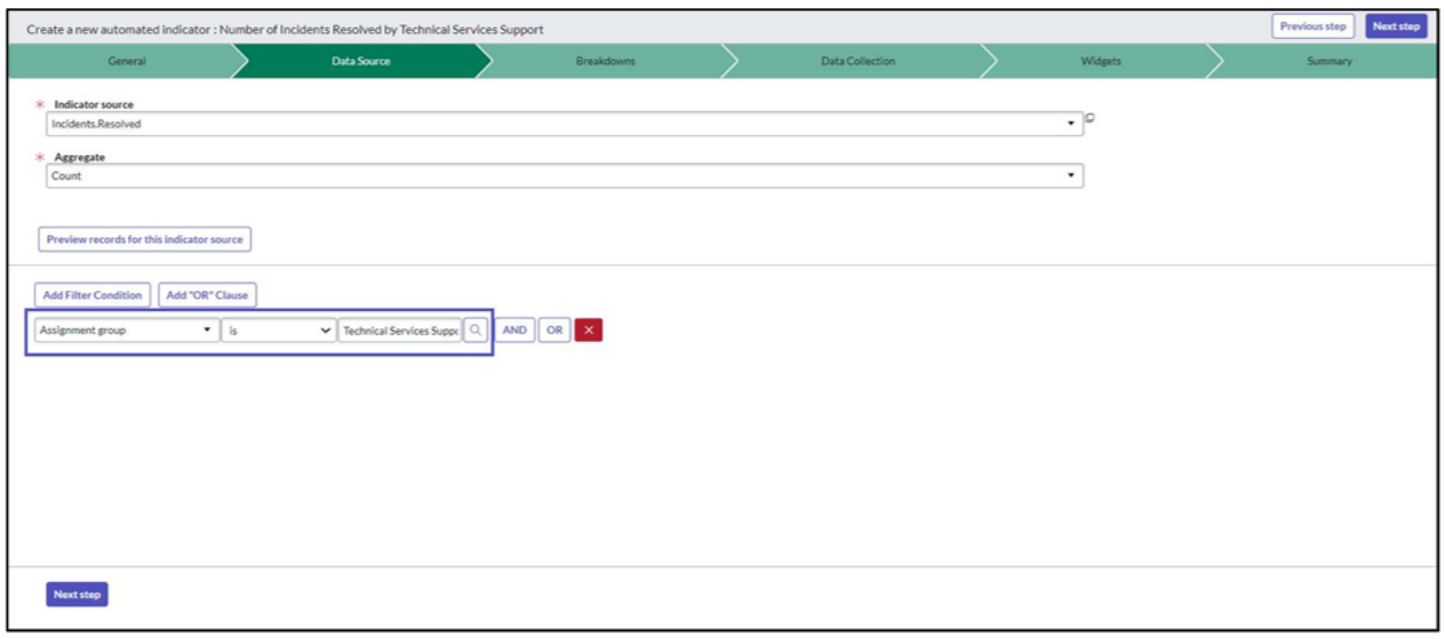
© 2023 ServiceNow, Inc. All Rights Reserved

4. Click **Next step**.

5. Complete the **Data Source** tab as follows:

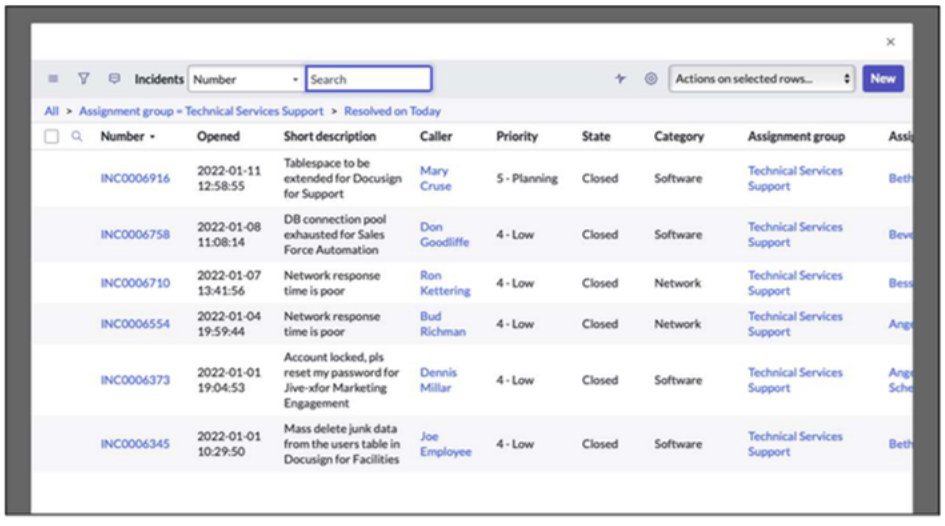
   Indicator source: **Incidents.Resolved**
   Aggregate: **Count**

   Under **Add Filter Condition**, enter the following:
   Assignment group | is | Technical Services Support



6. Click **Preview records for this indicator source** to view today's incidents resolved by the Technical Services Support group.

   Note: *Your data may differ slightly from the example.*

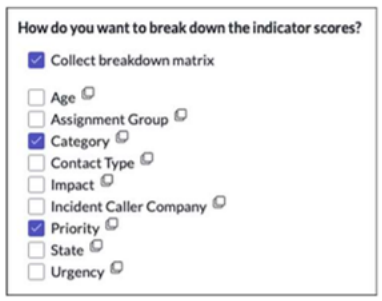


7. Close the preview window and click **Next step**.

© 2023 ServiceNow, Inc. All Rights Reserved

8. Enable the following choices in the **Breakdowns** section:

   - **Collect breakdown matrix**
   - **Category**
   - **Priority**

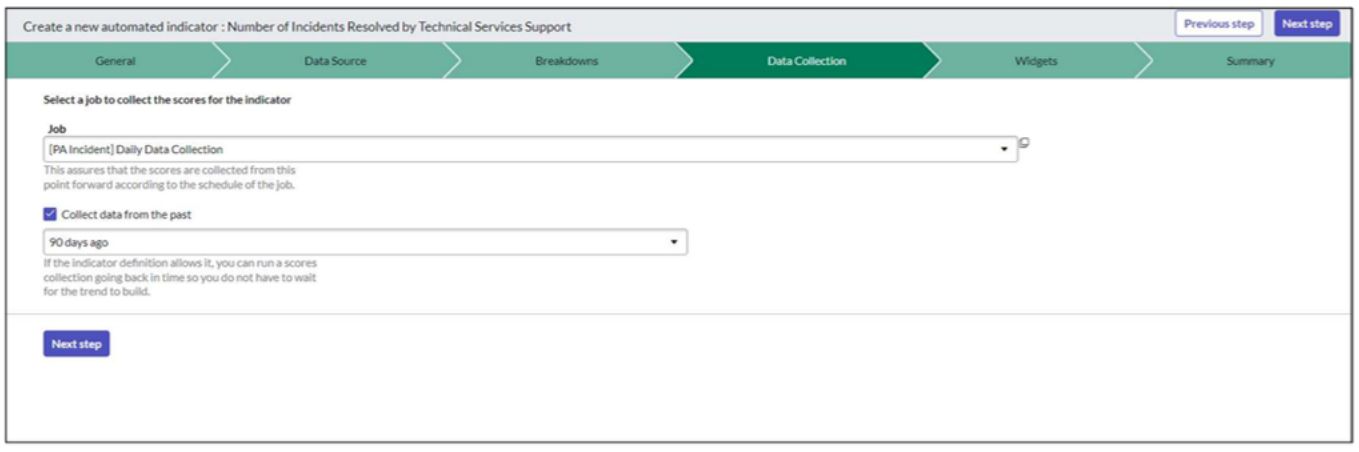


9. Click **Next step**.

10. Complete the **Data Collection** tab as shown:

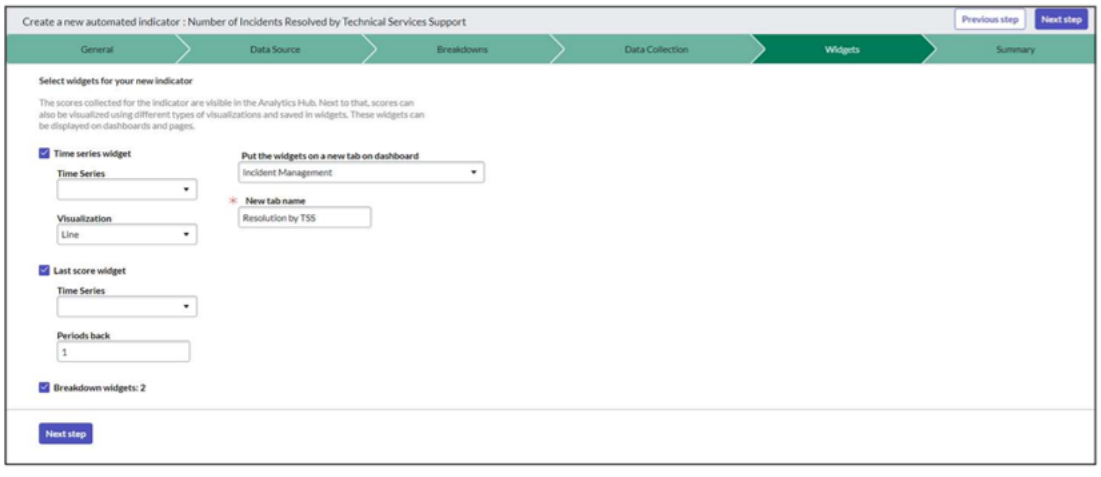
    Job: **[PA Incident] Daily Data Collection**
    Collect data from the past: [**checked**] and select **90 days ago**

11. Click **Next step**.



12. Complete the **Widgets** tab as follows:

    Time series widget: [**checked**]
    Last score widget: [**checked**]
    Breakdown widgets: 2: [**checked**]
    Put the widgets on a new tab on dashboard: **Incident Management**
    New tab name: **Resolution by TSS**



© 2023 ServiceNow, Inc. All Rights Reserved

> ***Note:*** *The above action creates four new widgets – a trend line, a last score, two breakdown widgets, and adds them to a new tab* ***Resolution by TSS*** *on the* ***Incident Management*** *dashboard.*

13. Click **Next step**.

14. Click **Apply** to initiate creation. Wait until the configuration and data collection completes.

Configuration Verification

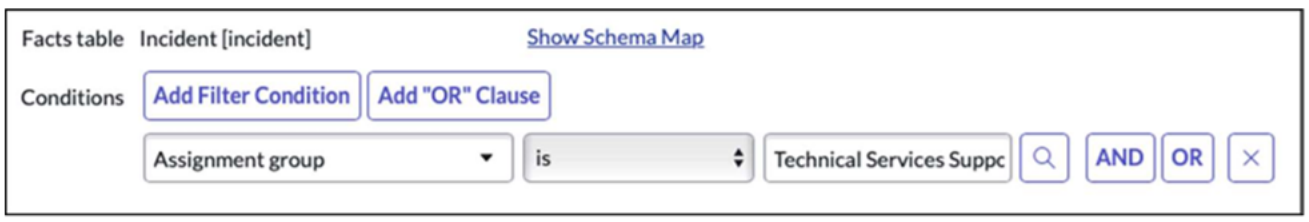
1. Click **View Indicator** after the creation process completes.

2. Review these fields to make sure they match the properties you specified in the steps you just completed:

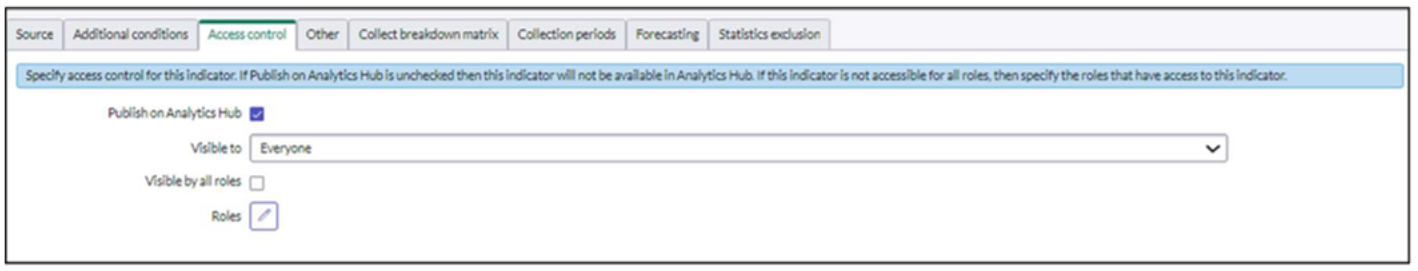
Indicator Groups	**Direction**	**Indicator Source**
Name	**Unit**	**Aggregate**

> ***Note:*** *The Description has been completed with all relevant configuration detail.*

3. Click the **Additional conditions** tab to review the filter conditions.



4. Navigate to the **Access control** tab and check the **Publish on Analytics Hub** checkbox.



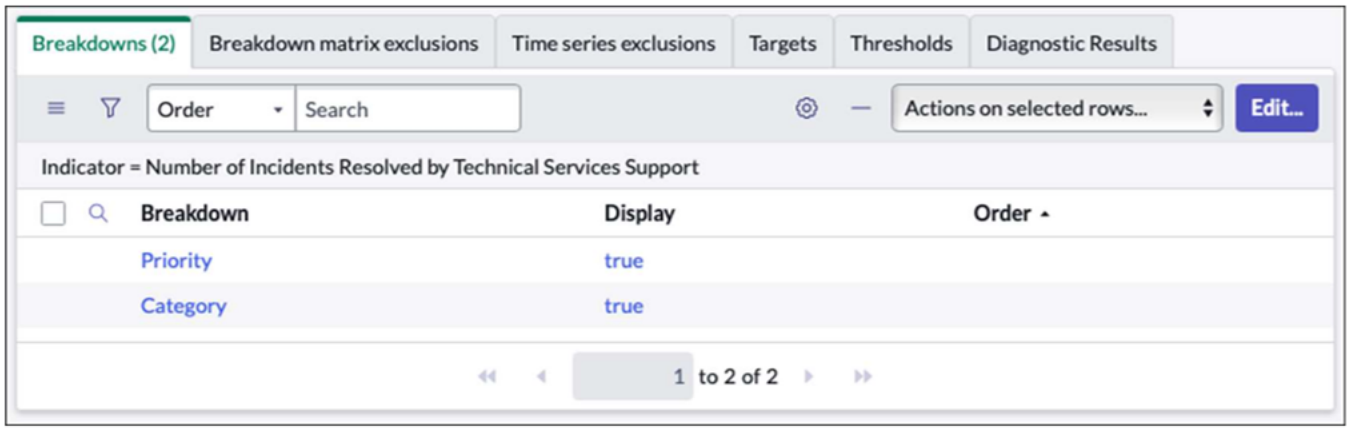
© 2023 ServiceNow, Inc. All Rights Reserved

5. Confirm that the **Collect breakdown matrix** property under the **Collect breakdown matrix** tab is checked.

6. Select **Save** from the form context menu.

7. Navigate to the **Breakdowns** Related list.

   Confirm that the Breakdowns are **Priority** and **Category** and then **Save**.

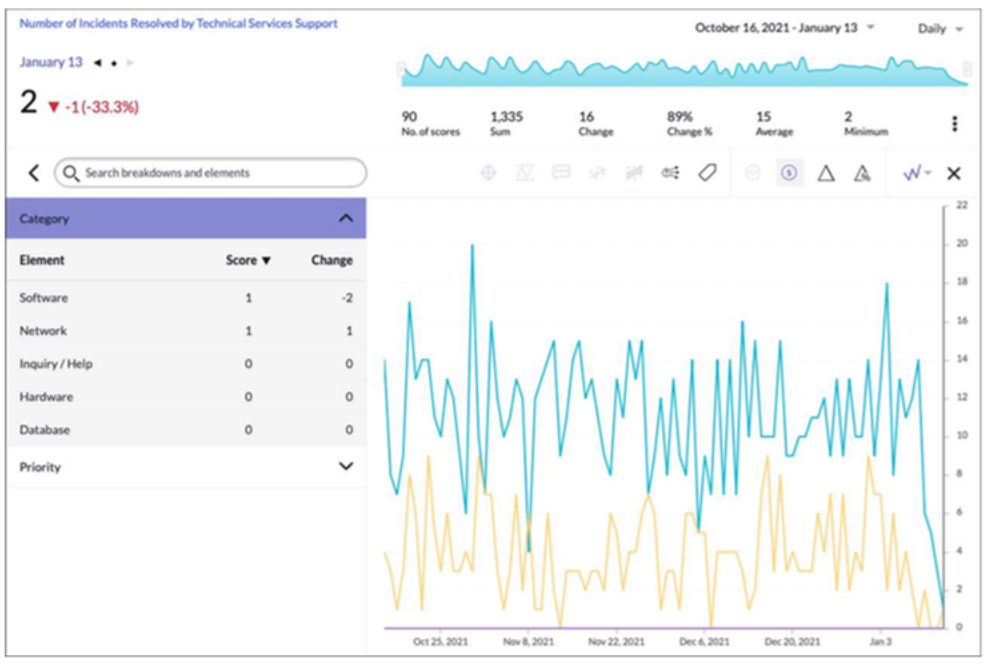


Data Verification

1. Select the **Show Analytics Hub** Related Link (you may need to scroll down on the form to see the link).

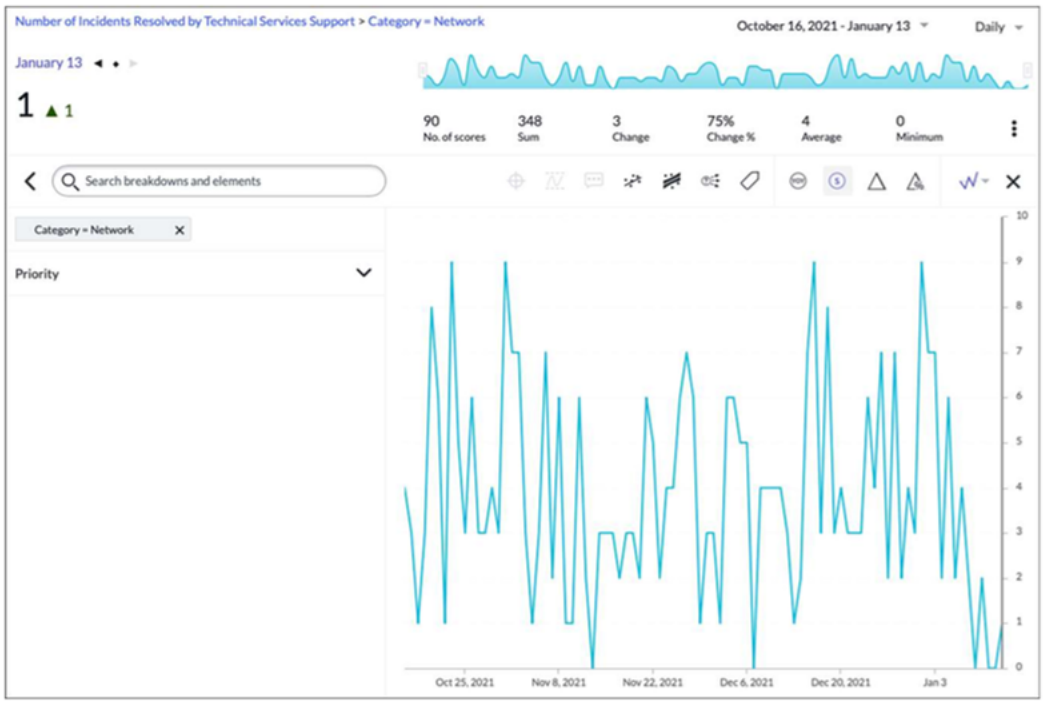
2. Click the **Breakdowns** button to view data by Breakdowns.

3. Expand the **Category** Breakdown.

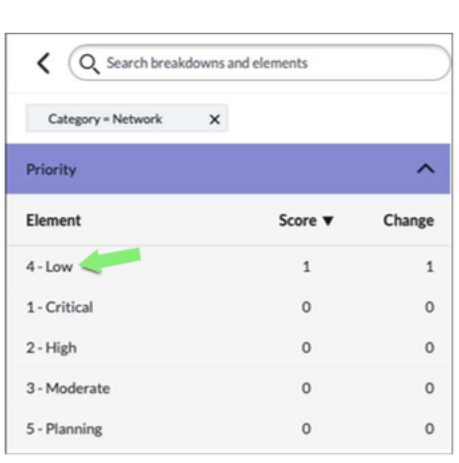


© 2023 ServiceNow, Inc. All Rights Reserved

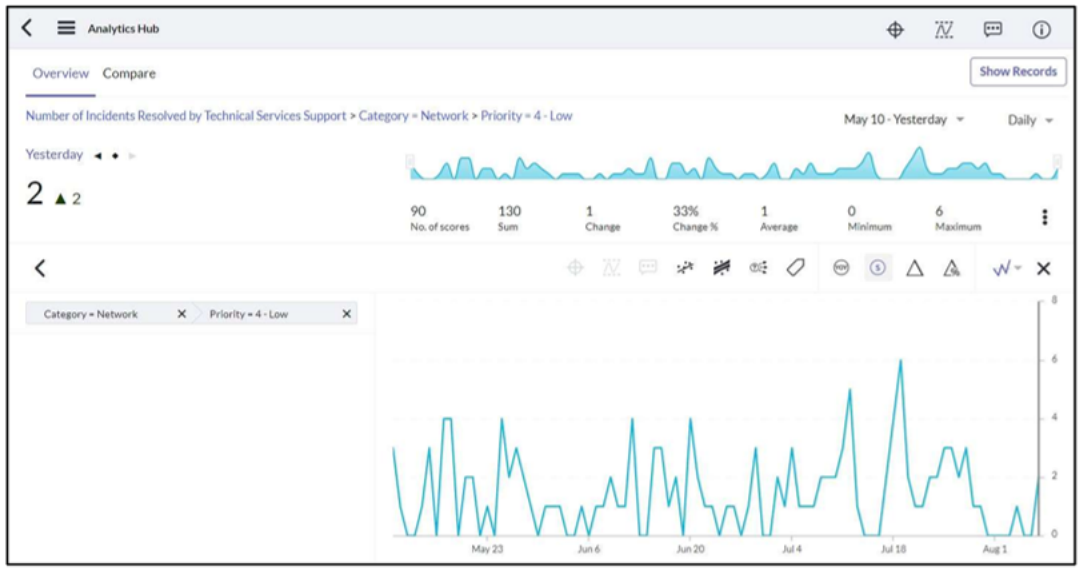
4. Click the **Network** element to display only Incidents from the **Network** category.



5. Expand the **Priority** breakdown and select **4 - Low** to apply a second Breakdown.



6. Confirm that the chart currently displays **Network** incidents with **4 - Low** priority.

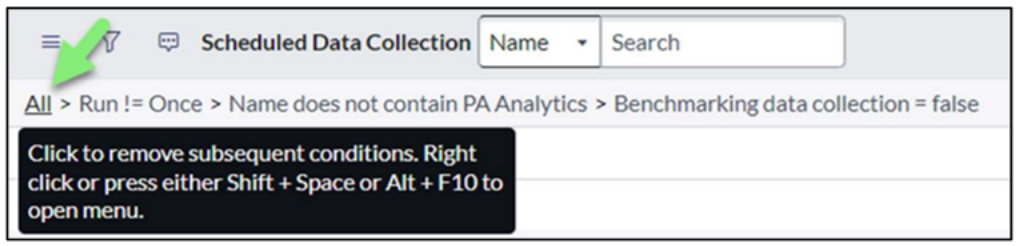


© 2023 ServiceNow, Inc. All Rights Reserved

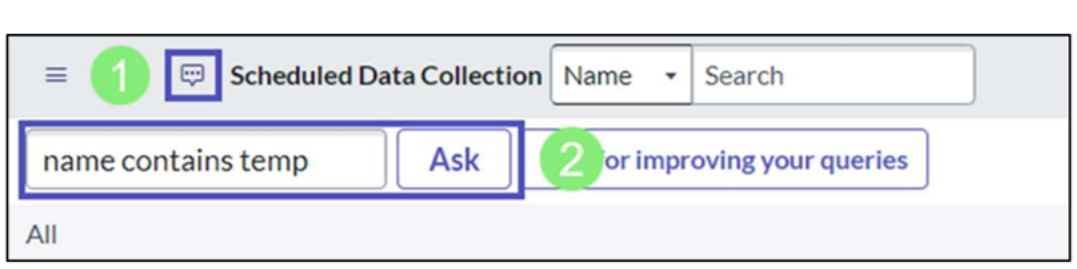
7. Close the **Analytics Hub** window.

Collection Job Verification

1. Impersonate the **PA Data Collector** user.
2. Navigate to **Performance Analytics > Data Collector > Jobs**.
3. Click **All** in the filter breadcrumb to display an unfiltered list of all jobs.



4. Select the **Show/hide natural language filter** button.
5. Search for a temporary job by typing "**name contains temp**" and press **Ask** or the Enter key:



6. Open the temp job and confirm that it is set to run **Once** and only collects a single indicator.
7. Navigate back to **Performance Analytics > Data Collector > Jobs**.
8. Open the **[PA Incident] Daily Data Collection** job**.**
9. Navigate to the **Indicators** Related List.
10. Confirm that the **Number of Incidents Resolved by Technical Services Support** indicator has been added.
11. End Impersonation.

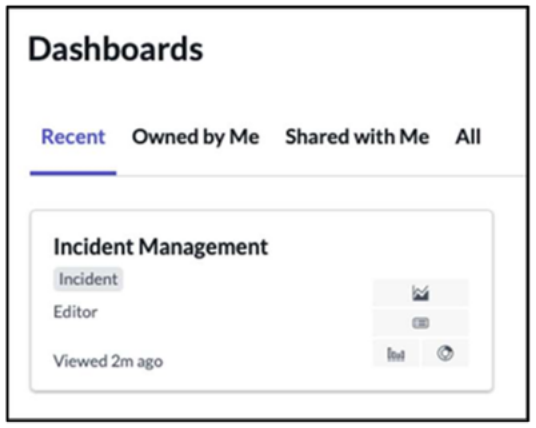
© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

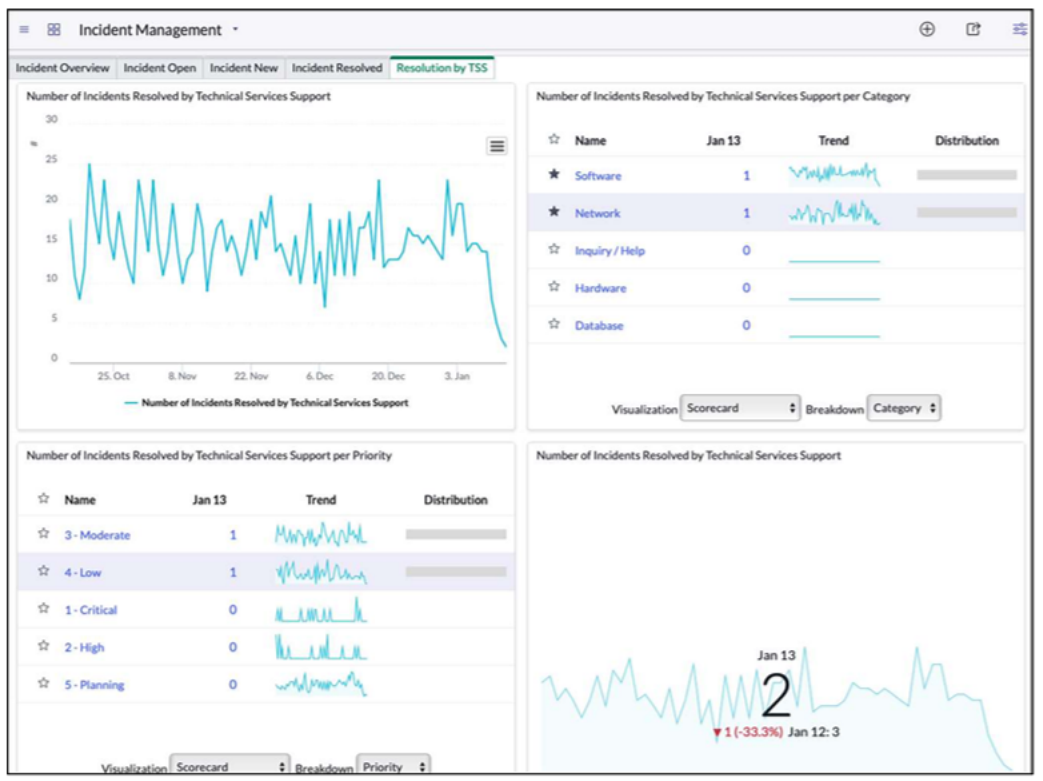
Widget Verification

In this step, you access the newly created dashboard tab and review the new widgets.

1. Impersonate the **PA Power User**.
2. Navigate to **Performance Analytics > Dashboards**.
3. Open the **Incident Management** dashboard. If not visible under **Recent**, select **All** and perform a search.



4. Navigate to the **Resolution by TSS** tab.
5. Verify the presence of four new widgets. (Your widgets will appear in a single column.)



6. End Impersonation.

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

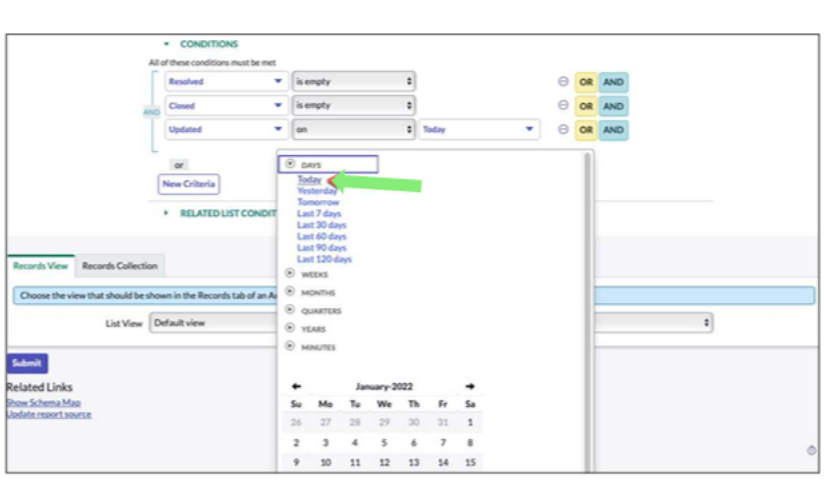
B. Automated Indicator Creation

Here you create a new indicator to track *updated incidents* without using the Guided Workflow.

Indicator Source Creation

The source data for the planned new Indicator is all Updated Incidents that have not yet been Resolved or Closed. The steps below guide you through the Indicator Source creation.

1. Impersonate **PA Admin**.
2. Navigate to **Performance Analytics > Sources > Indicator Sources**.
3. Click **New**.
4. Fill the Indicator Source form as follows:
   - Name:
     Incidents.Updated
   - Valid for frequency:
     Daily
   - Source:
     Facts table: **Incident [incident]**
   - Conditions:
     Resolved | is empty |
     AND
     Closed | is empty |
     AND
     Updated | on | Today



> ***Hint:*** *Click **DAYS** to display the **Today** option*

5. Click **Submit**.

Form-Based Indicator Creation

Next, you create an Automated Indicator based on the *Incidents.Updated* source to track daily counts of updated incidents.

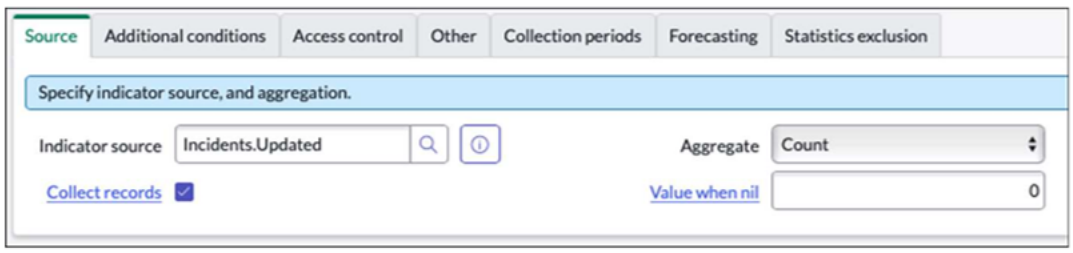
© 2023 ServiceNow, Inc. All Rights Reserved

1. Navigate to **Performance Analytics > Indicators > Automated Indicators**.

2. Click **New**.

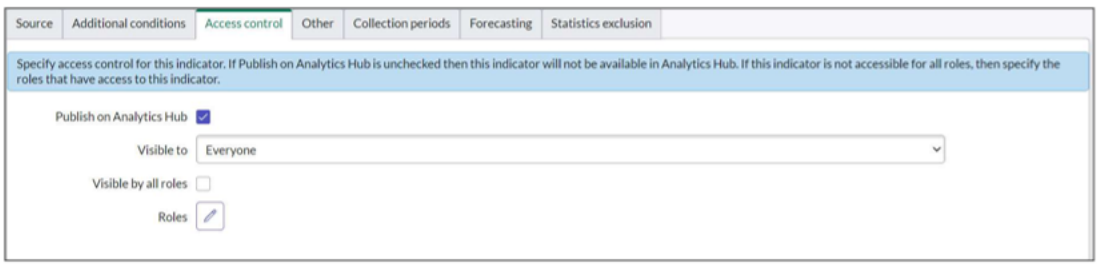
3. Complete the form as follows:
   Name: **Number of updated incidents**
   Frequency: **Daily**
   Direction: **Maximize** – because a higher number is preferable
   Unit: **#**

4. Complete the **Source** tab as shown:
   Indicator source: **Incidents.Updated**
   Aggregate: **Count** (default)
   Value when nil: **0**



5. Complete the **Access control** tab as shown:

   Publish on Analytics Hub: **[checked]**



6. Open the **Other** tab and check:

   Render continuous lines
   Show real-time score

7. Select **Save** from the form context menu.

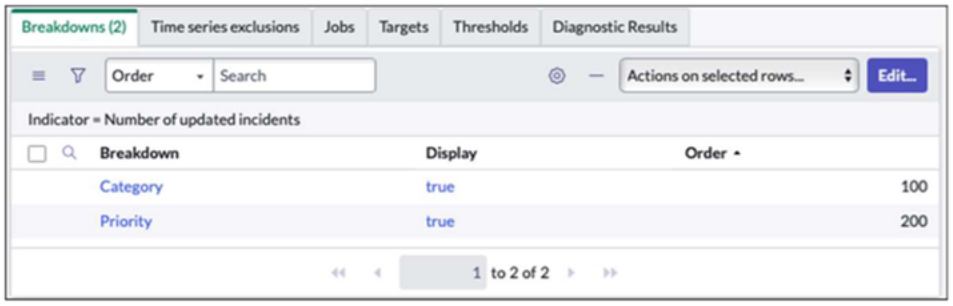
   Note: *The system automatically completes the* ***Description*** *field using the configuration information. This feature is for Automated Indicators only.*

8. Navigate to the **Breakdowns** Related List.

9. Click **Edit…** and add the **Priority** and **Category** Breakdowns.

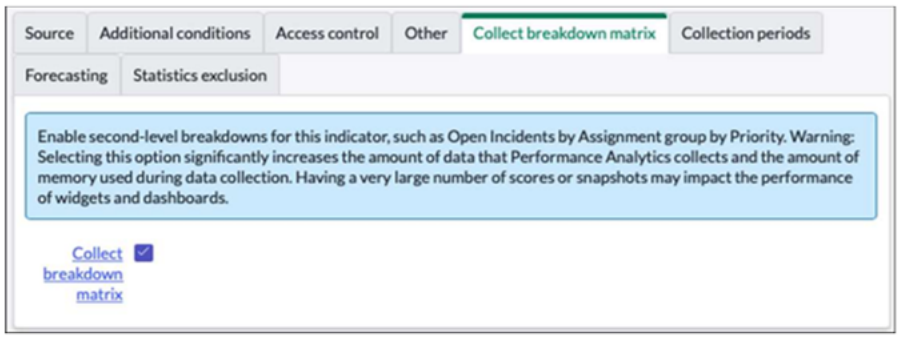
© 2023 ServiceNow, Inc. All Rights Reserved

10. Click **Save** to return to the Indicator form.



11. Navigate to the **Collect breakdown matrix** tab.

12. Enable the **Collect breakdown matrix** property.



Tip: *This property allows you to apply a 2nd breakdown.*

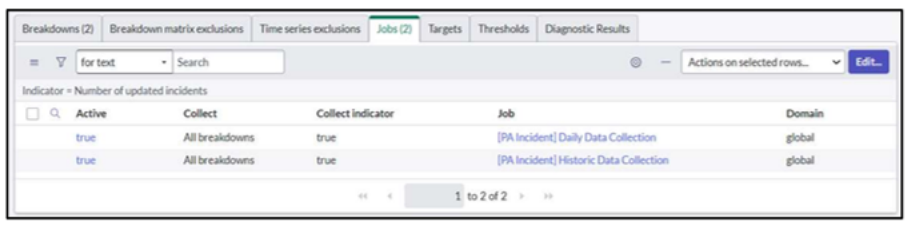
13. **Save** the Indicator.

14. Navigate to the **Jobs** related list.

15. Click **Edit..** and add these two jobs to the Jobs List:

    [PA Incident] Daily Data Collection
    [PA Incident] Historic Data Collection

16. Click **Save** to return to the Indicator form.



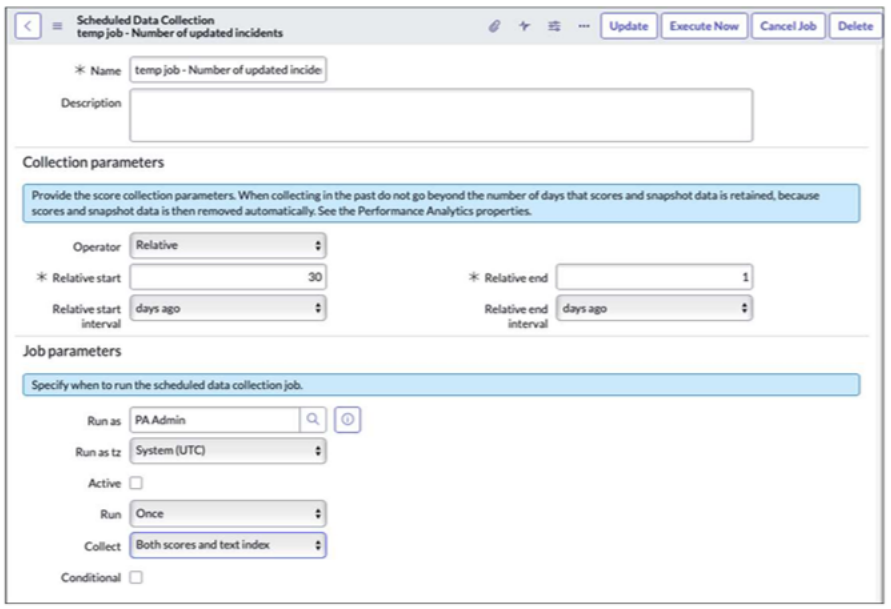
Note: *This action adds the Indicator to the Daily and Historic Incident Collection jobs.*

© 2023 ServiceNow, Inc. All Rights Reserved

Data Collection

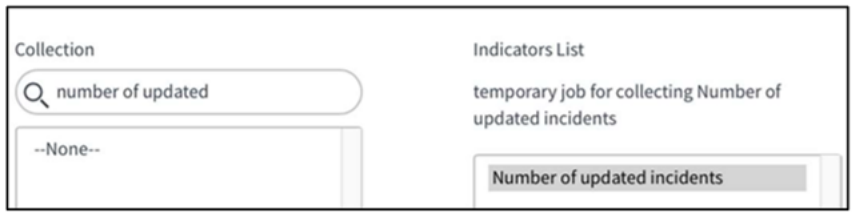
Even though future scheduled data collection will collect for the new Number of updated incidents indicator, an ad-hoc historical job is needed to populate past scores.

1. Navigate to **Performance Analytics** > **Data Collector** > **Jobs**.
2. Click **New** and complete the form as shown:



   - Name: **temp job - Number of updated incidents**
   - Relative start: **30 days ago**
   - Relative end: **1 days ago**
   - Active: **unchecked**
   - Run: **Once**

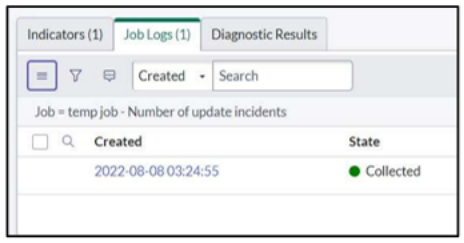
3. Select **Save** from the form context menu.
4. Navigate to the **Indicators** Related List.
5. Click **Edit**....
6. Add **Number of updated incidents** to the Indicators List.



7. Click **Save** to return to the job form.
8. Click **Execute Now** to execute the collection job immediately.

© 2023 ServiceNow, Inc. All Rights Reserved

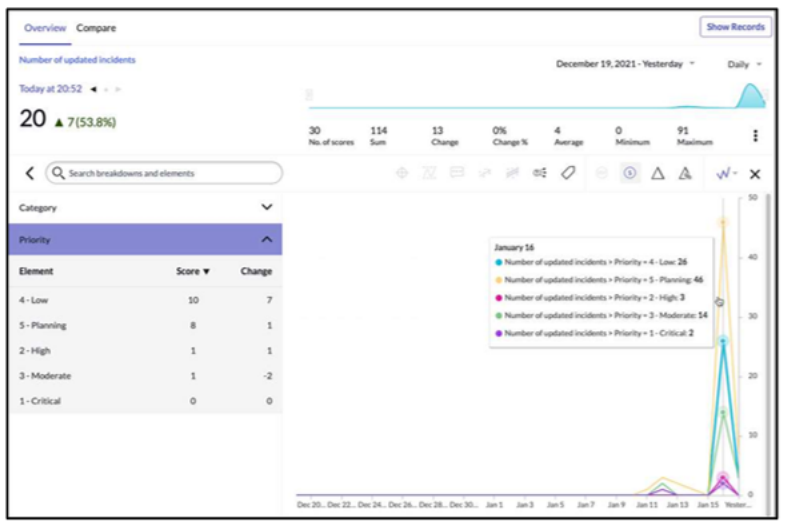
9. In the **Job Logs** tab, select Refresh List from the context menu to view the job status.



Data Verification

1. After the collection completes, navigate to **Performance Analytics** > **Analytics Hub.**
2. Search for **Number of updated** or **Number of updated incidents**.

3. Open the **Number of updated incidents** Indicator.
4. Click the **Breakdowns** button.
5. Expand the **Priority** Breakdown to view updated incidents by Priority, and mouse over the chart to view the scores for each time period shown.



Congratulations!
You have now completed the Automated Indicators Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

Module Recap

Core Concepts

- PA Admins and Data collectors perform the Indicator Source setup
- Indicator Sources provide the base set of records and are used by multiple Indicators
- The Facts table is the base process table that the Indicator Source is using
- An Indicator can be differentiated by an Aggregate and Additional Conditions

Review Questions

- Describe the difference between an Indicator and an Indicator Source
- Which is a mandatory type of field in the Indicator Source Condition?
- Describe an Indicator that should use the SUM Aggregate
- What does the Dependency Assessment do?

Describe the difference between an Indicator and an Indicator Source
An Indicator defines and measures a specific process behavior.
The Indicator Source defines a set of records specified by a condition on a process table. Many indicators can be defined using the same indicator source.

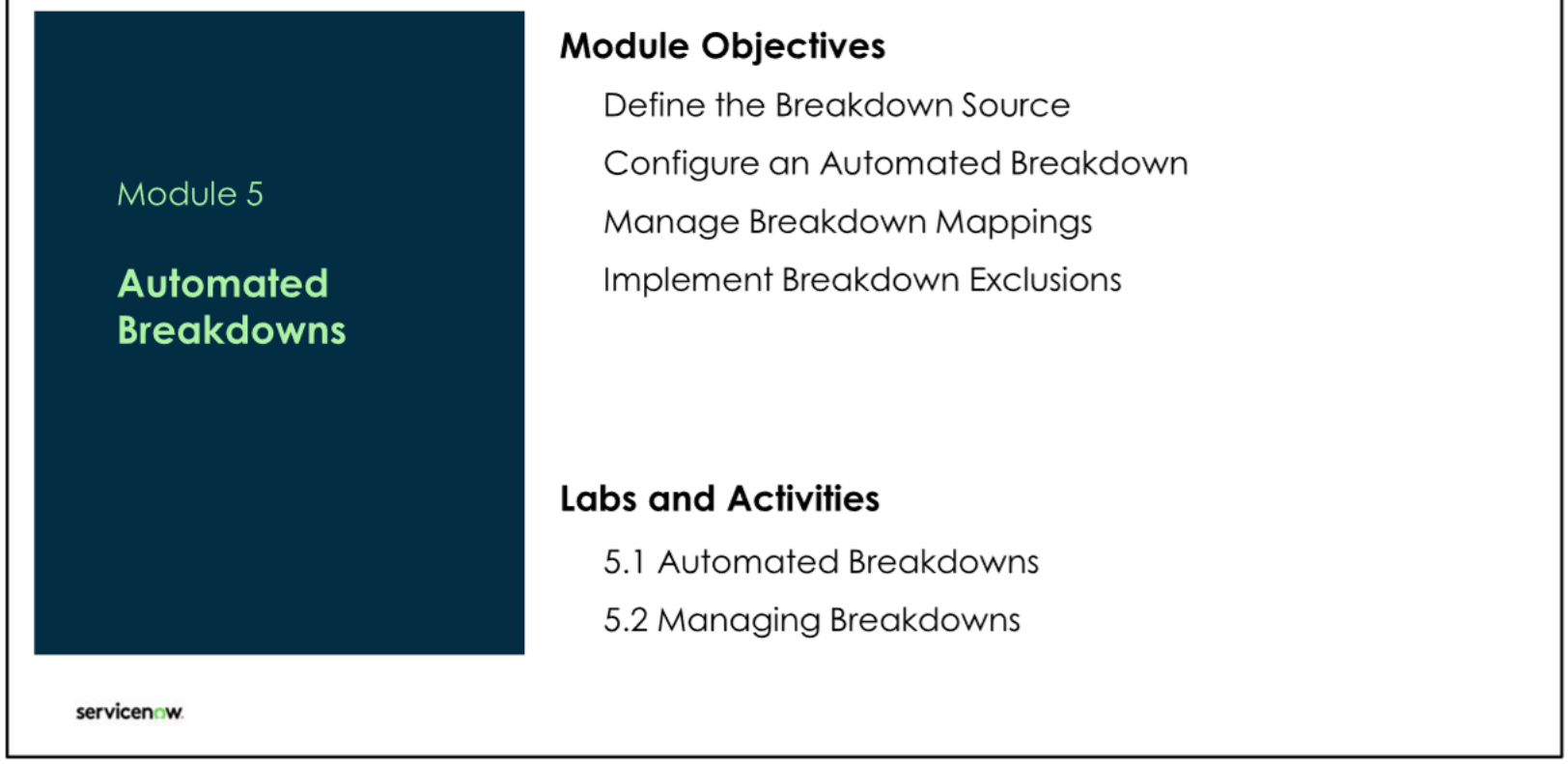
Which is a mandatory type of field in the Indicator Source Condition?
The Condition should always be constructed to incorporate a Date/Time field. Example: Incidents resolved ‘Today’

Describe an Indicator that should use the SUM Aggregate
Summed age of open cases
Summed duration of open incidents
Total cost of incident resolution

What does the Dependency Assessment do?
The dependency assessment is a graphical UI that shows component relationships in a hierarchical view. It helps understand the effects of planned component changes.

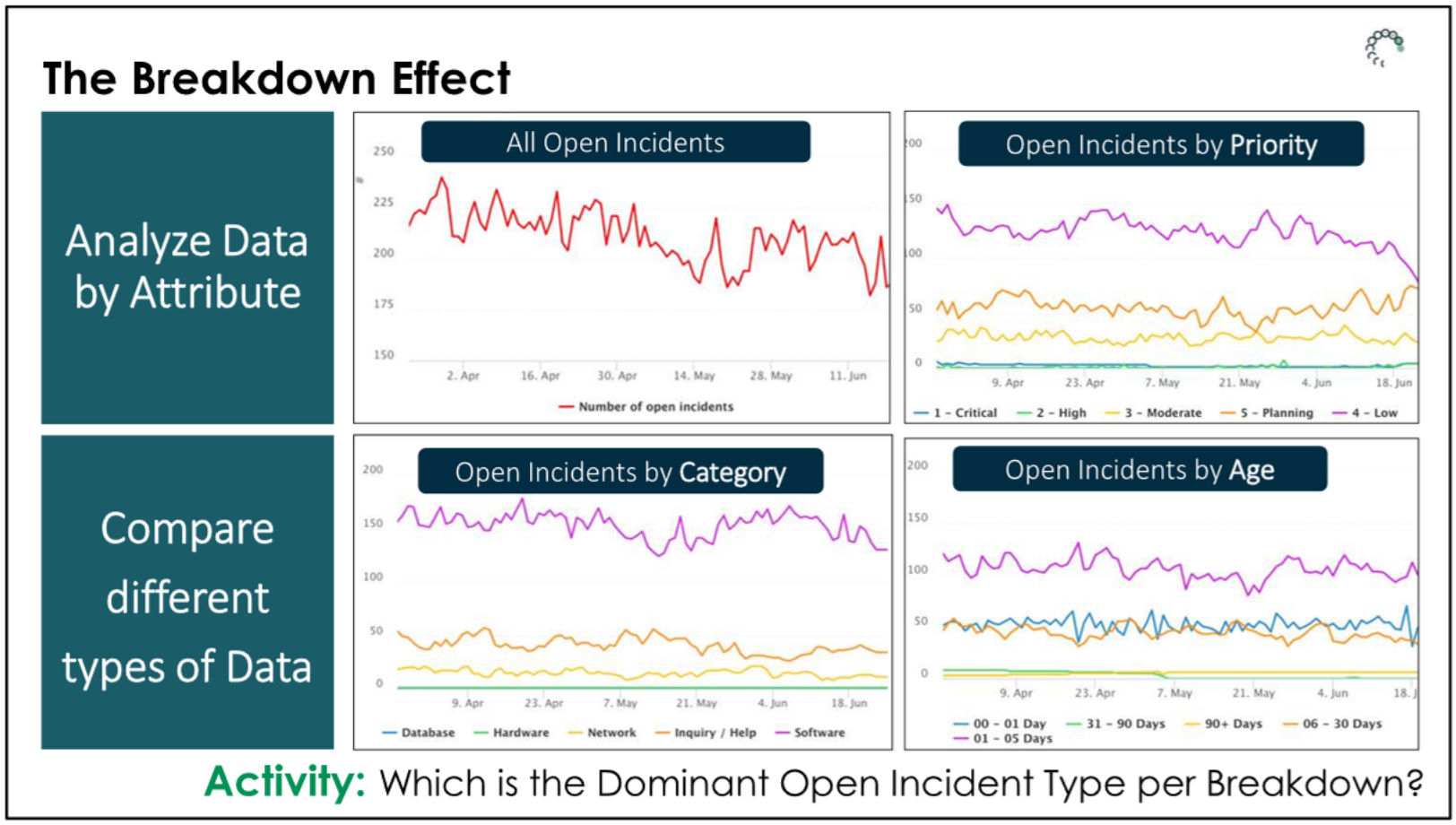
© 2023 ServiceNow, Inc. All Rights Reserved

© 2023 ServiceNow, Inc. All Rights Reserved



This module presents the configuration and administration of Automated Breakdowns and Breakdown Sources. Additional topics discussed are the Breakdown Matrix and applying Breakdown exclusions.

© 2023 ServiceNow, Inc. All Rights Reserved

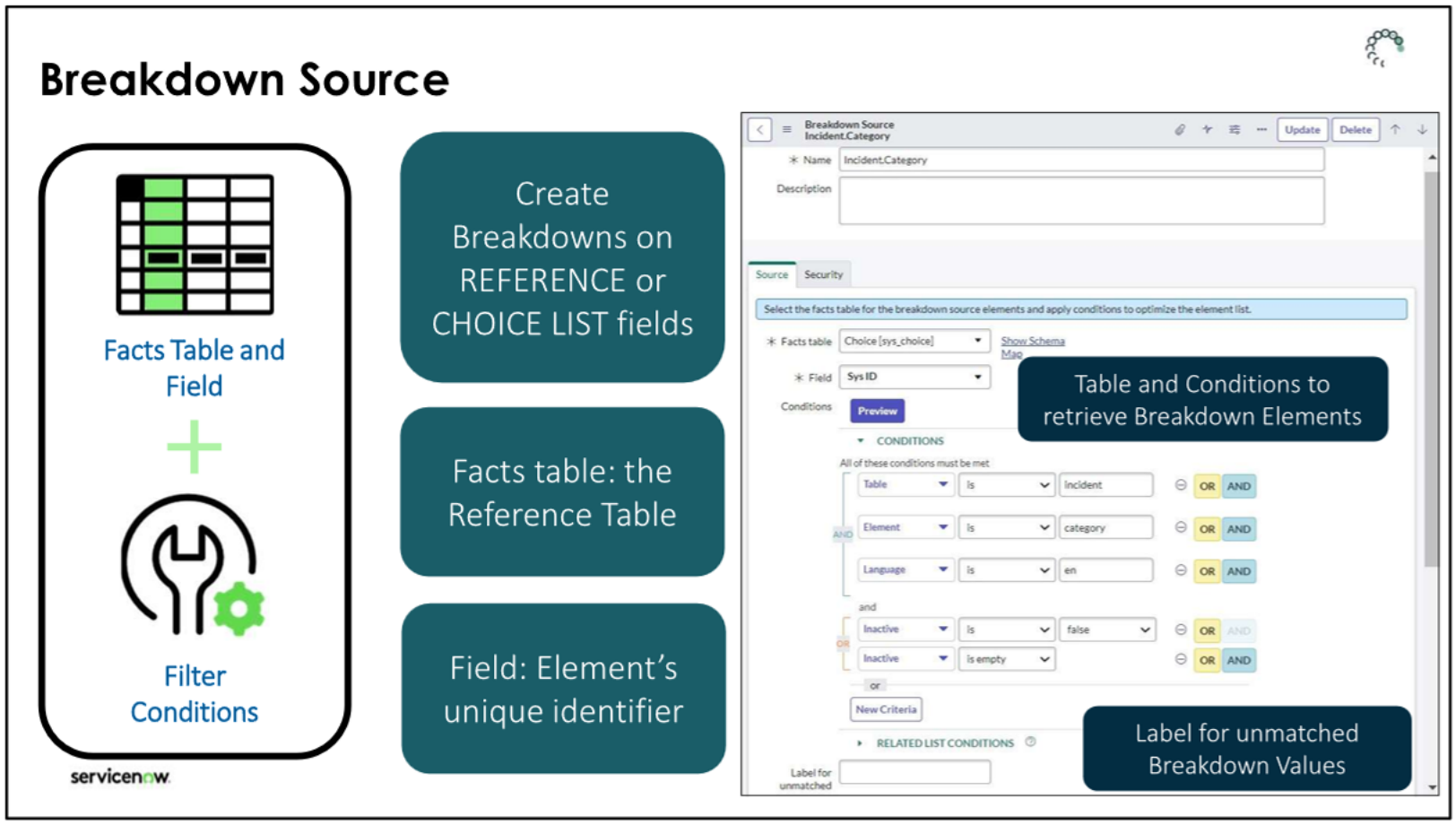


Breakdowns are configurations that allow you to analyze trends by a specific attribute such as Priority, State, Age, Category, Assignment group, etc. Breakdowns can be configured for any Indicator. Once configured, Breakdowns are visible in the Analytics Hub and in Dashboard Widgets. The above example presents several versions of the Number of Open Incidents widget:

- Time series of all Open Incidents
- Breakdown of the Open Incidents by Priority
- Breakdown of the Open incident by Category
- Breakdown of the Open incidents by Age

If you take a closer look at the example, you will be able to notice the most prevalent Category, Priority, and Age Group of Open Incidents.

© 2023 ServiceNow, Inc. All Rights Reserved



The Breakdown Source describes the nature of the attribute by which you segment the data.

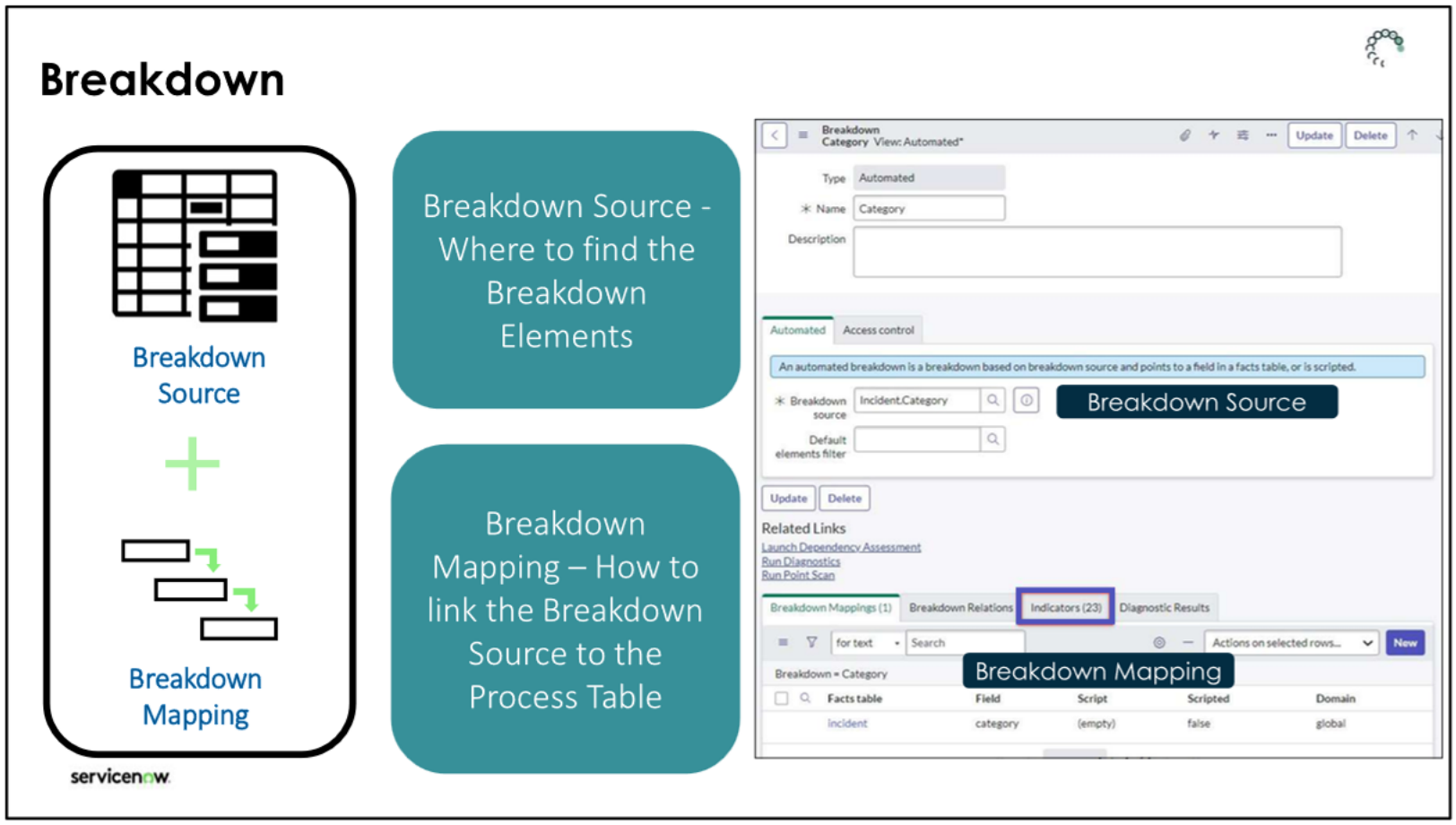
For instance, when you perform a breakdown by Category, the breakdown needs to "know" where the Category values are defined. So, you identify the **Facts table** and the **field** that uniquely identifies the elements in the table.

To configure a Breakdown Source, specify the following in the **Source** tab:

- **Facts table**: Select the base table that holds the breakdown elements, in this example **Choice [sys_choice]**.
- **Field**: Select the field that uniquely identifies the elements, usually that is '**Sys ID**' field.
- **Conditions**: Define filters that identify the specific breakdown elements in the Facts table that you need. In this example we want all **active category** elements. Click **Preview** to see how many records/elements match the condition.
- **Related List Conditions:** As you learned previously, this option enables you to build a filter that joins the facts table with another table.
- **Label for unmatched**: You may need to provide a label for score values that cannot be grouped to one of the elements.

