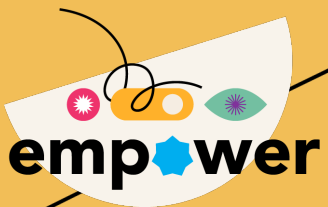
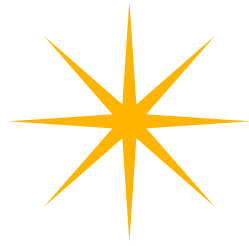


Welcome

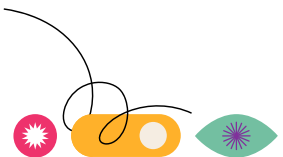


Let's get ready

some practical arrangements



- Earn DevOps points
- Goal of the sessions
 - My DataMiner is up and running (50 DevOps points)
 - AWS EC2 element is deployed from the cloud (50 DevOps points)
 - IDP was able to discover and provision elements (50 DevOps points)
- Guidelines on questions/help in the session



Let's spin up your DataMiner System first

DEMO

- Go to **dataminer.services**
- Log in or create a DCP account if you do not have one yet
- Become member of the Empower organization
 - <https://aka.dataminer.services/empowerorganization>
- **Deploy** a new DataMiner System
- **Install** DataMiner Cube

The screenshot shows the DataMiner Services dashboard. At the top, there is a dark blue header with a hamburger menu icon, the word 'HOME', and the user's name 'Empower' next to a profile picture. Below the header, the main content area is titled 'Apps' and contains several application tiles: 'Collaboration', 'Catalog', 'Sharing', 'Community', 'Admin', and 'More apps will follow'. To the right of the 'Apps' section, there is a dropdown menu labeled 'Install DataMiner Cube'. Below the 'Apps' section, there is a section titled 'DataMiner Systems' with the message 'No DataMiner Systems are available for you.' and a link to 'Learn more about connecting your DataMiner System to the cloud.' Below this link is a button labeled 'Deploy a new DataMiner System'. Hand-drawn black arrows point from the 'Deploy a new DataMiner System' button to the 'Install DataMiner Cube' dropdown menu.

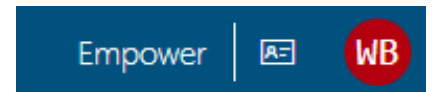


Let's spin up your DataMiner System first

exercise

Exercise

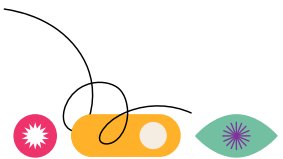
1. Go to **dataminer.services**
2. Log in or create a DCP account if you do not have one yet
3. Become member of the Empower organization:
<https://aka.dataminer.services/empowerorganization>
4. Go back to **dataminer.services** and reload the page
5. Verify in the top right corner you are a member of the **Empower** organization
6. Click **Deploy a new DataMiner System**
7. Click **Deploy a DataMiner System**
8. Fill in a DataMiner System Name: use your first name and the initials of your last name(s).
9. Leave the DataMiner System URL the same as the Name.
10. Agree to the terms of service and click **Deploy**.



DataMiner as a Service (DaaS)



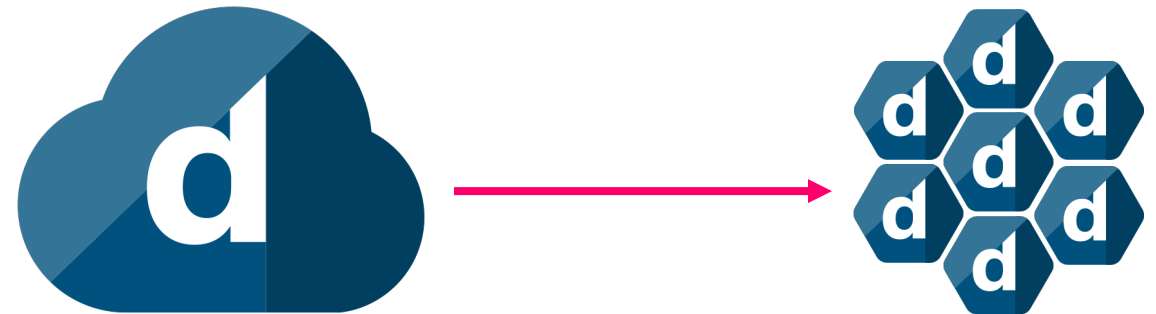
- Nothing brought with us to Mumbai, in the cloud
- Among the first in the world to use DaaS
- In pre-release
- Using Storage As A Service
- Connected to dataminer.services



How to connect to dataminer.services

Setting up the connection on an existing system

- Full flow is documented (aka.dataminer.services/connect-to-the-cloud)
- One-time setup
- Steps
 - Download Cloud Pack from DOJO
 - Run the installer locally
 - Cloud connect the system through Cube



How to get cloud connected

Download Cloud Pack



The screenshot shows the DataMiner Community website interface. At the top, there is a navigation bar with the following items: BLOG, QUESTIONS, LEARNING, RESOURCES, AGILE, EXPERT HUBS, DISCOVER, PARTNERS, PRICING, and MORE. A search bar is located in the top right corner. The main banner features the text "DataMiner Community" and a sub-header: "Connect with everybody involved with the DataMiner open monitoring and orchestration software. Design and deploy the most powerful and agile solutions for any media & broadband platform." Below the banner, there is a promotional message: "NEW: Sign up for the DevOps Professional Program and unlock exclusive benefits". The page is divided into four main sections, each with an icon and a brief description:

- BLOG**: get access to a wide range of topics and stay ahead of all ongoing technology and industry changes
- QUESTIONS**: share your use cases or discuss best practices for managing any media & broadband platform
- LEARNING**: develop and improve your DataMiner skills and learn about a wide variety of topics to stay ahead
- RESOURCES**: discover our comprehensive tutorials, how-tos, installation guides and code examples

Below these sections, the text "Recent Updates" is visible, followed by a "LEARNING" section header.



How to get cloud connected

Run installer

community.dataminer.services/download/dataminer-cloud-pack-2-8-5-0-embedded-net5/

DataMiner Dojo

Howdy, Baptiste Pattyn

dataminer dojo

Search community.dataminer.services

BLOG QUESTIONS LEARNING RESOURCES AGILE EXPERT HUBS DISCOVER PARTNERS PRICING MORE

>> GO TO DATAMINER.SERVICES

DataMiner Cloud Pack 2.8.5.0 (embedded .NET5)

[DOWNLOAD](#)

Downloads	67
File Size	81.71 MB
File Count	1
Create Date	26th January 2023
Last Updated	26th January 2023

DataMiner Cloud Pack 2.8.5.0 (embedded .NET5)

DataMiner Cloud Pack 2.8.5.0 (embedded .NET5).exe
MDA5: 2326A391A0D9ED96F092EA1DB66DBC77
SHA1: 341EF973DB4C657E9F6F4C6A13DA0C4F65186E55
SHA256:
865927262EAF775748CCDED09744A9FB00E50D95EB2EB22C5E
D37CD242F5CDD1

[LEAVE A REPLY](#)

Logged in as Baptiste Pattyn. [Edit your profile.](#) [Log out?](#) Required fields are marked *

COMMENT *

MY DOJO POINTS

428 Credits

6724 Reputation

[SPEND YOUR CREDITS](#)

DEVOPS PROGRAM

4423 Points

[more info about the program](#)

RECENT BLOGS

New course: secure coding 23rd March 2023

5 reasons why you should visit the DataMiner booth at Convergence India 20th March 2023

Are you ready to deal with continuous change? 16th March 2023

RECENT QUESTIONS

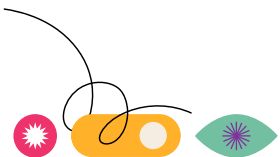
Is it possible to know on which Elastic nodes the data are stored for a DMA ?
0 Answers | 1 Vote

Is it possible to know on which Cassandra nodes the data are stored for a DMA ?
1 Answer | 1 Vote

SkyLine Visio Files
0 Answers | 2 Votes

DataMiner Cloud...exe

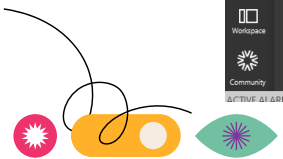
Show all



How to get cloud connected

Cloud connect the system through Cube

The screenshot displays the DataMiner System Center web interface. The top navigation bar is blue with the 'dataminer localhost' logo on the left and a search bar on the right. A left-hand sidebar contains a list of modules including Asset Manager, Automation, Bookings, Catalog, Cloud Admin, Correlation, Documents, Element Connections, Profiles, Protocols & Templates, Reports & Dashboards, Resources, Router Control, Scheduler, Service Templates, Services, System Center, Ticketing, and Trending. Below these are sections for Web Apps (Dashboards, Monitoring) and General (Help, Settings, About). The main content area is titled 'SYSTEM CENTER' and features a sub-menu with options like Overview, Agents, Cloud (highlighted), Users / Groups, Database, Backup, SNMP forwarding, Mobile Gateway, Search & Indexing, System settings, Logging, and Tools. The 'Cloud' section is active, showing a 'CLOUD GATEWAY SERVICE' status of 'Disconnected' and a 'CLOUD CONNECTION' status of 'Disconnected'. A 'Connect' button is visible at the bottom of the connection status area.



How to get cloud connected

Open Cloud Admin through Cube

The screenshot displays the DataMiner System Center interface. The left sidebar contains a navigation menu with categories like Surveys, Activity, App, and Web Apps. The main content area is titled 'SYSTEM CENTER' and shows the 'Cloud' menu item selected. The 'CLOUD CONNECTION' section indicates the system is connected to the DataMiner Cloud Platform, with a 'Status: Connected' and a 'Cloud Session: Valid'.

dataminer localhost Search

SYSTEM CENTER

- Overview
- Agents
- Cloud**
- Users / Groups
- Database
- Backup
- SNMP forwarding
- Mobile Gateway
- Search & Indexing
- System settings
- Logging
- Tools

CLOUD GATEWAY SERVICE

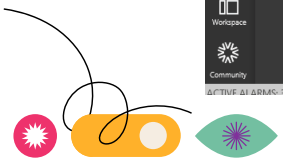
To connect to the DataMiner Cloud Platform, you must install the DataMiner Cloud Pack on one or multiple Agents in the cluster. Installing this DataMiner Cloud Pack will not cause any disruption of the services. See the [online help](#) for instructions on where to find the DataMiner Cloud Pack and how to install it.

CLOUD CONNECTION

Status: Connected ✓
Your DataMiner System is connected to the DataMiner Cloud Platform.

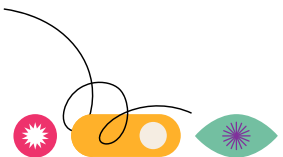
Cloud Session: Valid ✓

[Open Cloud Admin](#)



Cloud connection security

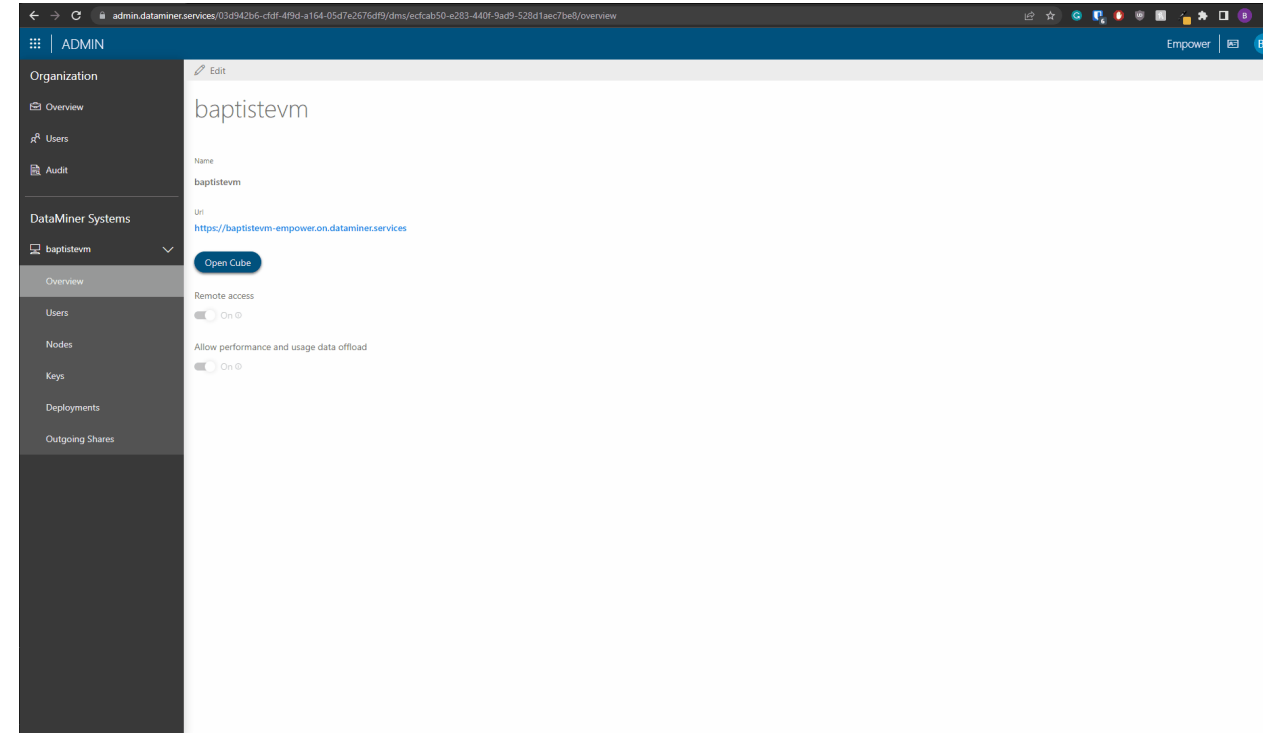
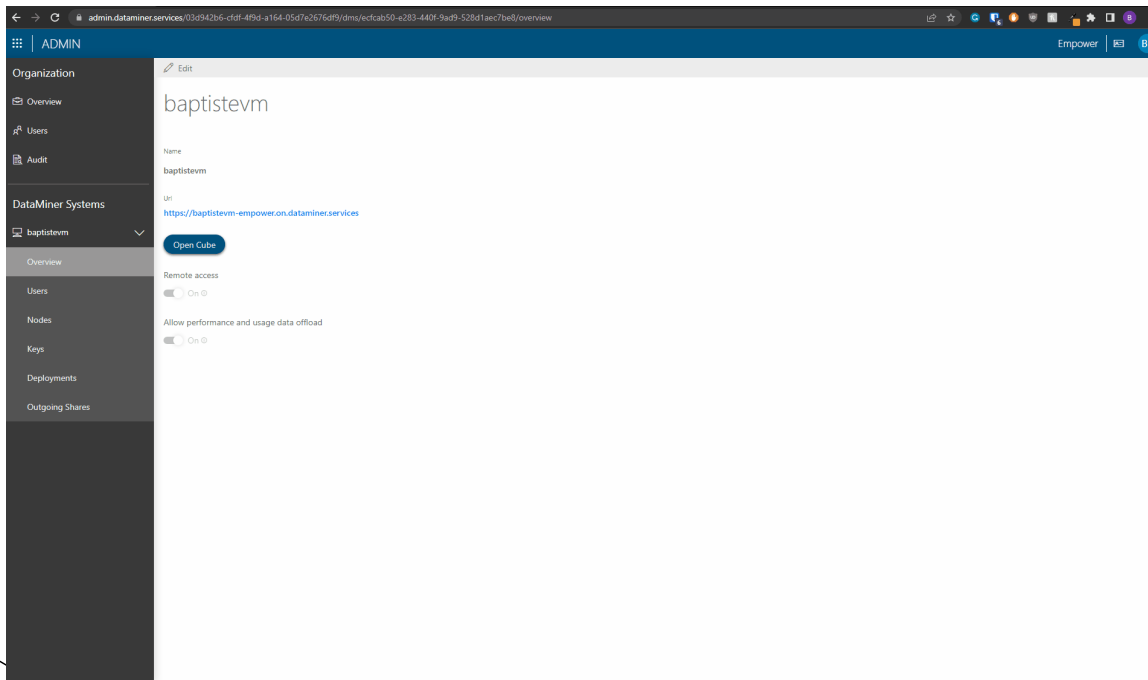
- Azure B2C authentication
- Unified security between dataminer.services and DMS (account linking)
- Web Application Firewall
- Data Encryption
 - At rest (AES-256 encryption)
 - In transit (HTTPS/WSS)
- Secure managed services in Azure
- Secure development practices



Remote connect service



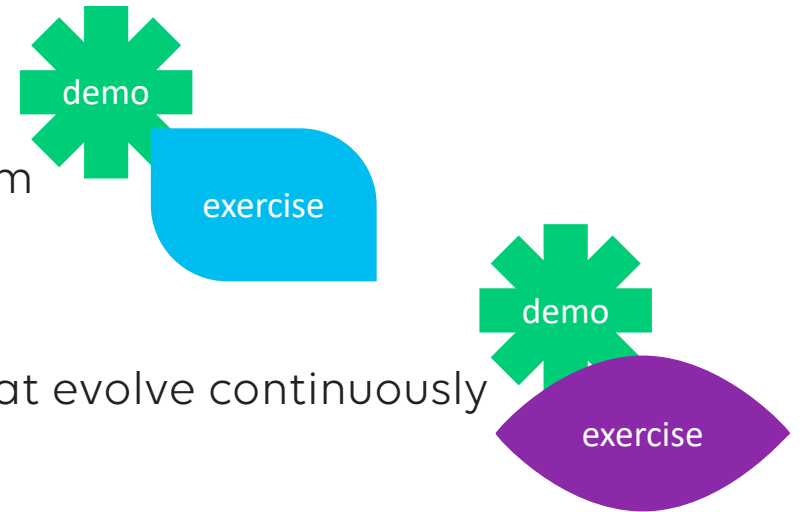
- Cube access from anywhere
- Remotely access all your web apps



Let's provision our DataMiner System

How can this be done?

- **Manual**
for static DataMiner Systems, managing a static ecosystem with static configuration
- With **3rd party tool** (e.g. Ansible, Terraform, ...)
e.g. as part of the deployment of your core dataminer system
- **IDP**
for static DataMiner Systems, managing a dynamic / vast ecosystem
- **DataMiner Catalog**
for flexible deployment of DataMiner components and solutions that evolve continuously

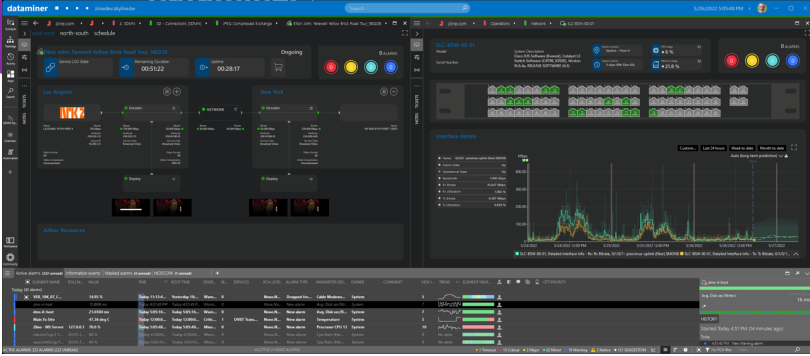




Who is the reference source?



Catalog



DataMiner Cube

Components
Solutions
CI/CD

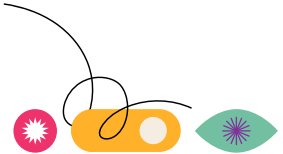


webservices



Auto
Discovery

IDP



3rd party tool

e.g. as part of the deployment of your core dataminer system

Ansible > webservices

```
tasks:
- debug:
  msg: "Get Connection string"
- name: Connect With DataMiner
  ansible.windows.win_uri:
  url: "{{server}}{{connect}}"
  return_content: yes
  content_type: "{{jsoncontent}}"
  url_method: POST
  body: '{
    "host": "{{server}}",
    "login": "ansible",
    "password": "DataMiner123@",
    "clientAppName": "AnsibleApp",
    "clientAppVersion": "1.0",
    "clientComputerName": "AzureVM"
  }'
  register: connectionid
- name:
  ansible.windows.win_uri:
  url: "{{server2}}"
  return_content: yes
  content_type: "{{soapcontent}}"
  url_method: POST
  body: '<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org
<soap:Body>
  <CreateElement xmlns="http://www.skyline.be/api/v1">
    <connection>{{connectionid.json.d}}</connection>
    <dmaID>1000000</dmaID>
    <viewIDs>
      <int>31</int>
    </viewIDs>
    <configuration>
      <Name>ZiineAnsibleWindows_ClassRoom1</Name>
      <ProtocolName>Microsoft Platform SNMP</ProtocolName>
      <ProtocolVersion>1.1.0.28</ProtocolVersion>
      <AlarmTemplate>ZiineMSTemplate</AlarmTemplate>
```

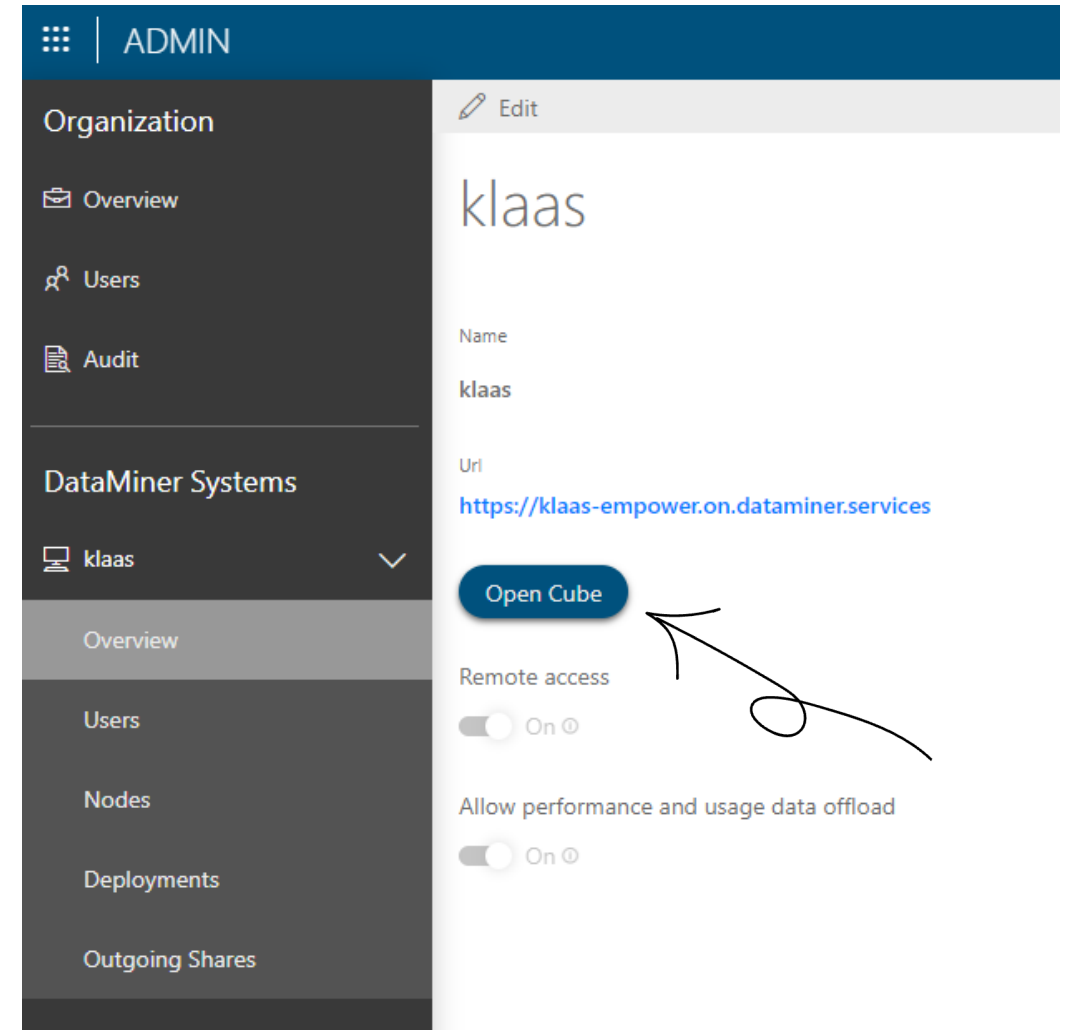


Let's access your DataMiner System

DEMO

- Go back to dataminer.services
- Open the **Admin** page of your deployed system
- Hit the **Open Cube** button

- Credentials:
 - User: DataMinerUser
 - Password: DataMiner123!



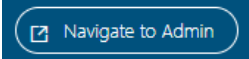
The screenshot displays the 'ADMIN' interface for a DataMiner system. The left sidebar contains a navigation menu with sections: 'Organization' (Overview, Users, Audit) and 'DataMiner Systems' (klaas, Overview, Users, Nodes, Deployments, Outgoing Shares). The main content area shows the configuration for the 'klaas' system, including an 'Edit' button, the name 'klaas', and the URL 'https://klaas-empower.on.dataminer.services'. A blue 'Open Cube' button is prominently displayed, with a hand-drawn arrow pointing to it. Below the button, there are two toggle switches: 'Remote access' (On) and 'Allow performance and usage data offload' (On).

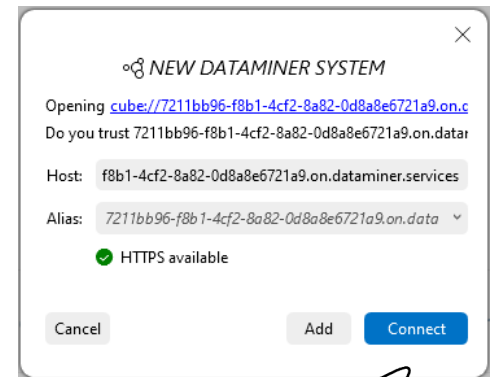


Let's access your DataMiner System

exercise

Exercise

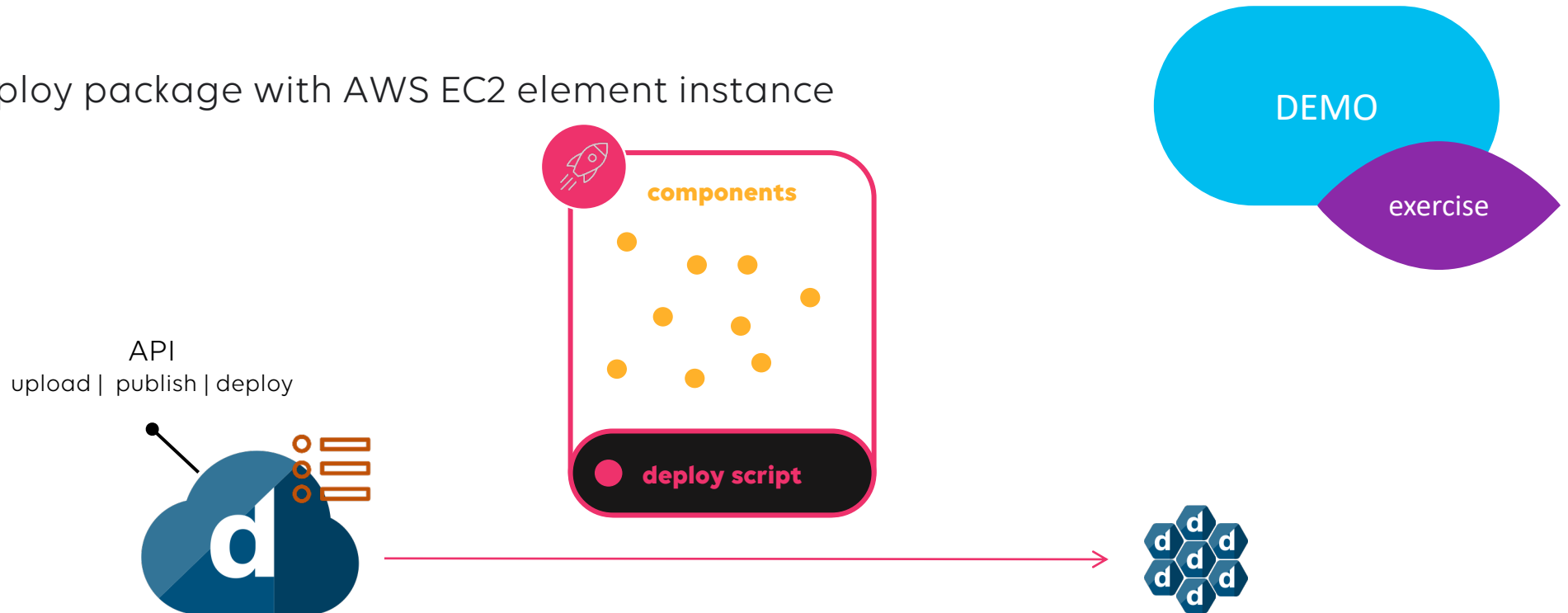
1. Go back to the deployment progress page on **dataminer.services**
2. Click on **Navigate to Admin.** 
3. Click the arrow next to your DataMiner system and click on **Overview.**
4. Click **Open Cube** to start a remote cube session.
5. Click **Open DataMiner Cube.**
6. In Cube Launcher, leave the host and alias as is and click **Connect.**
7. Login with:
 - User: DataMinerUser
 - Password: DataMiner123!



Leverage the DataMiner Catalog

DataMiner Catalog

- Any type of configuration (a single driver to a complete DataMiner solution)
- Perfect fit for components that evolve continuously
- Private & shared catalog
- Audit trailing
- EXERCISE: deploy package with AWS EC2 element instance



Account Linking

Unified security

- Prove DataMiner Identity
- Allows actions from the DCP
 - Create and update shares
 - Bot commands
 - Remote Access auto login
 - Catalog deployment



DCP Account



DataMiner Account

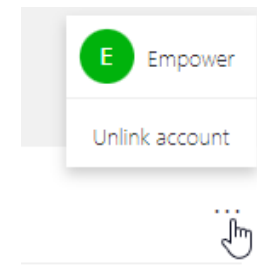


Account Linking

Exercise

exercise

1. Go to **dataminer.services**
2. Under DataMiner Systems, next to your agent name, click **Link account**.
3. Click **Continue to log on**.
4. **Log on** with:
 - User: DataMinerUser
 - Password: DataMiner123!
5. Click **Link accounts**.
6. Close the tab page, return to **dataminer.services** and reload the page,
7. Verify the linking was successful by clicking the three dots on the right of your DataMiner System's name.

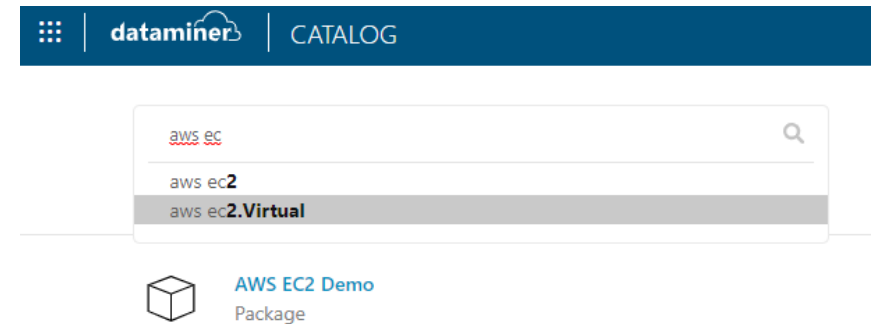
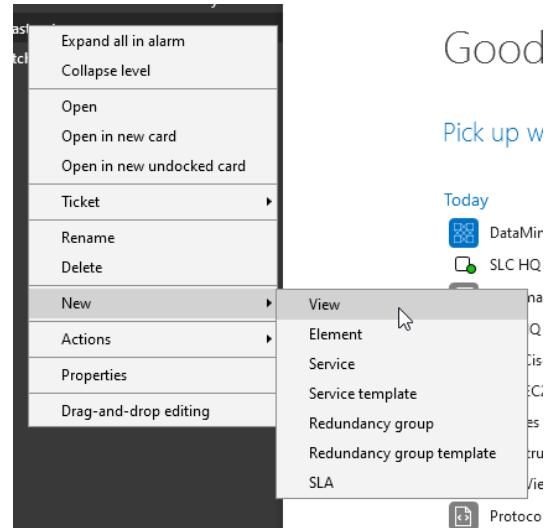


Leverage the DataMiner Catalog

exercise

Exercise

1. Create view 'Infrastructure'
2. Go to **catalog.dataminer.services**
3. Search for **AWS EC2 Demo**.
4. Open the item and click **Deploy**.
5. Select your target DMS and click Deploy again.
6. Go back to **dataminer.services** and open the **admin** page for your system.
7. Go to **Deployments** and verify the deployment was successful.
8. Go to Cube and verify the element **AWS EC2** is present in the **Infrastructure** view.
9. Open the element and verify the Visio file is assigned.
10. Open the **Protocols & Templates** app and verify protocol **Skyline Labs AWS EC2** is present, and the production version has been set.



IDP – Infrastructure Discovery & Provisioning

DataMiner Infrastructure Discovery Provisioning

- Discover new inventory in an automated manner
- Direct element provisioning
- Provides centralized inventory management
- Based on open source CI-types



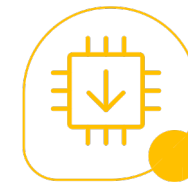
Config
Provisioning



Document
Management



Rack
Management



Firmware
Management



Resource
Inventory



Resource
Discovery

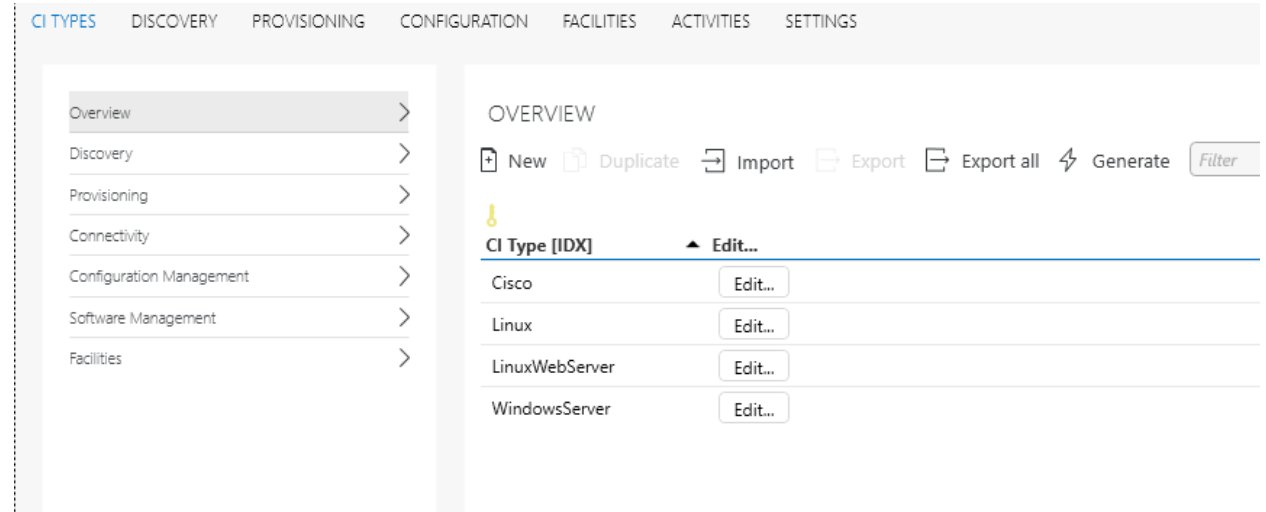


IDP – Infrastructure Discovery & Provisioning

CI Type

- Device **discovery**
- **Provisioning**
- Software management
- Configuration management
- Facility management

- Unique for a specific protocol or common for multiple element types



The screenshot displays the 'CI TYPES' management interface. The top navigation bar includes 'CI TYPES', 'DISCOVERY', 'PROVISIONING', 'CONFIGURATION', 'FACILITIES', 'ACTIVITIES', and 'SETTINGS'. A left sidebar menu lists 'Overview', 'Discovery', 'Provisioning', 'Connectivity', 'Configuration Management', 'Software Management', and 'Facilities'. The main content area is titled 'OVERVIEW' and features a toolbar with 'New', 'Duplicate', 'Import', 'Export', 'Export all', 'Generate', and 'Filter' buttons. Below the toolbar, a table lists CI Types with an 'Edit...' button for each:

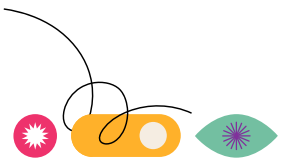
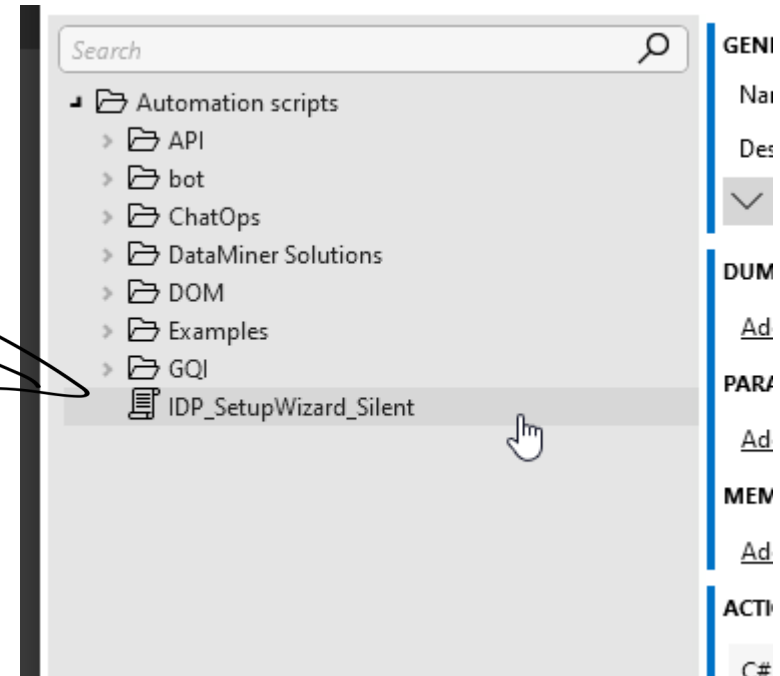
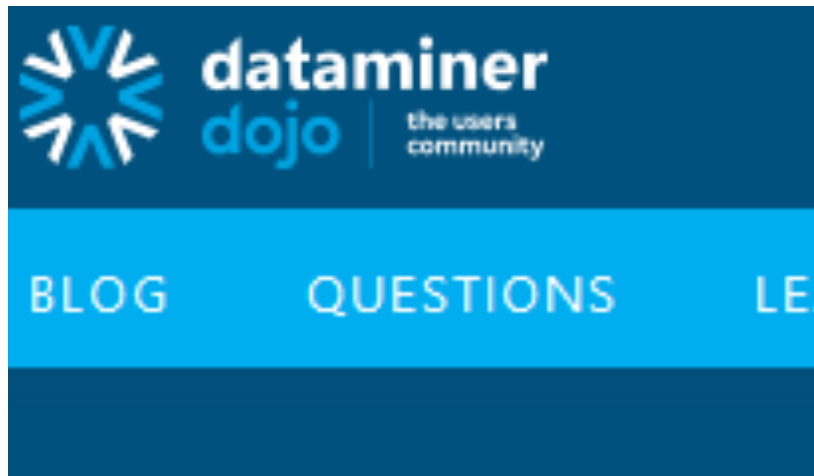
CI Type [IDX]	Edit...
Cisco	Edit...
Linux	Edit...
LinuxWebServer	Edit...
WindowsServer	Edit...



IDP Installation

CI Types

- Run IDP setup install script
- Step exclusive to Empower. Normally we install IDP from Dojo

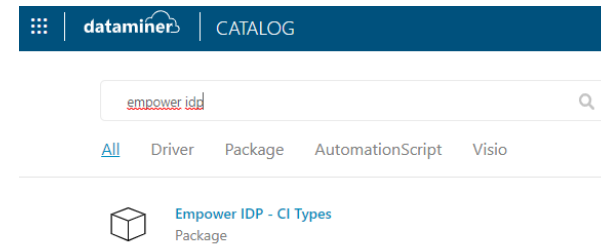


IDP – Infrastructure Discovery & Provisioning

Exercise – Deploy CI Types



1. Open the **DataMiner IDP** application.
2. Go to **ADMIN > CI TYPES > Overview**.
3. Verify there are no CI types present.
4. Go to **catalog.dataminer.services**
5. Search for **Empower IDP - CI Types**.
6. Open the item and click **Deploy**.
7. Select your target DMS and click Deploy again.
8. Go back to **dataminer.services** and open the **admin** page for your system.
9. Go to **Deployments** and verify the deployment was successful.
10. In the **DataMiner IDP** application go back to **ADMIN > CI TYPES > Overview**.
11. Verify there are 3 CI types present.

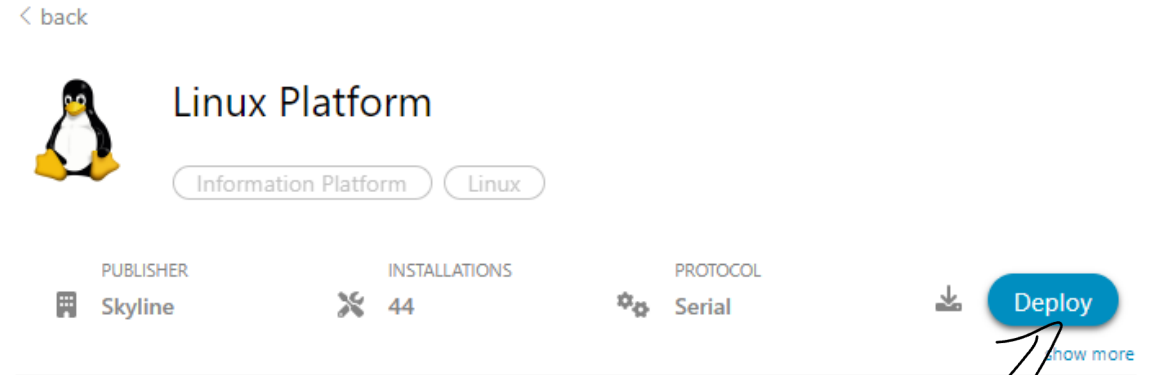


IDP – Infrastructure Discovery & Provisioning

Exercise – Deploy CI Types



1. Go to **catalog.dataminer.services**
2. Search for **Linux Platform**
3. Open the item and click **Deploy**.
4. Select your target DMS and click Deploy again.
5. Go back to **dataminer.services** and open the **admin** page for your system.
6. Go to **Deployments** and verify the deployment was successful.
7. In the **Protocols and templates** application, verify the driver is present



IDP – Infrastructure Discovery & Provisioning

Exercise – Discover



1. Open the **DataMiner IDP** application.
2. Go to **INVENTORY > DISCOVERED**.
3. Click on the **DISCOVER...** button.
4. Use the following **IP RANGE** 20.160.107.50 - 20.160.107.100 (*backup: 20.82.5.0 – 20.82.5.50*)
5. Click **Next**.
6. Discover Devices **by CI Type**.
7. **All CI Types**.
8. Disable **Ping First**.
9. Click **Start Discovery**.



IDP – Infrastructure Discovery & Provisioning

Exercise – Setup provisioning



1. Go to **IDP application > Admin > CI Types**
2. Click **Edit** next to **ZiineWebServer**
3. Click **Configure** next to **Provisioning**

The screenshot displays the Dataminer IDP web application interface. The main navigation bar includes 'OVERVIEW', 'INVENTORY', 'CONNECTIVITY', 'CONFIGURATION', 'SOFTWARE', 'FACILITIES', 'PROCESSES', 'ADMIN', and 'ABOUT'. The secondary navigation bar shows 'CI TYPES', 'DISCOVERY', 'PROVISIONING', 'CONFIGURATION', 'FACILITIES', 'ACTIVITIES', and 'SETTINGS'. The left sidebar contains a menu with 'Overview', 'Discovery', 'Provisioning', 'Connectivity', 'Configuration Management', 'Software Management', and 'Facilities'. The main content area shows the 'OVERVIEW' of CI Types, with a table listing 'ZiineLinux', 'ZiineWebServer', and 'ZiineWindowsServer'. The 'ZiineWebServer' row is selected, and its 'Edit...' button is highlighted. A modal window titled 'idp_ci_type_management' is open, showing the 'EDIT CI TYPE' form. The form includes a text input for 'CI Type Name' (ZiineWebServer) and several 'Configure...' buttons for 'Discovery', 'Provisioning', 'Connectivity', 'Configuration Management', 'Software Image Management', and 'Facilities'.



IDP – Infrastructure Discovery & Provisioning

Exercise – Setup provisioning



1. Click **Details** next to **Element details**
2. Select **Linux Platform** protocol
3. Click **Previous (x2)**
4. Click **Save**

idp_ci_type_management

dataminer idp ci type manager

EDIT CI TYPE

CI Type Name: ZiineWebServer

Discovery: Configure...

Provisioning: Configure...

Connectivity: Configure...

Configuration Management: Configure...

Software Image Management: Configure...

Facilities: Configure...

Save

Delete

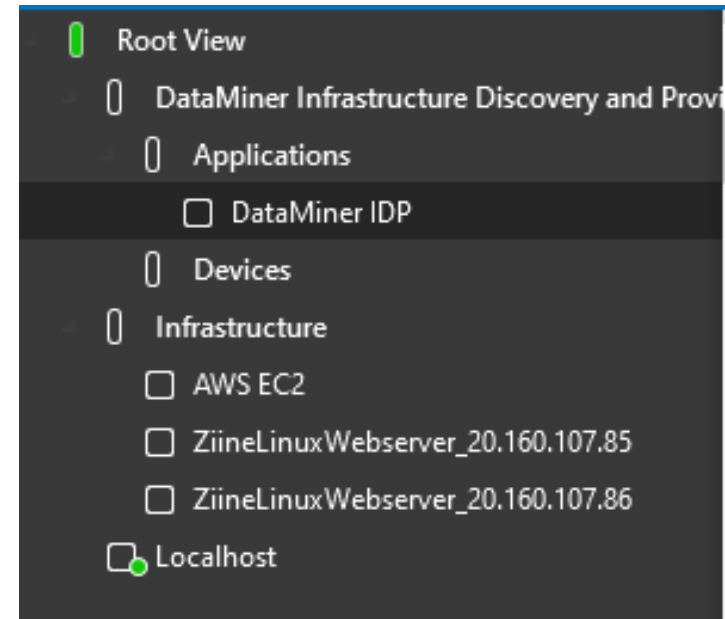


IDP – Infrastructure Discovery & Provisioning

Exercise – Provision



1. Open the **DataMiner IDP** application.
2. Go to **INVENTORY > DISCOVERED**.
3. Multiselect both web servers
4. Click **Provision**
5. Verify that they show up under the **Infrastructure view**

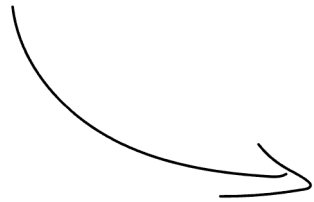


IDP – Infrastructure Discovery & Provisioning

Exercise – Provision



1. Select Show response on the items with a matching CI type:
2. Verify they become available in the **Infrastructure** view.



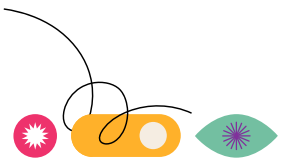
DISCOVERED ELEMENTS

Show Response Include Managed Filter 20.160.107.86/ZiineWebServer

CI Type	Proposed Element Name	Name	IP Address
Unknown	N/A		20.160.107.96
ZiineWebServer	ZiineLinuxWebserver_20...		20.160.107.86

Discovery Actions Result

- # SNMP_MIB_II/sysDescr
- # ZiineDiscovery/System Description
- # ZiineHTTP/GET_80 web2-test-eu



IDP – Infrastructure Discovery & Provisioning

Exercise – Create your own CI type



1. Go to **catalog.dataminer.services** and search for **Cisco Manager**.
2. Open the item and click on **Version history**.
3. Look for the latest 5.1.6.x entry which is 5.1.6.19 and click **Deploy**.
4. Select your target DMS and click **Deploy v5.1.6.19**.
5. Go to **dataminer.services** and open the admin page for your system.
6. Go to **Deployments** and verify the deployment was successful.
7. Go to IDP app > **Inventory** > **Discovered**
8. Select the row with the Unknown CI type and click **Show Response**.
9. Copy **C3750 Software (C3750-IPSERVICES-M)**

Discovery Actions Result

ZiineDiscovery/System Description
Cisco IOS Software, C3750 Software (C3750-IPSERVICES-M), Version 12.2(25)SEE2,
RELEASE SOFTWARE (fc1)
Copyright (c) 1986-2006 by Cisco Systems, Inc.
Compiled Fri 28-Jul-06 08:46 by yenanh

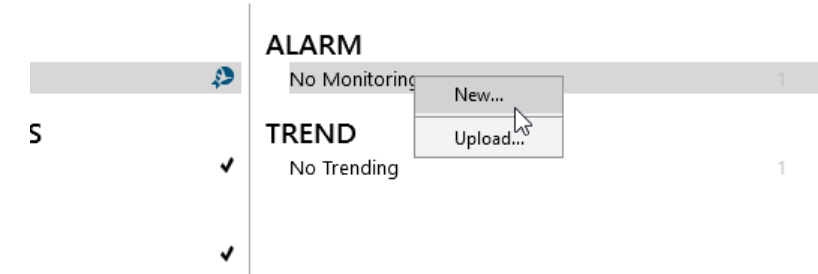


IDP – Infrastructure Discovery & Provisioning

Exercise – Configure templates



1. In **Protocols and Templates** navigate to the Cisco Manager protocol
2. Right click on **ALARM**, Select New Alarm template
3. Enable alarming on operational status



Detailed Interface Info



1. Right click on **TREND**, Select New Trend template
2. Enable trending on 'CPU Usage'

PARAMETER NAME	FILTER	REAL-TIME	AVERAGE
General			
CPU Usage		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



IDP – Infrastructure Discovery & Provisioning



Exercise – Create your own CI type (cont.)

1. In the **DataMiner IDP** application go to **ADMIN > CI TYPES > Overview**.
2. Click **New**.
3. Enter **CI Type Name**: ZiineCisco
4. Click **Configure...** next to **Discovery**.
5. Filter **Discovery Protocol Types** to **SNMP**.
6. In the list below click the plus sign next to the **System Description ZiineDiscovery** item.
7. Enter **MATCH**: Contains
8. Enter **VALUE**: **C3750 Software (C3750-IPSERVICES-M)**
9. Click **Previous**.
10. Click **Configure...** next to **Provisioning**.
11. Click **Details...** next to **Element Details**.
12. Enter **Protocol**: Cisco Manager
13. Enter **Version**: 5.1.6.19
14. Set **Alarm** and **Trend** templates to match previously created Cisco Manager templates
15. Enter **Get Community**: ZiinePublic_2023
16. Click **Previous**.



IDP – Infrastructure Discovery & Provisioning

Exercise – Create your own CI type (cont.)



1. Click **Views...** next to **Views**.
2. Click the arrow next to **Add element to an existing view**.
3. Click the plus sign next to **Infrastructure**.
4. Verify below that **Infrastructure** is mentioned under **SELECTED VIEWS**.
5. Click **Previous**.
6. Click **Previous**.
7. Click **Save**.