Note: Many breakdowns and breakdown sources are provided out of baseline and more can be deployed by installing available content packs. Create new breakdowns any time you wish to navigate and categorize data by a field that is not yet configured as an existing breakdown.

© 2023 ServiceNow, Inc. All Rights Reserved



Breakdowns are applied to Indicators to enable quicker understanding of process patterns and trends. Breakdowns divide Indicator data into dimensions such as Category, Priority, State, etc. For instance, using a Category Breakdown, you can view the “Number of open incidents” indicator data by category, to see which categories are producing the most Incidents.

A breakdown is defined by identifying **a Breakdown Source** and providing a **Breakdown mapping**.

In this example, we create a Breakdown as follows:

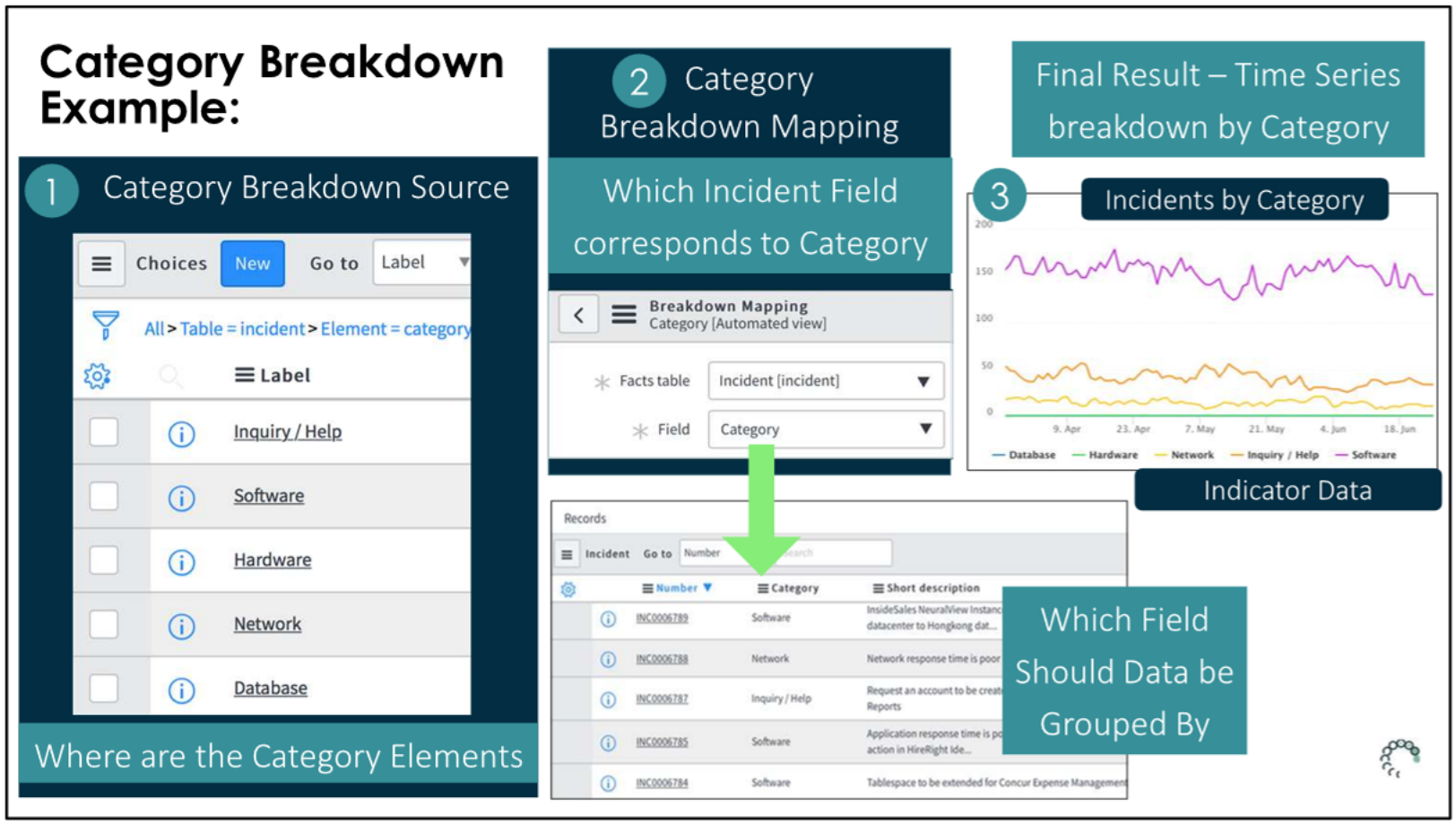
- **Name** is **Category**.
- **Breakdown Source** is **incident.category**, which contains all active category elements, as previously defined.
- **Breakdown Mappings** identifies the field in the Process Table that contains the breakdown element that was selected during Incident processing.

Note: You can create a breakdown while in the breakdown sources form, from the Breakdowns Related List.

Once a breakdown is configured, it needs to be applied to one or more Indicators listed in the **Indicators** tab.

In addition, visibility of Breakdown data can be limited by Users, Groups, and Roles in the **Access control** tab.

© 2023 ServiceNow, Inc. All Rights Reserved



This example summarizes the steps to configure the Category breakdown:

- First, create a **Breakdown Source** which retrieves all desired breakdown values for Category. These records are stored in the Choices table for this particular Breakdown.

- Next, create a Breakdown with a structure that links the Category elements from the Choice table to the field that contains the Category values in the Incident table. This structure is called the **Breakdown Mapping**. It is comprised of these two attributes:
  - **Facts table**: The Incident table to which the Breakdown should be applied.
  - **Field**: The column of the facts table that holds the Category element, which is Category.

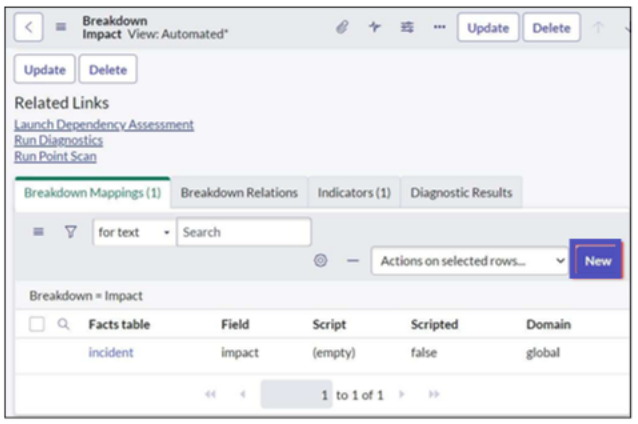
- Last:
  - Add the desired Indicators to the related **Indicators** tab in the Breakdown definition.
  - Collect data.
  - View the Indicator data by Breakdown in the Analytics Hub.

© 2023 ServiceNow, Inc. All Rights Reserved

New Breakdown Mapping

Use Existing Breakdowns with new tables by creating additional Breakdown Mappings

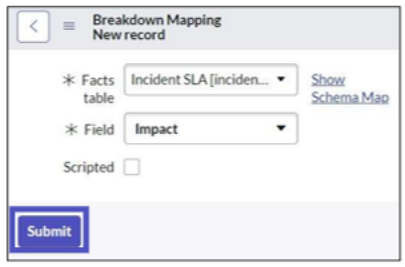
1



The Impact Breakdown is currently configured for the Incident Table only

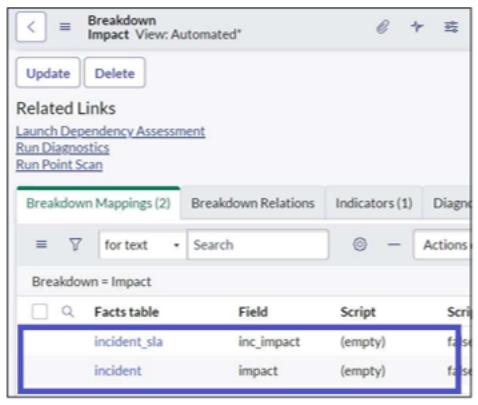
Create a New Mapping for the Impact field of the Incident SLA table

2



The Impact Breakdown can be used by Indicators based on both Incident and Incident SLA tables

3

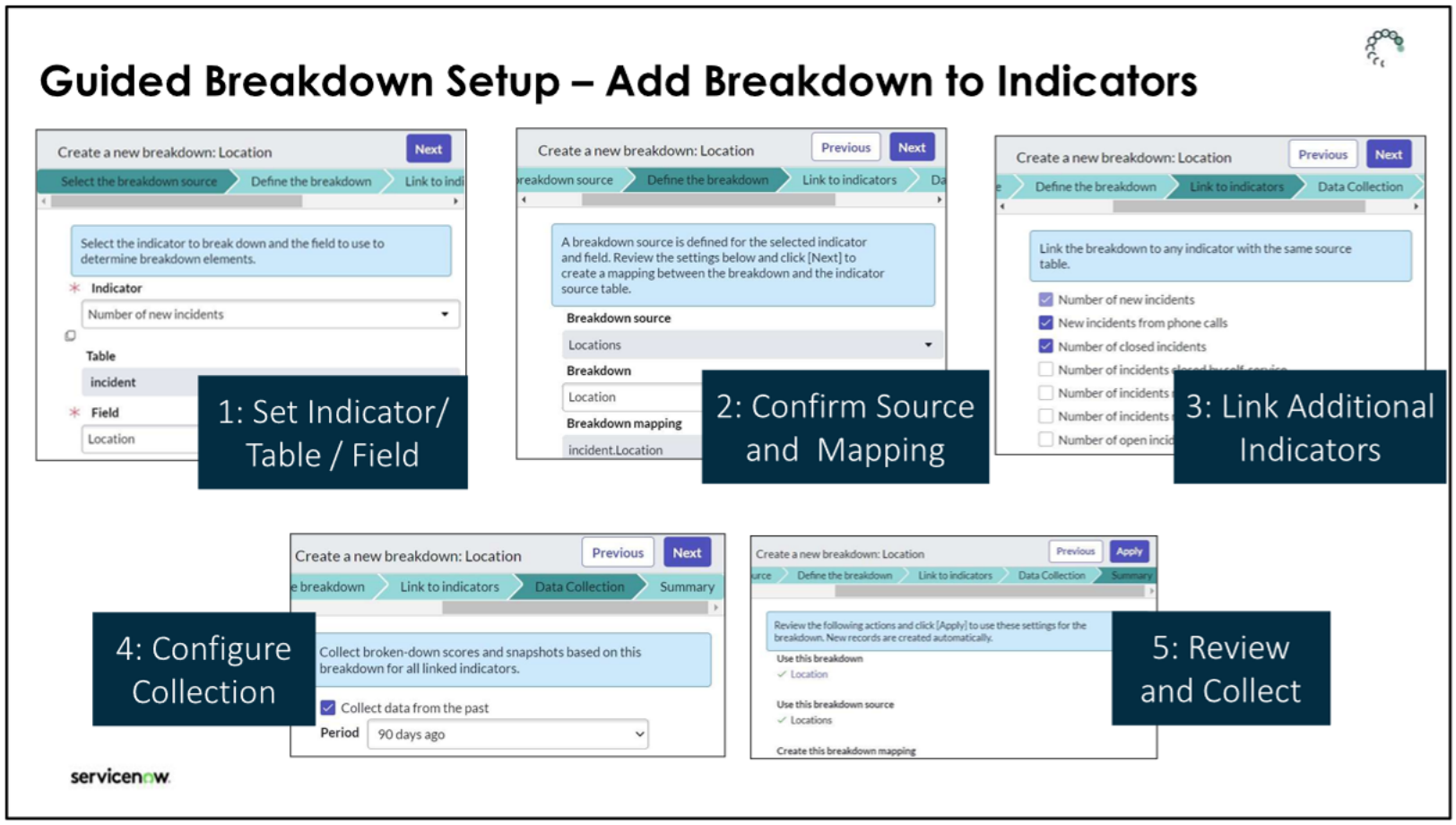


Performance Analytics for Incident Management (the Complimentary version) comes already pre-configured with common Breakdowns for the Incident and Task fields such as State, Priority, Location, and Assignment Group. These Breakdowns are sufficient to analyze Incident-based Indicators.

If you have Indicators based on other Process tables as well as custom tables that extend the Task table, you are likely going to need new Mappings, even though the base Breakdown already exists.

To do that, open an existing Breakdown, and add a new Mapping related record, for the process table you wish to analyze by that Breakdown.

© 2023 ServiceNow, Inc. All Rights Reserved



Similar to the Guided Indicator Setup, Performance Analytics offers a Guided Breakdown Setup. To begin creating a new breakdown, navigate to **Performance Analytics > Breakdowns > Create New.**

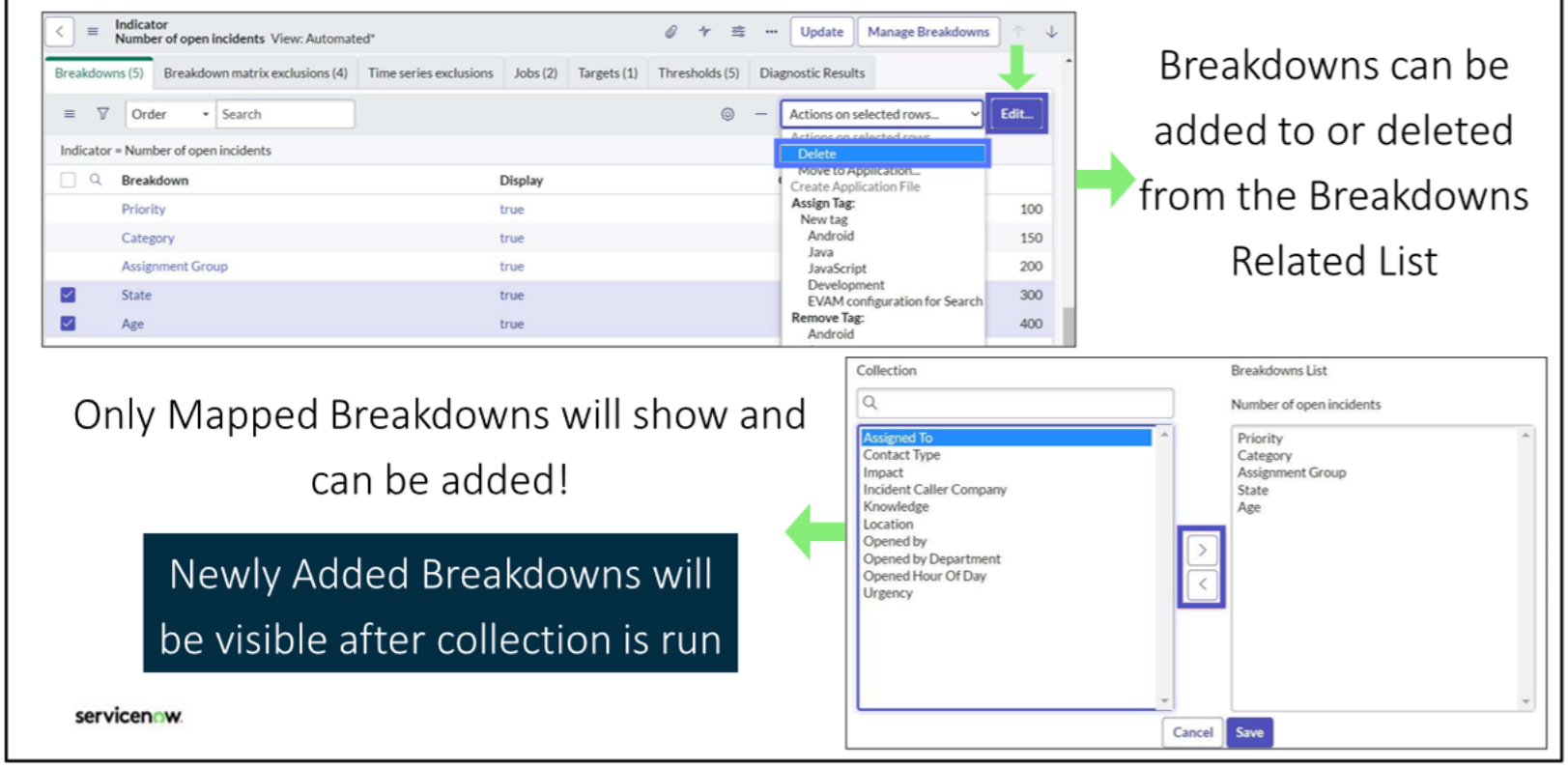
These are the steps of the setup:

1. Select the indicator to break down and the field to use to determine breakdown elements.
2. A breakdown source is defined for the selected indicator and field. Review the settings below and click [Next] to create a mapping between the breakdown and the indicator source table. A breakdown source is defined for the selected indicator and field. Review the settings below and click [Next] to create a mapping between the breakdown and the indicator source table.
3. Link the breakdown to any indicator with the same source table.
4. Collect broken-down scores and snapshots based on this breakdown for all linked indicators.
5. Review the following actions and click [Apply] to use these settings for the breakdown. New records are created automatically.

An added benefit to the breakdown guided setup is the ability to run a collection job on the fly without assistance from the Performance Analytics Admin.

© 2023 ServiceNow, Inc. All Rights Reserved

Add Breakdowns to Indicators Manually

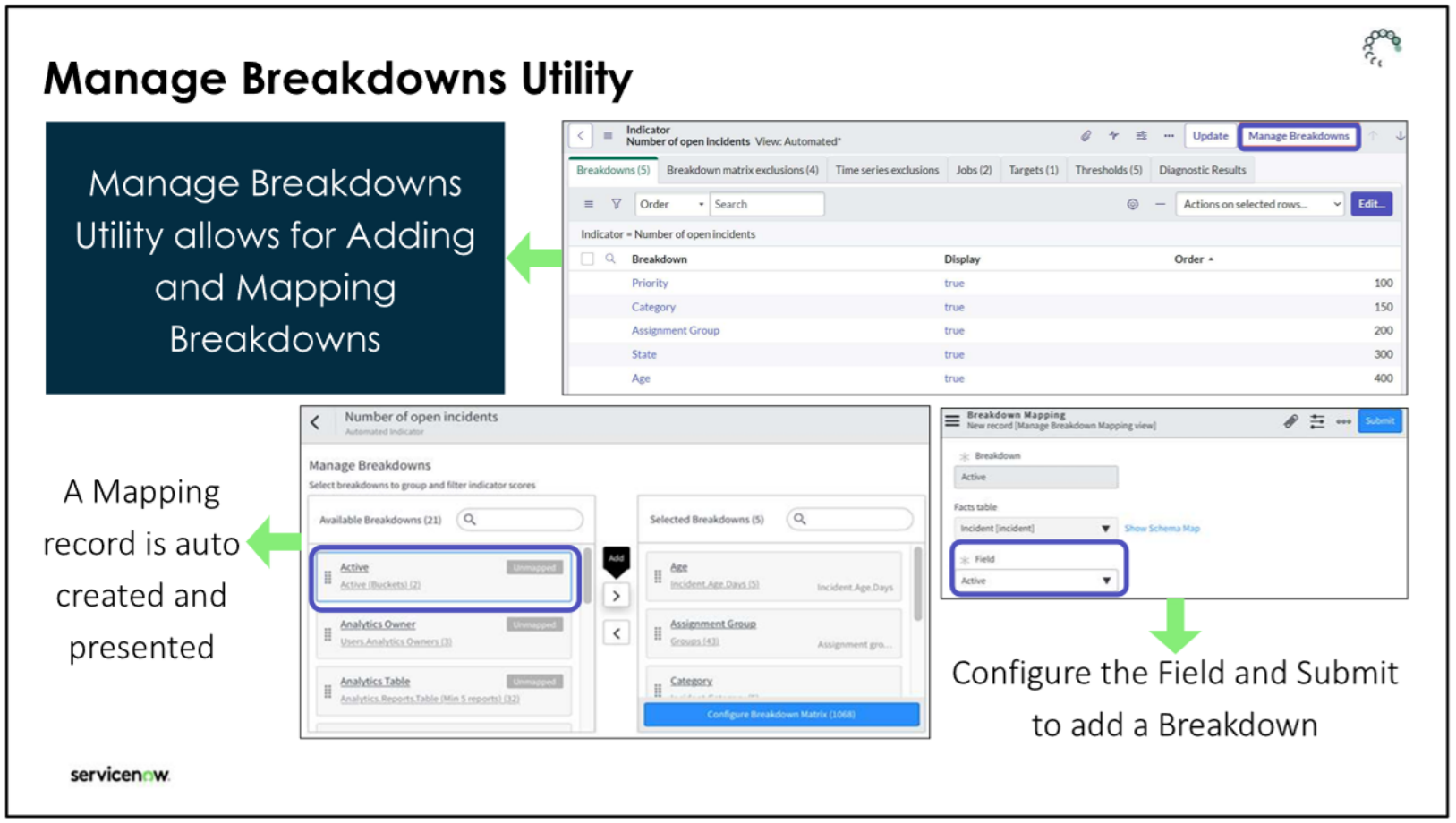


Breakdowns can be managed manually by accessing the Breakdowns Related List of an Indicator and using the **Edit** button to add or remove Breakdowns.

Note: Only Mapped Breakdowns can be added to an Indicator (Mapped = Having a Breakdown Mapping to the Indicator Facts table).

Do not forget to run collection after adding a new Breakdown, for just that Breakdown. Re-running historical collection for all Breakdowns may override daily updates and is not recommended.

© 2023 ServiceNow, Inc. All Rights Reserved



The **Manage Breakdowns** utility presents two columns:

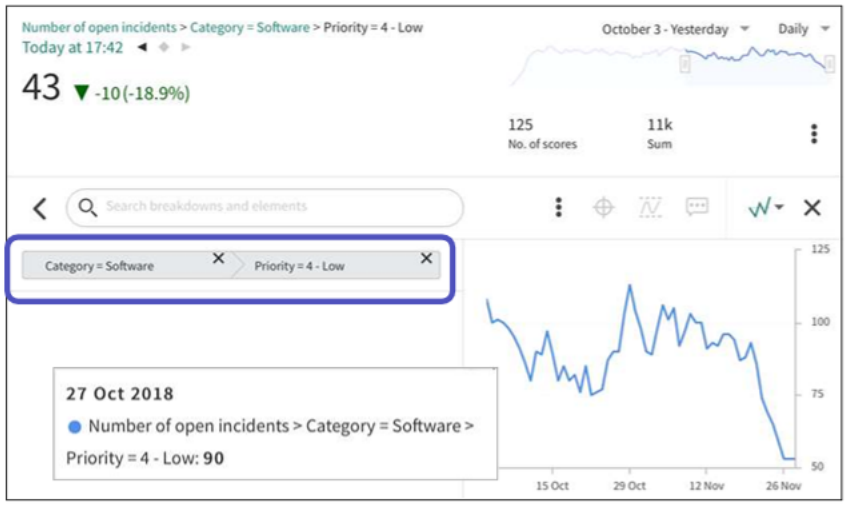
- Left: Available Mapped and Un-mapped Breakdowns.
- Right: Already Linked Breakdowns.

Select a Mapped or Unmapped Breakdown and drag it to the Right column or use the Add arrow. A Mapped Breakdown is added right away. An unmapped Breakdown requires a Mapping. A New Breakdown mapping record dialog is displayed already containing the Indicator Facts table. Select the **Field** and **Submit** to create a new Breakdown Mapping and link it to the new Breakdown.

© 2023 ServiceNow, Inc. All Rights Reserved

Breakdown Matrix

2 Levels of Breakdowns can be applied in Analytics Hub



servicenow

- 1st level breakdown navigation is always possible for configured breakdowns
- To allow 2nd level breakdown navigation, check **Collect Breakdown Matrix** in the Indicator form

- Example shows the current score and trend line of Open Incidents with a Category of Software that are Low priority
- CAUTION: Breakdown Matrix consumes extra storage and collection time

If an indicator has multiple breakdowns, the data collector can collect scores for a matrix of these breakdowns and maintain a scores history for the second breakdown layer.

For example: Number of open Incidents can be viewed by Assignment Group and then by Priority, or, by Priority first and then by Assignment Group.

Enabling the breakdown matrix option significantly increases the amount of data that Performance Analytics collects and the amount of memory used during data collection. Only activate this option if you require the history of second level breakdowns. If you only require a second level breakdown for a single score, use a group by report on the record set.

If a scores history of a second level breakdown for a first level breakdown is not wanted, this second level can be excluded. This is done by creating **Breakdown exclusion** records.

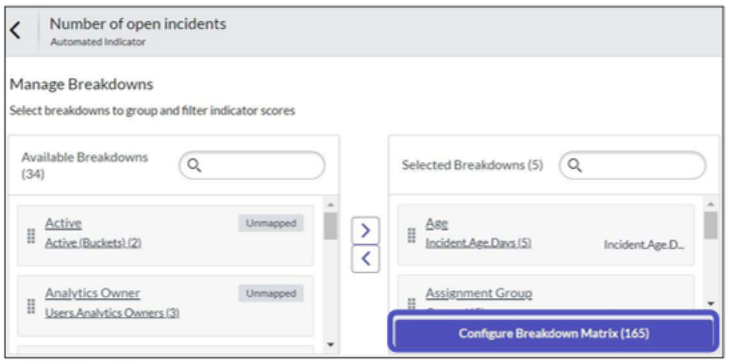
With the **Collect breakdown matrix** checked, click **New** in the **Breakdown matrix exclusions** Related List to create a new exclusion.

© 2023 ServiceNow, Inc. All Rights Reserved

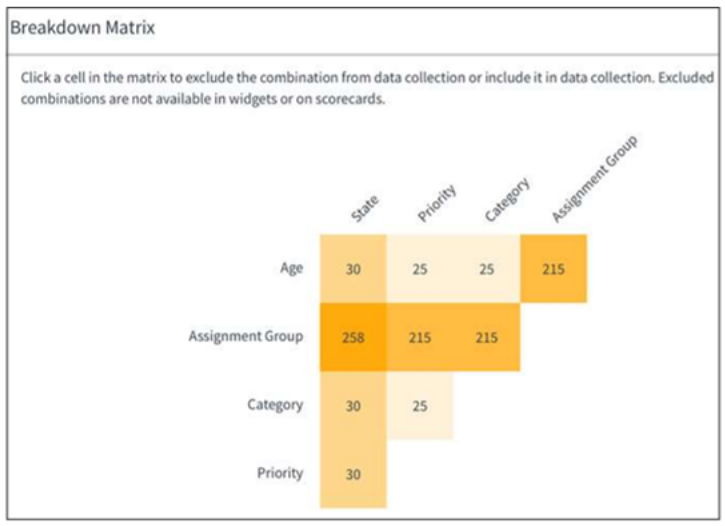
Breakdown Matrix Utility

Configure Breakdown Matrix allows for managing 2nd Level Breakdown collection

Configure Breakdown Matrix can be launched from the Manage Breakdowns Utility screen:



Each Cell holds the Number of Scores that will be collected for the respective navigation Path



There are 5 Ages and 6 States. 5 x 6 = **30** separate Scores will be generated for the **Age x State** breakdown

The **Configure Breakdown Matrix** utility is launched from within the **Manage Breakdowns** utility screen.

Each cell contains the number of new scores that would be generated during collection for the respective 2-level Breakdown navigation.

There are 5 Age Elements, 6 States, 5 Priorities, 5 Categories, and 43 Assignment Groups. Here is the math behind the numbers in the matrix:

Age x State = 5 x 6 = 30

Age x Priority = 5 x 5 = 25

Age x Category = 5 x 5 = 25

Age x Assignment Group = 5 x 43 = 215

Assignment Group x State = 43 x 6 = 258

Assignment Group x Priority = 43 x 5 = 215

Assignment Group x Category = 43 x 5 = 215

Category x State = 5 x 6 = 30

Category x Priority = 5 x 5 = 25

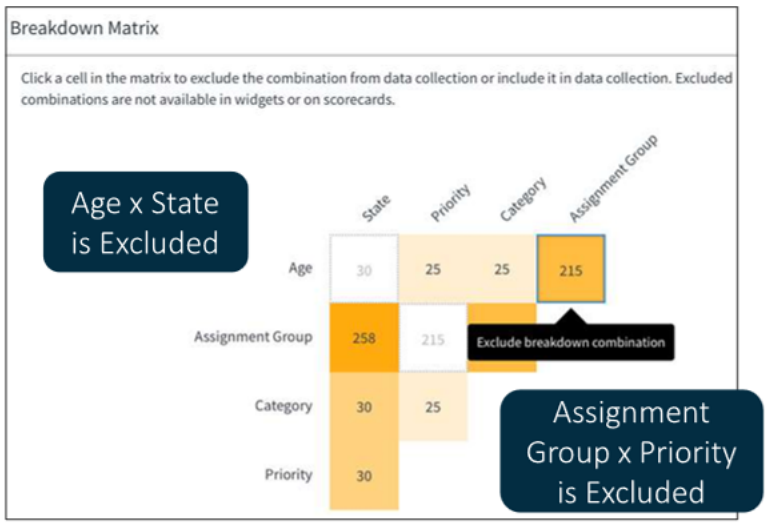
Priority x State = 5 x 6 = 30

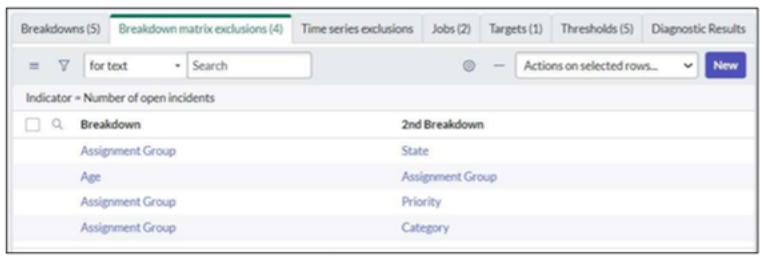
30+25+25+215+258+215+215+30+25+30 = 1068

© 2023 ServiceNow, Inc. All Rights Reserved

Breakdown Matrix Utility

- Click a Matrix Cell to Exclude or Include that Breakdown Combination in collections
- Matrix Exclusion records are automatically created and displayed in the related list of the affected Indicator





*Breakdown matrix exclusions are Bi-directional

The example prevents viewing by **Age x State** and **Assignment Group x Priority**

The visual Breakdown Matrix displays all combinations for data collection.

Click a cell to toggle the corresponding Breakdown combination between included and excluded. As shown in the example, excluded combos display in white and off-grey font. In this case the Age x State and Assignment Group x Priority combinations are excluded. If you click on the Age x Assignment Group cell, that breakdown combination would also be excluded.

As shown on the right, when you exclude a breakdown matrix combination, a record is automatically written to the Breakdown matrix exclusions list. In this case, there are two records in the list that correspond with the two selected breakdown matrix exclusions.

Adding an Indicator **Breakdown matrix exclusion** prevents navigating the Analytics Hub and all Widgets by that specific breakdown combination. Therefore, in this example, viewers will not be able to see Incidents broken down by Age AND State together, nor Assignment Group AND Priority together.

The order of the Breakdowns in a combination does not matter as Breakdown exclusions are bi-directional.

Note: Breakdown Exclusions can also be made directly to the Indicator's **Breakdown matrix exclusions** list shown on the right.

© 2023 ServiceNow, Inc. All Rights Reserved

Breakdown Management

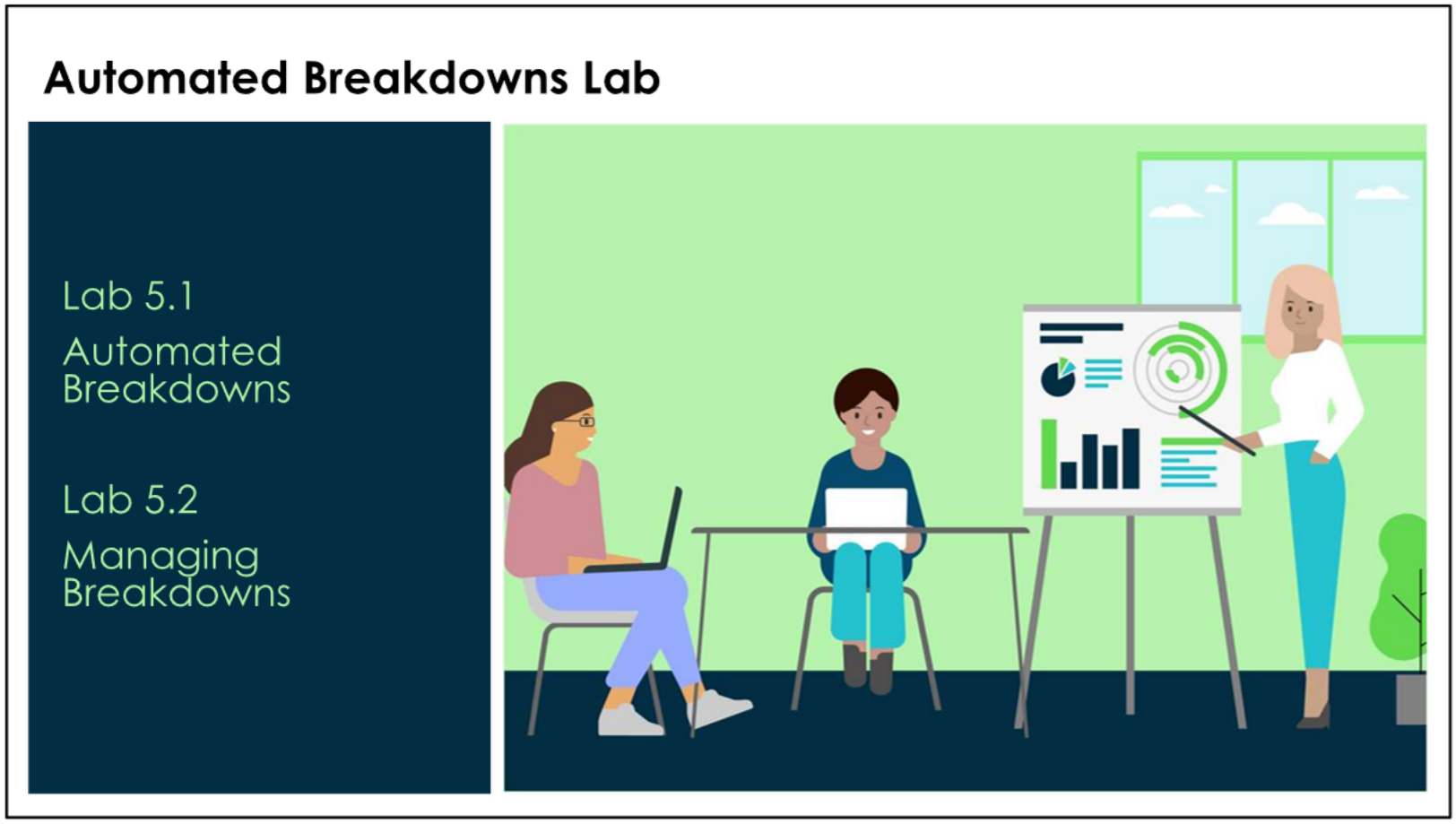
Good Practices

- Use the Manage Breakdowns Utility to view a list of Mapped and Unmapped Breakdowns and quickly create a Mapping
- Note that enabling the Breakdown Matrix generates extra scores and prolongs collection time
- Preview and manage the number of Breakdown Combinations using the Configure Breakdown Matrix Utility

servicenow

Consider the above best practices when working with Breakdowns, Sources, and Mappings.

© 2023 ServiceNow, Inc. All Rights Reserved



5.1 Automated Breakdowns Lab

- Create a new automated breakdown using the Guided Breakdown Workflow
- Create a breakdown using the form-based interface
- Collect data and view the results of the new breakdown

5.2 Managing Breakdowns Lab

- Use Manage Breakdowns Interface
- Launch and Configure Breakdown Matrix

© 2023 ServiceNow, Inc. All Rights Reserved

Automated Breakdowns

Lab 5.1

25 minutes

Lab Objectives

Process owners at Glide Haven need to analyze trends by various characteristics. To do that, Breakdowns are needed to "segment" the process data. In this lab, you perform the following:

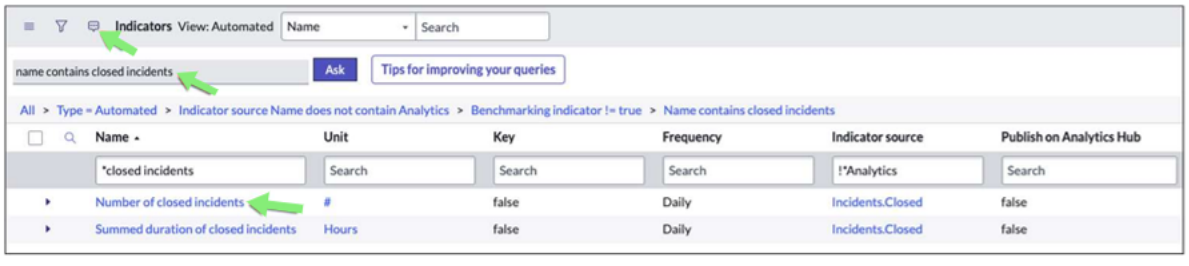
- Create a new Resolution Code Breakdown using the Guided Workflow
- Create a new Caller's Department Breakdown by using the Breakdown Form
- Manually configure Breakdown Source and Mapping
- Run collection with Breakdown exclusions

A. Guided Breakdown Setup

In this section, you create a new Breakdown that allows you to analyze closed and resolved incidents by their *Resolution code*.

Breakdown Review

1. Access the lab environment as the **PA Admin** user.
2. Navigate to **Performance Analytics > Indicators > Automated Indicators**.
3. Select the **Show/hide natural language filter** button.
4. Type "**name contains closed incidents**" and press **Ask** or the Enter key.
5. Select the **Number of closed incidents** indicator.



© 2023 ServiceNow, Inc. All Rights Reserved

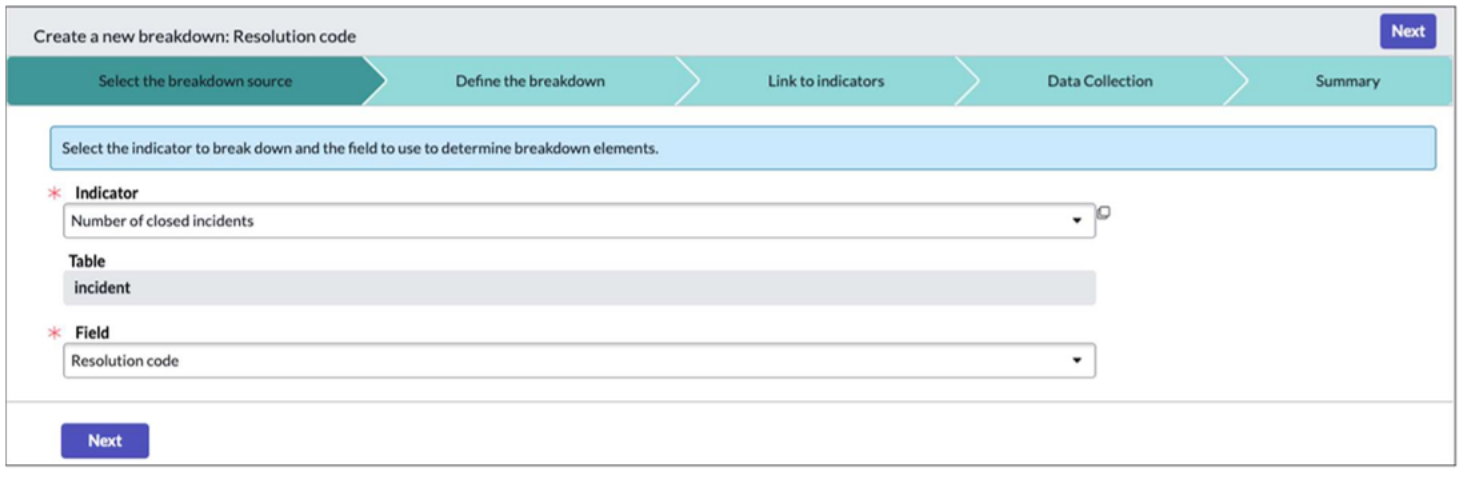
6. Navigate to the **Access control** tab on the Indicator form.
7. Enable **Publish on Analytics Hubs** to view this indicator in the Analytics Hub.
8. Select **Save** from the form context menu to remain on the form.
9. Click the **Show Analytics Hub** Related Link.
10. Explore the available **Breakdowns**.

***Question**: What are the dimensions by which you can analyze closed incidents?*

Existing Breakdown Review

1. Navigate to **Performance Analytics > Breakdowns > Create New** to launch the Guided Breakdown Workflow.
2. Complete the **Select the breakdown source** section as shown:

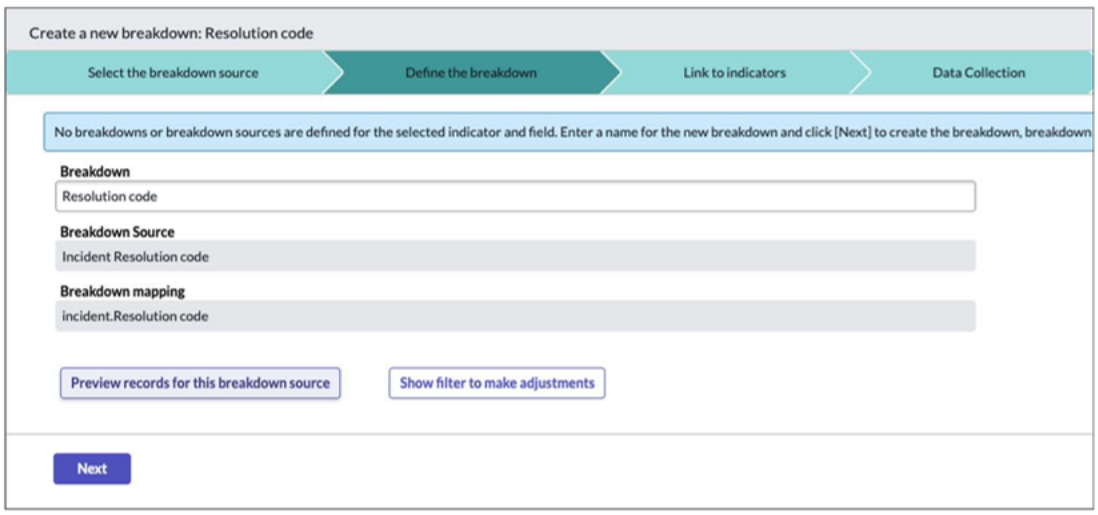
   Indicator: **Number of closed incidents**
   Table: **incident** [auto-populated]
   Field: **Resolution Code**



© 2023 ServiceNow, Inc. All Rights Reserved

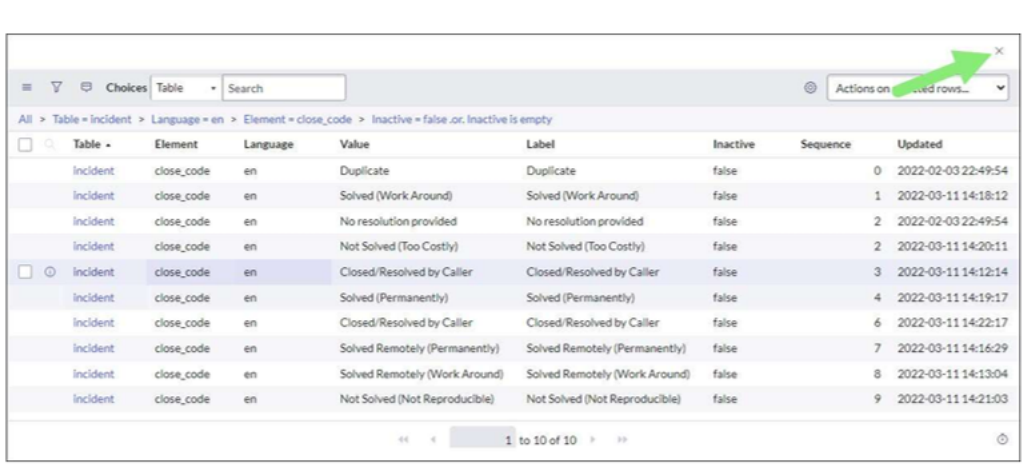
3. Click **Next** to move to the **Define the breakdown** step.

4. Confirm that **Breakdown Source** and **Breakdown Mapping** are automatically created.

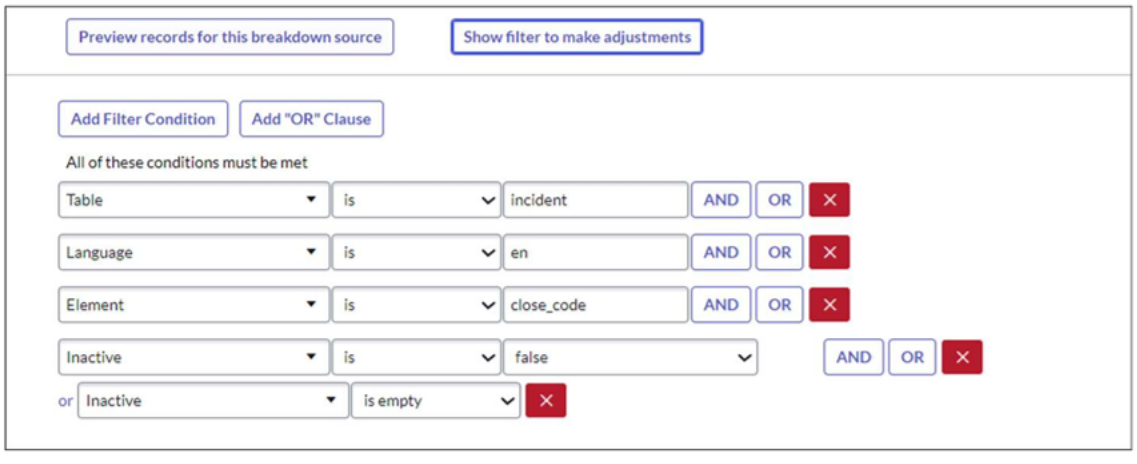


5. Click the **Preview records for this breakdown source** button.

6. Confirm that there are 10 resolution codes and close the window using the '**X**'.



7. Select **Show filter to make adjustments** and scroll down to review the Filter conditions.

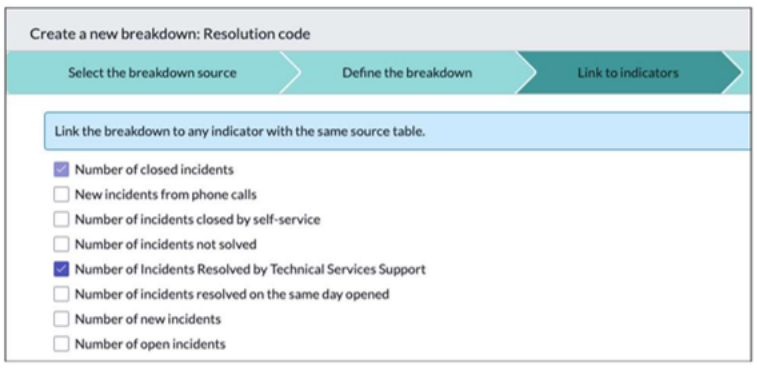


Note: *Here you can modify the logic that retrieves resolution codes from the Choice table.*

© 2023 ServiceNow, Inc. All Rights Reserved

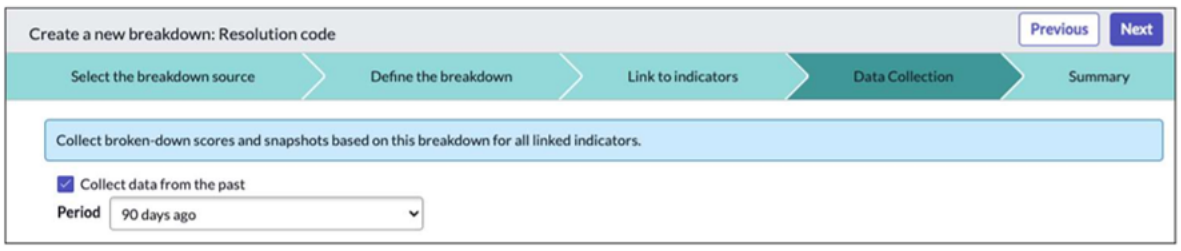
8. Click **Next** without modifying the conditions.

9. Check **Number of Incidents Resolved by Technical Services Support** to apply the new Breakdown to this additional Indicator.



10. Click **Next** to move to the **Data Collection** step.

11. Check **Collect data from the past** and set the collection period to **90 days ago**.



12. Click **Next**.

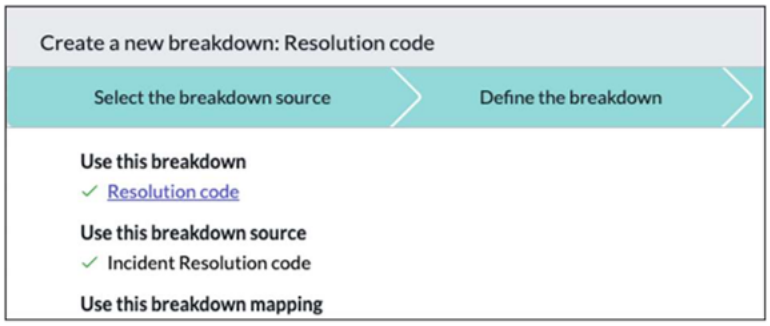
13. Review the **Summary**.

> ***Question:*** *Which new objects will be created after completing this process?*

14. Click **Apply** and wait until the breakdown is created.

New Breakdown Configuration Review

1. Once configuration completes, click **Resolution code** to open the Breakdown form.



© 2023 ServiceNow, Inc. All Rights Reserved

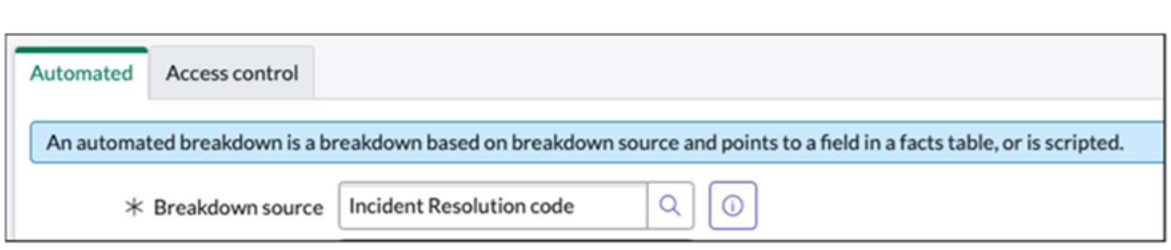
2. Scroll down the form to the **Indicators** Related List.

3. Confirm that **Number of closed incidents** and **Number of Incidents Resolved by Technical Services Support** are listed.

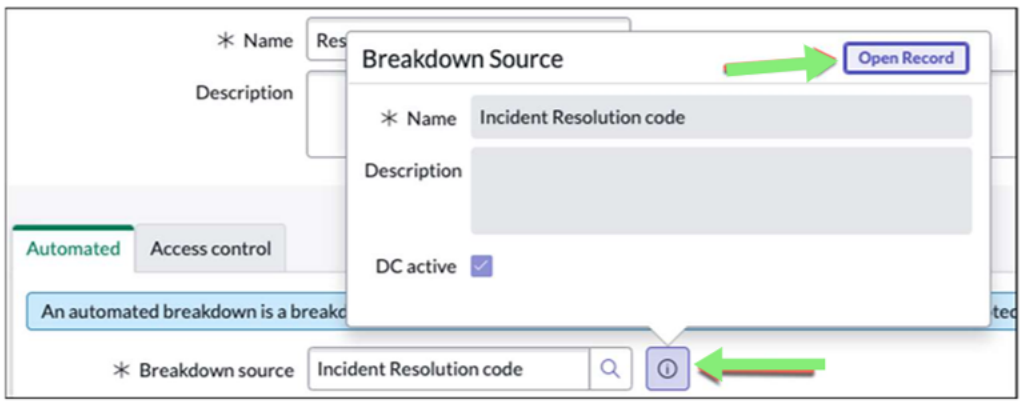
4. Navigate to the **Breakdown Mappings** tab and click the **Info** icon to view the breakdown mapping values.

5. Confirm that the mapping contains **incident** as the Facts table and **close_code** as the Field.

6. In the Automated tab, confirm that the **Breakdown Source** is set to **Incident Resolution code**.

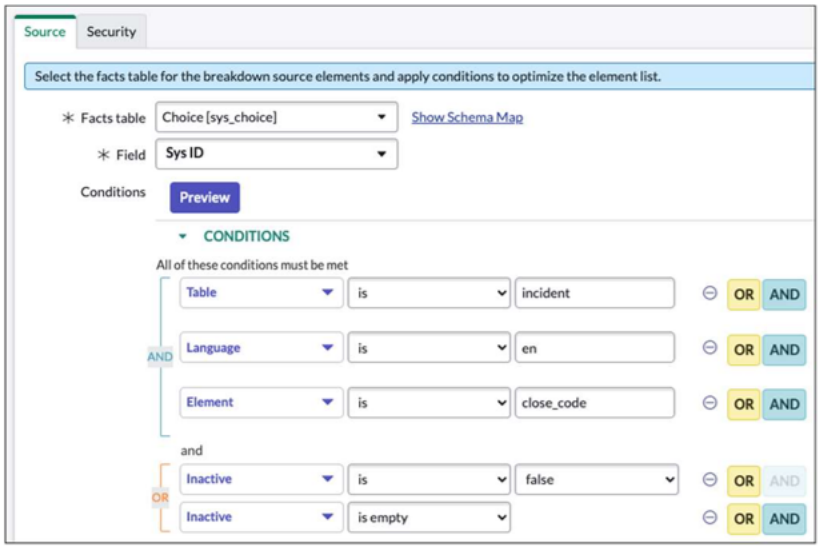


7. Click the **info** icon next to the **Breakdown source** and then click the **Open record** button.



© 2023 ServiceNow, Inc. All Rights Reserved

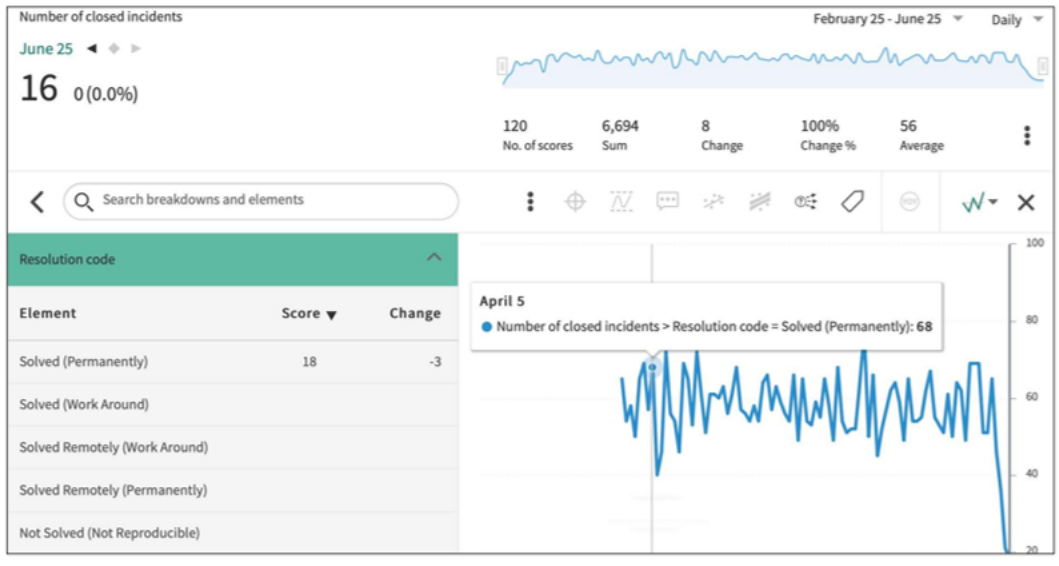
8. Review the Facts table, Field, and the Conditions. Recall that you previewed this information in the **Define Breakdown step** of the automated workflow.



9. Close the **Breakdown Source** form.

Indicator Data Verification

1. Navigate to **Performance Analytics** > **Analytics Hub**.
2. Open the **Number of closed incidents** Indicator.
3. Expand the **Breakdowns** list.
4. Select **Resolution code** Breakdown and confirm that incidents are categorized by their **Resolution code** values.



© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

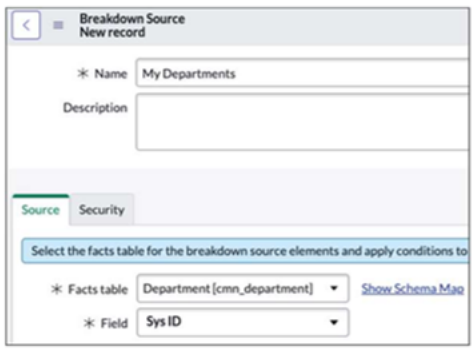
B. Manual Breakdown Setup

A Caller is the user that calls in to report an incident. You are going to manually configure a Breakdown to analyze incidents by the Caller's department.

Create Breakdown Source

To begin, you set up the base source for Department values.

1. Navigate to **Performance Analytics** > **Sources** > **Breakdown Sources** and click **New**.
2. Complete the form as follows:
   - Name: **My Departments**
   - Facts table: **Department [cmn_department]**
   - Field: **Sys ID**



3. Select **Save** from the form context menu to remain on the form.
4. Click **Preview** and then select the **7 records match condition** link to view the departments. This will open in a new tab.

5. Close the **Departments** list tab.

Create New Automated Breakdown

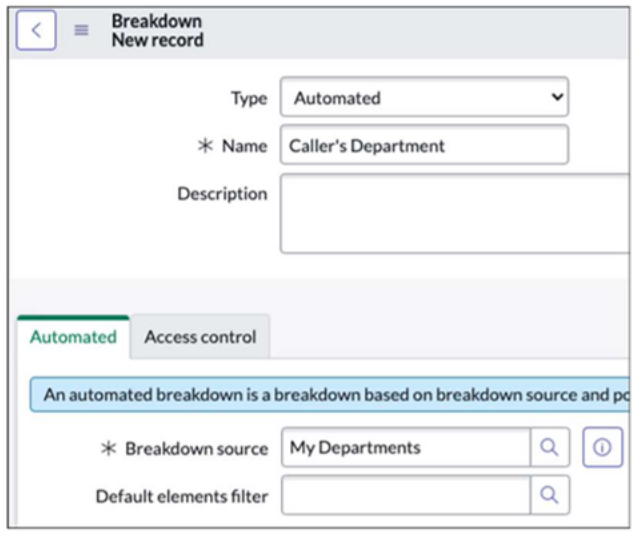
In this step, you set up the Breakdown that uses the **My Departments** source.

1. Navigate to **Performance Analytics** > **Breakdowns** > **Automated Breakdowns.**
2. Click **New** to create a new Breakdown based on the **My Departments** source.

© 2023 ServiceNow, Inc. All Rights Reserved

3. Complete the new Breakdown form as follows:

   - Name: **Caller's Department**
   - Breakdown source: **My Departments**



4. Select **Save** from the form context menu to remain on the form.

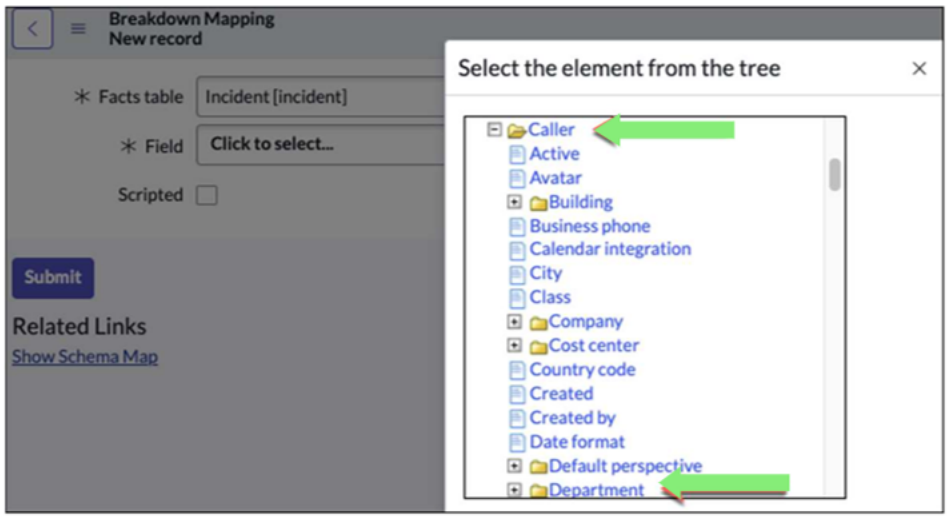
Create New Breakdown Mapping

In this step, you map the Departments table records to the Incident Caller Department field.

1. Navigate to the **Breakdown Mappings** Related List and click **New**.
2. Set the Facts Table to **Incident [incident]**.
3. Select the **Field** dropdown and perform these steps:

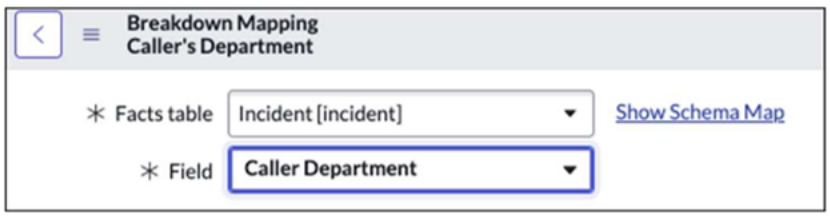
   a) Locate and expand the **Caller** attribute.

   b) Locate and select the **Department** attribute under **Caller.**



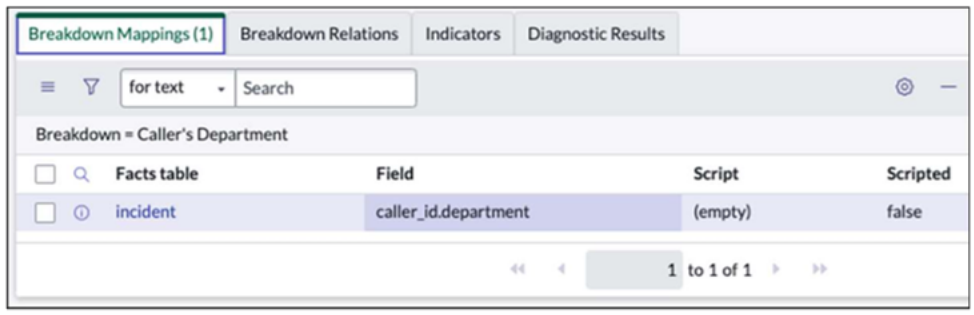
© 2023 ServiceNow, Inc. All Rights Reserved

4. Confirm that the Field attribute is set to **Caller Department**.



5. Click **Submit**.

6. Confirm that the new breakdown correctly maps to the **caller_id.department** field.



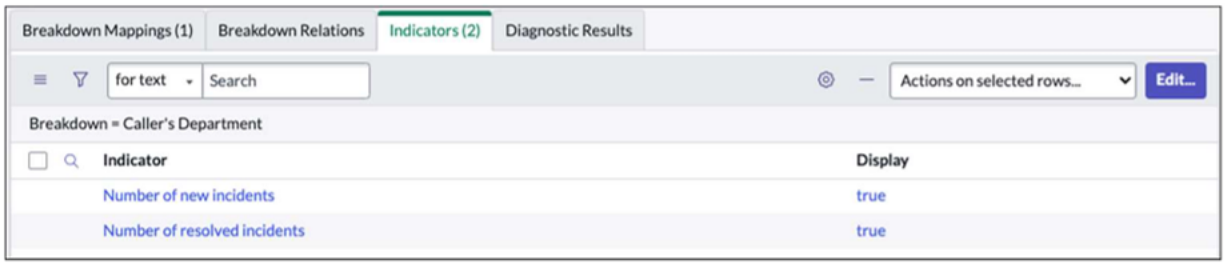
Add Indicators

As a last step, you need to specify which Indicators should use the Department breakdown.

1. Navigate to the **Indicators** Related List of the **Caller's Department** breakdown.

2. Click **Edit…** and add the **Number of new incidents** and the **Number of resolved Incidents** to the Indicators List.

3. Click **Save** and return to the automated breakdown form.



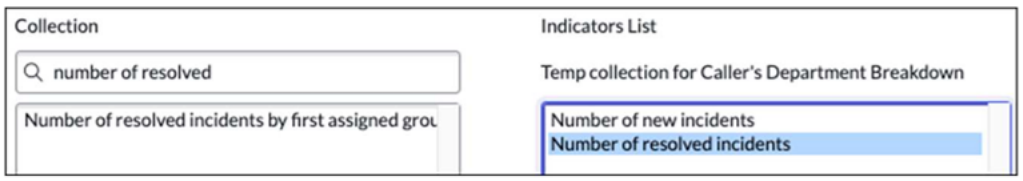
C. Run Collection for Indicators with New Breakdowns

A historical collection is required to populate the newly added Department Breakdown.

1. Navigate to **Performance Analytics > Data Collector > Jobs**.

© 2023 ServiceNow, Inc. All Rights Reserved

2. Click **New** and complete the form as follows:
    - Name: **Temp collection for Caller's Department Breakdown**
    - Relative start: **3**
    - Relative start interval: **months ago**
    - Active: **[unchecked]**
    - Run: **Once**
3. Select **Save** from the form context menu to remain on the form.
4. Navigate to the **Indicators** Related List and click **Edit…**.
5. Add **Number of new incidents** and **Number of resolved incidents** to the Indicators List and click **Save**.



D. Exclude Breakdowns from Collection

Since you are re-running a historical collection, there is always the chance that you may be overriding the daily scores collected over time. To prevent that, you need to add some exclusions.

1. While still in the Data Collection Job form, navigate to the **Indicators** related list.
2. Click the **Number of new incidents** indicator.
3. On the Job Indicator form, perform these changes:
    a) Uncheck **Collect indicator**.
    b) Set **Collect** to **Exclude these breakdowns**.

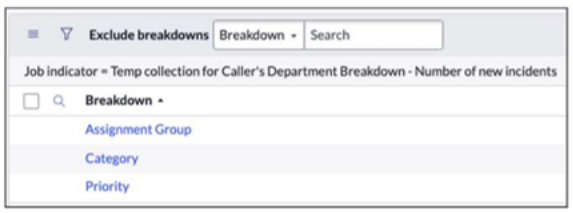
4. Select **Save** from the form context menu to remain on the form.

© 2023 ServiceNow, Inc. All Rights Reserved

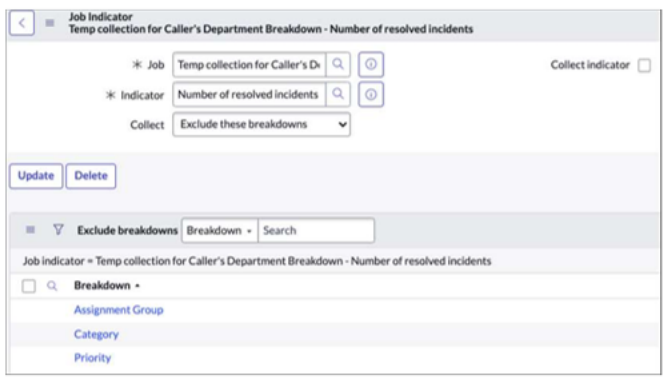
5. Click the **Edit…** button of the **Exclude breakdowns** related list.
6. Edit the **Exclude breakdowns** list and add the following breakdowns:

   Assignment Group, Category, Priority

7. Click **Save** and confirm that the three breakdowns have been excluded as shown:



8. Click **Update** to return to the Scheduled Data Collection form.
9. Open the **Number of resolved incidents** indicator from the **Indicators** Related List.
10. Repeat steps 3-7 above and confirm that the **Number of resolved incidents** Job Indicator has been configured as follows:



11. Click **Update** to return to the Scheduled Data Collection form.
12. Click **Execute Now** to run the job.

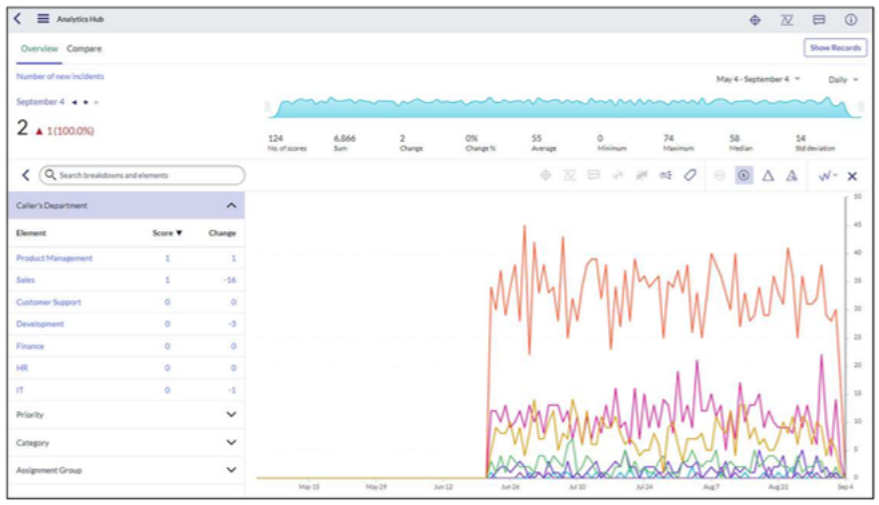
E. Breakdown Data Verification

Perform these steps after the collection job has completed:

1. Click the **Performance Analytics** - **Analytics Hub** favorite.
2. Search and open the **Number of new incidents** Indicator.
3. Expand the **Breakdowns** list.

© 2023 ServiceNow, Inc. All Rights Reserved

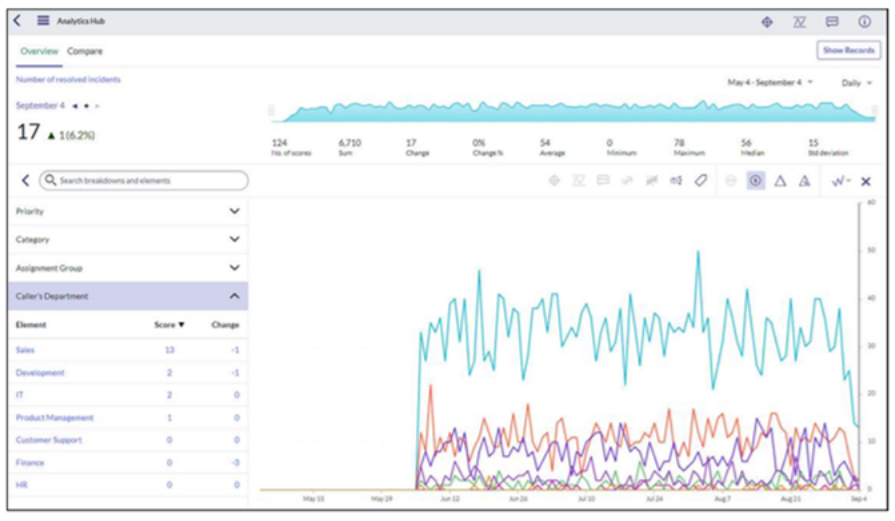
4. Confirm that open incidents are categorized by their **Caller's Department**.



5. Return to the **Analytics Hub** Indicator list.

6. Search for and open the **Number of resolved incidents** Indicator.

7. Confirm that resolved incidents are categorized by their **Caller's Department**.



Congratulations!

You have now completed the Automated Breakdowns Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Breakdown Management

Lab 5.2

⌛20 minutes

Lab Objectives

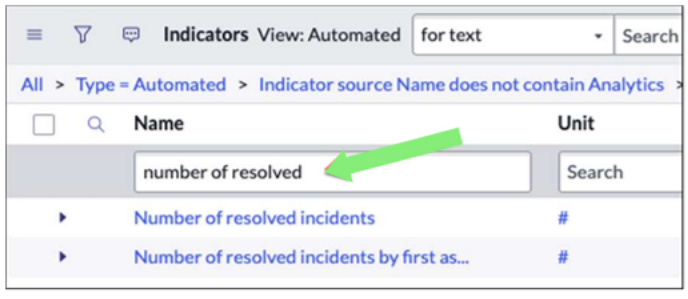
The Incident Manager at Glide Haven has some specific requirements for Breakdowns and Breakdown combination exclusions when viewing incident KPIs. In this lab, you use the Manage Breakdowns and Breakdown Matrix interfaces to add and map breakdowns and configure breakdown exclusions. The following activities are practiced:

- Launch the Manage Breakdowns interface
- Add a mapped breakdown
- Add an unmapped breakdown and create a mapping
- Explore the Breakdown Matrix

A. Manage Breakdowns

Launch Manage Breakdowns

1. Impersonate the **PA Power User**.
2. Navigate to **Performance Analytics > Indicators > Automated Indicators**.
3. Search for and open the **Number of resolved incidents** indicator.



***Tip:** Alternately, type **name contains number of resolved** in the Natural Language filter.*

© 2023 ServiceNow, Inc. All Rights Reserved

4. Review the **Number of resolved incidents** configuration.

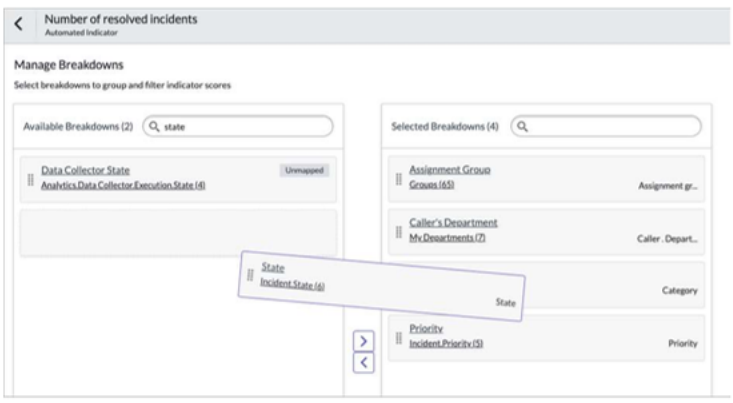
> ***Questions:***
> *What Breakdowns are currently configured?*
>
> *Is the **Collect breakdowns matrix** property enabled?*

5. Click the **Manage Breakdowns** button.

> ***Tip:** The **Manage Breakdowns** button is in the form header as well as above the Related Links.*

6. Type **state** in the **Available Breakdowns** search field to locate the **State** Breakdown.

7. Drag the **State** Breakdown to the list of **Selected Breakdowns** and remain on the same page.



Launch Breakdown Matrix

1. Click the **Configure Breakdown Matrix** button below the **Selected Breakdowns** column.

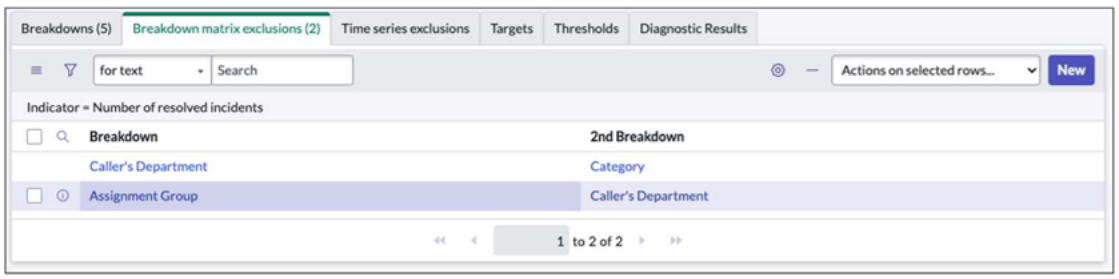
2. Exclude the following combinations of Breakdowns by clicking in the corresponding cells:

   - **Assignment Group** and **Caller's Department**
   - **Category** and **Caller's Department**

> ***Tip: Note:** An excluded combination will appear as a white background cell.*

© 2023 ServiceNow, Inc. All Rights Reserved

3. Close the **Breakdown Matrix** window.
4. Press the Back arrow to return to the **Indicator** form.
5. Confirm that the **State** breakdown has been added to the **Breakdowns** list.
6. Confirm that two new breakdown exclusions have been added.



> ***Note:*** *Breakdown exclusions will become effective after the next data Collection.*

7. End the Impersonation.

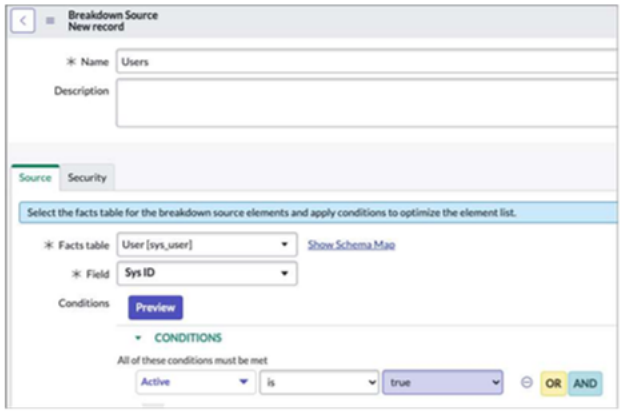
B. Create an Unmapped Breakdown

In this section you create a new Breakdown, including a new Breakdown Source and a new Breakdown Mapping via **Manage Breakdowns** utility.

Create Breakdown Source

1. Impersonate the **PA Admin**.
2. Navigate to **Performance Analytics > Sources > Breakdown Sources**.
3. Click **New** to create a new source.
4. Complete the form as shown:

- Name: **Users**
- Facts table: **User [sys_user]**
- Field: **Sys ID**
- Conditions: **Active is true**



© 2023 ServiceNow, Inc. All Rights Reserved

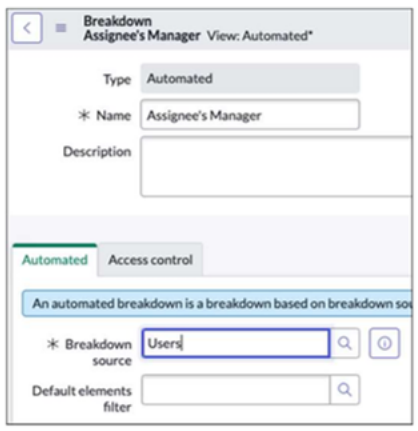
5. **Submit** the new record.

Create New Automated Breakdown

Now, configure a Breakdown for the Assignee's manager based on the Users Breakdown Source as follows:

1. Navigate to **Performance Analytics** > **Breakdowns** > **Automated Breakdowns.**
2. Click **New** to create a new Breakdown based on the **Users** breakdown source.
3. Complete the new Breakdown form as follows:

- Name: **Assignee's Manager**
- Breakdown source: **Users**



4. **Submit** the new record.

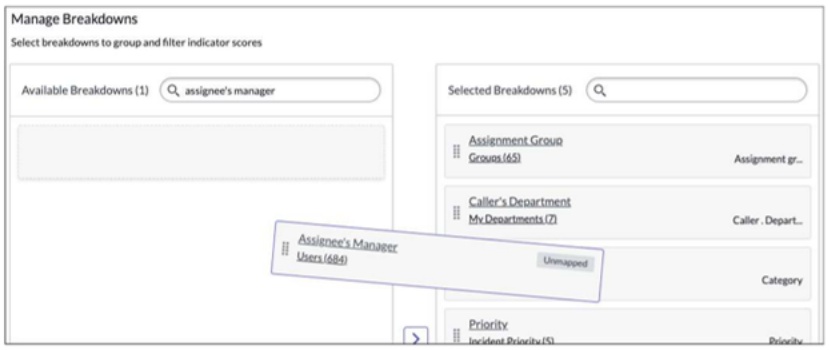
Link an Unmapped Breakdown

You need a mapping to add the **Assignee's Manager** breakdown to the **Number of resolved incidents** indicator. In this step you create a mapping using the **Manage Breakdowns** utility.

1. Navigate to **Performance Analytics** > **Indicators > Automated Indicators**.
2. Open the **Number of resolved incidents** record.
3. Click the **Manage Breakdowns** form button.
4. Confirm that the **Assignee's Manager** breakdown is currently marked Unmapped.

© 2023 ServiceNow, Inc. All Rights Reserved

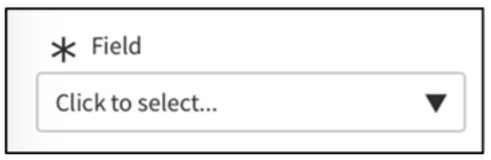
5. Add the **Assignee's Manager** breakdown to the list of **Selected Breakdowns** as shown:



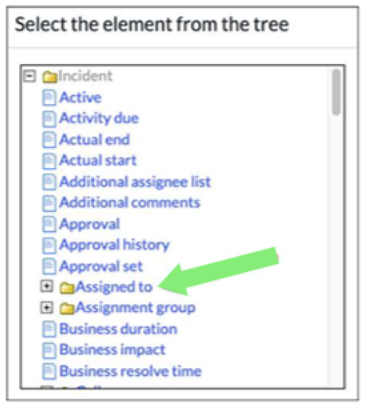
6. Review the **Breakdown Mapping** record that the system generates automatically.

7. Set the **Field** to **Assigned to Manager** as follows:

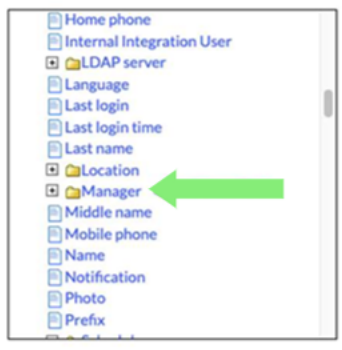
   a. Press **Click to select...**



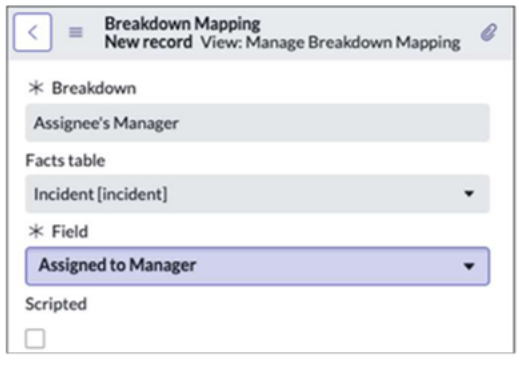
   b. Search for and expand the **Assigned to** attribute



   c. Click the **Manager** attribute under **Assigned To**



   d. Verify that the Filed is set to **Assigned to Manager**

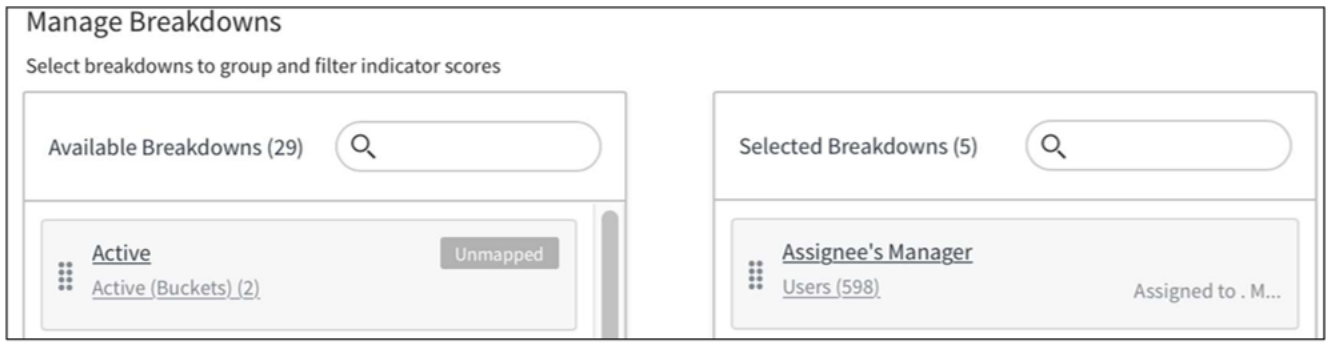


Note: *This action creates a new Breakdown mapping for the Incident's Assignee's Manager.*

© 2023 ServiceNow, Inc. All Rights Reserved

8. Click **Submit** to complete the **Breakdown Mapping** configuration.

9. Verify that the new Breakdown has been successfully added:



C. Run Collection

Configure Temp Collection Job

You need to run a historical collection to populate the Assignee's Manager Breakdown information for the Number of resolved incidents indicator.

1. Navigate to **Performance Analytics > Data Collector > Jobs**.

2. Click **New** and complete the form as follows:
   - Name: **Temp collection for Assignee's Manager Breakdown**
   - Relative start: **3**
   - Relative start interval: **months ago**
   - Active: **[unchecked]**
   - Run: **Once**

3. Click **Save** from the form context menu.

4. Navigate to the **Indicators** Related List and select **Edit…**

5. Add **Number of resolved incidents** to the **Indicators** list.

6. Click **Save**.

7. Click **Execute Now** to run the job.

> ***Tip:*** *As a best practice, apply Breakdown exclusions to avoid overwriting any scores collected daily.*

© 2023 ServiceNow, Inc. All Rights Reserved

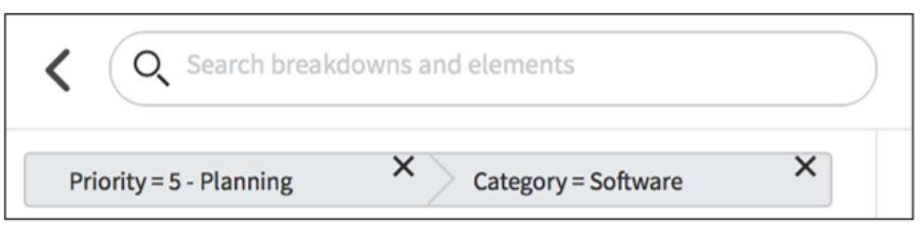
D. Data Verification - View Breakdown on Scorecard

1. Once collection completes, select the **Performance Analytics** – **Analytics Hub** favorite.
2. Search for and open the **Number of resolved incidents** Indicator.
3. Open the **Breakdowns** list.
4. Confirm that incidents can now be trended by their **Assignee's Manager**.

> ***Note:*** *You may need to go back to a previous day's collections to see scores.*

5. Select the **Priority** Breakdown and apply the **5-Planning** Breakdown element to view resolved incidents with Planning priority.

6. Select the **Category** Breakdown and apply the **Software** Breakdown Element as a 2nd level breakdown to view **5 - Planning** priority incidents from the **Software** category.



7. Clear the Breakdown element selections by clicking the '**X**'.

© 2023 ServiceNow, Inc. All Rights Reserved

8. Verify that incidents *cannot* be navigated by these two combinations of breakdowns:

Caller's Department + **Assignment Group** and **Category** + **Caller's Department**

Congratulations!
You have now completed the Breakdown Management Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

Module Recap

Core Concepts

- Breakdowns allow to navigate Indicator trends by an attribute
- The Breakdown mapping links the Breakdown Element to a Process table
- 2-level Breakdown navigation is allowed
- Matrix Exclusions reduce the attribute combinations allowed on Widgets and in the Analytics Hub

Review Questions

- Which object describes the possible values of a Breakdown?
- There are 3 Priorities, 4 States, and 2 Age Elements. How many scores are generated for all possible Breakdown combinations?
  - —Priority x State
  - —Priority x Age
  - —State x Age

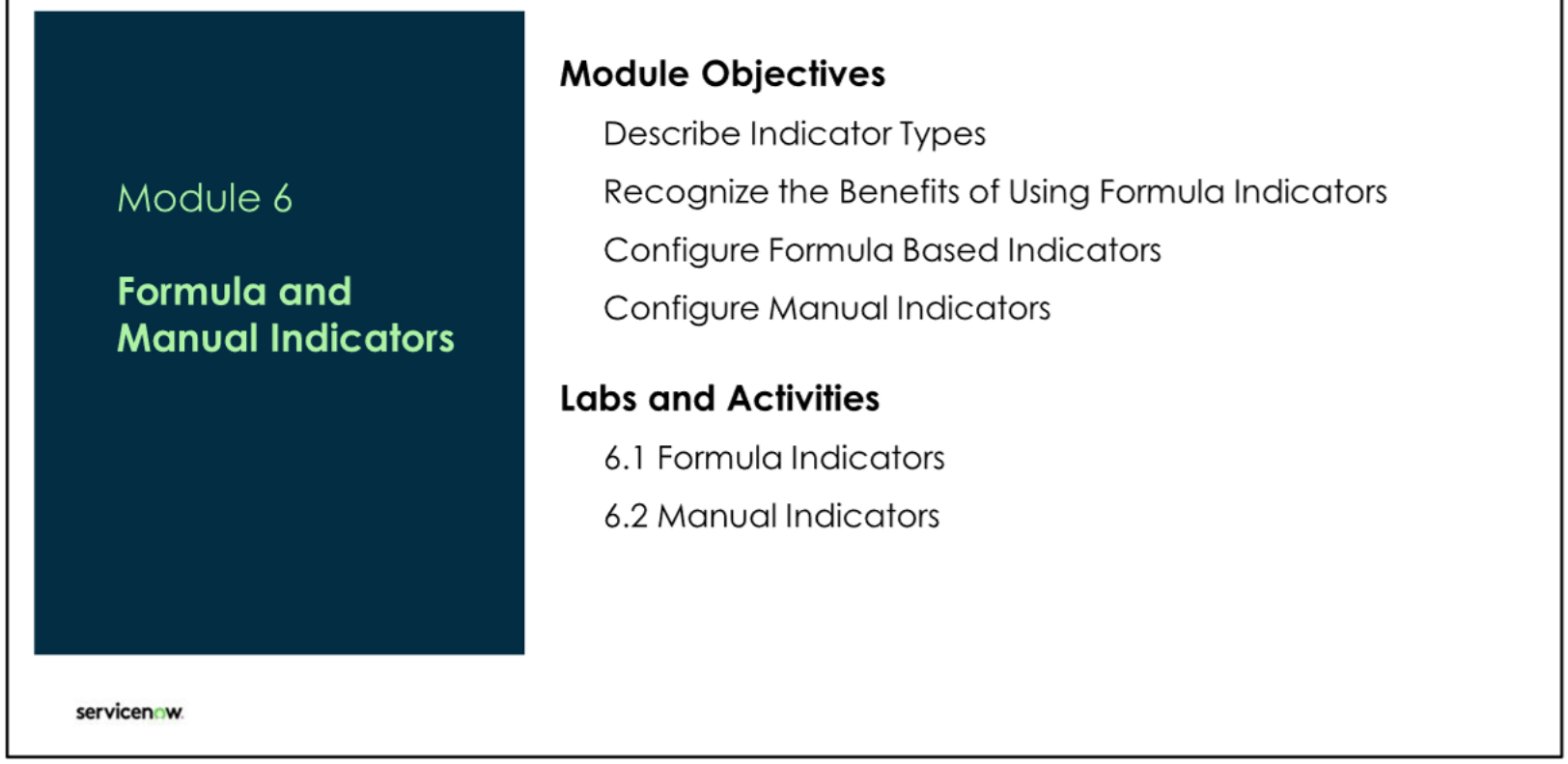
Which object describes the possible values of a Breakdown?
Breakdown Source

There are 3 Priorities, 4 States, and 2 Age Elements. How many scores are generated for all possible Breakdown combinations?
When adding them all up, the answer is 26:

- **Priority x State** 12
- **Priority x Age** 6
- **State x Age** 8

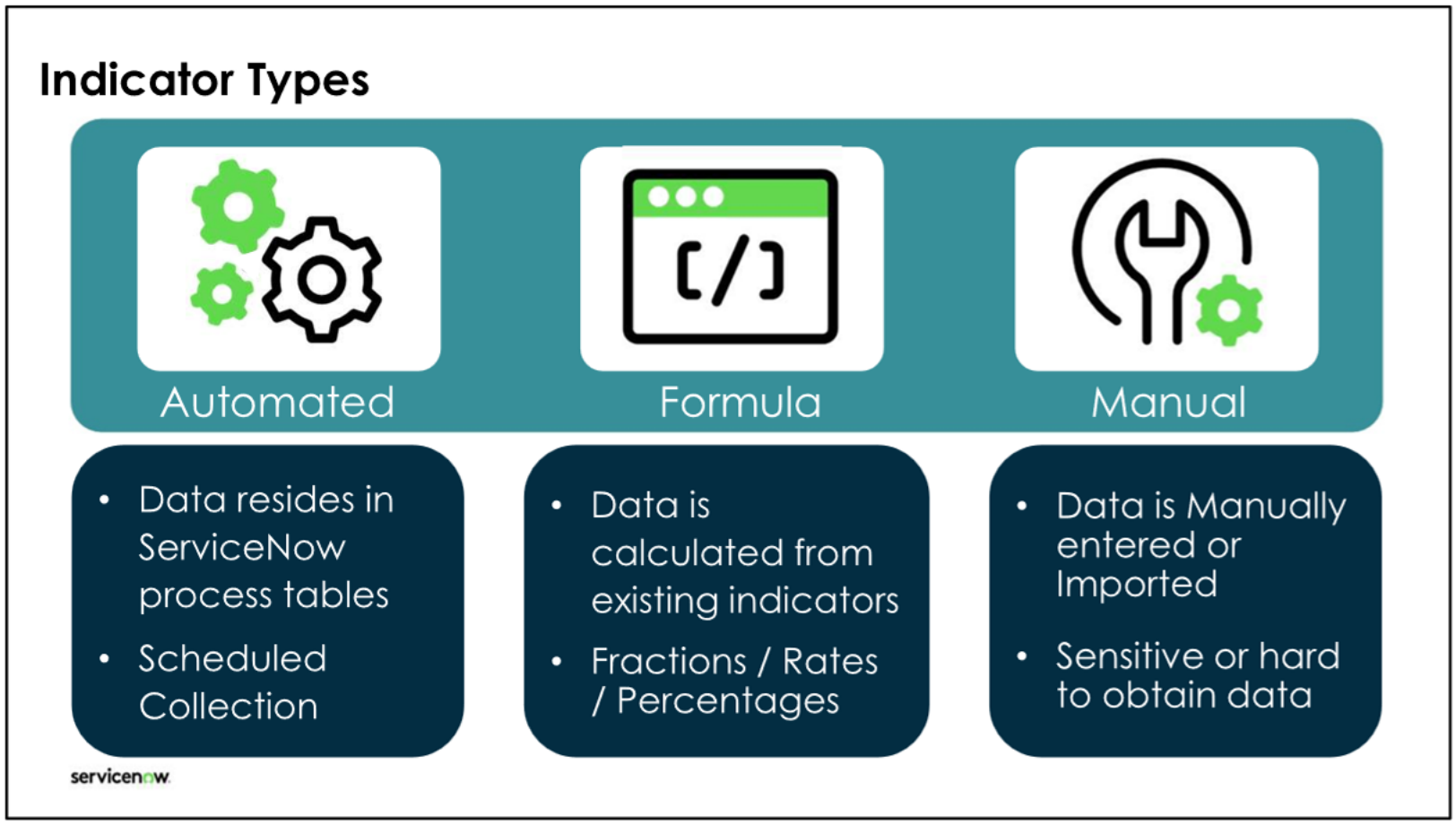
© 2023 ServiceNow, Inc. All Rights Reserved

© 2023 ServiceNow, Inc. All Rights Reserved



This module introduces the Formula Indicator Type and presents some common use cases and techniques for efficiently building Formulas to derive new metrics. In addition, the Manual Indicator type is also discussed.

© 2023 ServiceNow, Inc. All Rights Reserved



Choosing the right collection method depends on the frequency and integrity of your data. There are multiple ways to collect the scores for your indicators:

Automated Indicators: When data resides in ServiceNow process tables and you need to measure behavior on a daily basis, using an automated indicator is the preferred method. The data collector enables you to define a set of jobs and uses indicator definitions to collect scores.

Formula Indicators: Formula Indicators leverage other indicators to derive new metrics.

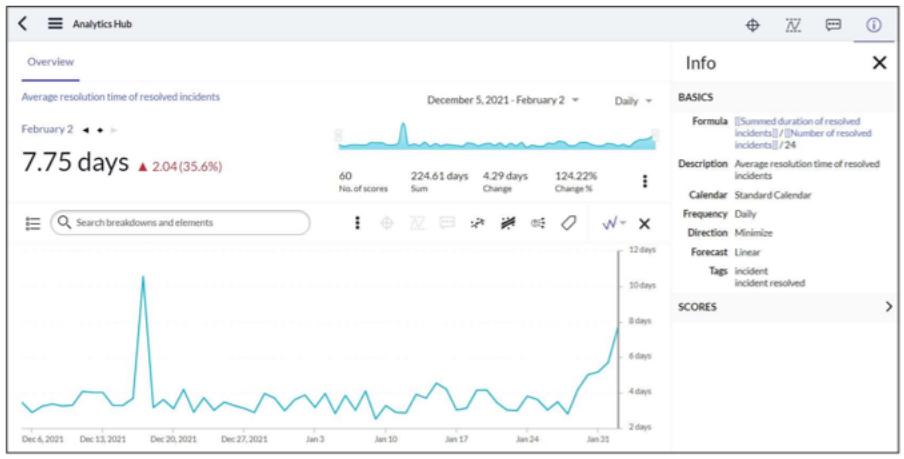
Manual Indicators: If you need to measure an indicator once a month, quarter, or year, use the manual interface or import the data via an Import Set. Manual Indicators may also be used to collect data from a 3rd party or for sensitive data such as HIPAA or Sarbanes-Oxley.

© 2023 ServiceNow, Inc. All Rights Reserved

Formula Indicators Defined

Purpose:

Obtain new insights from existing Indicators



Example:

Cumulative Resolution Time / Total # Incidents / 24 = Average Resolution time in days

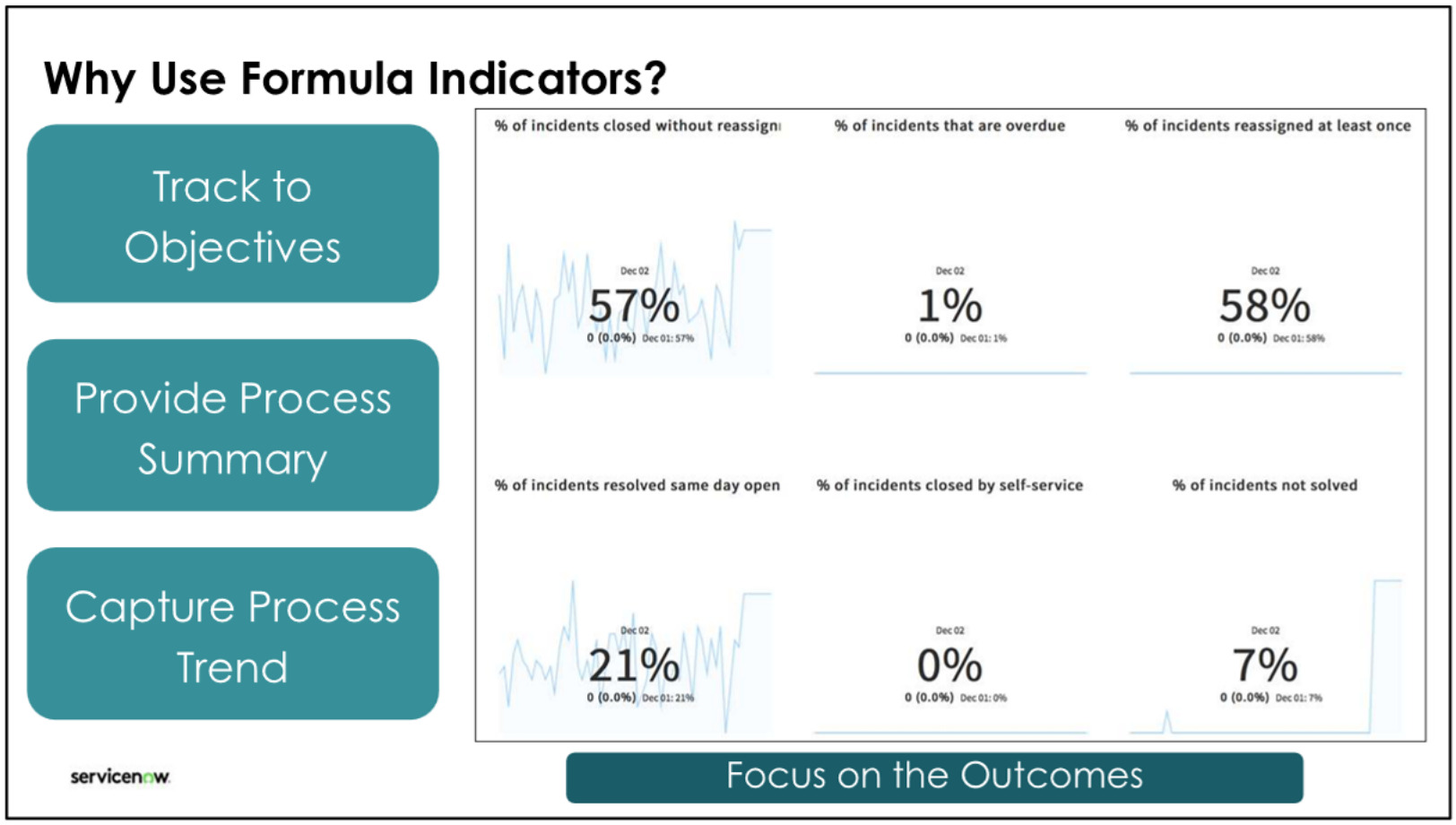
Implementation: Combine one or more Indicators in a mathematical statement (formula)

servicenow

Formulas calculate new metrics from existing Indicators. Formula indicators are calculated at display time (in the Analytics Hub and on Widgets) and their value is not persisted. Since formulas are executed for every data point in a trend, complex calculations and long running scripts can potentially slow down the Analytics Hub and Dashboard loading.

Technical Note: There is some overlap between what a Performance Analytics Script can do and Performance Analytics Formula Indicators. The main difference is that a **Performance Analytics Script is run at collection time and the results are stored** in the database. PA Formula Indicators are calculated at display time and the results are not materialized.

© 2023 ServiceNow, Inc. All Rights Reserved



Organizational goals often describe a global behavior, or a direction, expressed as a rate, percentage, a sum, or a relationship. Formula indicators are very effective at visualizing trends in relationships and process direction.

Consider this example: Your goal, as an incident manager, is to ensure prompt incident resolution. The following are some KPIs that illustrate your process effectiveness:

- Incident Backlog Growth
- Mean Time to Resolution
- % Incidents Resolved without Reassignment

These KPIs are outcomes, or lagging indicators, that are derived from input or leading indicators such as Number of incidents open, Number of new incidents, Number of resolved incidents, etc.

© 2023 ServiceNow, Inc. All Rights Reserved

Formula Use Cases

Percentage

$$\text{Percentage Overdue Incidents} = \frac{\text{Number of open and overdue}}{\text{Total number of open Incidents}} * 100$$

Average

$$\text{Average Incident Age} = \frac{\text{Summed age of open Incidents}}{\text{Total number of open Incidents}}$$

Rate

$$\text{Resolution Rate} = \frac{\text{Summed duration of resolved Incidents}}{\text{Total number of resolved Incidents}}$$

New Metric

Incident Backlog Growth = New Incidents – Resolved Incidents

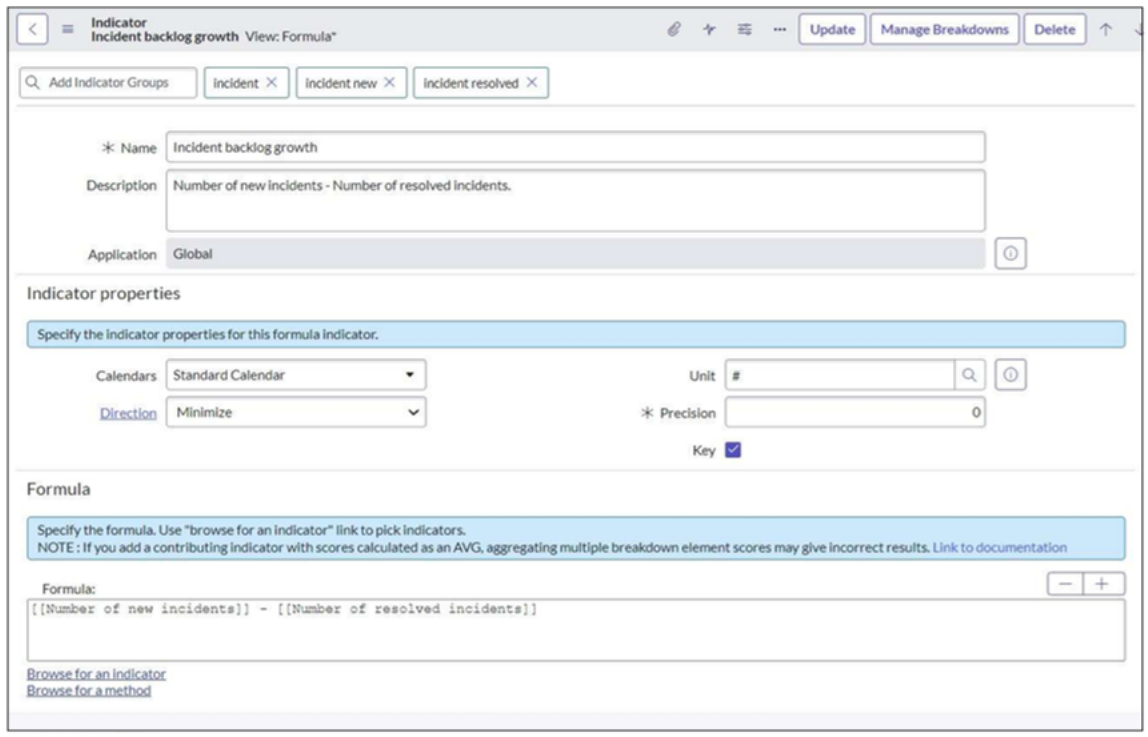
You can use Formula Indicators to create new Indicators based on the collected data from existing manual or automated Indicators. A Formula Indicator applies a calculation to one or more existing indicators in order to generate a new metric.

Formulas are often used to:

- Calculate ratios and percentages from existing indicators
- Combine data from different process applications

© 2023 ServiceNow, Inc. All Rights Reserved

Formula Indicator Configuration



The Formula Box contains an expression of Indicators and operators defining the Formula Indicator

Syntax Rule: Indicators are enclosed in [[ ]]

General, Presentation, Access, and Forecasting properties are identical to those of Automated Indicators

The Formula Indicators have identical general properties to those of the Automated Indicators.

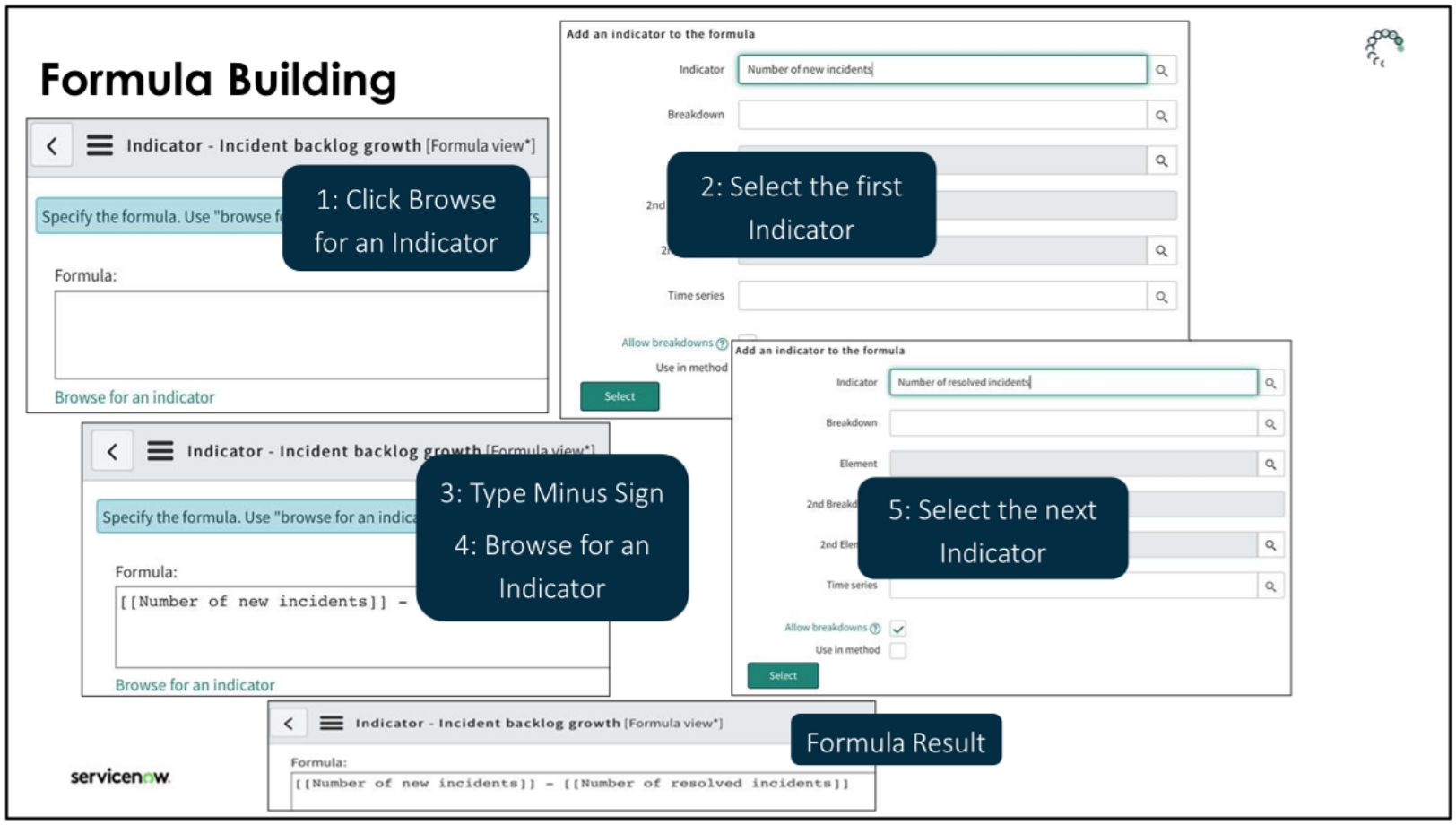
However, Formula Indicators do not use Indicator Sources but instead have a **Formula** box. The Formula box specifies existing indicator(s) and mathematical operations using JavaScript syntax.

Any Indicator referenced in the Formula box must be surrounded by double square brackets - **[[]]**.

Sharing, Forecasting, and Presentation properties are also identical to those of the Automated Indicators.

Formula Indicators can also be linked to Breakdowns.

© 2023 ServiceNow, Inc. All Rights Reserved



In the example shown here, the formula calculates the Incident Backlog Growth. The actual formula is: **Number of new incidents - Number of resolved incidents**. The steps to create this formula are as follows:

1. Click **Browse for an Indicator** action under the Formula box.
2. Search for and select the **Number of new incidents** indicator, then click **Select** to return to the Indicator Form.
3. Manually type the **subtraction operator (minus sign) -**
4. Select **Browse for an indicator** once again.
5. Search for and choose the **Number of resolved incidents** indicator, then click **Select** to return to the Indicator Form.

The final formula result is shown at the bottom.

Note: Save or Update the Indicator to confirm all changes.

© 2023 ServiceNow, Inc. All Rights Reserved

Using Breakdowns in Formulas

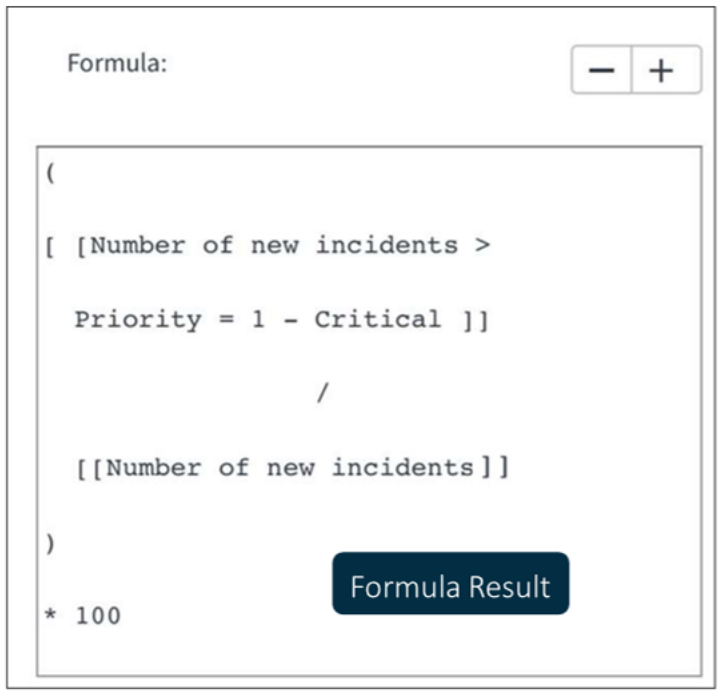
Method: Apply a Breakdown to identify specific scores as a percentage of all scores, then multiply by 100

$$\frac{\text{Count of Breakdown Scores}}{\text{Count of All Scores}} * 100$$

Example: What Percentage of Incidents are Critical?

$$\frac{\text{Number of P1s}}{\text{Number of All Incidents}} * 100$$

servicenow

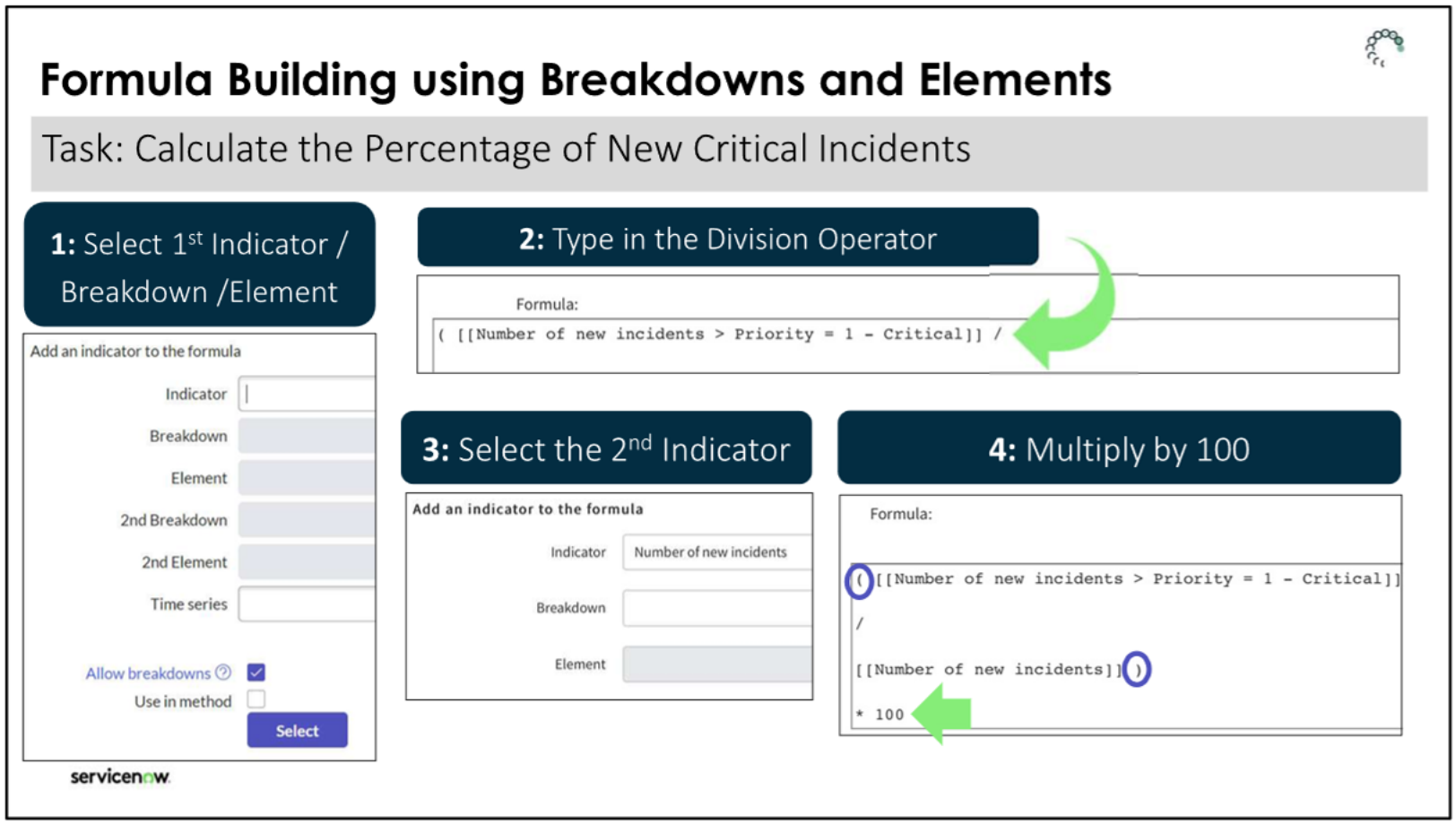


You can use Formula Indicators to create new Indicators based on the collected data from existing Manual or Automated Indicators. A Formula Indicator applies a calculation to one or more existing indicators in order to generate a new metric.

Formulas are often used to:

- Calculate ratios and percentages from existing indicators
- Combine data from different process applications

© 2023 ServiceNow, Inc. All Rights Reserved



In this example, we create a formula that calculates the percentage of New Incidents that are of a Critical Priority. The steps to generate the formula are as follows:

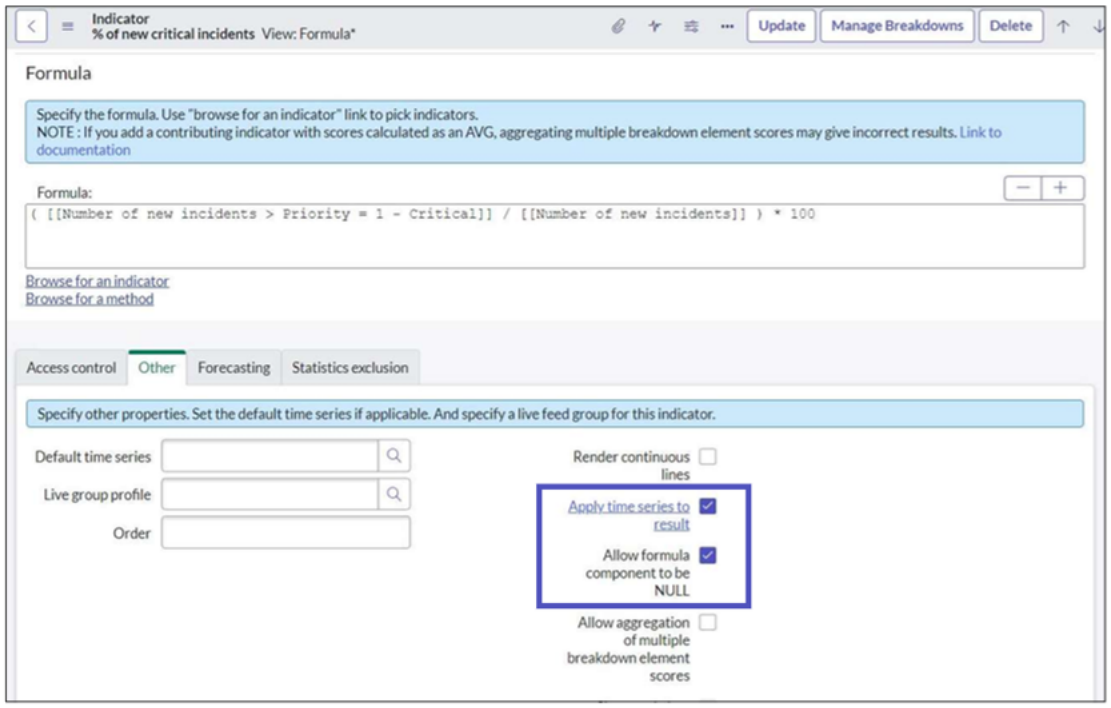
1. Specify the first formula component:
   - Click the **Browse for an Indicator** link and select the **Number of New incidents** indicator.
   - Specify the Breakdown as **Priority**.
   - Specify the Element as **1 – Critical**.
   - Enable the **Allow breakdowns** option and click **Select**.

   Note the syntax of the resulting expression:
   - The greater than operator is used to apply the Breakdown.
   - The equals sign is used to compare to a Breakdown value.

   This expression results in counting only the critical incidents that are new.
2. Next, manually insert the **division operator**.
3. Then, click **Browse for an indicator** once again to select the **Number of new incidents** indicator.
4. Finally, ensure the required parenthesis around the division expression are entered and add the *** 100** expression to derive the percentage of the Formula.

© 2023 ServiceNow, Inc. All Rights Reserved

Advanced Configuration Options



servicenow

The following tuning techniques may be used to further refine formula behavior by using the Other tab in the Formula Indicator form.