IDP – Infrastructure Discovery & Provisioning

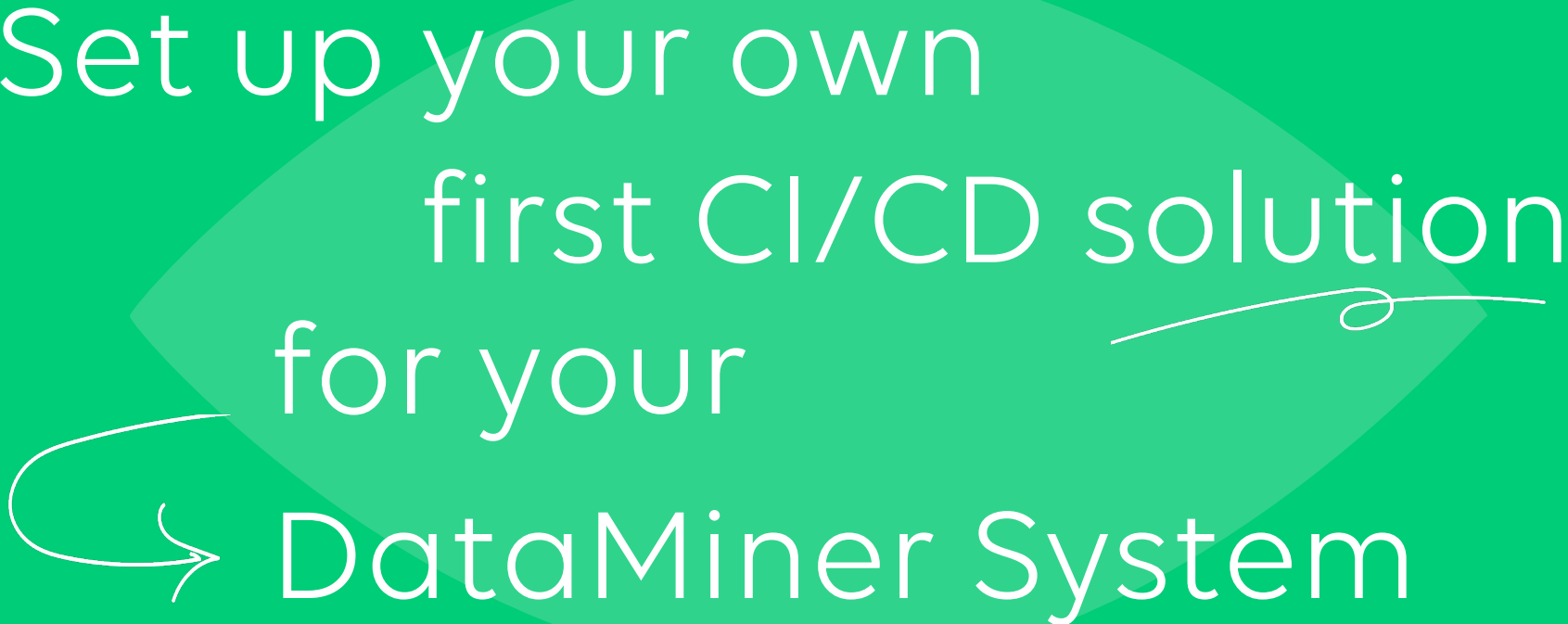


Exercise – Create your own CI type (cont.)

1. Go to **INVENTORY > DISCOVERED**.
2. Click on the **DISCOVER...** button.
3. Use the following **IP RANGE** 20.160.107.50 - 20.160.107.100
4. Click **Next**.
5. Discover Devices **by CI Type**.
6. **All CI Types**.
7. Disable **Ping First**.
8. Click **Start Discovery**.
9. Select the Cisco device and click **Provision**.
10. Verify it becomes available in the **Infrastructure** view.



Set up your own
first CI/CD solution
for your
DataMiner System



DataMiner Integration Studio

Installing Microsoft Visual Studio

- DIS version v2.40.1.23 requires at least Microsoft Visual Studio 2022.

Visual Studio Code and Visual Studio for Mac are not supported.



DataMiner Integration Studio

Prerequisites

- DataMiner Integration Studio must be able to connect to addresses in the following ranges:
 - <https://login.microsoftonline.com/>*
 - <https://aadcdn.msftauth.net/>*
 - https://*.dataminer.services/*
 - https://*.skyline.be/*



DataMiner Integration Studio

Installing DataMiner Integration Studio

1. Check which version of Visual Studio you are using, download the correct DataMinerIntegrationStudio.vsix extension file, and place it in a temporary folder on your computer:

Visual Studio version	Download location
Visual Studio 2022	https://community.dataminer.services/download/dataminer-integration-studio-insider-release-2/

2. Double-click DataMinerIntegrationStudio.vsix.
3. If multiple versions of Microsoft Visual Studio have been installed on your computer, select the version on top of which you want to install the DataMinerIntegrationStudio.vsix extension.
4. Click Install.



DataMiner Integration Studio

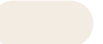
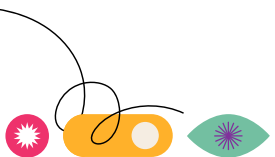
Installing DataMiner Integration Studio

5. When the installation is complete, click Close.
6. Start Microsoft Visual Studio. If it was running during the installation of the DataMinerIntegrationStudio.vsix file, restart it.
7. In the DIS menu, go to Settings > Account, and sign in with your dataminer.services account.

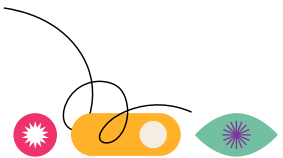
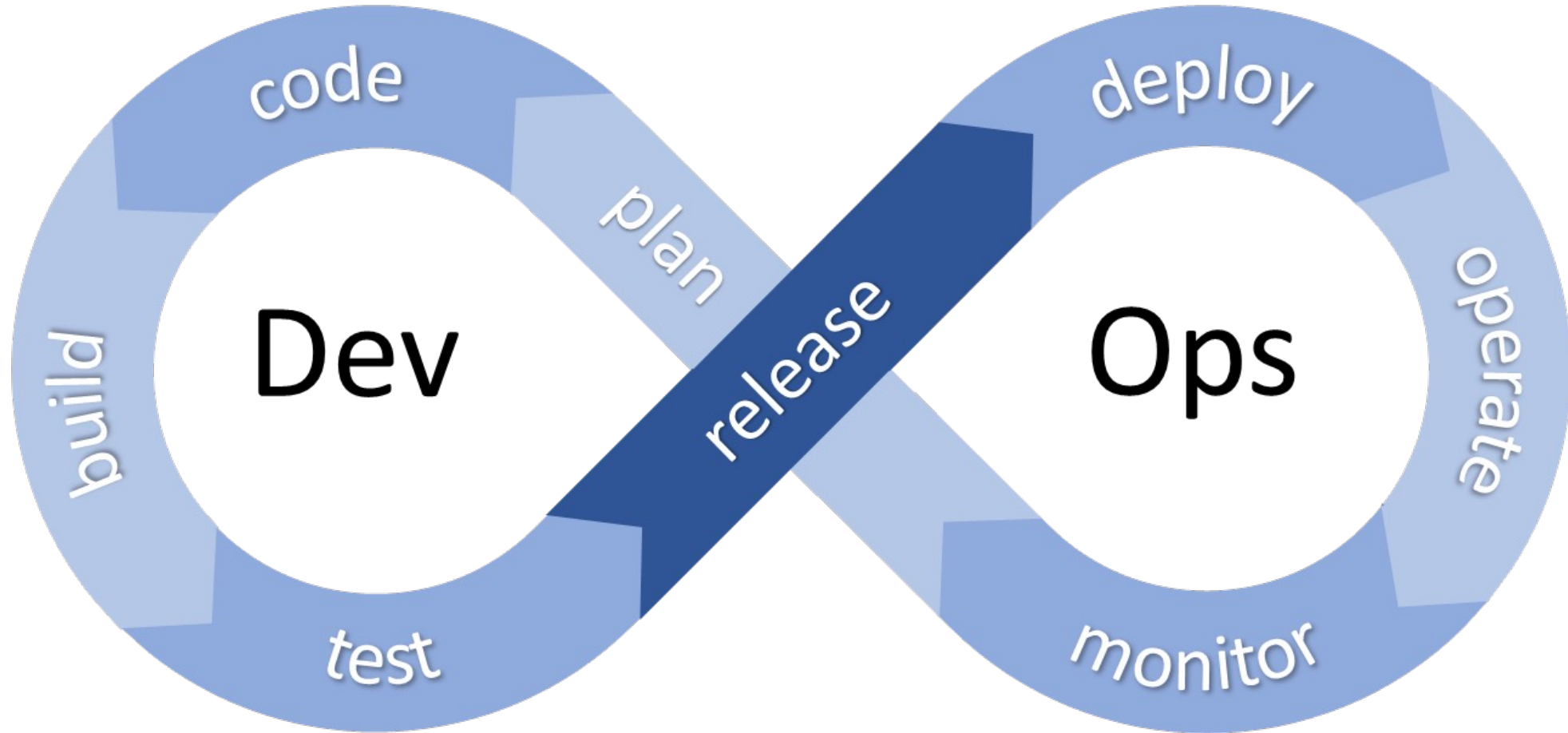


Agenda

- DevOps
- Automation script development
- Git & GitHub
- GitHub Actions



DevOps



TRIAL - TEST - LAB



SMALL DEPLOYMENTS



DIS Validator / Unit Testing

get driver, automation

load driver, automation

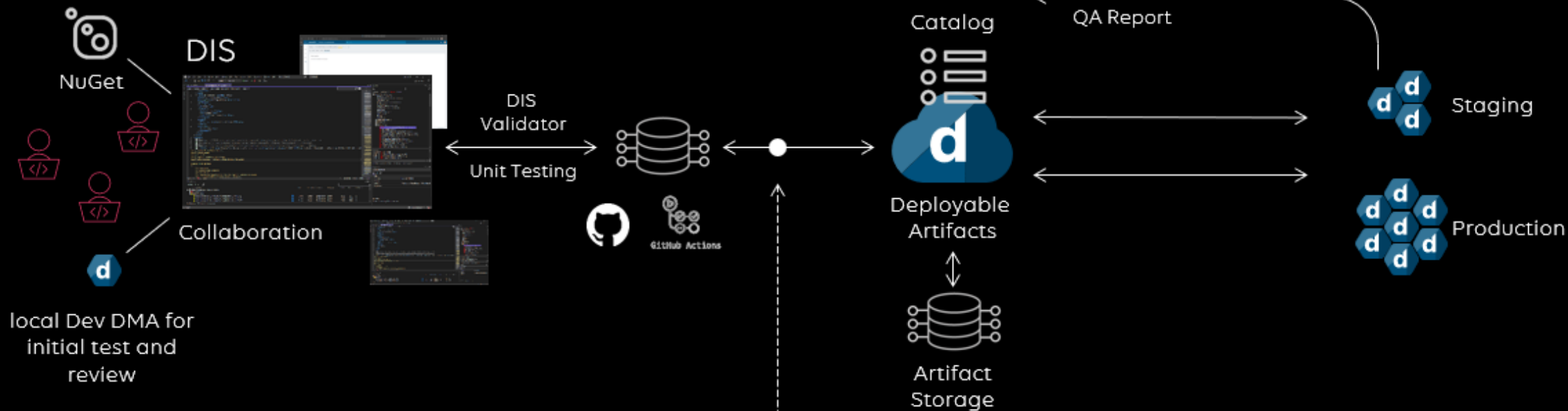


Staging



Production

RECOMMENDED



OPTIONAL

Code Sniffing
Testing
Validation
...



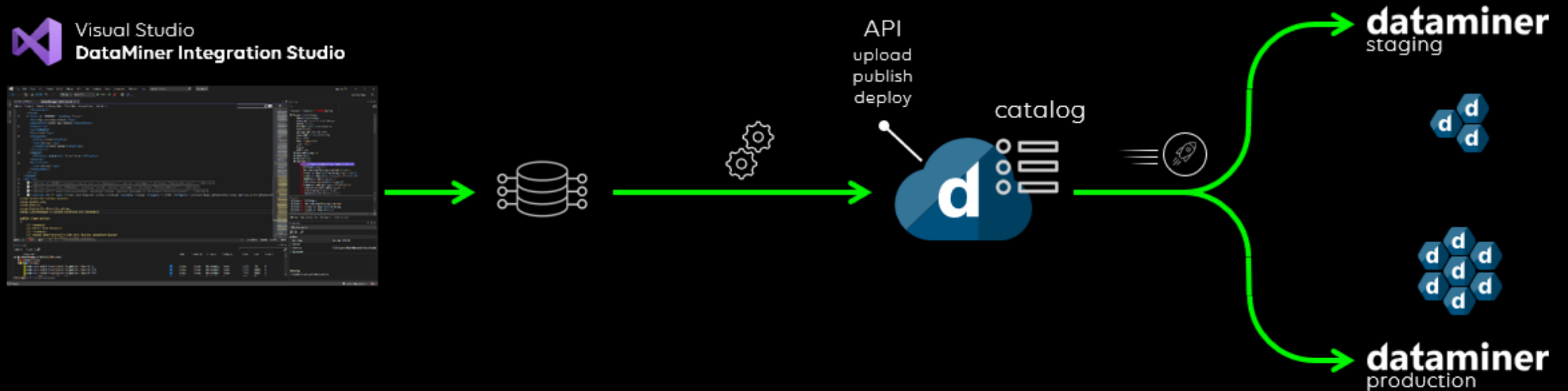
Bitbucket



sonarcloud



Continuous Evolution



IDE

Visual Studio
DataMiner Integration Studio

Code
Repository

Industry standard
solution such as
GitHub

CI

Artifact
Library

Storage of
Deployable
Solutions

CD

Target
Systems

Deploy on any
DataMiner System

Automation script development

Visual Studio - DIS

- Application Development Language C# for scripting?
 - Performant, Robust, Coding Standards, IDE --> Collaboration!
- Visual Studio
 - Integrated Development Environment (IDE)
- Visual Studio extension DataMiner Integration Studio (DIS)
 - Development of connectors (drivers), Automation scripts, SRM functions
 - Custom debugging tools
 - Import connectors/Automation scripts
 - Connector validation
 - Etc.
- Available on Dojo: <https://community.dataminer.services/exphub-dis/>



Automation script development

Visual Studio - DIS

- *File > New > DataMiner Automation Script Solution*

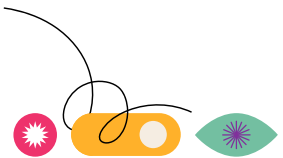
```
public class Script
{
    public void Run(Engine engine)
    {
        engine.GenerateInformation("Hello world!");
    }
}
```



DevOps

Best Practices

Build a collaborative culture



Git & GitHub

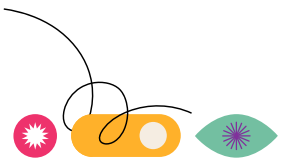
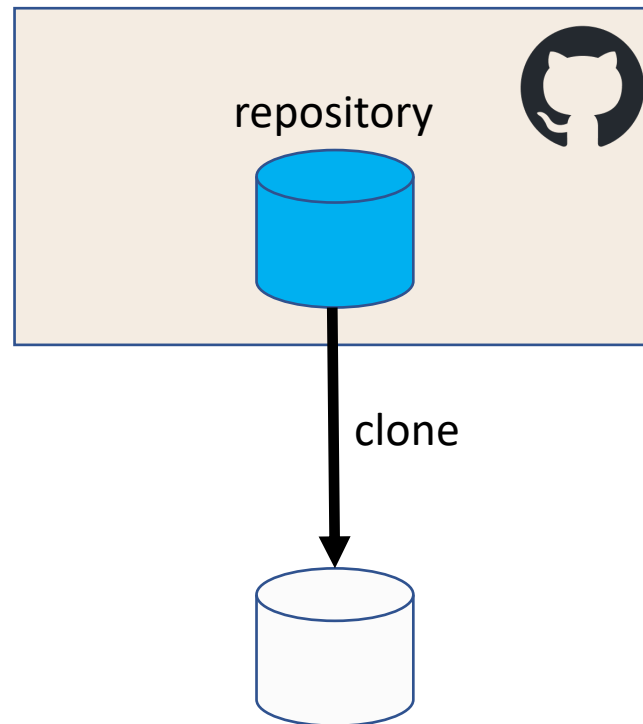
Source Code Management (SCM)

- Git
 - <https://git-scm.com>
- GitHub
 - <https://github.com/>



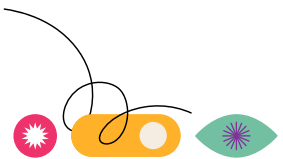
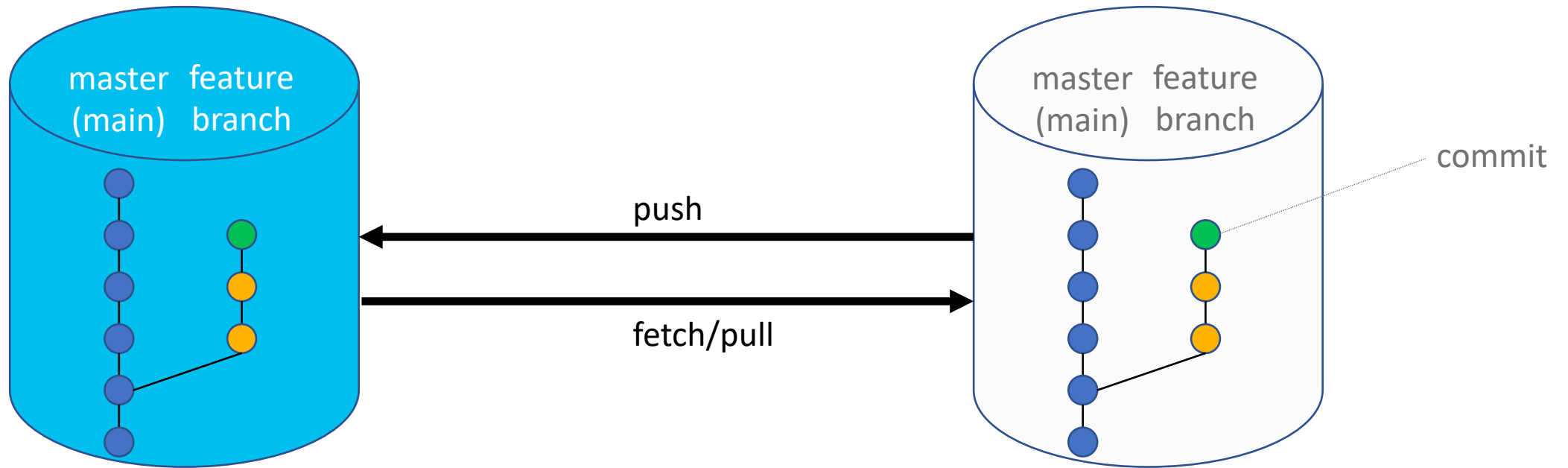
Git & GitHub

Concepts



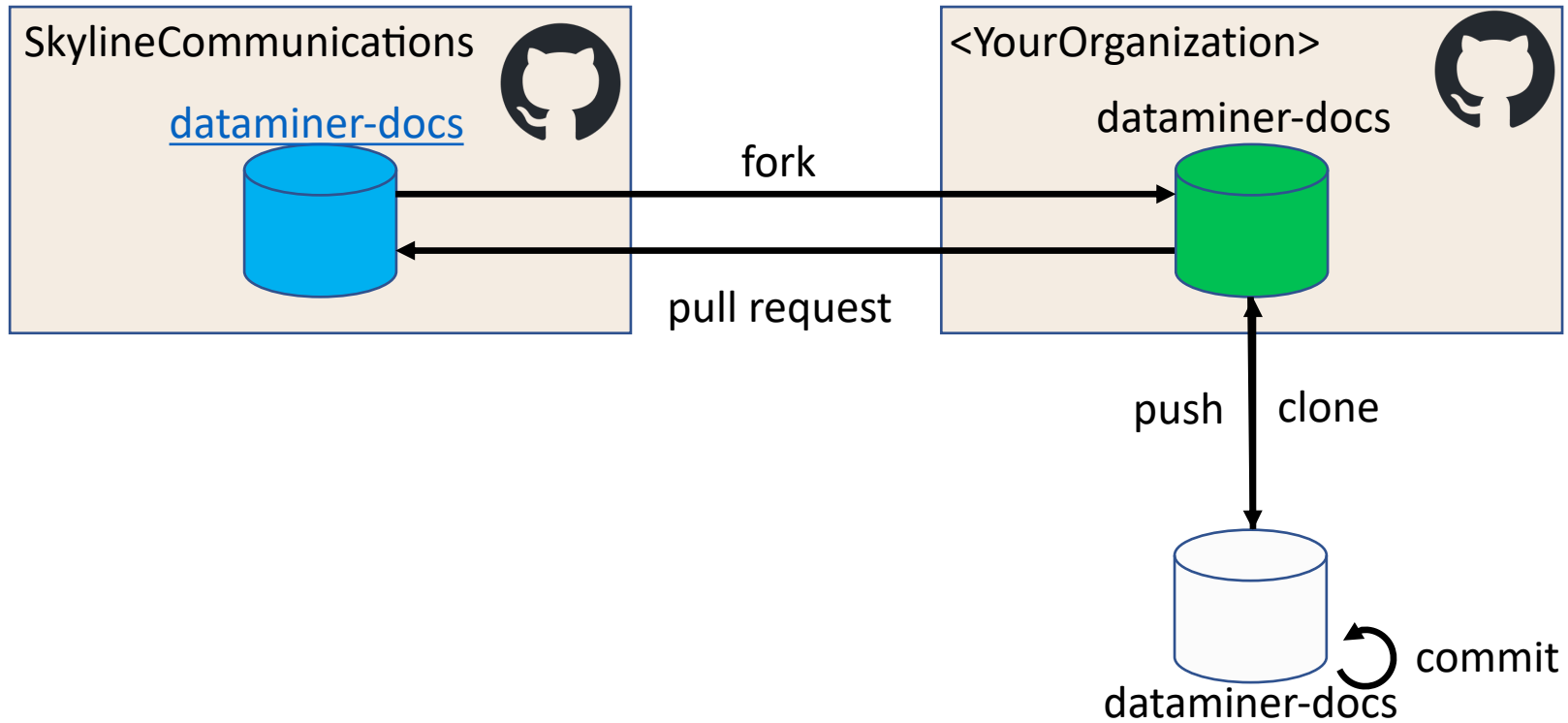
Git & GitHub

Concepts



Git & GitHub

Concepts



Git & GitHub

Source Code Management (SCM)

- Create organization
 - *Settings > Organizations > New organization > Free*

Tell us about your organization

Set up your organization

Organization account name *

This will be the name of your account on GitHub.

Your URL will be: <https://github.com/>

Contact email *

This organization belongs to: *

My personal account

I.e., PedroDebevere (Pedro Debevere)

A business or institution

For example: GitHub, Inc., Example Institute, American Red Cross



Git & GitHub

Create GitHub repository in Visual Studio

- *Git > Create Git Repository...*



- Owner: <YourOrganization>
- Public repository

Create a Git repository

Push to a new remote

- GitHub
- Azure DevOps

Other

- Existing remote
- Local only

Create a new GitHub repository

Account: PedroDeBevere (GitHub)
⚠ Re-enter your credentials

Owner: SkylineCommunications

Repository name: EmpowerHelloWorld

Description: Enter the description of the GitHub repository <Optional>

Private repository

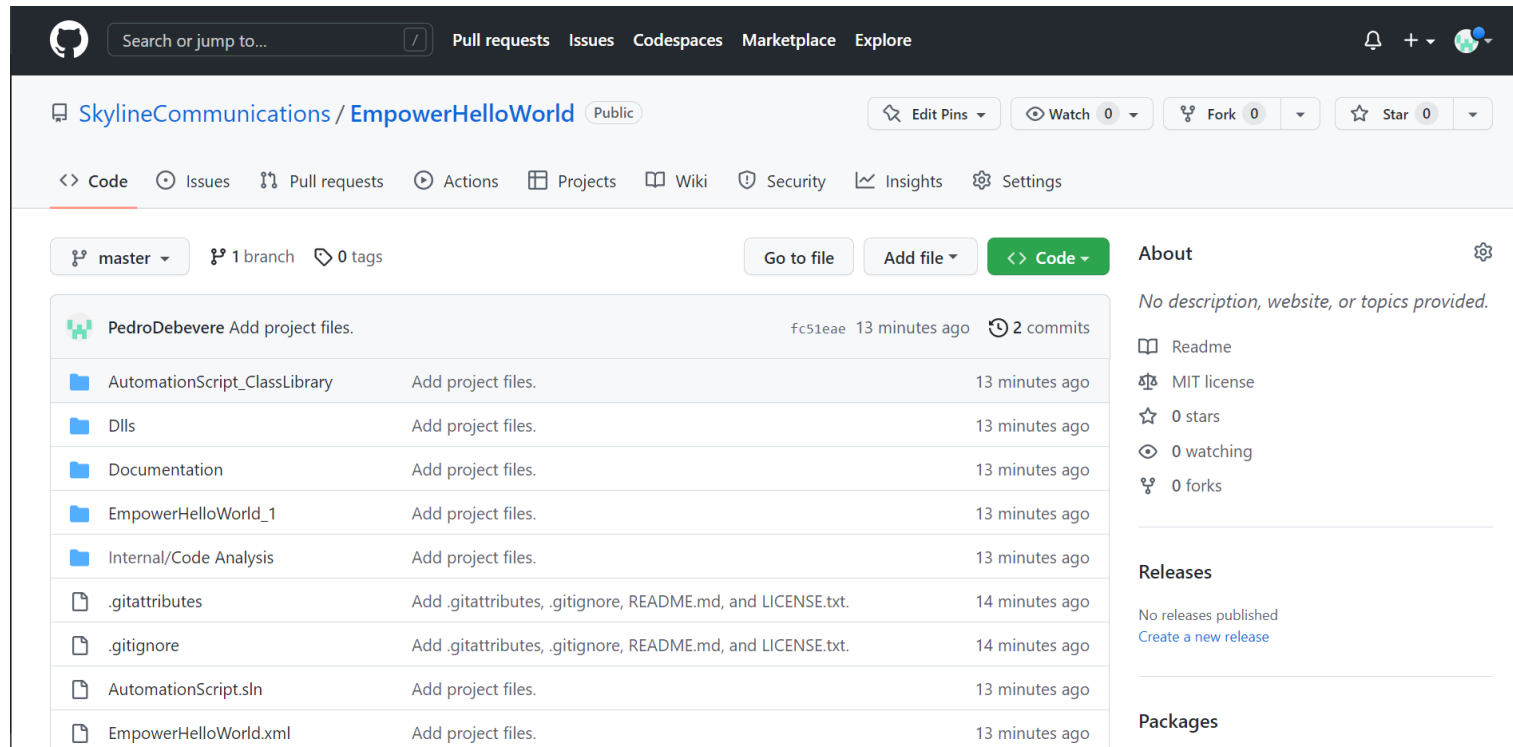
↑ Push your code to GitHub

Create and Push Cancel



Git & GitHub

GitHub repository



The screenshot shows a GitHub repository page for 'SkylineCommunications / EmpowerHelloWorld'. The repository is public and has 0 stars, 0 forks, and 0 watches. The main content area displays a commit by PedroDebevere from 13 minutes ago, with 2 commits in total. The commit message is 'Add project files.' and the commit hash is fc51eae. The commit includes several files and folders:

File/Folder	Description	Time
AutomationScript_ClassLibrary	Add project files.	13 minutes ago
Dlls	Add project files.	13 minutes ago
Documentation	Add project files.	13 minutes ago
EmpowerHelloWorld_1	Add project files.	13 minutes ago
Internal/Code Analysis	Add project files.	13 minutes ago
.gitattributes	Add .gitattributes, .gitignore, README.md, and LICENSE.txt.	14 minutes ago
.gitignore	Add .gitattributes, .gitignore, README.md, and LICENSE.txt.	14 minutes ago
AutomationScript.sln	Add project files.	13 minutes ago
EmpowerHelloWorld.xml	Add project files.	13 minutes ago

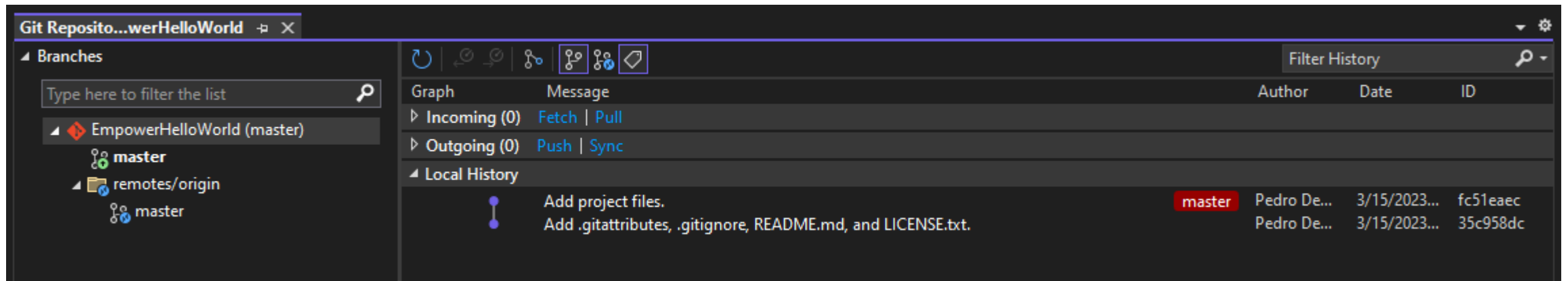
The right sidebar contains the 'About' section, which states 'No description, website, or topics provided.' and lists the repository's metadata: Readme, MIT license, 0 stars, 0 watching, and 0 forks. Below this are sections for 'Releases' (No releases published, Create a new release) and 'Packages'.



Git & GitHub

Git/GitHub integration in Visual Studio

- View > Git Changes
- View > Git Repository
- Git



- [How Visual Studio makes version control easy with Git](#)



DevOps

Best Practices

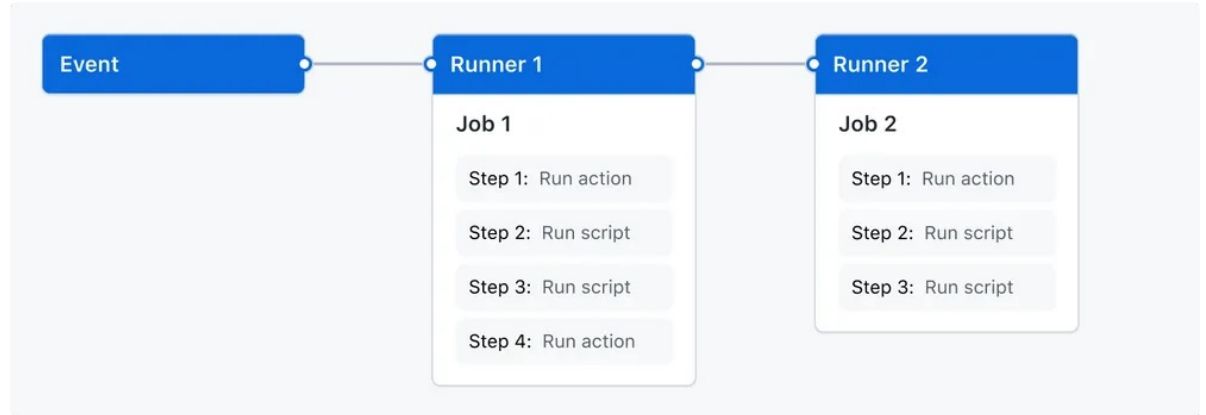
Adopt continuous integration and deployment (CI/CD)



GitHub Actions

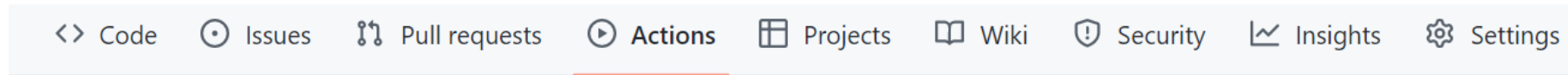
Continuous Integration and Continuous Delivery/Deployment (CI/CD)

- Automate your build, test, and deployment pipeline
- GitHub Actions workflow file
 - YAML file (.github/workflows)
 - Triggered on repository event
 - Consists of jobs
 - Job consists of steps (e.g. GitHub Action)
- GitHub Actions marketplace: <https://github.com/marketplace?type=actions>
- <https://github.com/features/actions>



GitHub Actions

Continuous Delivery/Deployment (CD)




Get started with GitHub Actions

Build, test, and deploy your code. Make code reviews, branch management, and issue triaging work the way you want. Select a work

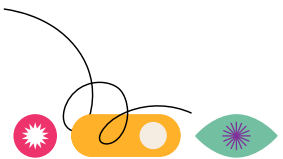
Skip this and [set up a workflow yourself](#) →

Suggested for this repository

.NET Desktop
By GitHub Actions



Build, test, sign and publish a desktop application built on .NET.



GitHub Actions

Continuous Delivery/Deployment (CD)

- [Skyline DataMiner Deploy Action](#)

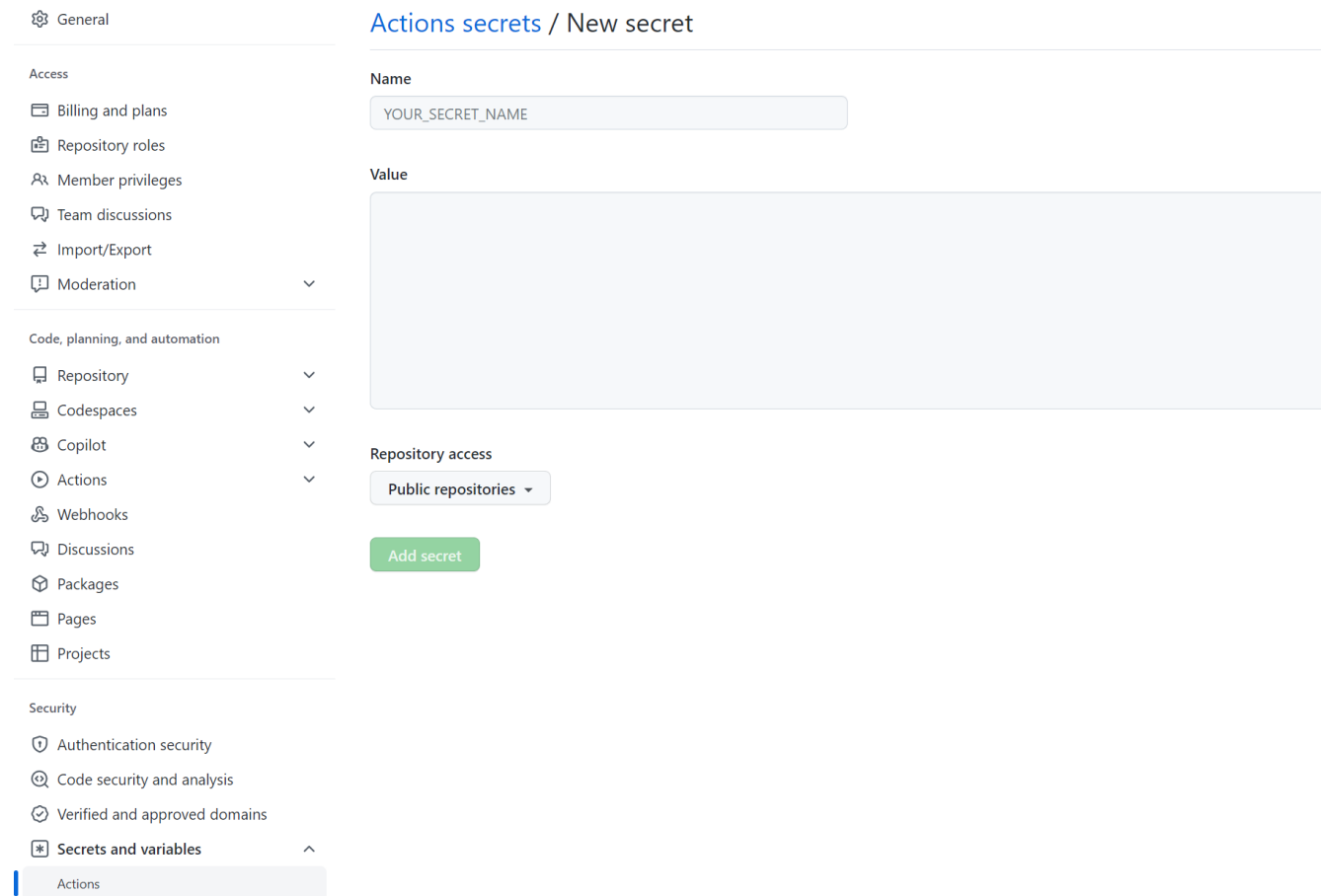
- name: Skyline DataMiner Deploy Action
uses: SkylineCommunications/Skyline-DataMiner-Deploy-Action@v1.0.11
with:
 - api-key: `${{ secrets.DATAMINER_DEPLOY_KEY }}`
 - solution-path: `AutomationScript.sln`
 - artifact-name: `EmpowerHelloWorld`
 - version: `1.0.1`
 - timeout: # optional, default is 900
 - stage: # optional, default is All
 - artifact-id:
 - build-number: `${{ github.run_number }}`



GitHub Actions

Continuous Delivery/Deployment (CD)

- Settings > Secrets and variables > Actions



The screenshot shows the GitHub Actions secrets configuration page. On the left is a navigation sidebar with categories: General, Access, Code, planning, and automation, and Security. The 'Secrets and variables' section is expanded to show 'Actions'. The main content area is titled 'Actions secrets / New secret' and contains a form with the following fields:

- Name:** A text input field containing the placeholder text 'YOUR_SECRET_NAME'.
- Value:** A large, empty text area for entering the secret value.
- Repository access:** A dropdown menu currently set to 'Public repositories'.
- Add secret:** A green button to save the new secret.

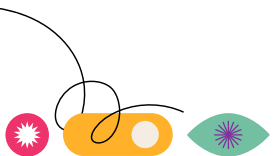


GitHub Actions

Continuous Integration/Continuous Deployment (CI/CD)

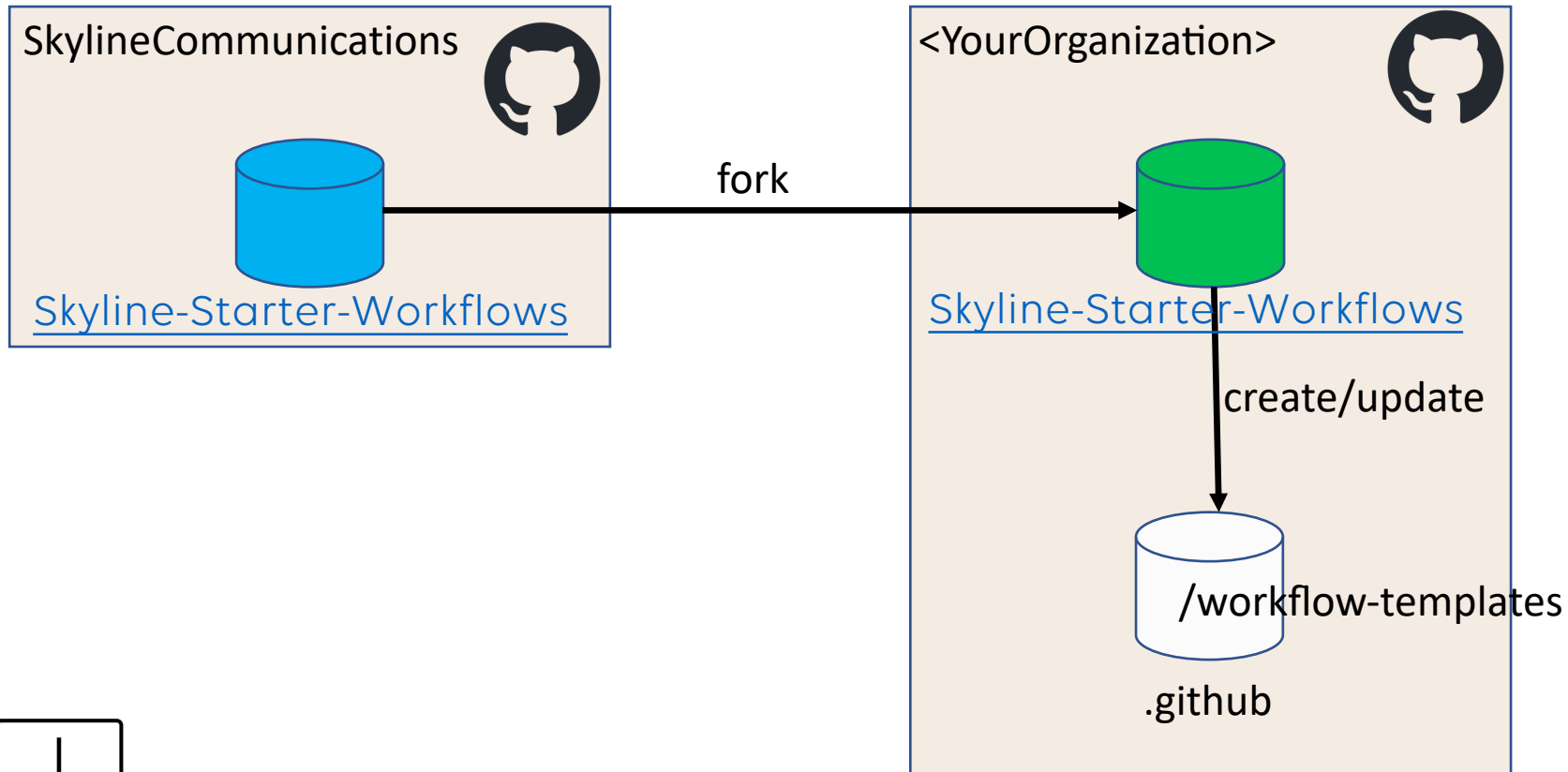
- Continuous Integration
 - Build
 - Unit tests
 - SonarCloud code analysis
 - etc.

- Starter workflows
 - `.github/workflow-templates`
 - <https://github.com/SkylineCommunications/Skyline-Starter-Workflows>

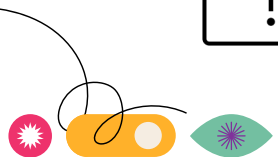


GitHub Actions

Continuous Integration/Continuous Deployment (CI/CD)



Workflow in Skyline-Starter-Workflows requires **personal access token (PAT)** with sufficient rights



GitHub Actions

Continuous Integration/Continuous Deployment (CI/CD)

1. Fork repository [Skyline-Starter-Workflows](#)
2. In your personal account, create personal access token
 - Profile icon > Settings > Developer settings > Personal access token > Generate new token
3. Add repository secret "PAT" with token as value
4. Run workflow
5. Merge pull request in .github repository

<input checked="" type="checkbox"/>	repo
<input checked="" type="checkbox"/>	repo:status
<input checked="" type="checkbox"/>	repo_deployment
<input checked="" type="checkbox"/>	public_repo
<input checked="" type="checkbox"/>	repo:invite
<input checked="" type="checkbox"/>	security_events
<input checked="" type="checkbox"/>	workflow
<input type="checkbox"/>	write:packages
<input type="checkbox"/>	read:packages
<input type="checkbox"/>	delete:packages
<input type="checkbox"/>	admin:org
<input checked="" type="checkbox"/>	write:org
<input checked="" type="checkbox"/>	read:org
<input type="checkbox"/>	manage_runners:org
<input type="checkbox"/>	admin:public_key
<input type="checkbox"/>	write:public_key
<input type="checkbox"/>	read:public_key



GitHub Actions


Continuous Integration/Continuous Deployment (CI/CD)

- Disable "CDOnly" workflow
- Add new workflow

By <YourOrganization>

DataMiner CICD

AutomationScript

 By <YourOrganization>

Starter Workflow for CICD with a Skyline formatted AutomationScript repository.

Configure



GitHub Actions

Continuous Integration/Continuous Deployment (CI/CD)

```
CI:  
  uses: SkylineCommunications/_ReusableWorkflows/.github/workflows/Automation Master  
Workflow.yml@main  
  with:  
    referenceName: ${{ github.ref_name }}  
    runNumber: ${{ github.run_number }}  
    referenceType: ${{ github.ref_type }}  
    repository: ${{ github.repository }}  
    owner: ${{ github.repository_owner }}  
    sonarCloudProjectName: TODO: Go to 'https://sonarcloud.io/projects/create' and  
create a project. Then enter the id of the project as mentioned in the sonarcloud  
project url here.  
  secrets:  
    api-key: ${{ secrets.DATAMINER_DEPLOY_KEY }}  
    sonarCloudToken: ${{ secrets.SONAR_TOKEN }}
```



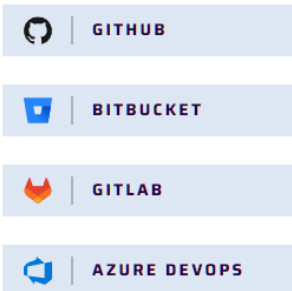
SonarCloud

Code analysis

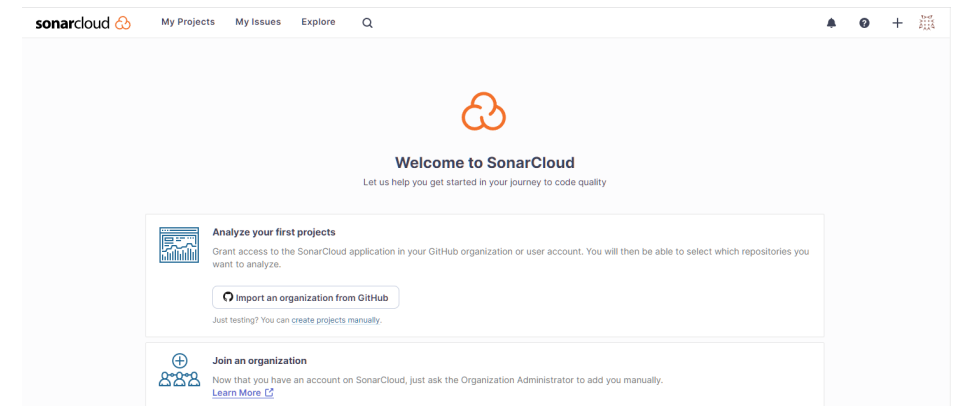
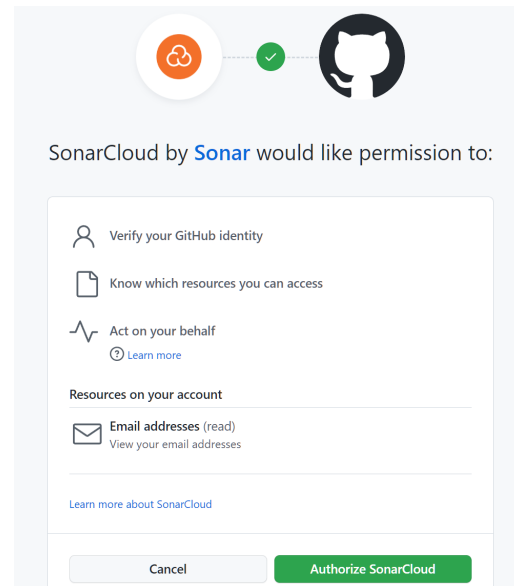
- While logged in on GitHub, browse to <https://sonarcloud.io>
- Press *sign up*
- Choose sign up with GitHub
- Authorize SonarCloud

Try SonarCloud for free

1-CLICK SIGNUP WITH:



By logging in, you're agreeing to our [Terms of Service](#).



SonarCloud

Code analysis

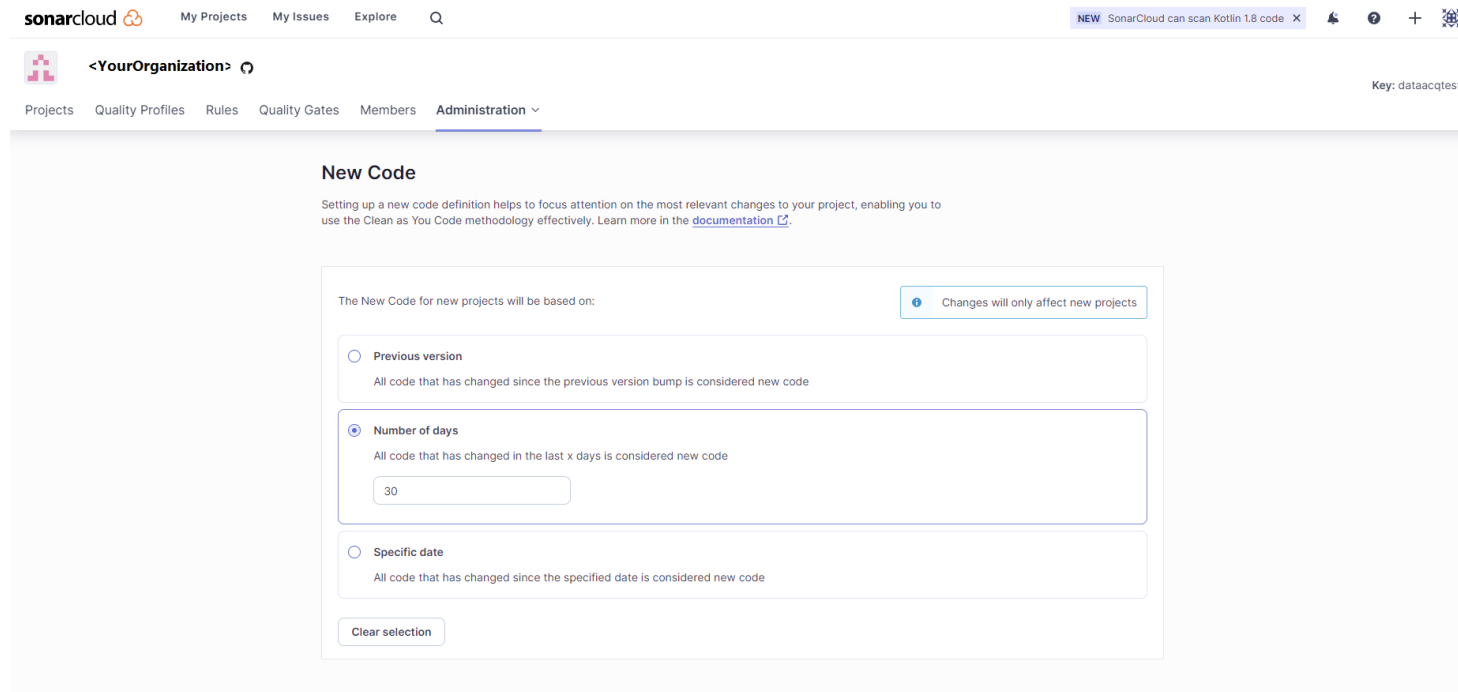
- User Icon > My Account > Security
 - Generate token
 - Provide token name
 - Click *Generate*
 - Copy value
- Create an organization secret in GitHub
 - Name: SONAR_TOKEN
 - Value: the token value



SonarCloud

Code analysis

- User Icon > My Organizations > <Your Organization>
 - Administration > New code



The screenshot shows the SonarCloud interface for configuring 'New Code'. The page title is 'New Code' and it includes a sub-header: 'Setting up a new code definition helps to focus attention on the most relevant changes to your project, enabling you to use the Clean as You Code methodology effectively. Learn more in the [documentation](#).' Below this, there is a form with the following elements:

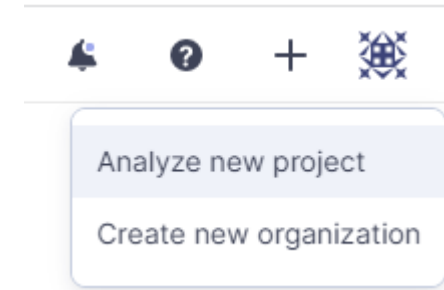
- A header: 'The New Code for new projects will be based on:' with a toggle switch 'Changes will only affect new projects'.
- Three radio button options:
 - Previous version: All code that has changed since the previous version bump is considered new code.
 - Number of days: All code that has changed in the last x days is considered new code. A text input field contains the value '30'.
 - Specific date: All code that has changed since the specified date is considered new code.
- A 'Clear selection' button at the bottom.