Using Time Series Analysis:

- By default, when using time series analysis with a formula, it is applied to every individual member/component of the formula. However, you can apply the time series calculations to just the final result of the formula calculations, by selecting **Apply time series to result** option. The differences are subtle, and the choice depends on objectives and personal preferences.

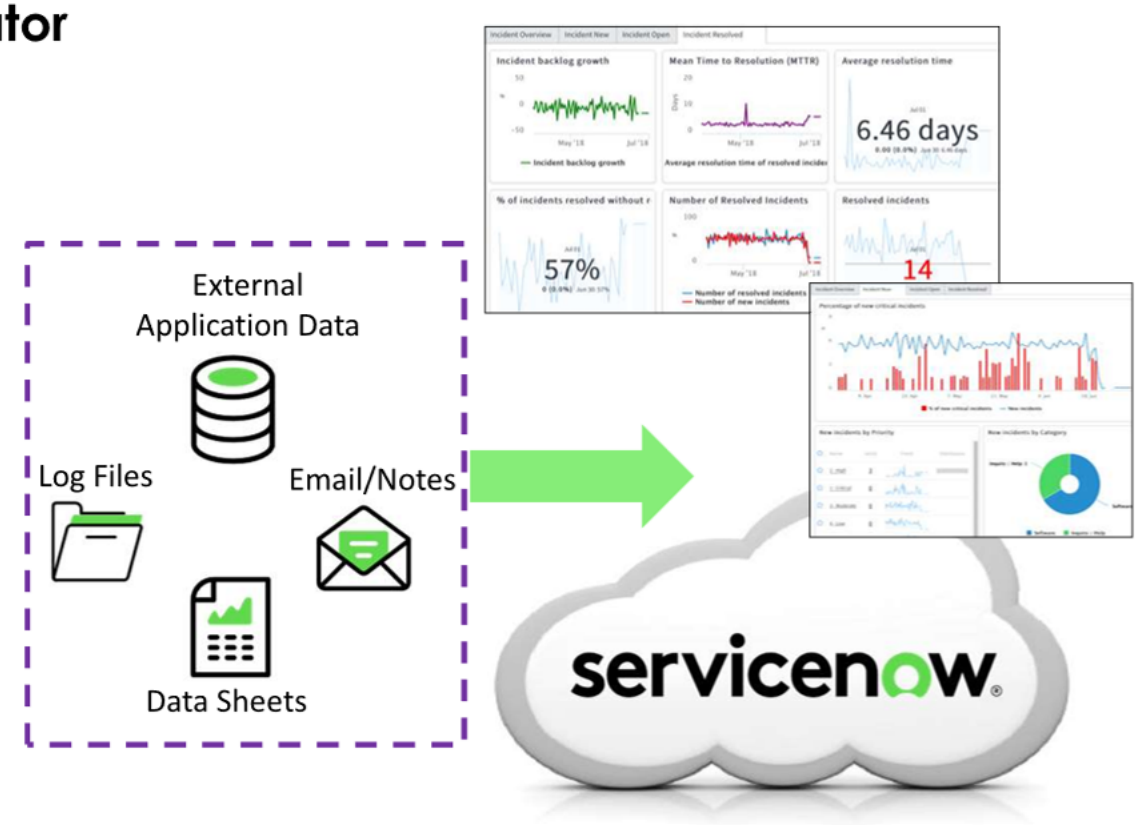
In addition, you can choose how to handle NULLs in a formula component:

- By default, if any of the formula components are Null, the formula will simply abort and return a **No Score** message.
- To perform a Null check and return an alternative value, select the **Allow formula component to be NULL** option.

© 2023 ServiceNow, Inc. All Rights Reserved

Manual Indicator

Manual Indicators enable you to track trends and performance of external data



Manual indicators are not associated with a source, but rather rely on manually typed in or imported data.

The following are additional characteristics of manual indicators:

- Scores for Manual Indicators are not collected automatically by a data collection job.
- Populate Manual Indicators by manually adding scores via the Scoresheet or by importing data into the Scores tables.
- Typically, Manual Indicators are used for data that is updated once a month or less.
- Manual Indicators are typically used for data that cannot be retrieved from the ServiceNow instance because it comes from an outside system.

Examples: Customer data from a third-party sales system or for sensitive (HIPAA, Sarbanes Oxley, etc.) scores.

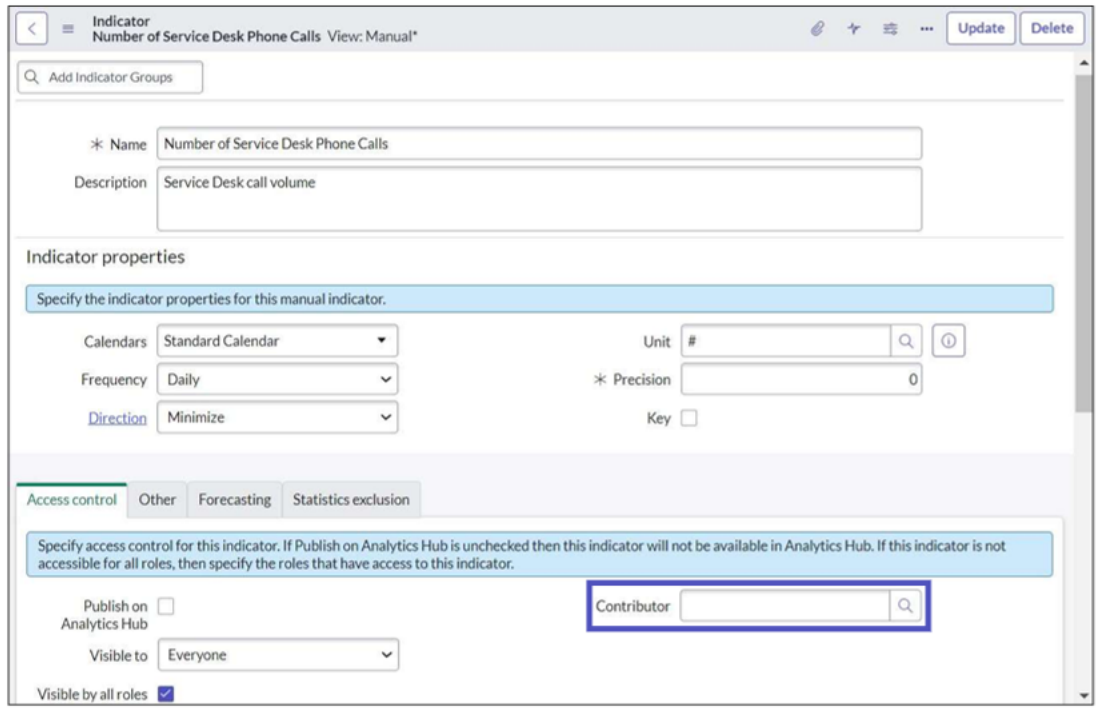
Example scenario: Your company does not have telephony data in any ServiceNow table. They do however have logs in their telephony system providing information about daily calls to the Service Desk. The total number of phone calls per day can be exported into a CSV file from the telephony system and imported into ServiceNow. A Manual Indicator is needed to display the imported data.

© 2023 ServiceNow, Inc. All Rights Reserved

Manual Indicator Configuration

No Indicator Source/No Collection

Contributors can Enter/Edit Scores



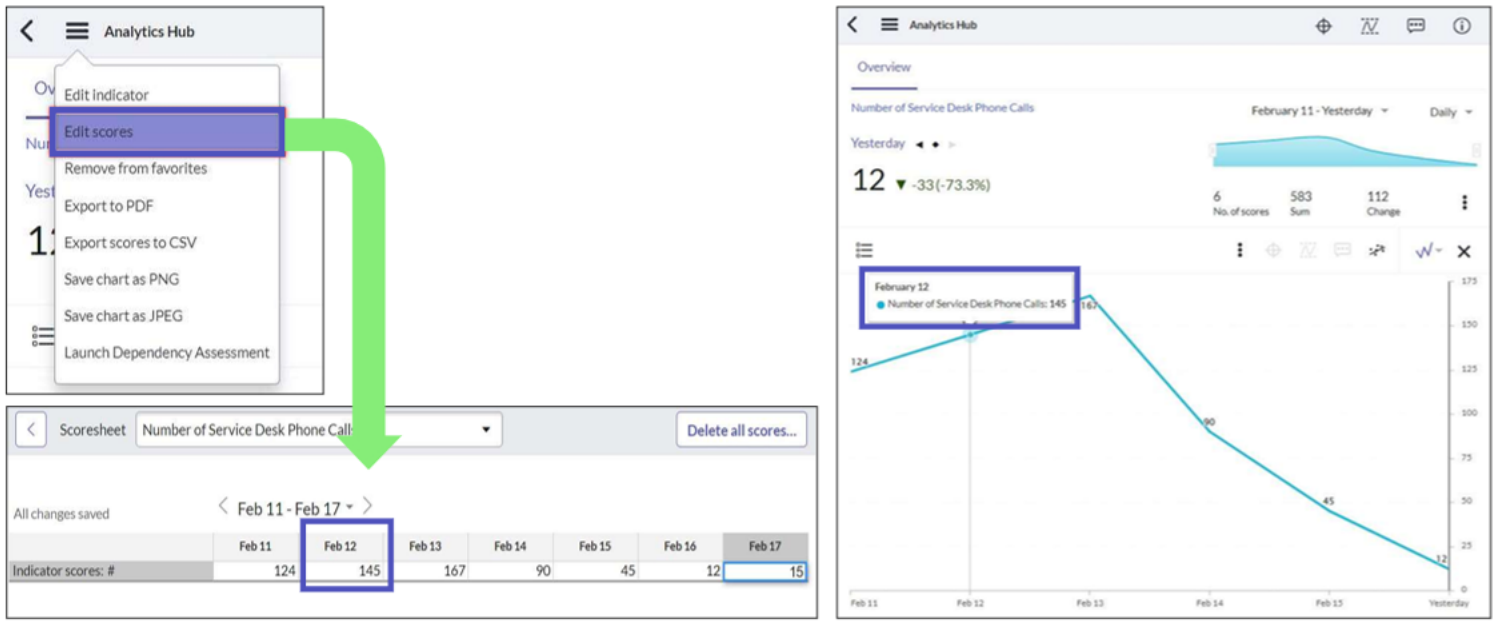
servicenow

- Since Manual Indicators do not have an Indicator Source, scores must be manually entered by an identified Contributor as seen on the indicator form (or by a user with the admin/pa_admin/power_user role).
- Users must have the pa_contributor role or they cannot be selected from the **Contributor** lookup.
- A Contributor will only be able to add scores to the indicator(s) they have been designated to.
- In use, Manual Indicators are identical to Automatic Indicators in terms of their features and capabilities. Access Control, Forecasting, Presentation properties, and Time Series additions/exclusions are identical to those covered in Automatic indicators.

© 2023 ServiceNow, Inc. All Rights Reserved

Populating a Manual Indicator

- Manually type in the scoresheet
- Use an import set or an xml to populate the `pa_scores_l1` and `pa_scores_l2` table



There are two ways to populate a Manual Indicator:

- Enter scores manually via the Scoresheet in respective frequency cells. All entries will be saved automatically.
- Create an Import Set and use a Transform Map to import the data into the pa_scores_l1 and pa_scores_l2 table. This step requires the admin role and is to be performed by the ServiceNow System Admin.

The frequency selected on the Manual Indicator form specifies how dates appear on the Scoresheet and how the indicator will be visualized in the Analytics Hub.
For example, if you select a Monthly Frequency, the Scoresheet displays Months. Similarly, if you select a quarterly Frequency, the Scoresheet displays quarters.

© 2023 ServiceNow, Inc. All Rights Reserved

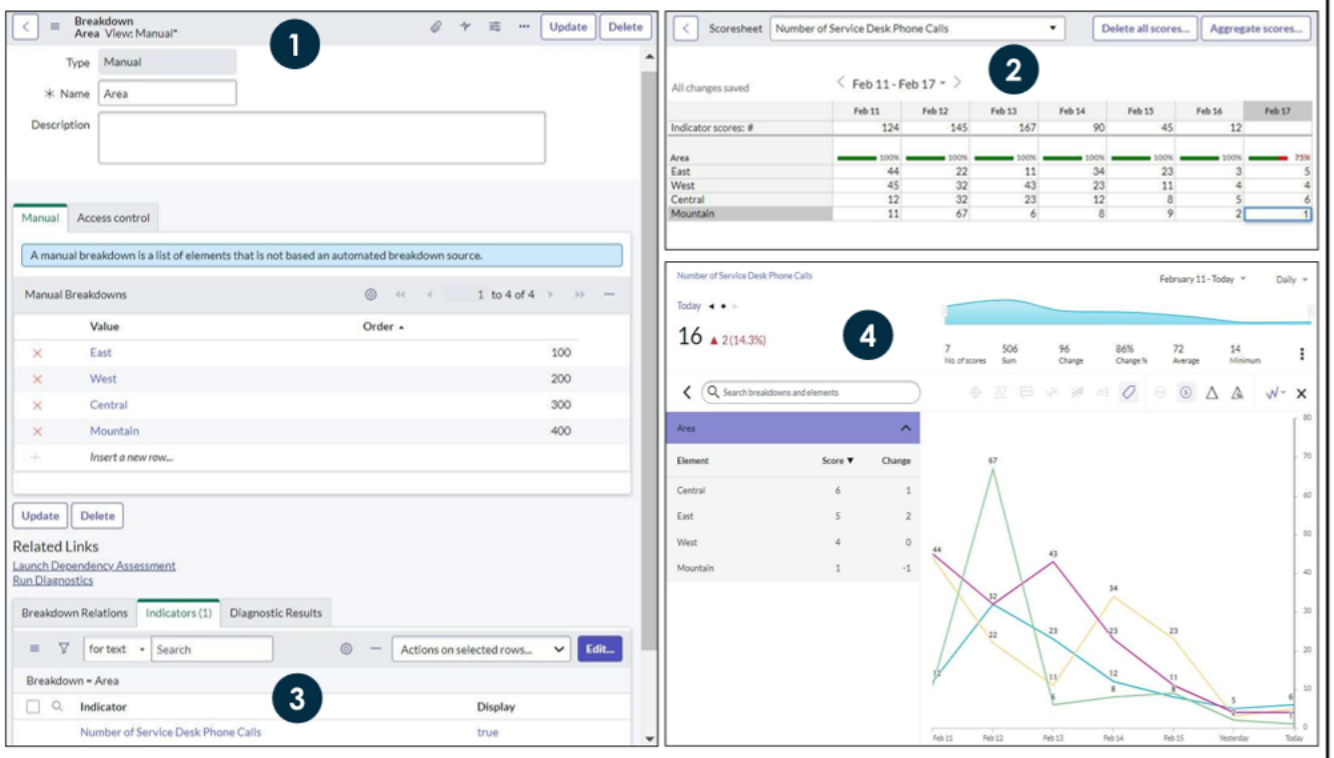
Manual Breakdown

1: Create Breakdown

2: Enter Scores

3: Link to a manual Indicator

4: View on Analytics Hub



A Manual Breakdown can be used in combination with a Manual Indicator. In this scenario, the breakdown data and indicator data are not contained in ServiceNow tables. Only Manual Breakdowns can be used with Manual Indicators.

As shown in this example, configuration of a manual breakdown is similar to that of an automated breakdown. The only difference is that the elements of a manual breakdown are not retrieved from an automated breakdown source but are entered manually.

Notes:

- When manual breakdowns are associated with a manual indicator, the indicator scoresheet will allow for entering data per breakdown element.
- Manual breakdowns may also be associated with automated indicators.
- There is no automatic summing up of breakdown data. The contributor is responsible for entering correct information in both the Indicator summary score cell as well as in the respective breakdown score cells.
- After entering scores, you click the **Aggregate Scores…**button and choose whether you want to use the **Sum** or the **Average** of a specific breakdown to calculate the main scores for the indicator.

© 2023 ServiceNow, Inc. All Rights Reserved

Manual and Formula Indicator Labs

Lab 6.1
Formula Indicators

Lab 6.2
Manual Indicators

6.1 Indicator Types Lab: Formula Indicators

- Create a New Formula Indicator

6.2 Indicator Types Lab: Manual Indicators

- Create a New Manual Indicator
- Add scores to the Manual Indicator Scoresheet

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Formula Indicators

Lab 6.1

15 minutes

Lab Objectives

The Glide Haven's Incident process owner needs to track the percentage of incidents that are not resolved by the first assigned group. This is achievable using a formula indicator. In this lab, you perform the following:

- Define formula logic
- Configure a Formula indicator
- View the Formula indicator in the Analytics Hub

A. Define Indicator Formula

You are going to build an indicator to calculate the percentage of incidents that were *not* resolved by the first assignment group.

A couple of approaches are possible when defining the formula. In this lab, you implement the following logic:

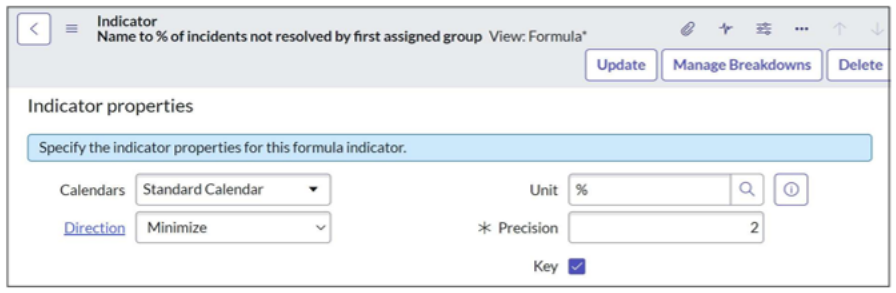
$$\frac{(Number\ of\ resolved\ incidents - Number\ of\ resolved\ incidents\ by\ first\ assigned\ group)}{Number\ of\ resolved\ incidents} * 100$$

B. Create Formula Indicator

1. Access the lab environment as the **PA Admin**.
2. Navigate to **Performance Analytics > Indicators > Formula Indicators**.
3. Click **New** to create a new Formula indicator.
4. Set the **Name** to **% of incidents not resolved by first assigned group**.
5. Set the **Description** to **Percentage of incidents that are not resolved by the first assigned group**.

© 2023 ServiceNow, Inc. All Rights Reserved

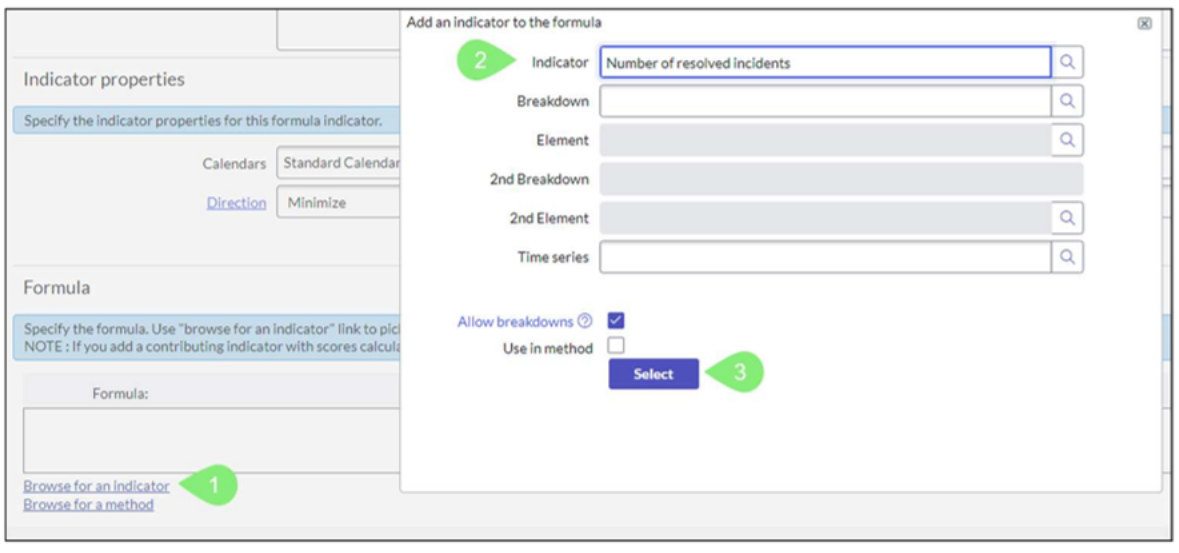
6. Set additional attributes as follows:
   - Direction: **Minimize**
   - Unit: **%**
   - Precision: **2**
   - Key: **checked**



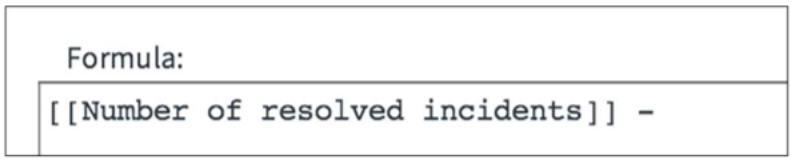
7. Enable the **Publish on Analytics Hub** property under the **Access control** tab.
8. **Save** the indicator from the form context menu.

Build Indicator Formula

1. Click the **Browse for an indicator** link in the Formula section.
2. Select the **Number of resolved incidents** indicator. Leave all other fields unchanged.
3. Click the **Select** button to return to the main form.



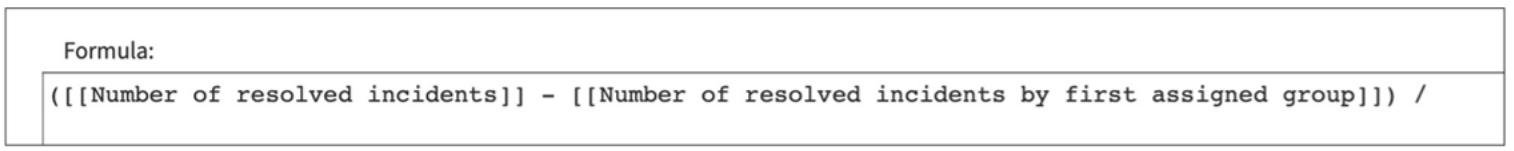
4. Type “-“ (minus operator) in the Formula box at the end of the current formula.



© 2023 ServiceNow, Inc. All Rights Reserved

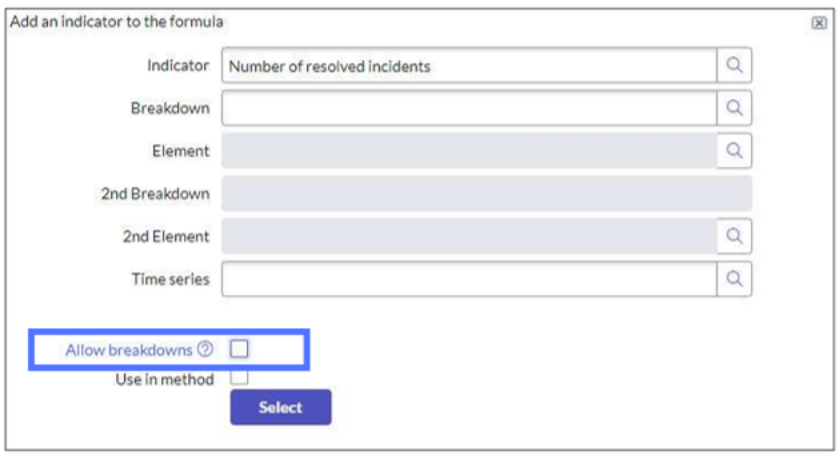
Repeat the process of selecting an operand as follows:

5. Click the link **Browse for an indicator** link in the Formula section.
6. Select **Number of resolved incidents by first assigned group**. Leave the attributes on the other sections unchanged.
7. Click **Select** to return to the main form.
8. Enclose the formula in parenthesis **()**.
9. Type "**/**" (division operator) after the parenthesis in the Formula box.

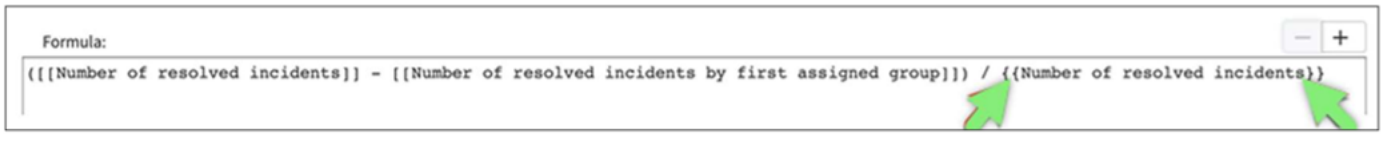


Repeat the process of selecting a third operand as follows:

10. Click the **Browse for an indicator** link.
11. Select **Number of resolved incidents** and leave other attributes unchanged.
12. Uncheck the **Allow breakdowns** box.



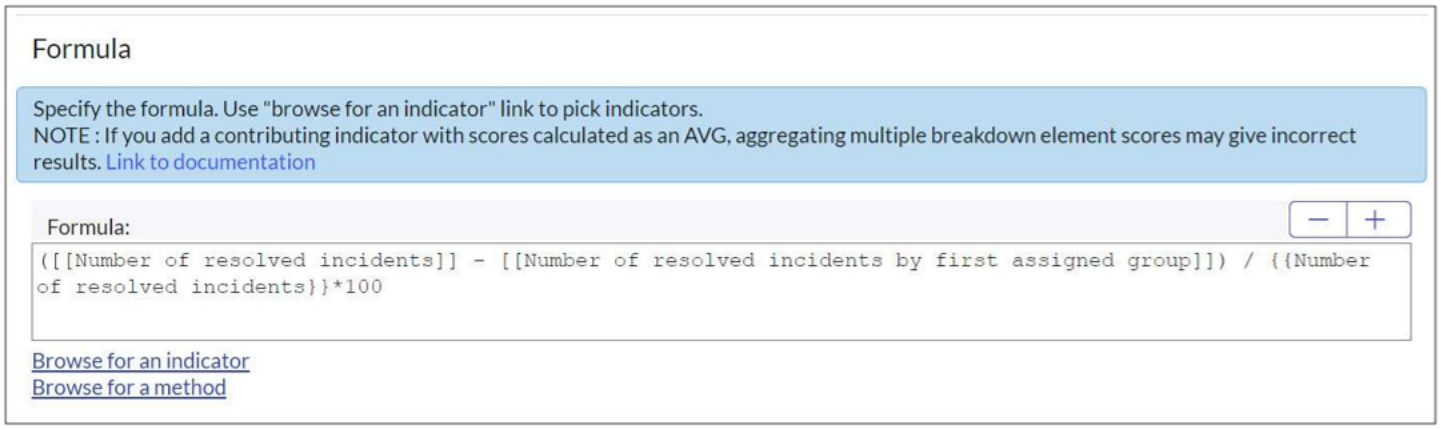
13. Click **Select**.
14. Confirm the presence of double curly {} brackets surrounding the denominator.



Note: *Curly brackets prevent users from applying breakdowns to the formula denominator.*

© 2023 ServiceNow, Inc. All Rights Reserved

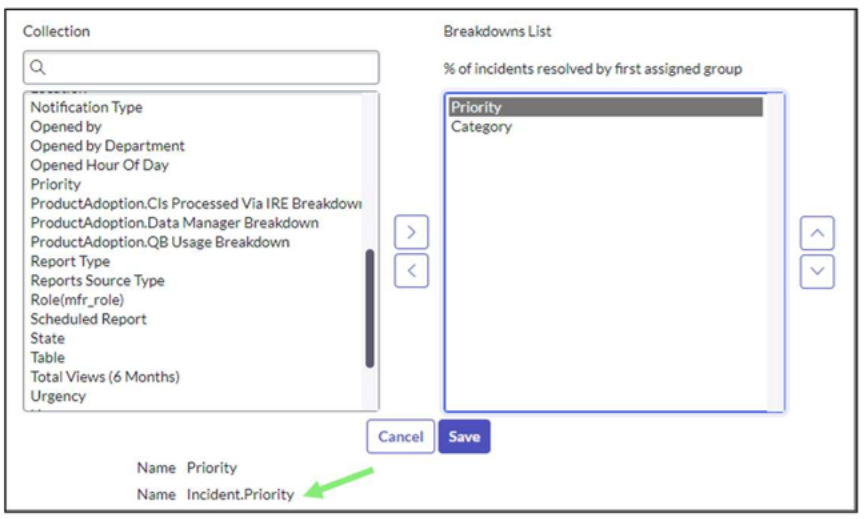
15. Type *** 100** in the Formula box at the end of the current formula.



16. **Save** the indicator.

Configure Indicator Breakdowns and Time Series

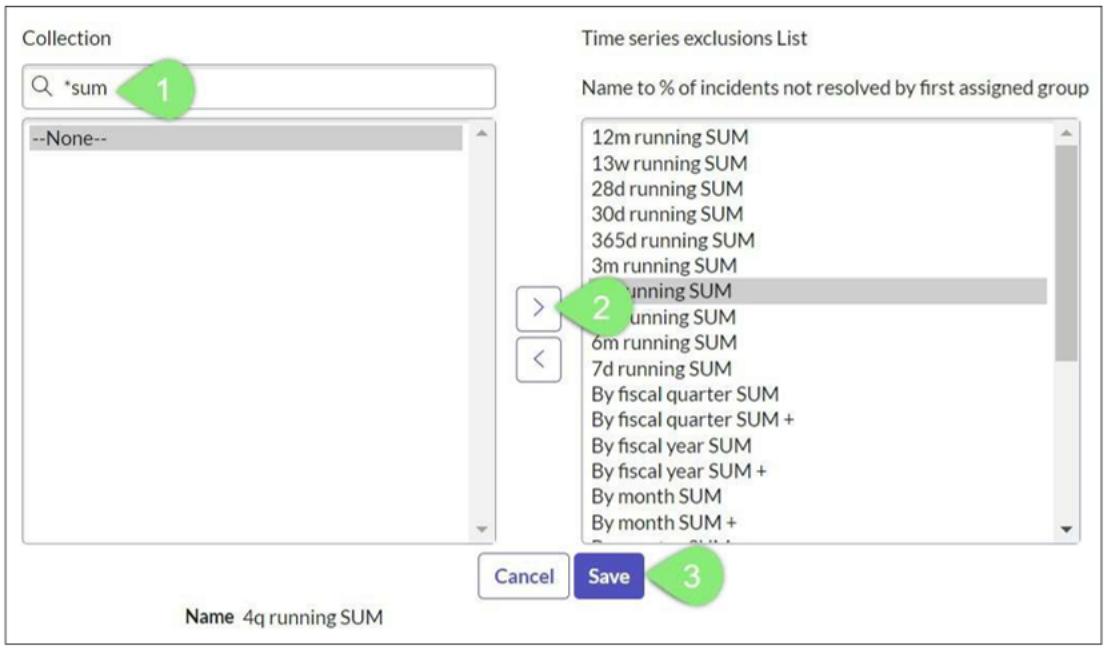
1. Navigate to the **Breakdowns** related list.
2. Click **Edit…**.
3. Add **Category** and **Priority (Incident.Priority)** to the Breakdowns List.



4. Click **Save** to return to the formula indicator.
5. Navigate to the **Time series exclusions** Related List.
6. Click **Edit…**
7. Type ***SUM** in the **Collection** search box.

© 2023 ServiceNow, Inc. All Rights Reserved

8. Add all **SUM** aggregates to the Time series exclusions List. This action prevents the viewer from applying a SUM aggregate in the Analytics Hub.



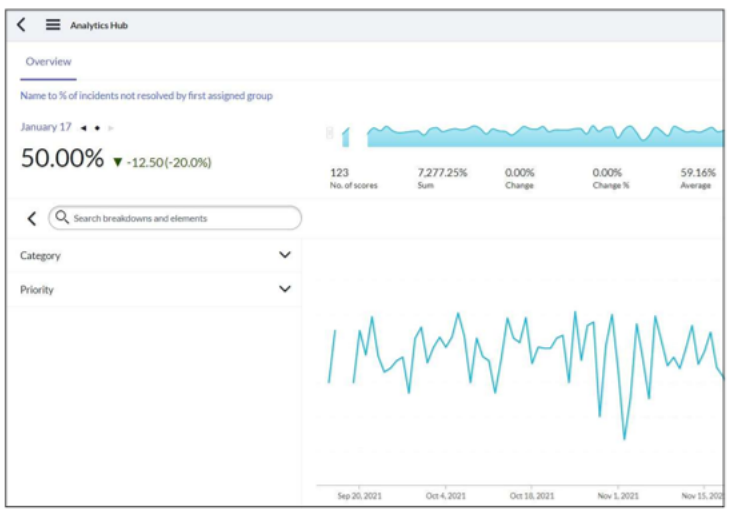
9. Click **Save** to return to the formula indicator.

C. Data Verification

Since you did not create a new automated indicator, there is no need to run collection. You only need to verify that the formula works as expected.

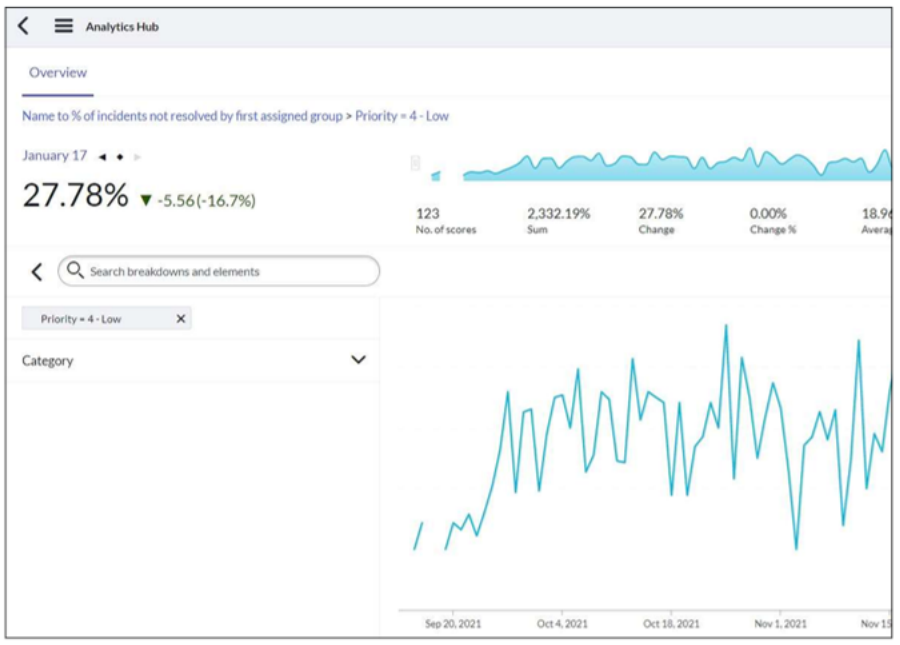
1. Click the **Show Analytics Hub** Related Link.

2. Click **Breakdowns** to view the **Breakdowns** list.



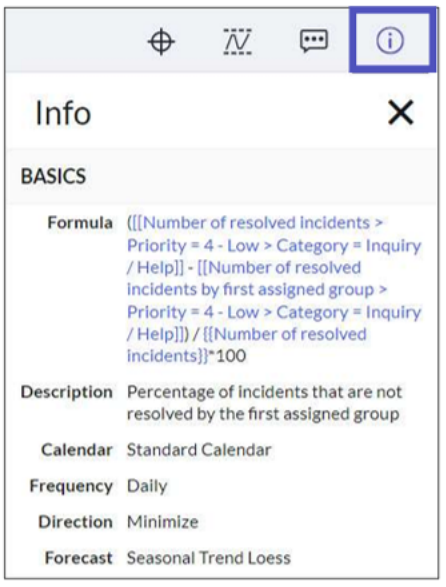
© 2023 ServiceNow, Inc. All Rights Reserved

3. Expand the **Priority** breakdown. What percentage of **Low** Priority incidents were most recently unresolved by first assigned group?



4. Expand the **Category** breakdown. What percentage of **Inquiry/Help** incidents were most recently unresolved by first assigned group?

5. Click the **Info** button and review the formula details.



6. Note that the Formula indicator does not have a **Compare** tab.

Tip: *The Compare tab is available only for Automated Indicators.*

Congratulations!
You have now completed the Formula Indicators Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Manual Indicators

Lab 6.2

⌛20 minutes

Lab Objectives

As an Incident Manager, you need visibility into the volume of phone calls into Glide Haven's Service Desk and the proportion of these calls that results in new incidents. To accomplish this, the following are created:

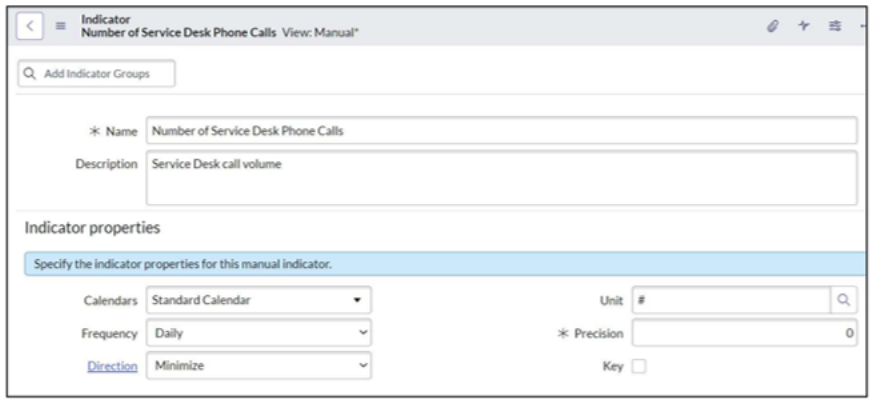
- Manual Indicator to provide external data about Service Desk calls
- Formula Indicator to visualize the proportion of calls resulting in incidents

A. Track Service Desk Phone Calls

New Manual Indicator

Here you configure a manual indicator to track all incoming Service Desk phone calls.

1. Access the lab environment as the **PA Admin** user.
2. Navigate to **Performance Analytics > Indicators > Manual Indicators** and click **New**.
3. Configure the new manual Indicator as follows:
   - Name: **Number of Service Desk Phone Calls**
   - Description: **Service Desk call volume**
   - Direction: **Minimize**
   - Unit: **#**



© 2023 ServiceNow, Inc. All Rights Reserved

4. **Save** the indicator.

Manual Indicator Data Entry

For the sake of time and simplicity, you are going to skip the file import process and type in the information for the past week manually.

1. Click the **Scores for this indicator** Related Link.

2. Once on the **Scoresheet**, type in the following numbers for the past 7 days:

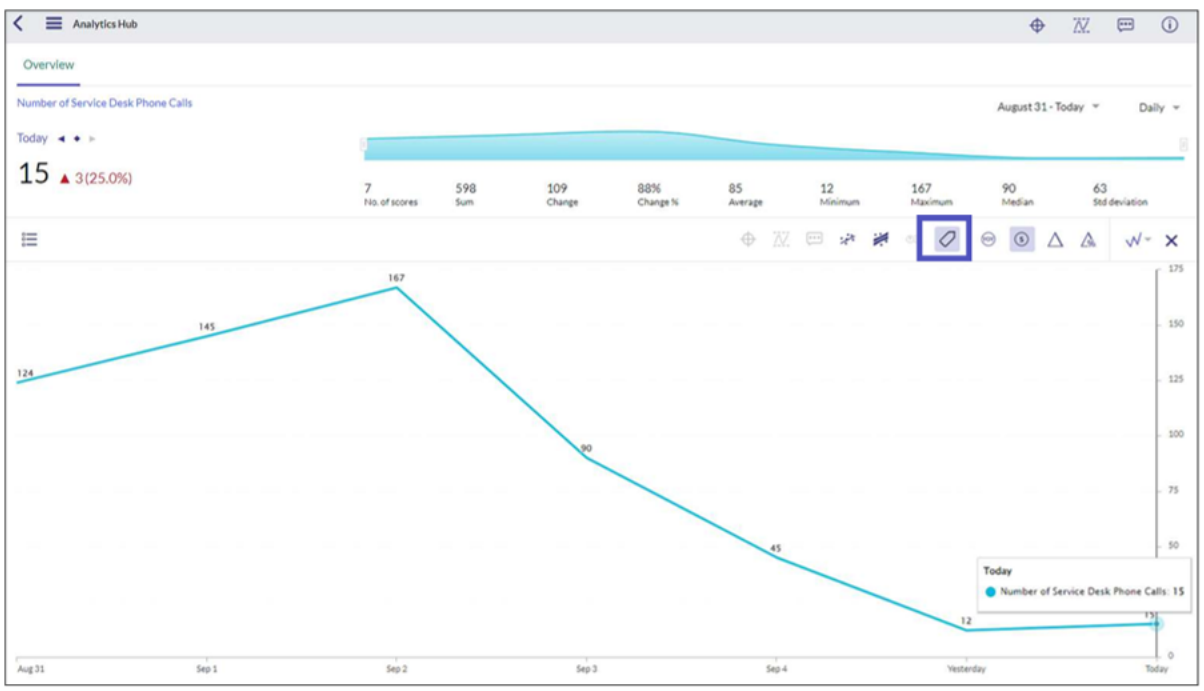
   124 145 167 90 45 12 15

***Note:** Tab away from an active cell after an update to save the new value.*

3. Click the Back arrow to return to the indicator.

4. Click the **Show Analytics Hub** Related Link to view the indicator trend.

5. Enable **Labels** and verify that the trend reflects the scores entered.



© 2023 ServiceNow, Inc. All Rights Reserved

B. Phone Calls Resulting in Incidents

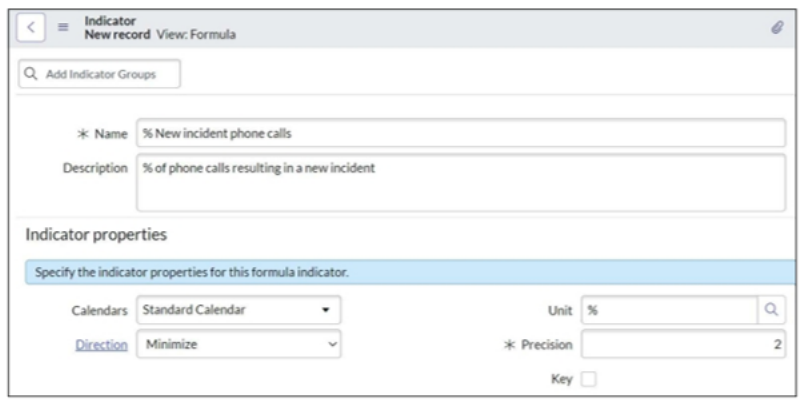
In this section, you create a formula indicator to calculate the proportion of phone calls placed into the Service Desk that result in a new incident.

Formula logic:

$$\%\ New\ incident\ phone\ calls\ = \frac{(New\ incidents\ from\ Phone\ Calls)}{Number\ of\ Service\ Desk\ Phone\ Calls} * 100$$

Formula Indicator

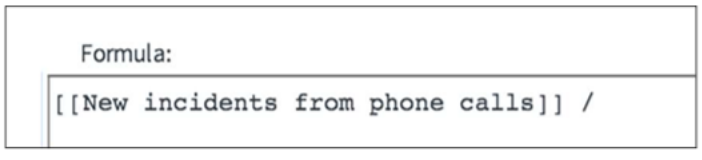
1. Navigate to **Performance Analytics** > **Indicators** > **Formula Indicators** and click **New**.
2. Create a new formula indicator as follows:
   - Name: **% New incident phone calls**
   - Description: **% of phone calls resulting in a new incident**
   - Direction: **Minimize**
   - Unit: **%**
   - Precision: **2**



3. **Save** the indicator.

Add First Formula Operand

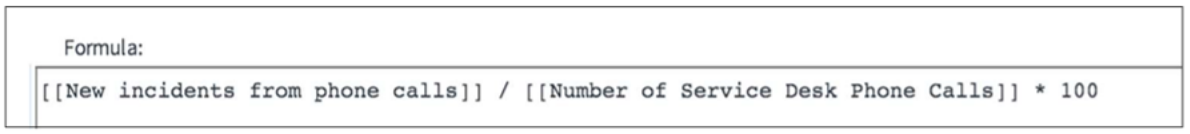
1. Click the **Browse for an indicato**r link under the Formula section.
2. Select the **New incidents from phone calls** indicator.
3. Click the **Select** button to return to the indicator form.
4. Type "**/**" (division operator) in the Formula box at the end of the current formula.



© 2023 ServiceNow, Inc. All Rights Reserved

Add Second Formula Operand

1. Click the link **Browse for an indicator** link.
2. Select the **Number of Service Desk Phone Calls** indicator. Leave all other attributes as they are.
3. Click **Select** to return to the formula indicator form.
4. Type *** 100** in the Formula box at the end of the current formula.



5. Check the **Publish on Analytics Hub** checkbox under the **Access control** tab.
6. **Save** the indicator.
7. Navigate to the **Breakdowns** Related List and click **Edit...**.
8. Add the **Priority (Incident.Priority)** Breakdown and click **Save** to return to the Indicator form.
9. Click the **Show Analytics Hub** Related Link to verify the data (your scores may vary).

Optional Exercise: Manual Breakdown

A manual Breakdowns can be configured whenever the Breakdown data is not available in ServiceNow. The Manual Breakdown definition specifies all Breakdown values.

1. Navigate to **Performance Analytics** > **Breakdowns** > **Manual Breakdowns**.

© 2023 ServiceNow, Inc. All Rights Reserved

2. Click **New**.

3. Set the Breakdown **Name** to **Area**.

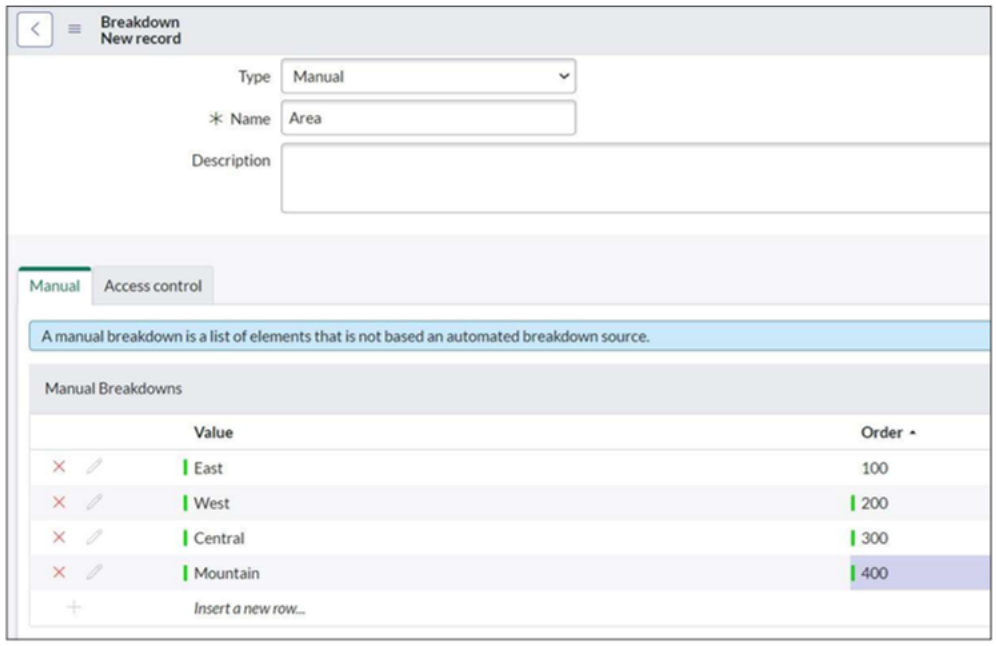
4. Type in the following Manual Breakdown values. (Double-click the **Value** and **Order** fields to enter values. Click the Check Mark to save values.)

Value: **East**
Order: **100**

Value: **West**
Order: **200**

Value: **Central**
Order: **300**

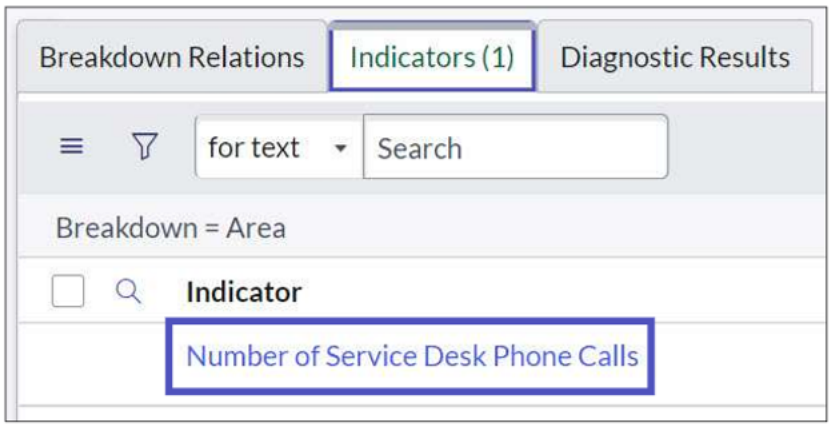
Value: **Mountain**
Order: **400**



5. **Save** and scroll down to the **Indicators** Related List.

6. Click **Edit…** and add the **Number of Service Desk Phone Calls** indicator.

7. Click **Save** and confirm that the Indicator has been successfully added.



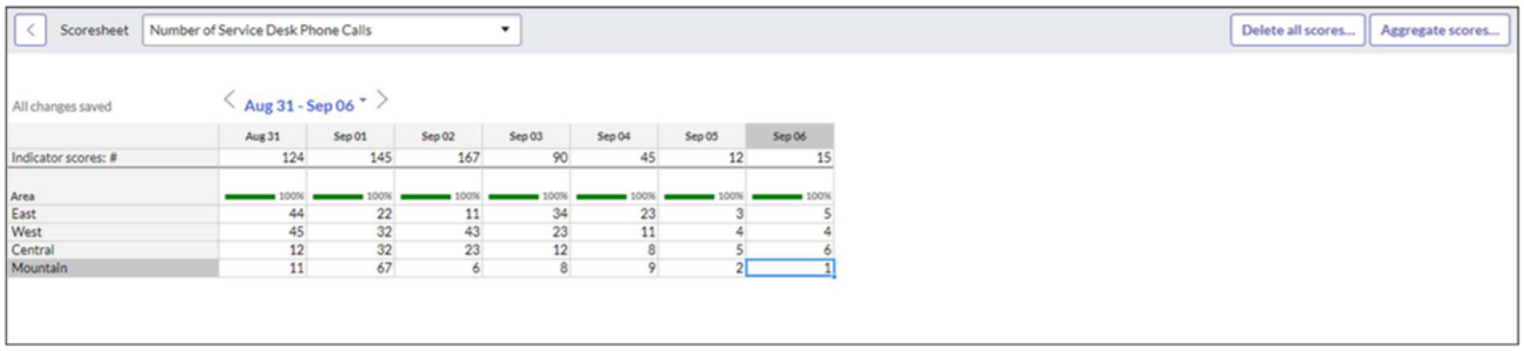
8. Open the **Number of Service Desk Phone Calls** indicator from the Indicators Related List.

9. Click the **Scores for this indicator** Related Link.

© 2023 ServiceNow, Inc. All Rights Reserved

10. Enter per area call volumes under each day of the 7-day period.

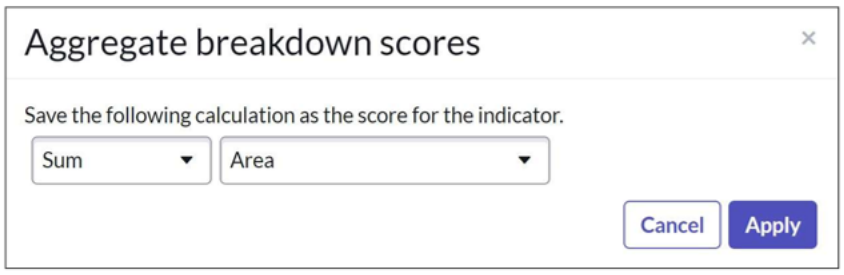
> ***Note:*** *It is not necessary to have the area numbers total up correctly to the summary score.*



	Aug 31	Sep 01	Sep 02	Sep 03	Sep 04	Sep 05	Sep 06
Indicator scores: #	124	145	167	90	45	12	15
Area	100%	100%	100%	100%	100%	100%	100%
East	44	22	11	34	23	3	5
West	45	32	43	23	11	4	4
Central	12	32	23	12	8	5	6
Mountain	11	67	6	8	9	2	1

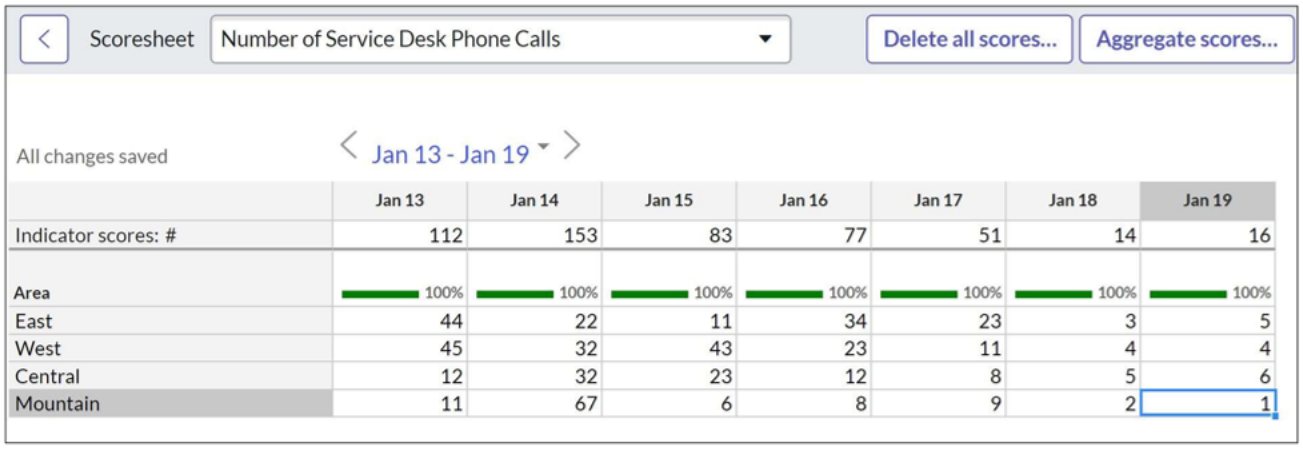
11. Click the **Aggregate scores...** button when finished entering data.

12. Set the first dropdown to **Sum** and the second dropdown to **Area.**



13. Click **Apply.**

14. Verify that scores add up to the total summary score shown in the first row.



	Jan 13	Jan 14	Jan 15	Jan 16	Jan 17	Jan 18	Jan 19
Indicator scores: #	112	153	83	77	51	14	16
Area	100%	100%	100%	100%	100%	100%	100%
East	44	22	11	34	23	3	5
West	45	32	43	23	11	4	4
Central	12	32	23	12	8	5	6
Mountain	11	67	6	8	9	2	1

> ***Note:*** *Tab away from an active cell after an update to save the new value.*

15. Select the Back arrow on the scoresheet to return to the indicator form.

© 2023 ServiceNow, Inc. All Rights Reserved

16. Click the **Show Analytics Hub** Related Link.

17. Expand the **Breakdowns** and select the **Area** Breakdown.

18. Confirm that you can see the per-area Service Desk phone call volumes.

Congratulations!
You have now completed the Manual Indicators Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

Module Recap

Core Concepts

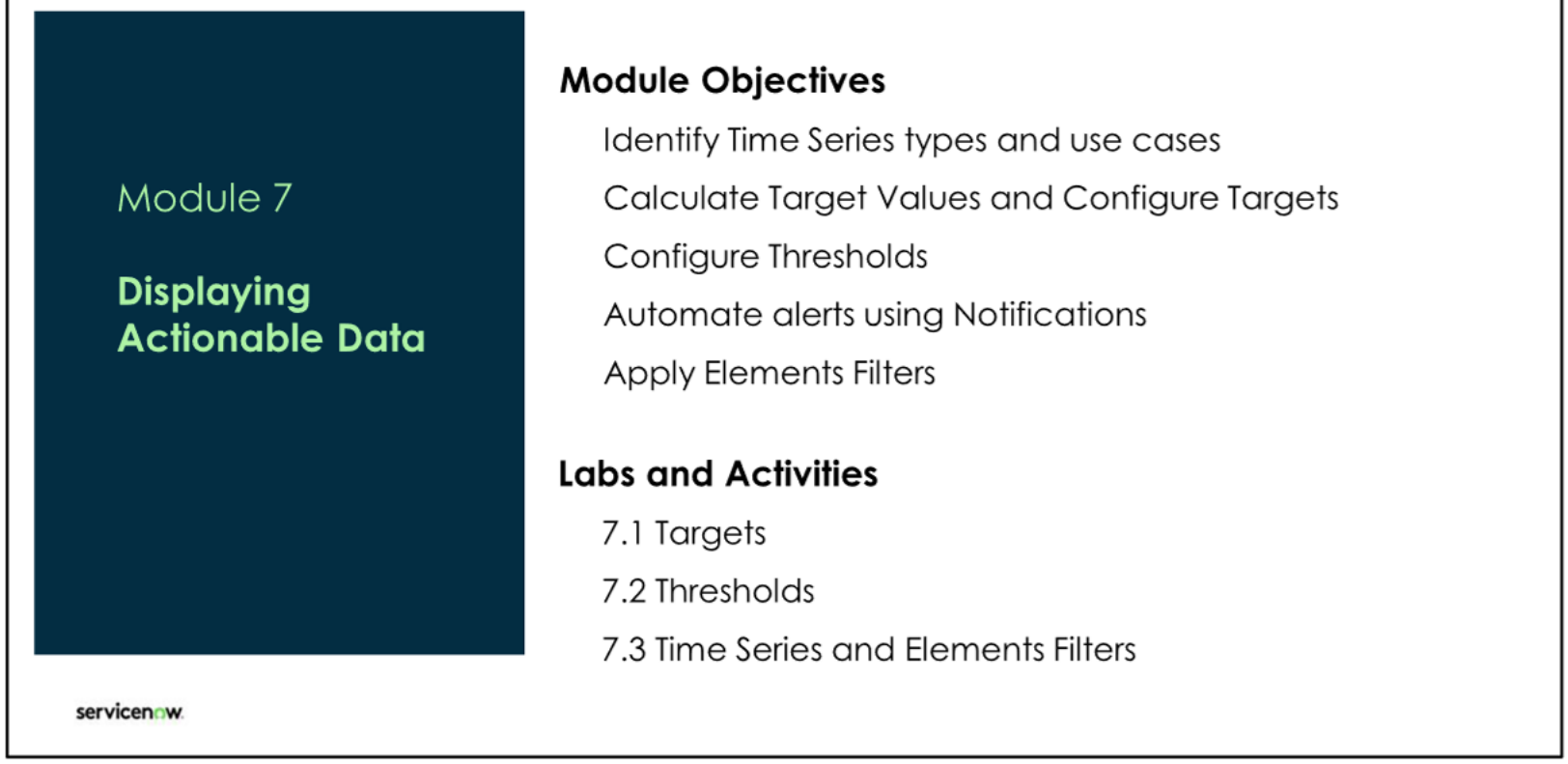
- Formula indicators use existing indicators and perform a formula calculation to derive a new metric
- Use Formula indicators to visualize trends and set business goals
- Formulas are calculated when the Indicator is viewed in the Analytics Hub or on a dashboard
- Manual indicators bring in external data via manual import or scoresheet update

Review Questions

- Consider some common HR processes like recruitment, hiring, training, etc. Think of some Formula indicators that would provide additional insight into HR activities
- What processes in your organization are external to ServiceNow and would benefit from having a corresponding Manual indicator?

© 2023 ServiceNow, Inc. All Rights Reserved

© 2023 ServiceNow, Inc. All Rights Reserved



Performance Analytics visualizations can be enhanced to provide information in a more meaningful context, leading to a quicker action.

In this module, you learn how to:

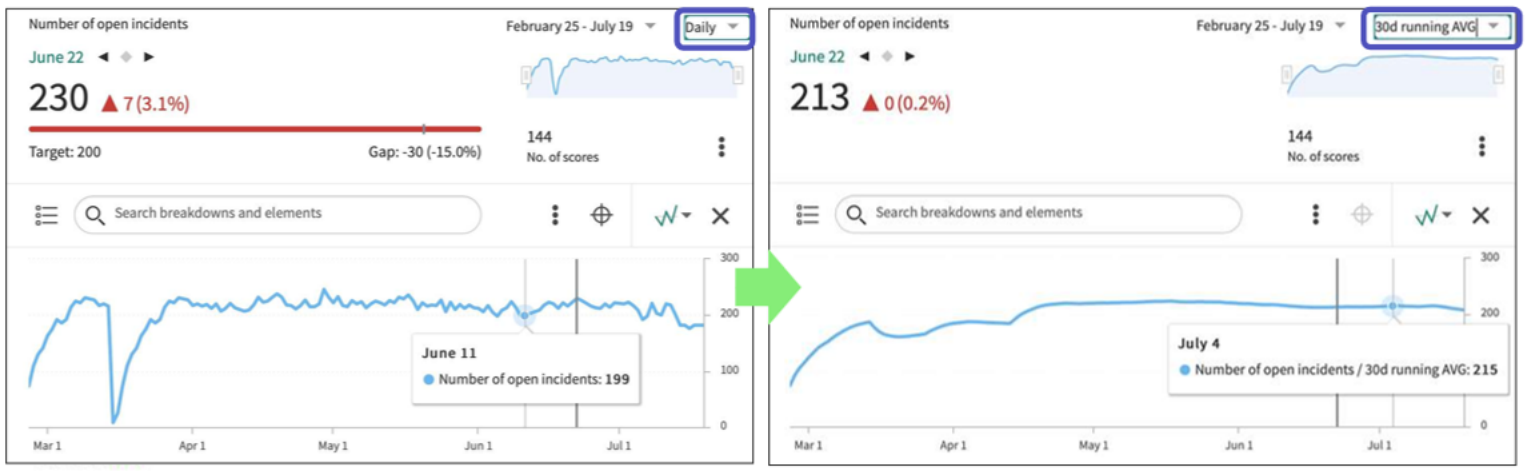
- Apply a Time Series for further data insight.
- Create Targets to visualize goals.
- Set up Thresholds for alerting when a boundary condition is met.
- Configure Elements filters to quickly identify the relevant Breakdown trends.

© 2023 ServiceNow, Inc. All Rights Reserved

What happens when you apply a Time Series?

A Time Series lets you apply a different **perspective** to your data so you can more easily identify trends and patterns

Apply Time Series on the fly in the Analytics Hub, *no new collection* is needed



Daily data is always useful, but there are situations where applying a Time Series to aggregate the data gives additional context about your performance.

In the example here, looking at daily incident counts shows a sharp drop about 3.5 months ago and multiple fluctuations all along. But the 30-day running average smooths out these movements and we can see that we have a steady, almost constant pattern of open incident counts over the last 4 months. This example illustrates how smoothing can be achieved using a running average Time Series so that you can focus on the big picture.

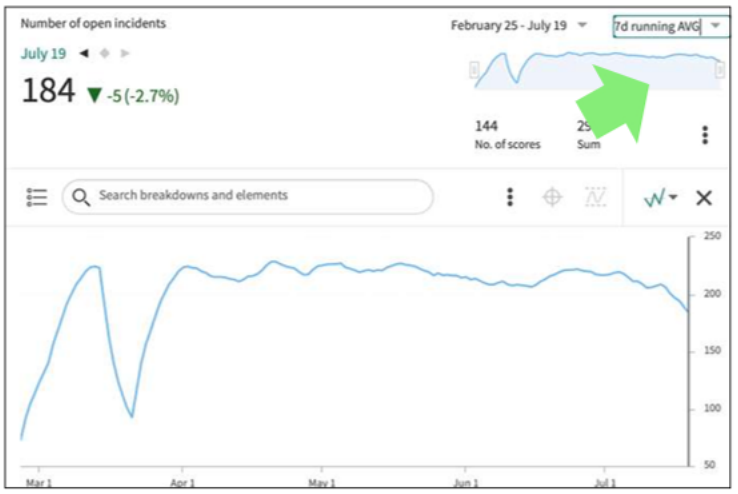
Performance Analytics comes pre-configured with multiple Time Series aggregation types that apply to different periods – weekly, month, quarter, etc. You can use the Analytics Hub or the widgets to apply a Time Series and change the aggregation on the fly. This capability does not require you to define multiple indicator sources and indicators to track each unique interval, as Performance Analytics natively allows you to capture the data once and then adjust the view by just applying a different Time series aggregation.

© 2023 ServiceNow, Inc. All Rights Reserved

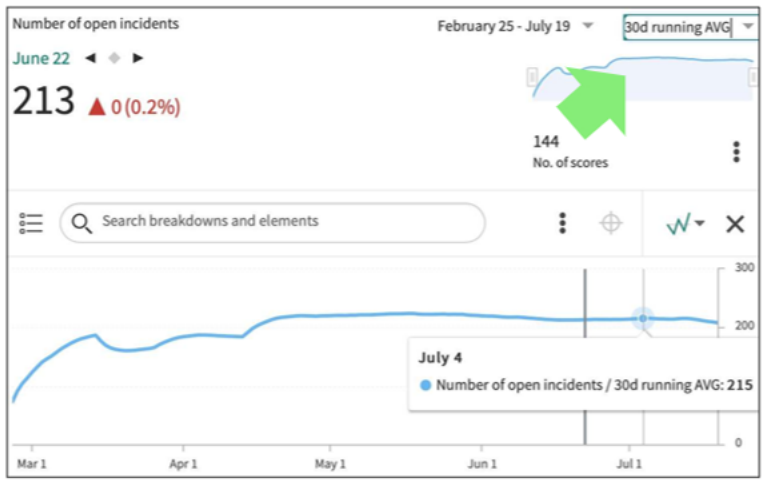
Use Case 1 – Smooth out Data with Running Average

'Running AVG' aggregations smooth out transient dips and spikes and highlight the bigger trends

Open Incidents – 7 day running AVG



Open Incidents – 30 day running AVG



Apply using the Periodic running AVG series: 7d running AVG, 30d running AVG, etc.

The **Running Average** Time Series smooths out spikes in the data to make trends easier to spot. For example, looking at daily incident counts may show a drop every weekend, but a 7-day or 30-day running average smooths out those drops.

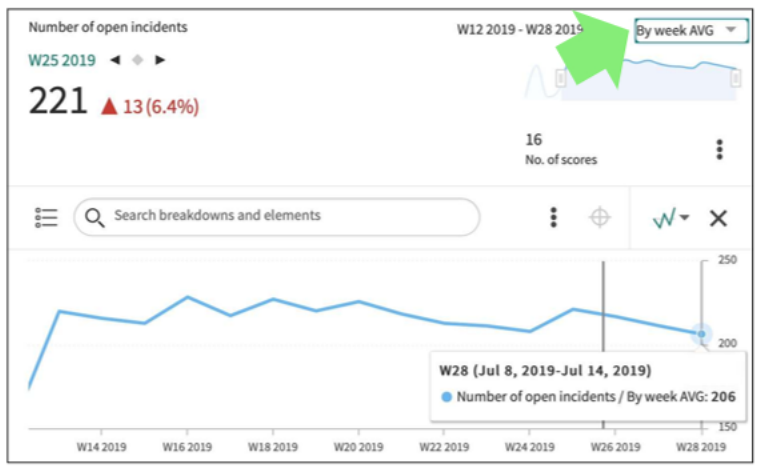
The following Running Average Time series are available: 12m running AVG, 13w running AVG, 28d running AVG, 30d running AVG, 365d running AVG, 3m running AVG, 4q running AVG, 4w running AVG, 6m running AVG, 7d running AVG.

© 2023 ServiceNow, Inc. All Rights Reserved

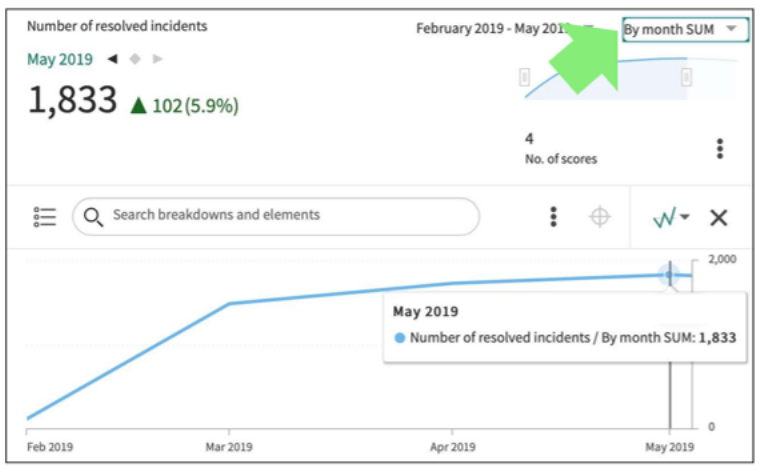
Use Case 2 – Aggregate Data to a Less Frequent Period

'By Period' aggregations calculate a 'cumulative score per period' showing performance for a month, quarter, or year

By Week Average Count of Open Incidents



By Month Sum of Resolved Incidents



Apply using the By Period series: By week, By month, By quarter, etc.

Performance Analytics allows you to apply periodic Sum and Average Time series aggregations so you can focus on the performance for a larger period rather than daily value.

Type	Example	Definition
By Period	By week, By month, By fiscal quarter, By quarter, By fiscal year, By year	Shows the cumulative scores for entire periods. Example: By Quarter Sum of Employees, By Year Average Personal Sick Days
By Period +	By week +, by month +, by quarter +, etc.	The "+" version of the "By" Time Series includes partial periods so there will be a score for the current period

By Period and By Period + Time Series trends transform the raw daily Time Series so that there is only one score for each period (week/month/quarter/year).

There are 24+ periodic Sum and Average Time series for representing Fiscal quarter, Fiscal year, Quarter, Week, Month, and Year periods, including Fiscal Calendar and partial periods.

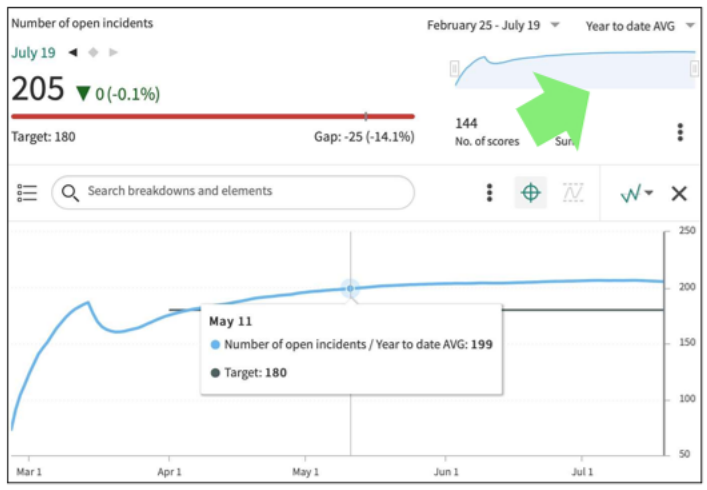
Note: Daily indicators can be aggregated with any Time series. However, indicators collected on a weekly basis cannot be aggregated with a monthly/quarterly/yearly format because weeks do not evenly fit into those periods.

© 2023 ServiceNow, Inc. All Rights Reserved

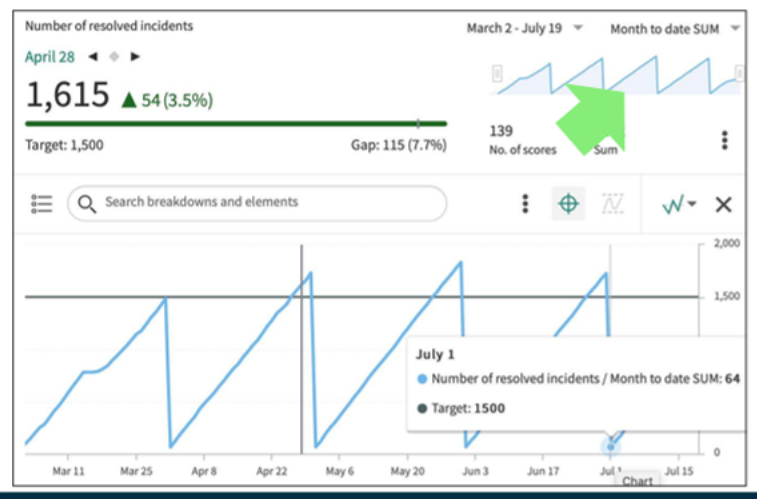
Use Case 3 – Determine a Period To Date Score

'To Date' aggregations calculate a score for a period to the date so you can track the performance to date

Year to Date Average - Open Incidents



Month to Date Sum - Resolved Incidents



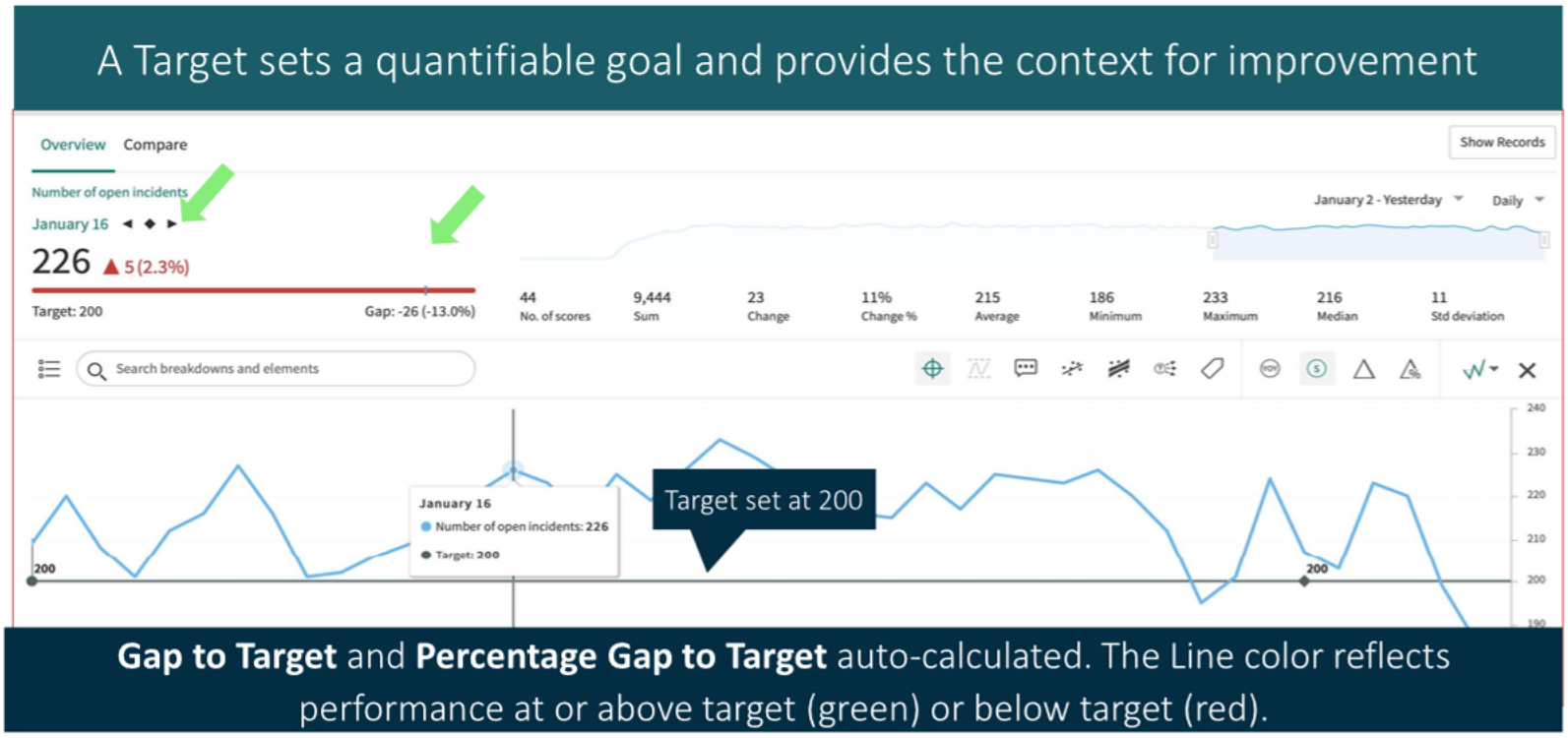
Apply using the Period To Date series: Month to Date, Year to Date, etc.

When you have a monthly, quarterly, or yearly target, you want to be able to see how close you are to that target on an ongoing basis. The **Period to Date** Time Series shows **cumulative scores** for the respective period.

Performance Analytics allows you to apply the following **Period To Date** Time Series aggregations for Sums and Averages: Fiscal quarter-to-date, Fiscal year-to-date, Month-to-date, Quarter-to-date, Week-to-date, and Year-to-date

© 2023 ServiceNow, Inc. All Rights Reserved

What are Targets?



Targets are user-defined numeric values that reflect the ideal value, or goal, for an indicator. Targets measure the progress related to goal and help drive improvement initiatives.

Once a target is defined, a **Gap** and **Percentage to Target Gap** are calculated. The Target Gap is based on the Global Target for an indicator. A change from the previous period is also calculated and shown in a color indicating improvement (green) or degradation (red) from the previous score. Improvement and degradation are calculated with respect to the Indicator's **Direction**.

The line below the Indicator Score is also colored to indicate performance at or above target (green) or below target (red).

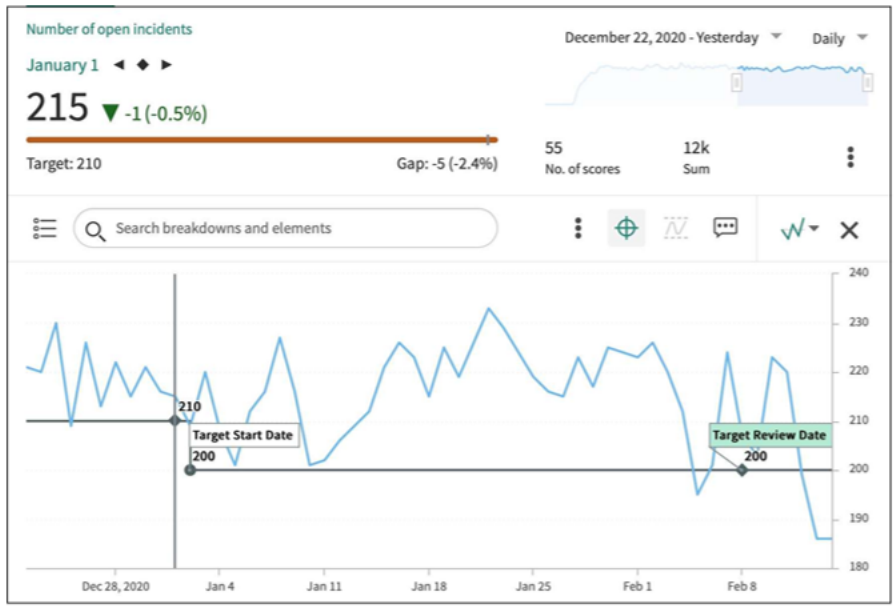
Targets can be shown in the Analytics Hub and on Widgets.

© 2023 ServiceNow, Inc. All Rights Reserved

Review Existing and Set New Targets

Use Target Review Dates and set new targets to drive process improvement.

- Targets have **Start** and **Review** dates
- During Review, adjust your goals by setting new targets
- Prior Target will end where the new Target begins
- Future Targets can be set



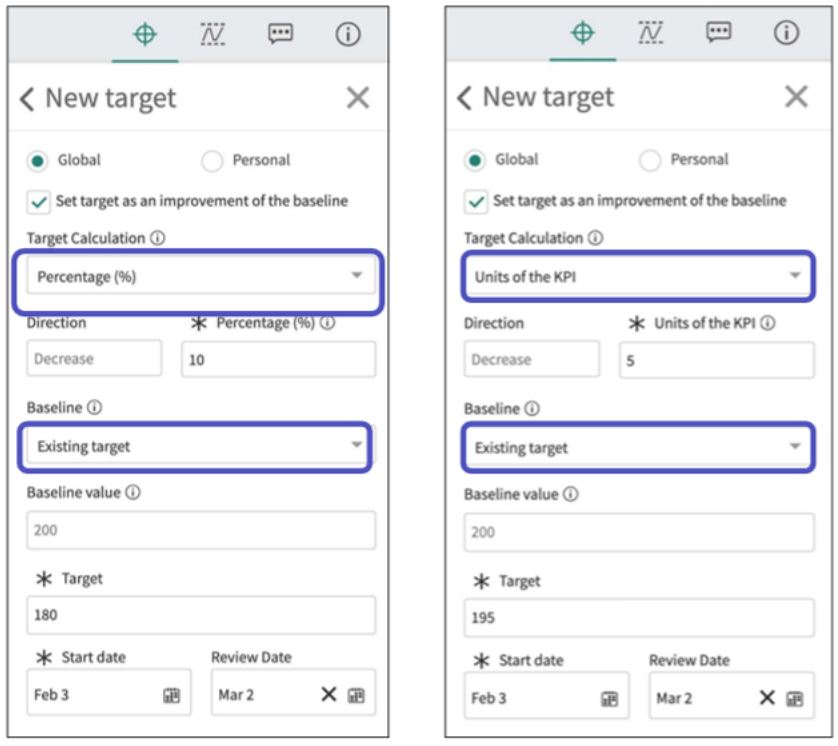
- Multiple Targets can be defined for a single indicator to gradually drive process improvement. Once process improvement has begun, and the indicator is moving in the right direction, you should set a new, more realistic target.
- To help you drive periodic performance reviews, Targets have **Start Date** and **Review Date**.
- The start date is represented by a circle, the review date is represented by a diamond.
- Targets cannot overlap. Instead, an older targets ends whenever a new target is defined. The most recent target has no end date.
- In the example, we have revised the Target from 210 to 200 around Jan. 1st.

Important: You can only set a new target with a Start Date *after* the Review Date of the previous target. Example: The current target has a Review Date on 2/8. A new target can only be set with a Start Date of 2/9 or later.

© 2023 ServiceNow, Inc. All Rights Reserved

Automated Targets - Calculation Based on Existing Target

- Check **Set target as an improvement of the baseline** to auto-calculate a new target
- Select either **Percentage** or **Number of units** to improve over the current baseline (Target)
- Choose **Existing target** as a **Baseline** to a use the current target in the calculation



You can set the target as an improvement of the **Existing target** like this:

1. Click the **Target** icon in the Analytics Hub banner and click **New Target**.
2. Select the **Set target as an improvement of a baseline** checkbox.
3. Choose **Target Calculation** method as follows:
   a. Percentage: Improvement is calculated as a percentage of the current Target value.
   b. Units of the KPI: Improvement is calculated as an absolute number.
4. Enter the percentage of improvement desired in the **Percentage** field. Alternatively, enter an absolute number of units to improve by.
5. Choose **Existing target** as the **Baseline**.
6. The **Target** is calculated using the read-only **Baseline value** (current target value).
7. Enter **Start date** and **Review Date** and click **Save**.

In the first example, the Baseline value is 200 (current target), Percentage (%) is 10, so the improvement is calculated as 10% of 200 which which is 20. The new target is 200 – 20 = **180**

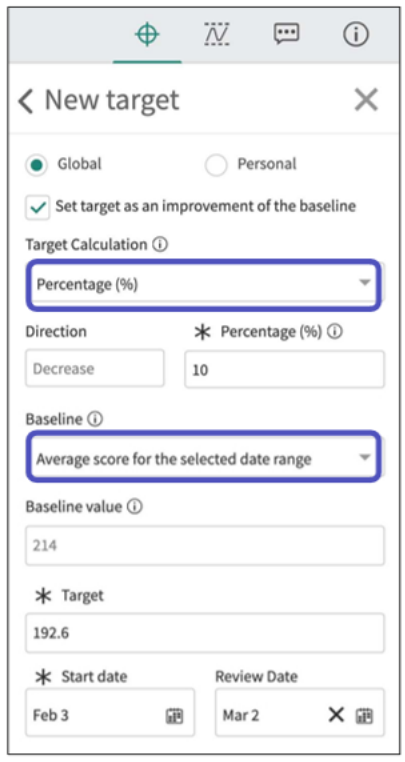
In the second example, the Baseline value is 200 (current target), the improvement is 5 Units of the KPI, so the new target is calculated as 200 – 5 = **195**

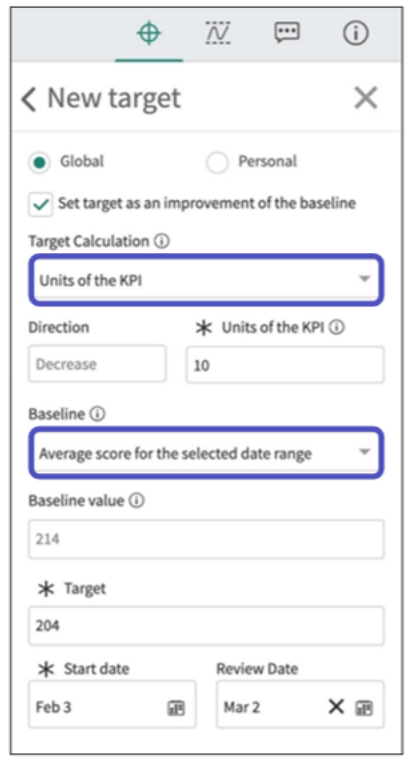
Note: You can still replace the auto-calculated target by manually entering a value in the Target field.

© 2023 ServiceNow, Inc. All Rights Reserved

Automated Targets - Calculation Based on Average Score

- Check **Set target as an improvement of the baseline** to auto-calculate a new target
- **Set Target Calculation** method
- Choose **Average score for the selected date range** as the **Baseline**





You can set the target as an improvement of the **Average score for the selected date range** like this:

1. Click the **Target** icon in the Analytics Hub banner and click **New Target**.
2. Select the **Set target as an improvement of a baseline** checkbox.
3. Choose **Target Calculation** method as follows:
   a. Percentage: Improvement is calculated as a percentage of the current Average score.
   b. Units of the KPI: Improvement is calculated as an absolute number.
4. Enter the percentage of improvement desired in the **Percentage** field. Alternatively, enter an absolute number of units to improve by.
5. Choose **Average score for the selected date range** as the **Baseline**.
6. The **Target** is calculated using the read-only **Baseline value** (average score).
7. Enter **Start date** and **Review Date** and click **Save**.

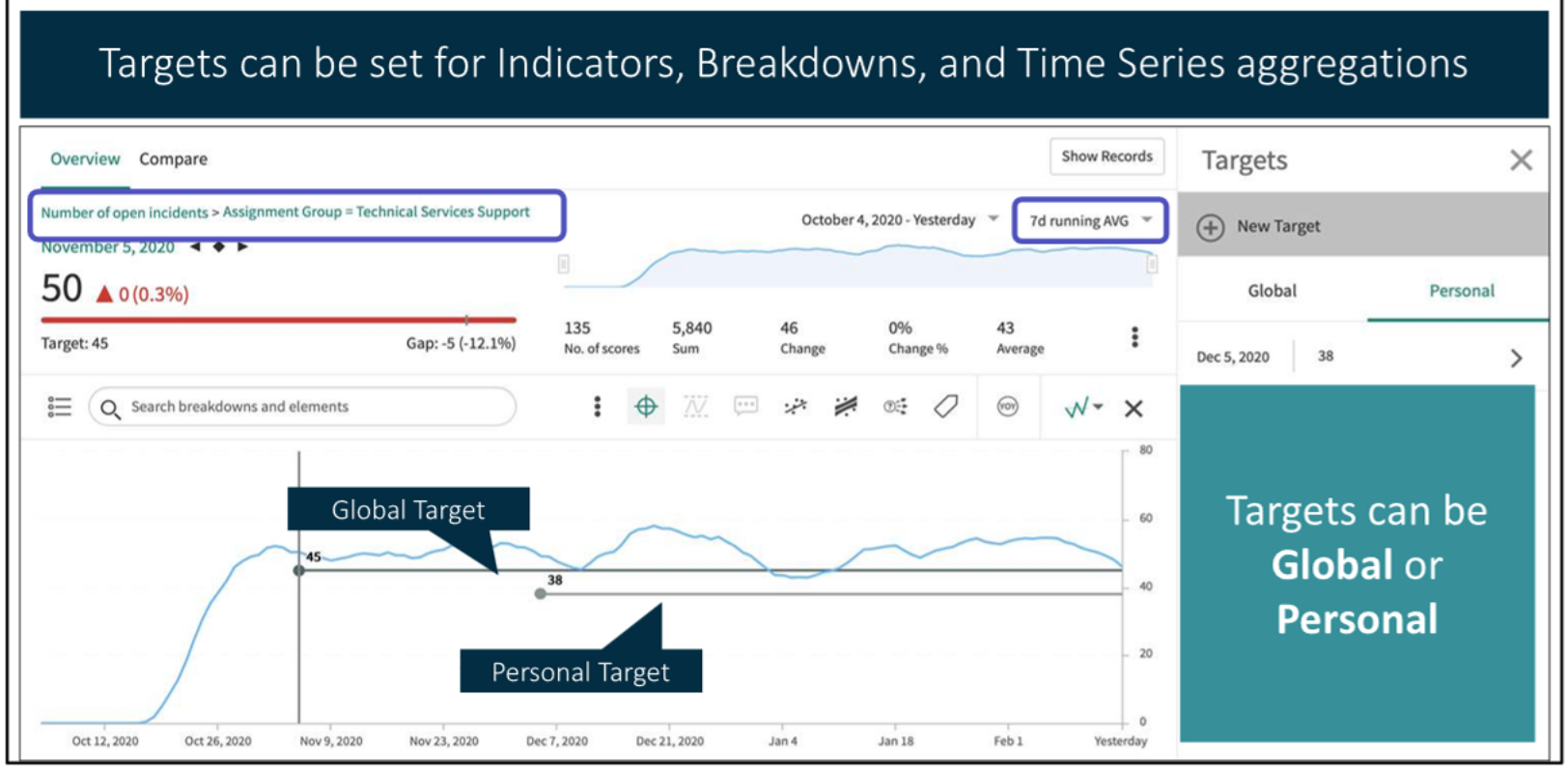
In the first example, the Baseline value is 214 (the average of all currently selected scores in the Analytics Hub), Percentage (%) is 10, so the improvement is calculated as 10% of 214 which which is 21.4. The new target is 214 – 21.4 = **192.6**

In the second example, the Baseline value is 214 (the average of all currently selected scores in the Analytics Hub), the improvement is 10 Units of the KPI, so the new target is calculated as 214 – 10 = **204**

Note: You can still replace the auto-calculated target by manually entering a value in the Target field.

© 2023 ServiceNow, Inc. All Rights Reserved

What can you put a Target on? Who can see the Target?



Targets can be set for any Indicator, Indicator Breakdown, specific Breakdown element, or a combination of two Breakdown elements. In addition, Targets can be set for an Indicator or Indicator Breakdown with a Time Series.

In the example, a couple of Targets have been set for the 7d running average trend of open incidents assigned to Technical Services Support.

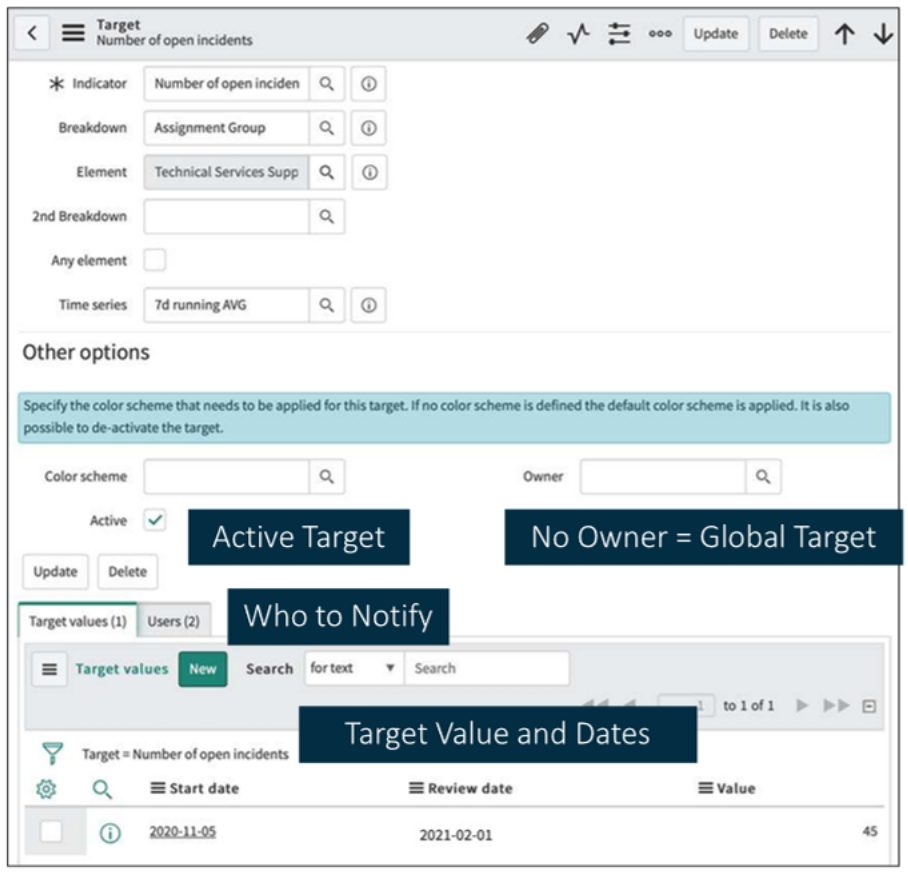
Targets can be **Global** or **Personal**. Only users pa_target_admin, pa_admin, or pa_power_user role can create Global Targets. Global Targets are seen by all. Anyone can create their personal targets. Personal targets are only visible to the user that created them.

© 2023 ServiceNow, Inc. All Rights Reserved

Target Form Details

Use the Target Form to:

- Manually create a target **without automatic target value calculation**
- Activate/Deactivate target
- Add **Users** to notify on target achievement
- Change the target **Color scheme**



servicenow

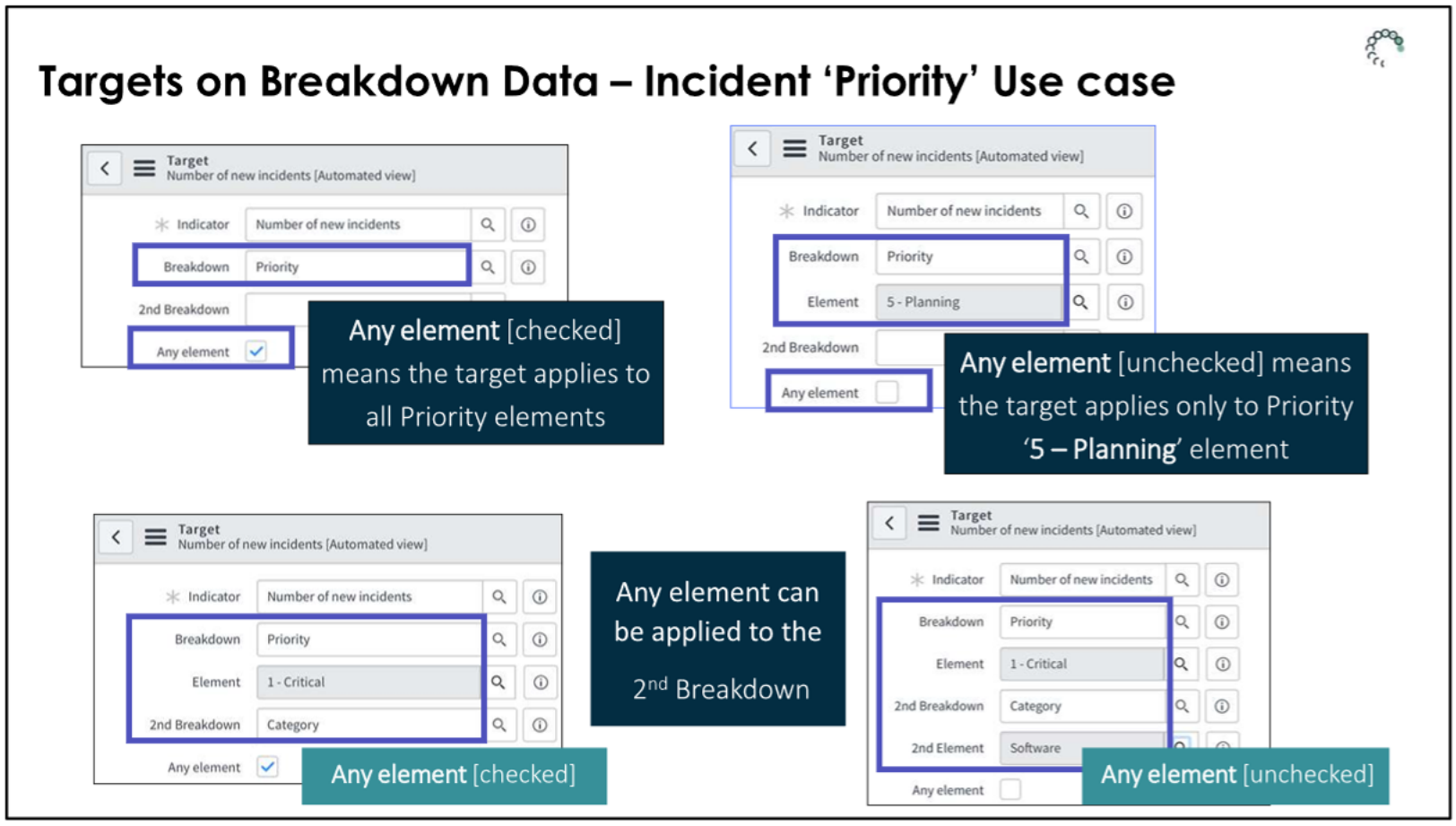
Targets can be created by clicking **New** in the **Targets** Related List of an indicator or by going directly to **Performance Analytics > Indicators > Targets** and clicking **New**.

- For a Target on the main indicator, simply select the **Indicator.**
- For a Target on a specific Breakdown element, proceed to select a **Breakdown** and specify the **Element.**
- For a Target on all breakdown elements, select a **Breakdown** and check **Any element.**
- For a Target on a combination of two specific Breakdown elements, proceed to select a **2nd Breakdown** and specify a **2nd Element.**
- For a Target on all combinations of a specific 1st and all 2nd breakdown elements, select a **2nd Breakdown** and check **Any element.**

Optionally, for all of the above use cases, select the **Time series** for which to set the Target. By default, the Target applies to the Daily Time series.

- Set the **Target value**, the **Start Date** from which the target value is valid, and the **Review Date** on which to review the target.
- For a global Target, add the **Users** who should be notified when the Target is reached. Personal target owners are notified by default.
- Set the **Owner** for a personal Target. Leave the owner blank if the Target is global.
- Uncheck **Active** to de-activate the target.

© 2023 ServiceNow, Inc. All Rights Reserved



The **Any Element** check box allows you to specify Breakdown Elements as follows:

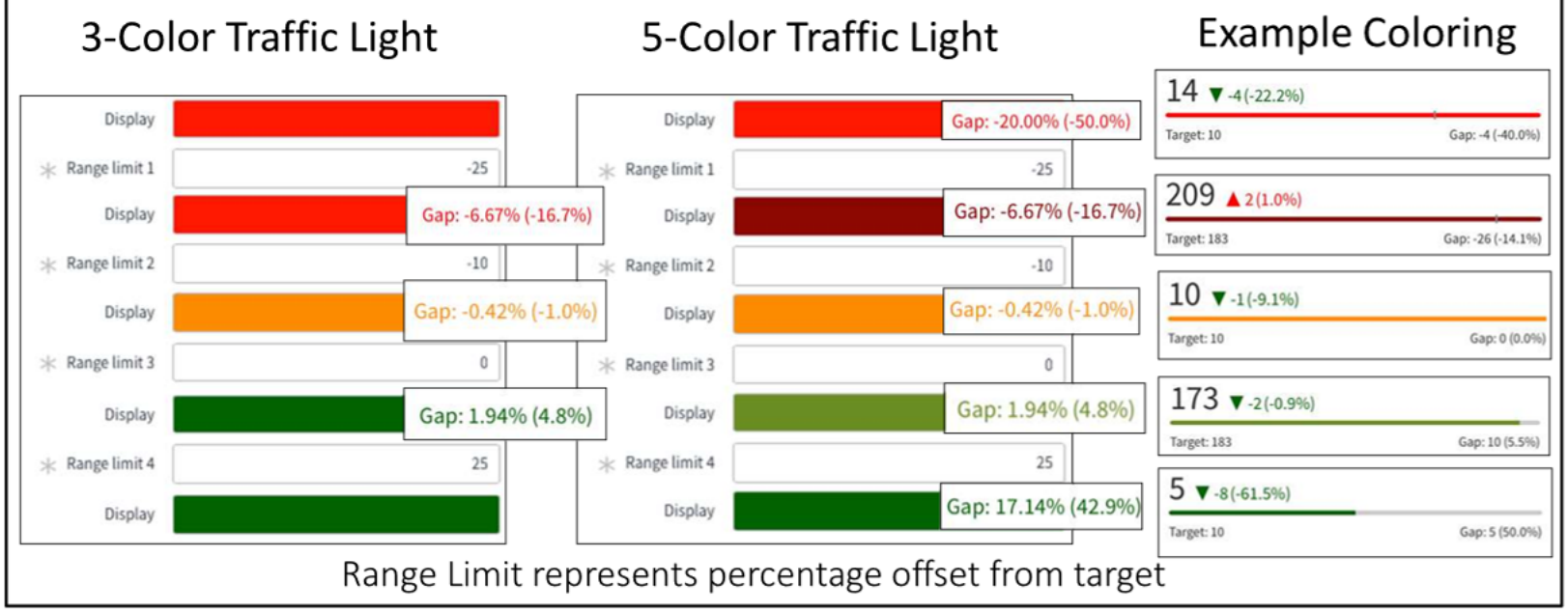
- Leave the **Any element** option unchecked to include all Breakdown values.
- Check the **Any element** option to specify a Breakdown value (element).

For a second breakdown, the **Any element** option can be specified only if a specific Breakdown Element value is defined for the 1st Breakdown. There cannot be a Target on any combination of 1st and 2nd level breakdown values.

© 2023 ServiceNow, Inc. All Rights Reserved

Target Color Schemes

The Target Color Scheme determines the score color based on target deviation



Range Limit represents percentage offset from target

Color schemes allow you to apply different colors when scores deviate from the Target. Each color has a range limit representing the percentage difference between actual scores and the Target.

Two Target color schemes are available out of the box – 3-color traffic light and 5-color traffic light. Additional Target color schemes can be defined by the pa_admin role.

Technical note: The line color of Target value displayed on Analytic Hub and on Widgets can be modified by adding the following properties:

Global target color property:

com.snc.pa.default_chart_target_color

Personal target color property:

com.snc.pa.default_chart_personal_target_color

© 2023 ServiceNow, Inc. All Rights Reserved

What is a Threshold?

Thresholds let you know when an Indicator is approaching an important value

Thresholds can be created for the following pre-defined conditions:

Thresholds let users know when an Indicator is approaching a specific condition so that Service Owners can detect abnormal behavior. When a threshold is reached, the system generates a notification message and associates that message to the Indicator as a comment in the Analytics Hub, if comments are enabled.

Thresholds can be **Global** or **Personal**. Only the pa_threshold_admin, pa_admin, or pa_power_user roles can create Global Thresholds. Global Thresholds are seen by all, but anyone can create their own personal thresholds. Personal Thresholds are only visible to the users that created them.

Thresholds can be created for the following pre-defined conditions:

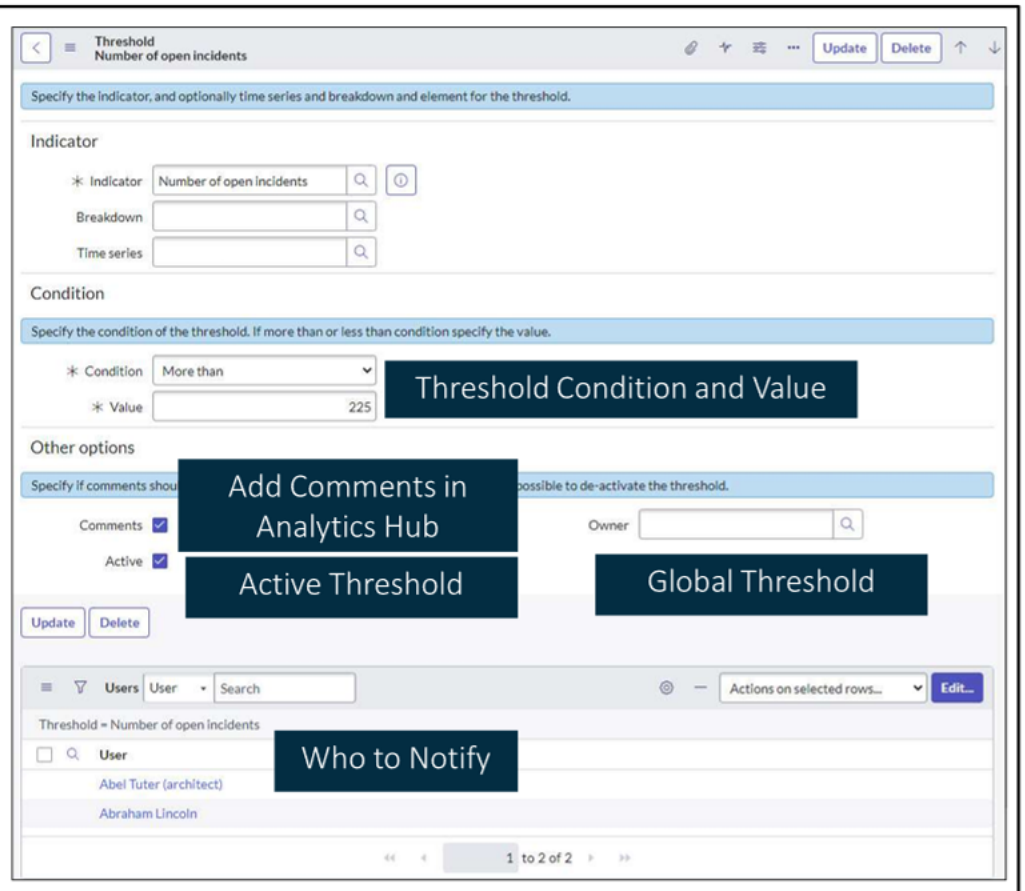
- More Than
- Less Than
- All Time High
- All Time Low

© 2023 ServiceNow, Inc. All Rights Reserved

Threshold Form Details

Use Threshold Form to:

- Activate/Deactivate threshold
- Add users to notify on reaching the threshold
- Enable automatic Comments in the Analytics Hub
- Edit condition and value



servicenow

Thresholds can be created by clicking **New** in the **Thresholds** Related List of an indicator or by going directly to **Performance Analytics > Indicators > Thresholds** and clicking **New**.

- For a Threshold on the main indicator, simply select the **Indicator**.
- For a Threshold on a specific Breakdown element, proceed to select a **Breakdown** and specify the **Element**.
- For a Threshold on all breakdown elements, select a **Breakdown** and check **Any element**.
- For a Threshold on a combination of two specific Breakdown elements, proceed to select a **2nd Breakdown** and specify a **2nd Element**.
- For a Threshold on all combinations of a specific 1st and all 2nd breakdown elements, select a **2nd Breakdown** and check **Any element**.

Optionally, for all of the above use cases, select the **Time series** for which to set the Threshold. By default, the Threshold applies to the Daily Time series.

- For a global Threshold, add the **Users** who should be notified when the Threshold is reached. Personal Threshold owners are notified by default.
- Set the **Owner** for a Personal Threshold. Leave the owner blank if the Threshold is global.
- Uncheck **Active** to de-activate the Threshold.

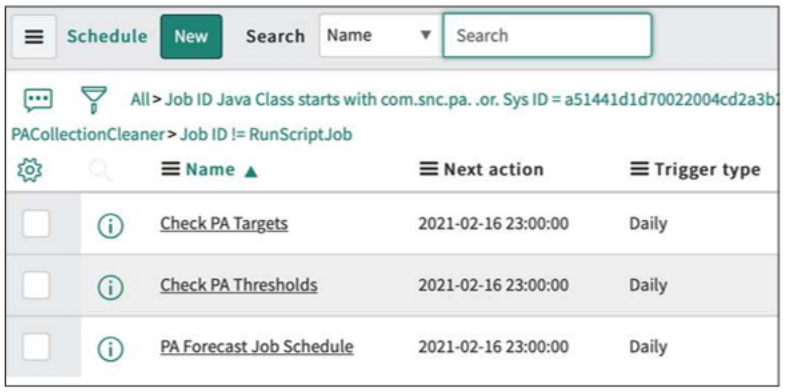
© 2023 ServiceNow, Inc. All Rights Reserved

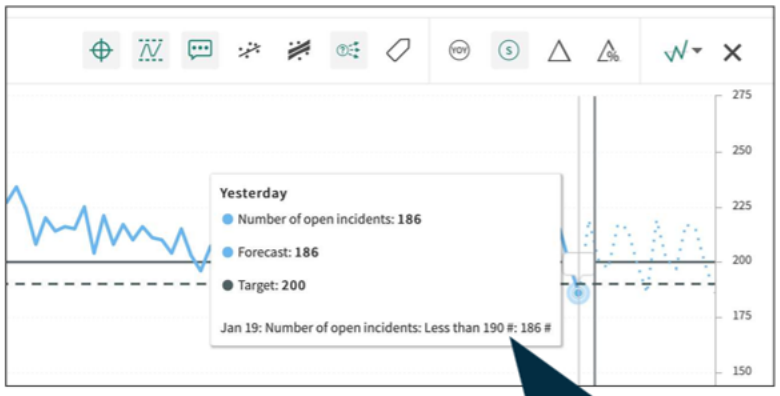
Notification Triggers and Distribution

Global Targets and Thresholds: Only Recipients on the Users list receive notifications

Personal Targets and Thresholds: Owner receives notification automatically

The following jobs run daily to check targets and thresholds, add comments and notifications:





*Active = True enables Target / Threshold and its notification

Analytics Hub Comment

To receive email notifications for Global Thresholds and Targets, users must be explicitly added. A PA Admin can add people to the **Users** Related List of the Threshold or Target form.
For personal Thresholds and Targets, the owner will automatically receive a notification if they have subscribed to it.

Technical Notes:

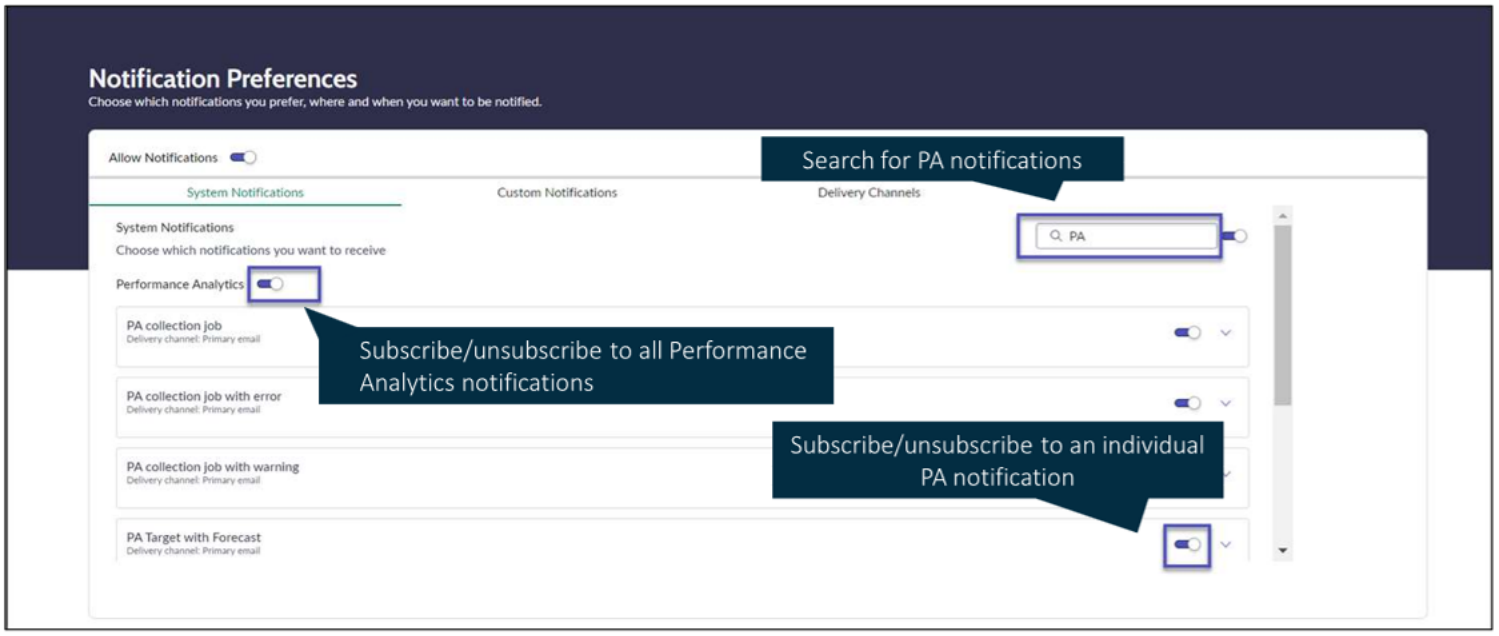
- Threshold notifications are triggered once a day via the **Check PA Thresholds** daily job.
- Target notifications are triggered once a day via the **Check PA Targets** daily job.
- Target notifications for predicted scores are triggered once a day via the **PA Forecast Job Schedule** daily job.

All scheduled PA jobs are listed under **Performance Analytic > Automation > Schedules**.

© 2023 ServiceNow, Inc. All Rights Reserved

Notification Subscription Management

Within User Preferences, select the **Notifications** tile and click **Advanced Preferences**



servicenow

Recipients can manage notification subscriptions to unsubscribe from notification and/or disable them. If a user unsubscribes, they stop receiving notifications both for Personal and Global Thresholds/Targets. Below is a summary of pre-configured notifications:

Notification	Scheduled Job	Description
PA Threshold Reached	Check PA Thresholds	Receive notification per indicator when the threshold has been reached
PA Threshold Notification	Check PA Thresholds	Receive a notification with a summary overview of all indicators that reached the threshold
PA Targets Notification	Check PA Targets	Receive a notification with a summary overview of indicators grouped by if the target has been reached or not
PA Target with Forecast	PA Forecast Jobs Schedule	Receive a notification that contains the prediction when the target for a specific indicator will be reached

© 2023 ServiceNow, Inc. All Rights Reserved

Targets and Thresholds

Targets

- Help drive process improvement
- Single Target per Indicator/Breakdown/Element combo
- Targets calculate the Gap
  - Difference between actual score and target
  - Based on the global target
- Future Global Target Reach Notification
- Summary notification on targets met / not met

Thresholds

- Help with alerts and exceptions
- Multiple Thresholds per Indicator
  - 1 of All time high / 1 All time low
  - Multiple More than / Less than
- Notifications about Thresholds hit per indicator
- Summary Notification about Thresholds reached with a list of indicators
- Supports automatic Comments in Analytics Hub

servicenow

- Personal targets and thresholds are only visible in the Analytics Hub to the user that created them (they are not visible on Widgets).
- Global thresholds/targets appear in the Analytics Hub and Time Series widgets.
- Personal targets and thresholds are colored in light grey. Global thresholds and targets are darker grey.
- A Personal threshold appears as a dotted light grey line. A Global threshold appears as a dotted darker grey line.

Technical Note: The color of targets and thresholds can be modified by adding the following properties:

Global threshold and target color properties:

com.snc.pa.default_chart_threshold_color
com.snc.pa.default_chart_target_color

Personal threshold and target color properties:

com.snc.pa.default_chart_personal_threshold_color
com.snc.pa.default_chart_personal_target_color

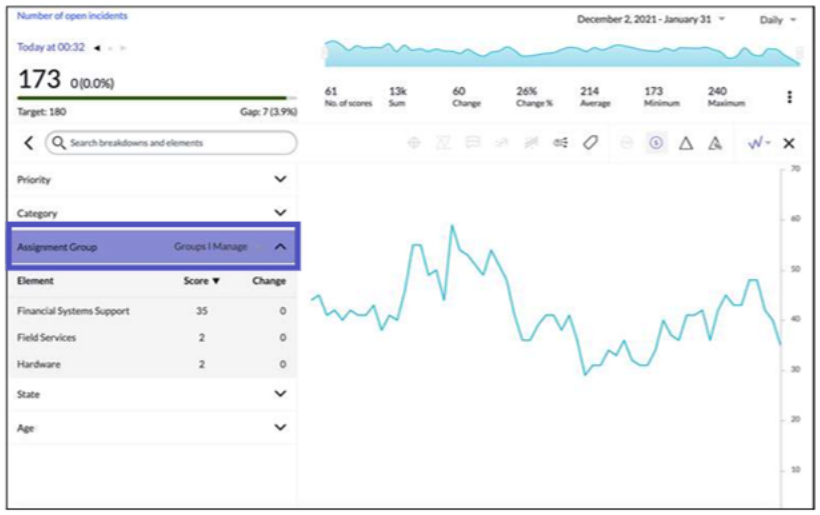
© 2023 ServiceNow, Inc. All Rights Reserved

What is an Element Filters?

Element Filters enable you to limit the displayed breakdown elements on an Analytics Hub or Widget

Without Filter: Too many elements

With Filter: Only look at elements of interest



When viewing indicators, the list of Breakdown elements can sometimes be long. Create **Element Filters** to help users easily retrieve and group the elements that they want to see. Element Filters allow you to define queries that can be applied to a Breakdown.

In the example shown, an Element Filter was created to enable further filtering of the Assignment Group Breakdown in order to show those Groups the current user manages.

The Filter condition is:

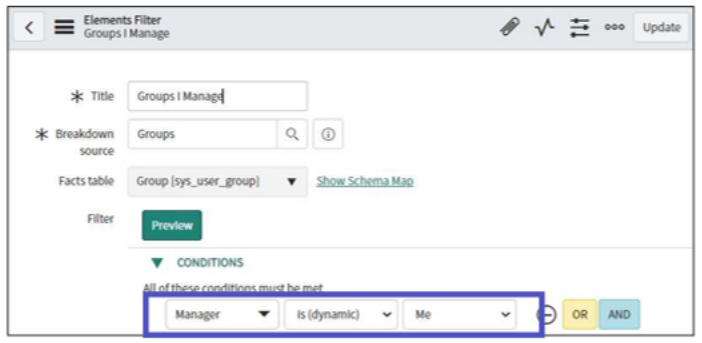
Manager | is (dynamic) | Me

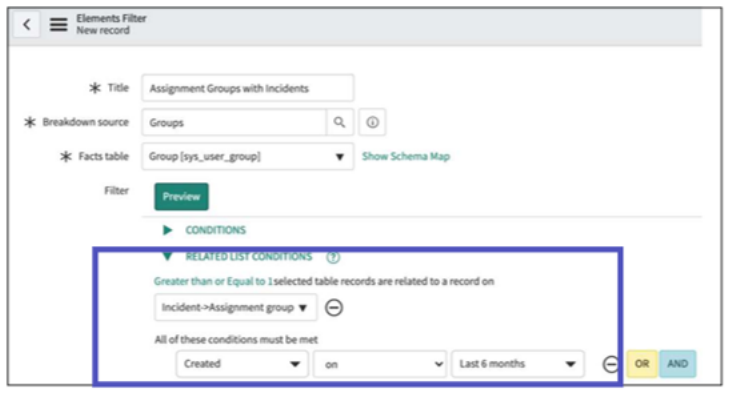
The condition includes a dynamic operator so that each Group Manager will only see the groups and she or he manages.