SonarCloud

Code analysis

- Click '+' icon (next to user icon) > Analyze new project



Analyze projects - Select repositories

You will be asked to grant access to the SonarCloud application on your organization or user account, which will allow you to choose which repositories you want to analyze.

Import an organization from GitHub

Just testing? You can [create a project manually](#).
Setup a [monorepo](#).

- Provide name and key
- Choose Free plan
- Create organization
- Select organization and repository

Analyze projects - Select repositories

Organization *

<YourOrganization> [Import another organization](#)

Select all available repositories

.github

<YourRepository>

Skyline-Starter-Workflows

Don't see your repo? Check your [GitHub app configuration](#).

1 repository selected

1 repository will be created as a public project on SonarCloud

Set Up

Just testing? You can [create a project manually](#).
Setup a [monorepo](#).



GitHub Actions

Continuous Integration/Continuous Deployment (CI/CD)

```
CI:
  uses: SkylineCommunications/_ReusableWorkflows/.github/workflows/Automation Master
Workflow.yml@main
  with:
    referenceName: ${ github.ref_name }
    runNumber: ${ github.run_number }
    referenceType: ${ github.ref_type }
    repository: ${ github.repository }
    owner: ${ github.repository_owner }
    sonarCloudProjectName:<YourProjectId>
  secrets:
    api-key: ${ secrets.DATAMINER_DEPLOY_KEY }
    sonarCloudToken: ${ secrets.SONAR_TOKEN }
```



GitHub Actions

Continuous Integration/Continuous Deployment (CI/CD)

CD:

```
if: github.ref_type == 'tag'
```

```
environment: production
```

```
name: CD
```

```
runs-on: ubuntu-latest
```

```
needs: CI
```

steps:

- uses: actions/checkout@v3

- name: Skyline DataMiner Deploy Action

```
uses: SkylineCommunications/Skyline-DataMiner-Deploy-Action@v1
```

```
with:
```

```
stage: Deploy
```

```
api-key: ${{ secrets.DATAMINER_DEPLOY_KEY }}
```

```
artifact-id: ${{ needs.CI.outputs.artifact-id }}
```



GitHub Actions

Continuous Integration - SonarCloud

- Static code analysis
 - Quality profiles
 - Quality gate

The screenshot displays the SonarCloud interface for a project named 'AutomationScript' on the 'master' branch. The main status is 'Passed' with a green checkmark. The interface shows various quality metrics:

- Reliability:** 0 Bugs (Grade A)
- Maintainability:** 0 Code Smells (Grade A)
- Security:** 0 Vulnerabilities (Grade A)
- Security Review:** 0 Security Hotspots (Grade A)
- Coverage:** — Coverage (Grade F)
- Duplications:** — Duplications (Grade F)

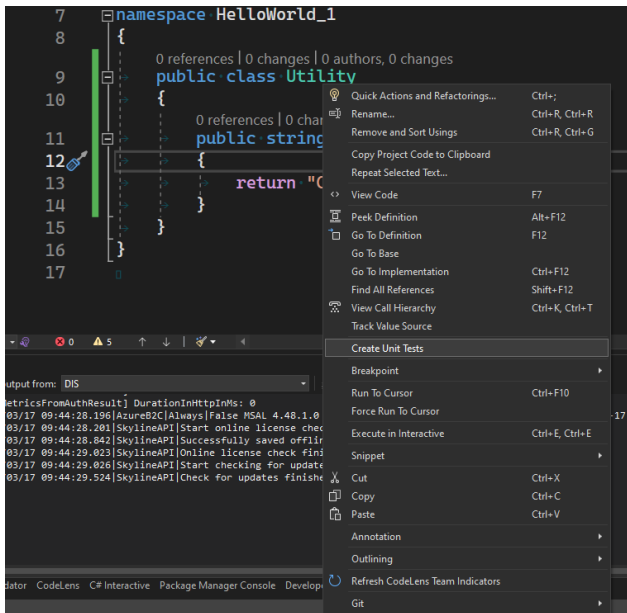
Additional information includes '26 Lines of Code', 'Last analysis 20 hours ago', and a warning: 'The last analysis has a warning. See details'. The interface also shows navigation tabs for 'Summary', 'Issues', 'Security Hotspots', 'Measures', 'Code', and 'Activity'.



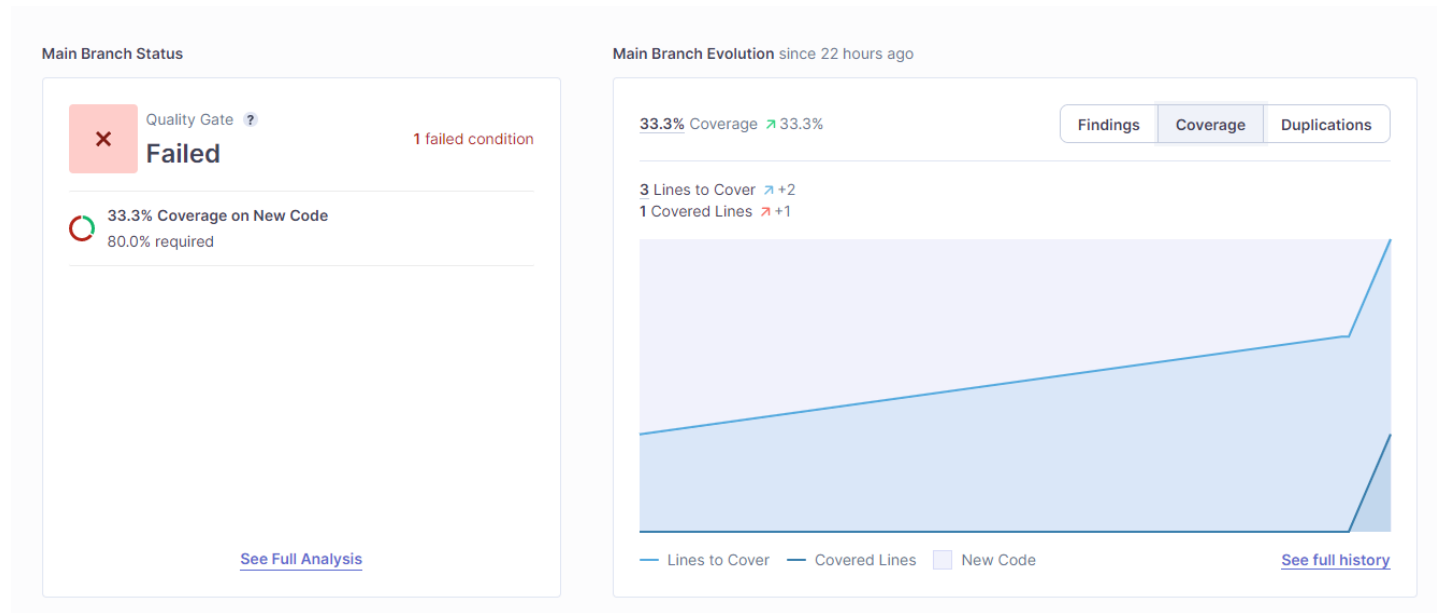
GitHub Actions

Continuous Integration – Unit tests

- Test projects in Visual Studio solution



```
7 namespace HelloWorld_1
8 {
9     0 references | 0 changes | 0 authors, 0 changes
10     public class Utility
11     {
12         0 references | 0 char
13         public string
14         {
15             return "C";
16         }
17     }
```



- Code coverage (SonarCloud)
- <https://community.dataminer.services/unit-testing-introduced/>

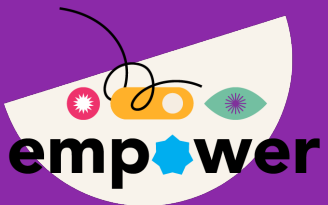


Create your first

| ChatOps extension,

| User Defined API,

→ and more...



Agenda

ChatOps Extensions

exercise

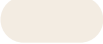
DEMO

Break

User Defined API

exercise



DEMO

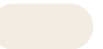


Let's get ready

some practical arrangements

HELP!

- Guidelines on questions/help in the session
- Links to docs.dataminer.services 
- Links to github repositories 



Let's get ready

goals of session

- Interact with DataMiner using other tools in your tool-belt
- Shout-out to the teacher through DataMiner and MS Teams
- Notify a group of colleagues in a MS Teams channel
- Have a conversation with DataMiner using MS Teams
- Expose & consume data through a self defined API
- Control DataMiner objects through a self defined API

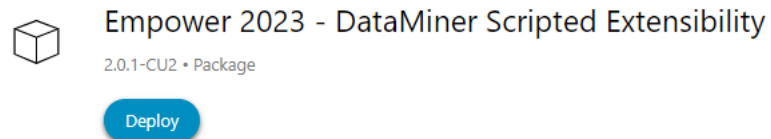
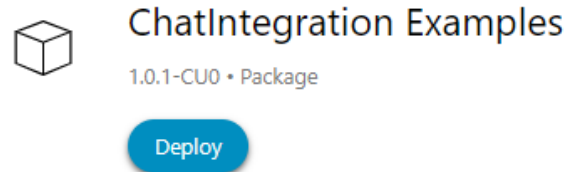


Let's get ready

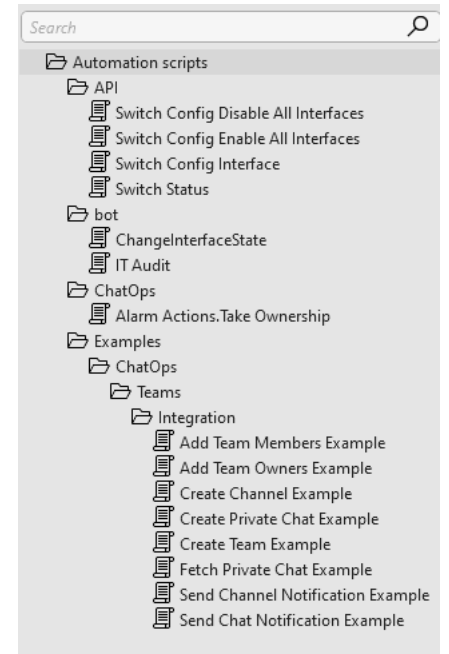
prepare your DataMiner

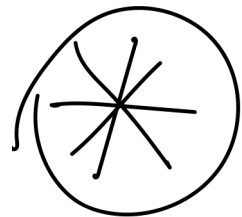
- Install package 'ChatIntegration Examples'
- Restart Cube session

- Install package "Empower 2023 – DataMiner Scripted Extensibility"



You should see at least these folders and scripts





ChatOps Extensions

exercise

DEMO



Microsoft Teams Integration

functionality



Notifications



ChatOps



Automation



Microsoft Teams Integration

the building blocks

- DataMiner
 - A cloud-services enabled DataMiner
 - Latest version of the Cloud package DxM
- MS Teams server
 - Make sure the DataMiner Bot is visible for install in the teams-client
 - Provide admin consent if you want DataMiner to allow sending notifications
- MS Teams client
 - Auto-installed when added into conversation
 - If not installed yet, install bot from store if you want to interact directly with your DataMiner



Notifications

how notifications get to you



DataMiner Cluster

Your Clusters are part
of a Cloud
Organization



DataMiner Cloud

Grant consent, to link
a DataMiner
Organization to your
Teams Tenant



Your Teams Environment

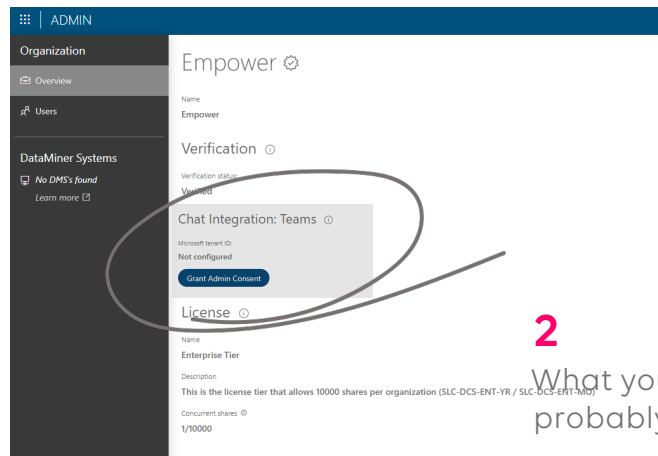


Notifications Connection

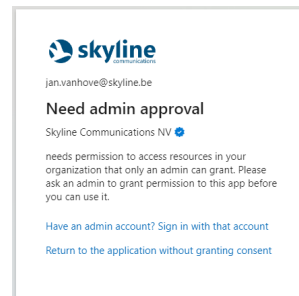
one time setup



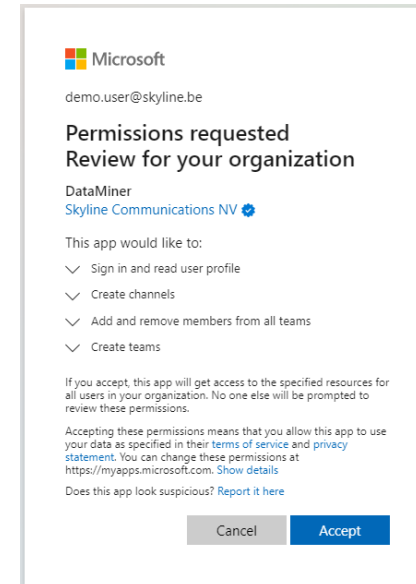
1
admin.dataminer.services



2
What you will probably see



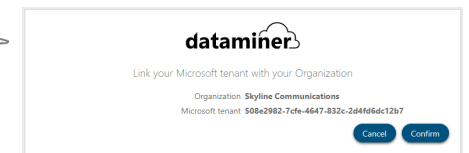
3
What your IT approves



5
Ready to Team

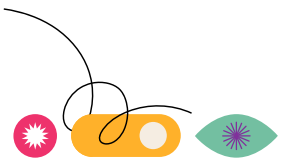
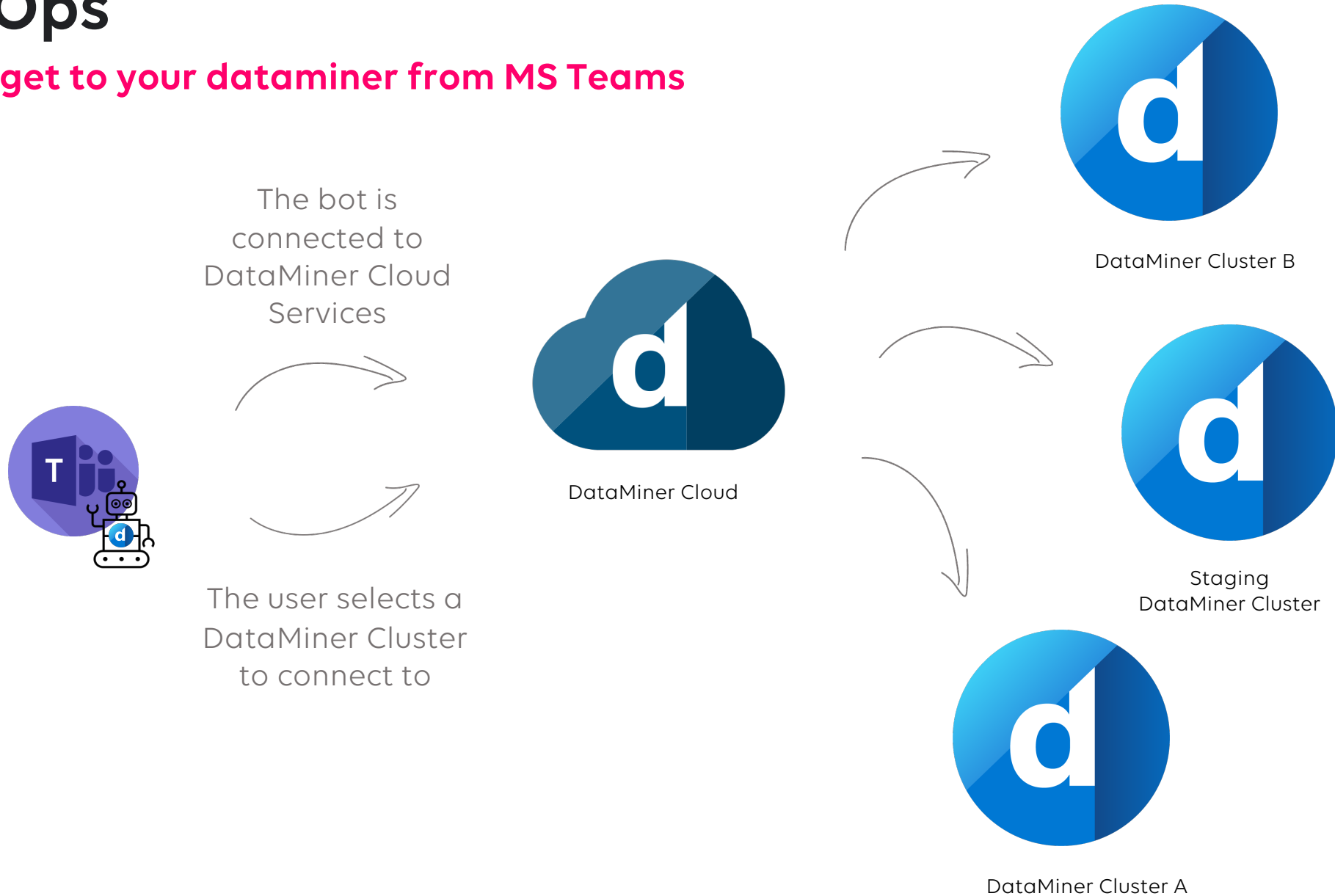


4
Confirm the linking



ChatOps

how you get to your dataminer from MS Teams

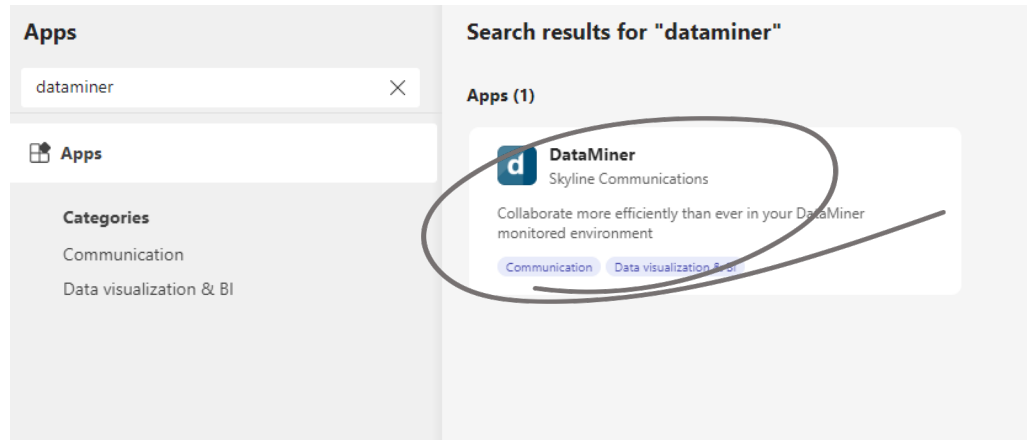


Chatbot Connection

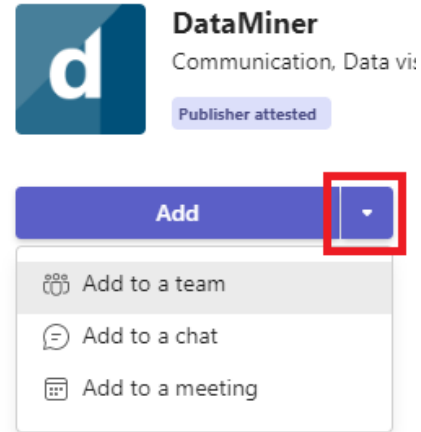
one time setup



1
In MS Teams search the DataMiner App



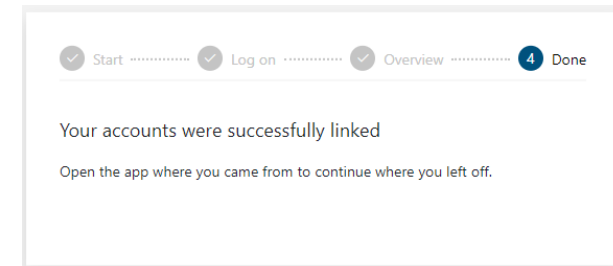
2
Add to your Teams



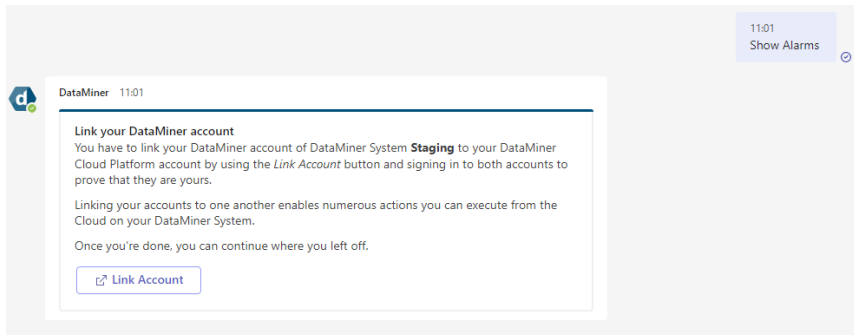
3
Ready to chat



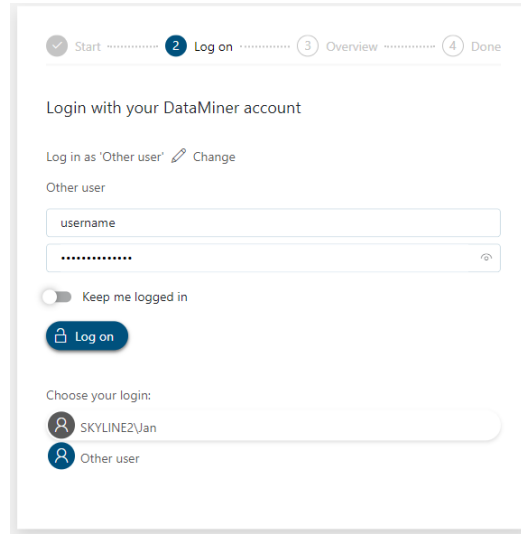
Make sure your accounts are linked on dataminer.services



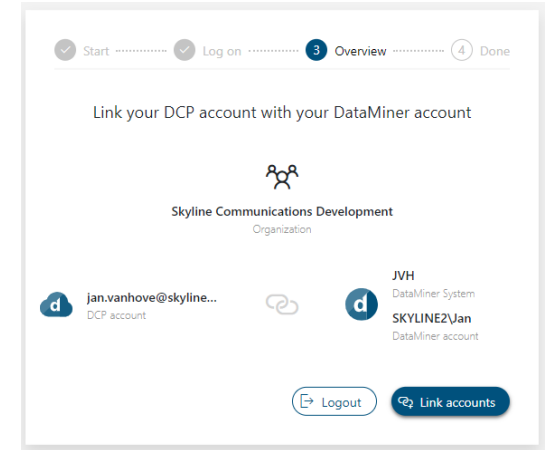
1 dataminer.services



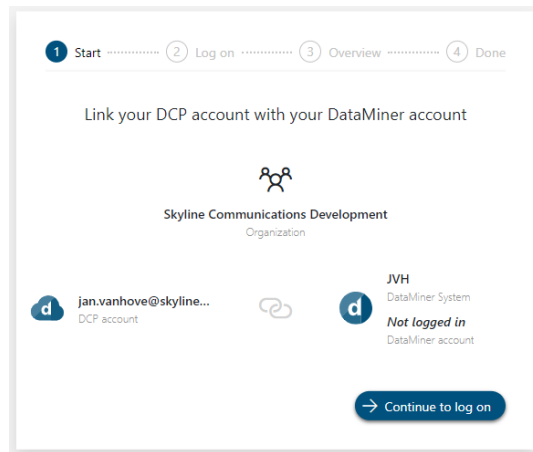
3 specify user to login on the DataMiner Cluster



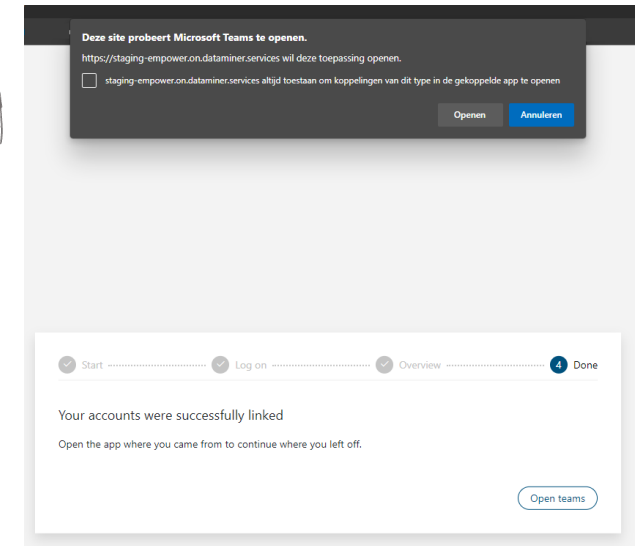
4 confirm summary



2 overview page



5 all set



Notifications

Shout-out to your trainer through DataMiner and MS Teams

- Prepared in scripts
 - Fetch the connection ID of the destination (STEP 1: Prepare setup)
 - Send the Message to the destination (STEP 2: Send)
- Send direct message to baptiste.pattyn@skyline.be



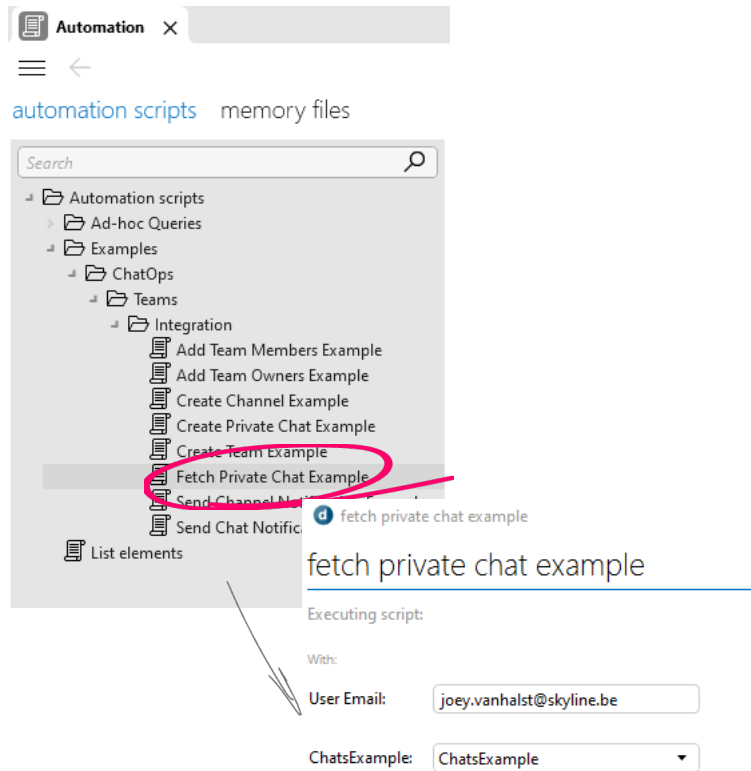
Notifications

Shout-out to your room-mates through DataMiner and MS Teams

1

Prepare setup 'Fetch Private Chat Example'

- Select destination
- Select ChatsExample (which is a memory file)

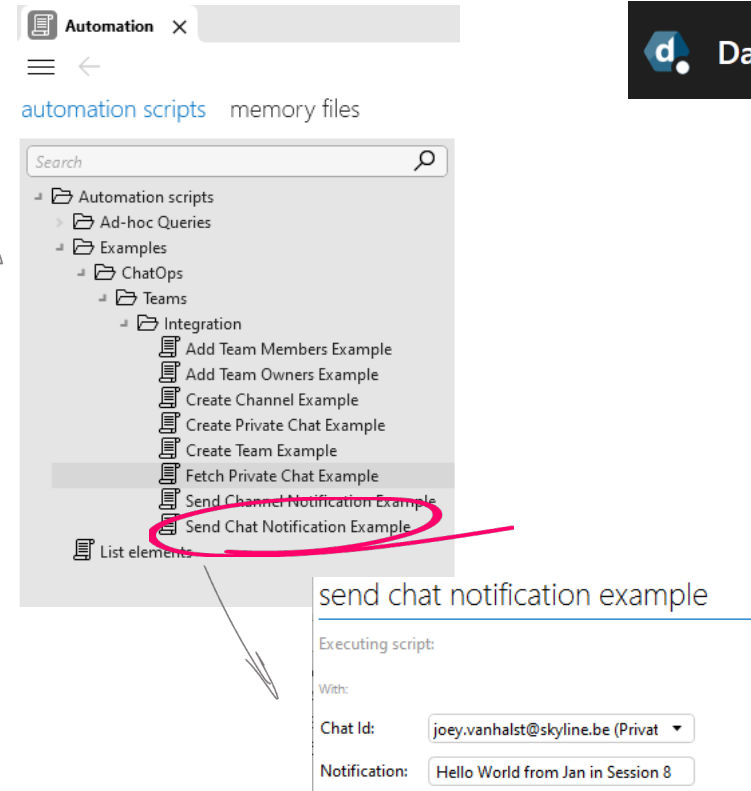


The screenshot shows the DataMiner interface with a file explorer on the left. The 'Fetch Private Chat Example' script is highlighted with a red circle. Below the explorer, the script name 'fetch private chat example' is displayed. The 'Executing script:' section shows the following configuration:

With: User Email: ChatsExample:

2

Execute 'Send Chat Notification Example'

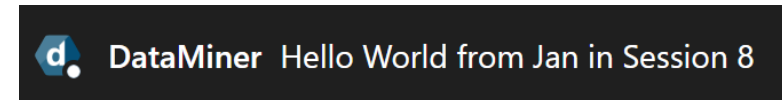


The screenshot shows the DataMiner interface with a file explorer on the left. The 'Send Chat Notification Example' script is highlighted with a red circle. Below the explorer, the script name 'send chat notification example' is displayed. The 'Executing script:' section shows the following configuration:

With: Chat Id: Notification:

3

Visible in MS Teams



Notifications

inform your team on an event in DataMiner

- Send a message to a pre-defined Teams-channel
- Actions
 - Change script "Alarm actions.Take Ownership"
 - uncomment `//SendChannelNotification(notification);`
 - Specify your name
 - Generate an alarm on "SLC HQ SW-L01" the interface by disconnecting a port
 - Run command "Hyperlinks > Take Ownership" on the alarm, which result in
 - Notify the team
 - Acknowledge the alarm



Team message in
specific channel



Notifications

inform your team on an event in DataMiner



1

Generate alarm on switch. (Info: There is conditional monitoring configured based on the 'Physical connection')

Index	Display Key (IDX)	Description	Speed	Flows	Physical Address	Admin Status	Oper. Status	Physical Connection	Last
1	Ethernet1/	Ethernet1	10 000 Mbps	100	D7:34:A6:09:8B:01	Down	Down	Yes	
2	Ethernet2/	Ethernet2	10 000 Mbps	100	D7:34:A6:09:8B:02	Up	Up	Yes	
3	Ethernet3/	Ethernet3	10 000 Mbps	100	D7:34:A6:09:8B:03	Up	Up	Yes	
4	Ethernet4/	Ethernet4	10 000 Mbps	100	D7:34:A6:09:8B:04	Up	Up	Yes	
5	Ethernet5/	Ethernet5	10 000 Mbps	100	D7:34:A6:09:8B:05	Down	Down	No	
6	Ethernet6/	Ethernet6	10 000 Mbps	100	D7:34:A6:09:8B:06	Down	Down	No	
7	Ethernet7/	Ethernet7	10 000 Mbps	100	D7:34:A6:09:8B:07	Down	Down	No	
8	Ethernet8/	Ethernet8	10 000 Mbps	100	D7:34:A6:09:8B:08	Down	Down	No	

2

- Un-comment the SendChannelNotification call, and hit save.
- Specify your name (You should do this through your CI/CD pipeline and DIS ;-)

Automation scripts

- Switch Config Disable All Interfaces
- Switch Config Enable All Interfaces
- Switch Config Interface
- Switch Status
- bot
- ChangeInterfaceState
- IT Audit
- Scripts
- (modified) Alarm Actions.Take Ownership**
- Examples
- ChatOps
- Teams
- Integration
- Add Team Members Example
- Add Team Owners Example
- Create Channel Example
- Create Private Chat Example
- Create Team Example
- Fetch Private Chat Example
- Send Channel Notification Example
- Send Chat Notification Example

Name: Alarm Actions.Take Ownership

Description:

DUMMIES

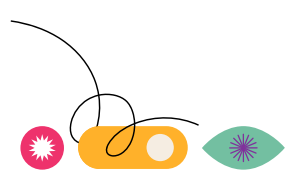
PARAMETERS

- Parameter: Alarm ID Values file: <Click to select>
- Parameter: Agent ID Values file: <Click to select>

MEMORY FILES

ACTIONS

```
CF code
70 // <summary>
71 // The Script entry point.
72 // </summary>
73 // <param name="alarm">Link with SIAutomation process.</param>
74 public void Run(Engine engine)
75 {
76     this.engine = engine;
77
78     try
79     {
80         RunSafe();
81     }
82     catch (Exception ex)
83     {
84         engine.Log(ex.ToString());
85         engine.ExitFail(ex.Message);
86     }
87 }
88
89 private void RunSafe()
90 {
91     var agentId = Convert.ToInt32(engine.GetScriptParam("Agent ID").Value);
92     var alarmId = Convert.ToInt32(engine.GetScriptParam("Alarm ID").Value);
93
94     var alarmDetails = GetAlarmDetails(agentId, alarmId);
95     engine.AcknowledgeAlarm(agentId, alarmId, "Taking ownership");
96
97     notification = $"Alarm on element '{alarmDetails.ElementName}' with description '{alarmDetails.ParameterName}' has been Acknowledged by {engine.UserDisplayName}";
98     // SendChannelNotification(notification);
99
100 private void SendChannelNotification(string notification)
101 {
102 }
```



Notifications

inform your team on an event in DataMiner



3

Trigger the script by executing hyperlink on the generated alarm

The screenshot shows the DataMiner interface with a table of alarms. A context menu is open over the table, and the 'Hyperlinks' option is selected, showing a sub-menu with 'Take Ownership' highlighted. A red circle highlights the 'Hyperlinks' and 'Take Ownership' options.

ELEMENT NAME	PARAMETER DESCRIPTION	VALUE	TIME	ROOT TIME
SLC HQ SW-L01	Oper. Status (Interfaces) Ethernet2/	Down	Today 09:55:22	Today 09:55:22



4

Visible in Teams

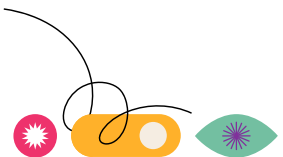
The screenshot shows a Microsoft Teams chat message from DataMiner. The message text is: "Alarm on element 'SLC HQ SW-L01' with description 'Oper. Status (Interfaces) Ethernet1/' has been Acknowledged by Jan Vanhove". There is a "Reply" button below the message.



Notifications

find your business flow

- These were some examples
- Can be triggered from many places
- Find a use-case in your organization
 - Teams channel for NOC users
 - Emergency channel
 - Company-wide channel on which you want to regularly post some information
 - ...
- Can be an activity in a process



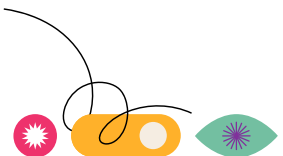
Bot and its built-in commands

chat chat chat ...

- Built-in commands
- If you have a DataMiner Bot, feel free to join along
- Demo on commands
 - Help
 - Change DMS
 - Show view/element/service/...



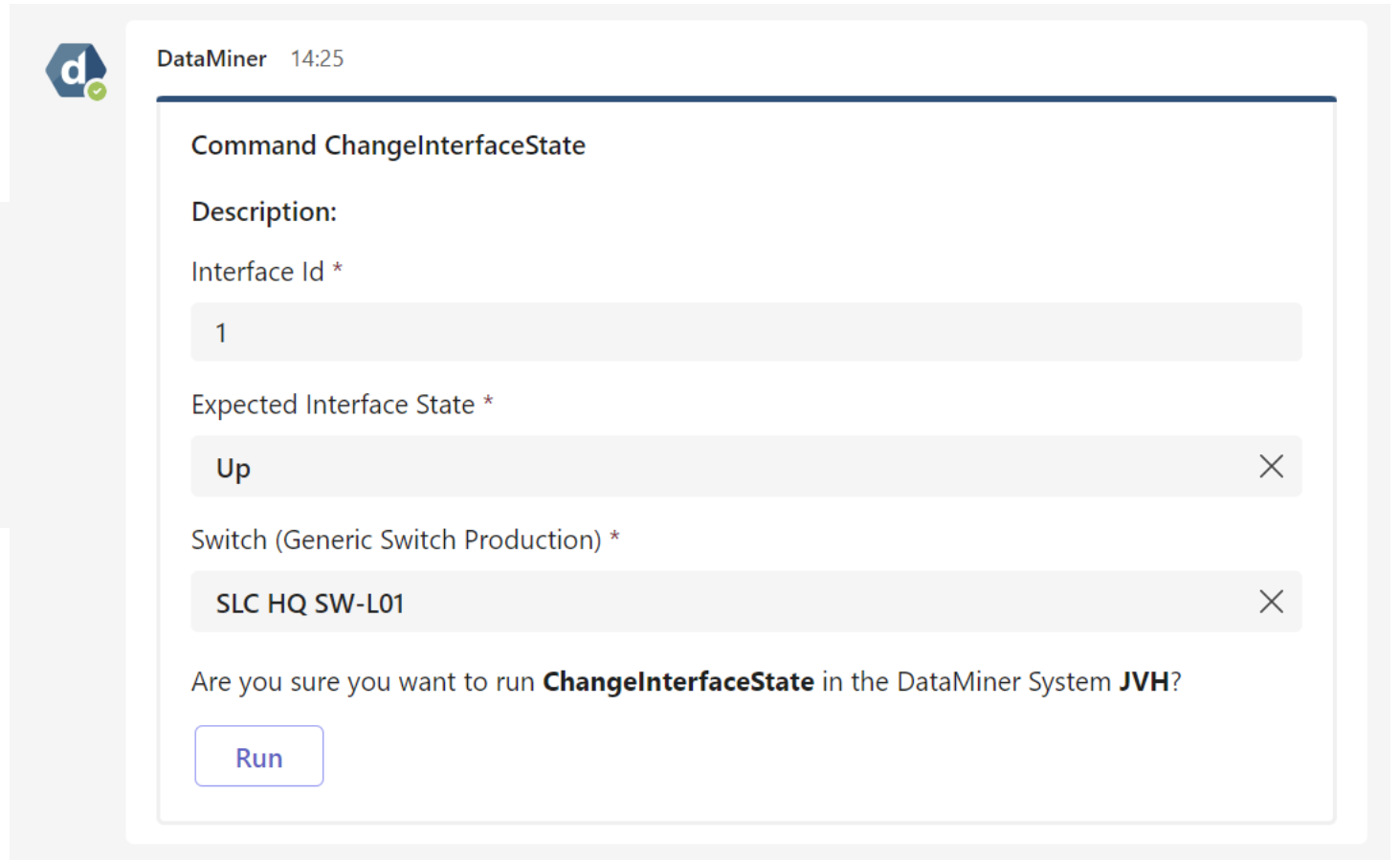
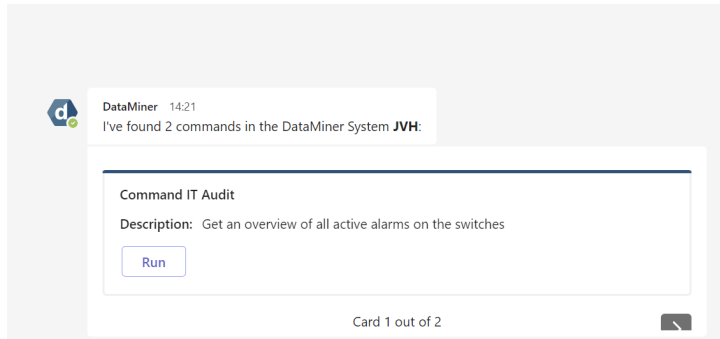
Use MS Teams to
interact with any
DataMiner System



Bot and custom commands

DEMO

- Specific scripts in 'bot' folder
- Trainer executes custom command



SLC HQ SW-L01 System dataminer.services Switches SLC HQ SW-L01

Search Interfaces

Index	Display Key [IDX]	Description	Extended Description	Type	MTU	Speed	Flows	Physical Address	Admin Status	Oper. Status	Physica
1	Ethernet1/	Ethernet1	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:01	Down	Down	Yes
2	Ethernet2/	Ethernet2	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:02	Up	Up	Yes
3	Ethernet3/	Ethernet3	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:03	Up	Up	Yes
4	Ethernet4/	Ethernet4	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:04	Up	Up	Yes
5	Ethernet5/	Ethernet5	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:05	Down	Down	No
6	Ethernet6/	Ethernet6	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:06	Down	Down	No
7	Ethernet7/	Ethernet7	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:07	Down	Down	No
8	Ethernet8/	Ethernet8	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:08	Down	Down	No
9	Ethernet9/	Ethernet9	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:09	Down	Down	No
10	Ethernet10/	Ethernet10	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:0A	Down	Down	No
11	Ethernet11/	Ethernet11	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:0B	Down	Down	No
12	Ethernet12/	Ethernet12	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:0C	Down	Down	No
13	Ethernet13/	Ethernet13	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:0D	Down	Down	No
14	Ethernet14/	Ethernet14	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:0E	Down	Down	No
15	Ethernet15/	Ethernet15	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:0F	Down	Down	No
16	Ethernet16/	Ethernet16	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:10	Down	Down	No
17	Ethernet17/	Ethernet17	Not initialized	Ethernet CSMACD	1 500 B	10 000 Mbps	100	D7:34:A6:09:8B:11	Down	Down	No

18 No RCA filter Filter

Your response was sent to the app

Command ChangeInterfaceState

Description:

Interface Id *

1

Expected Interface State *

Up

Switch (Generic Switch Production) *

SLC HQ SW-L01

Are you sure you want to run **ChangeInterfaceState** in the DataMiner System **JVH**?

Run

Card 2 out of 2

Last read

on the DataMiner System JVH...



More options


you can do even more

- Adaptive cards [Overview of Adaptive Cards for Teams - Power Automate | Microsoft Learn](#)

Flow 3:33 PM

Flow 11:33 AM

Model Repair Order

 **Megan Bowen**
Created 2019 Jun 15

Fence broken

Home Site: Homesite 115
Category: PunchList

Name: Fourth Coffee (san
Do not allow email: False
Do not allow calls: False
Address: 2223 N. West Sho

Edited

Command IT Audit

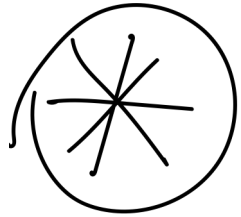
State: Succeeded

Output:

Element Name: SLC HQ SW-L01
Description: Oper. Status (Interfaces) Ethernet1/
Value: 2.000000
Root Time: 23/03/2023 14:29:50

[Run again](#)

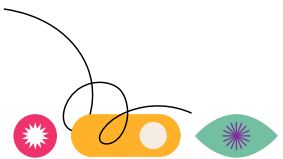




User Defined APIs

exercise

DEMO



User Defined APIs



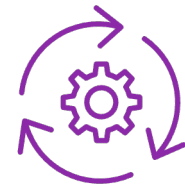
create tailored
User-defined API
easily & quickly



deploy
on the fly in line
with your
workflows



create secure
platform to
platform
connections



evolve easily &
continuously



User Defined APIs

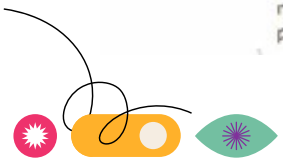
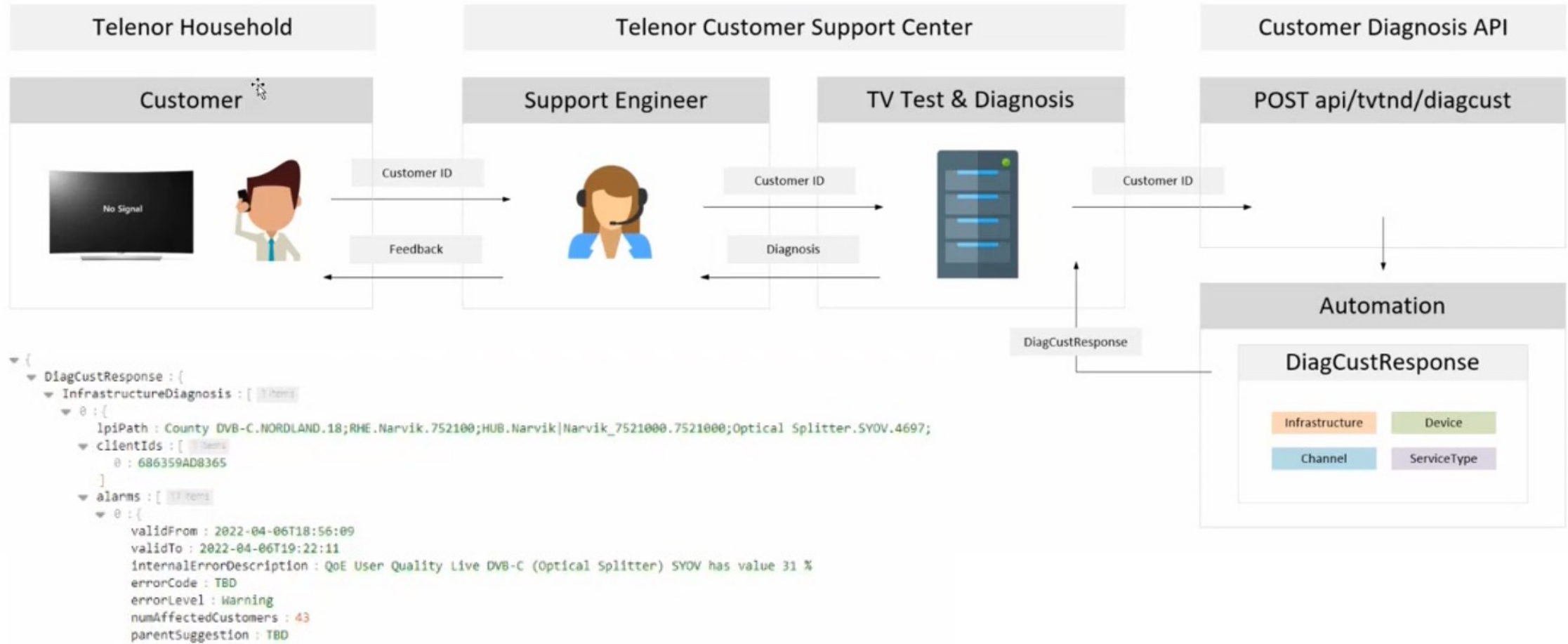
Telenor Use Case – TV Diagnostics API

- DataMiner EPM Solution deployed at Telenor monitors the delivery of its TV channels via DVB-C, IPTV, OTT and FWA 24/7
- A user defined API - which is consumed by an in-house developed customer support tool – provides detailed diagnostics data to Telenor's Customer Support Team
 - From Infrastructure, Device and Channel point of view
 - Live or Historical
- A Telenor Support Engineer only has to enter the customer id into the tool, and will receive all relevant data within a few seconds
- A DataMiner Dashboard is keeping track of the API request rate and performance



User Defined APIs

Telenor Use Case – TV Diagnostics API



User Defined APIs

Expose & consume data through a self defined API

- Create an api from existing script
- Publish API
 - Define URL
 - `https://<host>/api/custom/<route>`
 - Create tokens
- Use postman to test the API



1

Select the available script 'Switch Status'

automation scripts memory files

The screenshot shows the Skyline Data Miner interface. On the left, a file explorer shows a tree view of automation scripts. The 'Switch Status' script is selected and circled in red. On the right, the configuration pane shows the script's name and description. Below this, there are sections for 'DUMMIES', 'PARAMETERS', 'MEMORY FILES', and 'ACTIONS'. The 'ACTIONS' section contains a C# code editor with the following code:

```

1 using System;
2 using System.Collections.Generic;
3 using System.Linq;
4
5 using Newtonsoft.Json;
6
7 using Skyline.DataMiner.Automation;
8 using Skyline.DataMiner.Core.DataMinerSystem.Automation;
9 using Skyline.DataMiner.Core.DataMinerSystem.Common;
10 using Skyline.DataMiner.Net;
11 using Skyline.DataMiner.Net.Apps.UserDefinableApis;
12 using Skyline.DataMiner.Net.Apps.UserDefinableApis.Actions;
13
14 /// <summary>
15 /// DataMiner Script Class.
16 /// </summary>
17 public class Script
18 {
19     private IEngine engine;
20
21     // [AutomationEntryPoint(AutomationEntryPointType.Types.OnApiTrigger)]
22     public ApiTriggerOutput OnApiTrigger(IEngine engine, ApiTriggerInput requestData)
23     {
24         this.engine = engine;
25
26         try
27         {
28             var output = RunSafe(requestData);
29
30             return output;
31         }
32         catch (Exception ex)
33         {

```

The code editor has a 'Validate' button at the bottom right. At the bottom of the interface, there are buttons for 'New folder', 'Add script', 'Delete', and 'More...'. The 'Configure API...' button is circled in red.

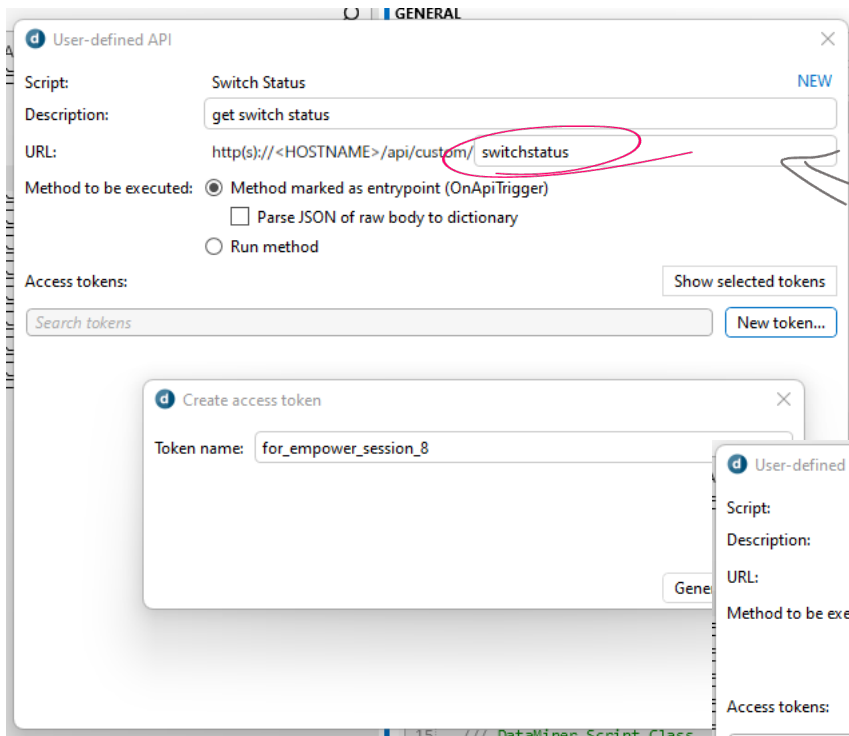
2

Uncomment the entry point and hit save.