© 2023 ServiceNow, Inc. All Rights Reserved

Element Filter Configuration and Use

- An Element Filter is a set of conditions that return specific records from a Breakdown Source
- Filter Conditions can include any attribute on the source table
- Filter Conditions can include a relationship with another table
- Apply Dynamic Conditions for personalized visuals





servicenow

To configure and use an Elements Filter:

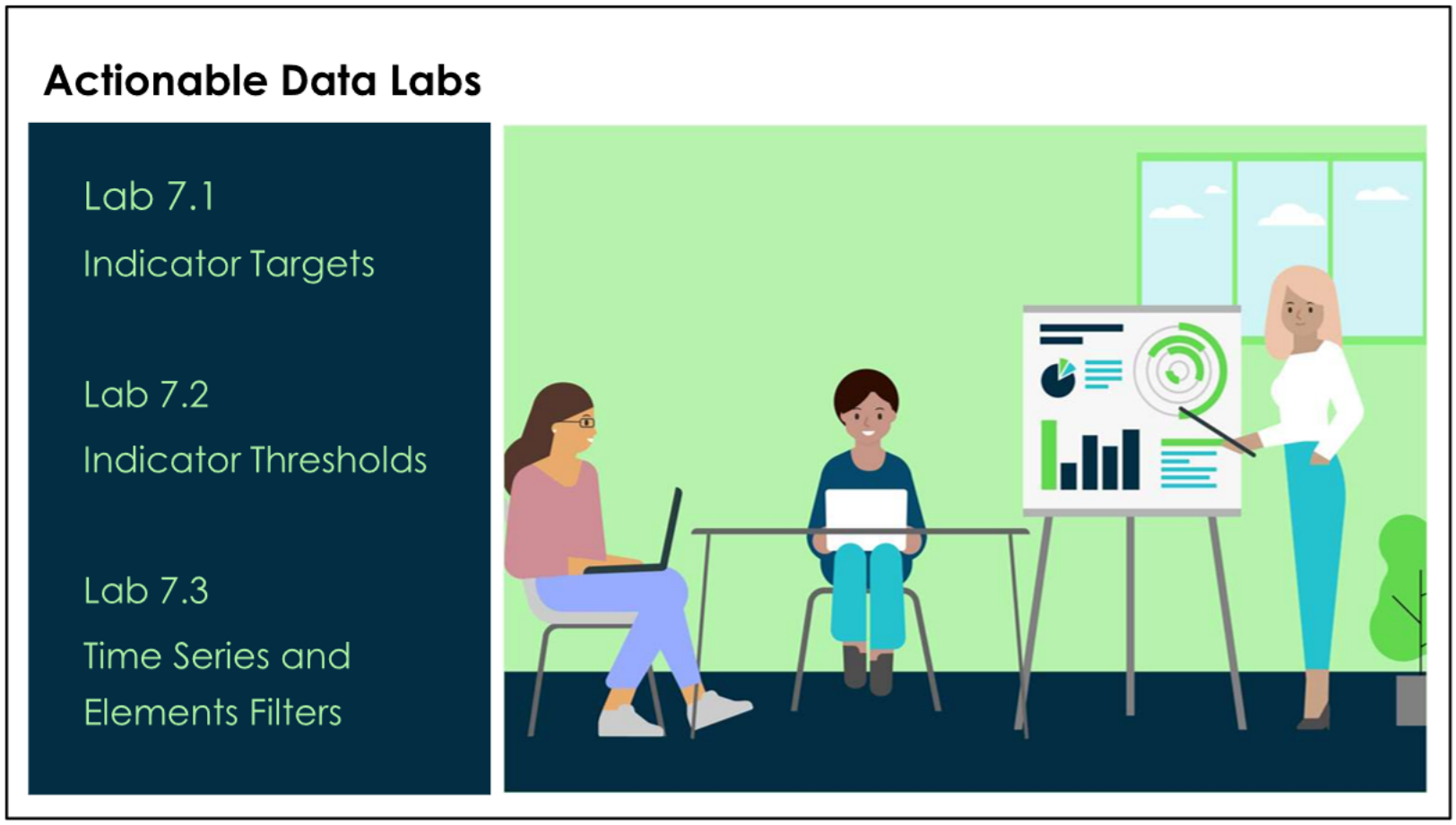
1. Navigate to **Performance Analytics > Breakdowns > Elements Filters** and click **New**.
2. Enter a **Title** and select an existing **Breakdown source**. The Facts table is automatically selected.
3. Construct filter condition(s) that returns the desired elements and click **Submit**.

To visualize the data using this filter in the Analytics Hub:

1. Open the Breakdowns tab in the Analytics Hub.
2. Select the respective Breakdown.
3. Select the filter in the **Element Filter** dropdown.

For Breakdown Widgets, you have the option to configure the Elements Filter which will automatically be applied whenever the widget is viewed on a Dashboard.

© 2023 ServiceNow, Inc. All Rights Reserved



Labs 7.1 Indicator Targets

- Configure Personal and Global Targets
- Explore Target Gaps and Target color schemes

Lab 7.2 Indicator Thresholds

- Configure Personal and Global Thresholds
- Trigger automatic Threshold Comments

Lab 7.3 Time Series and Elements Filters

- Apply different Time Series aggregations
- Configure and apply an Elements Filter

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Indicator Targets

Lab 7.1

15 minutes

Lab Objectives

The Incident Manager at Glide Haven needs directional information about Incident Management KPIs. This can be done by configuring targets to give visibility of how a process Indicators are performing over time relative to a goal. In this lab, you perform the following:

- Manage global targets using the Target form
- Manage global targets from the Analytics Hub
- Analyze Target Gaps

A. Manage Global Targets

View and Create New Global Target using the Target form

1. Impersonate the **PA Power User**.
2. Navigate to **Performance Analytics > Analytics Hub**.
3. Enable the following in **List Settings** (Gear icon):

   With a target: ON
   Change: ON
   Trend: ON
   Bullet chart: ON
   Gap: ON

   ***Note**: Since no Global Targets exist, the list is empty.*

4. Navigate to **Performance Analytics > Indicators > Targets**.
5. Click **New** and begin creating a new Target as follows:
   - Indicator: **Number of open incidents**
   - Color scheme: **5 color traffic light**
   - Owner: **[leave blank]**

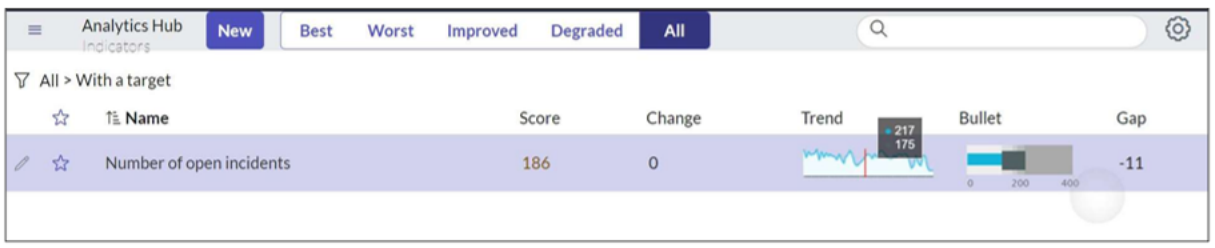
© 2023 ServiceNow, Inc. All Rights Reserved

> ***Note**: Populating the Owner will automatically make the Target Personal.*

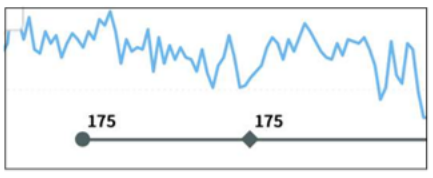
6. **Save** the Target.
7. Navigate to the **Target values** related list and click **New**.
8. Create a new Target value as follows:
    - Start date: Select a date about **3 months ago**
    - Review Date: Select a date about **2 months ago**
    - Value: **175**
9. Click **Submit**.
10. Navigate to the **Users** Related List and click **Edit**...
11. Add **Abel Tuter (architect)** and **Abraham Lincoln** to notify when reaching the Target.
12. Click **Save** to return to the target form.

View and Edit Global Target in Analytics Hub

1. Navigate to **Performance Analytics > Analytics Hub**.
2. Hover over Number of open incident's bullet chart to view the respective day score and target.



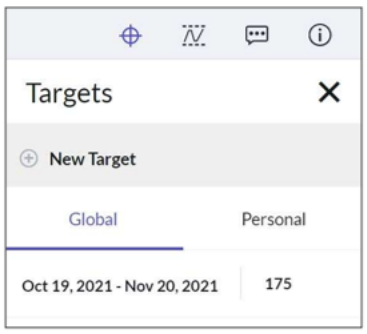
3. Open the **Number of open incidents** Indicator.
4. Enable the **Targets** viewing option to visualize the Target in the chart.
5. Note the circle and diamond along the target line representing the target Start and Review Dates respectively.



© 2023 ServiceNow, Inc. All Rights Reserved

6. Click the **Targets** button to open the Targets panel.

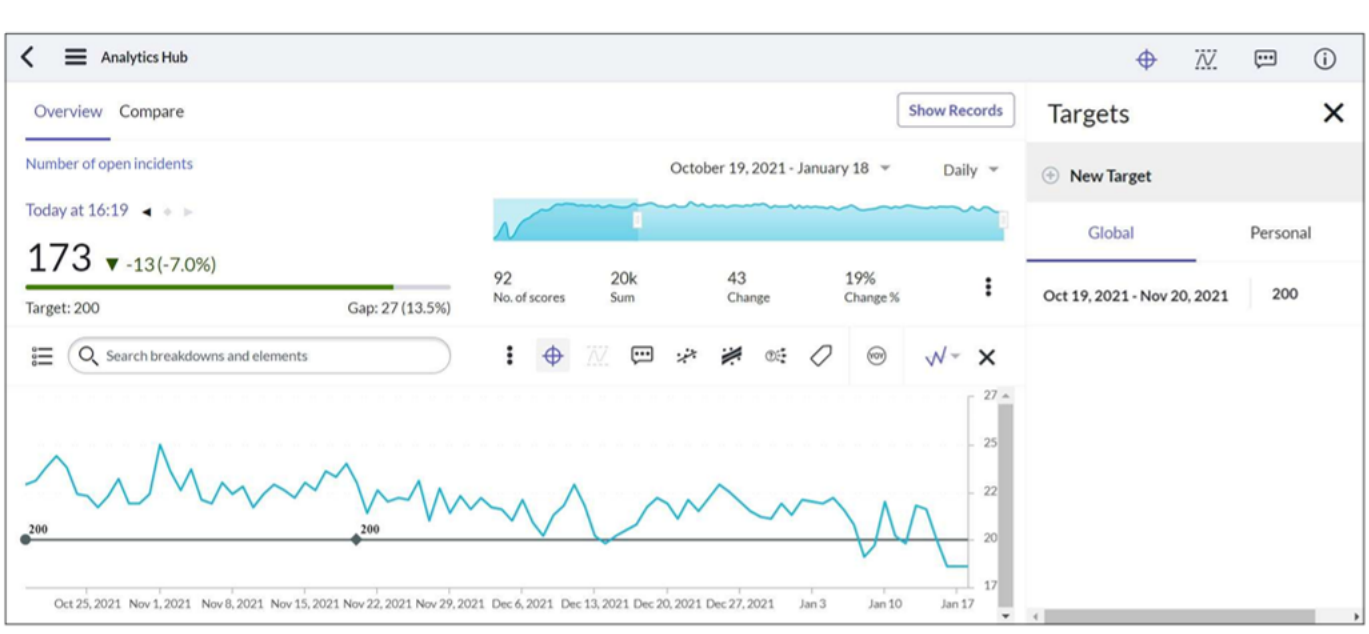
7. Click the existing Target in the list.



8. Adjust the Target value to **200** and click **Save**.

> ***Tip:*** *You can change the start and review dates and delete an existing target from the Analytics Hub.*

9. Confirm that the Target immediately changes to reflect the new value.



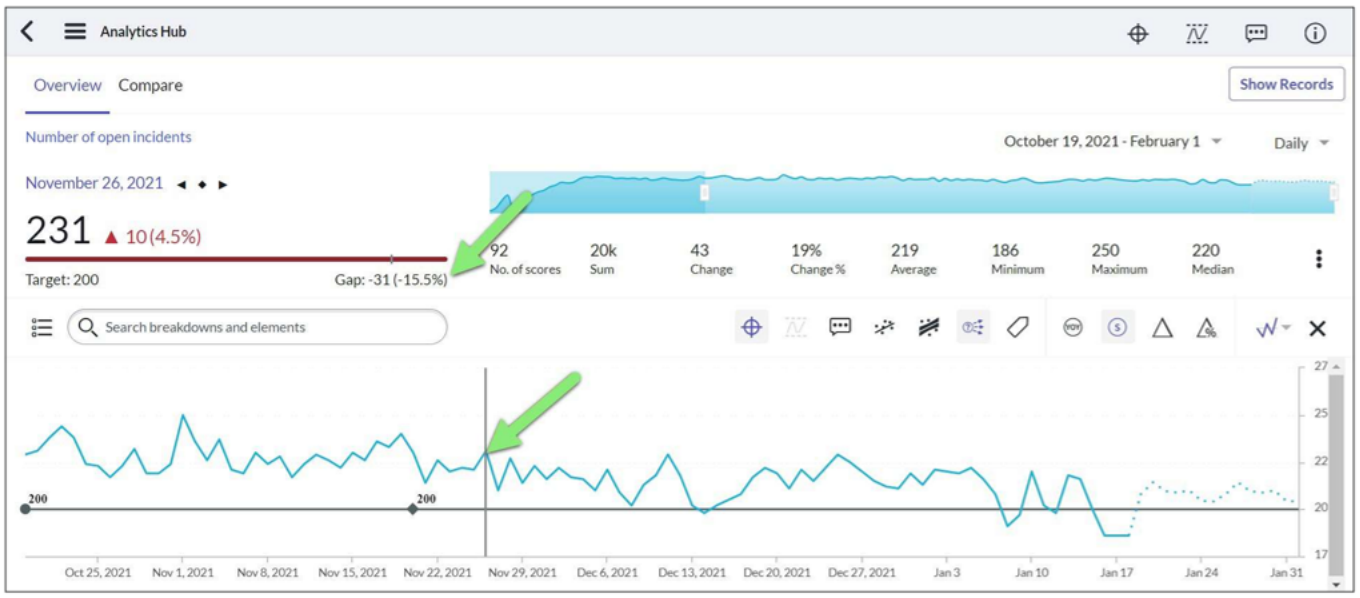
B. Target Gaps

Review and Interpret Analytics Hub Targets

1. Enable the **Forecast** chart option. 

© 2023 ServiceNow, Inc. All Rights Reserved

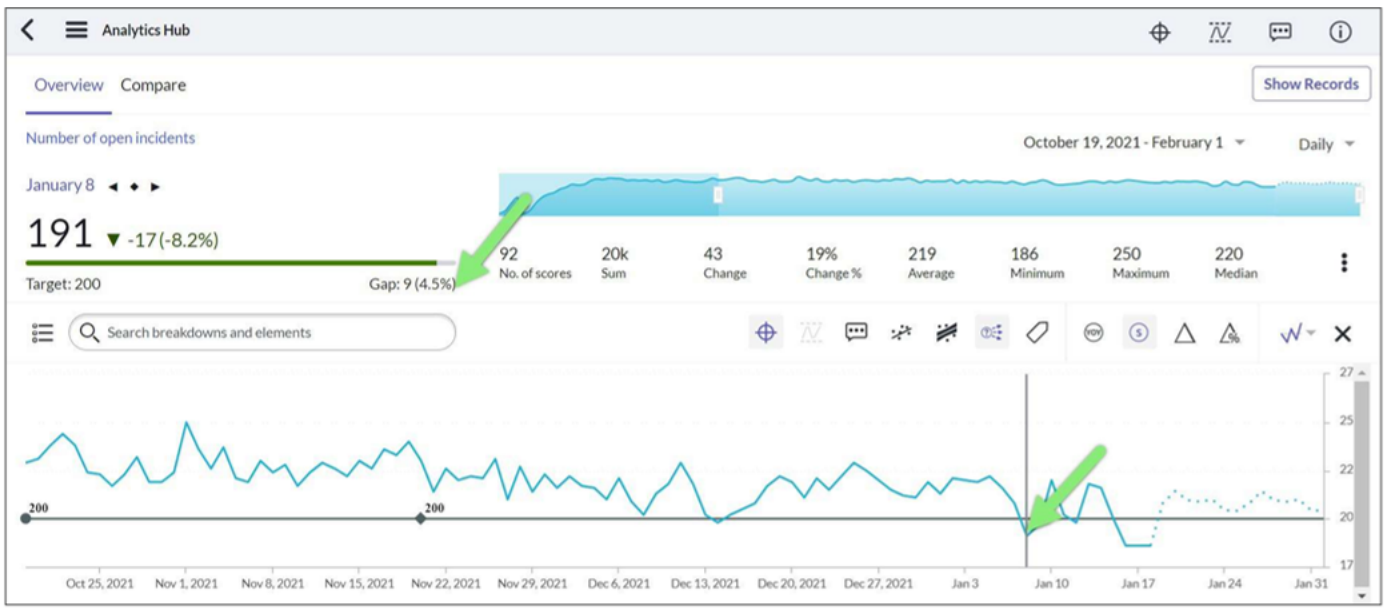
2. Click a data point where the score exceeds the Target and review the Gap info.



*In this example, the **gap** to target is -15% which is **between -10% and -25%**, and the direction of the Indicator is **Minimize,** therefore the Gap is visualized using a dark red bar.*

***Note:** This behavior is defined by the **"5 color traffic light"** color scheme.*

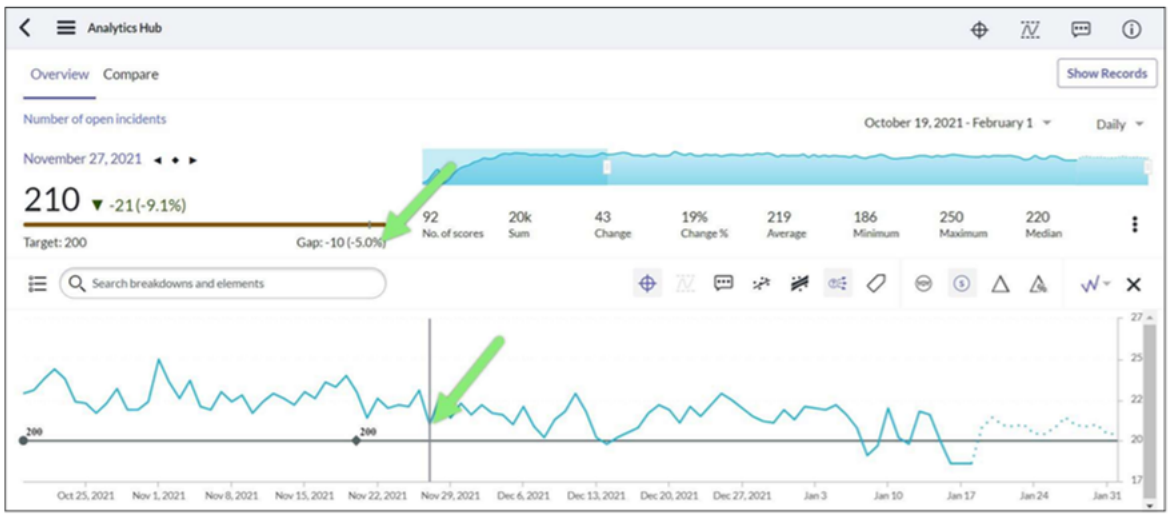
3. Click a data point below the target. Does the Gap representation make sense?



*In this example, the **Gap** to target is 4.5% which is **between 0% and 25%**, and the direction of the Indicator is **Minimize,** therefore the Gap is displayed in green.*

© 2023 ServiceNow, Inc. All Rights Reserved

4. Select a third data point which is close but still above target. Does the Gap representation make sense?



*The **Gap** to target is-5% which is **between 0% and -10%** and is displayed in orange color.*

5. Locate the **Forecast** line on the chart.

***Question:** Does it appear that the target will be reached in the next 2 weeks?*

6. Navigate to **Performance Analytics > System > Target color schemes**.

7. Open and review the **5-color traffic light** color scheme.

Questions:

*What would be the color gap if the Score was 25% or more **above** target?*

*What would be the color gap if the Score was 25% or more **below** target?*

C. Automatic Target Calculation

When creating a new target, you can rely on the system to automatically calculate the target value based on the current target or the average indicator score. This lets you set more realistic and data-driven process improvement goals.

Create Target as an Improvement of the Existing Target

In this section, you set a new target value which is a 10% improvement over the current target.

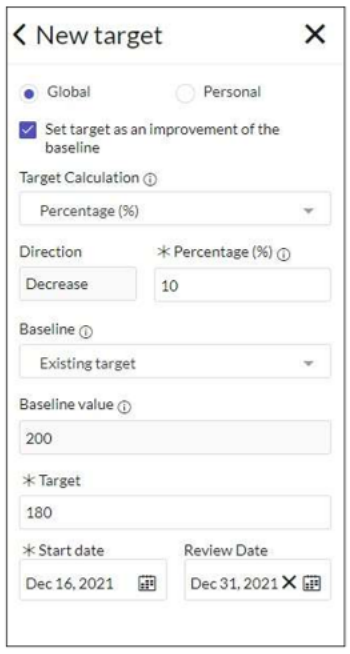
1. Navigate back to **Performance Analytics > Analytics Hub** and click **Number of Open Incidents**. Click the **Targets** button to open the Targets panel.

© 2023 ServiceNow, Inc. All Rights Reserved

2. Click **New Target.**

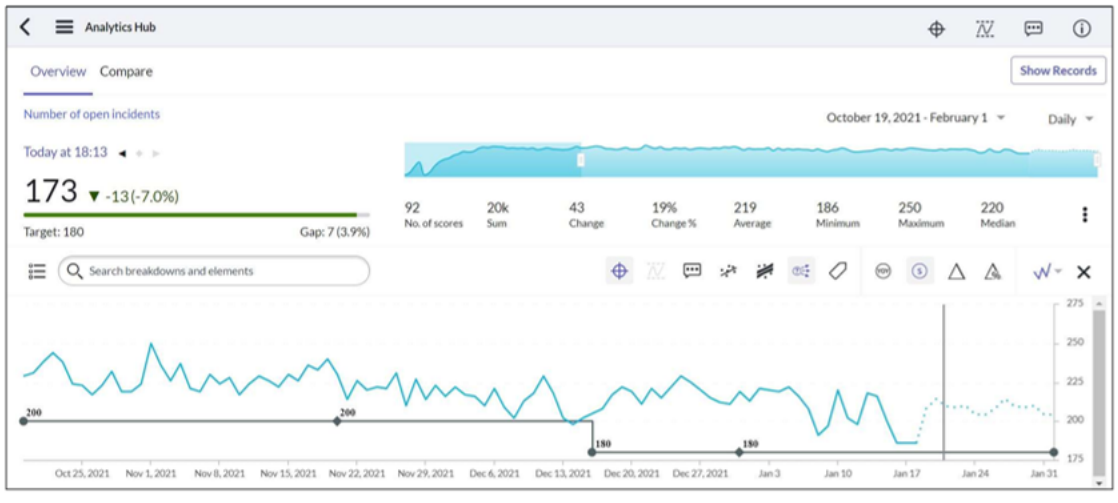
3. Select the **Set target as an improvement of the baseline** checkbox.

4. Set the **Target options** as follows:
   - Target Calculation: **Percentage (%)**
   - Percentage (%): **10**
   - Baseline: **Existing target**
   - Target: **Auto-populates as 10% less than the last target**
   - Start date: **A date after the previous target's Review date**
   - Review date: **About 15 days after Start date**



> ***Tip:*** *Note: The Start date cannot overlap with the previous target. It must be after the existing target's Review date*

5. Click **Save**.

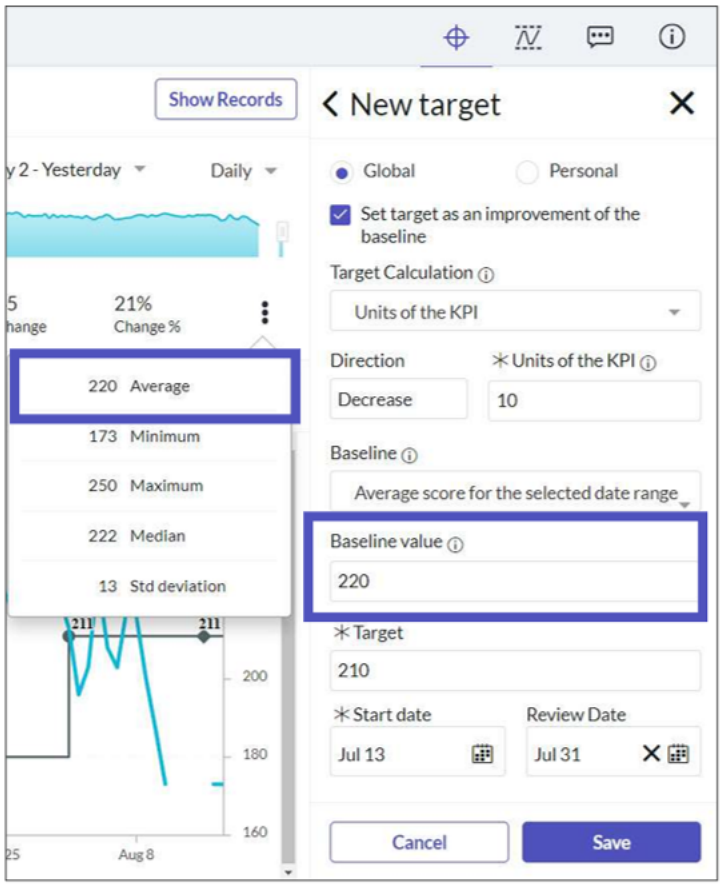


© 2023 ServiceNow, Inc. All Rights Reserved

Create Target as an Improvement on Average Score

In this section, you create another new target as a 10-point improvement over the current average indicator score.

1. Click the **Targets** button to open the Targets panel.
2. Click **New Target.**
3. Select the **Set target as an improvement of the baseline** checkbox.
4. Set the Target as follows:
    - Target Calculation: **Units of the KPI**
    - Units of the KPI: **10**
    - Baseline: **Average score for the selected date range**
    - Baseline Value: **Auto-populates with the Average score**
    - Target: **Auto-populates as 10 less than Average score**
    - Start date: **A date after the previous target's Review date**
    - Review date: **About 15 days after Start date**



Tip: *The Average used as a Baseline value depends upon the range of data you have selected in the Analytics Hub*

Tip: *The prepopulated Baseline value can be modified.*

© 2023 ServiceNow, Inc. All Rights Reserved

5. Click **Save.**

Optional Step - Scheduled Target Check

In this last step, you practice triggering the System Target checking job.

1. Impersonate the **System Administrator** or end impersonation.
2. Navigate to **Performance Analytics** > **Automation** > **Schedules**.
3. Open the **Check PA Targets** Schedule Item.
4. Adjust the **Next Action** to any date in the past.
5. Click **Update** to trigger the Job.

***Note**: This action forces the system to immediately run the Target Check and trigger notifications.*

***Tip:** Administrators can view triggered notifications by navigating to **System Mailboxes > Outbound > Outbox**. You may need to sort on the Created column to see the queued-up emails.*

Congratulations!
You have now completed the Targets Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Indicator Thresholds

Lab 7.2

⌛10 minutes

Lab Objectives

Glide Haven's Help Desk team has defined a range of acceptable Indicator scores and needs to send alerts whenever KPIs cross certain boundaries. This behavior requires the implementation of Thresholds. In this lab, you are going to:

- Manage Personal and Global Thresholds
- Implement Threshold Notifications

A. Manage Thresholds

Create Personal Thresholds

In this step, you implement two Personal Thresholds – one for the overall new incident trends and one for the Critical Priority breakdown.

1. Impersonate the **PA Viewer**.
2. Navigate to **Performance Analytics > Analytics Hub**.
3. Search and open the **Number of new incidents** Indicator.
4. Click the **Thresholds** button in the Analytics Hub banner.

Create two new thresholds as follows:

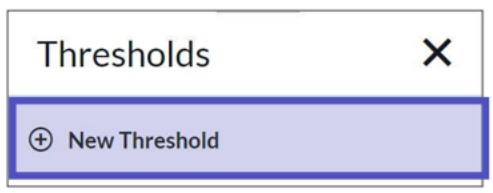
5. Click **New Threshold**.

© 2023 ServiceNow, Inc. All Rights Reserved

6. Select the **All time high** option.

7. Click **Save**.

8. Click **New Threshold**.



9. Select the **All time low** option.

10. Click **Save**.

11. Verify that there are grey dotted lines representing the two new thresholds.

***Note:** If not seeing the new threshold lines, enable the **Thresholds** chart option.*

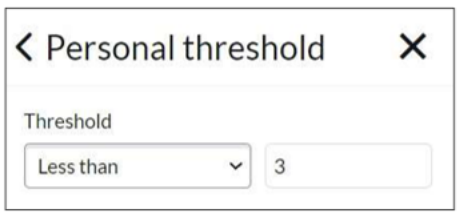
12. Navigate to the **Priority** Breakdown and view the **1-Critical** priority incidents.

© 2023 ServiceNow, Inc. All Rights Reserved

13. Click the **Thresholds** button in the Analytics Hub banner.

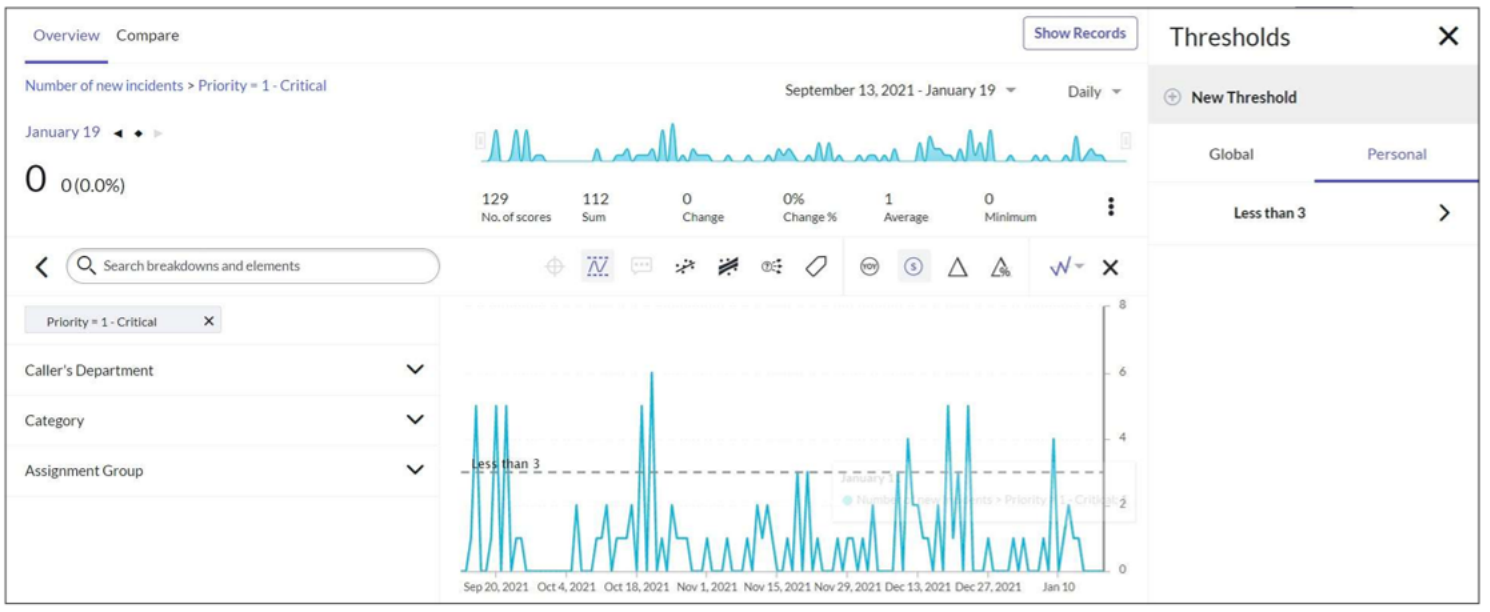
14. Click **New Threshold**.

15. Select the **Less than** option and enter **3** as the threshold value.



16. Click **Save**.

17. Confirm that your chart correctly displays the new threshold.



Manage Personal Thresholds

1. Navigate to **Performance Analytics > Indicators > Thresholds**.

© 2023 ServiceNow, Inc. All Rights Reserved

2. Open one of the **All time high** threshold for **Number of new incidents** by clicking the **Info** icon.

3. Review the configuration settings under **Other options**.
4. Open the threshold record and uncheck the **Active** checkbox.
5. Enable automatic comments when threshold is breached by clicking the **Comments** property.
6. Click **Update**.

Implement a Global Threshold

In this step, you configure Global Thresholds manually from the Thresholds list.

1. Impersonate the **PA Power User**.
2. Navigate to **Performance Analytics** > **Indicators** > **Thresholds**.
3. Click **New** to manually create a threshold.
4. Configure a new Global threshold as follows:
   - Indicator: **Number of open incidents**
   - Condition: **Less than**
   - Value: **190**
   - Comments: **checked**
   - Active: **checked**
   - Owner: **blank**

   Note: *Populating the Owner will make the Threshold Personal.*
5. **Save** the threshold.
6. Navigate to the **Users** related list.

© 2023 ServiceNow, Inc. All Rights Reserved

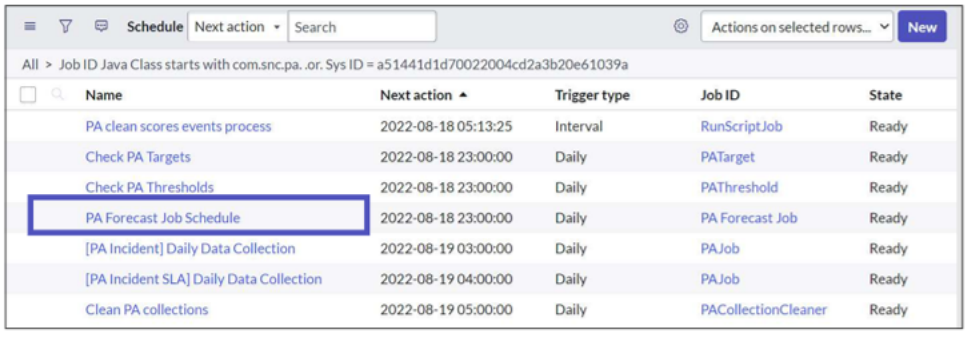
7. Click **Edit…** and add **Abel Tuter (architect)** and **Abraham Lincoln**, then click **Save**.
8. **Update** the Threshold.
9. Navigate to **Performance Analytics > Analytics Hub**.
10. Open the **Number of open incidents** Indicator.
11. Enable the **Thresholds** and disable the **Forecast** chart options.
12. Verify that a new black dotted line representing the threshold is visible.

Note: *The color of the threshold is black indicating a Global Threshold.*

Validate Thresholds

Performance Analytics has a threshold checker job which only runs once per day. To force an ad-hoc threshold checking to occur, you need to execute the job manually.

1. Impersonate the **System Administrator** or end the current impersonation.
2. Navigate to **Performance Analytics** > **Automation** > **Schedules**.
3. Search for and open the scheduled job **Check PA Thresholds**.

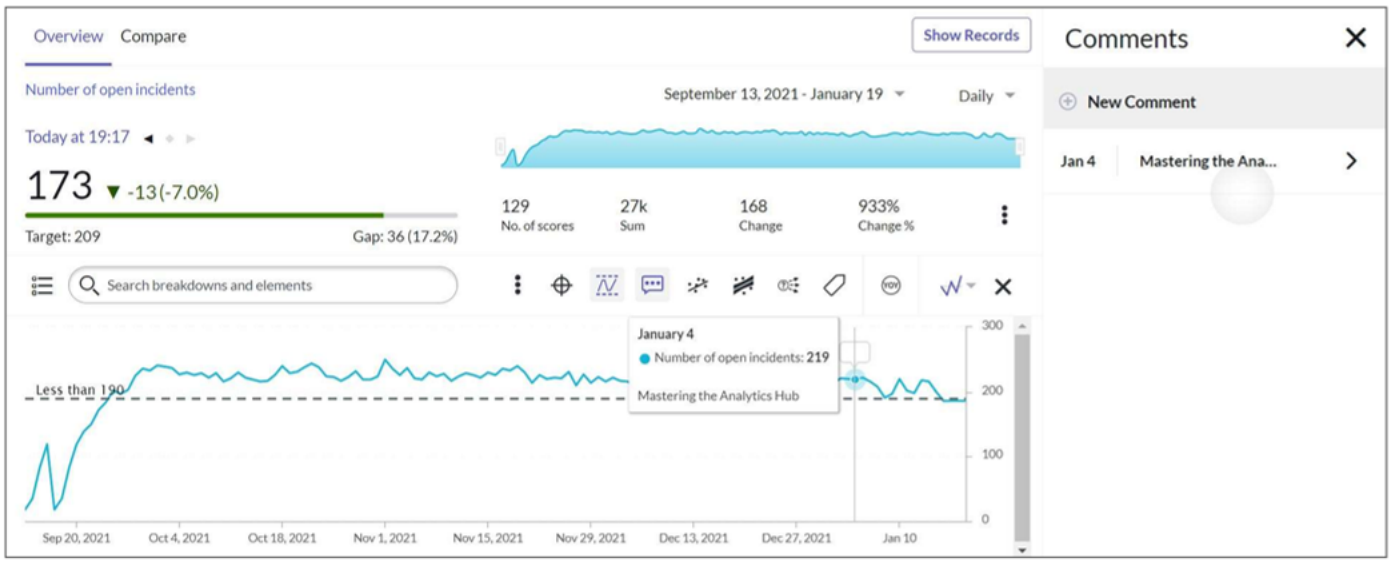


© 2023 ServiceNow, Inc. All Rights Reserved

4. Set the **Next action** field to **any date in the past** (the job will not run without this!).
5. Click **Update** to execute the job.

   Note: *Allow ~ 1 minute before the threshold checker has finished and Comments are generated.*

6. Navigate to **Performance Analytics** > **Analytics Hub**.
7. Open the **Number of open incidents** Indicator.
8. Enable the **Comments** and **Thresholds** chart options.
9. Click the **Comments** button from the Analytics Hub banner.
10. Hover over the most recent bubble to read the comments "**Mastering the Analytics Hub**".
11. Verify that you can view the new Threshold reached comment.



Note: *Notifications for the above crossed thresholds are also dispatched. You can view queued-up notifications by going to* ***System Logs > Emails****.*

Congratulations!
You have now completed the Indicator Thresholds Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Time series and Elements Filters

Lab 7.3

15 minutes

Lab Objectives

The list of Breakdown elements can be long and difficult to search. To help make them more manageable, Elements filters are used to apply a filter to Breakdown elements.

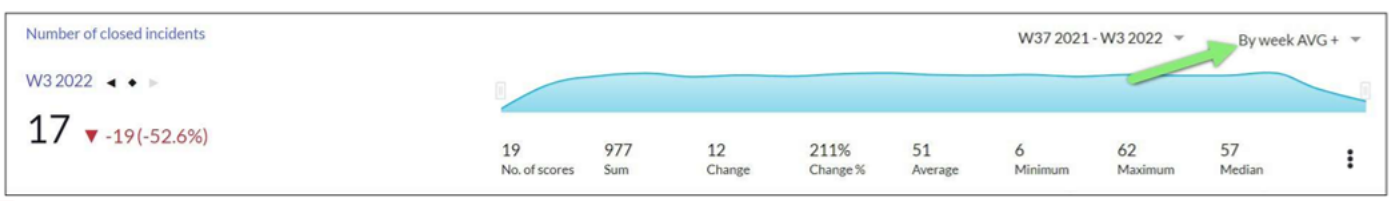
In this lab, you perform the following:

- Explore the outcome of using Time Series aggregations
- Create an Elements Filter to display only Assignment Groups that you manage
- Practice navigating Indicator charts by Elements Filters

A. Time Series Aggregations

Aggregate the data to a less frequent period

1. Impersonate the user **PA Admin**.
2. Navigate to **Performance Analytics > Analytics Hub**.
3. Open the **Number of closed incidents** indicator.
4. Confirm that the **Daily** Time Series is applied.
5. Enable the **Trend** chart option. 
6. Apply the **By week AVG+** Time Series to view the average incidents closed weekly.



Question:

How does the score line change after the application of the By Week AVG+ time series?

© 2022 ServiceNow, Inc. All Rights Reserved

servicenow

Smooth the data with a rolling average

1. Navigate to **Performance Analytics > Analytics Hub**.
2. Open the **% of incidents not resolved by first assigned group** indicator and make sure that the **Daily** Time Series is already applied.
3. Apply the **30d running AVG** Time Series to view a 30-day running average of incident closures.

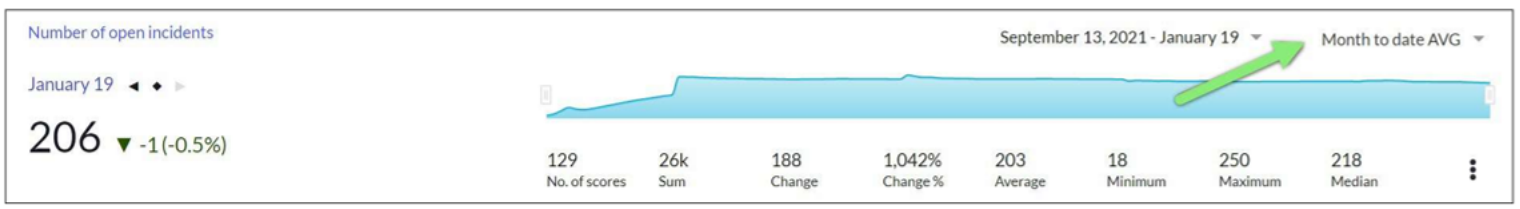
***Question**: Does the 30d running AVG Time series provide a variable picture of indicator fluctuations?*

Determine a period-to-date score

1. Navigate to **Performance Analytics > Analytics Hub**.
2. Open the **Number of open incidents** indicator and confirm that the **Daily** Time Series is applied.
3. Enable the **Targets** chart option.

Looking at the Target line, you can see your daily compliance. However, you cannot tell how close you are to achieving the target over a larger time period, like a week or a month.

4. Apply the **Month to date AVG** Time Series to view the Target compliance month to date.



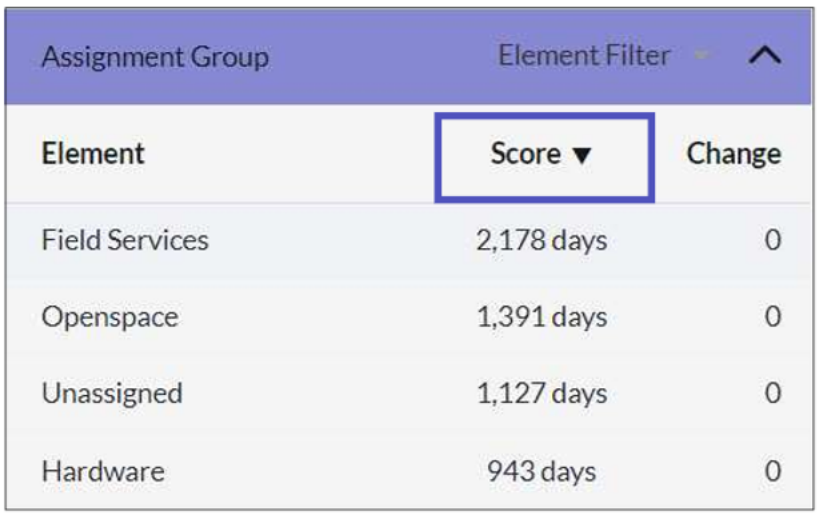
It is recommended to create a new month-to-date Target so that you are able to tell, on a daily basis, how close you are, month to date, to achieving your target.

© 2022 ServiceNow, Inc. All Rights Reserved

B. Breakdowns Without Elements Filters

In this step, you review the Breakdown elements of an Indicator without an Elements Filter.

1. Confirm you are still impersonating the user **PA Admin**.
2. Navigate to **Performance Analytics** > **Analytics Hub**.
3. Open the **Average age open incidents** Indicator.
4. Expand the **Breakdowns** list and select the **Assignment Group** Breakdown.
5. Expand the **Assignment Group** list of Elements.
6. Click **Score** 1-2 times to sort the Breakdown elements by **Score** magnitude in ascending and descending order.



Assignment Group	Element Filter	
Element	Score ▼	Change
Field Services	2,178 days	0
Openspace	1,391 days	0
Unassigned	1,127 days	0
Hardware	943 days	0

Questions: *How many Assignment Groups are there? How easy is it to locate the Group you wish to explore?*

C. Create Elements Filter: Groups I Manage

In this step, you design a filter to display ONLY the Groups that you manage.

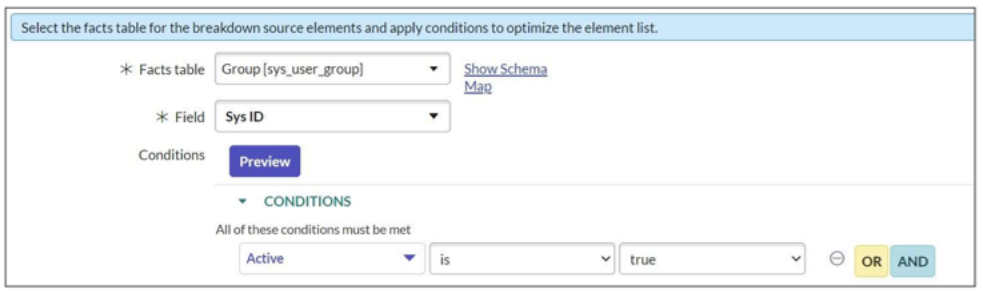
Review Elements Filter Source

As a best practice, review the Breakdown Source corresponding to the new Elements Filter.

1. Navigate to **Performance Analytics** > **Sources** > **Breakdown Sources**.

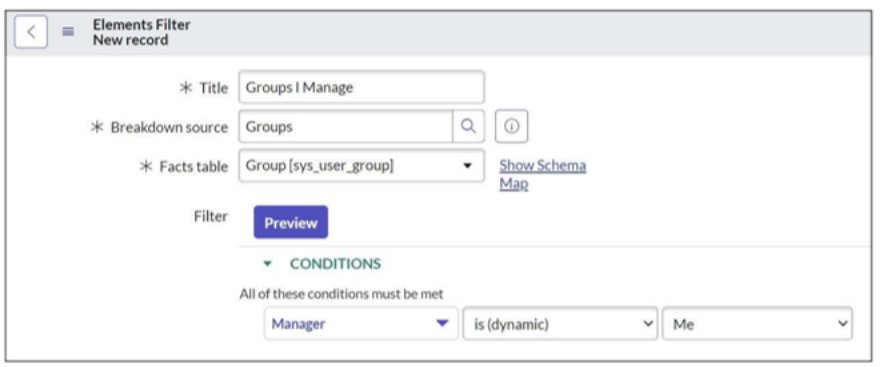
© 2022 ServiceNow, Inc. All Rights Reserved

2. Open the **Groups** Breakdown Source.
3. Review the **Facts table** and the **Condition**.



Create Elements Filter

1. Navigate to **Performance Analytics** > **Breakdowns** > **Elements Filters**.
2. Click **New** to begin creating an Elements Filter.
3. Complete the form as shown:
   - Title: **Groups I Manage**
   - Breakdown source: **Groups**
   - Facts table: **Group [sys_user_group]**
   - Filter: **Manager** | **is (dynamic)** | **Me**



***Note**: The above will limit the displayed groups only to those managed by the logged in user.*

4. Click **Submit**.

D. Apply Elements Filters

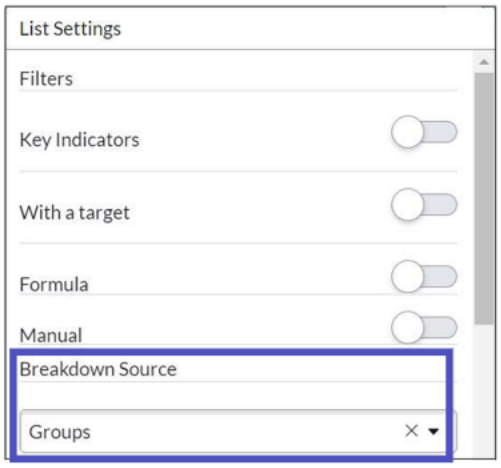
1. Impersonate the **System Administrator** or end impersonation.

   ***Note:** This user manages the **Financial Systems Support**, **Field Services**, and **Hardware** groups.*

2. Navigate to **Performance Analytics** > **Analytics Hub**.

© 2022 ServiceNow, Inc. All Rights Reserved

3. Set the **List Settings** to include Indicators with the **Groups** Breakdown Source:



4. Turn off the **With a target** toggle button in the list settings.

5. Open the **Average age open incidents** or any of the **Indicators** in the list.

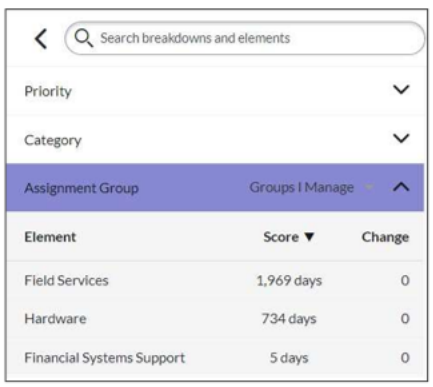
6. Expand the **Breakdowns** tab and select the **Assignment Group** Breakdown.

7. Expand the **Element Filter** dropdown to view the available filters.

8. Select **Groups I Manage** filter.

9. Confirm that Breakdown Elements list contains only the following groups:

   Hardware, **Financial Systems Support**, and **Field Services**.



Congratulations!
You have now completed the Time Series and Elements Filters Lab

© 2022 ServiceNow, Inc. All Rights Reserved

Module Recap

Core Concepts

- Time series dynamically transform a daily trend by applying an SUM or AVG aggregation
- Targets visualize how a process performs against a predefined goal
- Thresholds allow alerting with automatic notifications whenever a predefined condition is met
- Elements Filters filter Breakdown elements in the Analytics Hub and Widgets

Review Questions

- How are Personal Targets and Thresholds different from Global?
- Who can be a recipient of notifications?
- What is the difference between a 3-color and 5-color traffic light color scheme?
- What needs to be configured to be able to quickly view records of Priorities higher than Moderate?

How are Personal Targets and Thresholds different from Global?
Pa_viewer role can only create Personal Thresholds.
Pa_power_user and pa_admin can create both Global and Personal Thresholds.
Personal Thresholds are only visible in the Analytics Hub to the user that created them (not on Widgets).

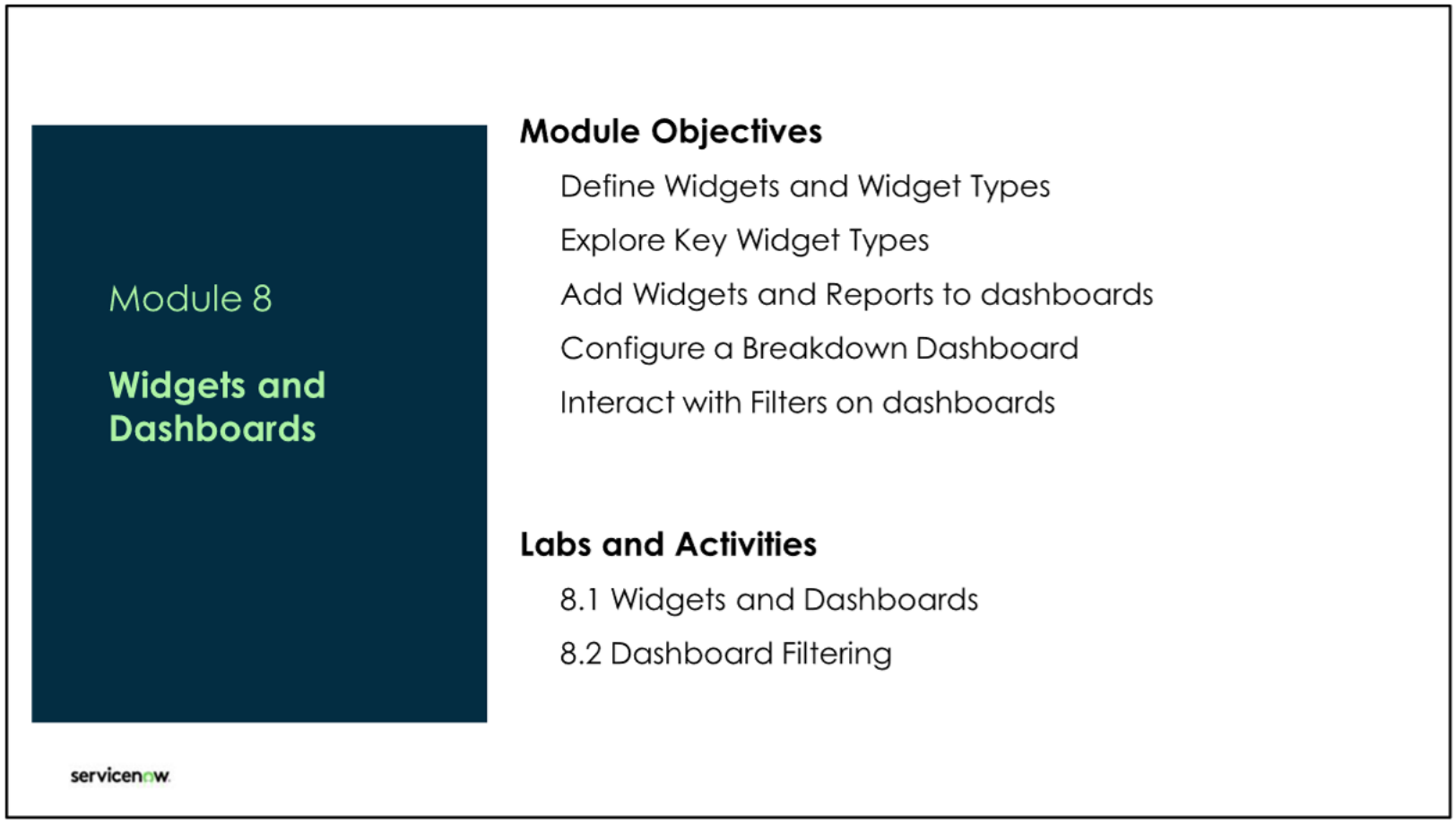
Who can be a recipient of notifications?
For Global Targets and Thresholds: Only Recipients on the Users list receive notifications.
For Personal Targets and Thresholds: Owners receive notifications automatically.

What is the difference between a 3-color and 5-color traffic light color scheme?
Gaps to target are visualized using either 3 or 5 categories with respective colors.

What needs to be configured to be able to quickly view records of Priorities higher than Moderate?
Elements Filter, Condition: Priority | Greater than | Moderate

© 2023 ServiceNow, Inc. All Rights Reserved

© 2023 ServiceNow, Inc. All Rights Reserved



This module explores the Performance Analytics widget and dashboard visualizations. It introduces the most common widget types and provides an overview of working with dashboards to add and edit content, configure the dashboard layout, and share the dashboard.

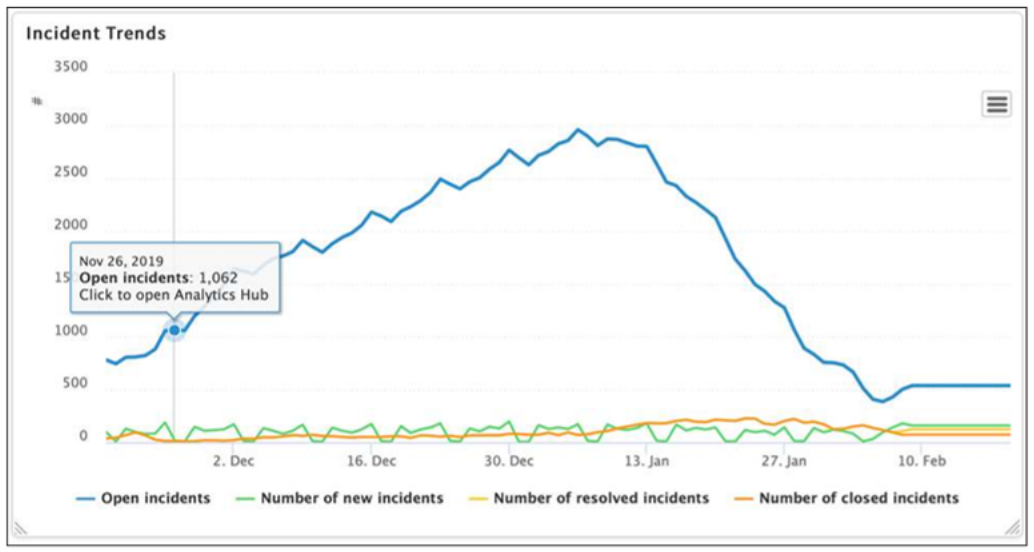
© 2023 ServiceNow, Inc. All Rights Reserved

What is a Performance Analytics Widget?

Reusable visualization of the Indicator's available historical data

- Visualize Indicator and Breakdown data
- Display one or more trends in the same chart
- Customize Title, Labels, and Chart colors
- Choose from available visualizations
- Click into the Analytics Hub
- Reuse across dashboards

servicenow



A Performance Analytics widget is used to visualize the historical trend of one or more Indicators.

Multiple configuration options are available to customize the appearance and content of the widget.

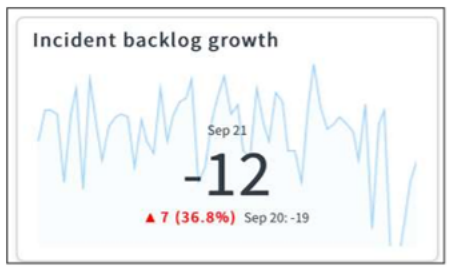
The widget becomes visible to viewers when placed on a dashboard and is reusable across multiple dashboards.

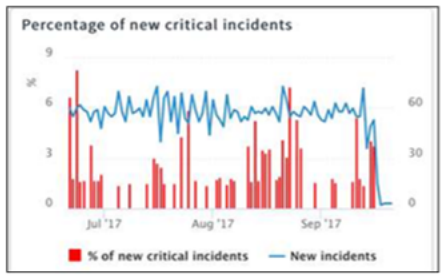
© 2023 ServiceNow, Inc. All Rights Reserved

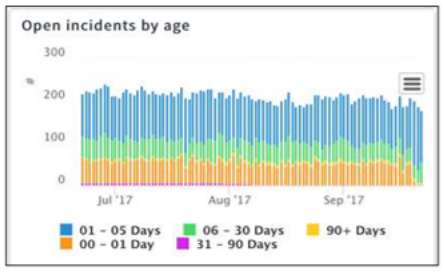
Widget Types

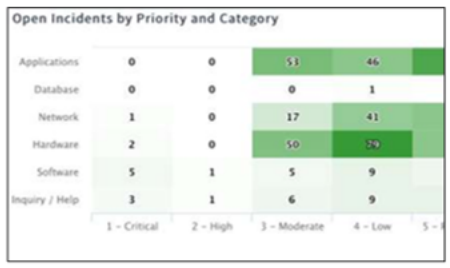
Select Widget Type based on your data visualization goals

- Summarize overall Indicator score
- Trend historical Indicator data
- View Indicator data by Breakdown
- Compare multiple Indicators
- Analyze text data









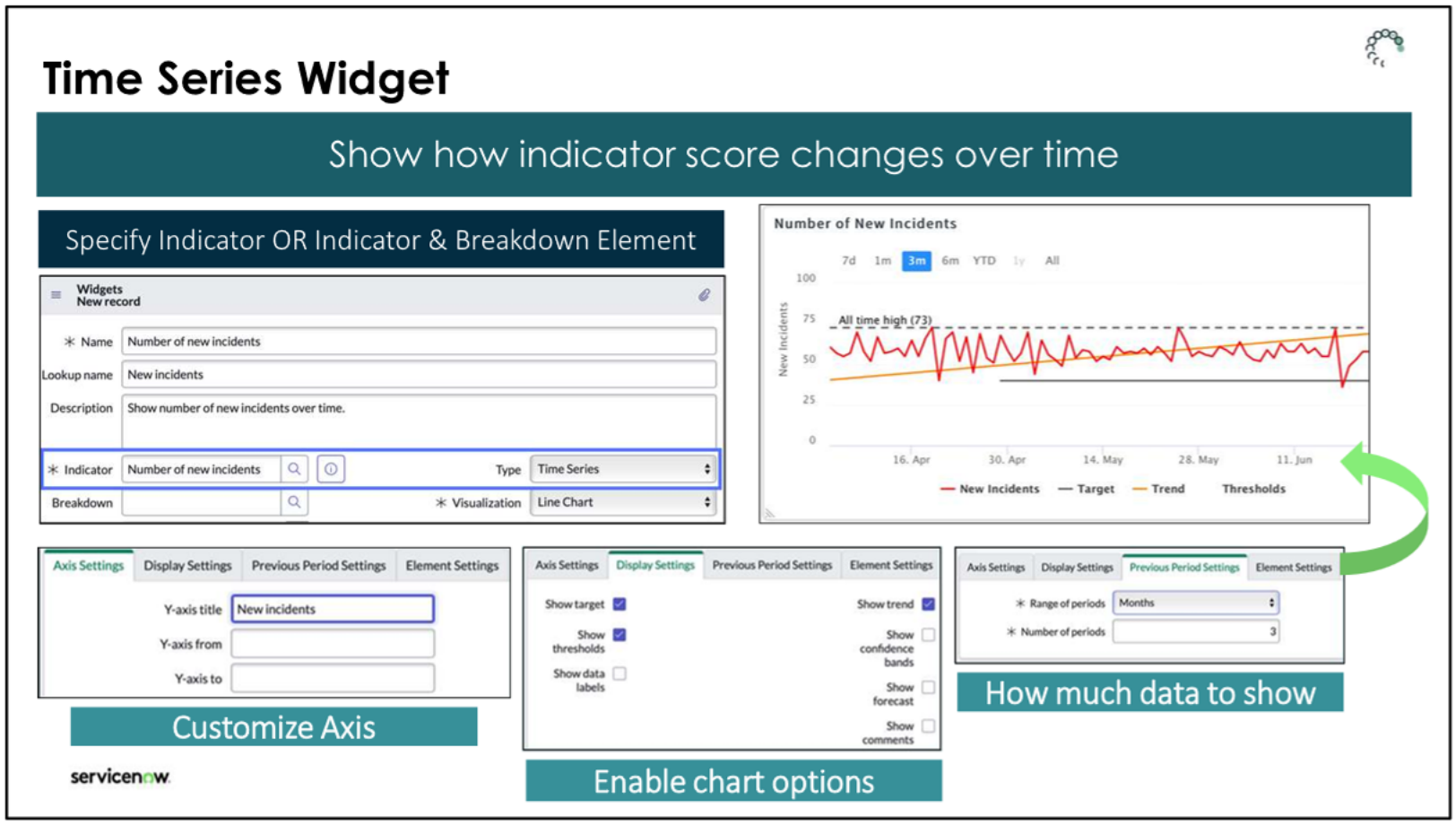
This module focuses on the most common widget types:

- **Time Series**: A visualization of the historical score trend over time, that has the ability to forecast, and compare with other indicators.
- **Breakdown**: Trend or summarize Indicator data by Breakdowns Elements.
- **Score**: A summary of the latest score with an option to compare against a prior score.
- **Report:** Created in the Reports application.