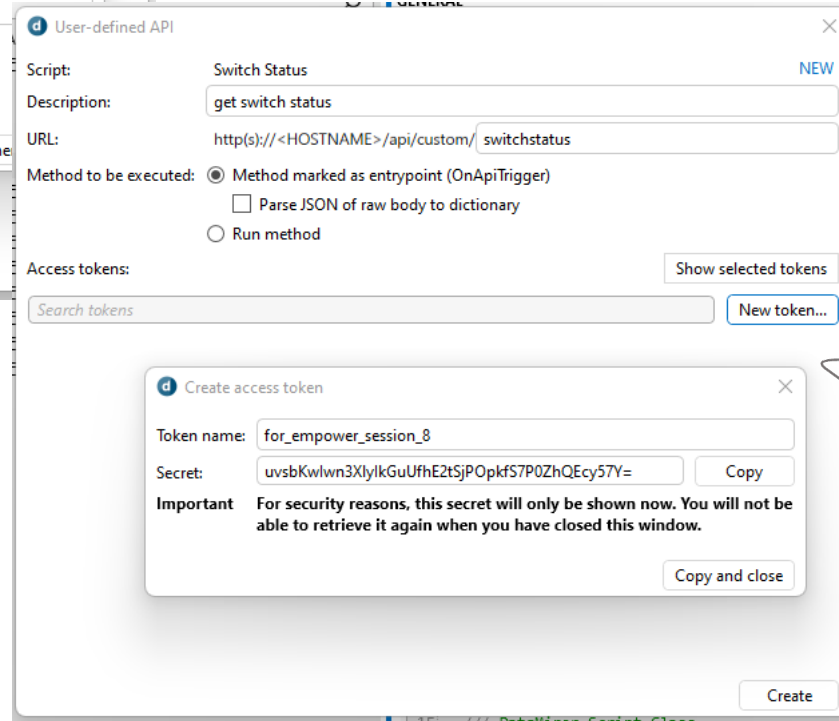
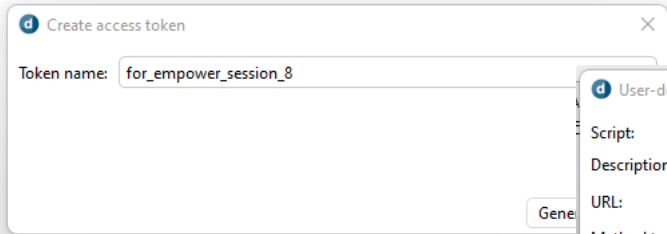
3

Configure the API

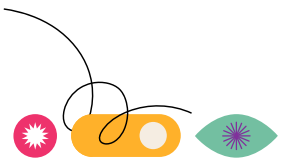


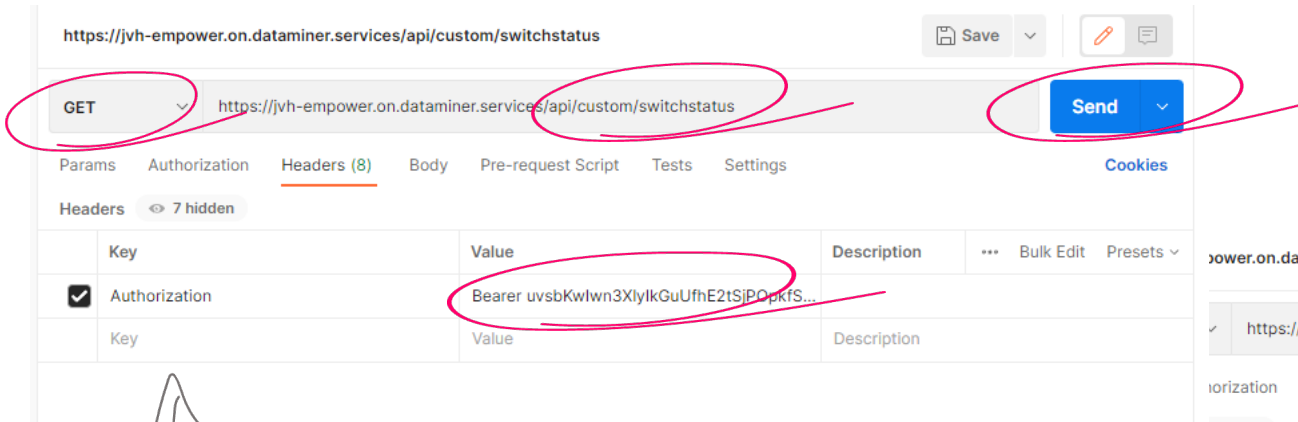
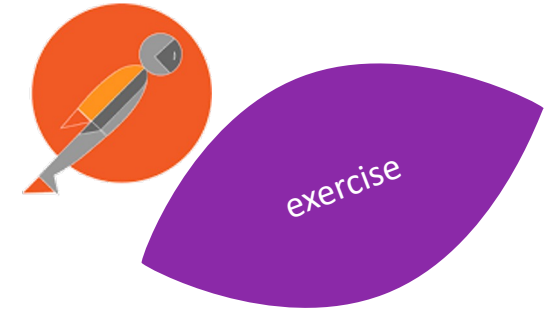


1
Define the url



2
Create a token

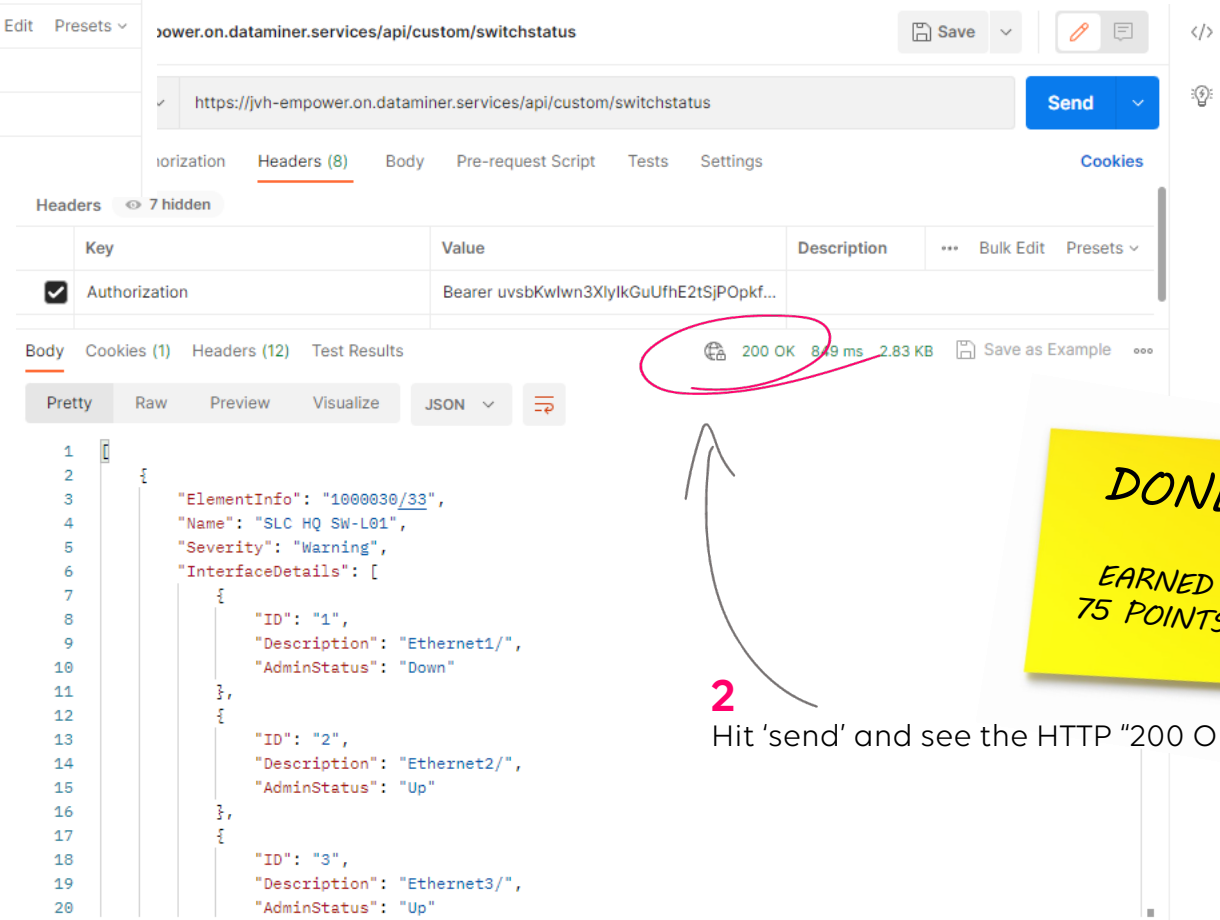




1

Configure request in postman

- GET
- URL prefixed with your domain on dataminer.services
- Authorization header: Bearer + <created token>



2

Hit 'send' and see the HTTP "200 OK"



User Defined APIs

debug an error

https://jvh-empower.on.dataminer.services/api/custom/switchstatus

GET https://jvh-empower.on.dataminer.services/api/custom/switchstatus

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies

Headers 7 hidden

Key	Value	Description	Bulk Edit	Presets
Authorization	Bearer uvsbKwlwn3XlyIkGuUfhE2iSjPOpkf...			

Body Cookies (1) Headers (12) Test Results 500 Internal Server Error 301 ms 794 B

Pretty Raw Preview Visualize JSON

```
1
2
3
4
5
6
7
8
9
10
{
  "errors": [
    {
      "title": "Error occurred while handling the request, contact your admin with the p
      errorCode and faultingNode ID.",
      "detail": "Something went wrong, contact the system administrator.",
      "errorCode": 12,
      "faultingNode": 1000030
    }
  ]
}
```

1

If things go wrong:

- Check the HTTP error
- Check the Error code in the JSON

2

Look up the 2 error-codes in docs.dataminer.services

If you get this error during the exercise, you probably forgot to modify and save your script.

Advanced DataMiner modules / User-Defined APIs (preview) / Triggering an API

errorCode

The errorCode field of an error contains an error code that can be used by the API maintainer to find out what went wrong:

ErrorCode	Integer value	HTTP Status Code	Explanation
EmptyRoute	1	400	The passed request route is empty.
InvalidRequestMethod	3	405	The HTTP method is not valid. For the valid methods, see HTTP methods.
DefinitionNotFound	5	404	A definition with the passed route could not be found.
ManagerNotInitialized	7	503	The UserDefinableApiManager in DataMiner has not been initialized yet. To see what went wrong, check the log file C:\SkylineDataMiner\Logging\SLUserDefinableApiManager.txt.
UnexpectedException	8	500	An unexpected exception occurred. To see what went wrong, check the log file C:\SkylineDataMiner\Logging\SLUserDefinableApiManager.txt.
InvalidActionMeta	9	500	The ActionMeta object does not match the specified ActionType in the API definition.
BodyToParametersConversionFailed	10	400	Something went wrong while trying to convert the body to a collection of key value parameters. See User input data.
InvalidActionType	11	500	The ActionType, that is specified in the API definition is not valid.
AutomationActionError	12	500	An error occurred while trying to execute an Automation script action.
InvalidAutomationActionResult	13	500	The result returned by the Automation script was null or invalid.
FailedToGetScriptInfo	15	500	Could not get the script info required to execute the script.
MissingScriptParameters	16	400	There are missing script parameters in the request body. The "error" JSON object will contain the missing script parameters as a missingScriptParameters array.

User Defined APIs

Control your DataMiner through an API



```
34         ResponseCode = (int)StatusCode.InternalServerError,  
35         ResponseBody = ex.Message,  
36     };  
37 }  
38 }  
39  
40 private ApiTriggerOutput RunSafe(ApiTriggerInput requestData)  
41 {  
42     if (requestData.RequestMethod != RequestMethod.Post)  
43     {  
44         return new ApiTriggerOutput  
45         {  
46             ResponseCode = (int)StatusCode.MethodNotAllowed,  
47             ResponseBody = "Only POST methods are supported.",  
48         };  
49     }  
50 }
```

1 Option to filter on HTTP-VERB

2 You can reuse tokens, so you can provide the consumer a nice set of API-calls

Script: Switch Config Disable All Interfaces NEW

Description:

URL: http(s)://<HOSTNAME>/api/custom/disableall

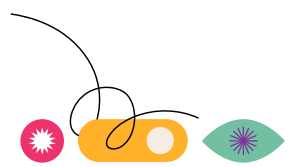
Method to be executed: Method marked as endpoint (OnApiTrigger)
 Parse JSON of raw body to dictionary
 Run method

Access tokens: Show selected tokens

New token...

- for_empower_session_8

Create



User Defined APIs

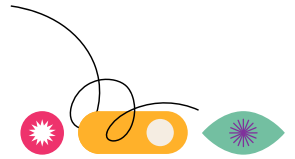
Control your DataMiner through an API




The image shows a network interface with a table of flows and a Postman interface. The table has columns: Flows, Physical Address, Admin Status, Oper. Status, Physical Connection, Last Change, and Rx Flows. The 'Oper. Status' column is circled in red, and all entries are 'Down'. The Postman interface shows a POST request to 'https://jvh-empower.on.dataminer.services/api/custom/disableall'. The 'Authorization' header is set to 'Bearer uvsbKwln3XlyIkGuUfhE2tSjPpof...'. The response is '200 OK 1900 ms 541 B' and the body contains '1 Configuration executed.'.

Flows	Physical Address	Admin Status	Oper. Status	Physical Connection	Last Change	Rx Flows
10 Gbps	100 B7:00:32:B9:27:01	Down	Down	Yes	24/03/2023 12:18:09	
10 Gbps	100 B7:00:32:B9:27:02	Down	Down	Yes	24/03/2023 12:18:09	
10 Gbps	100 B7:00:32:B9:27:03	Down	Down	Yes	24/03/2023 12:18:09	
10 Gbps	100 B7:00:32:B9:27:04	Down	Down	Yes	24/03/2023 12:18:09	
10 Gbps	100 B7:00:32:B9:27:05	Down	Down	No	24/03/2023 08:20:04	
10 Gbps	100 B7:00:32:B9:27:06	Down	Down	No	24/03/2023 08:20:04	
10 Gbps	100 B7:00:32:B9:27:07	Down	Down	No	24/03/2023 08:20:04	

2
All ports down

1
Configure postman to do
- POST
- On the created URL
- Authorization token
- Should result in an HTTP OK




Reimagine
how things  can be done
 with your 
dashboards & low-code apps

Agenda





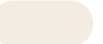
(09h00 – 10h30)

Dashboards: real-time operational insights for everyone

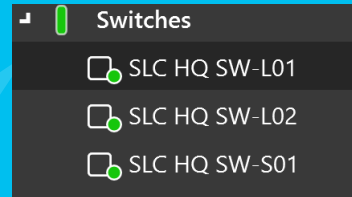
- Concept
- Components and Data Sources
- Build your own server dashboard
- Leverage feeds to make our dashboards dynamic and reusable
- Share a live dashboard 

Low-code Apps: take it to the next level

- Concept and difference with dashboards
- Build your first app 
- Expand an app with a collapsible side-panel 

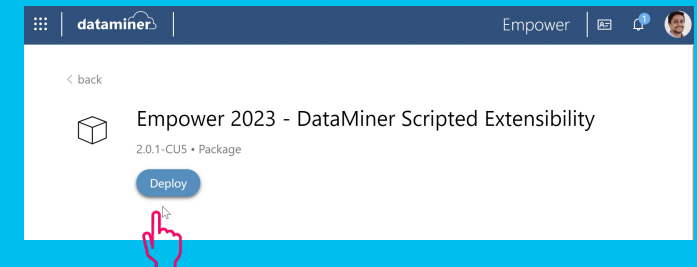
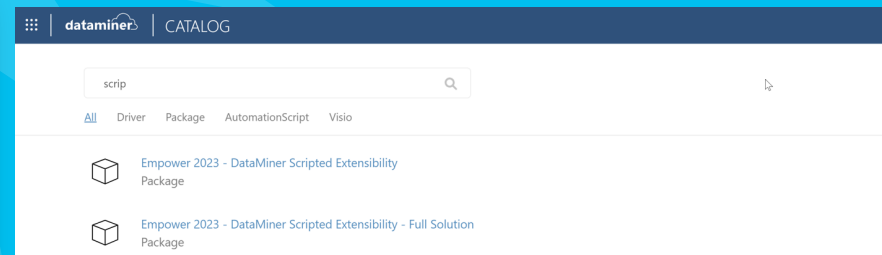
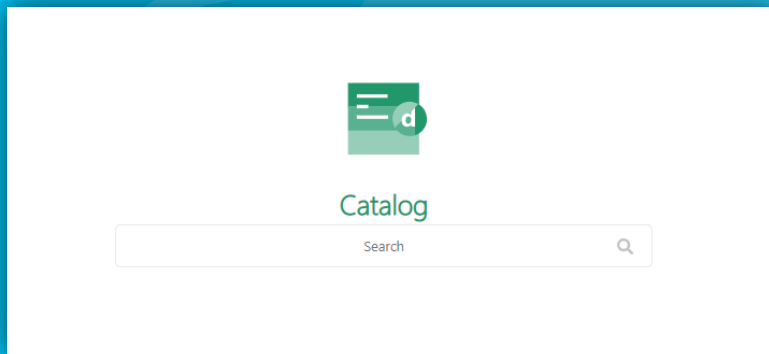


Make sure you have the Generic Switches elements available



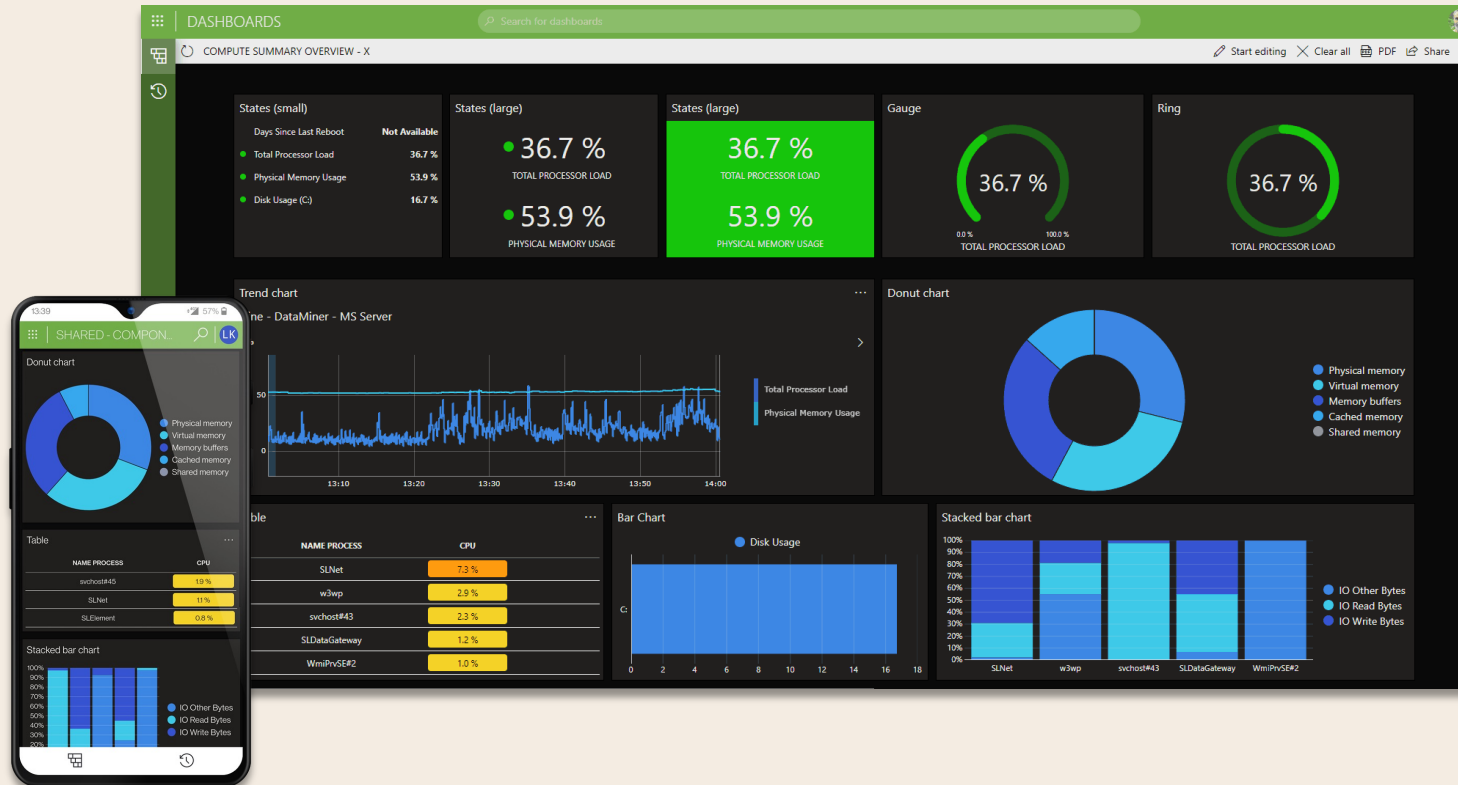
If not:

- Go to '**catalog.dataminer.services**'
- Search for '**Empower 2023 - DataMiner Scripted Extensibility**' & deploy



DataMiner Dashboards

Real-time operational insights for everyone



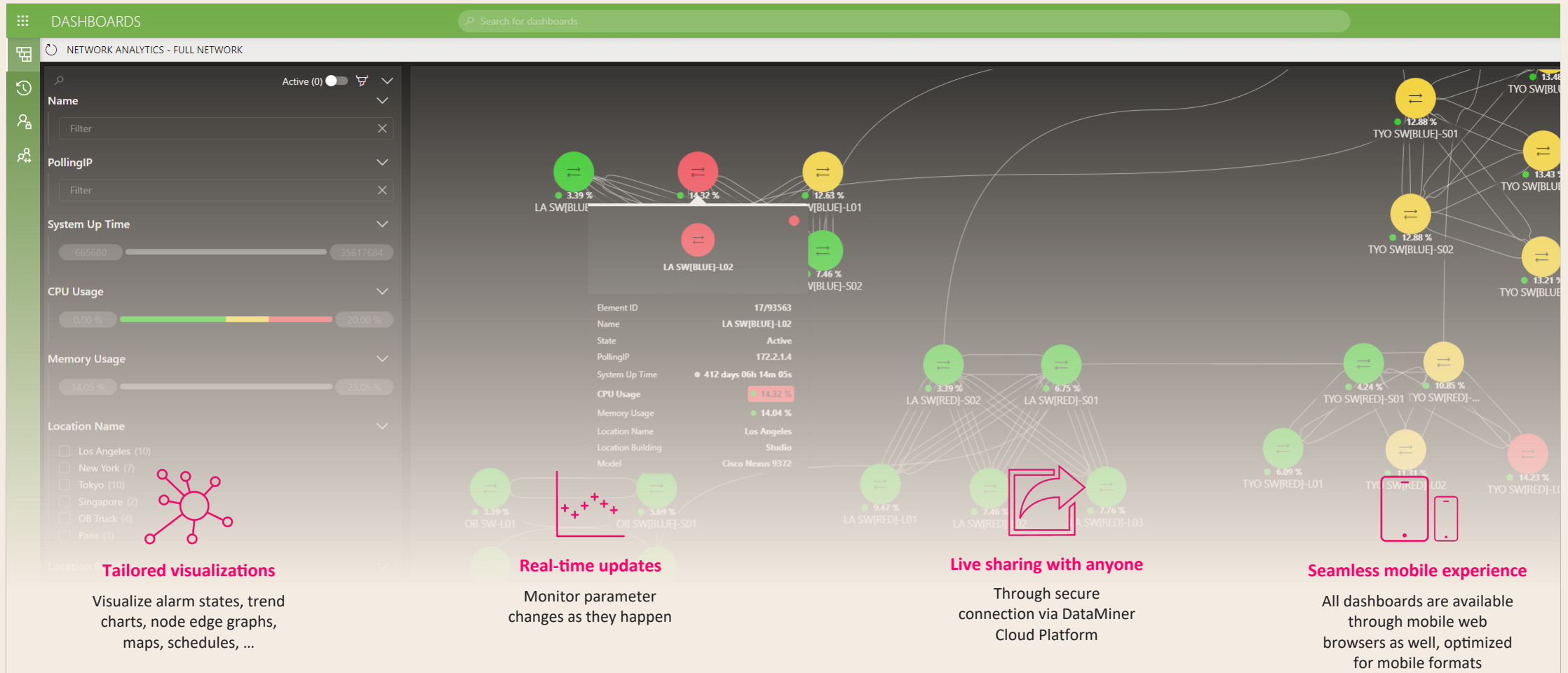
- Visualize any data
- Drag-and-drop dashboard design
- Library of visualizations
- Query and analyze with GQL
- Customizable themes
- Full DataMiner security enforced
- Additional access control
- Generate reports

...

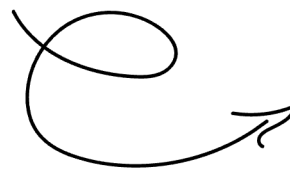
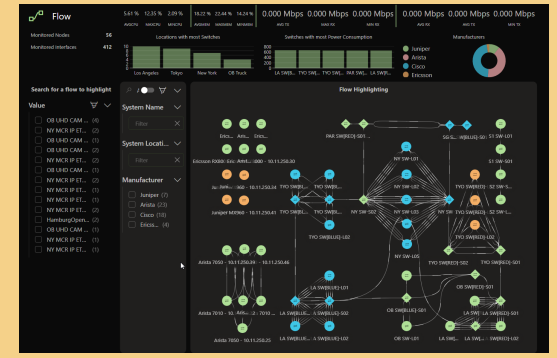
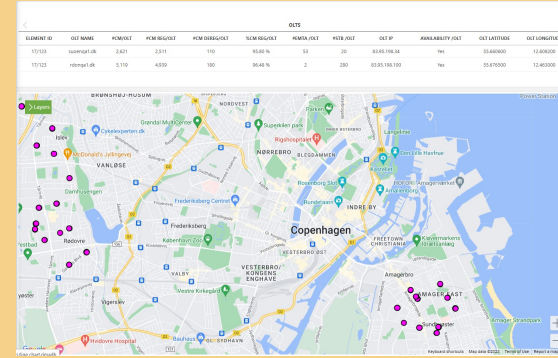
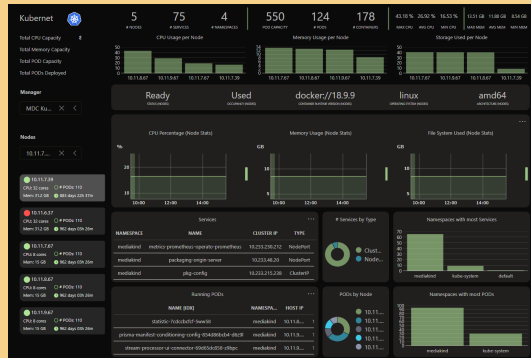


DataMiner Dashboards

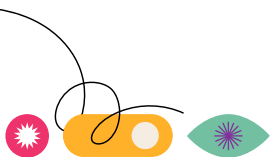
Real-time operational insights for everyone



Dashboards



<https://ziine.skyline.be/dashboard/>



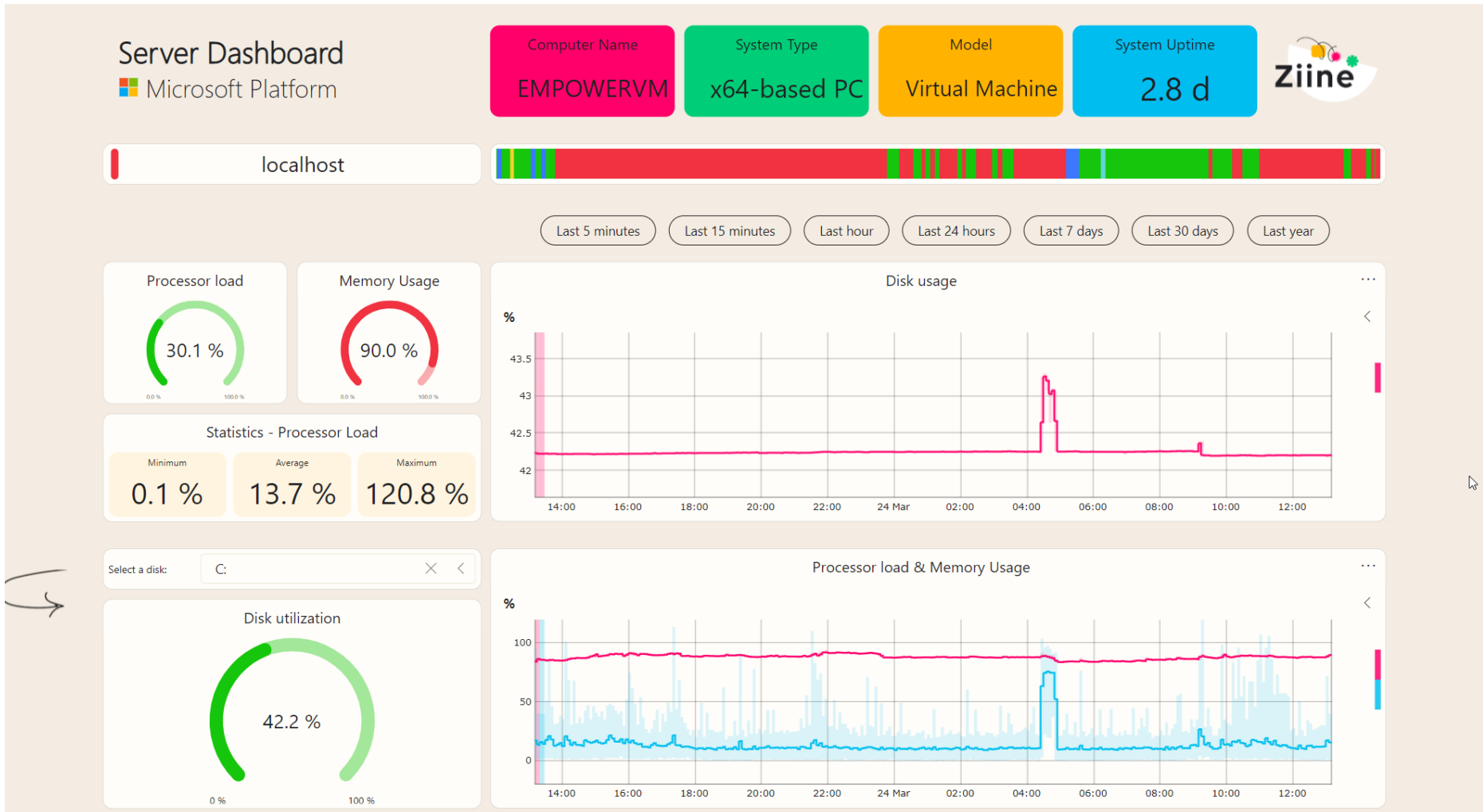
Build Your Own Dashboard

Go to your own
DataMiner agent



Dashboard end goal

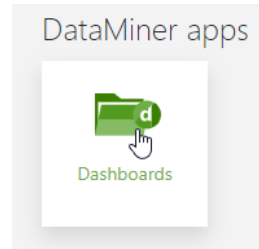
see sample dashboard "Server Dashboard" on your own DMA



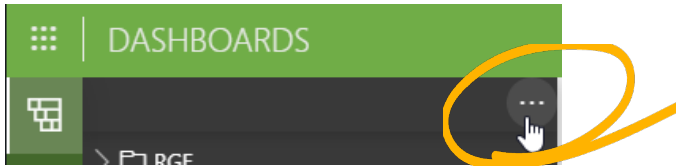
Build Your Own Dashboard

Create new dashboard

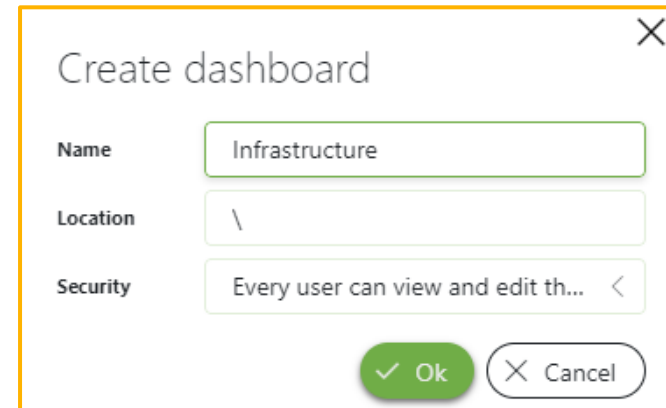
1. Click on **Dashboards**



2. To create a new dashboard click on the three dots in left column



3. Give the dashboard a name like **"Infrastructure"**
4. Select security level **"every user can view and edit"**

A screenshot of the 'Create dashboard' dialog box. The dialog has a title bar with a close button (X). It contains three input fields: 'Name' with the value 'Infrastructure', 'Location' with the value '\', and 'Security' with the value 'Every user can view and edit th...'. At the bottom right, there are two buttons: a green 'Ok' button and a grey 'Cancel' button.

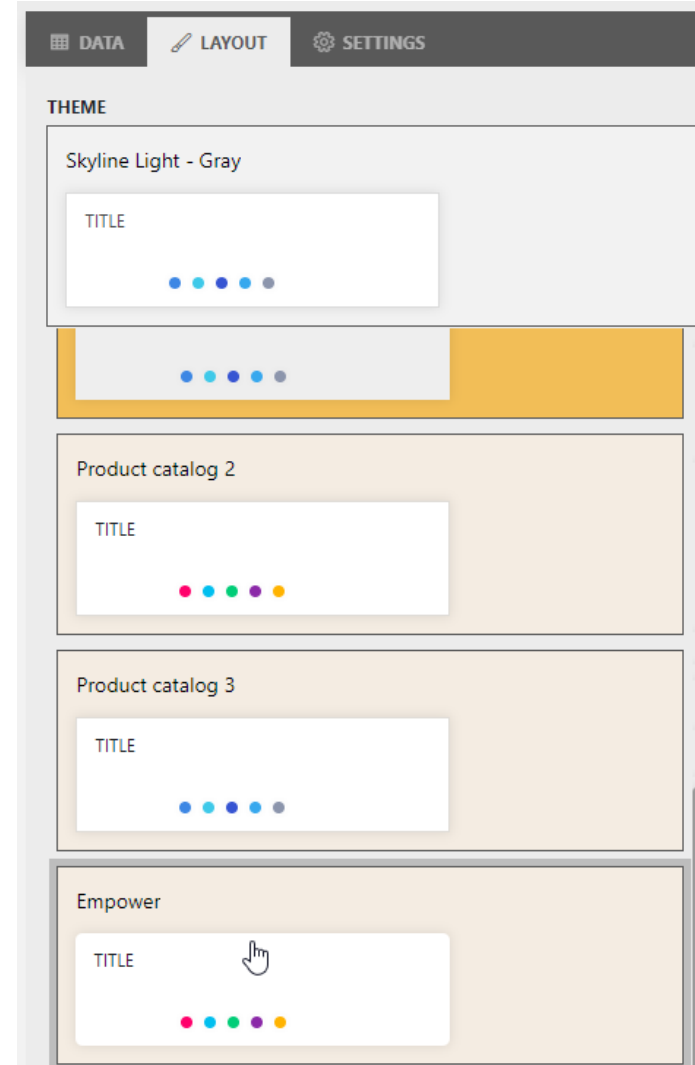
Field	Value
Name	Infrastructure
Location	\
Security	Every user can view and edit th...



Build Your Own Dashboard

Dashboard Themes

- First choose a style using **Dashboard Themes**
 - Click on **layout** in the right pane
 - Select the '**Empower**' theme

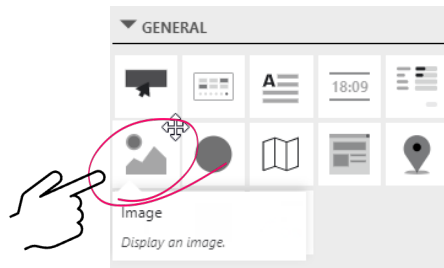


Build Your Own Dashboard

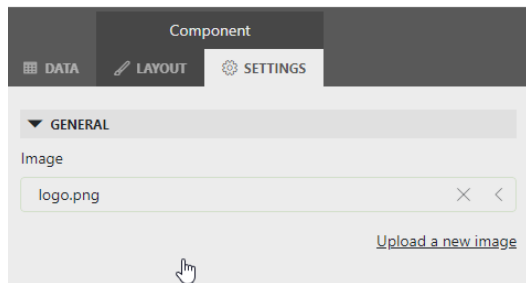
Adding an image



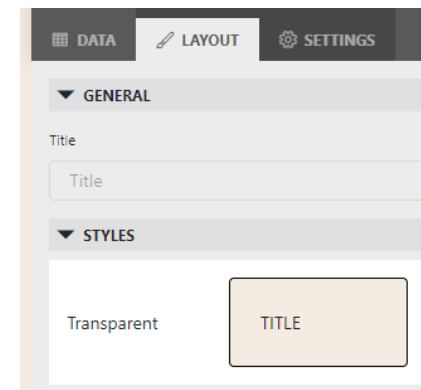
- Drag and drop the **Image** visualization from the left pane on to the dashboard



- On the right pane, go to settings and select the **logo.png** image



- Set the style of the component to Transparent



Build Your Own Dashboard

Adding a Title



Server Dashboards
Microsoft Platform

Using a Text component

- Drag and drop text component
- On settings enter Text = "Server Dashboard <ENTER> Microsoft platform"
- On layout
 - Font size = 27
 - Style > select 'Yellow' from theme



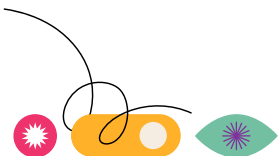
Server Dashboard
 Microsoft Platform

Using an HTML component

- Drag and drop an HTML component
- On Settings :
 - Type = Custom HTML
 - HTML =

```
<H1
style="color:#000000; font-family: 'Segoe UI Light', sans-serif;margin:0;font-weight:200; padding-left:10px;">
<b>Server Dashboard</b>
<div style="font-size: 20pt">&nbsp;Microsoft Platform
</div>
</H1>
```

- On Layout: Style > select 'Yellow' from theme



Build Your Own Dashboard

Visuals, Data and Components

Visualization

Component

Data source

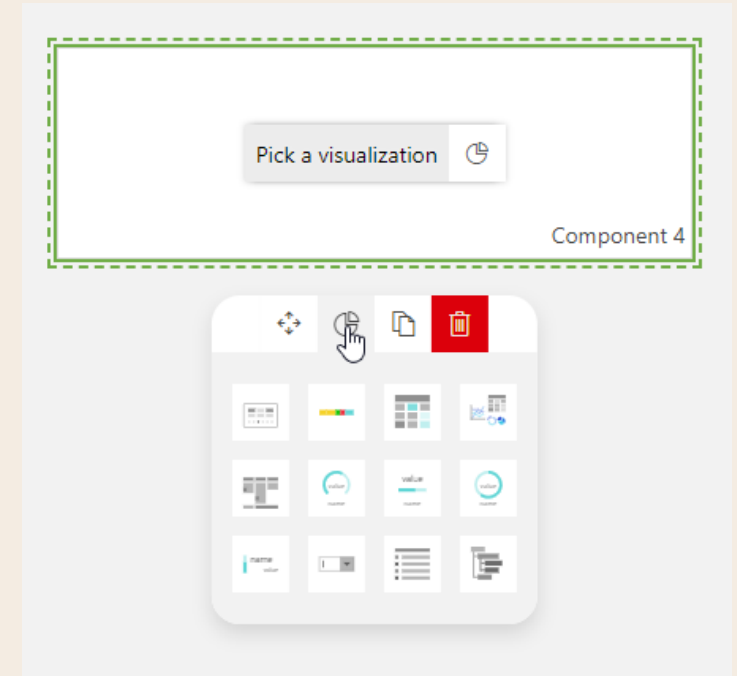
The screenshot displays a dashboard builder interface for 'INFRASTRUCTURE TEST'. The left sidebar, outlined in pink, contains categories: GENERAL, STATES & VALUES, TABLES, CHARTS, and OTHER. The central workspace features a donut chart titled 'Physical Memory Usage' showing 94.2% usage, with 0.0% and 100.0% markers. The chart is labeled 'Component' and is enclosed in a green dashed box. The right sidebar, outlined in purple, shows configuration options for 'Physical Memory Usage (Ziine Prestige Pro)', including 'ALL AVAILABLE DATA', 'INDICES', 'OBJECT MANAGER DEFINITIONS', 'OBJECT MANAGER INSTANCES', and 'PARAMETERS (12)'. The 'PARAMETERS' section includes fields for 'From' (Element) and 'Element' (Ziine Prestige Pro), along with checkboxes for 'Button', 'Column', 'Monitored', 'Range', 'Read', 'Single', 'Table', and 'Trended'. The right sidebar is labeled 'Data source'.



Visualizations



Find the right visualization for your data

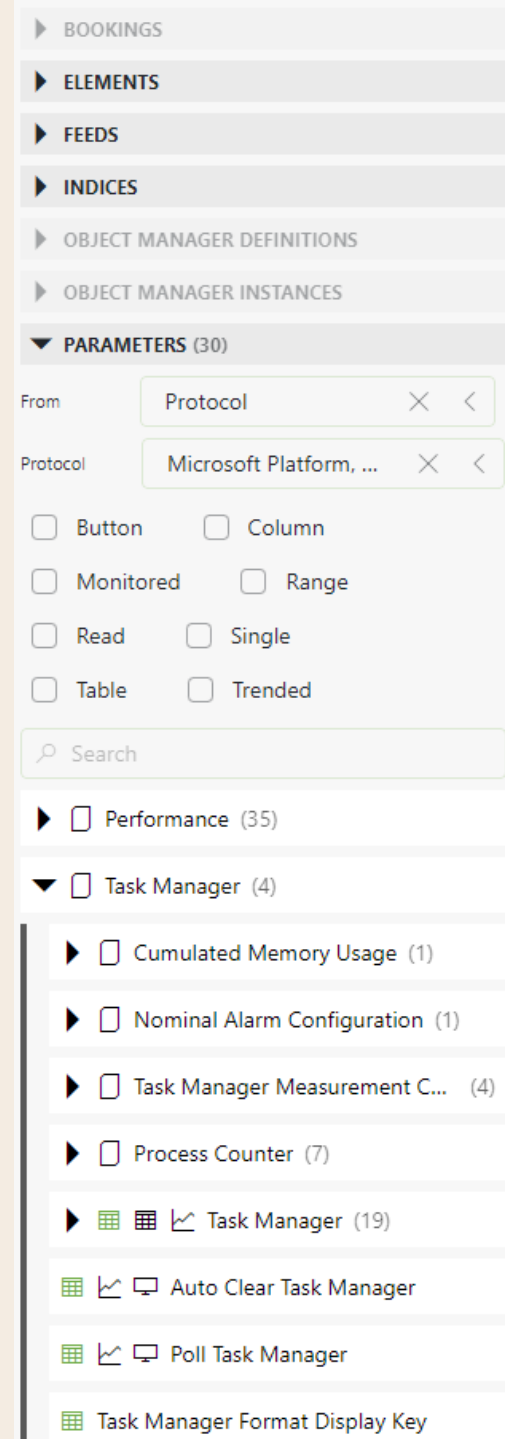
- Drop the data source on the dashboard canvas
- Hover the component, and in the popup click the 'visualization' button
- You will see a filtered set of possible visualizations
- Hovering each visualization will show a preview



Visualizations

Find the right visualization for your data

- Also other way around
- Drop a visualization on the canvas
- Click on the green 'data' or yellow 'filter' drop zone
- Compatible data types will be **highlighted**
- Specific data sources that can be used with this visualization are indicated with a  or  icon



The screenshot shows a sidebar menu with the following items:

- ▶ BOOKINGS
- ▶ ELEMENTS
- ▶ FEEDS
- ▶ INDICES
- ▶ OBJECT MANAGER DEFINITIONS
- ▶ OBJECT MANAGER INSTANCES
- ▼ PARAMETERS (30)

Below the menu, there are two input fields:

From: Protocol











Protocol: Microsoft Platform, ...

There are several checkboxes for visualization types:

- Button
- Column
- Monitored
- Range
- Read
- Single
- Table
- Trended

A search bar is present with the text "Search".

Below the search bar, there are more items in the list:

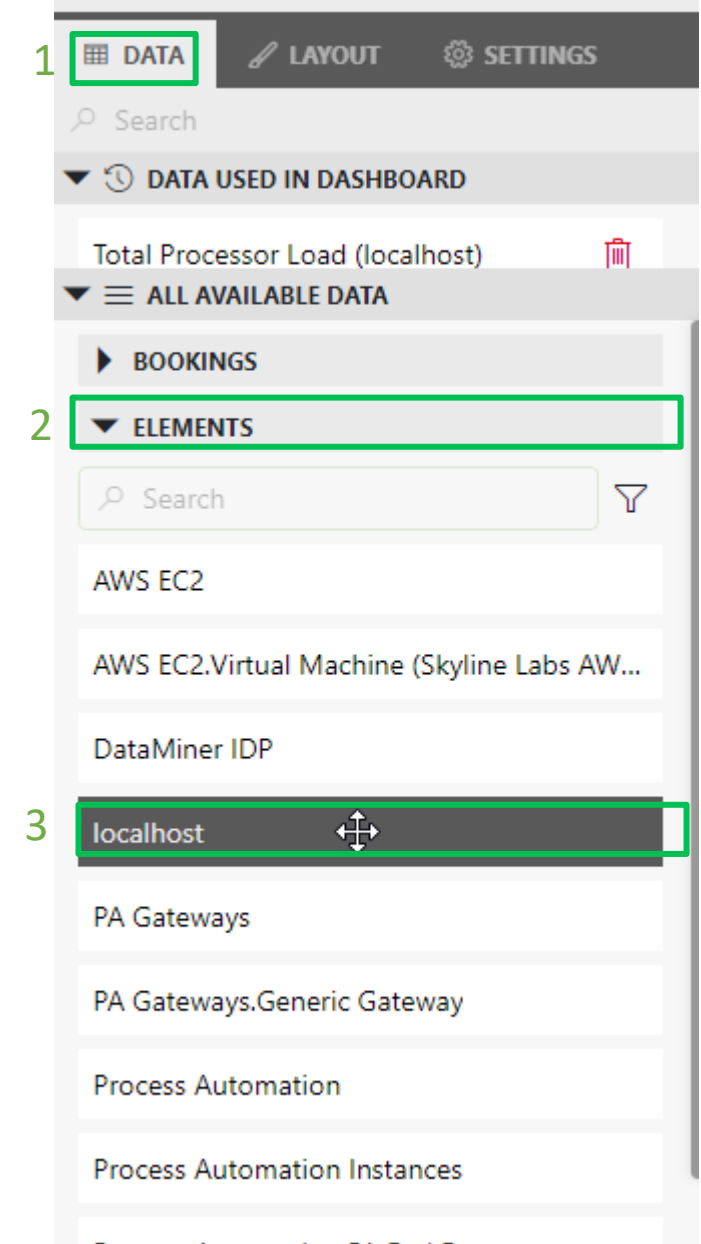
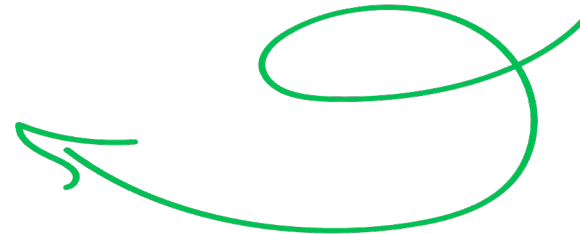
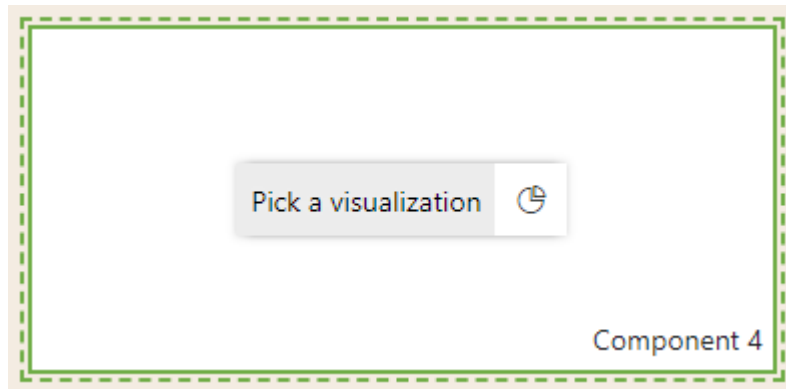
- ▶ Performance (35)
- ▼ Task Manager (4)
- ▶ Cumulated Memory Usage (1)
- ▶ Nominal Alarm Configuration (1)
- ▶ Task Manager Measurement C... (4)
- ▶ Process Counter (7)
- ▶    Task Manager (19)
-    Auto Clear Task Manager
-    Poll Task Manager
-  Task Manager Format Display Key



Add an element

Add the data source

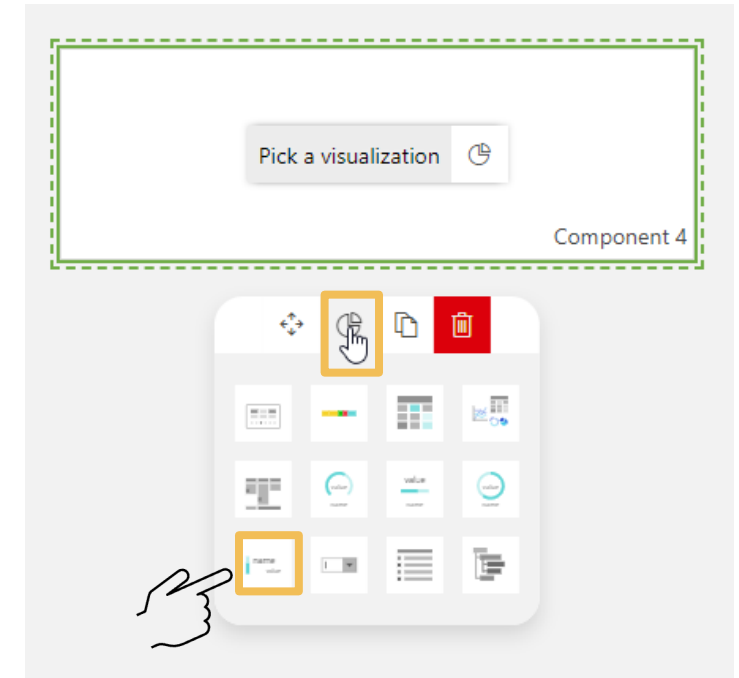
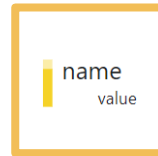
- Open the data tab
- From the data sources, open the **Elements** expander
- Choose an element from the element selector, e.g. **localhost**
- Drag this element onto the dashboard canvas



Add an element (as State)

Choose a visualization

1. Hover the component, and in the popup click the 'visualization' button
 - You will see a filtered set of possible visualizations
 - Hovering each visualization will show a preview
2. Choose a visualization, e.g. 'State'
3. Position and resize as you wish
4. Tune visuals
 - Layout > Style > design = Auto size
 - Layout > Styles > select "Blue"
 - Alarm state coloring = Line

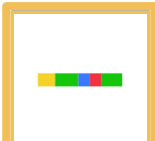


Result

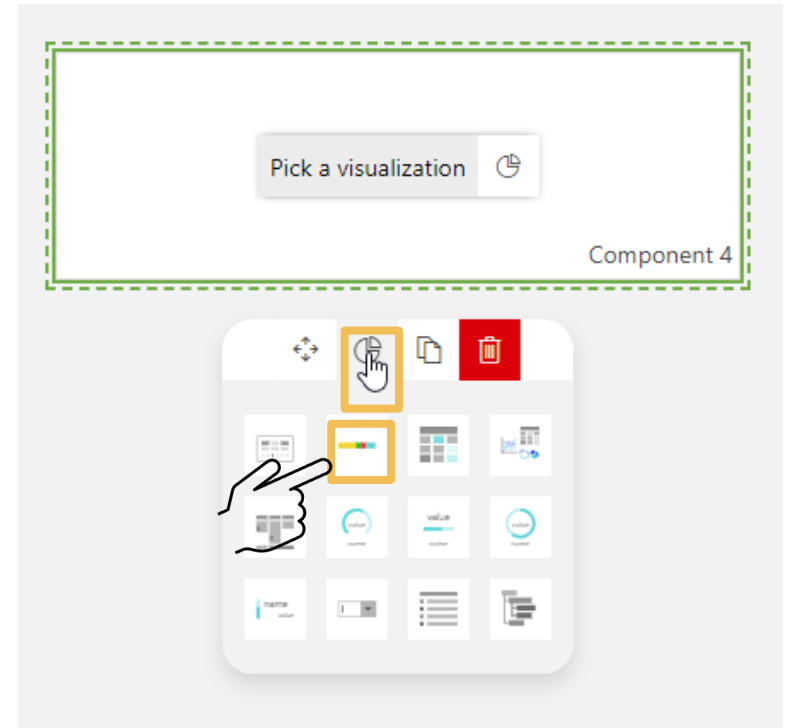


Add an element (as State timeline)


Choose a visualization

1. Drag and drop the same element again on the dashboard
2. Now choose a visualization '**State timeline**' 
3. Position and resize as you wish

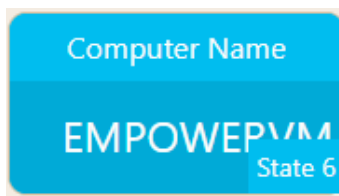
- **Result**



Add a parameter (as State)

1. From the same element select the parameter "Performance > Device Info > Computer Name" and add it to the dashboard
2. Choose the visualization State 
3. Tune visuals
 - Set Title = "Computer Name"
 - Layout > Style > design = Auto size
 - Layout > Labels > disable "show parameter name"
 - Layout > Styles > select "Blue"

Result



Exercise

Add state components for parameters: **System Type**, **Model**, **Days since last reboot**. Each with a different color

Component

DATA LAYOUT SETTINGS

Search

DATA USED IN DASHBOARD

- Total Processor Load (localhost)
- localhost
- Computer Name (localhost)

DATA USED IN COMPONENT

- Computer Name (localhost)

ALL AVAILABLE DATA

- PARAMETERS (30)
 - From Element
 - Element localhost
- Button
- Column
- Monitored
- Range
- Read
- Single
- Table
- Trended

Search

Performance (35)

- Detailed Processor Informat... (4)
- Device Info (17)

Computer Name

Computer Description

Add a parameter

Add the data source

- Open the data tab
- From the data sources, open the **Parameters** expander
- Leave the 'from' selector as it is to use an element
- Choose an element from the element selector, e.g. **localhost**
- Choose the desired parameter, e.g. Total Processor Load (under Performance)
- Drag this parameter onto the dashboard **canvas**

1 DATA LAYOUT SETTINGS

Search

▶ DATA USED IN DASHBOARD

▼ ALL AVAILABLE DATA

▶ OBJECT MANAGER DEFINITIONS

▶ OBJECT MANAGER INSTANCES

2 ▼ PARAMETERS (20)

3 From Element × <

4 Element Main Windows server × <

Button Column Monitored

Range Read Single

Table Trended

Search

▼ Performance (24)

▶ Detailed Processor Information (3)

▶ Device Info (10)

▶ Security Settings (1)

▶ Ping (7)

▶ Port Monitoring (5)

▶ Terminal Services (3)

5 Total Processor Load

Total Handles

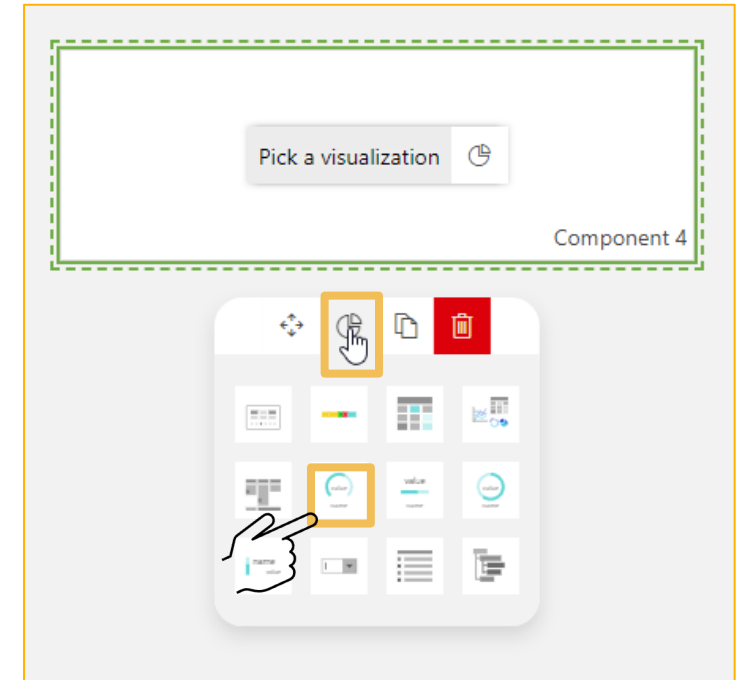
Total Threads



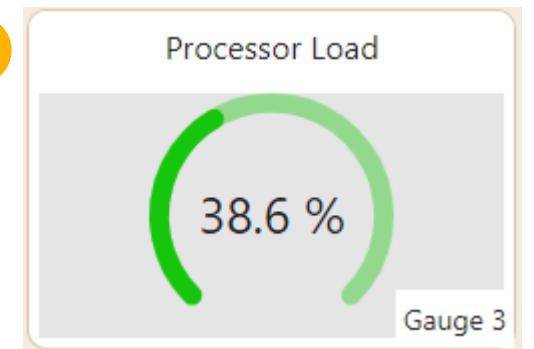
Add a parameter (as Gauge)

Choose a visualization

1. Hover the component, and in the popup click the 'visualization' button
 - You will see a filtered set of possible visualizations
 - Hovering each visualization will show a preview
2. Choose a visualization, e.g. 'Gauge'
3. Position and resize as you wish
4. Tune visuals
 - Layout > Style > design = Auto size
 - Disable Labels > Show parameter name
 - Set Title = " Processor Load"



Result



Exercise

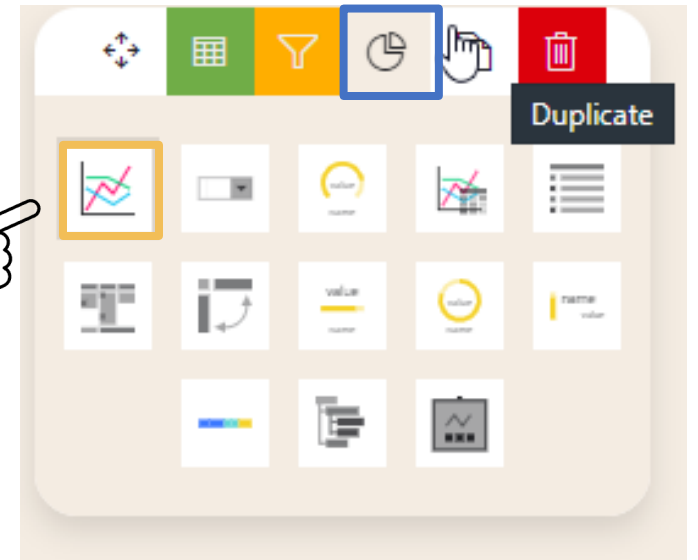
Add additional gauge for **Physical Memory Usage**



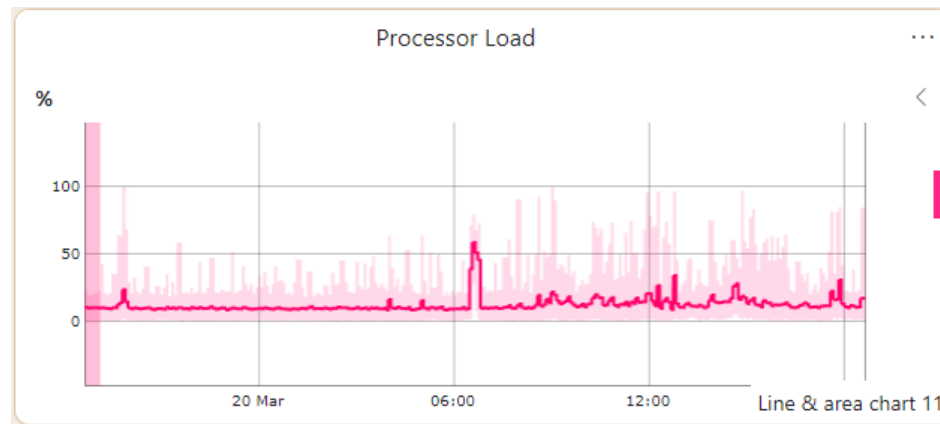
Add a trended parameter (as Line & area chart)

Choose a visualization

1. Drag and drop the trended parameter "Total Processor Load" onto the dashboard canvas
2. Choose the visualization '**Line & area chart**'
3. Tune visuals



Result



Exercise

Add a second trended parameter **Physical Memory Usage** to the same Line & area chart

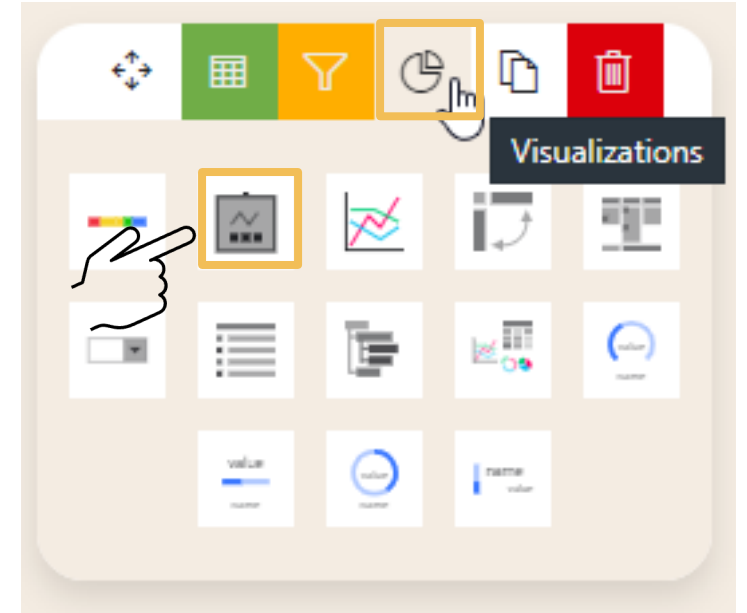
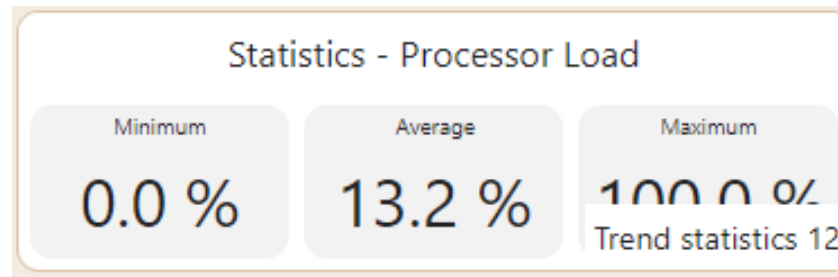


Add a trended parameter (as Trend statistics)

1. Drag and drop the trended parameter "Total Processor Load" onto the dashboard canvas
2. Choose the visualization **'Trend Statistics'**
3. Tune visuals

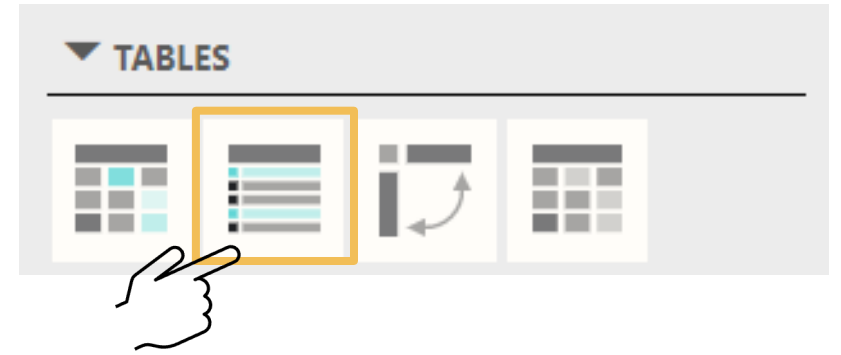


Result



Add an alarm table

1. From the visualizations drag and drop an **'Alarm table'** onto the dashboard canvas
2. To filter on alarms of a specific element (localhost), drag and drop the element onto the alarm table



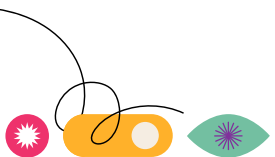
Result

1 alarm



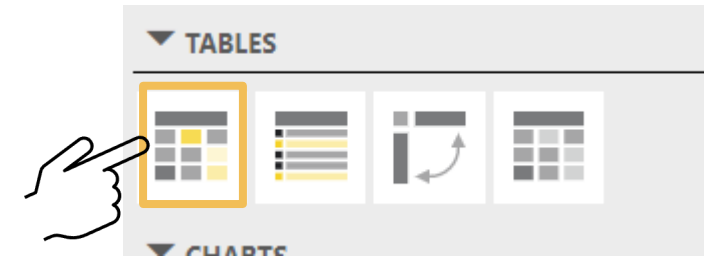
Filter

	ELEMENT NAME	PARAMETER DESCRIPTION	VALUE	TIME▼	ROOT TIME
▼ TODAY 1					
●	localhost	Total Processor Load	63.6 %	Today 19:40:53	Today 19:40:53



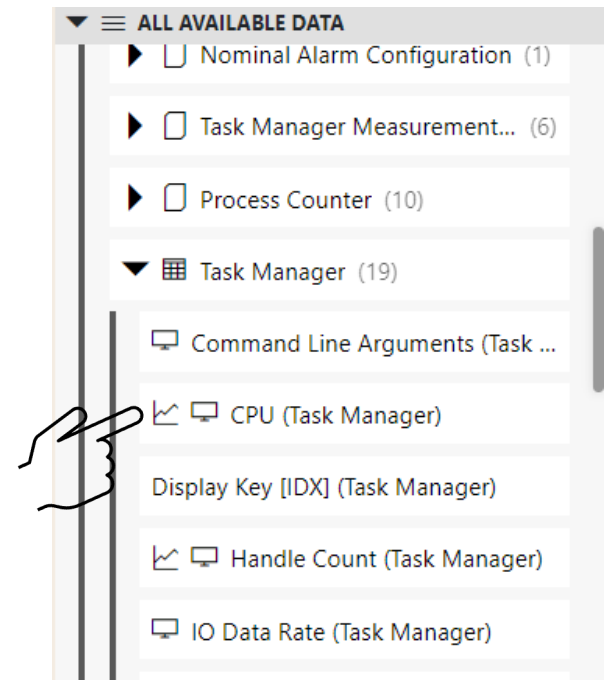
Add a parameter table

1. From the visualizations drag and drop an '**Parameter table**' onto the dashboard canvas
2. From Data sources, drag and drop the parameter "Task Manager" (from element localhost) onto the parameter table
3. To only show specific columns, drag and drop the columns from the data source (under task manager) onto the parameter table

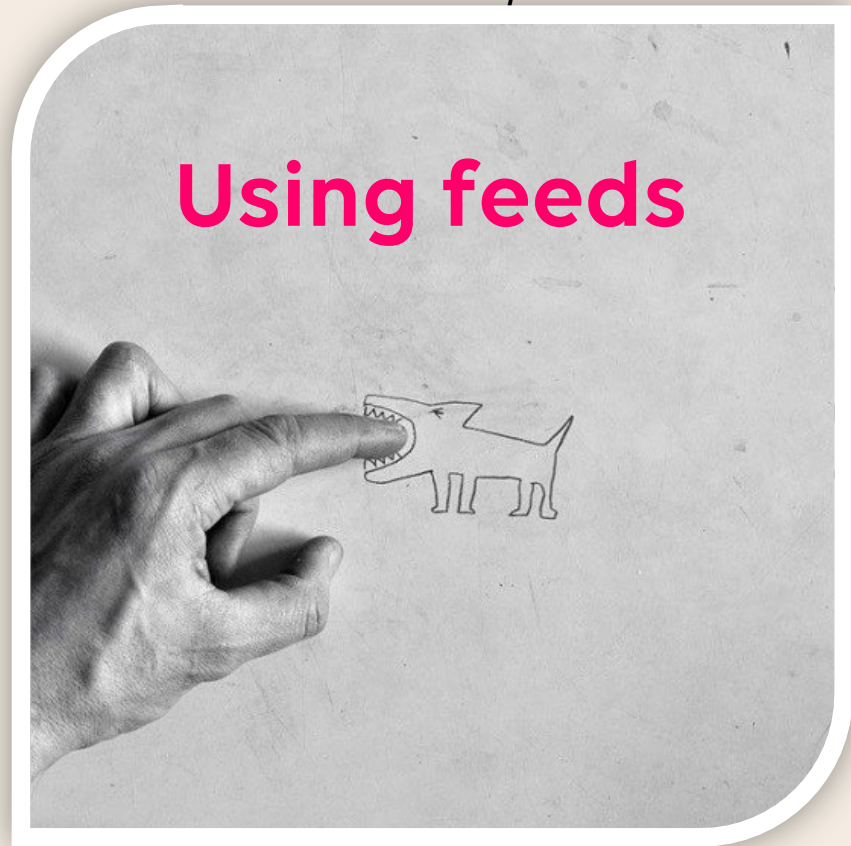


Result

Task Manager			
NAME (TASK MANA...	PROCESS ID (TASK MANAGER)	CPU (TASK MANAGER)	MEMORY USAGE (TASK MANAGER)
svchost#43	2 628	4.1 %	32 704 kB
mstsc#1	112	1.2 %	262 064 kB
WmiPrvSE#1	17 896	1.2 %	22 632 kB
SLProtocol#1	17 400	1.1 %	131 252 kB
WmiPrvSE#2	17 976	0.8 %	30 264 kB
services	728	0.7 %	11 832 kB



Making your dashboard interactive



Data sources

Different flavors for different applications



1. Out-of-the box data sources

Pre-defined DataMiner data types

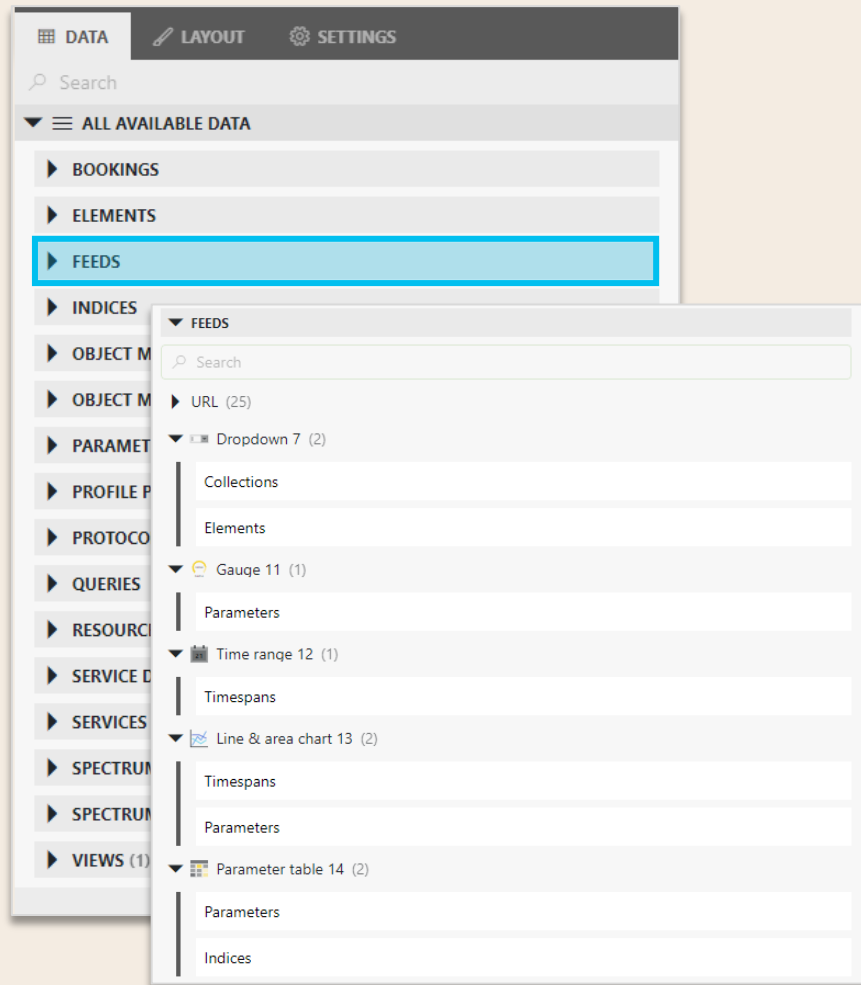
Drag and drop

Updating in real-time



Data sources

Different flavors for different applications



1. Out-of-the box data sources

Pre-defined DataMiner data types

Drag and drop

Updating in real-time

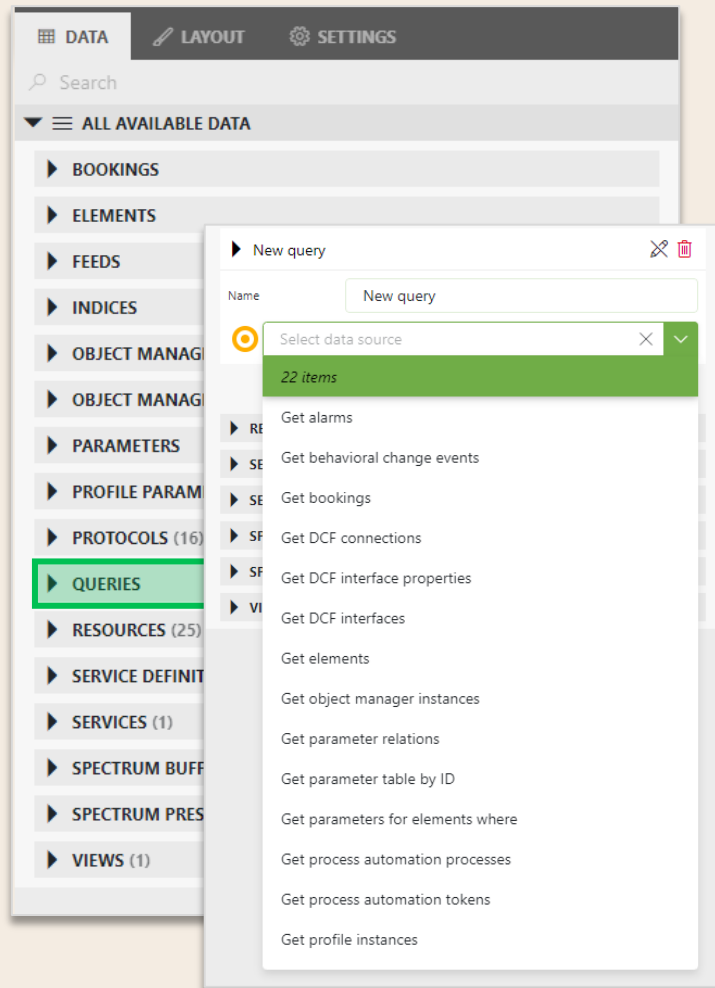
2. Feeds

Data coming from a selection in another component
Used to make content of dashboards dynamic



Data sources

Different flavors for different applications



1. Out-of-the box data sources

Pre-defined DataMiner data types
Drag and drop
Updating in real-time

2. Feeds

Data coming from a selection in another component
Used to make content of dashboards dynamic

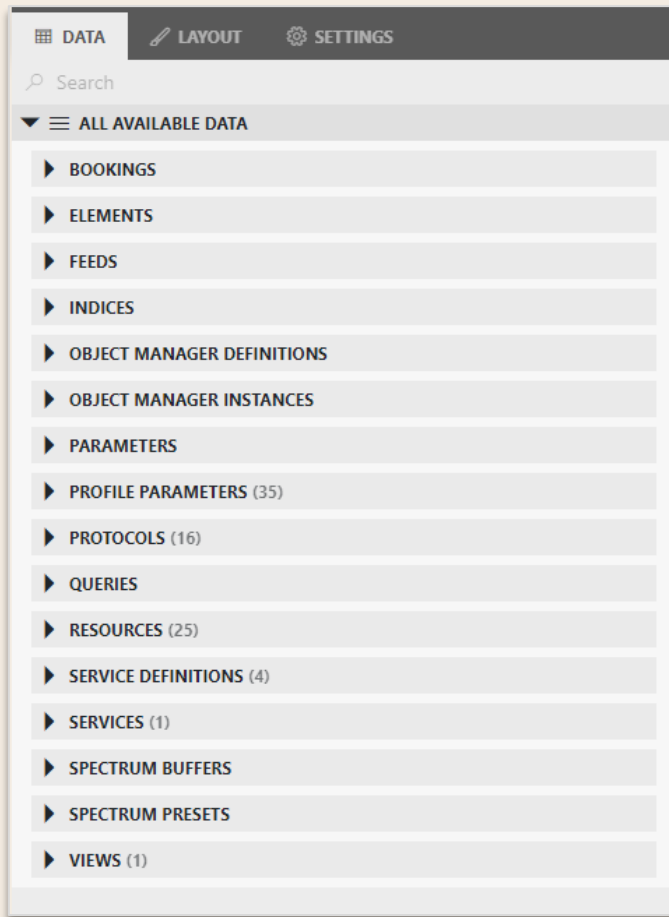
3. Queries

Any data source
Build advanced queries
Filter, aggregate and combine data
Updating on refresh



Data sources

Different flavors for different applications



1. Out-of-the box data sources

Pre-defined DataMiner data types

Drag and drop

Updating in real-time

2. Feeds

Data coming from a selection in another component

Used to make content of dashboards dynamic

3. Queries

Any data source

Build advanced queries

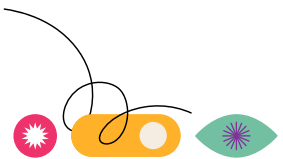
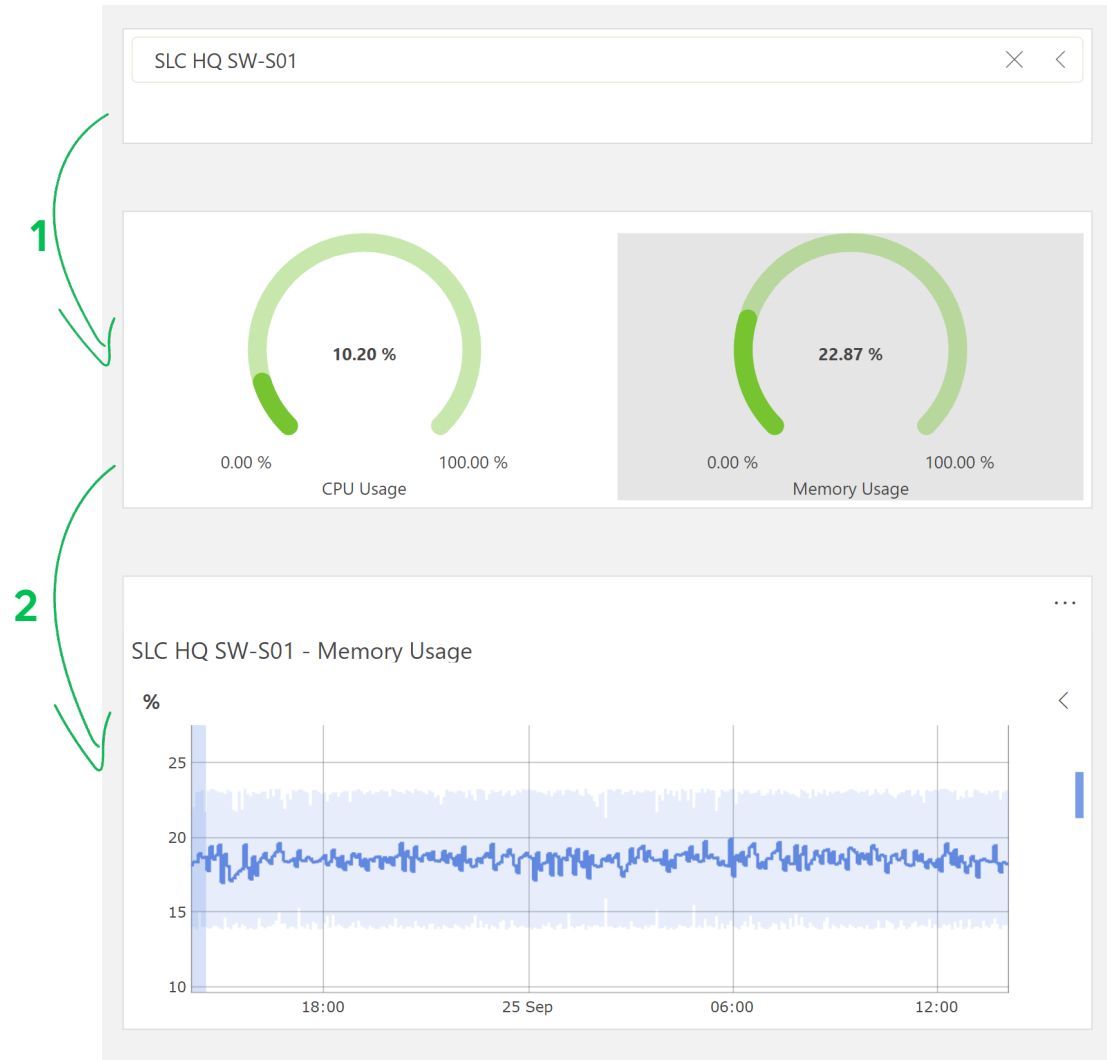
Filter, aggregate and combine data

Updating on refresh




Interactivity – Using feeds

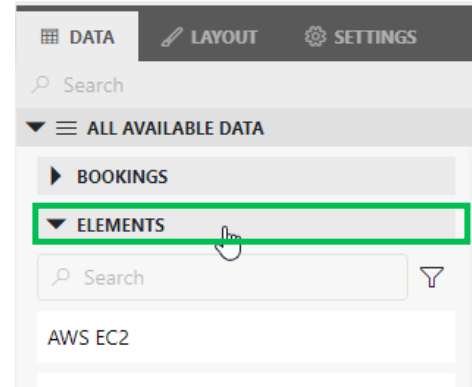
Show parameters based on user selection



Interactivity – Using feeds

1) Make an element pick list

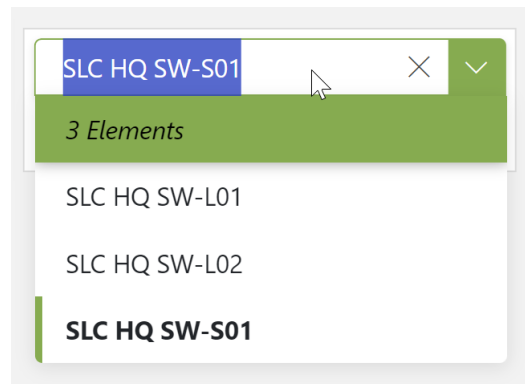
1. Drag Elements header onto dashboard
2. Choose visualization = dropdown 
3. To filter on Generic Switch elements only



→ From protocol drag and drop **Generic Switch** onto the drop down




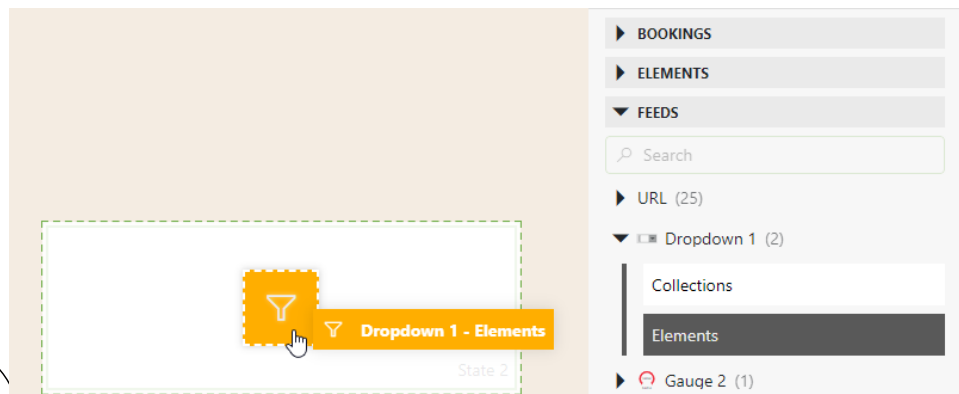
Result



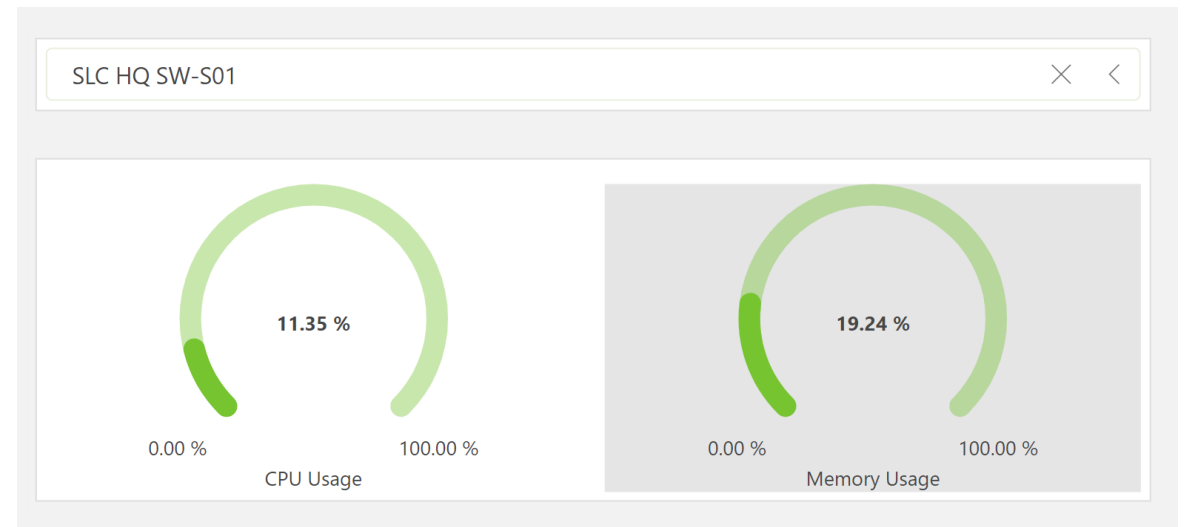
Interactivity – Using feeds

2) Based on element selection show parameters

1. From 'Data', drag the following parameter onto the canvas:
 - Parameters > From Protocol > **Generic Switch**
 - Parameter > User Idle CPU %,
2. Choose visualization = Gauge 
3. To only show this **parameter for element selected in dropdown:**
→ From **Feeds** drag and drop **Dropdown 1 > Elements** onto the gauge
4. Add parameters to the **same gauge component**: Memory Usage
 - Make sure following settings are set on tab LAYOUT > Advanced > Layout:
 - Layout flow = 'Rows' / Maximum columns per page >= 5




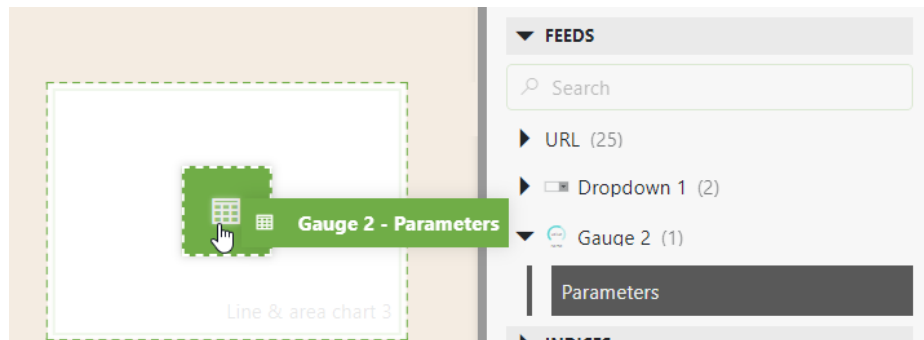
Result



Interactivity – Using feeds

3) Based on parameter selection trigger other component

1. From Visualizations drag and drop **“Line & Area chart”**  onto dashboard
2. Drag and drop Feeds> Gauge >Parameters onto the Line & Area chart

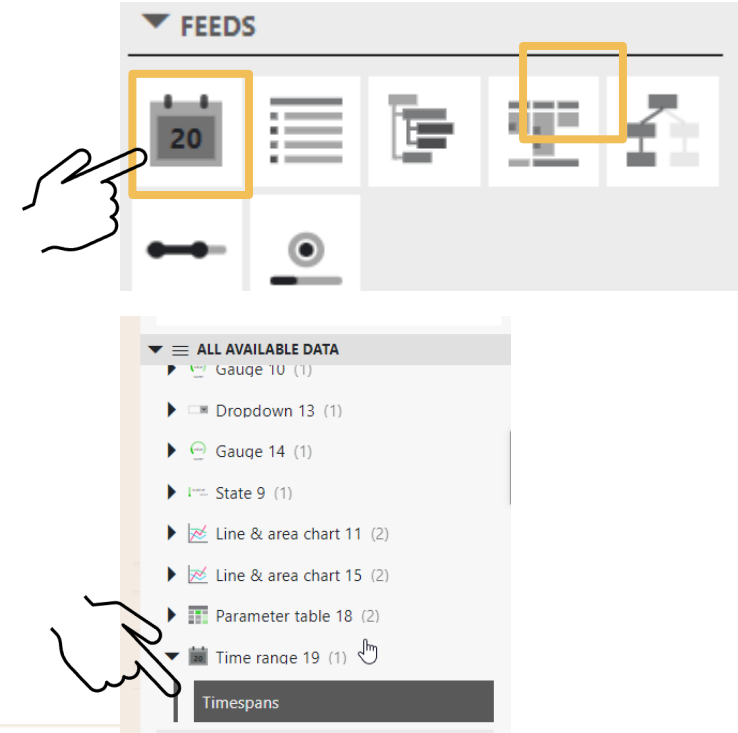


3. Now when selecting a CPU gauge it will update the line chart with the CPU trend info



Add a Time range

1. Drag and drop the **Time range** visualization onto the dashboard canvas
2. On layout enable **Use quick picks** and disable **show current range**
3. On the line charts → drag and drop Feeds >Time range>Timespans. This will now update the time ranges on the line charts when the time range filter options are used



Result

Last 5 minutes

Last 15 minutes

Last hour

Last 24 hours

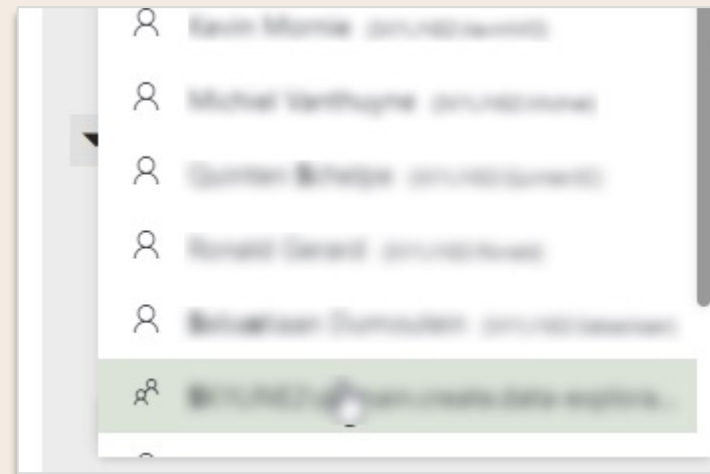
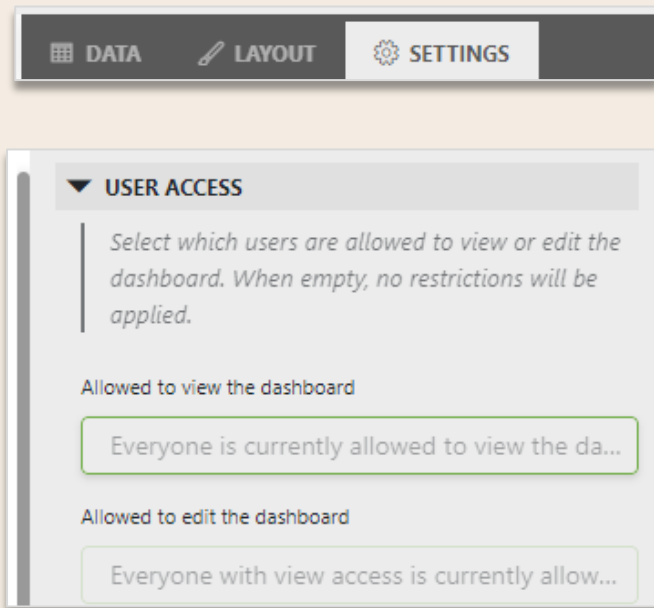
Last 7 days

Last Time range 19



Secure your dashboard

- DataMiner security enforced in dashboards by default: users only see metrics they have rights to
- Further limit access to a dashboard:
 - Without components selected, go to settings
 - Under user access, you can specify the users
 - As soon as you start typing, a list of users and groups is shown



Dashboard sharing

Collaborate around your data with anyone in- or outside of your organization

- Instant, effortless and on the fly
- Fully configurable and easily manageable
- Supporting concurrent sharing towards multiple people
- Option to add a message for your "addressees" as well as an expiration data
- Straightforward to add or remove someone to your list
- Revocable at any time
- Email notification with link to the dashboard sent out automatically

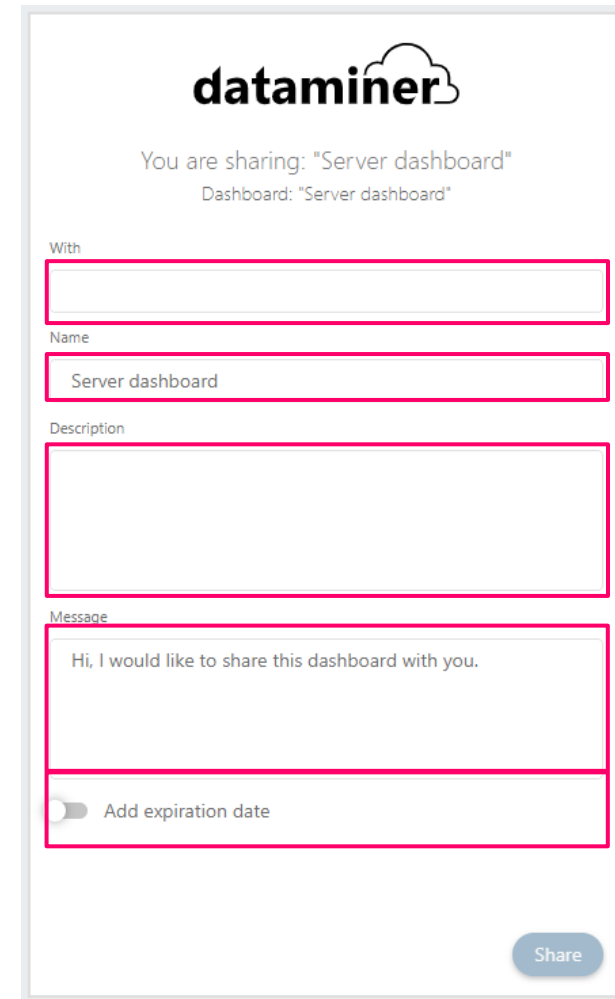
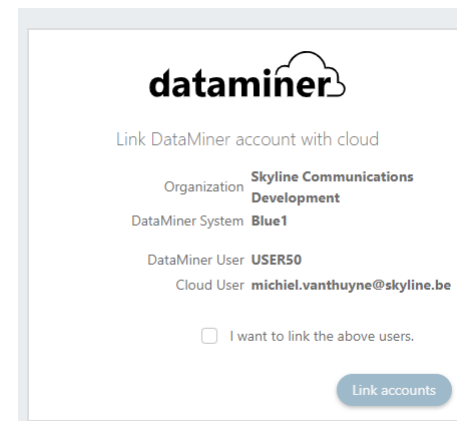
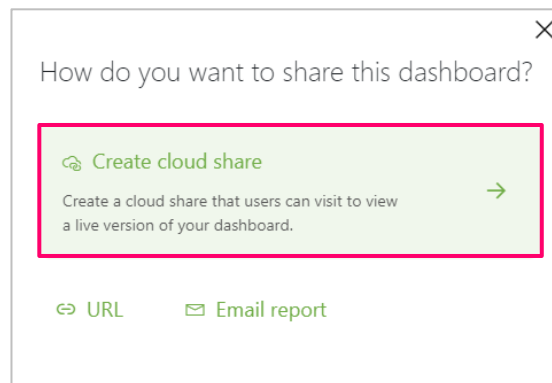
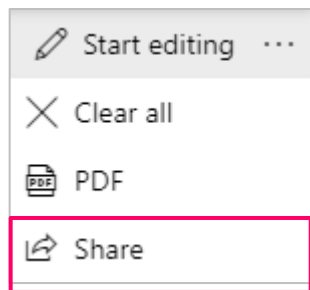
The screenshot displays the DataMiner dashboard interface. The top navigation bar includes 'DASHBOARDS' and a search bar. The main content area is titled 'COMPONENTS OVERVIEW' and features several widgets: 'States (small)', 'States (large)', 'Gauge', 'Ring', 'Trend chart', 'Donut chart', 'Table', 'Bar Chart', and 'Stacked bar chart'. A 'Share' button is highlighted in the top right corner. Below the dashboard, a sharing form is shown with the following fields: 'Name' (Network Topology), 'Description' (Network topology diagram), 'Message' (Hi, I would like to share this dashboard with you.), and 'Expiration Date' (20 Oct 2022 at 00 : 00). To the right, an email notification is displayed, stating 'Dominique De Paepe shared a dashboard with you' and providing a link to the shared dashboard.

Share your dashboard in the cloud



DevOps points!

1. Click the 3 dots
2. Click share
3. Click create cloud share
 - Possibly you need to allow popups to go to the next step
4. Log in or register and link accounts if needed
5. Fill in the sharing data and share
 - Include your own e-mail address



Take it
to the next level*
*
with low-code apps



DataMiner Low-Code Apps

Focus on the essentials to do better

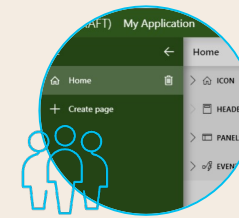
MEDIA ASSET MANAGEMENT ORCHESTRATION

Asset Library

Total assets: 11 | New assets: 4 | Assets in file missing: 2 | Archived assets: 3

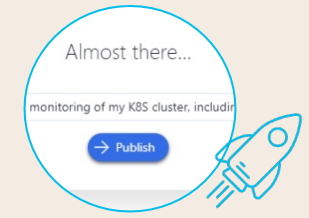
Workflow: New → Ready for ingest → Pre-OC OK → Edited → Subtitled → Transcoded → Post-OC OK → Published → Archived

HOUSE ID	TITLE	CONTENT PROVIDER NAME	STATE	PRIORITY	GENRE	RATING	LICENSE START DATE	LICENSE END DATE	ALLOWED REGIONS
H0392099	Titanic	Fox Sports	New	Low	Drama	TV-PG			
A10458	The Deer Hunter (1978)	HBO	Post OC Failed	Medium	Action	TV-MA	1/04/2021 00:00	31/12/2025 00:00	
A10437	The Great Escape (1963)	Jale	Ready for ingest	High	Action	TV-MA	1/04/2022 00:00	31/03/2025 00:00	
A10469	Judgment at Nuremberg (1961)	HBO	Edited	Low	Action	TV-MA	1/04/2021 00:00	31/12/2025 00:00	
A10442	The Seventh Seal (1957)	Fox Sports	Archived	Low	Action	TV-MA	1/04/2021 00:00	31/12/2025 00:00	France, UK
A10335	Memento (2000)	HBO	File Missing	High	Drama	TV-G	21/02/2022 10:00	10/02/2023 10:00	US
A10460	It Happened One Night (1934)	Jale	Subtitled	Low	Action	TV-MA	1/06/2022 00:00	31/12/2026 00:00	
A10482	Vertigo (1958)	HBO	Pre OC Failed	Urgent	Action	TV-MA	1/04/2021 00:00	31/12/2025 00:00	US, France
A10280	12 Angry Men (1957)	HBO	File Missing	Low	Action	TV-MA	3/07/2022 00:00	31/08/2023 00:00	Spain
A10326	Pulp Fiction (1994)	FOX	Archived	High	Action	TV-MA	1/09/2021 20:00	2/10/2023 20:00	
A10468	Casino (1995)	HBO	Archived	High	Action	TV-MA	1/04/2021 20:00	31/12/2025 10:00	



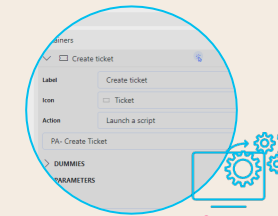
Empower everyone to create

Tools are built by the people who need to use them day in and day out.