The following additional widget types are also available:

- **Workbench**: Interactive widget grouping multiple indicators by Breakdowns and creating a process context.
- **Pivot:** Compare scores in a pivot table (grid) using one Breakdown Element as the row and another Breakdown Element as the column.
- **Text**: A word cloud analyzing patterns in text fields of an Indicator.
- **List:** Summary statistics about multiple indicators in a tabular/list format.

© 2023 ServiceNow, Inc. All Rights Reserved



A Time Series widget displays the changes in a KPI over time. It can show all Indicator data, or only the data pertaining to a specific Breakdown Element.

Use the **Axis Settings** to customize the Label and Range of the 1st and 2nd Y axis. A 2nd Y-axis can be labeled if you have more than one Indicator, and some of them are using different units of data.

Use the **Display Settings** to enable deeper data insight, similar to what you see in the Analytics Hub:

- **Show target**: Compare the scores of this chart with the target scores.
- **Show thresholds**: Display thresholds such as an **All time High** or an **All time Low**.
- **Show data labels**: Display the score for each portion of the chart.
- **Show trend**: Display the trend line.
- **Show confidence bands**: Display confidence bands in this chart.
- **Show forecast**: Display forecast data in the chart based on current trend data.
- **Show comments**: Display comments added to data points in the chart.

Use the **Previous Period Settings** to control the range of displayed Indicator data:

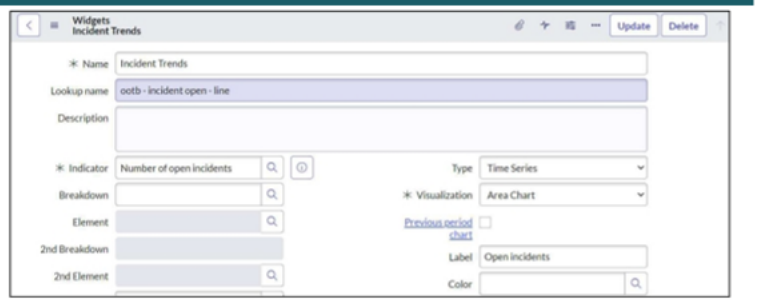
- A **Range of periods** to specify data format in years, quarters, months, or weeks.
- **Number of periods** to specify the number of years (2 years max), months, or weeks to collect.

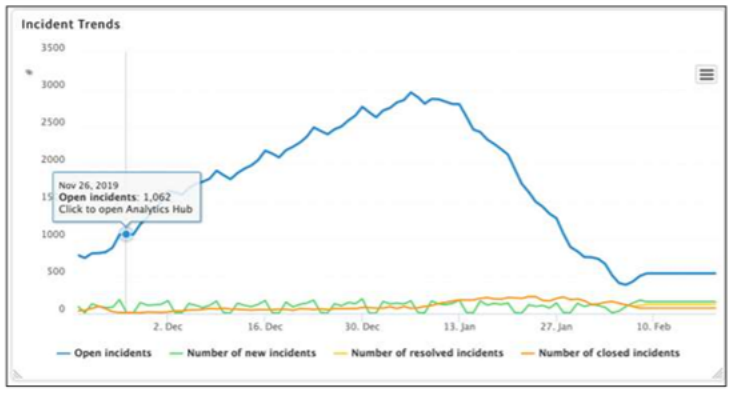
© 2023 ServiceNow, Inc. All Rights Reserved

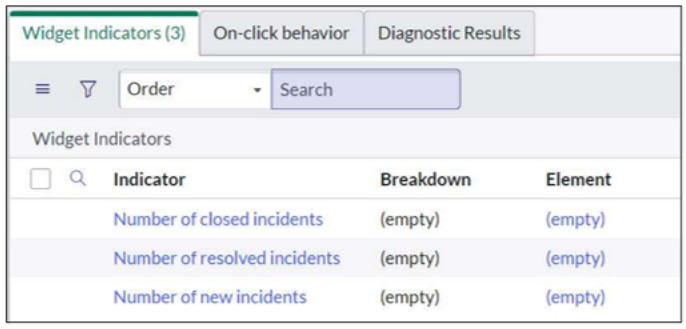
Time Series with Widget Indicators

Show multiple KPIs - indicators or indicator breakdown trends

- Define up to seven Widget Indicators to display in the same chart
- Each Main or Widget Indicator can be styled separately
- Time series can be applied to each Main or Widget indicator







Time Series Widgets can visualize multiple Indicators on a single chart. In this example, the Time Series widget displays a Line chart for **Number of open incidents** (main indicator), and three additional line charts for **Number of resolved incidents**, **Number of new incidents**, and **Number of closed incidents**.

Use the **Widget Indicators** related list to add more indicators to display together with the main indicator. To configure additional Indicators, click **New** in the Widget Indicators related list.

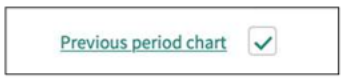
The Additional Widgets can show any Indicator or combination of Indicator and Breakdown elements. By default, up to seven additional widgets can be displayed together with the main Indicator.

© 2023 ServiceNow, Inc. All Rights Reserved

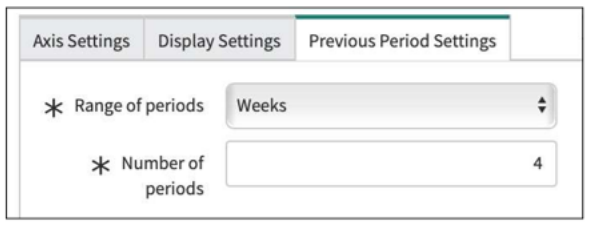
Time Series with Previous Periods

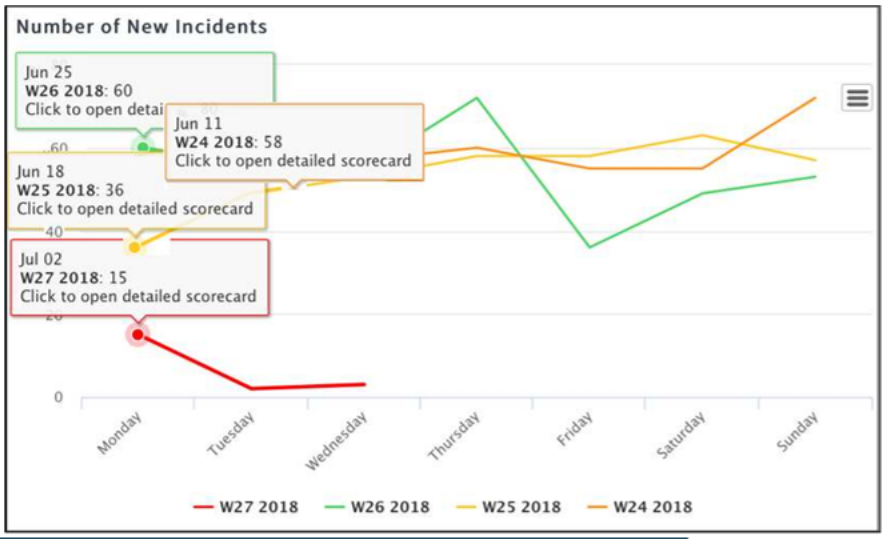
Compare indicator trends for previous periods

- Enable **Previous period chart**



- Define Range and number of periods





Available Previous Periods: Week, Month, Quarter, Year

The **Previous period chart** property allows for a trend line for each Previous Period in the same chart. Time Series can be configured to compare data from multiple periods in the same chart as follows:

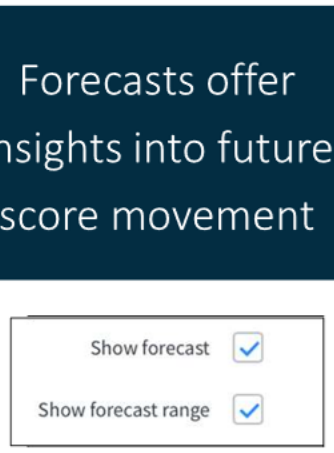
- **Previous period chart**: Check to compare data from previous periods. **Each period is represented in a different color** in the same chart for the number of periods selected.
- **Range of periods**: Select the range of periods to compare with the current period.
- **Number of periods**: Specify the number of previous periods to display.

The above example trends data from four different consecutive weeks using different colors. Data for the last week only contains three data points, as it happens to be an incomplete week.

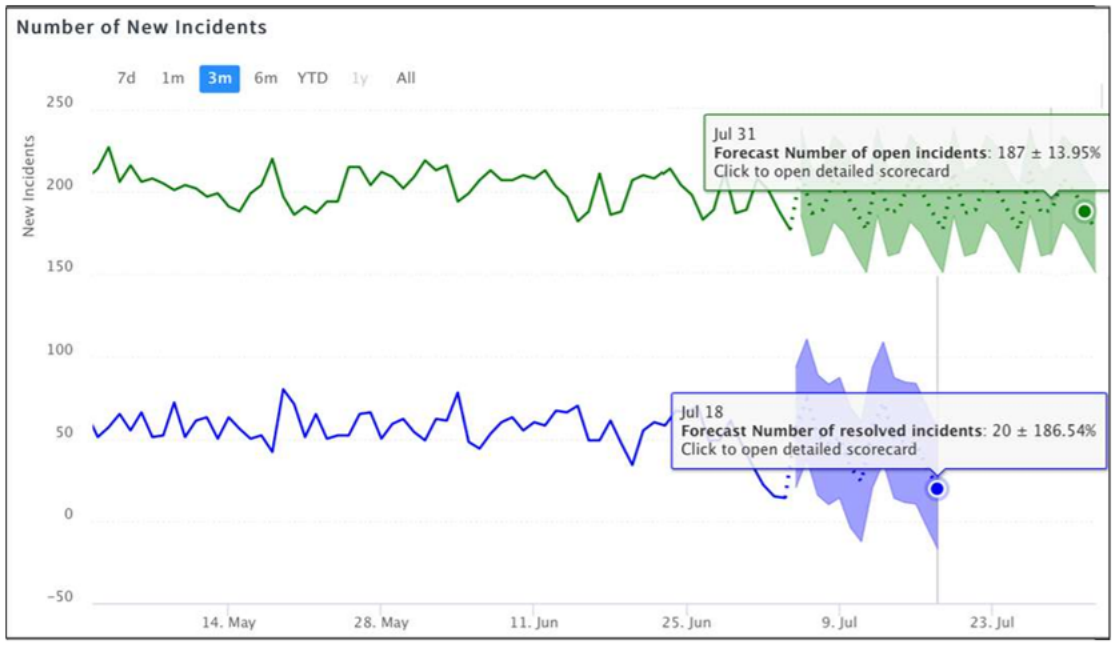
© 2023 ServiceNow, Inc. All Rights Reserved

Time Series with Forecast

Forecasts offer insights into future score movement



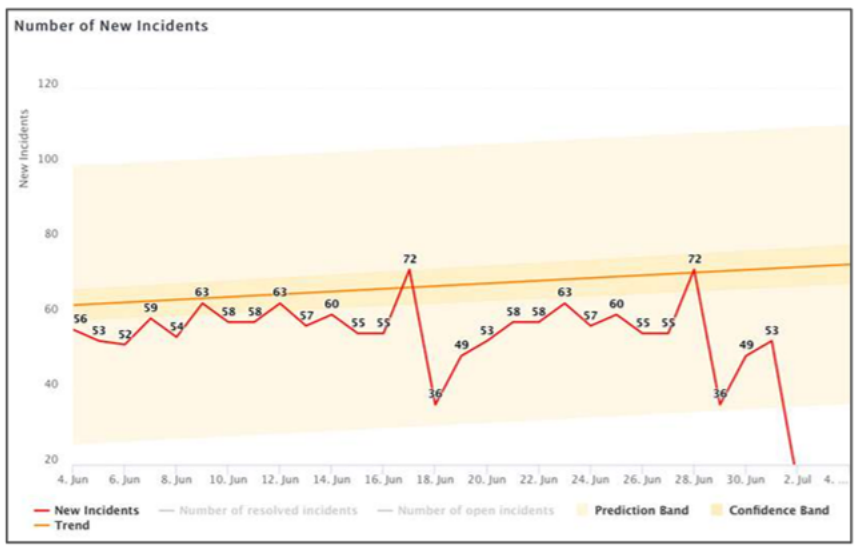
Forecast Range shows the 95% confidence interval of the forecast



Any Time Series widget that shows a trend can be enhanced with the display of the Forecast and the Forecast Range. The number of periods forecasted depends on the Forecasting settings of the corresponding Indicator. The Time Series widget is *the only widget type* that can visualize the forecast.

Additional Settings may be applied to visualize the following:

- Data Labels – values of each data point.
- Trend – an approximation of the score movement and direction.
- Confidence and Prediction Bands – lighter and darker bands respectively.



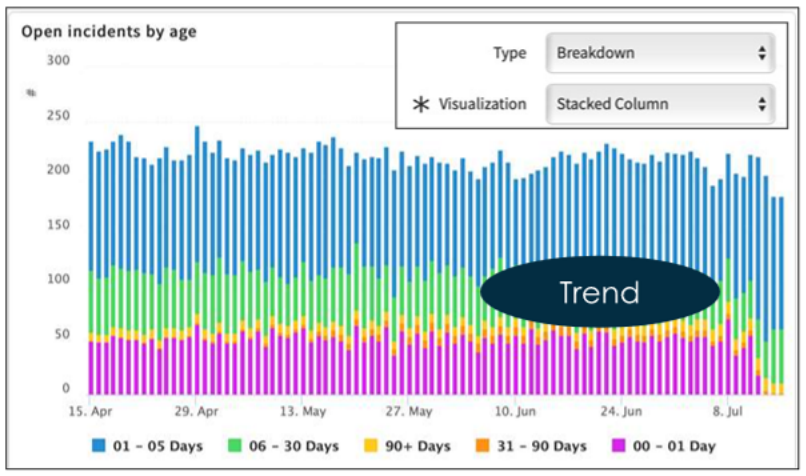
© 2023 ServiceNow, Inc. All Rights Reserved

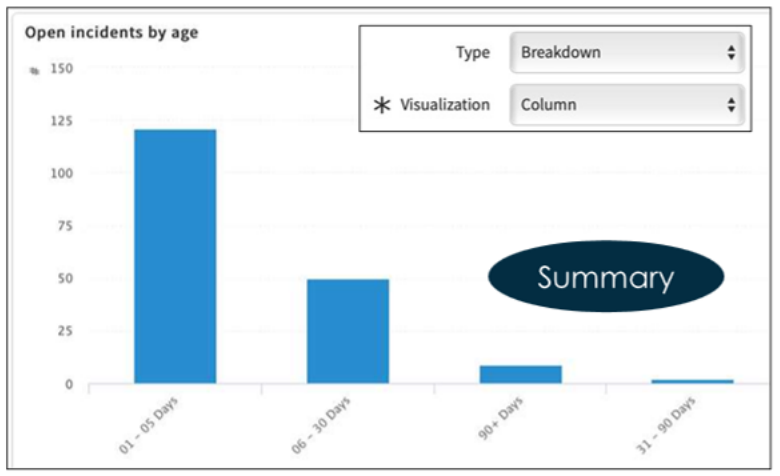
Breakdown Widgets

Visualize and Compare Breakdown Elements

Trend visualizations: Line, Stacked Column

Summary visualizations: Pie, Column, etc.





A Breakdown widget is used to trend or summarize Indicator data by its Breakdown elements. The Breakdown widget has multiple visualizations:

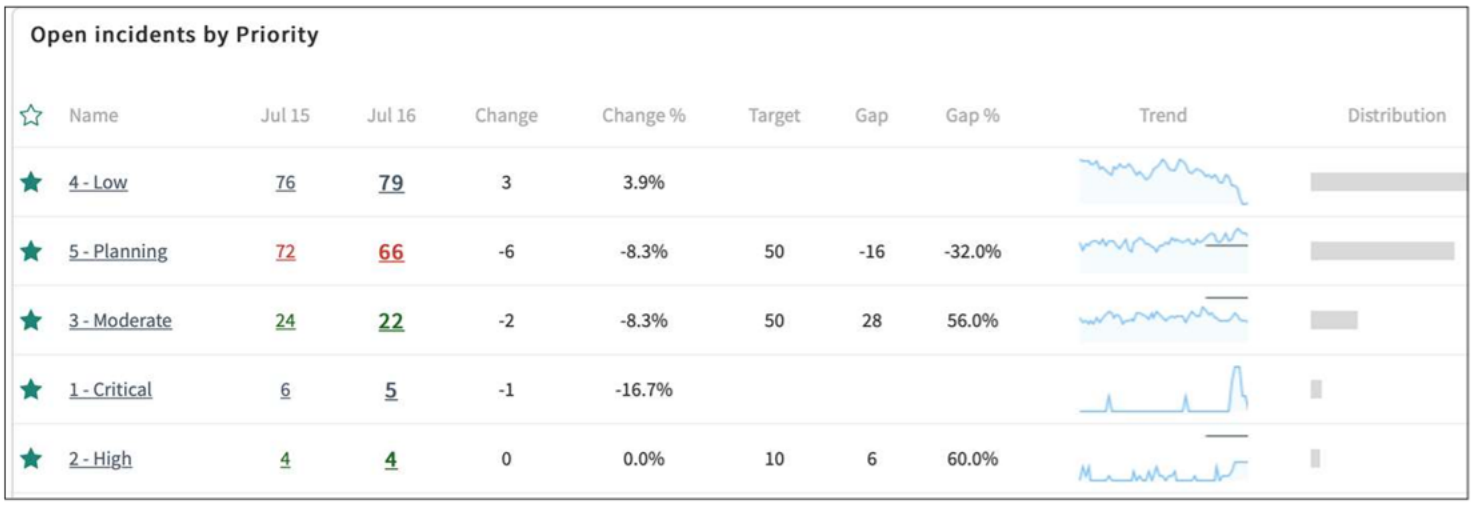
- If the goal is to display a trend over time, choose the **Line**, the **Stacked Column**, or the **Columns and Totals** visualization.
- If your goal is to display a summary of the latest score, select one of these summary visualizations: **Pie**, **Donut**, **Semi Donut**, **Funnel**, **Pyramid**, or **Column.**
- To view a trend of all Elements of a specific Breakdown summarized in a table, choose the **Scorecard** visualization.
- To compare the score change relative to a baseline across multiple Breakdown Elements, choose the **Relative Compare** visualization.
- The **Pareto** visualization summarizes the latest score by Breakdown Element and identifies the cumulative percentage contribution of each Element.

For Indicators configured to collect the Breakdown matrix, you can view data by 1st and 2nd Breakdown by specifying a 1st Breakdown + Element and a 2nd Breakdown as follows:

© 2023 ServiceNow, Inc. All Rights Reserved

Breakdown Scorecard

- Configure a Breakdown widget with a **Scorecard** visualization
- View a performance Scorecard of all Elements of the Indicator Breakdown
- Compare past period scores, current score, target, gap, change, change %

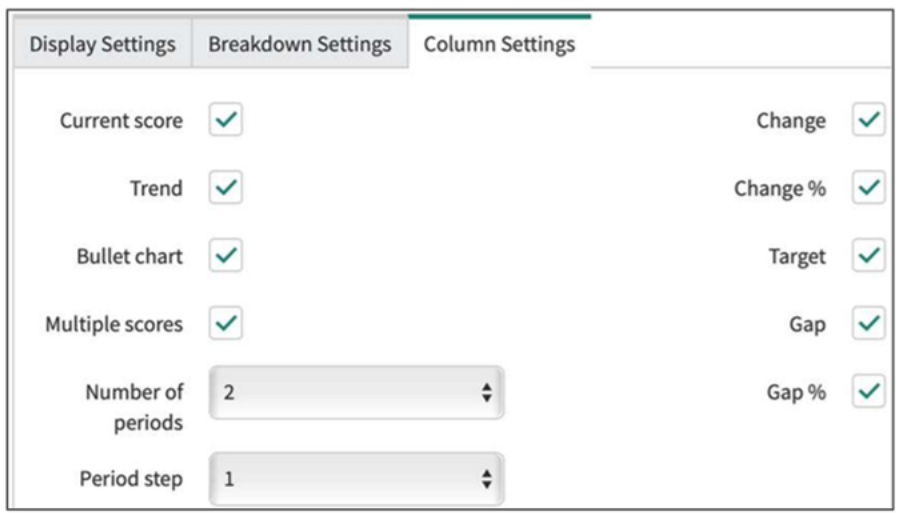


Choose a Breakdown widget with a **Scorecard** visualization to show a list of Indicator Breakdown trends by Element. Use the **Scorecard** visualization to render a tabular view of an Indicator's Breakdown elements.

In our example, open incidents are being compared by their priority.

Adjust the selections under **Column Settings** to add additional information to the scorecard list. The following Column Settings are available:

- Current Score
- Trend
- Bullet chart
- Multiple scores
- Change
- Change %
- Target
- Gap
- Gap%

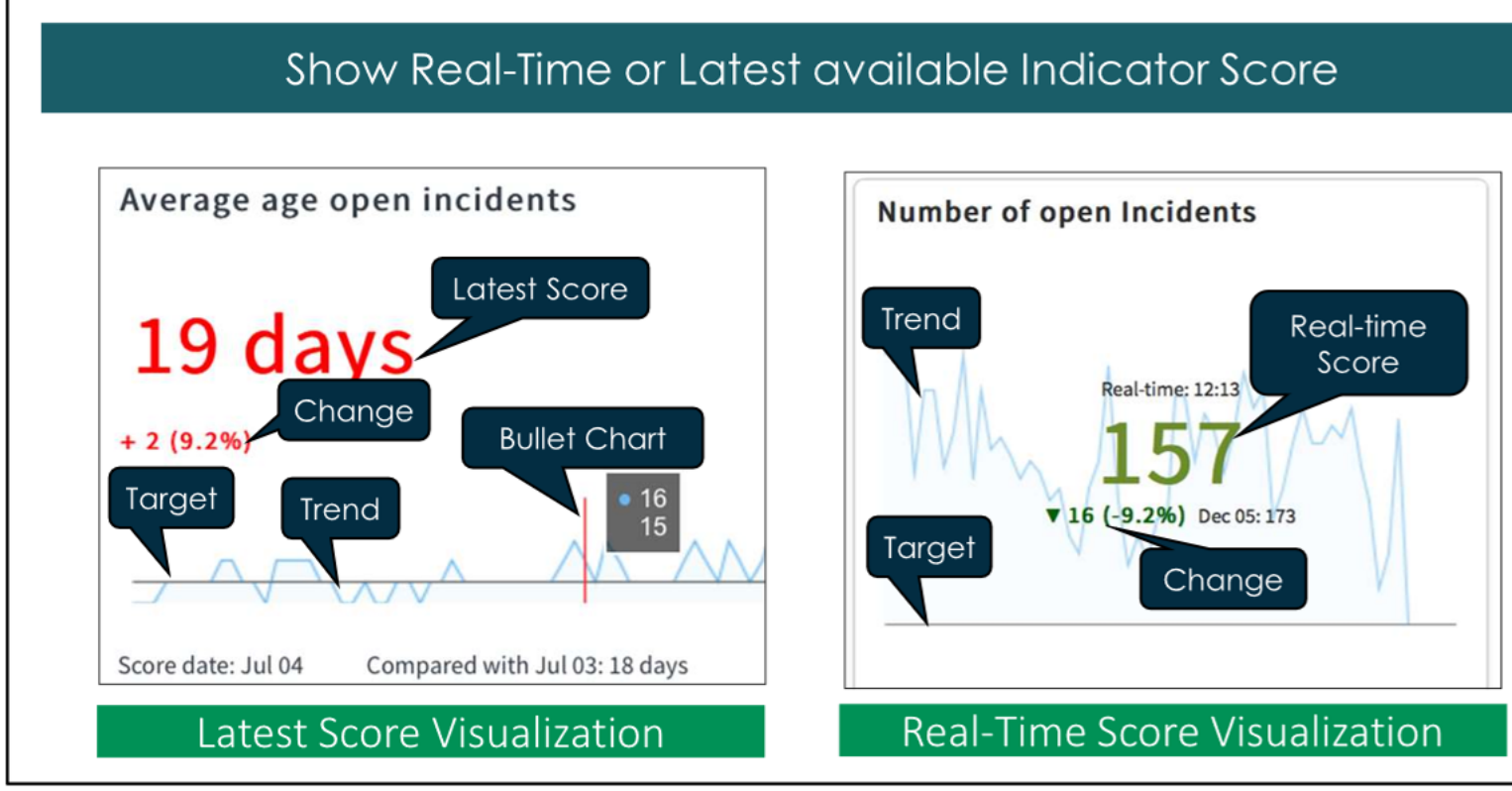


If **Multiple scores** is selected, the following appear:

- Number of periods – how many past scores to display
- Period step – how many periods apart are the past scores, use **1** for consecutive scores

© 2023 ServiceNow, Inc. All Rights Reserved

Score Widget



The **Score** Type widget can be used to display an aggregate Indicator score, such as the current number of open incidents or latest number of resolved incidents.

The Available visualizations are: **Latest Score**, **Real-time Score**, **Speedometer**, and **Dial**. The latest score is the score as per the last collection, whereas the real-time score is obtained from the data currently in the respective business table.

Note: A Real-time score is available only for Automated Indicators that use the Count aggregation.

When creating a Latest Score widgets, there are three visualization templates available:

- Template 1: Latest score/Real-time Score, Trend, Bullet Chart, Target, Change, % Change, Comparison Score.
- Template 2: Latest score/Real-time Score, Score date Trend, Target, Change, % Change.
- Template 3: Latest score/Real-time Score, Target, Gap, Gap %, Change, % Change.

All Real-time Score widgets display a real-time time stamp.

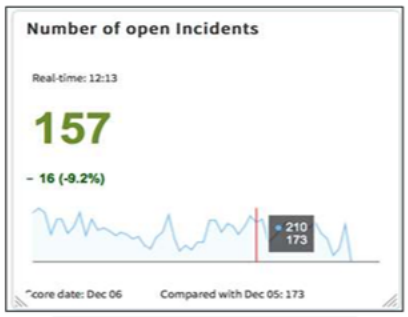
Note: The score/gap/change colors are determined by the respective Target color scheme, if one is defined.

© 2023 ServiceNow, Inc. All Rights Reserved

Which Score Visualization and Template to Choose?

Choose a Template based on your visualization needs:

- Real-Time score of the latest Score?
- Previous Score info?
- Interactive Bullet chart?
- Gap and Gap % info?
- Score Trend?



Template 1

Template 2

Template 3

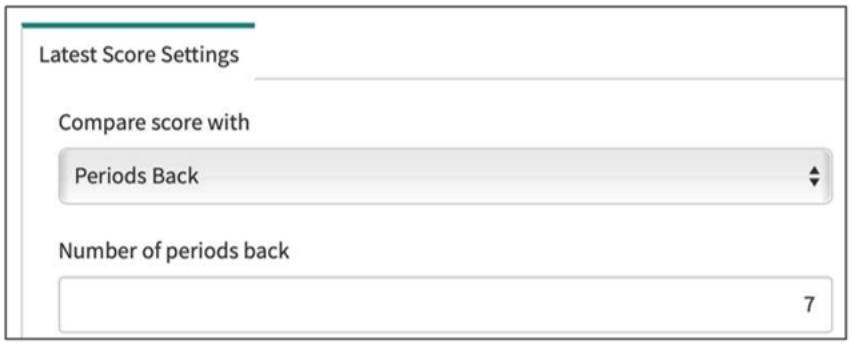
When the visualization is **Latest Score**, you can compare the data with the previous score, or, to a specific previous period as follows:

Set **Compare score with** to:

- Previous Period (default) – Compare to the next to last available score

Alternatively, you can specify:

- **Periods Back**.
- **Number of periods**: How many periods to go back for comparison.



Which Template should you choose? Here are some important Template differences:

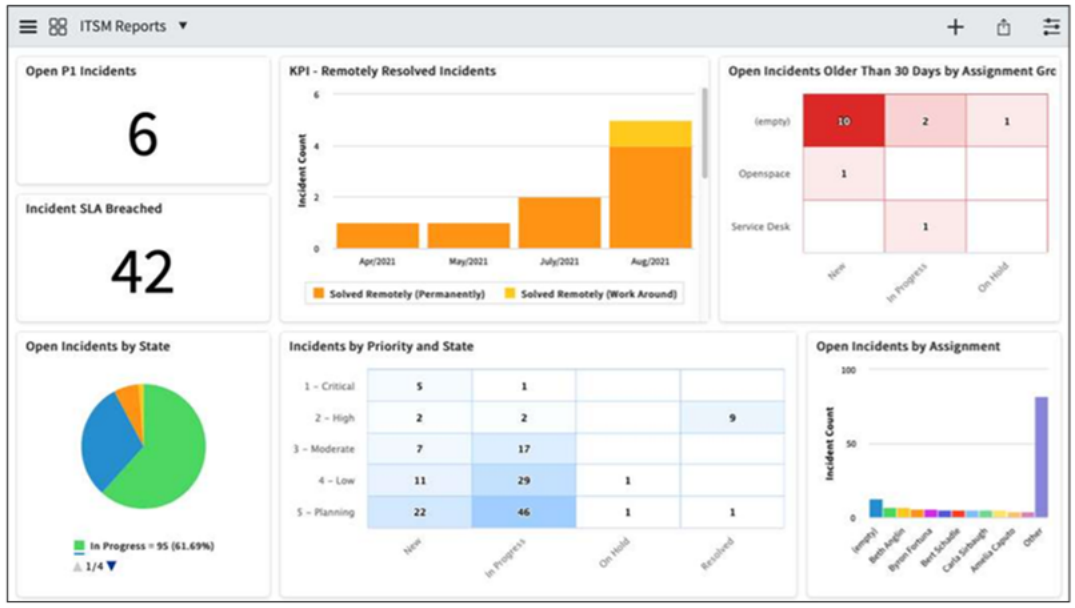
- Template 1: Has an interactive bullet chart and allows for previous period comparison.
- Template 2: Centered display of the current/real-time score with background trend chart and previous period comparison.
- Template 3: Additional Gap/Gap % info

© 2023 ServiceNow, Inc. All Rights Reserved

Report Widgets

Created in the Reports Application and usable on a Dashboard

- Coexist on dashboards with PA widgets
- Built by PA and non PA users
- Need to be explicitly shared with dashboard viewers



servicenow

In addition to Performance Analytics widgets, Reporting widgets (**Reports**) can also be added to a dashboard. Report creation can be done by any user and does not require Performance Analytics privileges.

Note: If a report has not been shared with specific viewers, its contents may not be available on the dashboard. Therefore, you should explicitly share a report with Everyone or intended groups and users before adding it to a dashboard.

© 2023 ServiceNow, Inc. All Rights Reserved

Widgets are Global

- Widgets are seen by anyone with Dashboard access
  - ALWAYS create a new Widget when you need an alternate visualization
  - NEVER edit an existing Widget if you do not own it
- Select the appropriate Widget Type based on Visualization Objective
  - Are you visualizing a historical Trend or a Score summary?
  - Do you need to compare trends across Breakdown Elements?
  - Do you plan to view multiple Indicators in a single widget?
  - Are you interested in the Real-Time Score?
  - Do you need multiple Indicator statistics in a single view?

servicenow

Any admin, pa_admin, and pa_power_user can:

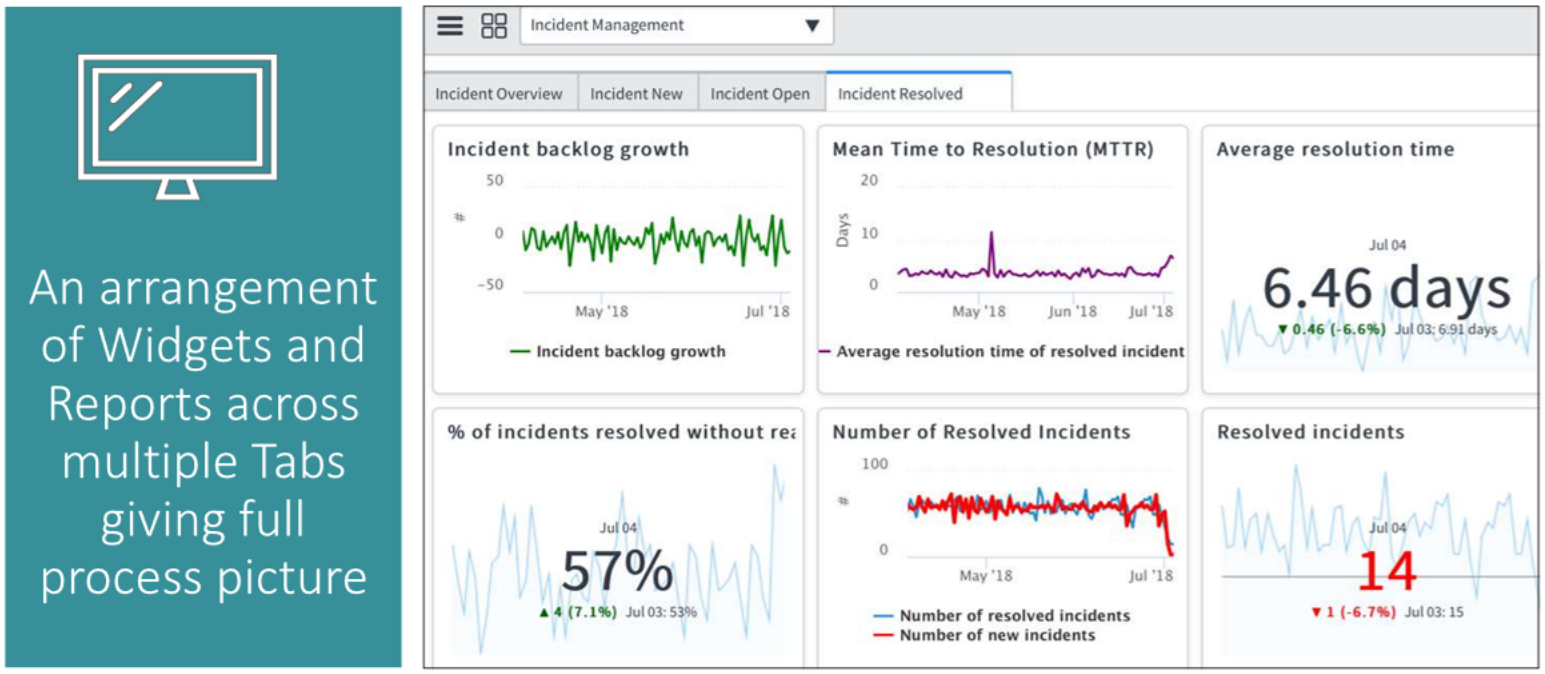
- Use a widget they created when creating their Dashboard.
- Edit any widget, regardless of who created and owns it.

Widgets are global!

- Anyone can see your widget.
- Anyone can use it when creating their dashboard.
- Anyone can edit your widget.
- ALWAYS create a new widget when you need an alternate view.
- DO NOT change an existing widget if you did not create it.

© 2023 ServiceNow, Inc. All Rights Reserved

What is a Dashboard?

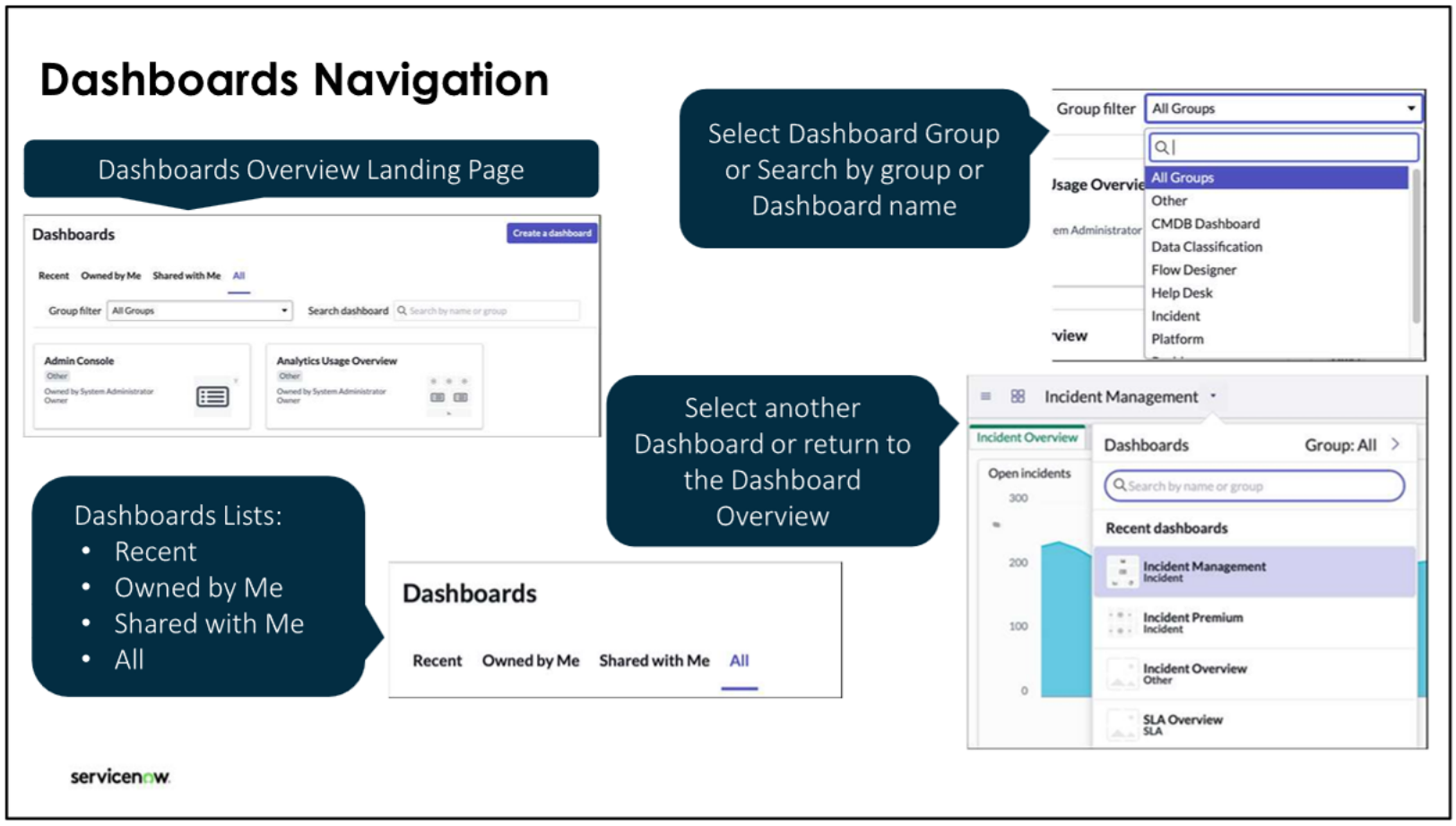


Dashboards combine Performance Analytics Trend and Summary charts (widgets), and Reports to monitor the health of your business services.

Dashboard tabs are like Homepages, however, multiple tabs may be added to a dashboard, and you have many additional editing and layout capabilities.

Tabs allow you to logically group widgets that belong together. In the example shown, the Incident Management Dashboard contains four tabs: Incident Overview, Incident Open, Incident New, and Incident Resolved – all related to the health of the Incident Management process.

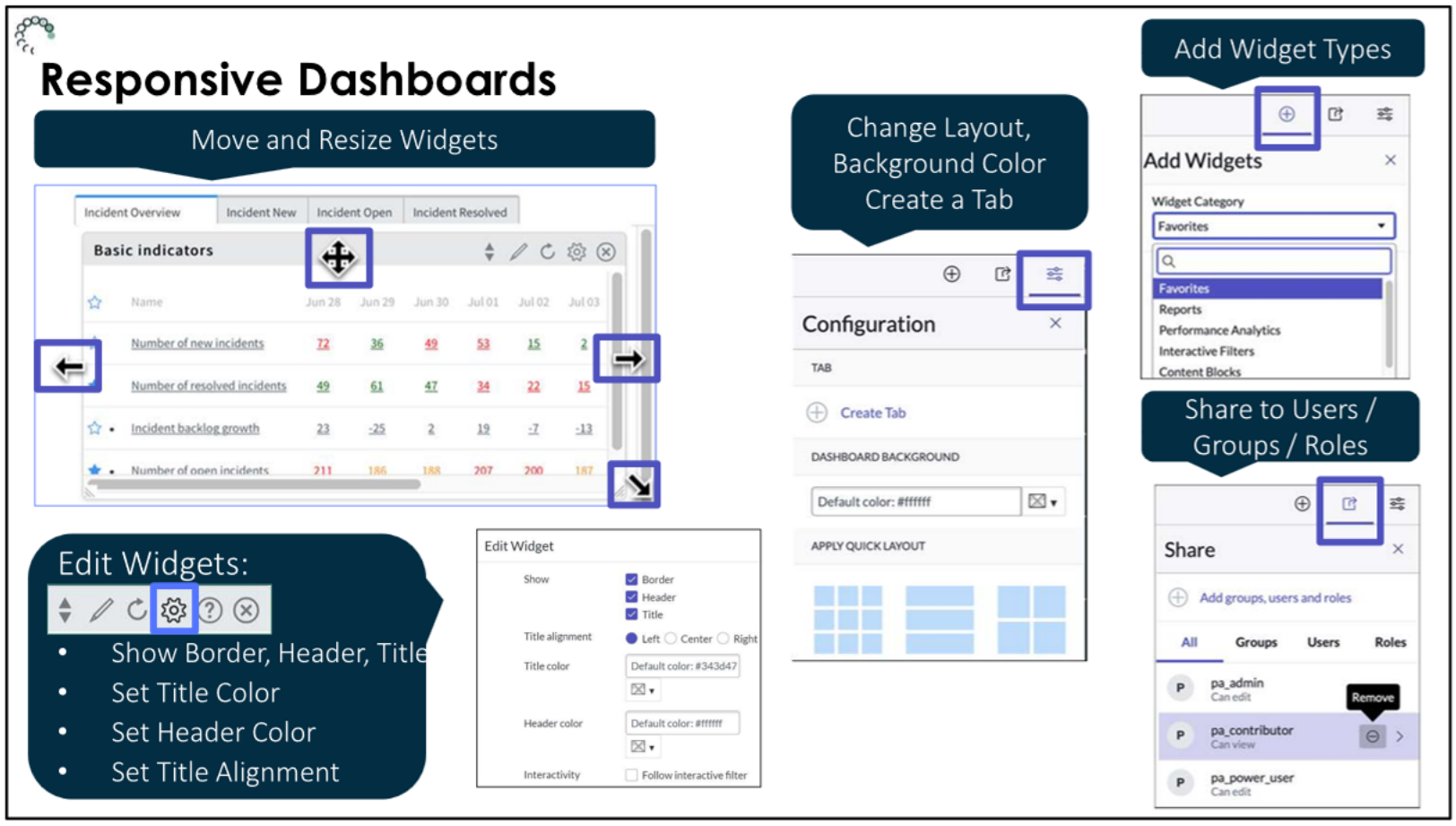
© 2023 ServiceNow, Inc. All Rights Reserved



Here are some key points on navigating the Dashboards application:

- All Dashboards are accessed by navigating to **Performance Analytics > Dashboards.**
- Dashboards are organized in **Recent**, **Owned by Me**, **Shared with Me**, and **All** lists.
- Search Dashboards by Group using the **All Groups** drop down.
- Search Dashboards by Title/Group using the Search box.
- Click the Dashboard tile to open the Dashboard for viewing and editing.
- Once a Dashboard loads, click the **Dashboards Overview** icon to go back to the list of Dashboards.

© 2023 ServiceNow, Inc. All Rights Reserved



Responsive dashboard features requires the Responsive canvas plugin (com.glideapp.canvas). After installing the plugin, all dashboards will be converted to be responsive dashboards.

You can also make your dashboards easier to read with dark theming. The dark theme is supported on the Dashboards Overview, dashboards, interactive filters, Performance Analytics widgets, and reports.

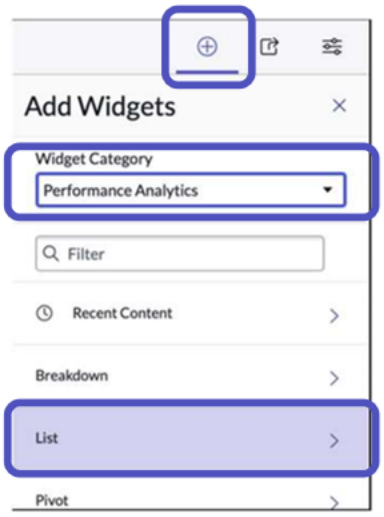
Here are some of the Responsive Canvas key features:

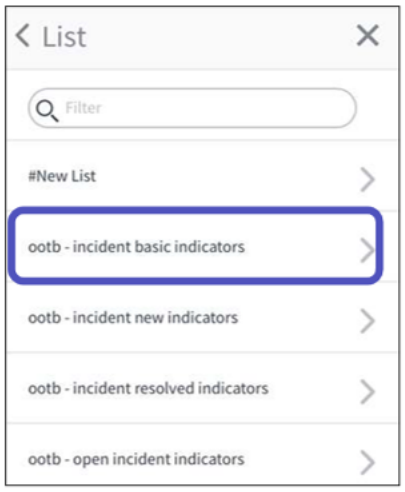
- Drag to move and resize widgets.
- Create and edit reports, analytics, and other widgets directly from the dashboard.
- Add Content pane for adding Widgets and Reports.
- Quick Layout models to snap widgets into a predefined layout, then adjust as desired.
- Improved performance and data load control.
- Optionally set an entire responsive dashboard as your Home Page.
- Requires Internet Explorer 9 and above.

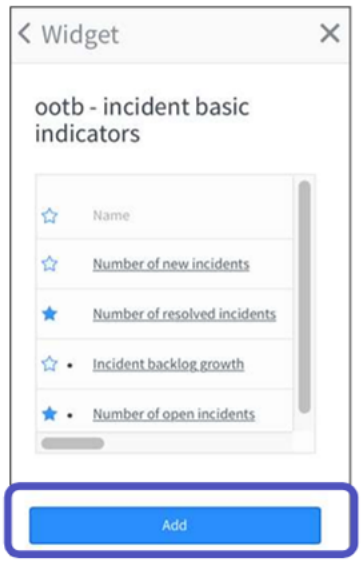
© 2023 ServiceNow, Inc. All Rights Reserved

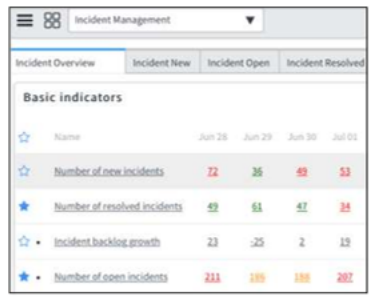
Adding Performance Analytics Widgets

1. Click Add Widgets
2. Select Performance Analytics
3. Select Widget Type
4. Select Widget
5. Preview and Add Widget









Tip:
Use the **Filter** to search by Name or Lookup Name for quicker retrieval

To add an existing Performance Analytics widget, perform the following:

1. Begin by specifying the **Performance Analytics** category.
2. If you know the Widget **name** or **Lookup name**, enter it as a search term.
3. Optionally select a widget **type** – Breakdown, List, Pivot, Score, Time Series or a Workbench.

4. Select the desired widget and click the **Add** button.

To create a new Performance Analytics widget, perform the following:

1. Select a Widget type – Breakdown, List, Pivot, Score, Time Series or a Workbench.
2. Select **#New List/#New Score/#New Breakdown**, etc. to begin creating a new widget.

Reports Note: Add Reporting widgets in the same manner by choosing the Reports category.

© 2023 ServiceNow, Inc. All Rights Reserved

Widgets and Dashboards Labs – Part I

Lab 8.1
Dashboards and
Widgets

8.1 Dashboards and Widgets Lab

- Create a Time Series Widget
- Create a Score Widget
- Create a Breakdown Widget

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Widgets and Dashboards

Lab 8.1

25 minutes

Lab Objectives

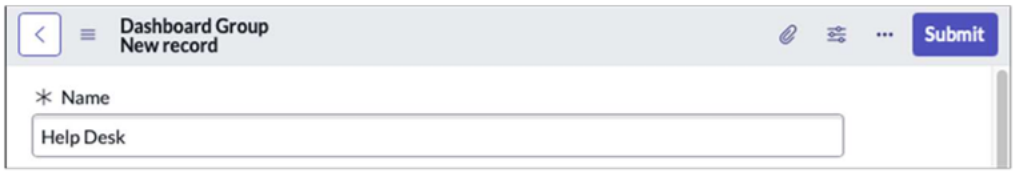
Glide Haven's Help Desk team needs to see all relevant process analytics in a single place. In this lab, you perform the following:

- Create a new dashboard
- Add existing widgets to the dashboard
- Manage the content by adding new widgets and dashboard tabs
- Share the dashboard with other users

A. New Dashboard

In this step, you create a blank dashboard to serve as the container for tabs and widgets.

1. Impersonate the user **PA Power User**.
2. Navigate to **Performance Analytics > Dashboards**.
3. Click **Create a dashboard** to begin creating a new dashboard.
4. Set the Name to **Help Desk Live Status**.
5. Click the **magnifying glass** button next to the **Group** field.
6. Once the list of existing Dashboard Groups loads, click **New**.
7. Set the **Name** to **Help Desk** and click **Submit**.



Note: *This action places the new Dashboard in the Help Desk group for easier retrieval.*

© 2023 ServiceNow, Inc. All Rights Reserved

8. **Save** the Dashboard.

   ***Note**: The **Owner** is set to PA Power User and a single tab is automatically created.*

9. Click the **View Dashboard** related link.

B. Dashboard Content

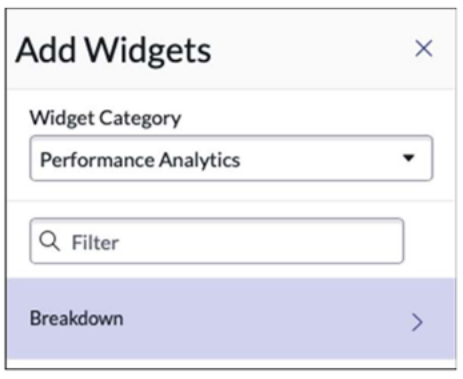
In this step, you add several different Widgets and configure the dashboard layout.

Breakdown Widgets

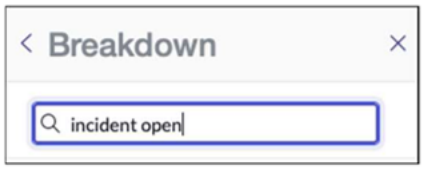
1. Click the **Add Widgets** button in the header to begin adding a widget.

2. Select **Performance Analytics** in the first dropdown.

3. Select the **Breakdown** visualization category.



4. Type **incident open** in the **Filter** field.

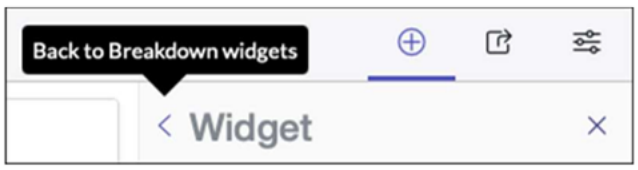


5. Select the **ootb – incident open by priority - scorecard** widget (4th in the list).

6. Click the **Add** button under the preview.

© 2023 ServiceNow, Inc. All Rights Reserved

7. Verify that the new widget has been added to the Dashboard.
8. Click the **Back to Breakdown widgets** arrow to return to the **Breakdown** category.



9. Click the **ootb – incident open by age – stacked column** widget (2nd in the list).
10. Click the **Add** button under the preview.
11. Verify that the new widget has been added to the Dashboard.

Score Widgets

1. Click the **Back to Breakdown widgets** arrow to go back to the **Breakdown** category.
2. Click the **Back to add widgets** arrow to return to all widget types.
3. Clear the **Filter** text.
4. Select the **Score** category of Widgets.
5. Type **age** in the Filter box**.**

6. Select the **Average age open incidents** Score widget.
7. Click the **Add** button under the preview.
8. Verify that the new widget has been added to the Dashboard.
9. Click the **Back to Score widgets** arrow to go back to the **Score** category.
10. Type **overdue** in the Filter box.

11. Select the **Open and overdue incidents** widget.

© 2023 ServiceNow, Inc. All Rights Reserved

12. Click the **Add** button under the preview.
13. Verify that the new widget has been added to the Dashboard.
14. Click the **Back to Score widgets** arrow to go back to the **Score** category.
15. Type **critical** in the Filter box.

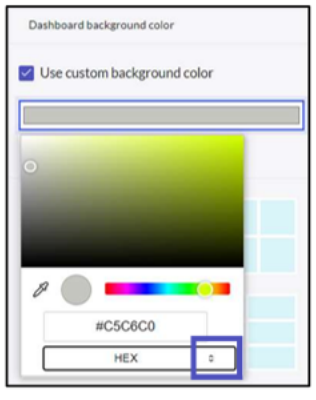
16. Select the **% of new critical incidents** widget.
17. Click the **Add** button under the preview.
18. Verify that the new widget has been added to the Dashboard.

C. Dashboard Layout and Color

In this section, you refine the Dashboard layout and background color.

1. Click **Configuration** button on the Dashboard banner.

2. Apply the 1st layout in the list of quick layouts (3x3).
3. Enable the **Use custom background color** checkbox and confirm that you see a black background.
4. Select the color panel and select the **Hex** option using the dropdown menu and set the background to **#C5C6C0** (light grey).



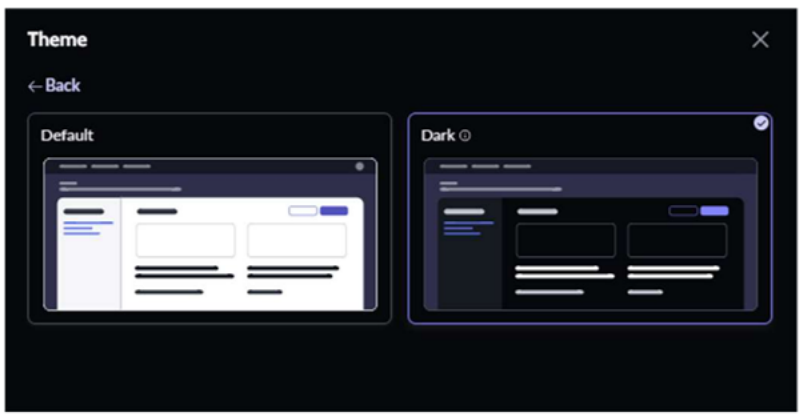
Note: *The color is saved as you soon as you tab away from the field.*

© 2023 ServiceNow, Inc. All Rights Reserved

5. Navigate to **User menu** and select **Preferences.**

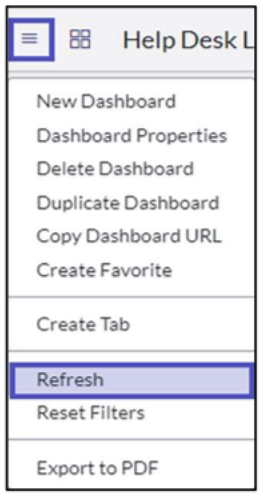
> ***Note**: You can see your dashboard in dark mode by changing the theme in the **Preferences** section.*

6. Select **Theme** and click the **Dark** tile to switch to dark mode**.**



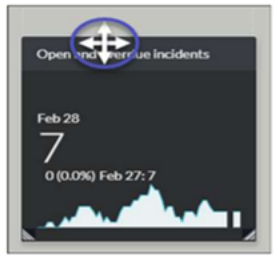
7. Click '**X**' to close the window.

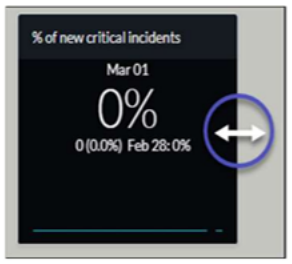
8. Navigate to **Dashboard controls** menu and select **Refresh**. Confirm that you see your dashboard in dark mode.



© 2023 ServiceNow, Inc. All Rights Reserved

9. Hover over any widget and verify that you can resize and reposition as shown:





> ***Note:*** *You need to be in Edit mode (Add Widgets, Configuration, or Share panel needs to be open) to be able to perform any dashboard and layout changes.*

10. Resize and position as needed to achieve this layout:

11. Click **Preferences** from the user menu and select **Theme.**

12. Set it to **Default** to switch the theme to light mode.

13. Navigate to **Dashboard controls** menu and select **Refresh**. Confirm that you see your dashboard in light mode.

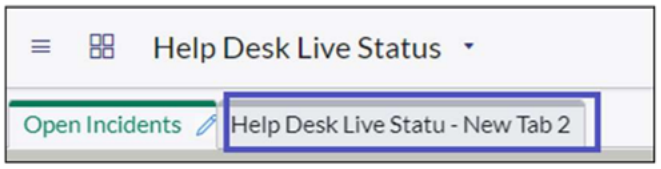
D. New Dashboard Tab

In this section, you add a new dashboard tab dedicated to incidents reassignments.

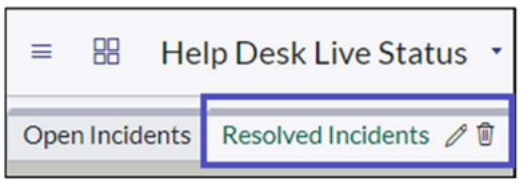
1. Click the **Configuration** button and select **Create Tab**.

© 2023 ServiceNow, Inc. All Rights Reserved

2. Click into the first tab name and rename it to **Open Incidents**:



3. Click the pencil icon and rename the second tab to **Resolved Incidents**.

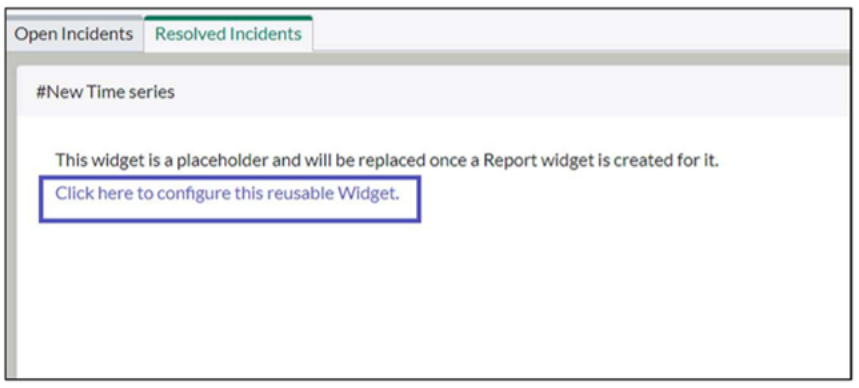


E. Create New Widget

1. With the **Resolved Incidents** tab selected, click the **Add Widget** button.
2. Select **Performance Analytics** in the first dropdown and the **Time Series** widget type.
3. Select **# New Time Series**.