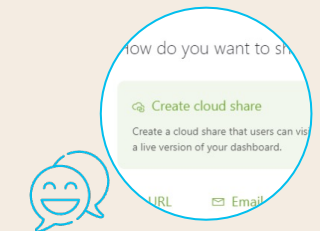
Build apps fast

Build – deploy – use in minutes regardless of your coding abilities



Leverage powerful DataMiner automation

Plug in DataMiner automation scripts to further boost your apps for any use case



Collaborate without limits

Share apps for live monitoring & control with anyone inside or outside (roadmap) of your organization securely



Dashboards

vs

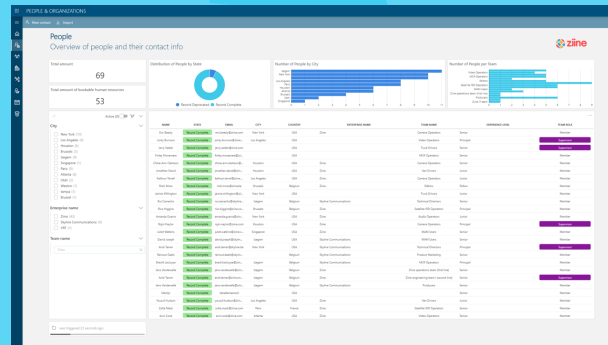
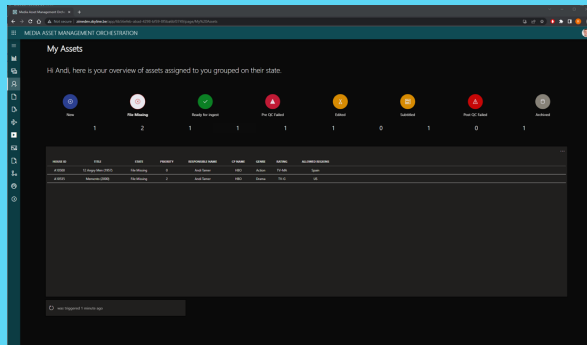
Low-code apps

- Any data source
- Catalog of visual components
- One page
- Mainly for monitoring & reporting
- Limited in actions
- Live sharing
- Export to PDF/Email

- Any data source
- Catalog of visual components
- Multiple pages and collapsible panels
- Infinite use cases
- Automation & user interaction
- Live sharing: on the roadmap
- Versioning




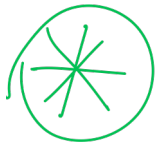
Some examples



Low-code apps

Create your first app

- Create a new app: hover your mouse next to 'Monitoring' and click the  button that appears
 - Give the app a name: "Hello World"
 - Choose an icon for your app
 - Create a couple of pages ("Switches", "Page 2", "Page 3", ...)
 - Choose some page icons you like
 - Play around with the ordering + visibility of pages



Publish your app and check it out!

25

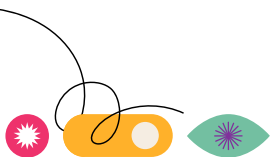
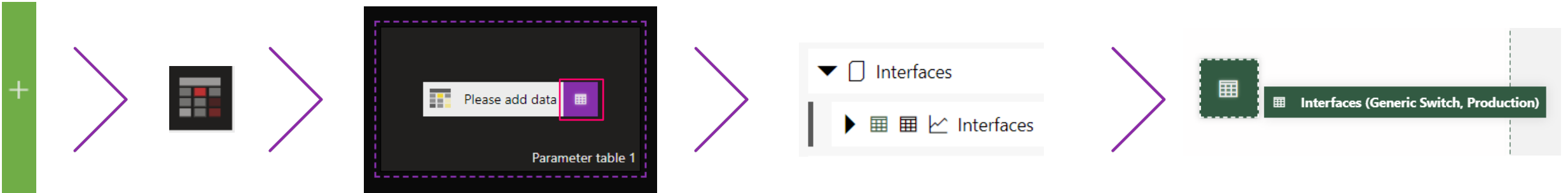
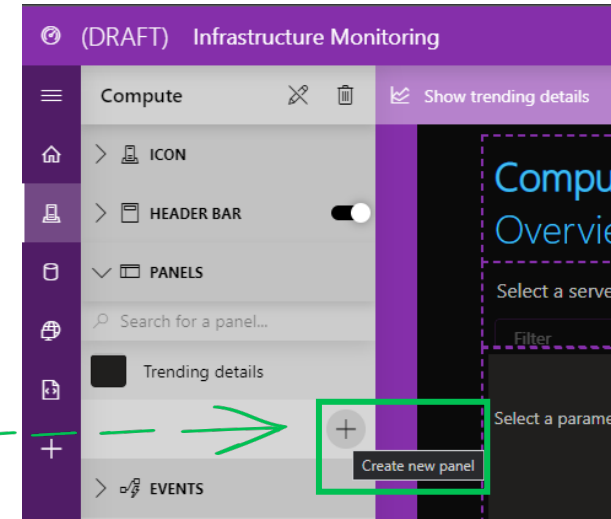
DevOps points!



Low-code apps

Adding content in a collapsible side panel

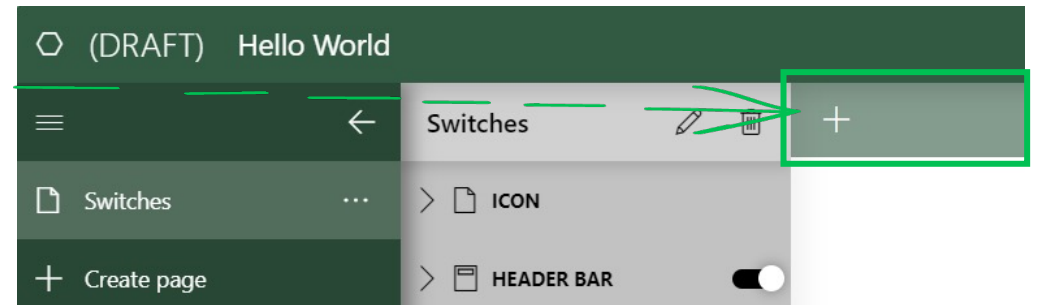
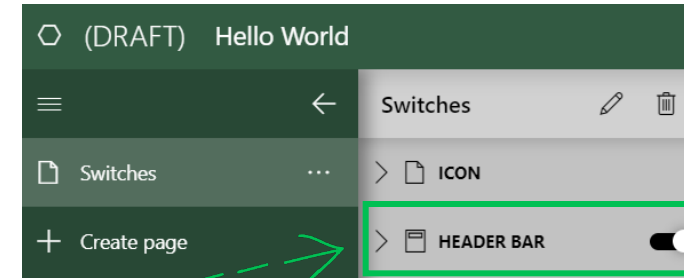
- Create the same interactive dashboard in the App.
- Go into edit mode
- Create a new panel called 'Interfaces'
 - Add a Parameter Table component to it
 - Data: Protocol parameter 'Interfaces' from 'Generic Switch' protocol
 - Filter: element feed from dropdown on Main page



Low-code apps

Adding content in a collapsible side panel

- Go into edit mode
- Activate the header bar on the 'Switches' page
 - Add a button that says 'Show Interfaces'



Low-code apps

Adding content in a collapsible side panel

- Go back to button on the 'Swiches' page and add an event to it

On click: open a panel

- Panel: 'Interfaces'
- On the right
- Width: 30%



Publish your app and test your button!



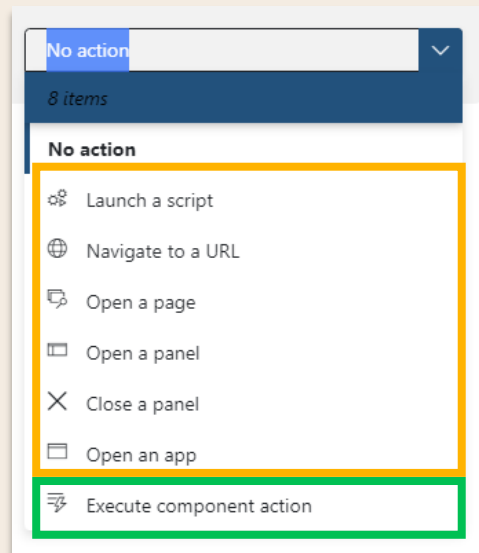
DevOps points!



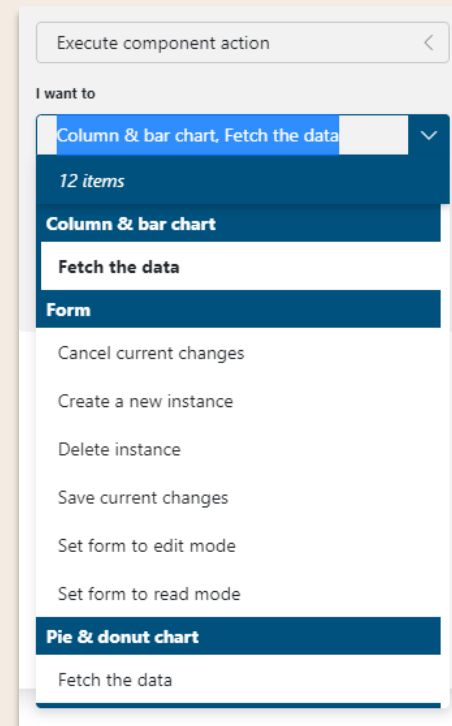
Actions in Low-Code Apps

Many different possibilities

General actions



Component actions



[Link to full documentation](#)



Actions

Execution types

In parallel



What should happen when the button is clicked? ✕

- > Open popup 'Detail objective' + 🗑️
- > Launch Clear selection + 🗑️

+ Add action

In sequence



What should happen when the button is clicked? ✕

- > Open popup 'Detail objective' + 🗑️
- > Launch Create a new instance + 🗑️
 - ✓ Launch Fetch the data 🗑️
 - Execute component action <
 - I want to
 - State, Fetch the data <
 - Which state?
 - Objectives, State 7 <
 - + Upon completion





Actions

Possible triggers

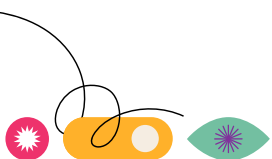
- On page load
- On button click
 - On page
 - On header
- On component specific trigger
 - Table
 - On row click
 - On row double click
 - On row button click
 - Node edge
 - Schedule
 - Grid



Create 
→ and shape 
your first DataMiner
Object Model

Agenda

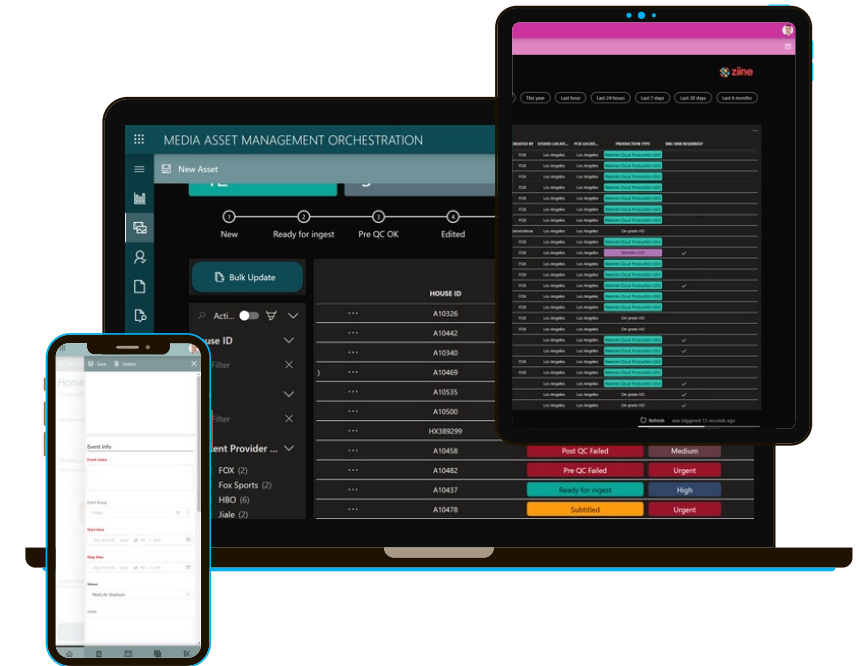
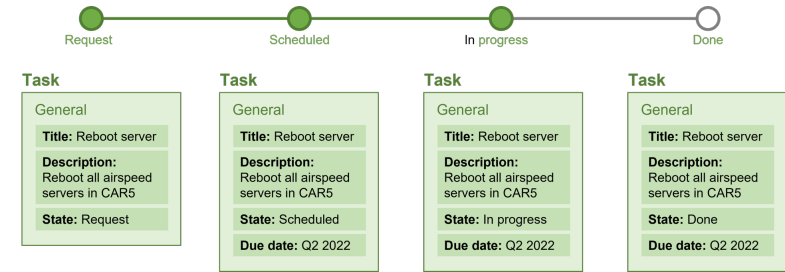
- Introduction
 - Use cases
 - DevOps tools to create/update DOM definitions
- DOM architecture & possibilities
- Hands-on #1
 - Create DOM definition with DOM designer (Excel)
 - Extend DOM definition with DOM Editor
 - Code example: Invoices App
 - Best practices
- Hands-on #2
 - Creation of a Low-Code-App centered around DOM



Object modelling (DOM)

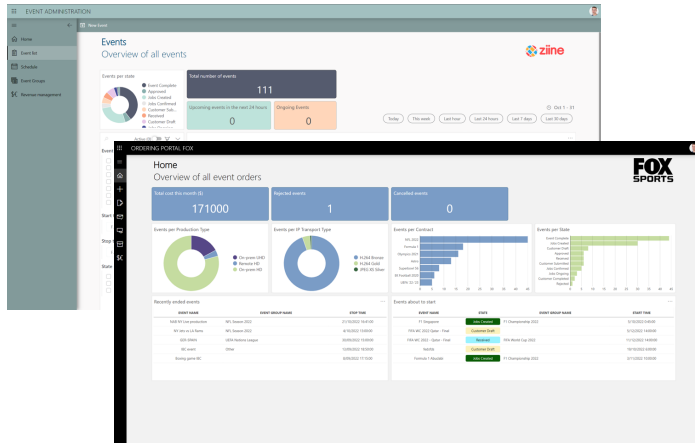
Enrich your operation with just any administrative data

- Empower endless business and operational use cases
 - Channels, assets, tickets, people, and many more
- Customize lists & forms for whatever your team needs
 - Create your data model with highly tailored forms to enter/store data in your app
 - Low-code object modelling & IaC
 - Self-documented environment
- Combine with Low-code apps or 3rd party systems
 - Create persona-specific apps on top of DOM for a personalized experience
 - Visualize DOM data in timelines, bar charts, pie charts and many more
 - Data easily accessible by DataMiner modules and 3rd party systems
- Add behavior and automation to your data
 - State-aware objects with managed state-transitions
 - Enables controlled and step-wise data collection and completion
 - Automate business operational & technical processes & logic on top of the data

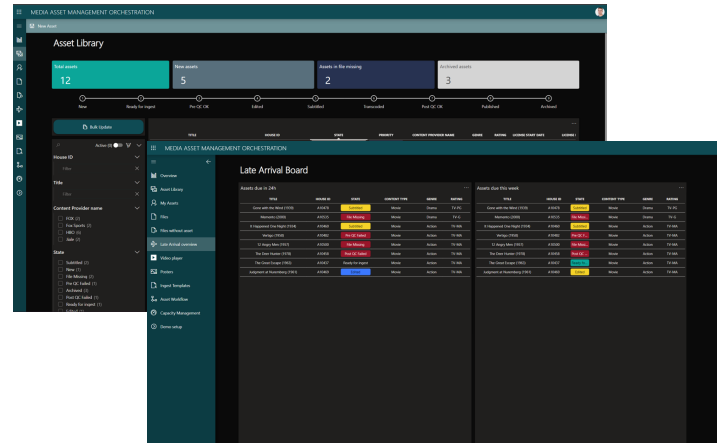


Object modelling (DOM)

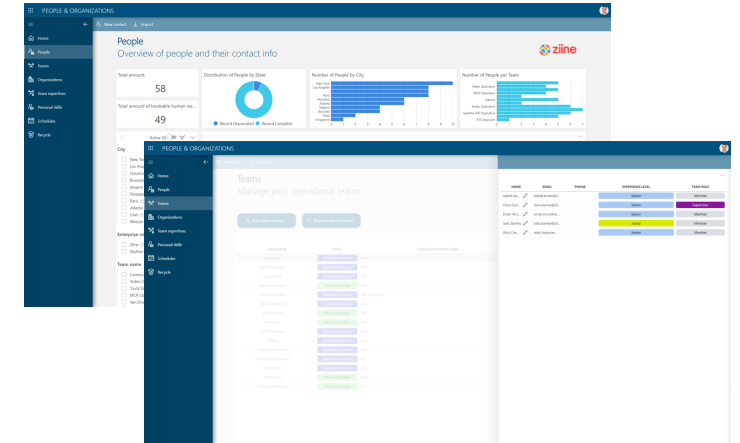
Enrich your operation with just any administrative data



- Event administration
- Event customer portals
- Vehicle resource management
- ...



- Asset management
- RPD provisioning
- Planned maintenance
- Ticketing



- People and organizations
- Human resource scheduling
- Virtual desk management
- ...



you build it, you run it

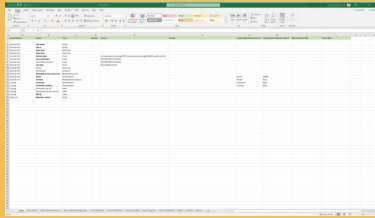
Continuously improve your data models

today

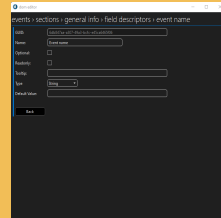
DOM scripts

```
using System;
namespace DotNetBot {
    public static class Program {
        public static void Main(string[] args) {
            string message = "";
            if (args.Length < 1) {
                message = "Welcome to .NET Core!";
            }
            else {
                foreach (string item in args) {
                    message += item;
                }
            }
        }
    }
}
```

DOM definition in excel



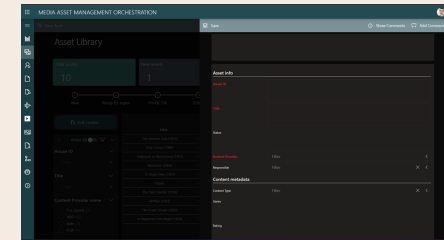
DOM Editor



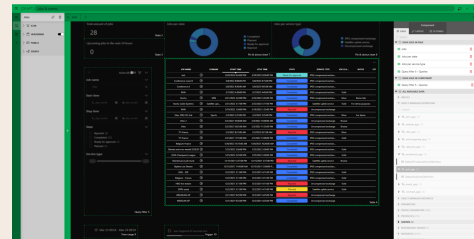
Semi-manual
on-cluster
deployment



DOM models & forms



low code apps



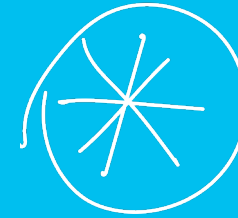
roadmap

DOM definition (graphical)



CI-CD pipeline





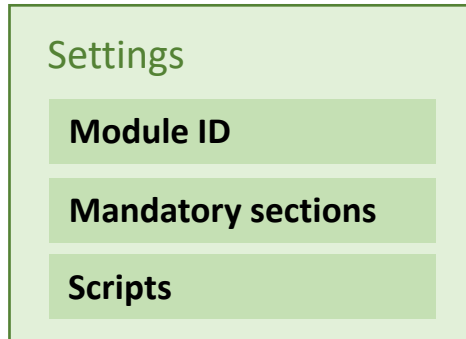
DOM

Architecture

DOM

Module vs definition

Channel



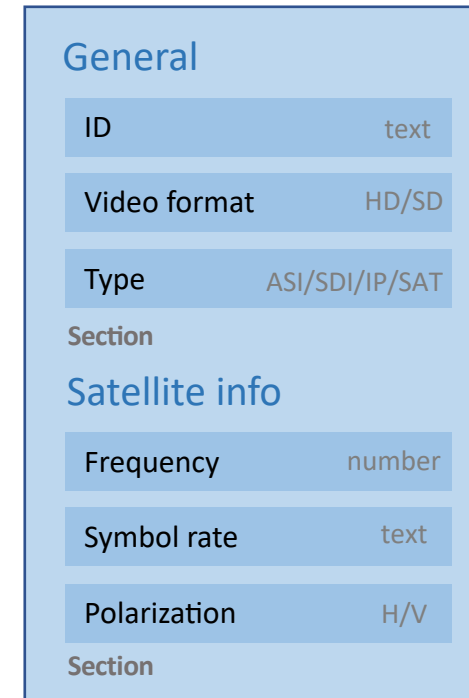
Module

IPTV channel



Definition

Sat channel



Definition



DOM

Definition vs Instance

IPTV Channel definition

General	
ID	text
Video format	HD/SD
Type	ASI/SDI/IP/SAT
Section	
IP info	
Multicast group IP	text
Multicast source IP	text
Multicast port	number

Definition

IPTV Channel instance

General	
ID: Discovery channel	
Video format: HD	
Type : IP	
IP info	
M group IP: 293.105.13.1	
M source IP: 172.26.248.93	
Multicast port: 13001	

Instance

IPTV Channel instance

General	
ID: Animal Planet	
Video format: SD	
Type : IP	
M group IP: 239.105.13.1	
M source IP: 172.26.210.93	
Multicast port: 13010	

Instance

IPTV Channel instance

General	
ID: MTV	
Video format: HD	
Type : IP	
M group IP: 293.105.13.2	
M source IP: 172.26.248.94	
Multicast port: 13002	

Instance



DOM

Field descriptors

- **Standard**

- String
- Double
- Long
- DateTime
- TimeSpan
- Bool
- Enum

- **Roadmap**

- User/user group
- Time range
- Email
- IP
- MAC
- Attachments
- ...

- **DataMiner specific**

- Resource
- Element
- Service definition
- DOM instance
- DOM instance value

DateTime

DOM instance

Bools

The screenshot shows a web form with several sections. A red dashed box highlights the 'Event Group' section, which contains 'Start time' and 'Stop time' fields, both with a date-time picker icon. A green dashed box highlights the 'Commercial Info' section, which contains 'Customer name', 'Customer contact person(s)', and 'Customer contract' fields, each with a filter icon. A yellow dashed box highlights the 'Order Details' section, which contains 'Production type' and 'IP Contribution' dropdowns, and three checkboxes: 'Satellite contribution', 'OTT', and 'Social Media'. Three arrows point from the text labels to these highlighted sections: a red arrow from 'DateTime' to the red box, a green arrow from 'DOM instance' to the green box, and a yellow arrow from 'Bools' to the yellow box.

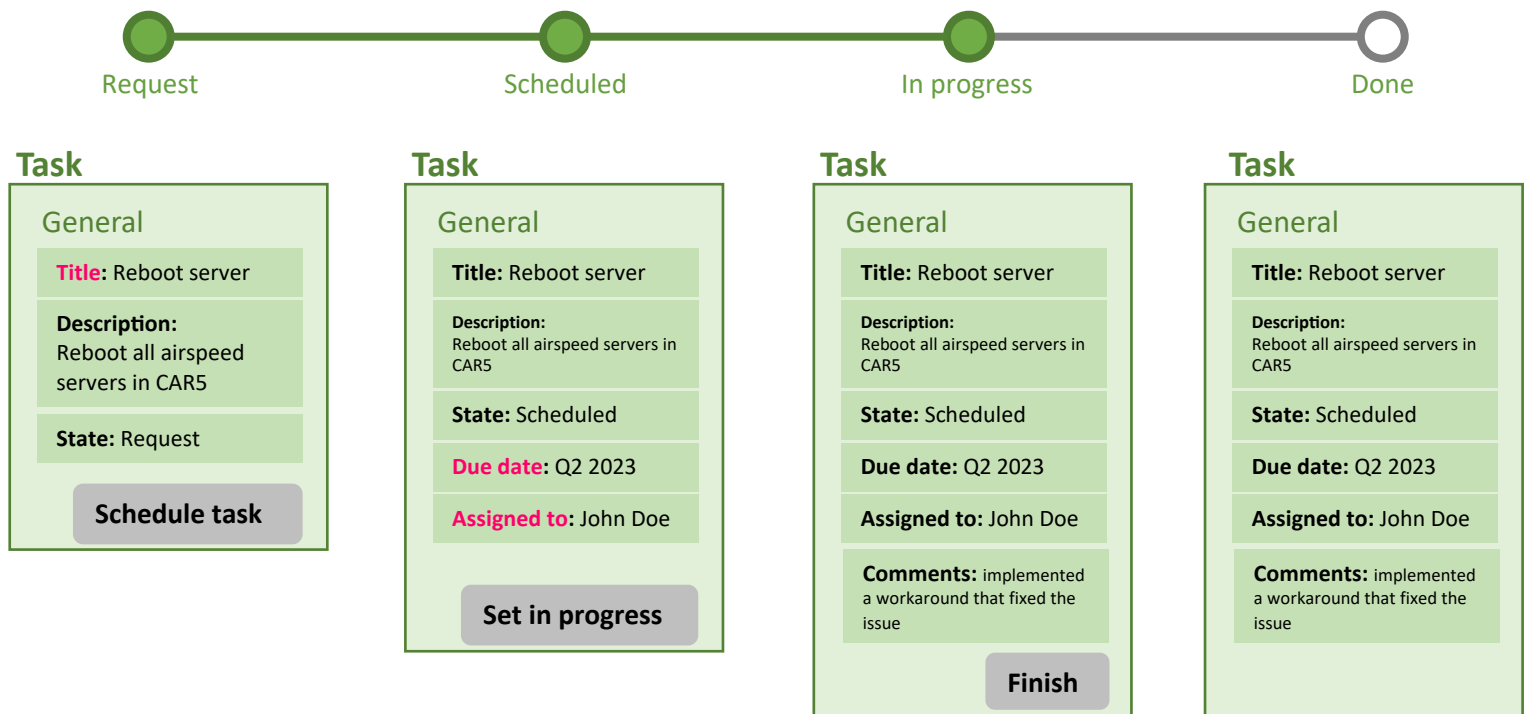
https://docs.dataminer.services/user-guide/Advanced_Modules/DOM/DOM_objects/DOM_SectionDefinition.html



DOM

State-aware objects with managed state-transitions

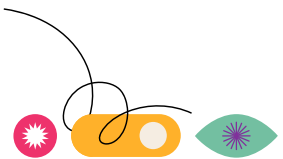
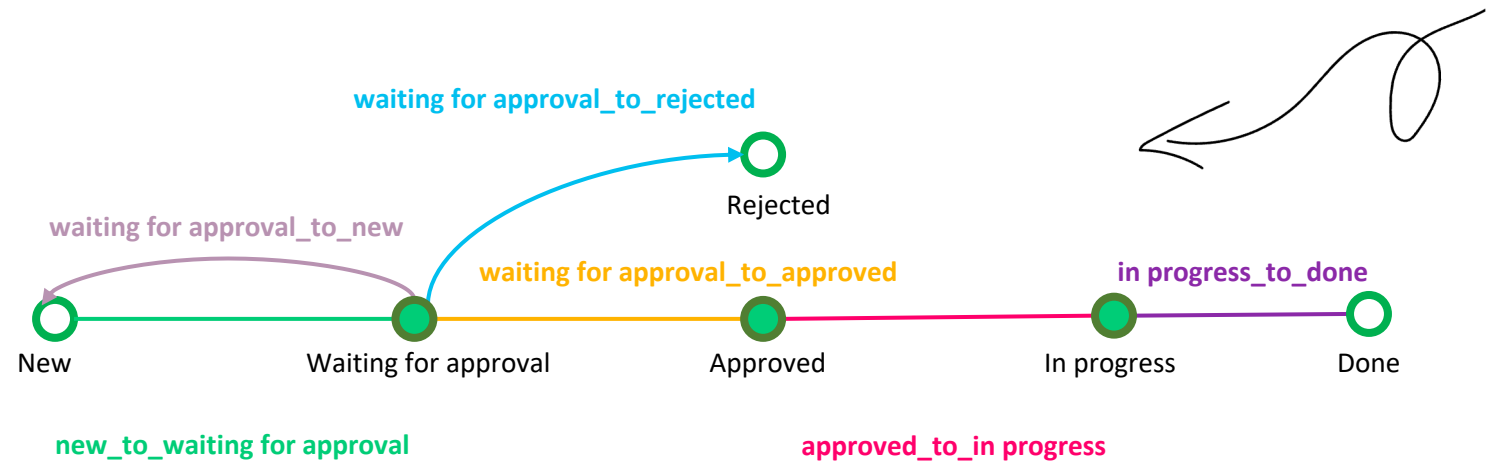
- Define for each state:
 - Which fields are **mandatory**/optional
 - Which fields are visible/hidden
 - Which fields are read-only
 - Which buttons are visible on the form
 - Buttons can trigger custom automation



DOM

State transitions


- Define transitions between states
- Trigger transitions on instances via automation
 - Manual via a form button
 - External API trigger
 - e.g.
 - When a booking ends
 - In a process activity



Lifecycle & script

DOM instance



Task  Create script

General

Title: Reboot server

Description:
Reboot all airspeed servers in CAR5

Task

General


Title: Reboot server

Description:
Reboot all airspeed servers in CAR5

State: Request

Due date: Q2 2023

 Action script

Task  Update script

General


Title: Reboot server

Description:
Reboot all airspeed servers in CAR5

State: Scheduled

Due date: Q2 2023

 Action script

Task  Update script

General


Title: Reboot server

Description:
Reboot all airspeed servers in CAR5

State: In progress

Due date: Q2 2023

 Action script

Task  Update script

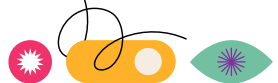
General

Title: Reboot server

Description:
Reboot all airspeed servers in CAR5

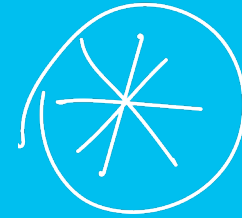
State: Done

Due date: Q2 2023





Hands-on



Hands-on

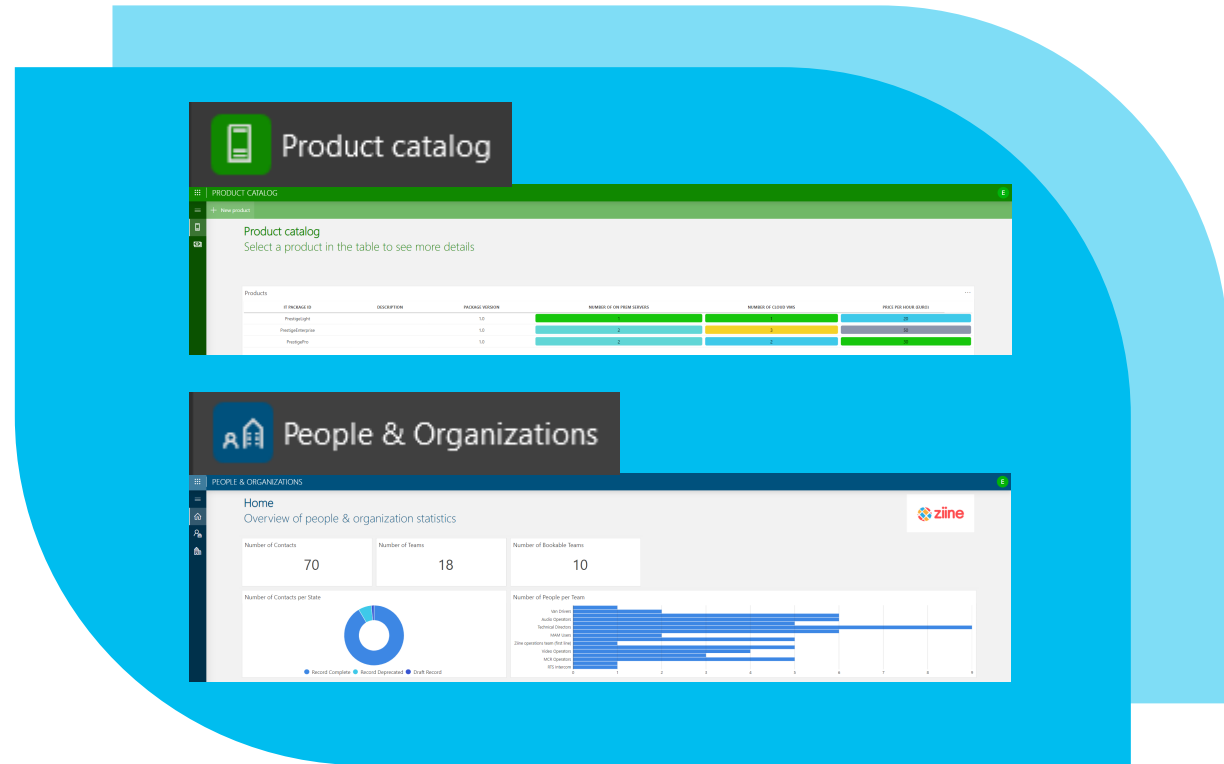
Install Prerequisite package

- **Installation of:**

- Product Catalog App
- People and Organizations App
- Scripts used during hands-on
- Generate resources used during hands-on

- **Steps**

- Open Catalog
- Search for DOM
- Deploy **InitialSetup** package
- Deploy **Hands-on** package
- Deploy **DOM Editor** package





GET INSPIRED



Ziine is a visionary B2B services company, offering top-of-the-line Prestige services to customers on demand. Prestige is a platform service used by customers of Ziine to analyze their business from time to time. Ziine has made different **packages** available based on the performance requirements : Prestige Enterprise, Prestige Pro and Prestige Light. To make a seamless experience, the Ziine sales team has created an **online portal**, that allows to manage Prestige service orders with ease. This portal can be accessed through any web browser. Schedule orders by selecting a **package, customer** and a desired **time-interval**.



GET INSPIRED



Hands-on

Goal

ServiceOrder

catalog

Order details

Order ID	String
Description	String
Start time	DateTime
End time	DateTime
Server location	Enum
Organization	DomInstance



Organization

(p&o)organizations

Contact

Enterprise name	String
Category	Enum
Street address	String
City	String
ZIP	Long
Country	Enum
Email	String
Email	String



Hands-on

Goal

ServiceOrder

catalog

Order details

Order ID	String
Description	String
Start time	DateTime
End time	DateTime
Server location	Enum
Organization	DomInstance

InitialSetup package

Organization

(p&o)organizations

Contact

Enterprise name	String
Category	Enum
Street address	String
City	String
ZIP	Long
Country	Enum
Email	String
Email	String



Hands-on

Goal

DOM Editor tool

ServiceOrder catalog

Order details

Order ID	String
Description	String
Start time	DateTime
End time	DateTime
Server location	Enum
Organization	DomInstance



Organization (p&o)organizations

Contact

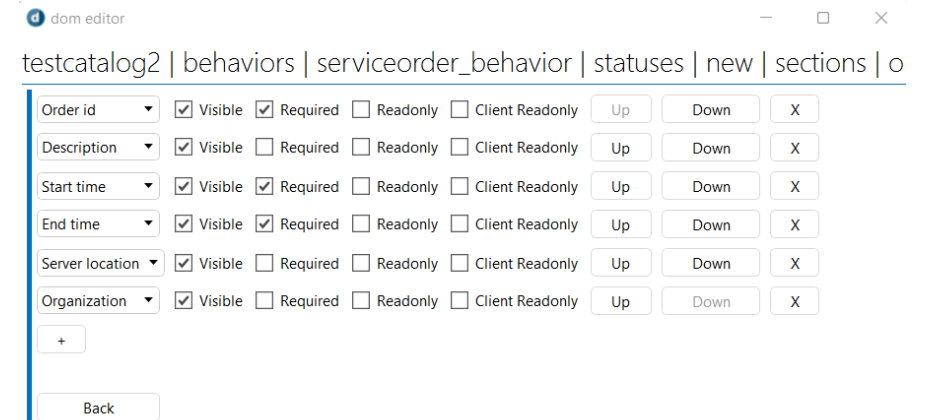
Enterprise name	String
Category	Enum
Street address	String
City	String
ZIP	Long
Country	Enum
Email	String
Email	String



Extra exercises

DOM editor

1. Execute the **Dom Editor** script
2. Add a new Definition 'Service Order' within the (p&o)organizations module
3. Add a new Section Definition 'Order Details'
4. Add the listed Field Descriptors to the 'Order Details'
5. Section Definition
6. Add the 'Order Details' Section Definition to the 'Server Order' Definition



Extra exercises

DOM editor

- Refresh the app & field should be added

Order id

Description

Start time

End time

Server location

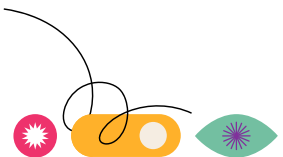
Organization



Code example

Invoices App

- DataMiner Docs:
 - Go to <https://docs.dataminer.services/>
 - Search for 'Invoice App'
 - Open the 'Invoice app example' page
- Content
 - Creating the section definitions
 - Adding the DOM definition
 - Creating DOM instances
 - ...

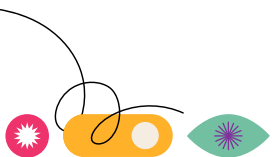


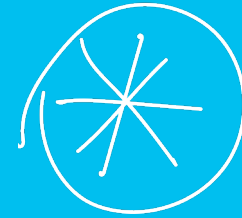
Best practices

- **Reduce the amount of DOM modules.** Group DOM definitions that belong together in one manager.



- **Avoid large objects.** Split them up if pieces of data are rarely used together.
 - Large objects take longer to be transferred between server and client.





DOM

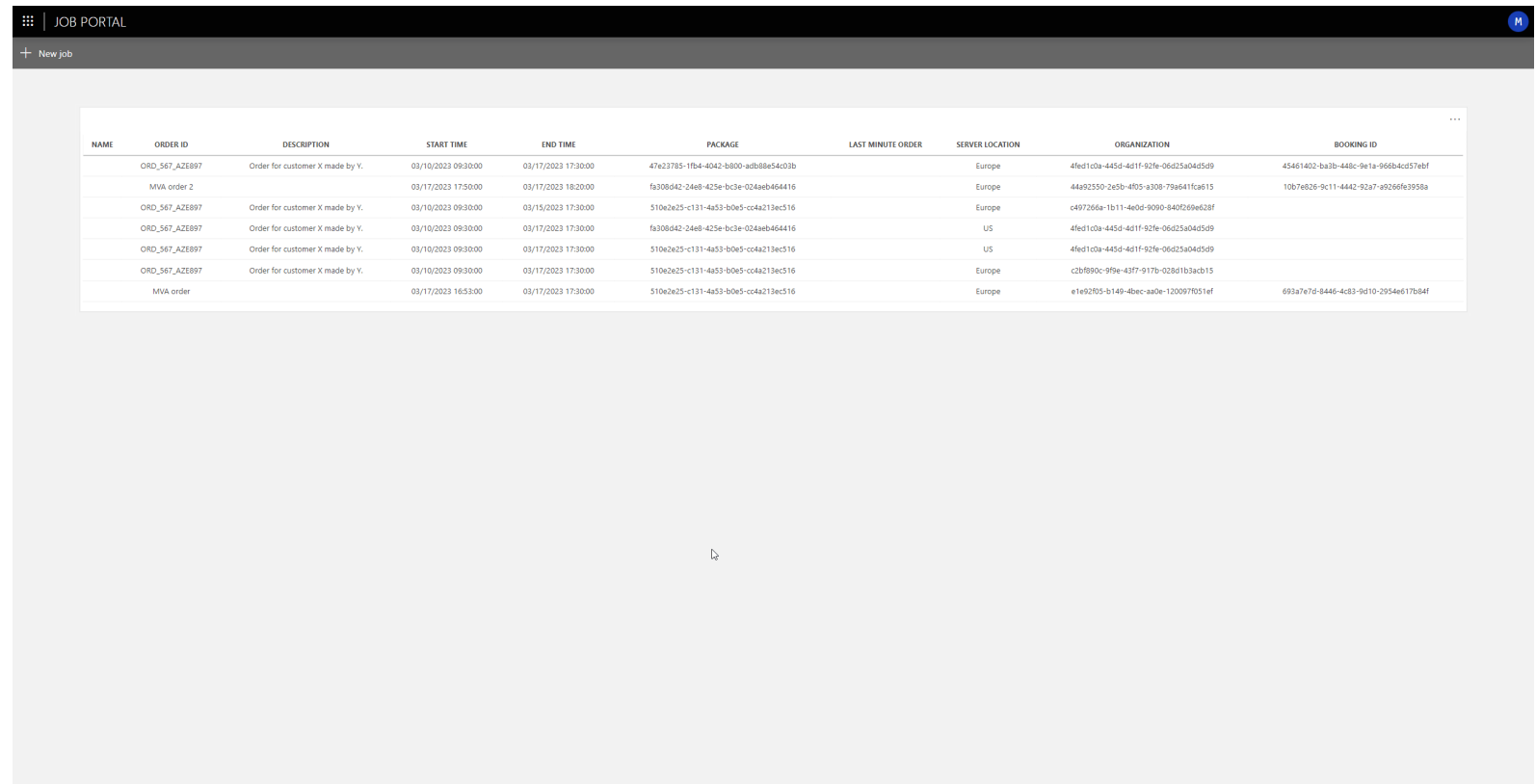
Integration in low-code
apps



Hands-on

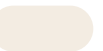
DOM integration in low-code apps – milestone 1

- Milestone 1: basic app with a button to create a new DOM instance
 - Create a new app
 - Show instances in table
 - Add button to expand panel
 - Add panel with form
 - Add save button



The screenshot shows a web application interface titled 'JOB PORTAL'. At the top left, there is a '+ New job' button. The main content area displays a table with the following columns: NAME, ORDER ID, DESCRIPTION, START TIME, END TIME, PACKAGE, LAST MINUTE ORDER, SERVER LOCATION, ORGANIZATION, and BOOKING ID. The table contains several rows of data, including entries for 'ORD_567_AZE897' and 'MVA order 2'. The interface is clean and modern, with a dark header and a light background for the table.

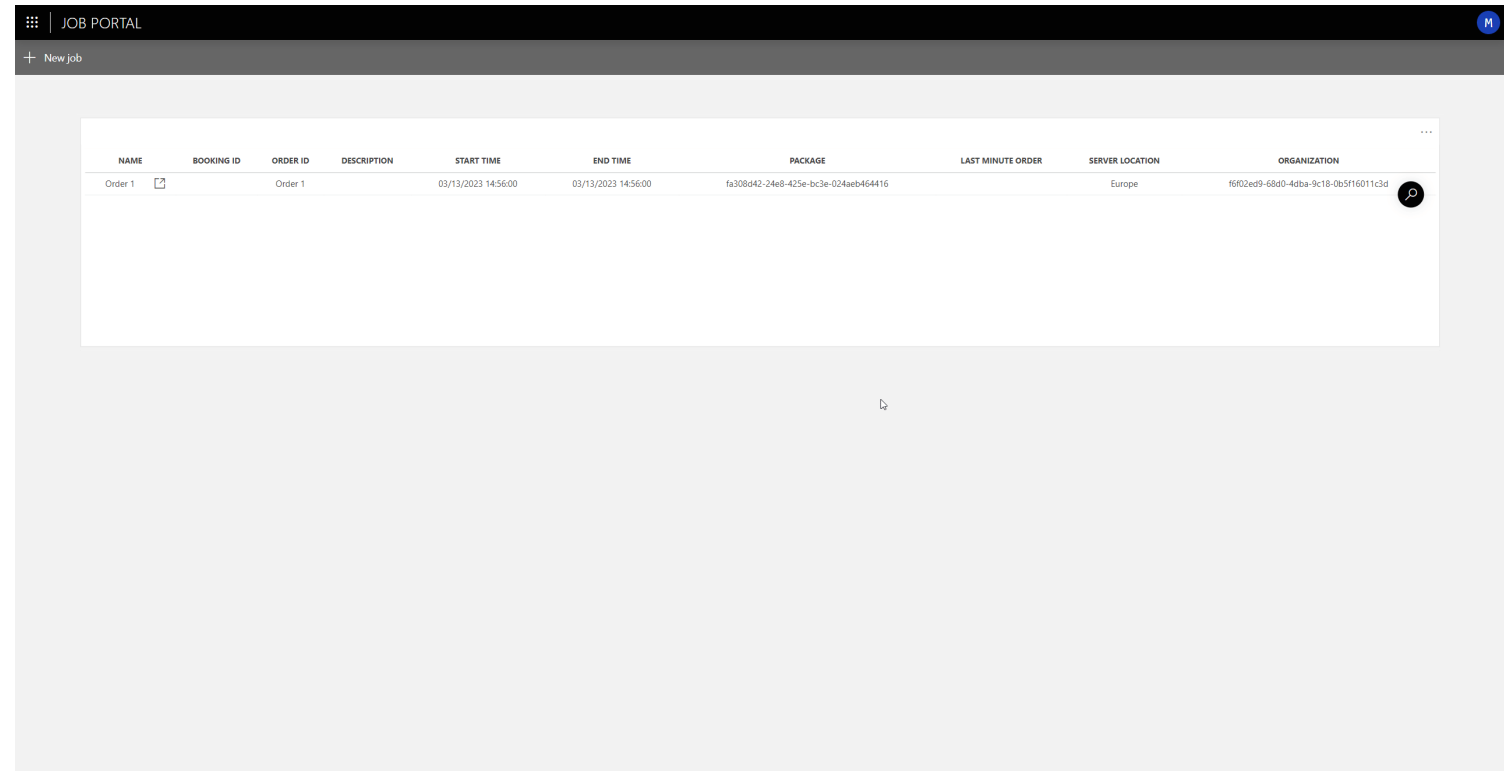
NAME	ORDER ID	DESCRIPTION	START TIME	END TIME	PACKAGE	LAST MINUTE ORDER	SERVER LOCATION	ORGANIZATION	BOOKING ID
	ORD_567_AZE897	Order for customer X made by Y.	03/10/2023 09:30:00	03/17/2023 17:30:00	47e23785-1fb4-4042-b800-adb88e54c03b		Europe	4fed1c0a-445d-4d1f-92fe-06d25a045d99	45461402-ba3b-448c-9e1a-966b4cd57ebf
	MVA order 2		03/17/2023 17:50:00	03/17/2023 19:20:00	fa30b042-24e8-425e-bc3e-024ae8464416		Europe	4492550-2e5b-4f05-a30b-73a641fca615	10b7e626-9c11-4442-92a7-a92666b3958a
	ORD_567_AZE897	Order for customer X made by Y.	03/10/2023 09:30:00	03/15/2023 17:30:00	510e2e25-c131-4a53-b0e5-cc4a213ec516		Europe	c497266a-1b11-4e0d-9090-840269e628f	
	ORD_567_AZE897	Order for customer X made by Y.	03/10/2023 09:30:00	03/17/2023 17:30:00	fa30b042-24e8-425e-bc3e-024ae8464416		US	4fed1c0a-445d-4d1f-92fe-06d25a045d99	
	ORD_567_AZE897	Order for customer X made by Y.	03/10/2023 09:30:00	03/17/2023 17:30:00	510e2e25-c131-4a53-b0e5-cc4a213ec516		US	4fed1c0a-445d-4d1f-92fe-06d25a045d99	
	ORD_567_AZE897	Order for customer X made by Y.	03/10/2023 09:30:00	03/17/2023 17:30:00	510e2e25-c131-4a53-b0e5-cc4a213ec516		Europe	c2b890c-9f9e-43f7-917b-02bd1b3ac615	
	MVA order		03/17/2023 16:53:00	03/17/2023 17:30:00	510e2e25-c131-4a53-b0e5-cc4a213ec516		Europe	e1e9205-b149-4bec-aad0e-120097051ef	693a7e7d-8446-4c83-9d10-29546617b84f



Hands-on

DOM integration in low-code apps – milestone 2

- Milestone 2: expand the app with a table that shows all orders & have the possibility to show/edit existing instances
 - Add button to expand panel from table
 - Feed form in panel with table
 - Add refresh actions from save
 - Add delete option on the form



The screenshot displays a web application interface for a 'JOB PORTAL'. At the top, there is a dark header with a hamburger menu icon, the text 'JOB PORTAL', and a user profile icon. Below the header, a navigation bar contains a '+ New job' button. The main content area features a table with the following columns: NAME, BOOKING ID, ORDER ID, DESCRIPTION, START TIME, END TIME, PACKAGE, LAST MINUTE ORDER, SERVER LOCATION, and ORGANIZATION. A single row is visible in the table, representing 'Order 1'. A search icon is located in the bottom right corner of the table area.

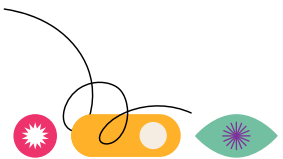
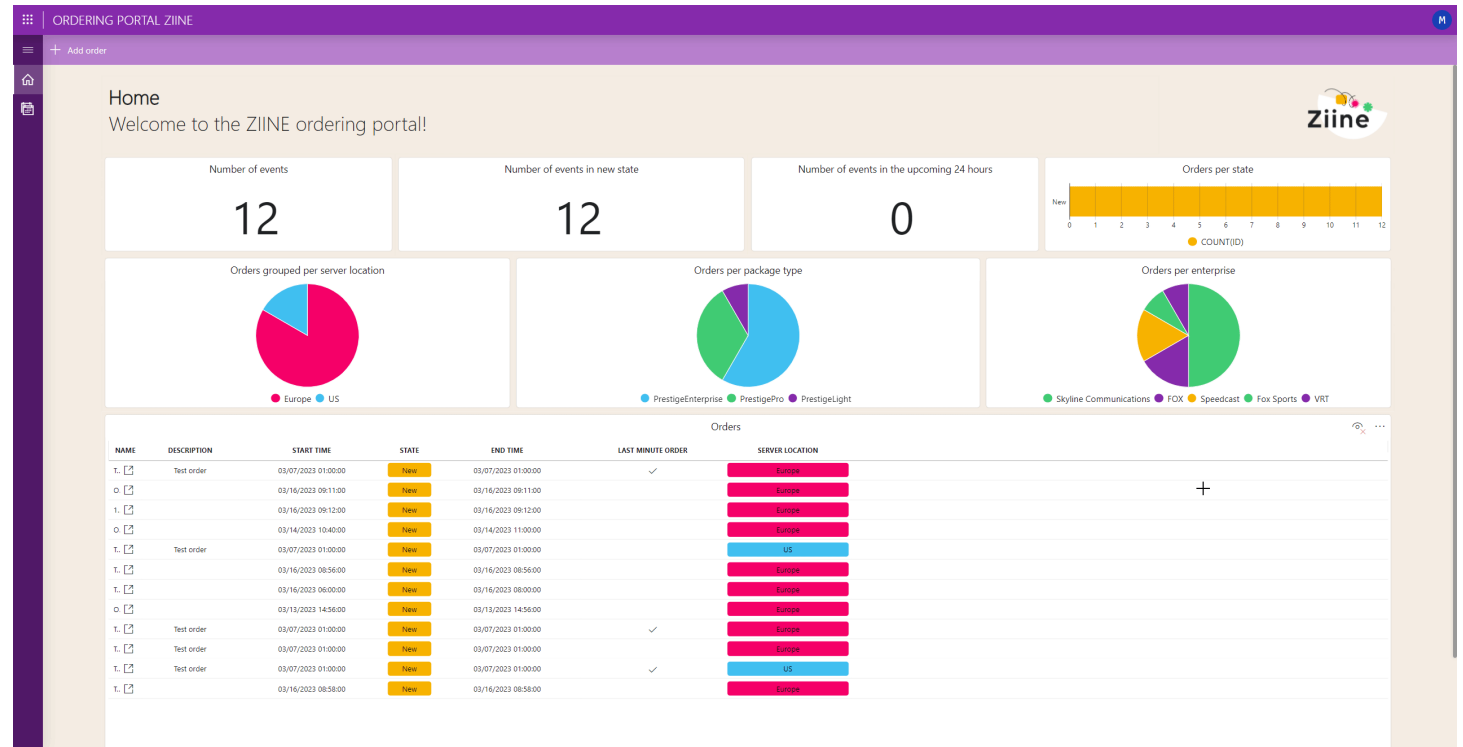
NAME	BOOKING ID	ORDER ID	DESCRIPTION	START TIME	END TIME	PACKAGE	LAST MINUTE ORDER	SERVER LOCATION	ORGANIZATION
Order 1		Order 1		03/13/2023 14:56:00	03/13/2023 14:56:00	fa308d42-24e8-425e-bc3e-024aeb464416		Europe	f6f02ed9-68d0-4dba-9c18-0b5f16011c3d





Hands-on

DOM integration in low-code apps – milestone 3

- Milestone 3: polish app
 - Show filtering on a table
 - Add conditional coloring on DOM table
 - Customize columns per user by drag & drop
 - Add extra pages
 - Change layout
 - Add image

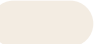
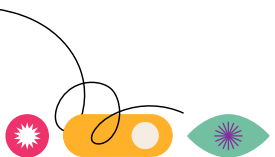
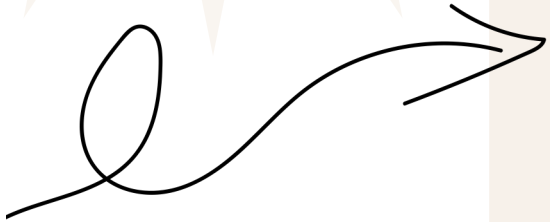


Craft your first 
GQI queries
and – deliver your first
 actionable insights

Agenda



- What is GQI?
- What are queries?
- How does data flow?
- Visualizing a result
 - Simple
 - Advanced
- Tweaking a query
- Extending GQI
 - Ad hoc data sources
 - Custom operators



Goals

We understand
the concept of
GQI and queries.