Tip: *Clear the filter text if you cannot see # New.*

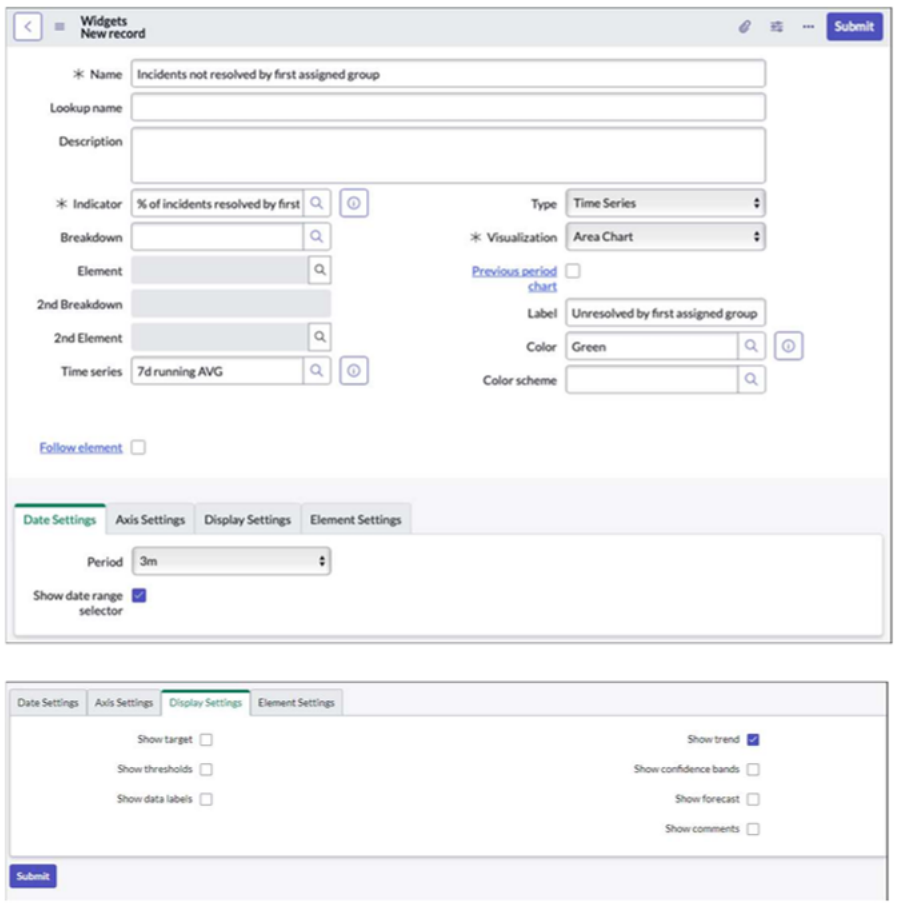
4. Click the **Add** button to add the new empty Time Series widget.
5. Select the **Click here to configure this reusable Widget** link to begin configuring a new Time Series widget.



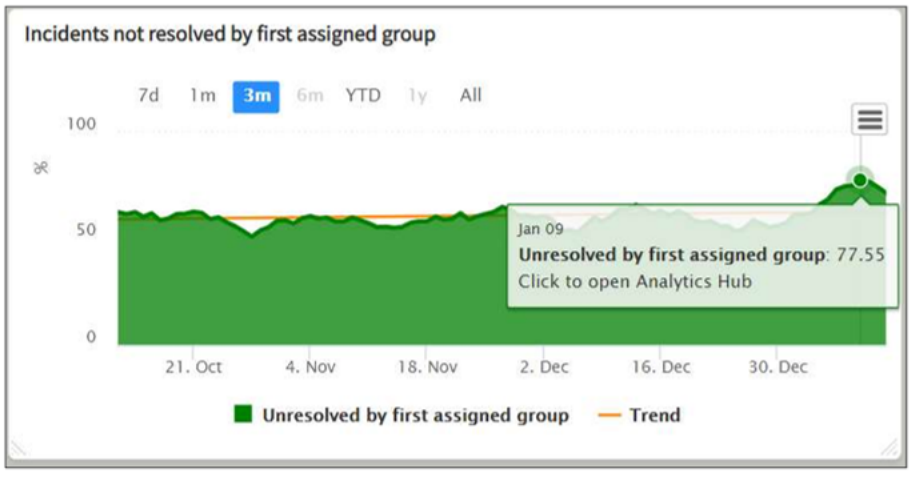
© 2023 ServiceNow, Inc. All Rights Reserved

6. Configure as follows:

- Name: **Incidents not resolved by first assigned group**
- Indicator: **% of incidents not resolved by first assigned group**
- Visualization: **Area Chart**
- Label: **Unresolved by first assigned group**
- Color: **Green**
- Time series: **7d running AVG**
- Date Settings tab:
  - Show data range selector: **checked**
- Display Settings tab:
- Show trend: **checked**



7. **Submit** and view the newly added Widget. Click any data point for details.



© 2023 ServiceNow, Inc. All Rights Reserved

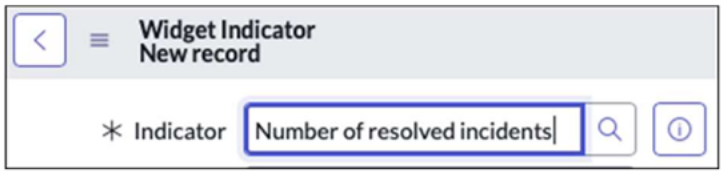
F. Additional Widget Indicators

In this section, you configure additional trends to display together with the **% of Incidents not resolved by first assigned group** Indicator.

1. Click the **Add Widgets** button to enter Edit mode.
2. Hover over the widget header and select the **Edit Content** button.

3. Navigate to the **Widget Indicators** Related List.
4. Click **New**.
5. Set the Indicator to **Number of updated incidents**.

6. Set the Time series to **7d running AVG**.
7. Set the color to **Yellow**.
8. Click **Submit**.
9. Click **New** in the **Widget Indicators** Related List to add another Widget indicator.
10. Set the Indicator to **Number of resolved incidents**.



11. Set the color to **Blue**.
12. Set the Time series to **7d running AVG**.
13. Click **Submit**.
14. Click **New** to add one last Widget indicator.

© 2023 ServiceNow, Inc. All Rights Reserved

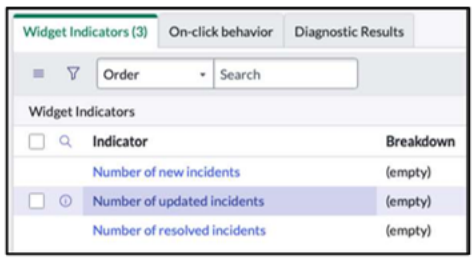
15. Set the Indicator to **Number of new incidents**.

16. Set the color to **Red**.

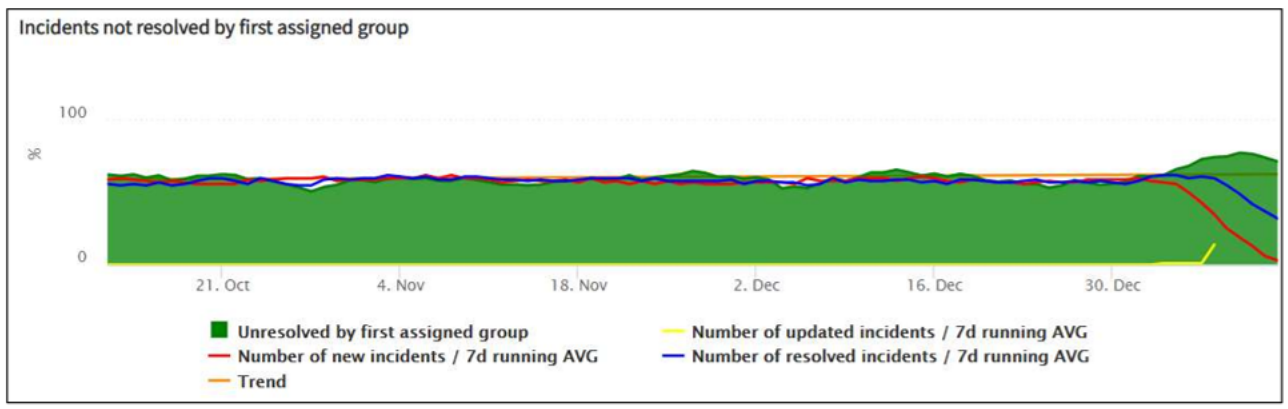
17. Set the Time series to **7d running AVG**.

18. Click **Submit**.

19. Confirm that you have added three Widget indicators as shown:



20. Click **Update** and view the widget on the dashboard. Then practice toggling individual Indicators on and off by clicking on their labels.



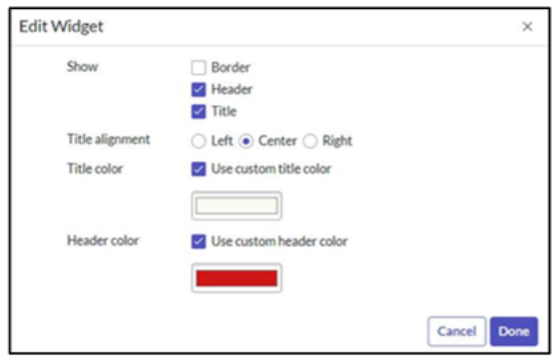
G. Widget Styling

1. While in Edit mode, hover over the widget banner and click **Edit Widget**.

© 2023 ServiceNow, Inc. All Rights Reserved

2. Configure the widget presentation settings as shown:

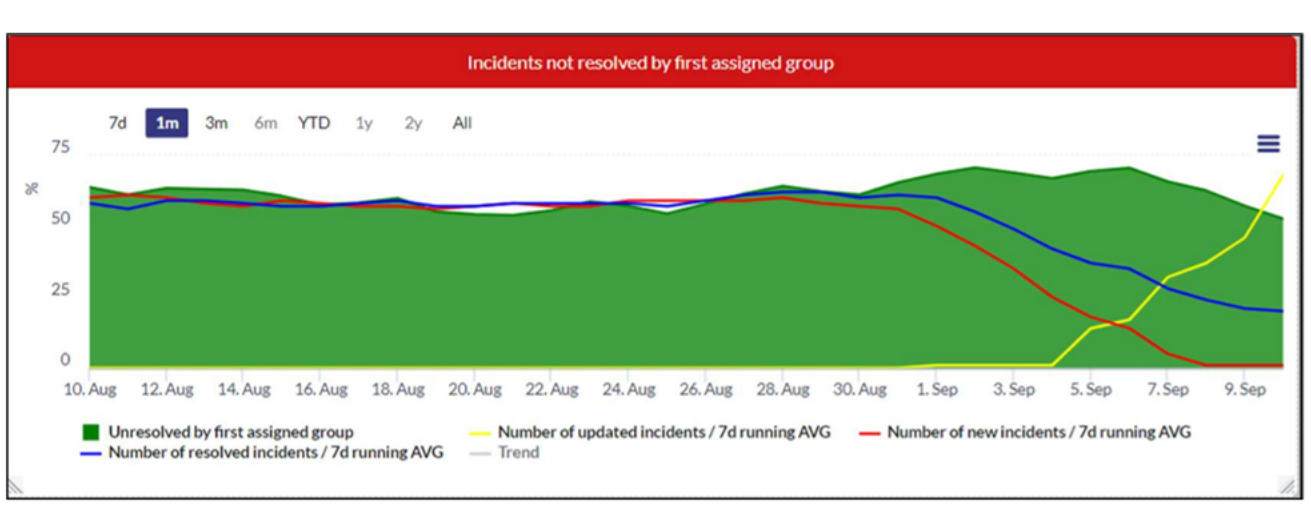
   - Border: **Unchecked**
   - Title alignment: **Center**
   - Title color: **#fafbf5** (or any preferred color)
   - Header color: **#cf1515** (or any preferred color)



3. Click **Done**.
4. Select the **1m** date range to view only the last month of available data.

   Note: *Move your cursor over the widget to view the date range options.*

5. Toggle off the **Trend** line display by clicking it in the legend.
6. Verify that the widget is styled as per the updated settings.



H. Dashboard Sharing

In this step, you share the dashboard with additional Performance Analytics users.

1. Click the **Sharing** button on the dashboard banner.

© 2023 ServiceNow, Inc. All Rights Reserved

2. Click the **Add groups, users, and roles** button.

3. Add the **PA Viewer** and **PA Admin** to the list of dashboard users.

4. Set the Message to **Welcome to the Live Status dashboard!**

5. Set Recipients to **Can edit**.

6. Click **Share**. Confirm that the Sharing panels lists the two newly added users.

> ***Note:*** *An email notification will be sent to all newly added users and group members informing them that they have been given dashboards access.*

7. To verify a successful share, impersonate either the **PA Viewer** or the **PA Admin** user.

8. Navigate to **Performance Analytics > Dashboards**.

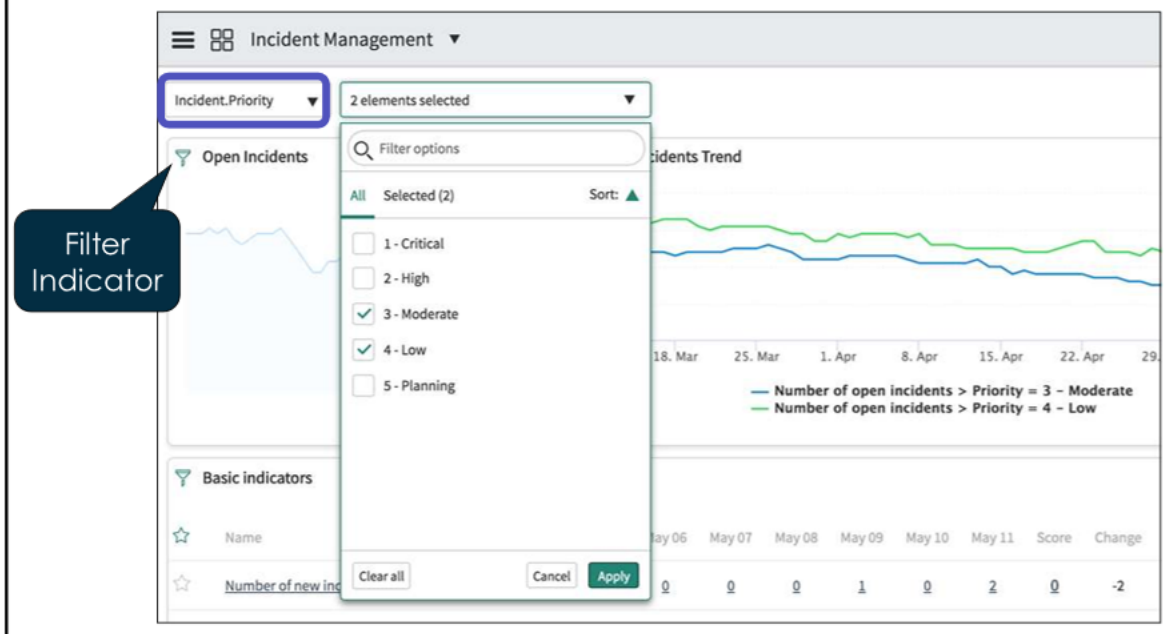
9. Search for and view the **Help Desk Live Status** dashboard.

Congratulations!
You have now completed the Dashboards and Widgets Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

What is a Breakdown Dashboard?

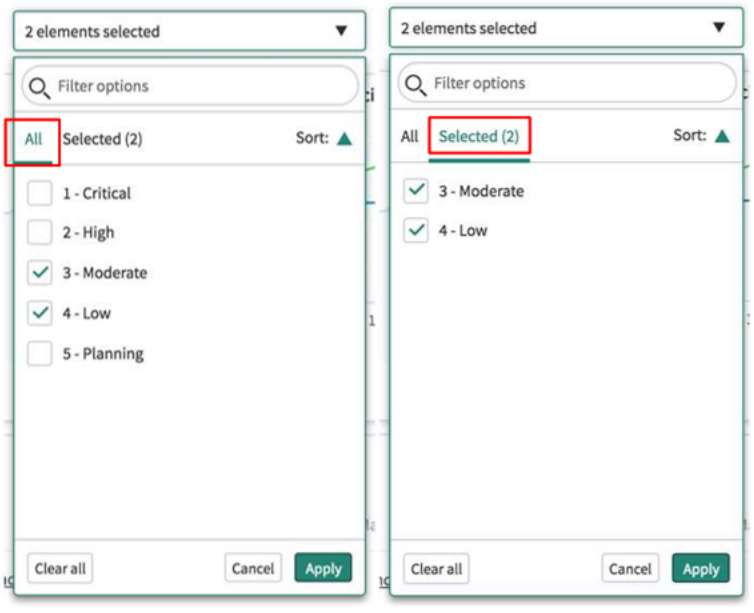
Dashboard with a Breakdown Source acting as a Widget Filter



- Multi-Element select is allowed by default
- Element selection is persisted

A Breakdown dashboard is a dashboard with a Breakdown Source selector. The Breakdown Source elements act as a filter, which is applied to all dashboard widgets that have the corresponding Breakdown configured and have been set up to “follow the Breakdown” Element. In the example shown, the Open Incidents widget is filtered to only show incidents with 3 - Moderate and 4 - Low priorities.

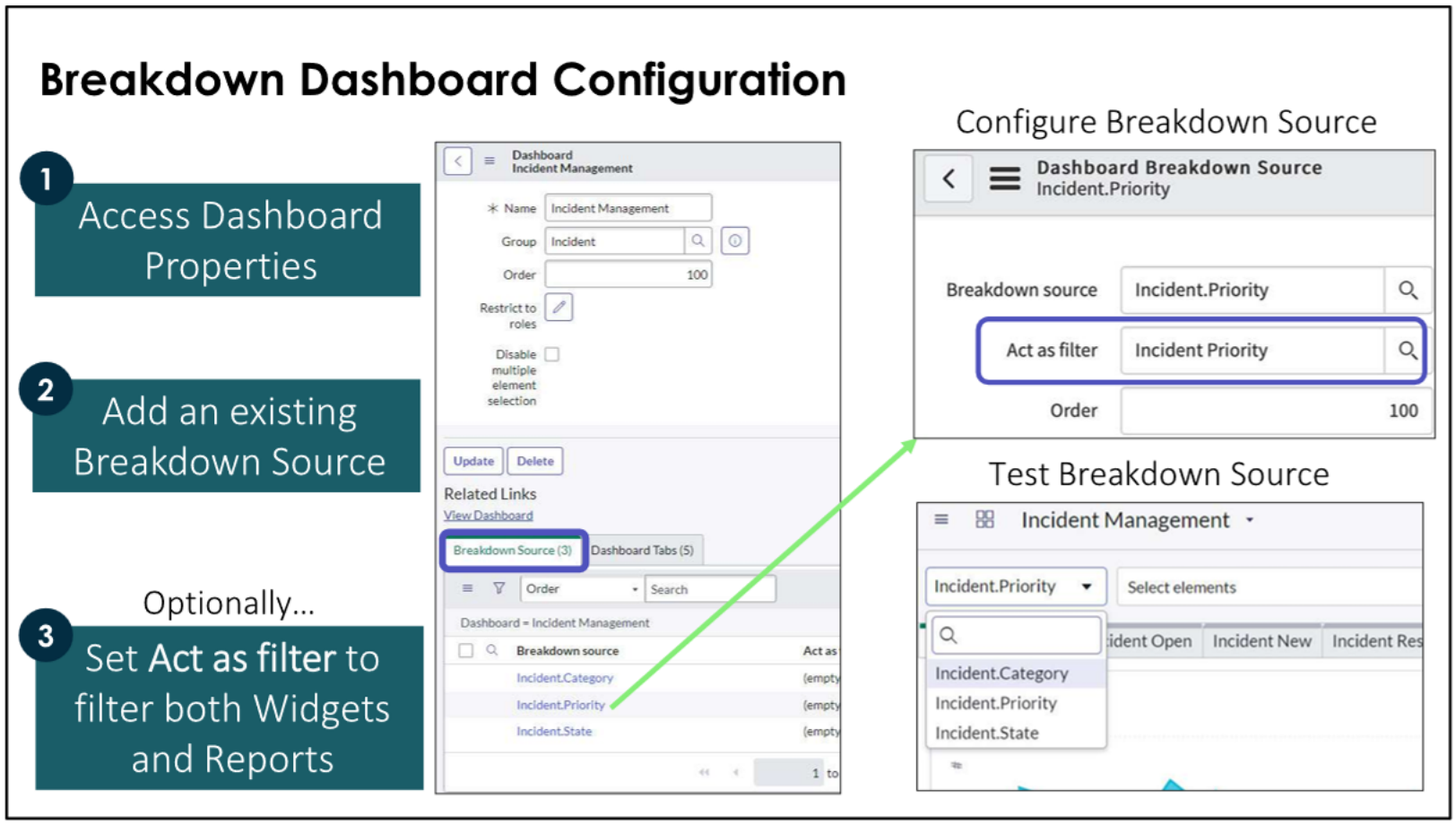
The Dashboard filter consists of two tabs: **All** and **Selected**



- Viewers can select multiple elements at once. The selection is applied only after clicking Apply.
- Clear all removes all the selected elements after clicking Apply.
- Cancel allows to close the dropdown without changing the filter.

Note: Older versions of the Dashboard only allow a single element selection. For compatibility, you can revert to the older behavior by enabling the **Disable multiple element selection** property in the Dashboard Properties window.

© 2023 ServiceNow, Inc. All Rights Reserved



Navigate to the **Breakdown Sources** related list and click **New** to add a new **Breakdown Source**. Once a Breakdown source is added, the dashboard displays the **Breakdown source** and **Select element** dropdowns just above the dashboard tabs.

By default, Breakdown sources apply to Performance Analytics widgets only. To enable a Breakdown source to apply to reports as well, configure the **Act as filter** property for each Breakdown Source included (as desired).

Selecting the **Disable multiple element selection** dashboard property disables the ability to select multiple Breakdown elements and only allows you to select a single Breakdown element to filter widgets.

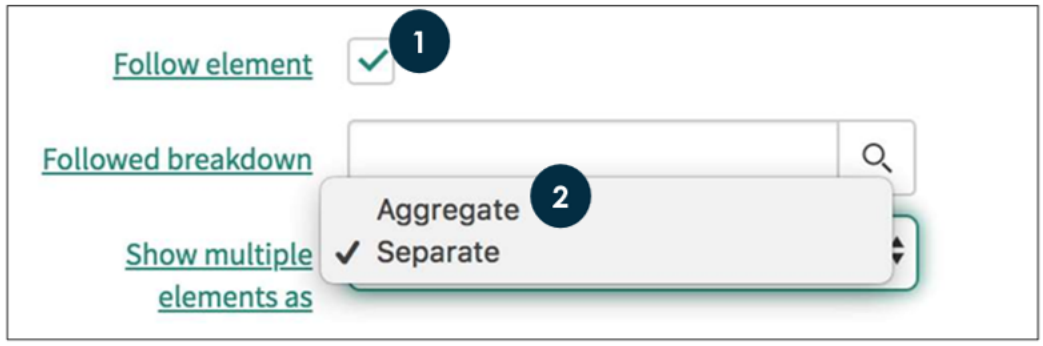
In the example shown here, the Incident Management dashboard is configured with two Breakdown sources - Incident.Priority and Incident.Category. The Incident.Priority Breakdown source is configured to apply to incident reports and “act like” the corresponding Incident.Priority Interactive Filter.

Note: Interactive filters are dashboard filters for Reports only and are covered later in this module.

© 2023 ServiceNow, Inc. All Rights Reserved

Breakdown Source – Widget Configuration

1. Check **Follow element** to be able to follow the Breakdown source filter
2. Specify how to view the filtered data – **Aggregate** or **Separate** trends



servicenow

In order for widgets to "listen" to the Breakdown source and be filtered, these three Widget properties must be configured:

Follow element: Check to make the widget respond to the selected breakdown on the dashboard

Followed breakdown: Specify the breakdown to apply if multiple breakdowns using the same Breakdown Source exist on a dashboard

Show multiple elements as: For widgets that allow multiple element selection, you can choose to display the filtered data as follows:

- Aggregate: The trends are combined. For instance, there will be a single line representing High and Critical incidents.
- Separate: The trends are separate. For instance, there will be two trend lines, one for High and another for the Critical priority incidents.

Note: When multiple selection is not allowed, the **Show multiple elements as** field is greyed out and displays "Not available".

© 2023 ServiceNow, Inc. All Rights Reserved

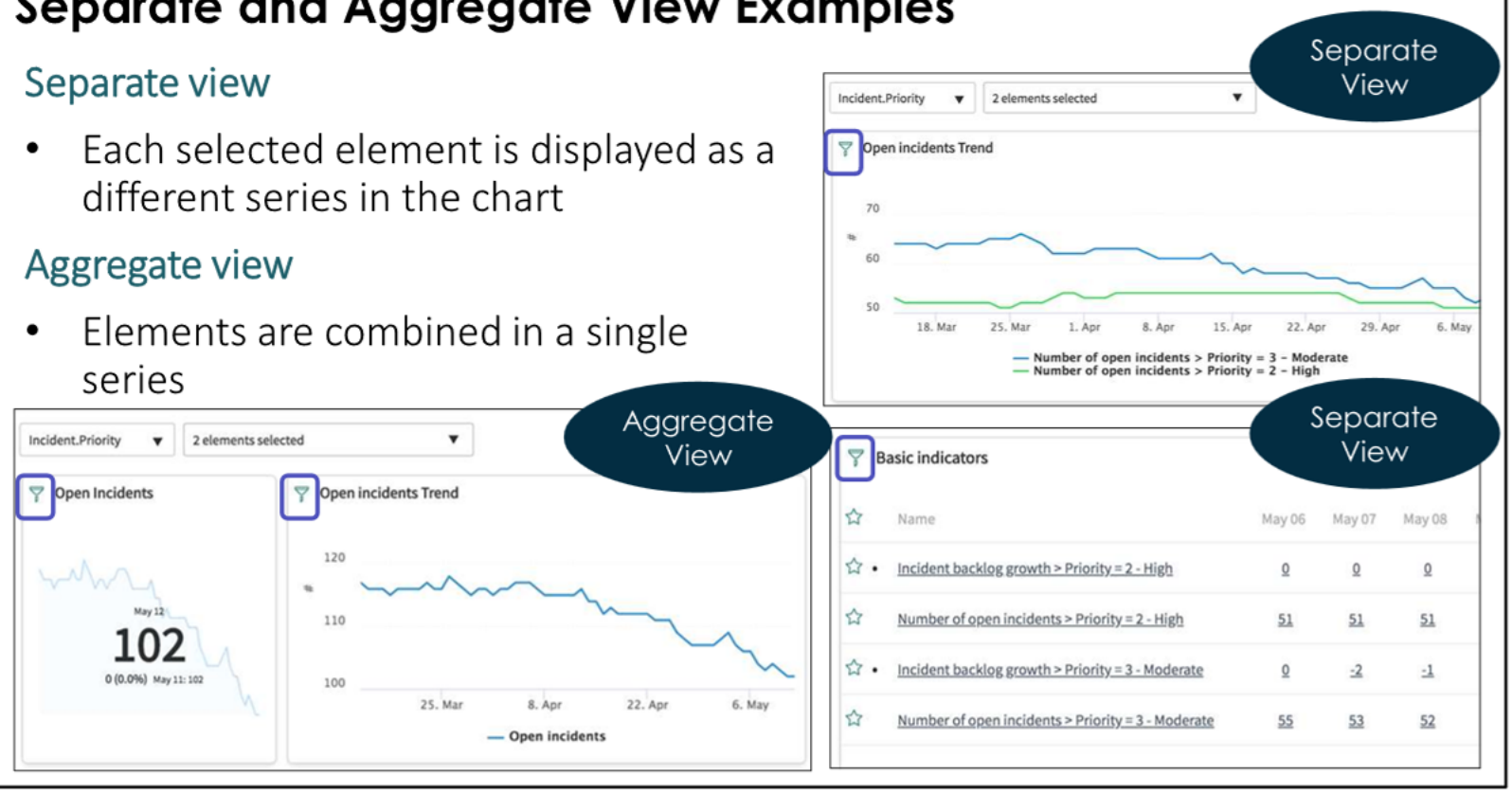
Separate and Aggregate View Examples

Separate view

- Each selected element is displayed as a different series in the chart

Aggregate view

- Elements are combined in a single series



The **filter** icon is displayed in the top left corner of the widget whenever the widget is following the selection of one or more elements from the Breakdown source filter.

If the icon is not displayed, this indicates that the widget does not have **Follow element** enabled or that multi-element selection is not supported.

The **aggregate** view displays a single series of the selected Elements as follows:

- For SUM or COUNT indicators, it shows the sum of the values of all selected elements.
- For MAX indicators, it shows the highest value from the selected elements.
- For MIN indicators, it shows the lowest value from the selected elements.

Notes:

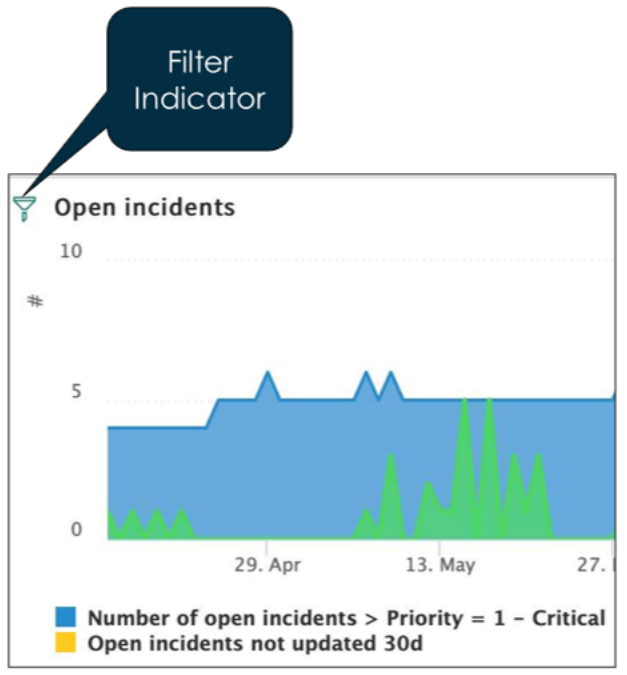
- Targets, thresholds, and comments are *not* supported for the *aggregate* view of a Time series widget.
- When redirected from an Aggregated view to the Analytics Hub, the following are disabled:

  Targets/Thresholds/Comments/Breakdowns panel/Compare tab/Time series aggregations

© 2023 ServiceNow, Inc. All Rights Reserved

Multi Select Support by Widget Type

- **Time Series** widgets support both the Aggregate and Separate view
- **Score** widget visualizations only support the Aggregate view
- **Breakdown** widget visualizations only support the Aggregate view
- **List** widgets support both the Aggregate and Separate view



servicenow

The support for multi selection of Breakdown Elements varies according to the type of Indicator and its visualization.

In general, the Aggregate view is not supported for the following Indicator types:

- Formula indicators
- Automated indicators with Aggregation type Average or Count Distinct

The following widget types support both Aggregate and Separate view:

- Time Series
- List

The following widget types support only the Aggregate view:

- Score
- Breakdown

The following widgets do not support multiple element selection:

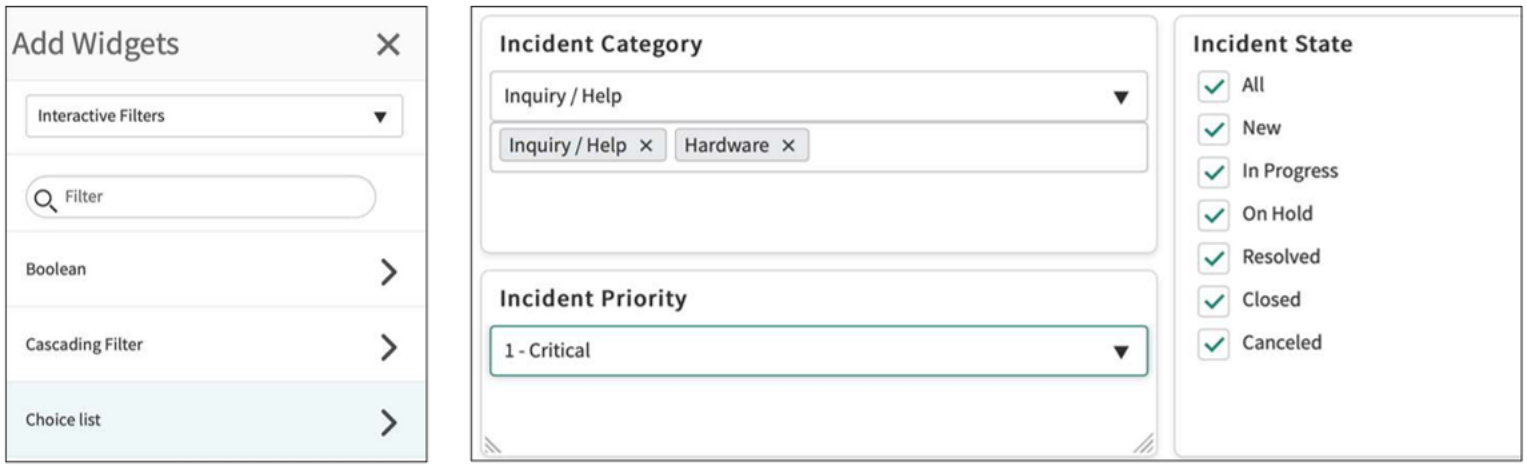
- Workbench
- Text
- Pivot (this widget does not support any filtering)

© 2023 ServiceNow, Inc. All Rights Reserved

What are Choice List Interactive Filters ?

Filter Widgets based on a predefined choice list used to filter Reports

- Added from the Add Widgets panel
- Only work on reports in the current Dashboard Tab



Interactive Filters are dashboard filter structures that filter the contents of **Reports only**, not PA widgets.

In the example, three Interactive Filters are shown:

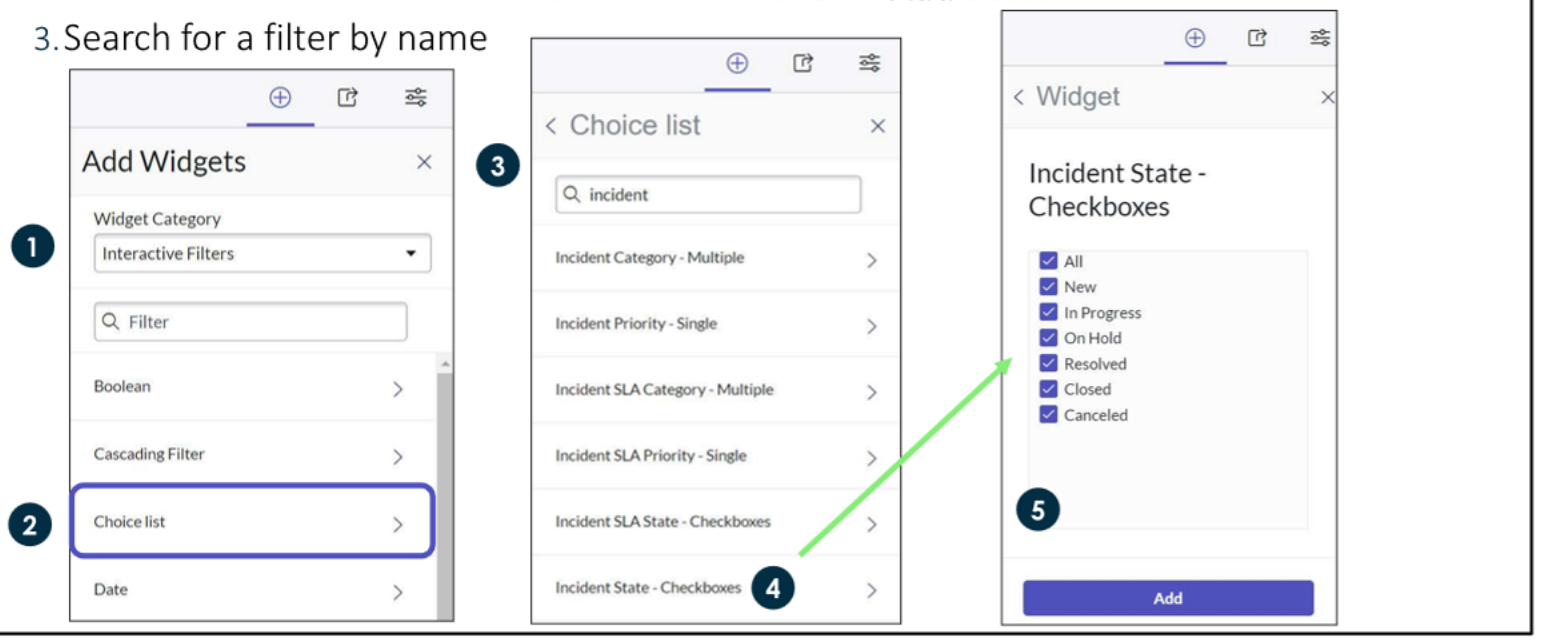
- Incident Category – Multiple
- Incident Priority – Single
- Incident State – Checkboxes

Note: Only a Report administrators [report_admin] can create Interactive Filters. Create additional filters by navigating to **Reports > Administration > Interactive Filters**.

© 2023 ServiceNow, Inc. All Rights Reserved

Locating and adding Interactive Filters

1. Select the **Interactive Filters** category
2. Select the **Choice List** sub-category
3. Search for a filter by name
4. Preview by clicking the widget name
5. Click **Add** button

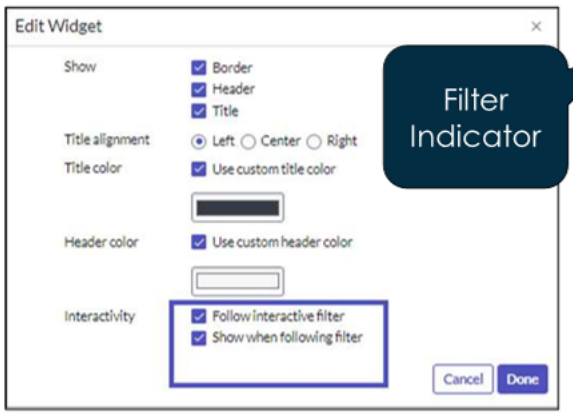


Once created, Choice List Interactive Filters are added from the Add Widgets panel.

© 2023 ServiceNow, Inc. All Rights Reserved

Interactive Filter Example

Reports need to be configured to **Follow the interactive filter**



Interactive filters in action

The above example uses two interactive filters as follows:

- The Priority filter is set to **3 - Moderate**
- The Category is set to **Hardware** and **Software**

The widget has been configured to follow the filter. As a result, it only shows incidents with 3 - Moderate priority from the Hardware and Software category.

A report widget will only follow the filter if the following is enabled:

- **Follow interactive filter**
- **Show when following filter**

© 2023 ServiceNow, Inc. All Rights Reserved

Widgets and Dashboards Labs – Part II

Lab 8.2

Dashboard Filtering

8.2. Dashboard Filtering Lab

- Implement Breakdown Sources and filter Performance Analytics widgets

© 2023 ServiceNow, Inc. All Rights Reserved

servicenow

Dashboard Filtering

Lab 8.2

20 minutes

Lab Objectives

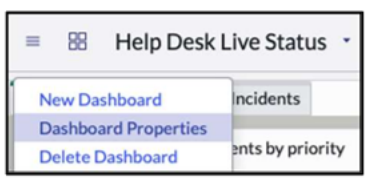
In this lab, you implement widget filters and perform the following activities:

- Configure Breakdown Sources for a dashboard
- Apply breakdown elements to filter widgets
- Add Reports to dashboards and filter them using Interactive Filters

A. Breakdown Source Configuration

In this section, you configure Breakdown sources for the Help Desk Live Status dashboard.

1. Impersonate the user **PA Power User**.
2. Navigate to **Performance Analytics > Dashboards**.
3. Open the **Help Desk Live Status** dashboard.
4. Click the Dashboard controls menu and select **Dashboard Properties**.



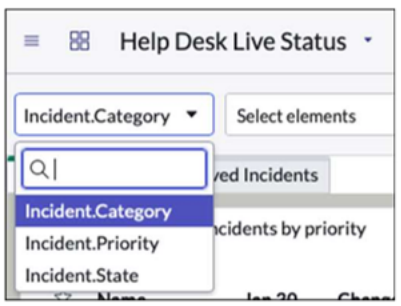
5. Navigate to the **Breakdown Source** Related List.
6. Click the **Edit…** button.
7. Add the following Breakdown Sources:

Incident.Category
Incident.Priority
Incident.State

© 2023 ServiceNow, Inc. All Rights Reserved

8. Click **Save** and confirm that the new breakdown sources have been added.
9. Make sure that the **Disable multiple element selection** checkbox is **unchecked**.
10. Click the **View Dashboard** Related link.
11. Note the Breakdown Source drop-down with these three elements:

    Incident.Category, **Incident.Priority**, and **Incident.State**.



B. Widget Filter Configuration

To apply a breakdown element as a filter, configure widgets to "follow" the breakdown source.

1. Click the **Add Widgets** button to begin editing the dashboard content.
2. From the **Open Incidents** tab, click the **Edit Content** button of the **Open incidents by age** widget.
3. Select (check) the **Follow element** checkbox. 

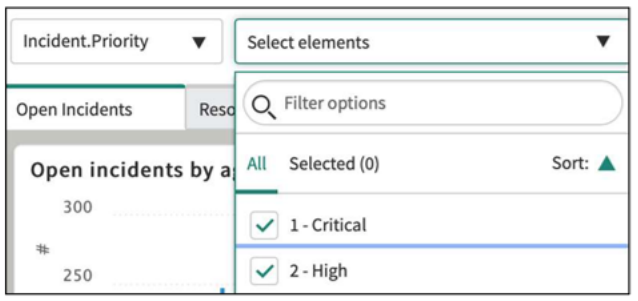
   ***Note**: This property ensures that, when a breakdown is configured for a widget, that widget can be filtered by selecting the respective breakdown source in the dashboard.*
4. Click **Update** to return to the dashboard.
5. Repeat steps 2-4 for these widgets:
   - **Open incidents by Priority**
   - **% of new critical incidents**
   - **Open and overdue incidents**

   ***Note**: The Average age of open incidents widget has already been configured to follow the Breakdown Source.*

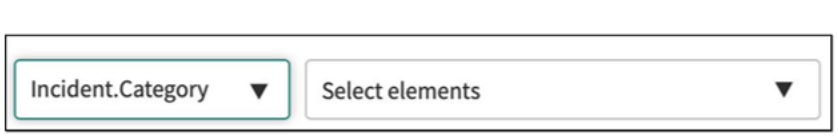
© 2023 ServiceNow, Inc. All Rights Reserved

C. Widget Filtering

1. Review the data in the **Open incidents by age** widget.
2. Select the **Incident**.**Priority** Breakdown source.
3. Select the **1-Critical** and the **2-High** elements.

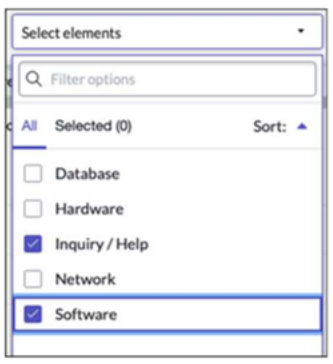


4. Click **Apply**. How did the data in the **Open incidents by age** widget change?
5. Review the data in the **Open incidents by Priority** widget.
6. Select the **Incident.Category** Breakdown source.



***Note**: The widgets data was automatically reset to clear the Priority filter.*

7. Select the **Inquiry/Help** and **Software** elements.



8. Click **Apply**. How did the data in the **Open incidents by Priority** widget change?
9. Select the **Incident.State** Breakdown source and the **On Hold** element.

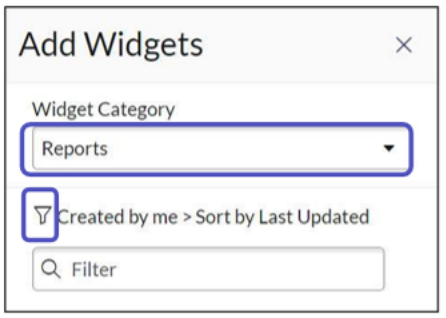
© 2023 ServiceNow, Inc. All Rights Reserved

10. Click **Apply** and review the filtered widgets.
11. Select **Incident.Priority** once again. Note that the prior filter was retained.
12. Clear all filters by clicking **Clear All** and then **Apply** in the Element dropdown.

D. Report Widgets

1. Add a new dashboard tab and rename it to **Incident Reports**.

2. Click the **Add Widgets** button, select **Reports**, and click the **Filter icon**  .

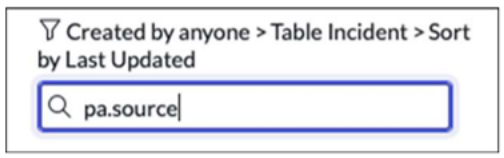


3. Modify the Report filter options as follows:
   - Created by: **Anyone**
   - Table: **Select a table**
   - Dropdown: **Incident [incident]**

4. Click **Apply** to view the available incident reports.

© 2023 ServiceNow, Inc. All Rights Reserved

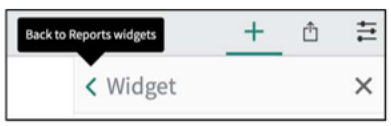
5. Enter **PA.Source** in the Filter field.



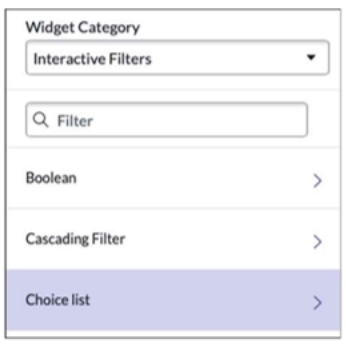
6. Select the **PA.Source: Open incidents – Heatmap – Priority/Category** report.
7. Click the **Add** button.

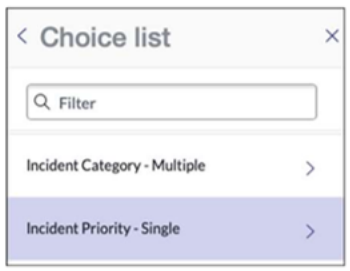
E. Interactive Filters

1. Click the **Back to Reports widgets** button.

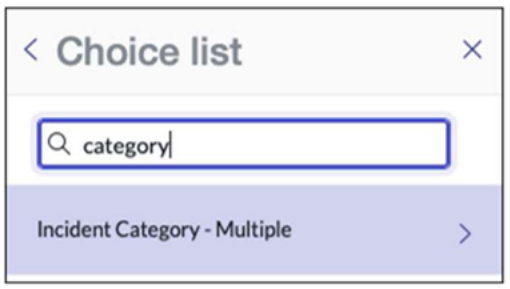


2. Select **Interactive Filters** in the dropdown.
3. Select the **Choice list** type and then the **Incident Priority – Single** Interactive filter.



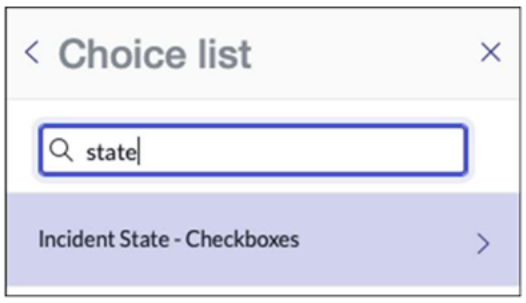


4. Click the **Add** button.
5. Click the **Back to Choice list widgets** button.
6. Search for the **Incident Category – Multiple** Choice list Interactive filter.

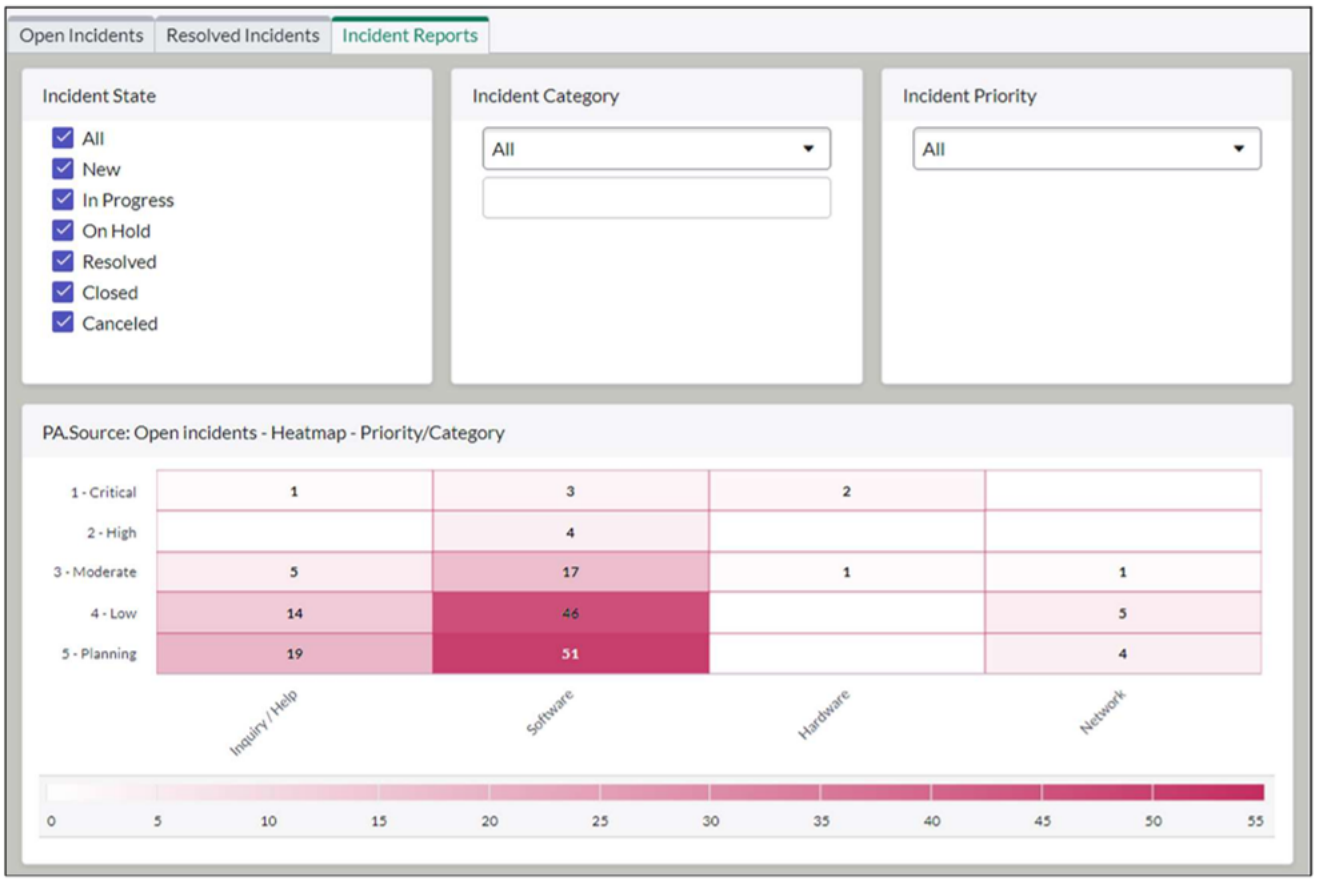


© 2023 ServiceNow, Inc. All Rights Reserved

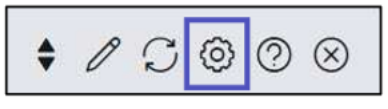
7. Click the **Add** button.
8. Click the **Back to Choice list widgets** button.
9. Search for the **Incident State – Checkboxes** Choice list Interactive filter.



10. Click the **Add** button.
11. Resize and reposition the new filter widgets so that your dashboard looks like this:



12. Hover over the toolbar of the **PA.Source: Open Incidents – Heatmap** report.
13. Click **Edit Widget** button.



© 2023 ServiceNow, Inc. All Rights Reserved

14. Select the following **Interactivity** options:
    - **Follow interactive filter**
    - **Show when following filter**

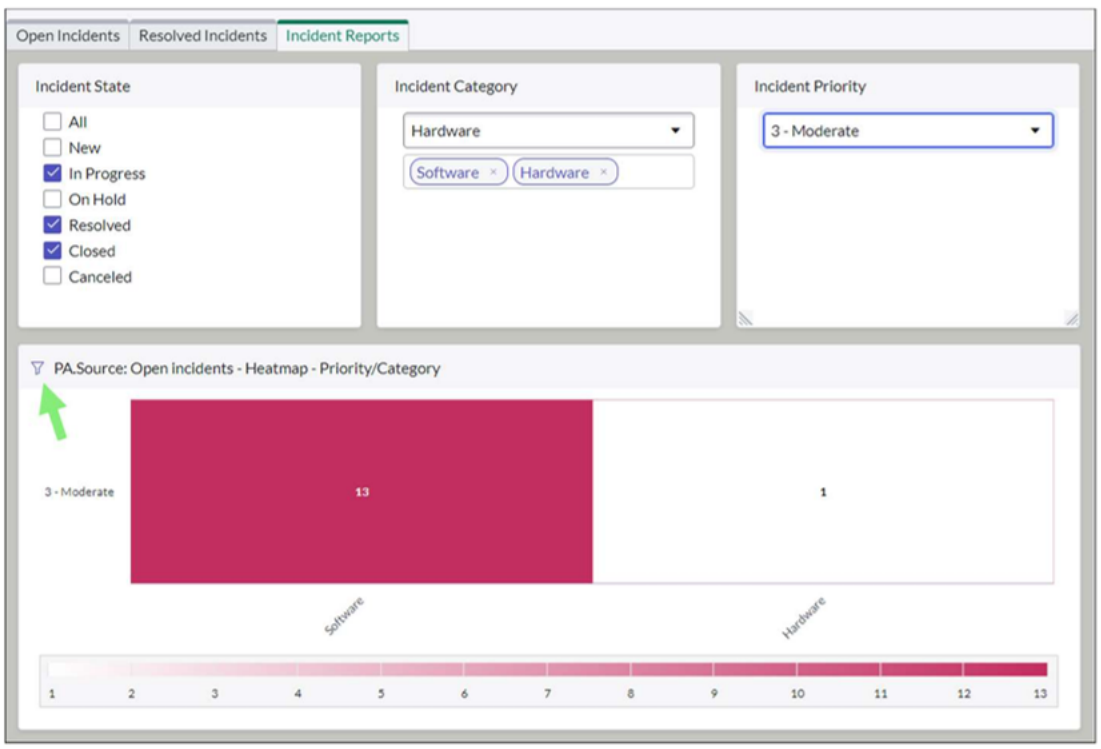
15. Click **Done**.

F. Apply Interactive Filters

1. Set the Interactive filters as follows:

   Incident State: **In Progress, Resolved, Closed**
   Incident Category: **Software, Hardware**
   Incident Priority: **3-Moderate**

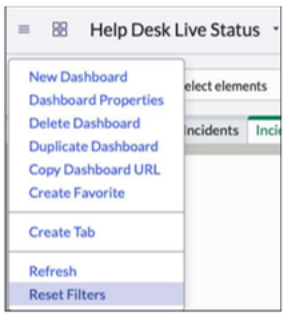
2. Validate that the Heatmap report looks as follows:



© 2023 ServiceNow, Inc. All Rights Reserved

> ***Tips:***
>
> *If no filter changes are seen, select **Refresh** in the Dashboard controls menu.*
>
> *Make sure that you can see the **filter icon** (highlighted above) in the top left corner of the report widget indicating that the report is following a filter.*

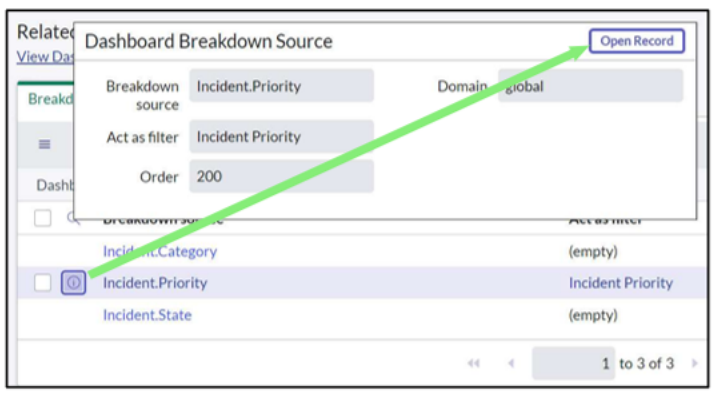
3. From the **Dashboard controls** menu, click **Reset Filters** to clear all filter selection.



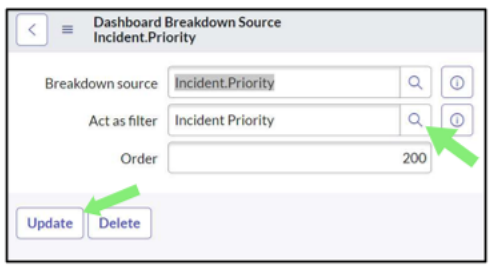
G. Optional Step: Apply Breakdown Source to Reports

In this step you configure a Breakdown Source to act as a reporting filter. With this approach, you can remove Interactive filter widgets from dashboards, freeing up additional space.

1. Click **Dashboard Controls** menu and select the **Dashboard Properties** menu option.
2. Click the Preview icon next to the **Incident.Priority** Breakdown Source, and then select **Open Record**.



3. Set **Act as filter** to **Incident Priority** with Lookup name **Incident Priority – Single**.

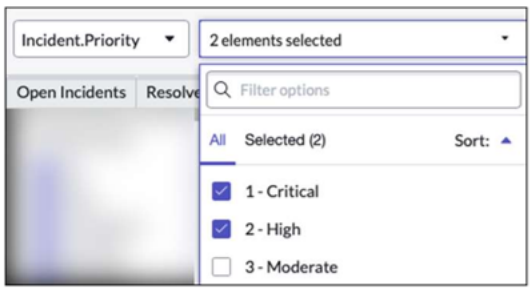


© 2023 ServiceNow, Inc. All Rights Reserved

> ***Note**: The 'Lookup name' for a widget is displayed in the Dashboard "Add Widgets" navigation tree.*

4. Click **Update** to return to the **Incident Reports** tab of the Dashboard.

5. Recall the Breakdown Source drop-down under the dashboard name. Set the **Incident.Priority** filter to **1- Critical** and **2 - High**.



6. Click **Apply**.

7. Validate that the Heatmap report looks as follows:

> ***Note:***
>
> *Configuring a Dashboard Breakdown Source to behave as a filter (using the **Act as filter** property) enables you to filter both PA and Reports with a single action and removes the need to have a dedicated Interactive Filter.*

Congratulations!
You have now completed the Dashboard Filtering Lab.

© 2023 ServiceNow, Inc. All Rights Reserved

Module Recap

Core Concepts

- Widgets are reusable Indicator and Report visualizations added to dashboards
- Dashboards are multi-tab containers for widgets and can contain filter widgets
- Dashboard widgets can be filtered using a Breakdown Source
- Filtered data is presented as a single or multiple series of Breakdown Elements
- Interactive Filters apply to Report widgets only

Review Questions

- Which Widget type allows to display multiple KPIs in one widget?
- Which Widget type allows to view real-time scores?
- Which Widget type and visualization allows to view a trend line of scores by breakdown?
- How can Breakdown Sources filter Reports?

Which Widget type allows to display multiple KPIs in one widget?
List Widget, Time Series with Widget Indicators

Which Widget type allows to view real-time scores?
Score Widget

Which Widget type and visualization allows to view a trend line of scores by breakdown?
Breakdown widget with the Line visualization

How can Breakdown Sources filter Reports?
By configuring the **Act as filter** property

© 2023 ServiceNow, Inc. All Rights Reserved

www.servicenow.com/services/training-and-certification.html

2225 Lawson Ln, Santa Clara, CA 95054, USA • (858) 720-0477 • (858) 720-0479 • www.servicenow.com

©2023 ServiceNow, Inc. All rights reserved.

ServiceNow believes information in this publication is accurate as of its publication date. This publication could include technical inaccuracies or typographical errors. The information is subject to change without notice. Changes are periodically added to the information herein; these changes will be incorporated in new additions of the publication. ServiceNow may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time. Reproduction of this publication without prior written permission is forbidden. The information in this publication is provided "as is". ServiceNow makes no representations or warranties of any kind, with respect to the information in this publication, and specifically disclaims implied warranties of merchantability or fitness for a particular purpose.

ServiceNow is a trademark of ServiceNow, Inc. All other brands, products, service names, trademarks or registered trademarks are used to identify the products or services of their respective owners.