We can use data
sources and
operators.

We understand
how data is
flowing.

50

We can visualize
results.

We can extend
GQI.

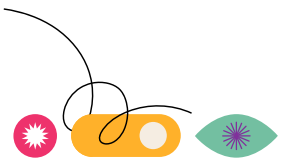
50

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What is GQL?

Ssssh, it's magic...



What is GQI?

Generic Query Interface

Why?

- Fetches tables
- Abstraction layer for dashboards and Low-Code apps
- Generic operators
- Generic visualizations
- Generic tools

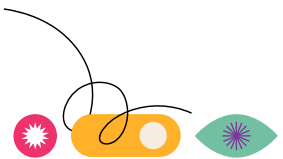
The image shows two overlapping screenshots of a Generic Query Interface (GQI). The background screenshot displays a query builder with a vertical flow of steps: 'Get alarms', 'Filter Is active' (with 'equals true' below it), 'Aggregate Alarm ID', 'Get the Count', and 'Group by Severity'. At the bottom, there is a 'Select operator' dropdown menu. The foreground screenshot shows a filter panel with a search bar containing 'Ziine'. Below the search bar, there are two sections: 'Element name' and 'Severity'. The 'Severity' section has a list of severity levels with checkboxes and counts: 'Notice (0)', 'Warning (5)' (checked), 'Critical (4)', 'Suggestion (0)', and 'Major (0)'. A pink wavy line is drawn over the bottom right of the foreground screenshot.

Query builder and filter



What are queries?

You talking to me?



What are queries?

```
SELECT *  
FROM Alarms  
WHERE Severity  
LIKE '%Warning%'
```

```
SELECT Severity, Count(*)  
FROM Alarms  
GROUP BY Severity
```

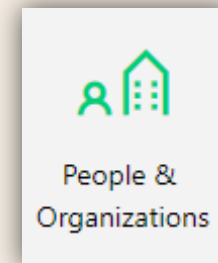
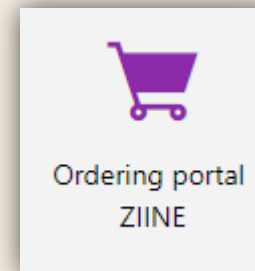
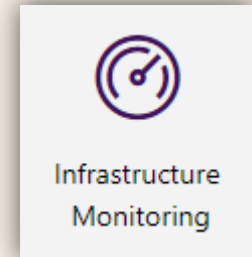
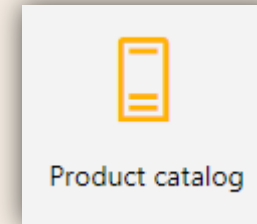
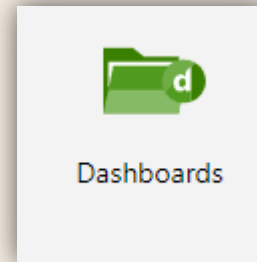
Similarities with other querying languages

Exists of

- **One data source**
- **Zero or more operators**

Built through a **conversational API**

Stored in your dashboard or Low-Code app



What are queries?

Data sources you say?

Identifies what data should be fetched



DataMiner

Alarms

Bookings

DOM instances

Parameters

Services



Any external data

API endpoint

Database

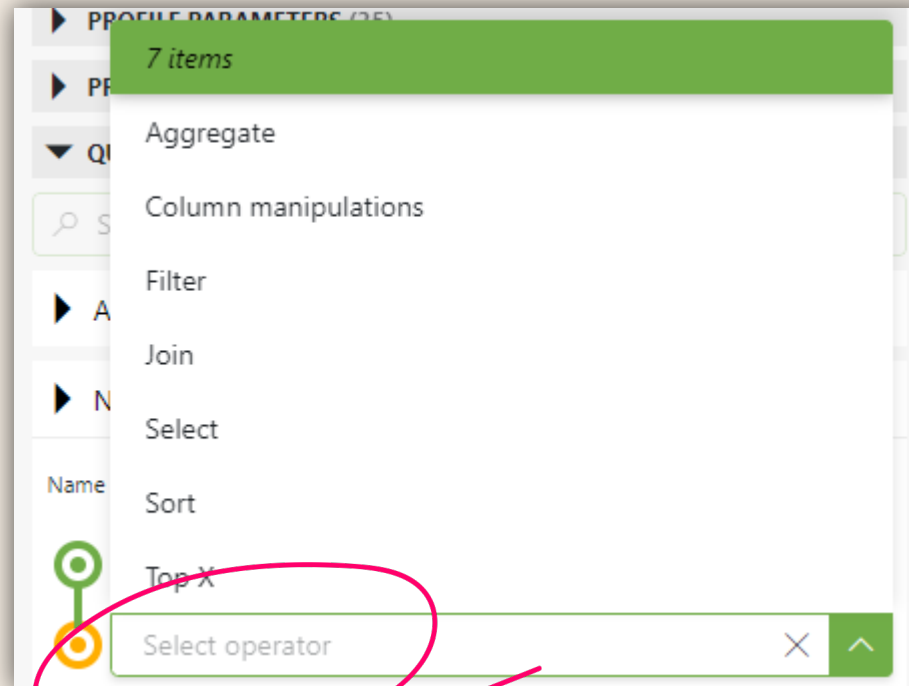
File storage
(CSV, JSON, XML)



What are queries?

Operators you say?

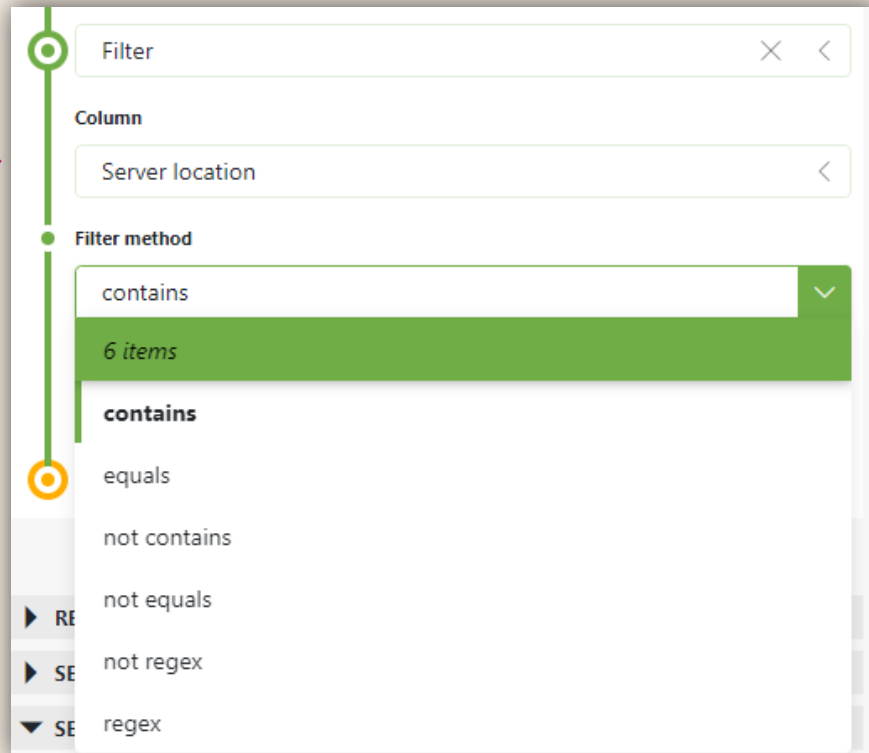
Chained operators that apply transformations to our data source



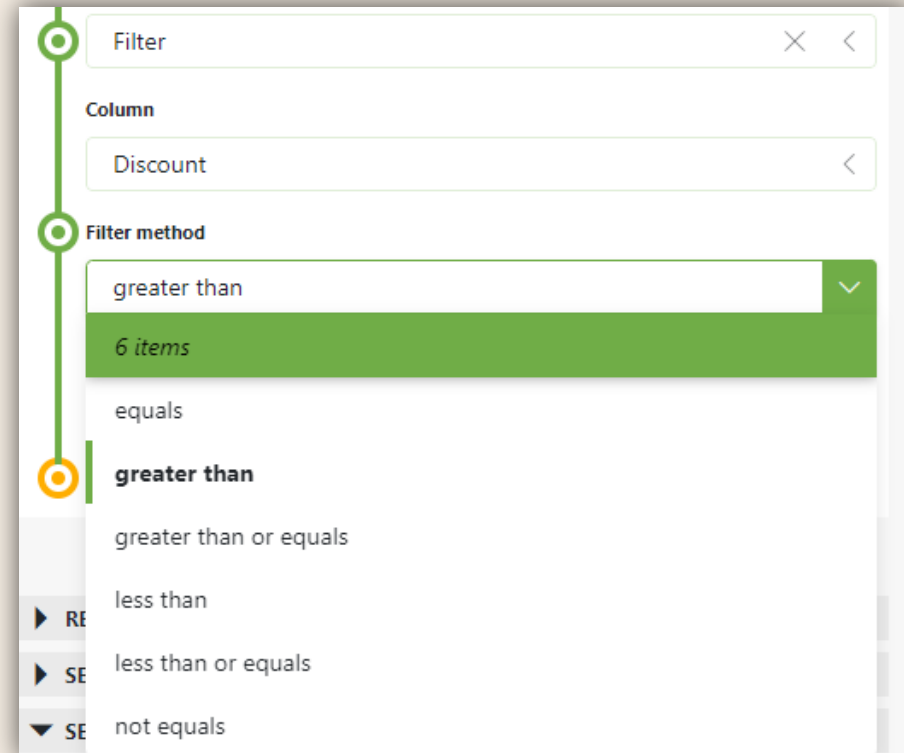
What are queries?

Conversational, my new best friend?

Looks at the current query and limits capabilities to what makes sense.



Text



Numeric




GET INSPIRED



Let's have

~ a look

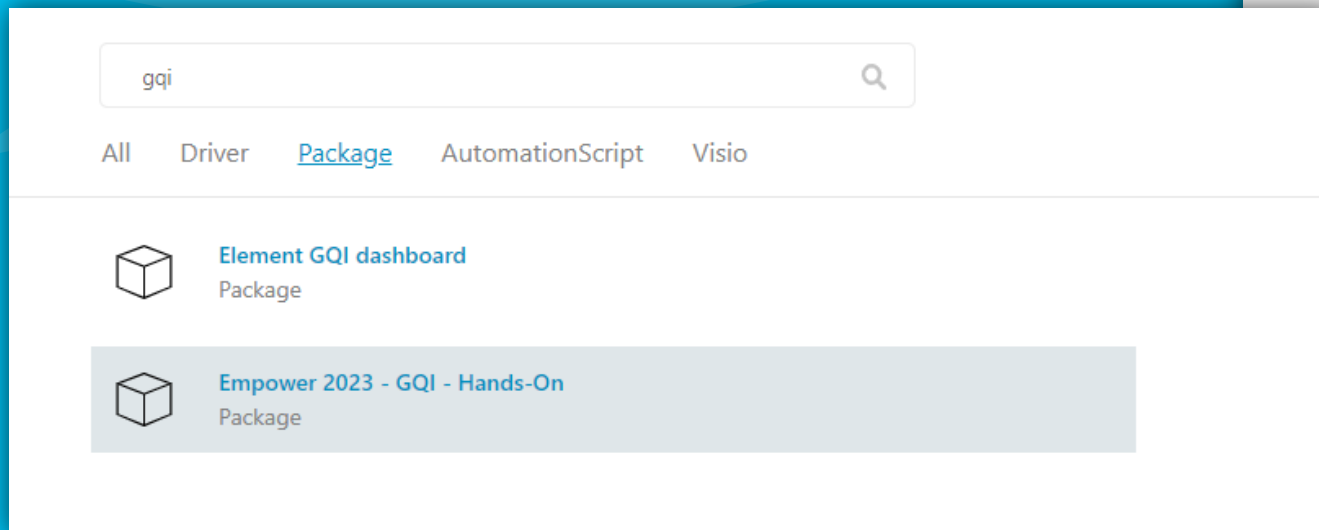
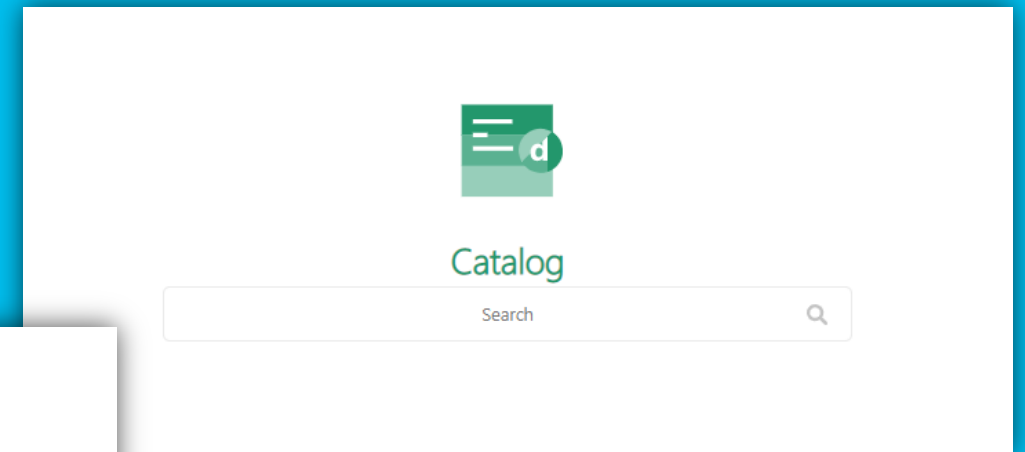


**We understand
the concept of
GQI and queries.**

GET INSPIRED

Hands-on time!

- Go to '**Catalog.dataminer.services**'
- Search for '**GQI**'
- Install the '**Empower 2023 – GQI – Hands-on**'



DASHBOARDS

- ✓ 1. GQI query exercises
 - Exercises
 - 1. Selecting data
 - 2. Filter
 - 3a. Aggregate - I
 - 3b. Aggregate - II
 - 4. Sorting
 - 5. Top X
 - 6a. Column manipulation - I
 - 6b. Column manipulation - II
 - 7a. Joins - I
 - 7b. Joins - II
 - 8a. Advanced I
 - 8b. Advanced II
 - Solutions
- > 2. GQI visual exercises
- > 3. GQI extensions

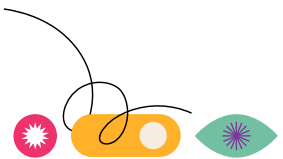
Let's get our hands dirty!

Query exercises

We can use data sources and operators.

How does data flow?

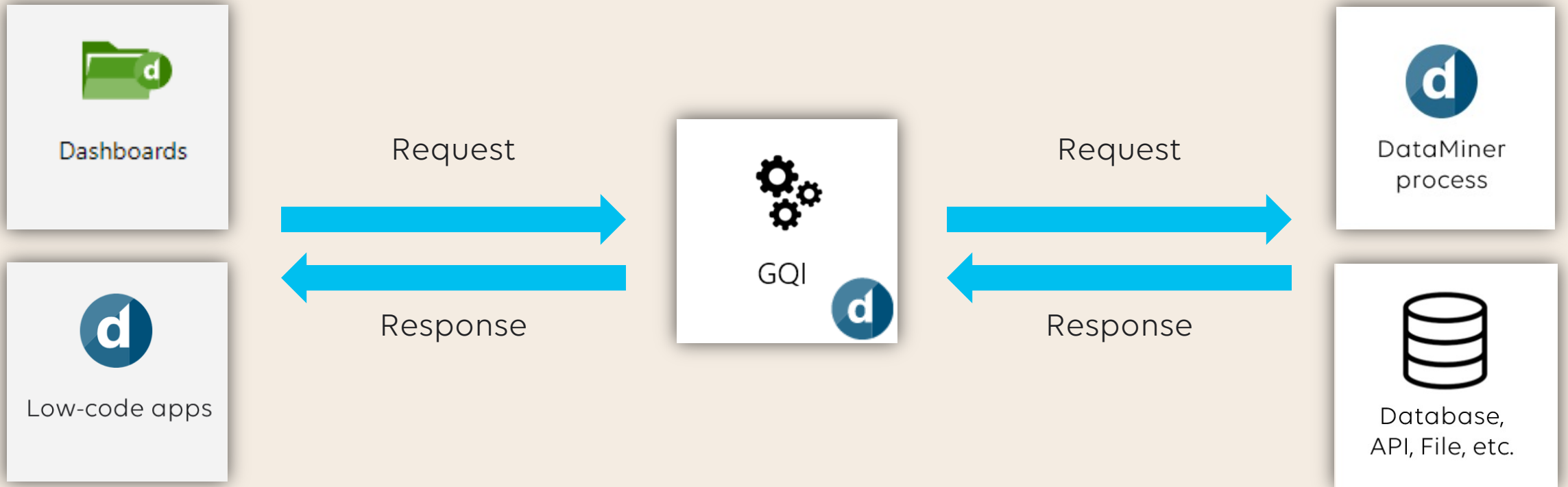
Like a stream of 1s and 0s



How does data flow?

Advanced!

Sessions!



Runs in the browser on the client.

Runs in the SLHelper process on the DMA.

Depends on the data source



How does data flow?

Advanced!

Messages?

OpenQuerySession

- **Sends** a request to open a session
- **Returns** session key, column information

GetNextQuerySessionPage

- **Sends** a request for the next X records
- **Returns** the next X records
- Rinse and repeat

CloseQuerySession

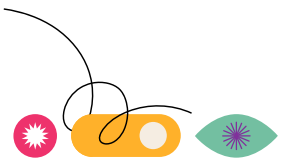
- **Sends** a request to close the session and release the resources on the backend
- **Returns** nothing

We can use data sources and operators.



Visualizing a result?

Please, no more tables...

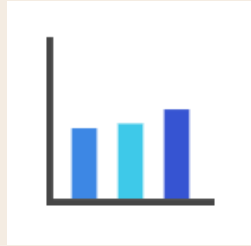


Visualizing a result

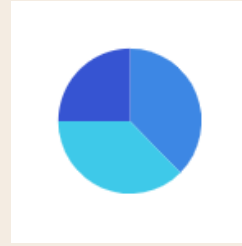
Well known visuals



Table



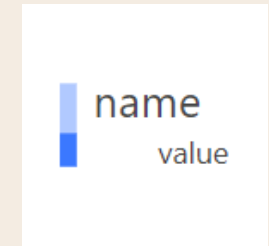
Bar chart



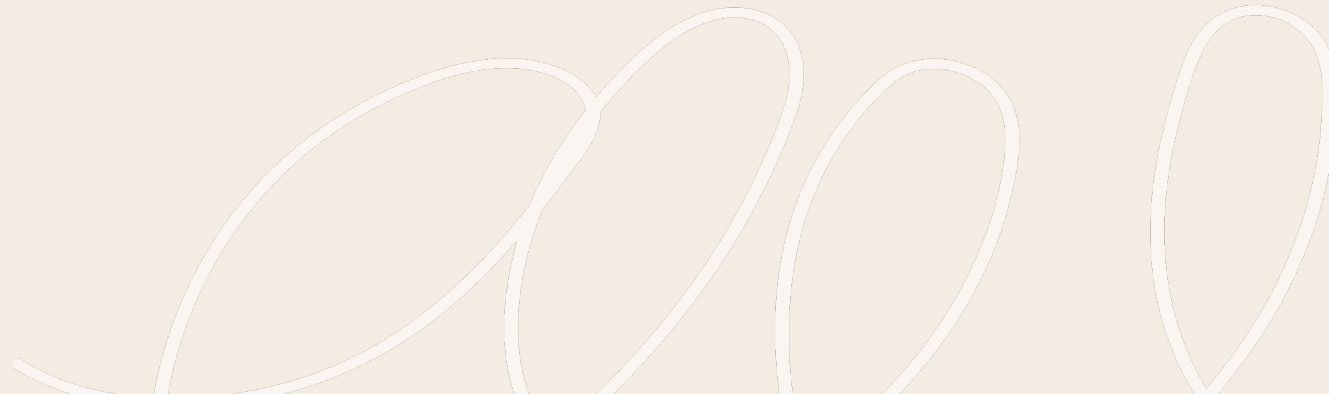
Pie chart



Line chart



State



Visualizing a result

Advanced visuals - Grid



Soft-launch

The dashboard displays test results for two destinations: Fusion 1 (V+A) and Muon 1 (V). Each destination has a summary bar at the top with the following metrics:

Metric	Fusion 1 (V+A)	Muon 1 (V)
passed	2	2
tests	2	2
suites	1	1
flakes	0	0
skips	0	0

The main grid shows test results for various sources and groups. The 'Neuron 1-2' source is highlighted in blue. The grid is organized into columns for Areas, Groups, Sources, and Groups.

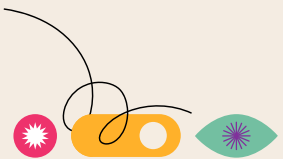
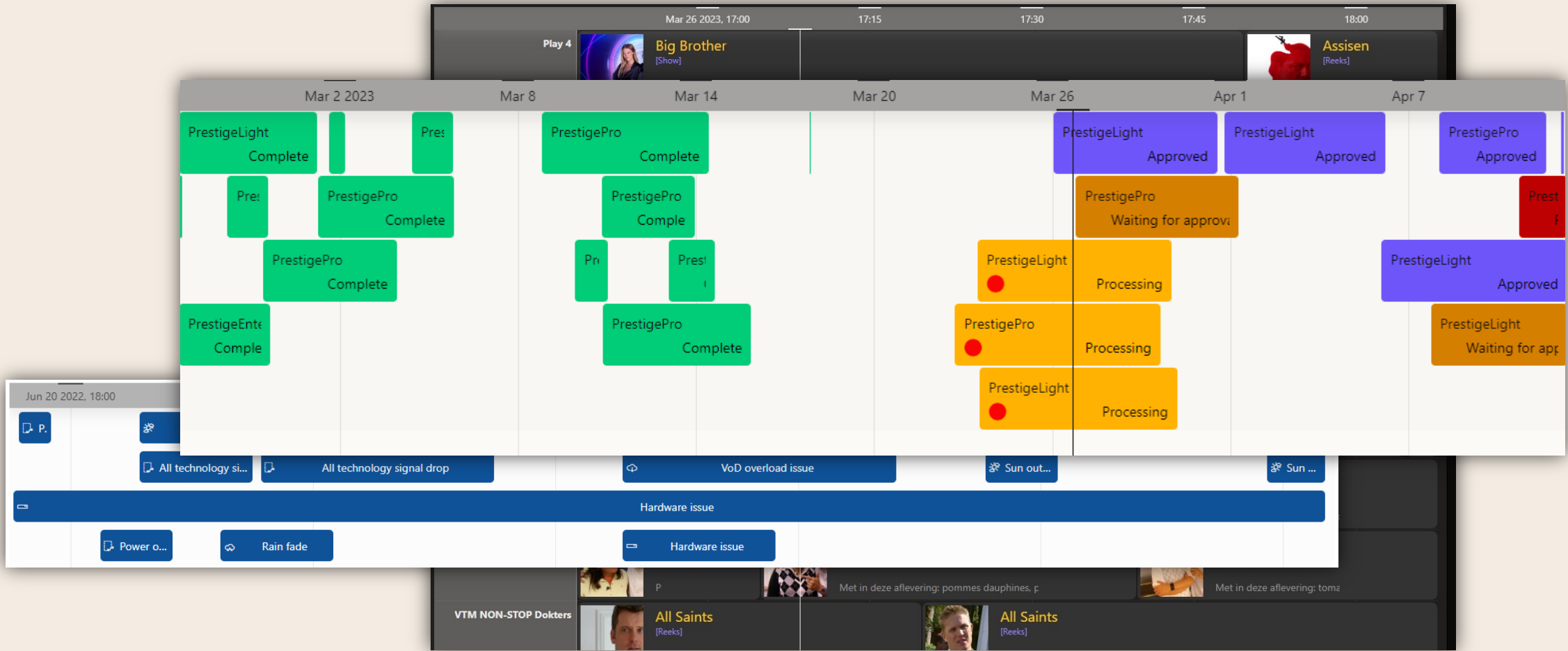


Visualizing a result

Advanced visuals - Timeline

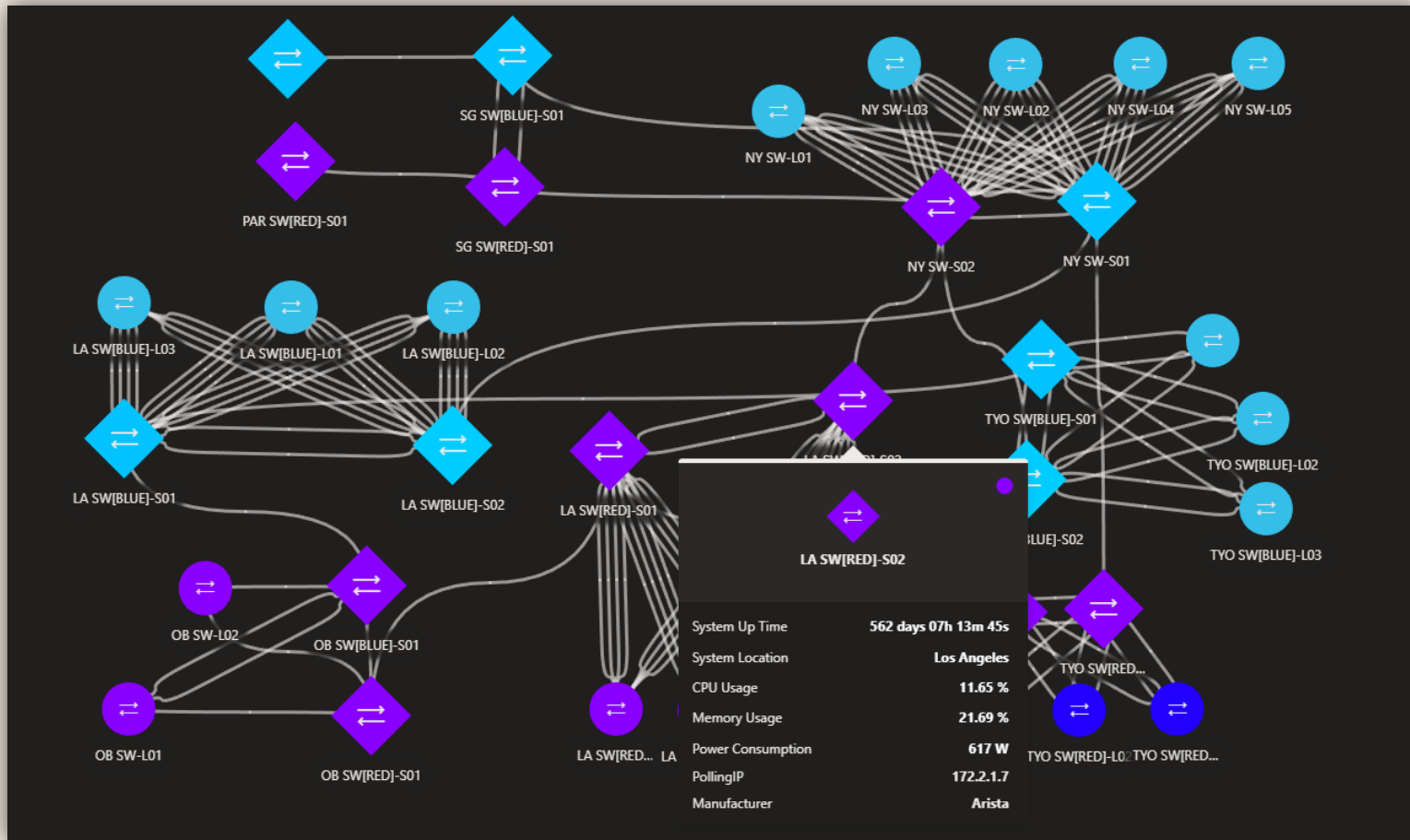


Soft-launch



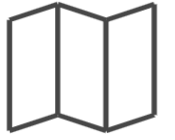
Visualizing a result

Advanced visuals – Node-edge

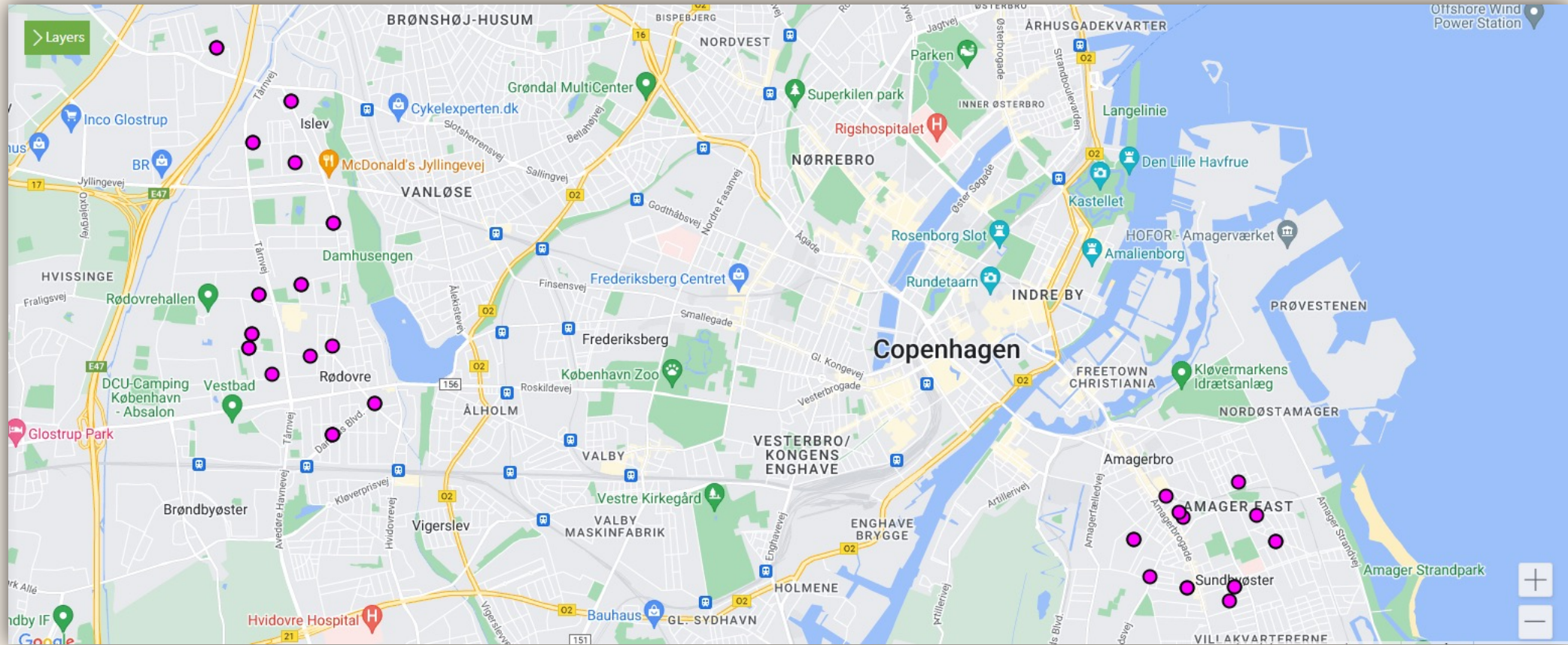


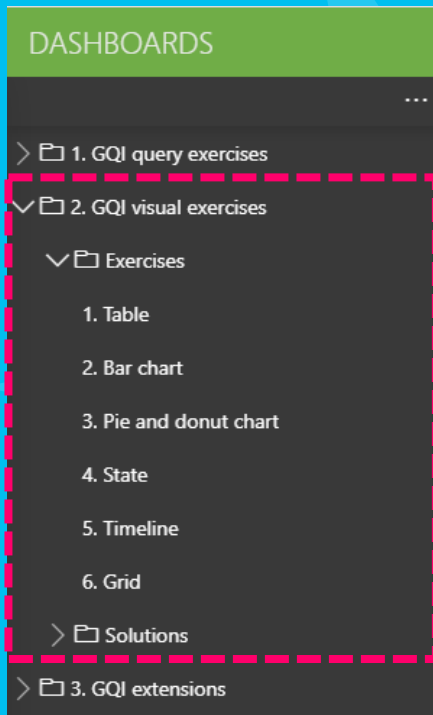
Visualizing a result

Advanced visuals – Maps



Soft-launch





Let's get our hands dirty!

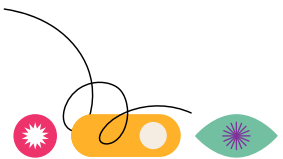
Visual exercises

We can visualize results.

50

Tweaking a query

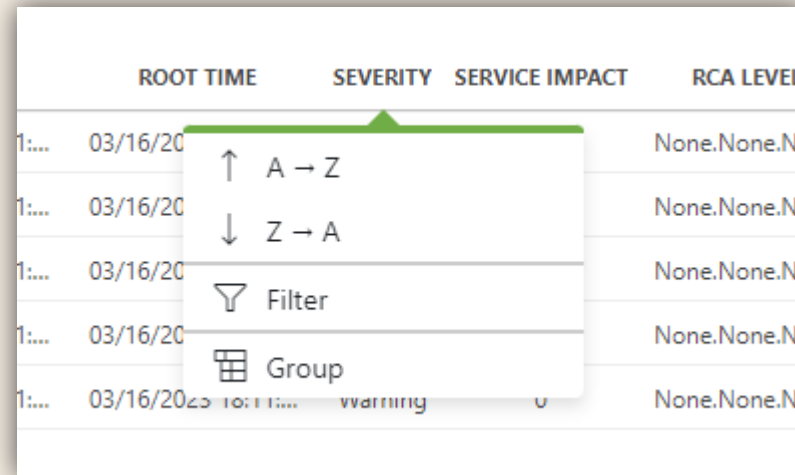
Less is more



Tweaking a query

Through a table

Right click menu of columns.



The screenshot shows a table with the following columns: ROOT TIME, SEVERITY, SERVICE IMPACT, and RCA LEVEL. A right-click context menu is open over the SEVERITY column, displaying the following options:

- ↑ A → Z
- ↓ Z → A
- Filter
- Group

	ROOT TIME	SEVERITY	SERVICE IMPACT	RCA LEVEL
1:...	03/16/20			None.None.No
1:...	03/16/20			None.None.No
1:...	03/16/20			None.None.No
1:...	03/16/20			None.None.No
1:...	03/16/20	warning	0	None.None.No



Tweaking a query

Through a query filter

Separate component

Exposes other queries

Exposes statistics

Soft-launch

The screenshot shows a user interface for configuring a query filter. At the top right, there is a search icon, a toggle switch labeled 'Active (0)', a trash icon, and a dropdown arrow. Below this is the 'Element name' section with a dropdown arrow and a text input field containing the word 'Filter' and a close 'X' button. The 'Parameter description' section has a dropdown arrow and a list of checkboxes with labels and counts: 'DataMiner run-time (1)', 'Use [%] (Storage) Real Memory.2 (5)', 'Use [%] (Storage) Cached memory.7 (2)', 'Use [%] (Storage) Shared memory.8 (2)', 'Alarm Group (1)', and 'Connection Status (1)'. The 'Severity' section has a dropdown arrow and a list of checkboxes with labels and counts: 'Notice (1)', 'Warning (5)', 'Critical (4)', 'Suggestion (1)', and 'Major (1)'. A yellow callout bubble with the text 'Soft-launch' is positioned above the top right corner of the interface.



GET INSPIRED



Let's have

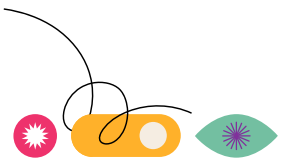
 a look



GET INSPIRED

Extending GQL

You mean extending it ourselves?



Extending GQL

Advanced!

Ad hoc data sources - Why

Not all data is in DataMiner yet

- File based storage
- Databases
- Rest APIs

We needed a flexible and easy way to access any data

Queried only when necessary while retrieving the latest values



Extending GQI

Advanced!

Ad hoc data sources - How

- Write code that implements one or more interfaces

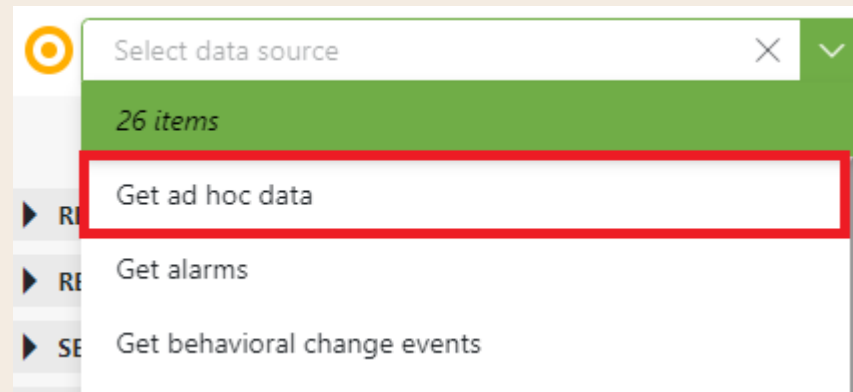
```
public interface IGQIDataSource
{
    GQIColumn[] GetColumns();

    GQIPage GetNextPage(GetNextPageInputArgs args);
}
```

- Compile this class in a library using the automation module

Compile as library with name:

- The data source will automatically become available in the query builder



Extending GQI

Advanced & soft-launch!

Custom operators

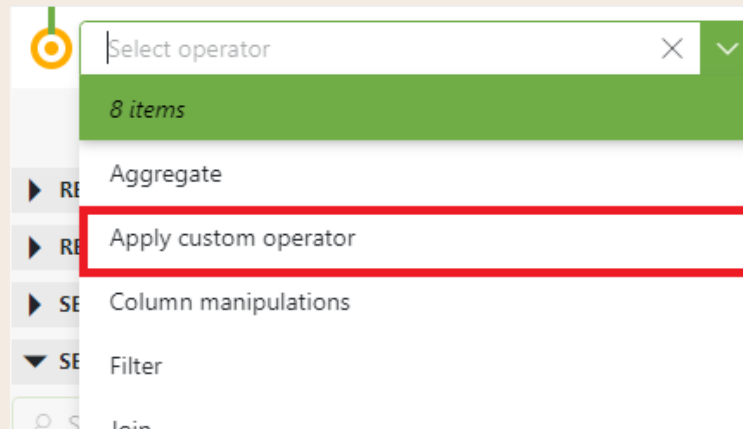
Do your own transformations using custom operators!

Similar approach to ad hoc data sources:

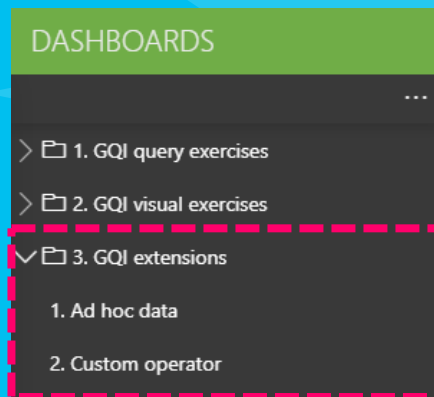
- New set of interfaces

```
public interface IGQIRowOperator : IGQIOperator
{
    ...
    void HandleRow(GQIEditableRow row);
}
```

- Compiled as a library
- Automatically available in the query builder



Let's get our hands dirty!



GQI extensions

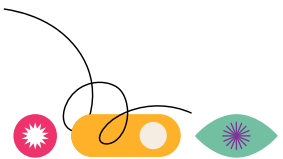
We can extend
GQI.

50

When it all  comes together



Goals



Let's create an app

Here's the story...

Get ready for an exciting project, folks! We have the incredible opportunity to create a game-changing tool that will empower our amazing manager, Andi Tamer! Andi will be blown away by the insightful information we'll be providing about our orders, including new orders, waiting orders, and those that are ready to be delivered. We can't wait to see Andi's face light up with appreciation when we receive 50 DevOps Points for our hard work!

But that's just the beginning, because we're taking this project to the next level! After Andi's review, we'll be adding even more features to our tool. We'll be providing insights on the revenue we're generating with our services and show how much revenue an order generates. Andi has requested an extra page that shows our orders in a nice schedule view, and another page that provides details on our operations, like how many people are part of our company and what level of expertise they are grouped in. And guess what? Andi will reward us with 50 DevOps Points for this incredible work!

But wait, there's more! Our ultimate goal at Ziine is to generate \$1,000,000 in revenue with these services in 2023, and Andi wants to know if we're on track. Can we get some insights on that in the app? Andi also wants to know how happy our customers are with our services. We'll even create a landing page for Andi's app, which will give him a summary view of all the content in the app. And if we can create this last increment, Andi will reward us with another whopping 50 extra DevOps Points!

Today, we'll create the MVP and if you're feeling empowered, go ahead and take the lead on the next iterations! Andi has set the deadline on April 5th for us to send him a demo of the final version (andi.tamer@skyline.be). So, let's roll up our sleeves, put our best foot forward, and create an app that will make Andi proud! This is an exciting opportunity to showcase our skills and make a real impact on our company's success!



Let's create an app

Focus on an MVP version

The screenshot shows a web application interface for 'New orders'. The top navigation bar includes the text 'EXERCISE DAY 2 - IT'S THE MANAGER' and a user profile icon 'P'. A sidebar on the left contains navigation icons and a search bar. The main content area features a table of orders with columns: START, END, STATE, LAST MINUTE, DISCOUNT, NAME, VERSION, TOTAL PRICE, and CUSTOMER. Below the table, a blue banner displays a 'No items to show' message with a decorative graphic of stars and clouds.

START	END	STATE	LAST MINUTE	DISCOUNT	NAME	VERSION	TOTAL PRICE	CUSTOMER
06/22/2023 05:53:21	06/27/2023 18:10:21	New		20%	PrestigeLight	1.0	2646 €	Skyline Communications
05/24/2023 17:52:54	05/31/2023 16:21:54	New		16%	PrestigePro	1.0	4994 €	Skyline Communications
05/22/2023 15:42:25	05/24/2023 09:18:25	New	✓	20%	PrestigeEnterprise	1.0	2080 €	Skyline Communications
06/07/2023 04:06:24	06/12/2023 09:16:24	New		18%	PrestigePro	1.0	3755 €	Skyline Communications
04/25/2023 22:02:28	04/28/2023 15:40:28	New		22%	PrestigeEnterprise	1.0	3282 €	Skyline Communications
06/10/2023 20:26:18	06/13/2023 22:18:18	New	✓	16%	PrestigeLight	1.0	1477 €	Skyline Communications

A vertical menu with three items, each represented by a folder icon and text: 'New Orders', 'Waiting Approval', and 'Approved Orders'.



Let's create an app

Feel free to go wild

EXERCISE DAY 2 - IT'S THE MANAGER

Hi Manager, how was your day so far? Here are some Insights

ORDER OVERVIEW

4 # NEW ORDERS

- # Waiting Orders: 6
- # Approved Orders: 5
- # Rejected Orders: 15

Orders by state

- Rejected
- Waiting for approval
- Approved
- New
- Complete
- Processing

164111 € BOOKED YTD 2023

16 % % MISSION

see more revenue metrics

STATE OF THE OPERATIONS

43 # PEOPLE

50 AVERAGE TIME

see more operations metrics

Our Community

43 # PEOPLE

- Junior: 10
- Senior: 27
- Principal: 4
- Fellow: 2

User Feedback

3.58 AVERAGE FEEDBACK SCORE

Delivered orders

164098 € BOOKED YTD 2023

Revenue Q1	16875 €
Revenue Q2	0 €
Revenue Q3	0 €
Revenue Q4 (K)	0 €

Coming up confident

18550 € REVENUE BOOKED ORDERS

Coming up uncertain

16975 € REVENUE ORDERS IN WAITING

% MISSION COMPLETE

0

7157 € REVENUE THIS WEEK SO FAR	15929 € REVENUE LAST WEEK	45325 € REVENUE THIS MONTH SO FAR	7157 € REVENUE LAST MONTH
---------------------------------	---------------------------	-----------------------------------	---------------------------

Order Schedule

Active (0)

Start: no lower ... and no upper ...

End: no lower ... and no upper ...

State:

- Complete (11)
- Approved (2)
- Waiting for appro... (1)
- Processing (3)

Server location:

- Australia (6)
- Europe (5)
- China (3)
- US (3)

Last minute:

- Yes (7)
- No (10)

Discount: no lower ... and no upper ...

Name:

- PrestigePro (7)
- PrestigeLight (6)
- PrestigeEnterprise (4)

PrestigeLight
Europe

Customer rating: ☆☆☆☆☆

Great job! This is definitely something to be proud of. Keep up the good work! You're doing allls.

100% Complete



GET INSPIRED

Real-life ~ use cases

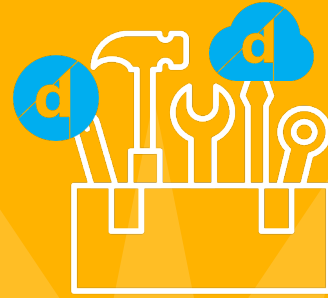
from



around the world

GET INSPIRED

GET INSPIRED



Create quick wins

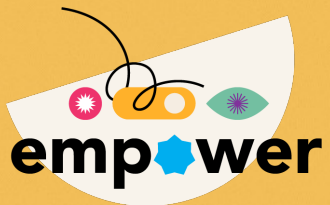


GET INSPIRED



LET US EMPOWER YOU

**practical
details**



better - faster - cheaper

towards a data driven organization

plan

deploy

monitor ^[AI]

control

automate & orchestrate

your unique ecosystem, without boundaries



Digital Twin

Live Sharing as a Service

ChatOps as a Service

DevOps as a Service

Unsupervised (real-time) AI

Business Process Automation

Service & SLA Monitoring

Collaboration

Ad-hoc control management

Configuration Management

Life-cycle management

Event management

Incident management

Service configuration planning



Markets

DataMiner comes with sample applications and use cases for ICT media & broadband

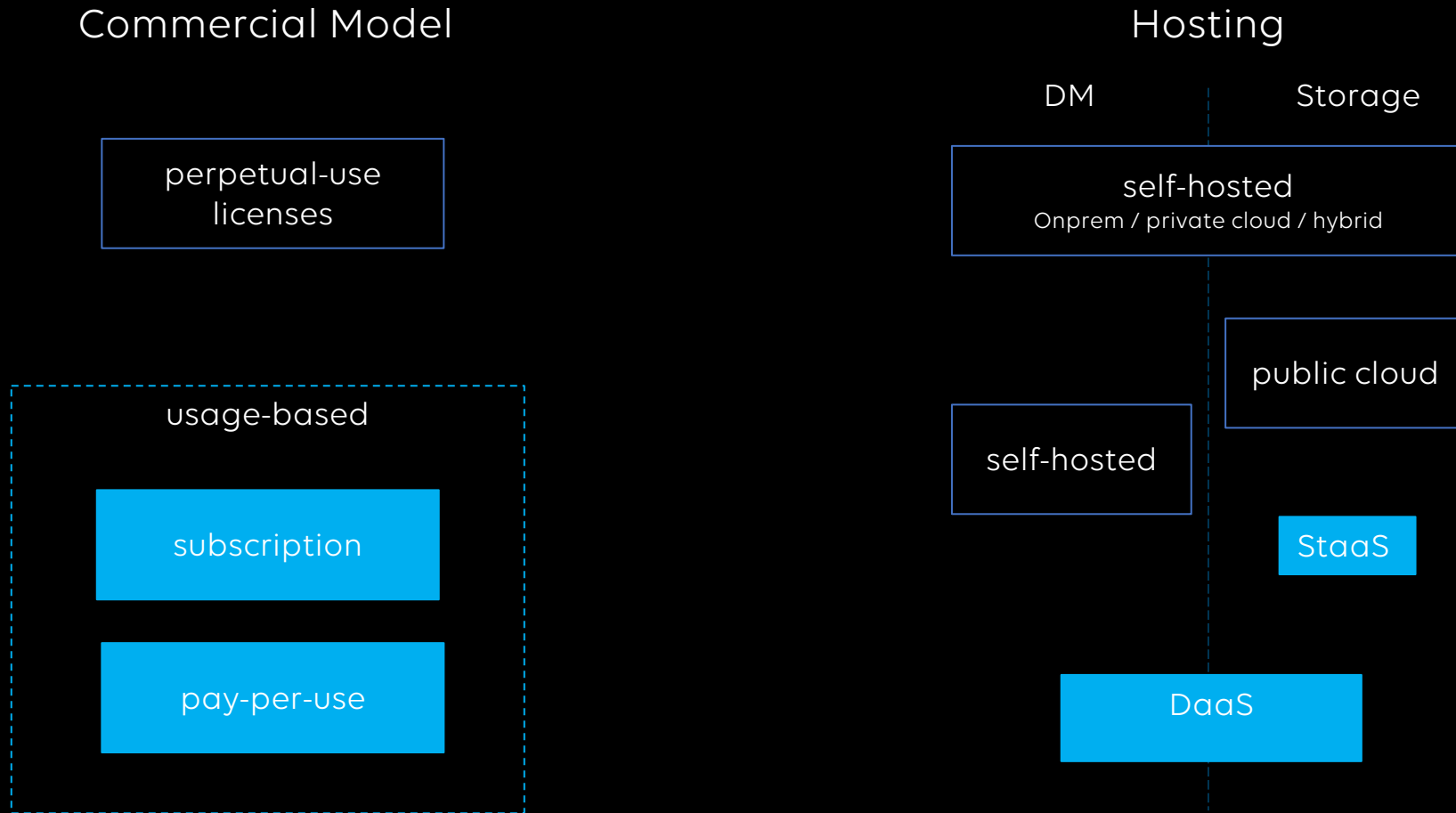
production studio • MCR • playouts • multi-screen OTT • video headends • cloud pipelines • SaaS • cloud platforms • ICT data centers • ad insertion • VoD pipelines • Media Asset Management WF automation MAM • EPG meta data management • IP L3 networks • IP L2 VLAN networks • MPLS networks • SDH & SONET networks • CDN networks • optical networks • broadcast SNG • contribution & exchange networks • inter-studio networks • core backbones • DTH • DVB-T • ISDB-T • ATSC networks • enterprise VSAT • consumer VSAT • satellite teleports • satellite downlinks • GEO networks • MEO and LEO constellations • DOCSIS networks • DSL access networks • 4G/5G fixed mobile networks • FTTx networks • 5G RAN • 5G broadcast • CDN • IoT • EPG metadata • CPE broadband gate fixed wireless • CPE Mobile • WiFi networks • KQI management • ticket and incident management • incident resolution • inventory management • planned maintenance management • facility management • rack management • configuration management • software management • BPM business process management ...



Solutions Use Cases DataMiner



What we offer



Agenda

ICT

1. Environmental, facilities & IoT sensors
2. On-premises networks & data centers
3. Network timing management
4. Managing cloud workloads

Events and jobs planning

5. Events and jobs bookings
6. Production workloads in the cloud

Master Control (MCR)

7. Flow and signal group management
8. Flow engineering & documentation
9. Flow monitoring
10. Control surfaces
11. Satellite downlink automation
12. Contribution over fiber and cloud

13. SDN for contribution & distribution services
14. Automating file asset workflows

User experience management (UEX)

15. Service configuration database
16. Experience & performance management
17. Service Level Agreements

OSS / BSS workflows

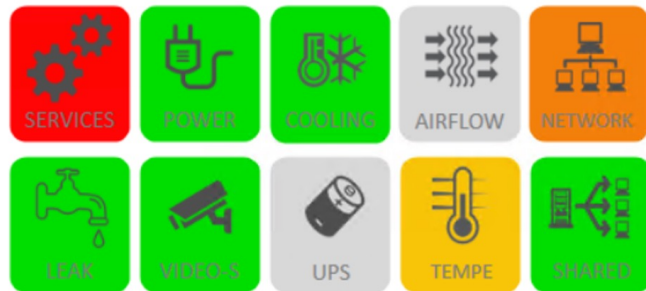
18. Planned Maintenance
19. Incident management
20. Problem mgt & resolve workflows
21. Activity scheduling
22. Operational data management
23. VSAT hub and terminal provisioning
24. From warehouse to operations



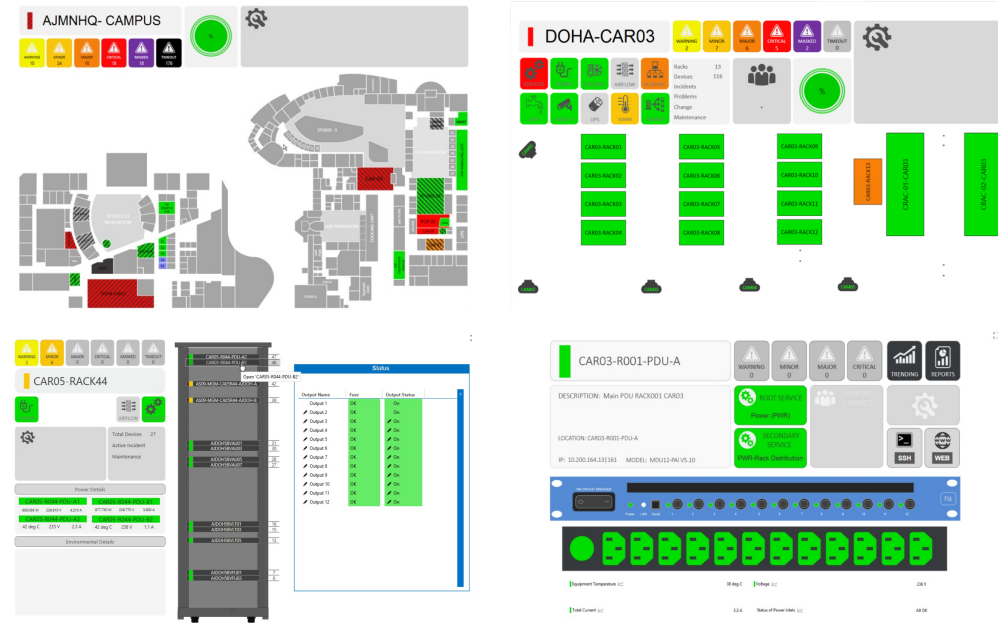
1. Environmental, facilities & IoT

Know what's going on in your buildings and identify impact on your media & IT services

- drill down from campus into buildings, rooms, racks, equipment
- interface with PDUs, UPS, CCTV, aircon, water leaking & temperature probes etc...
- IoT sensors & smart meter integration
- map environment to media / IT services for root cause analysis
- dynamically created visual overviews



monitor your facility, interface with environmental probes, sensors and CCTV cameras & browse through your rooms and racks



Visual Overview
Services
Root Cause Analysis

- STATUS
- DATA
 - Config Page
 - Modbus Data Table
 - Data
 - View Table
 - Set Device
 - Full Task
- ALARMS 1
- REPORTS
- BACK-UP/RTS
- DOCUMENTS
- NOTES
- GENERAL PARAMETERS
- ANNOTATIONS
- HELP

Sikringer

Utlest sikring F01, F02 eller F04 ●	Utlest sikring F03 eller F06 ●
F01-Nettspenning	F03-Busspenning
F02-Motorsvarmer	F06-Generatorspenning
F04-Batterilader/Varmeelement/ Utak for drivstoffpumpe	

Batteriladerinfo

Feil på batterilader ●

Innbrudd

Innbruddskalern utlest ●

Alarmklasser

A B C D E F

Brennstoff

Tanknivå: 610 L
 Gjennomsnitt uttak: 137 L
 Gjennomsnitt drift: 4 Apr 2019



Kraftforsyning

Generator effekt
35 (kVA)

Hovedstrømskonne
 Spenning: 220 V
 Frekvens: 400 Hz
 Hovedstrømskonne ute ●



Reservekraftforsyning

Start

Stopp

NB: Klikk på Stopp + Start dersom Start ikke fungerer første forsøk



Oljetank

Lavt nivå-oljetank ●

Motorinfo

Turtall	0 rpm		
Oljetrykk	0.0 bar	Lavt oljetrykk	●
Motortemperatur	27 °C	Kritisk lavt oljetrykk	●
		Lavt oljetrykk	●
Startfeil	10	Høy temperatur	●
Driftstimer	16 h	Overoppheting	●
Reste service	28 h	Lav temperatur	●
		Startfeil	●

Generatorinfo

Aktiv effekt	0 kW	
Effektfaktor	1.0	
Snittstrøm	0 A	
Snittspenning	0 V	
Frekvens	0.0 Hz	
Generatorspenning	0 V	<input type="button" value="Skru..."/>

Nettinfo

Aktiv effekt	-0 kW
Effektfaktor	1.0
Snittstrøm	0 A
Snittspenning	220 V
Frekvens	400 Hz
Nett ute	●

Leverandør: Coromatic Nord AS, Support: +46 83 10 27 00 a/baker
 40079, Epost: tomas.indigen@coromatic.se, Eskalering: +46 72 248
 66 06

IP: 10.17.48.146, Sida lastet inn av: Alexian Engineering 04.04.19, Veikalefon nr: +47 941 48 401, Driftmodus: Interchange

Registrert a-vik: 02.11.18 - Laderfeil, Bat spenning = 10.1% Maks undervoltage 1 (A) = 209V

2. On-premises networks & data centers

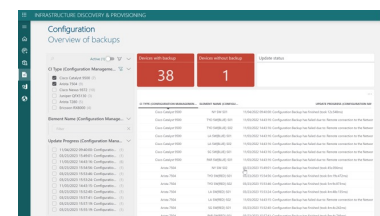
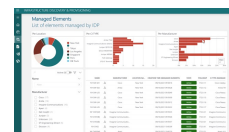
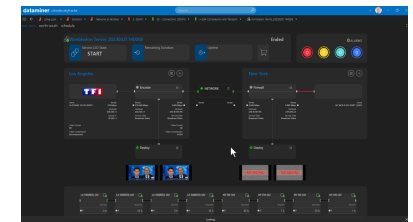
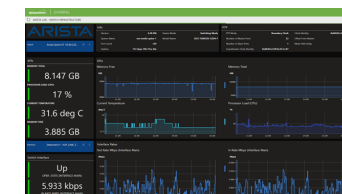
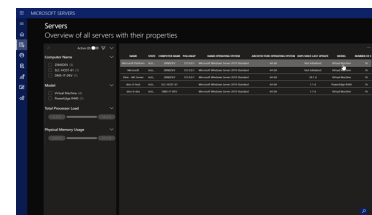
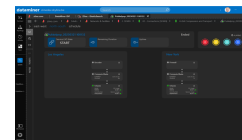
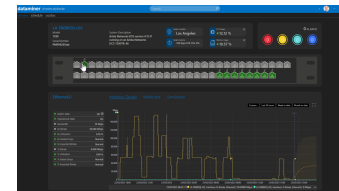
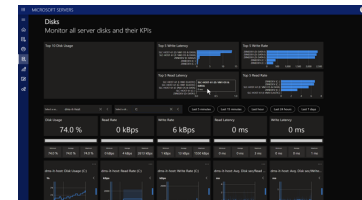
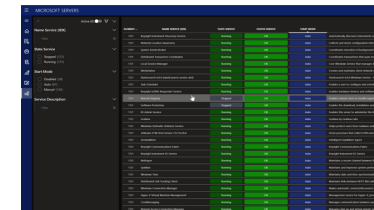
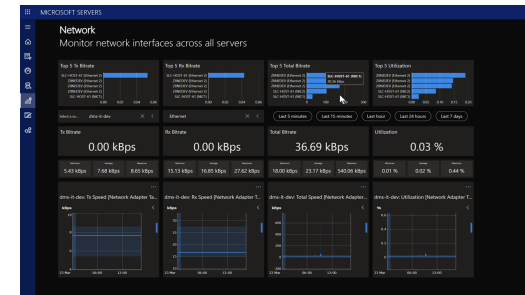
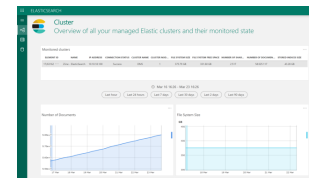
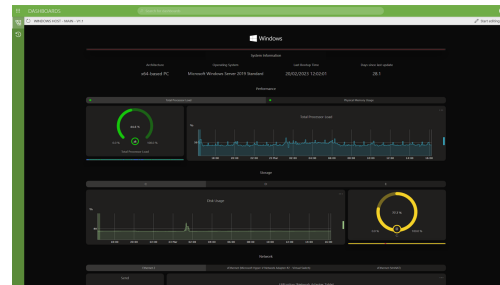
Single pane of glass to monitor, automate and keep your infrastructure secure

Any data source

Streaming telemetry

Synthetic testing

Any other system



Digital twin
DataMiner IDP
Process Automation
Dashboards
Low code apps

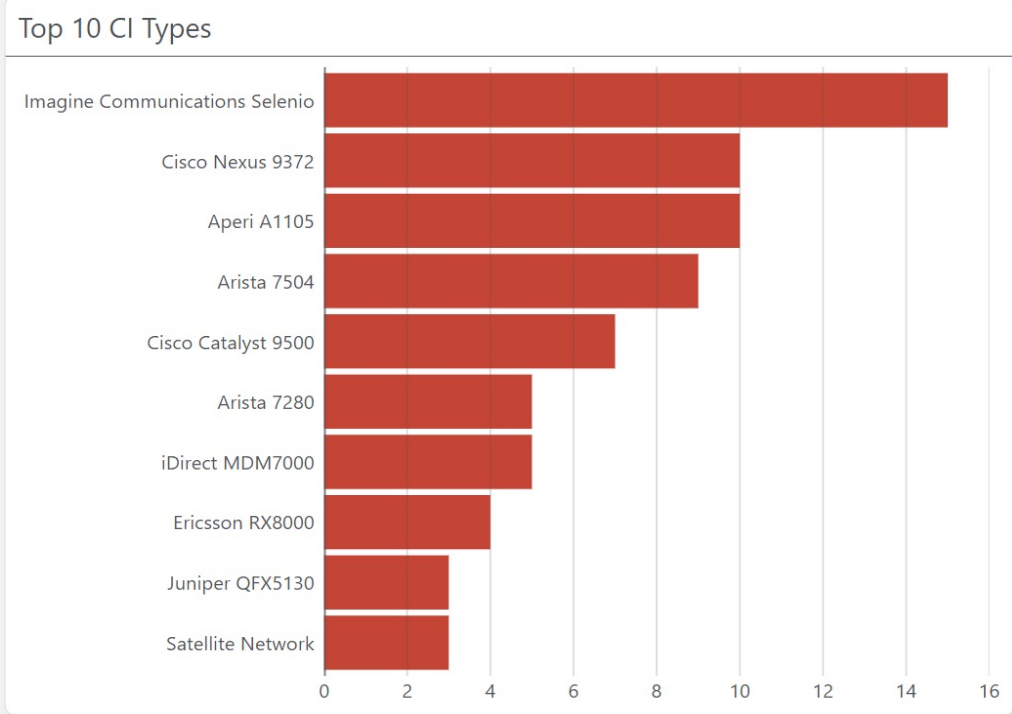
Home

Overview of the DataMiner Infrastructure Discovery & Provisioning app

Managed elements	Discovered elements	Unknown data sources disc...
83	0	0

Last network scan started

02/28/2023 11:12:41



Last 10 provisioned elements

ELEMENT NAME (MANAGED ELEMENT...)	CREATION TIME (MANAGED ELEMENTS)	IP ADDRESS (MANAG
20.10.63.45 - STE X3 Terminal	03/08/2023 15:08:40	20.10.63.45
10.11.2.168 - STE X7 Terminal	03/08/2023 14:51:07	10.11.2.168
125.20.36.10 - STE X5 Terminal	03/08/2023 14:47:00	125.20.36.10
255.256.147.12 - STE X5 Terminal	03/08/2023 14:10:52	255.256.147.12
10.104.190.80 - STE X7 Terminal	02/21/2023 17:59:44	10.104.190.80
10.44.0.230 - STE X3 Terminal	02/21/2023 17:38:47	10.44.0.230
10.11.280.19 - STE X7 Terminal	02/21/2023 17:32:56	10.11.280.19
Johannesburg Hub 17	02/21/2023 13:42:09	168.68.46.3
Paris Hub 11	02/21/2023 13:42:01	156.254.51.1
10.130.0.165 - STE X3 Terminal	02/21/2023 13:35:35	10.130.0.165

Last 10 discovered data sources

- Home
- Discovery
- Managed Elements
- Configuration
- Software
- Facilities

Discovery

Scan your network and see all discovery results

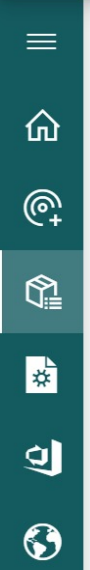
Quick Discovery
Custom Discovery...

Refresh was triggered 15 sec...

DISCOVERY START TIME	DISCOVERY END TIME	PROGRESS	DISCOVERY TOTAL	DISCOVERY DONE	DETECTED DEVICES
09/27/2023 22:22:53	09/27/2023 22:23:13	100 %	243	243	0
09/26/2023 19:02:00	09/26/2023 19:02:20	100 %	243	243	0
09/25/2023 21:21:36	09/25/2023 21:21:56	100 %	243	243	0
09/17/2023 15:21:26	09/17/2023 15:21:46	100 %	243	243	0
09/13/2023 00:22:35	09/13/2023 00:22:55	100 %	243	243	0

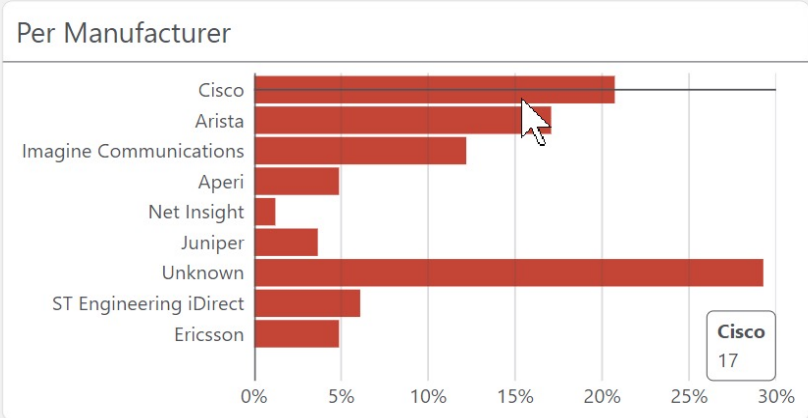
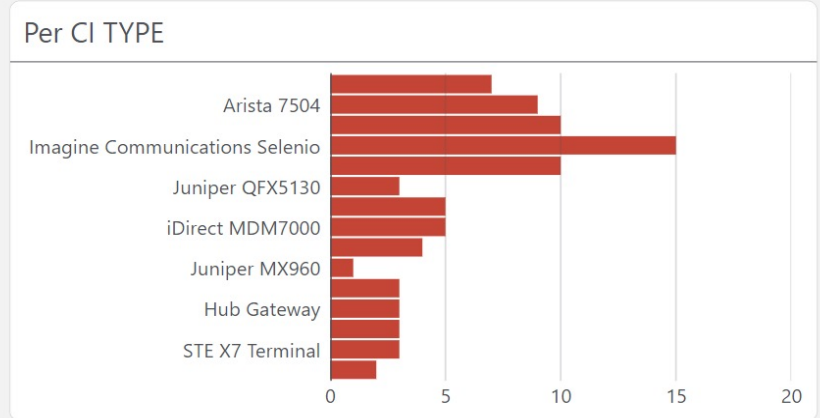
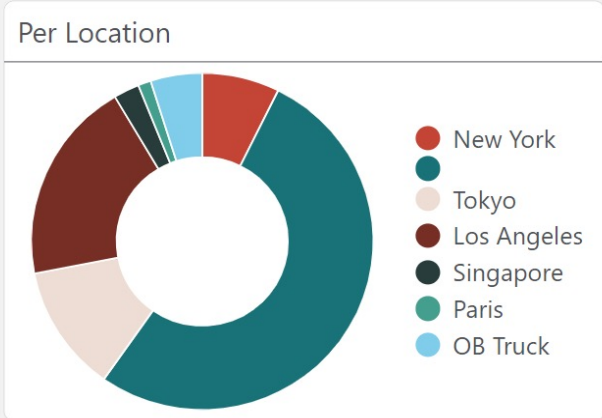
Discovery results

ELEMENT ID	CI TYPE	IP ADDRESS	FIRST DISCOVERY TIME	LAST DISCOVERY TIME	DMA ID	ELEMENT ID	DMA NAME	PROPOSED ELEMENT NAME	LAST PROVISIONING TIME	PROVISIONING STATUS	NAME
17/92883	Unknown	10.10.18.1	04/10/2023 13:58:45	04/10/2023 15:17:18				N/A	N/A		SLC-DEMO-DMA.skyline.local
17/92883	Unknown	10.10.18.100	04/10/2023 15:17:18	04/10/2023 15:17:18				N/A	N/A		ZiineDev.skyline.local
17/92883	Unknown	10.10.18.101	04/10/2023 15:17:18	04/10/2023 15:17:18				N/A	N/A		
17/92883	Unknown	10.10.18.105	04/10/2023 15:17:18	04/10/2023 15:17:18				N/A	N/A		drivertraining.skyline.local
17/92883	Unknown	10.11.250.1	10/10/2022 21:23:30	06/07/2023 21:44:10				N/A	N/A		
17/92883	Unknown	10.11.250.2	10/10/2022 21:23:36	06/07/2023 21:44:23				N/A	N/A		
17/92883	Unknown	10.11.250.3	10/10/2022 21:23:30	06/07/2023 21:44:10				N/A	N/A		
17/92883	Unknown	10.11.250.4	10/10/2022 21:23:32	06/07/2023 21:44:10				N/A	N/A		
17/92883	Unknown	10.11.250.5	10/10/2022 21:23:30	06/07/2023 21:44:10				N/A	N/A		
17/92883	Unknown	10.11.250.6	10/10/2022 21:23:35	06/07/2023 21:44:10				N/A	N/A		
17/92883	Unknown	10.11.250.7	10/10/2022 21:23:35	06/07/2023 21:44:10				N/A	N/A		



Managed Elements

List of elements managed by IDP



Active (0)
🗑️

Name ▼

Manufacturer ▼

- Cisco (17)
- Arista (14)
- Imagine Communications (10)
- Aperi (4)
- Net Insight (1)
- Juniper (3)
- Unknown (24)
- ST Engineering iDirect (5)
- Ericsson (4)

Location Name ▼

NAME	MANUFACTURER	LOCATION NA...	CREATION TIME (MANAGED ELEMENTS)	STATE	POLLINGIP	CI TYPE (MANAGED
NY SW-S01	Cisco	New York	09/10/2021 09:58:16	Active	172.0.1.1	Cisco Catalys
NY SW-S02	Arista	New York	09/10/2021 09:58:28	Active	172.0.1.2	Arista 7504
NY SW-L03	Cisco	New York	09/10/2021 09:58:49	Active	172.0.1.4	Cisco Nexus
NY SW-L02	Cisco	New York	09/10/2021 09:59:00	Active	172.0.1.5	Cisco Nexus
NY SW-L04	Cisco	New York	09/10/2021 09:59:12	Active	172.0.1.6	Cisco Nexus
NY SW-L05	Cisco	New York	09/10/2021 09:59:23	Active	172.0.1.7	Cisco Nexus
NY CH01[M]	Imagine Communicatio...		09/10/2021 09:59:35	Active	172.0.2.1	Imagine Communica
NY CH01[B]	Imagine Communicatio...		09/10/2021 09:59:46	Active	172.0.3.1	Imagine Communica
NY CH03[B]	Imagine Communicatio...		09/10/2021 09:59:57	Active	172.0.6.1	Imagine Communica
NY CH02	Imagine Communicatio...		09/10/2021 10:00:09	Active	172.0.4.1	Imagine Communica
NY CH03[M]	Aperi		09/10/2021 10:00:20	Active	172.0.5.1	Aperi A11

Configuration

Overview of backups

Active (1)

CI Type (Configuration Managemen...

- Cisco Catalyst 9500 (7)
- Arista 7504 (9)
- Cisco Nexus 9372 (10)
- Juniper QFX5130 (3)
- Arista 7280 (5)
- Ericsson RX8000 (4)

Element Name (Configuration Manage...

Filter

Update Progress (Configuration Mana...

- 11/04/2022 09:40:00: Configuratio... (1)
- 03/23/2023 15:49:01: Configuratio... (1)
- 11/03/2022 14:43:16: Configuratio... (6)
- 03/23/2023 15:54:56: Configuratio... (1)
- 03/23/2023 15:53:46: Configuratio... (1)
- 03/23/2023 15:53:24: Configuratio... (1)
- 11/03/2022 14:43:15: Configuratio... (1)
- 03/23/2023 15:52:40: Configuratio... (1)
- 03/23/2023 15:57:41: Configuratio... (1)
- 03/23/2023 15:57:19: Configuratio... (1)
- 03/23/2023 15:55:19: Configuratio... (1)

Devices with backup

38

Devices without backup

1

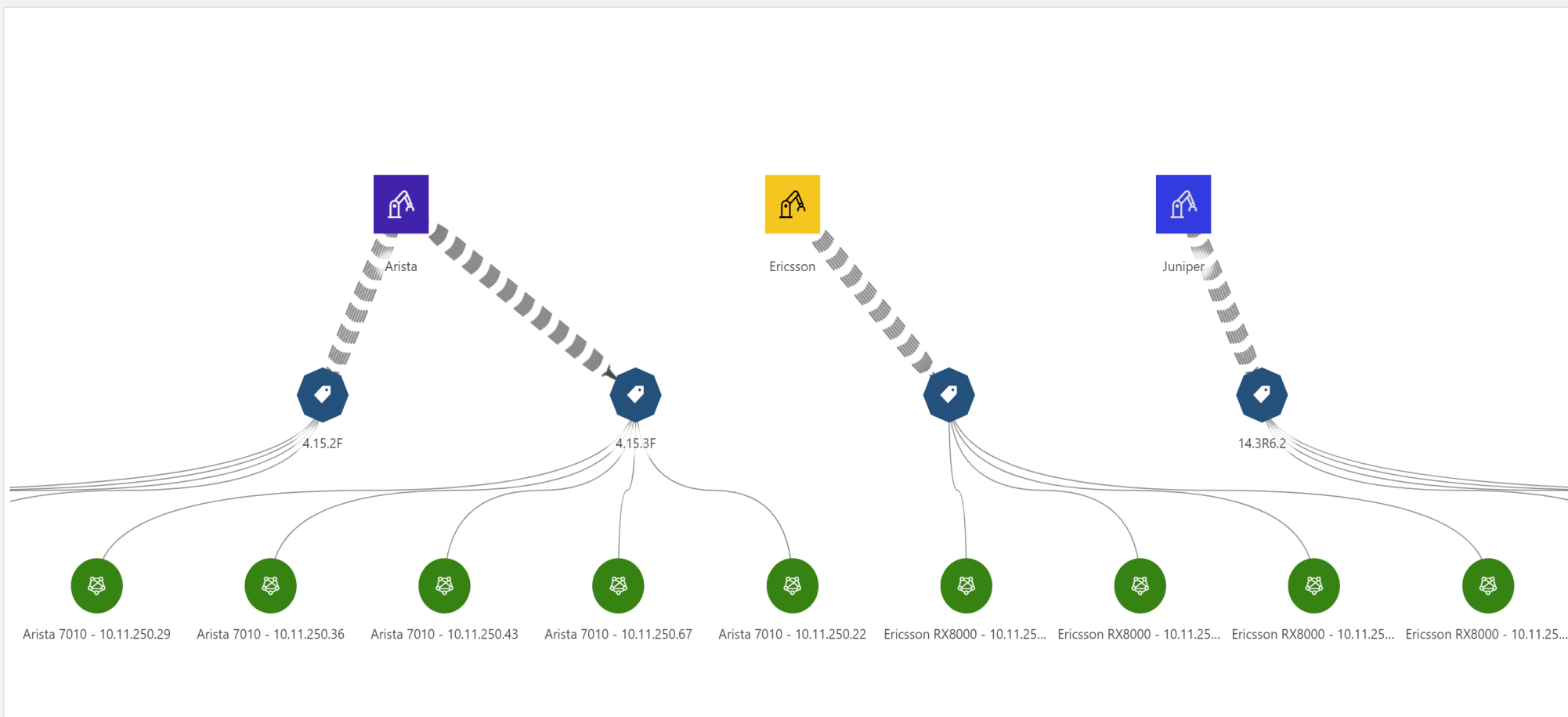
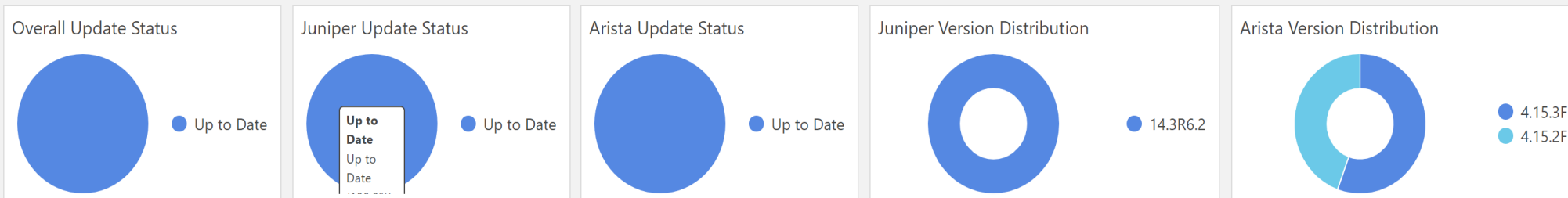
Update status

CI TYPE (CONFIGURATION MANAGEMEN...	ELEMENT NAME (CONFIGU...	UPDATE PROGRESS (CONFIGURATION MA
Cisco Catalyst 9500	NY SW-S01	11/04/2022 09:40:00: Configuration Backup has finished (took 12s:548ms)
Cisco Catalyst 9500	TYO SW[BLUE]-S01	11/03/2022 14:43:16: Configuration Backup has failed due to: Remote connection to the Networ
Cisco Catalyst 9500	TYO SW[BLUE]-S02	11/03/2022 14:43:16: Configuration Backup has failed due to: Remote connection to the Networ
Cisco Catalyst 9500	LA SW[BLUE]-S01	11/03/2022 14:43:16: Configuration Backup has failed due to: Remote connection to the Networ
Cisco Catalyst 9500	LA SW[BLUE]-S02	11/03/2022 14:43:16: Configuration Backup has failed due to: Remote connection to the Networ
Cisco Catalyst 9500	SG SW[BLUE]-S01	11/03/2022 14:43:16: Configuration Backup has failed due to: Remote connection to the Networ
Cisco Catalyst 9500	PAR SW[BLUE]-S01	11/03/2022 14:43:16: Configuration Backup has failed due to: Remote connection to the Networ
Arista 7504	NY SW-S02	03/23/2023 15:49:01: Configuration Backup has finished (took 45s:056ms)
Arista 7504	TYO SW[RED]-S01	03/23/2023 15:54:56: Configuration Backup has finished (took 6m:19s:472ms)
Arista 7504	TYO SW[RED]-S02	03/23/2023 15:53:46: Configuration Backup has finished (took 5m:9s:873ms)
Arista 7504	LA SW[RED]-S01	03/23/2023 15:53:24: Configuration Backup has finished (took 4m:48s:135ms)
Arista 7504	LA SW[RED]-S02	11/03/2022 14:43:15: Configuration Backup has failed due to: Remote connection to the Networ
Arista 7504	SG SW[RED]-S01	03/23/2023 15:52:40: Configuration Backup has finished (took 4m:4s:242ms)
Arista 7504	PAR SW[RED]-S01	03/23/2023 15:57:41: Configuration Backup has finished (took 9m:4s:746ms)

- Home
- Discovery
- Managed Elements
- Configuration
- Software
- Facilities

Software

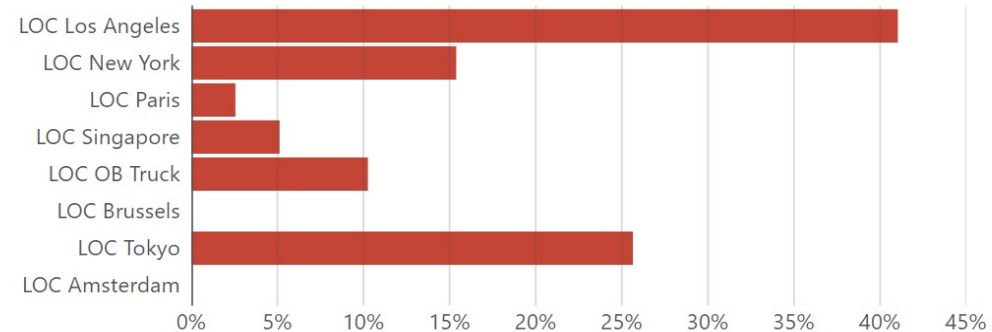
Overview of software versions



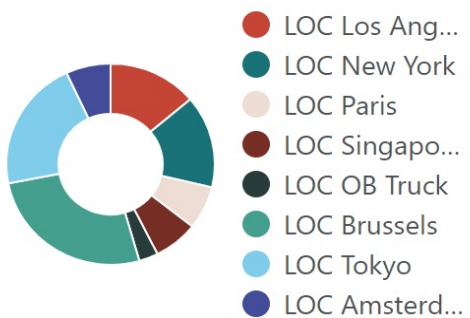
Facilities

Overview of locations, buildings, rooms and racks

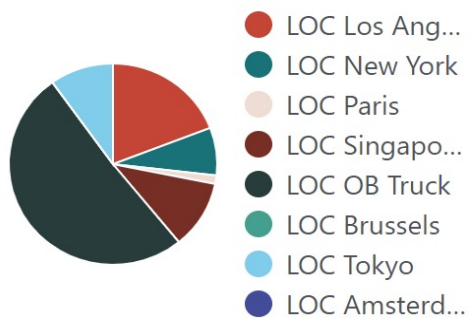
Devices per Location



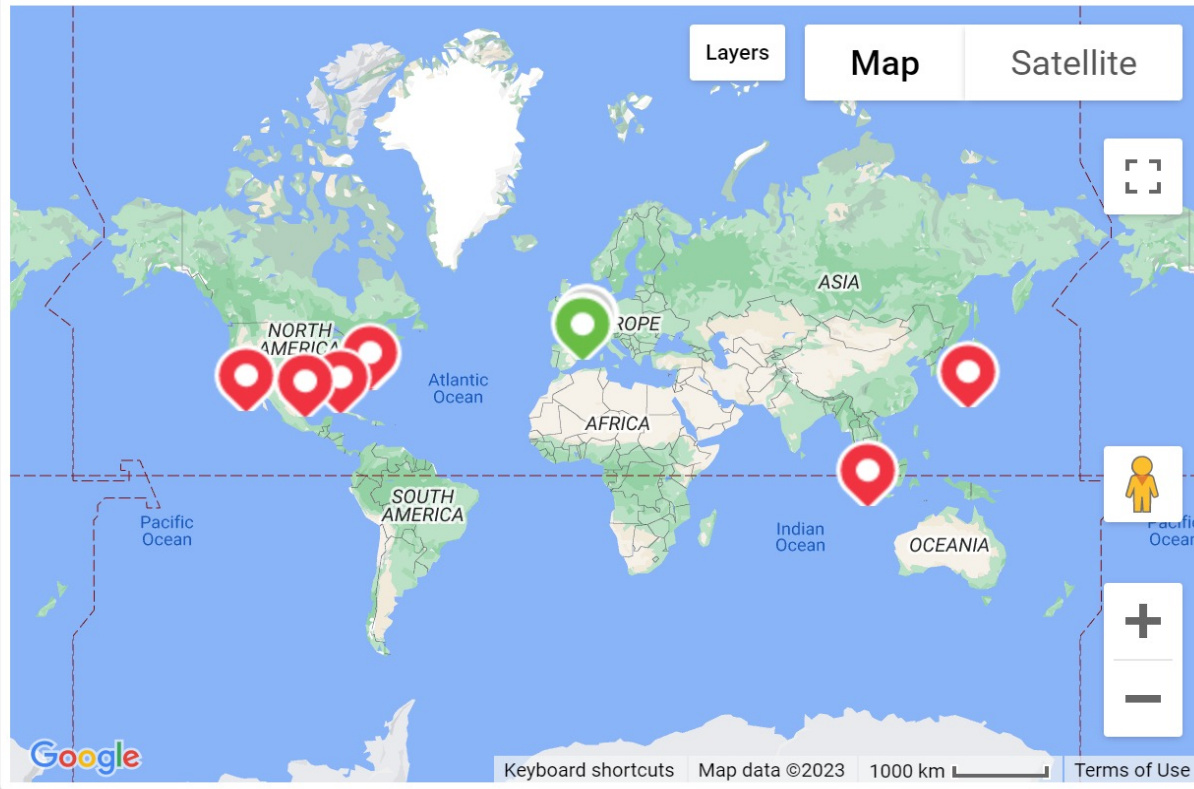
Rack Space Capacity



Device Space Usage



Map view



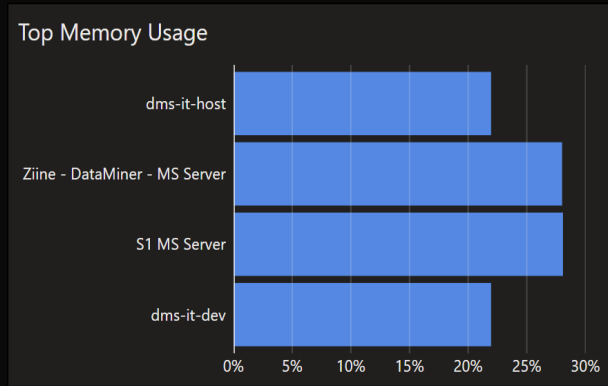
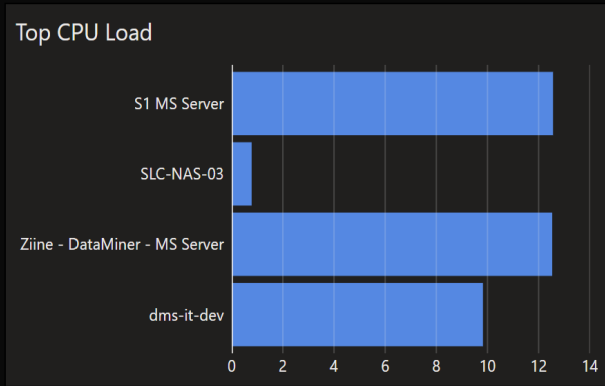
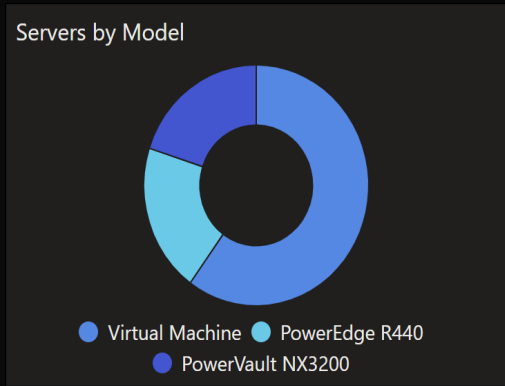
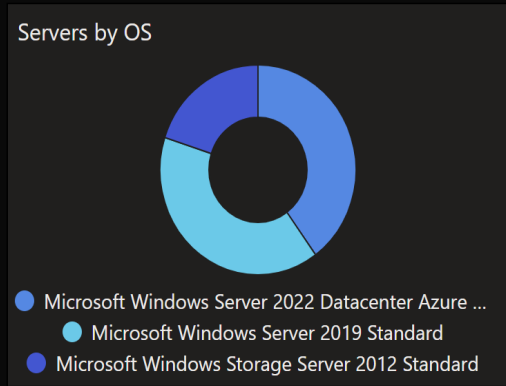
Location Graph



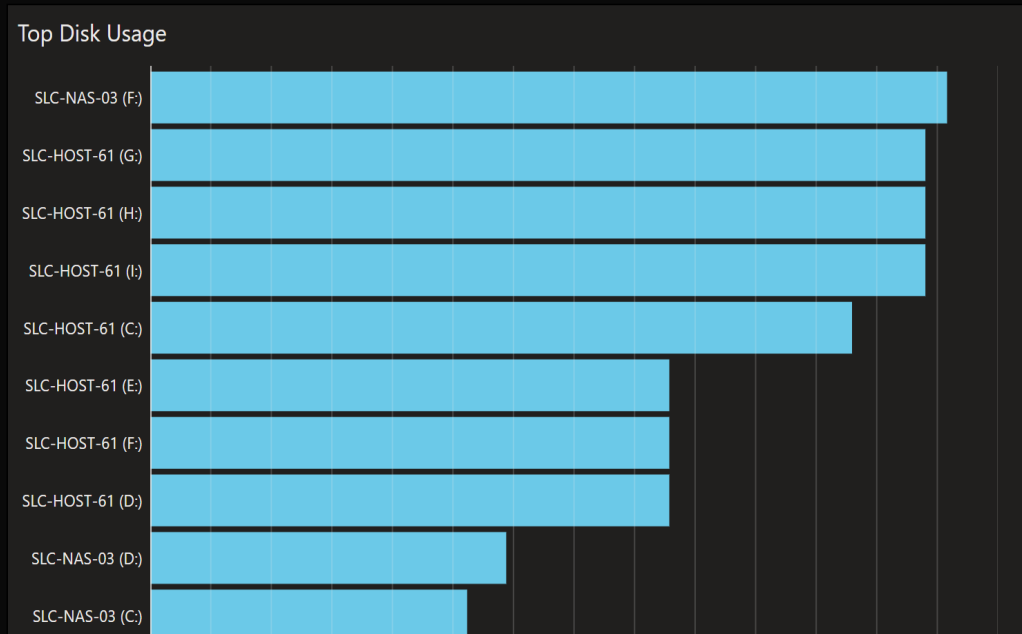


Home

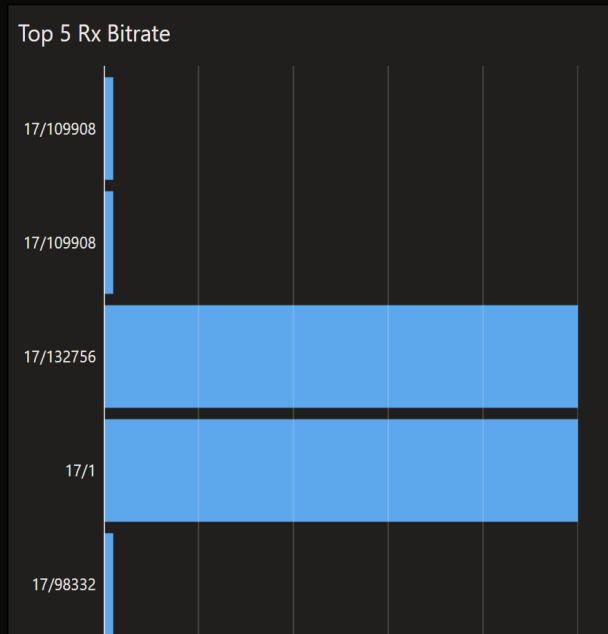
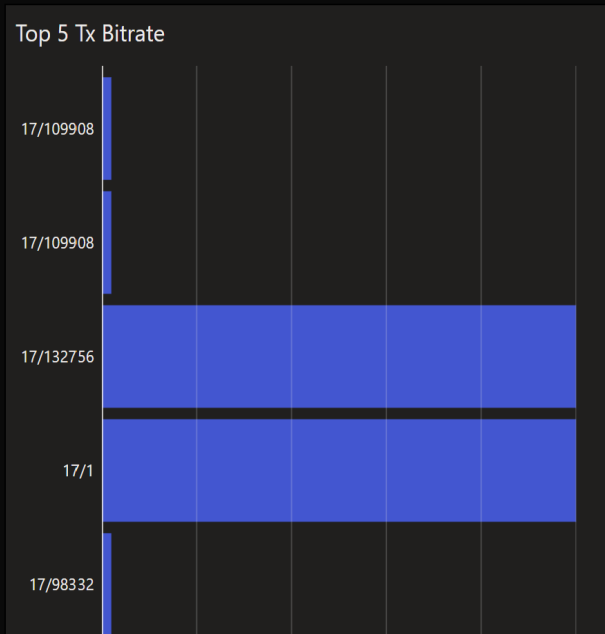
Overview of all servers and their most important monitoring KPIs



Storage





Networking




Servers

Overview of all servers with their properties


Active (0) 

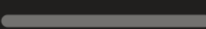
Computer Name 


- ZIINEDEV (3)
- SLC-HOST-61 (1)
- DMS-IT-DEV (1)


Model 

- Virtual Machine (4)
- PowerEdge R440 (1)

Total Processor Load 

0.4 %  54.4 %

Physical Memory Usage 

54.8 %  91.5 %

NAME	STATE	COMPUTER NAME	POLLINGIP	NAME OPERATING SYSTEM	ARCHITECTURE OPERATING SYSTEM	DAYS SINCE LAST UPDATE	MODEL	NUMBER OF C
Microsoft Platform	Acti...	ZIINEDEV	127.0.0.1	Microsoft Windows Server 2019 Standard	64-bit	Not initialized	Virtual Machine	16
Microsoft	Acti...	ZIINEDEV	127.0.0.1	Microsoft Windows Server 2019 Standard	64-bit	Not initialized	Virtual Machine	16
Ziine - MS Server	Acti...	ZIINEDEV	127.0.0.1	Microsoft Windows Server 2019 Standard	64-bit	28.1 d	Virtual Machine	16
dms-it-host	Acti...	SLC-HOST-61		Microsoft Windows Server 2019 Standard	64-bit	1.1 d	PowerEdge R440	16
dms-it-dev	Acti...	DMS-IT-DEV		Microsoft Windows Server 2019 Standard	64-bit	1.7 d	Virtual Machine	16





Select a server

Ziine - MS Server

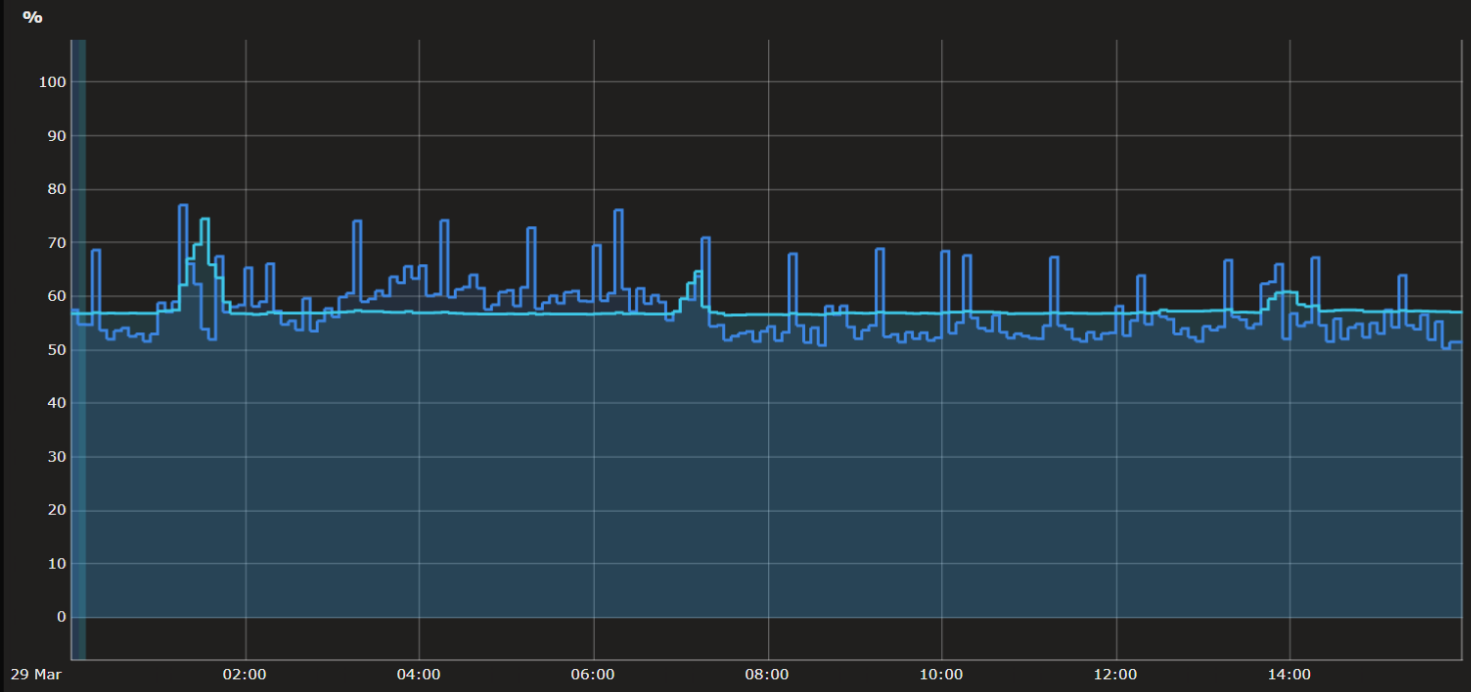


- Last hour
- Last 24 hours
- Last 7 days
- Last 30 days

<p>44.2 %</p> <p>TOTAL PROCESSOR LOAD</p>	<p>57.1 %</p> <p>PHYSICAL MEMORY USAGE</p>	<p>196</p> <p>TOTAL PROCESSES</p>	<p>8 375</p> <p>TOTAL THREADS</p>	<p>3 347 097</p> <p>TOTAL HANDLES</p>																														
<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>27.8 %</td><td>56.7 %</td><td>97.6 %</td></tr> </table>	Minimum	Average	Maximum	27.8 %	56.7 %	97.6 %	<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>56.5 %</td><td>57.4 %</td><td>78.4 %</td></tr> </table>	Minimum	Average	Maximum	56.5 %	57.4 %	78.4 %	<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>193</td><td>215</td><td>254</td></tr> </table>	Minimum	Average	Maximum	193	215	254	<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>8103</td><td>8424</td><td>8889</td></tr> </table>	Minimum	Average	Maximum	8103	8424	8889	<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>3320190</td><td>3340404</td><td>3363959</td></tr> </table>	Minimum	Average	Maximum	3320190	3340404	3363959
Minimum	Average	Maximum																																
27.8 %	56.7 %	97.6 %																																
Minimum	Average	Maximum																																
56.5 %	57.4 %	78.4 %																																
Minimum	Average	Maximum																																
193	215	254																																
Minimum	Average	Maximum																																
8103	8424	8889																																
Minimum	Average	Maximum																																
3320190	3340404	3363959																																

History CPU & Memory

Ziine - MS Server



Top 10 Processes by CPU

NAME PROCESS	CPU
elasticsearch-service-x64	8.4 %
prunsv	6.2 %
TeamViewer_Service	6.1 %
svchost#33	4.3 %
SLDataGateway	3.1 %
SLLog	3.0 %

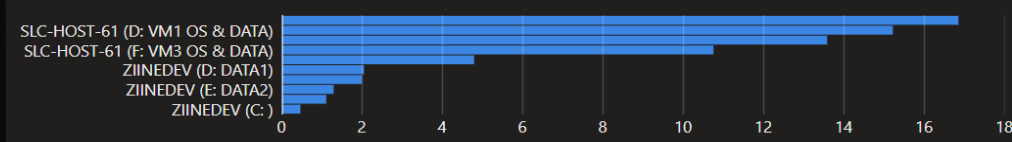
Top 10 Processes by MEM

NAME PROCESS	MEMORY USAGE
elasticsearch-service-x64	20 520 168 kB
prunsv	10 175 220 kB
SLElement	3 595 080 kB
SLDataGateway	3 230 692 kB
SLAutomation	1 802 440 kB
SLNet	1 542 444 kB

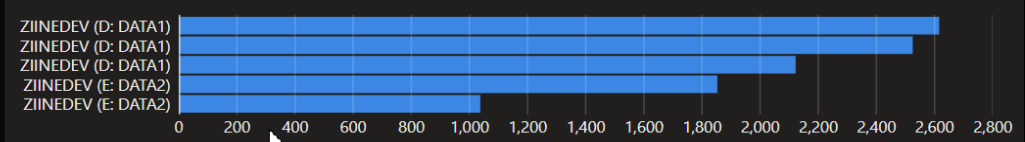
Disks

Monitor all server disks and their KPIs

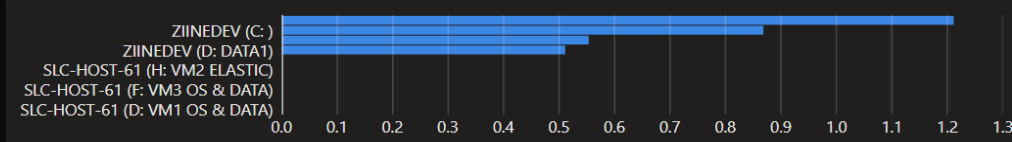
Top 5 Write Latency



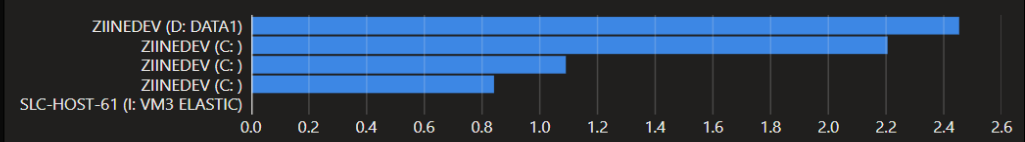
Top 5 Write Rate



Top 5 Read Latency



Top 5 Read Rate



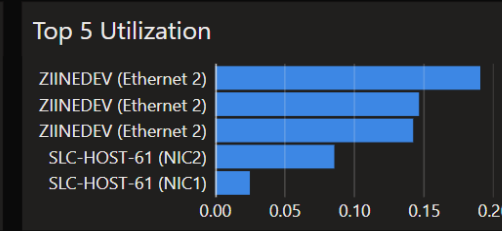
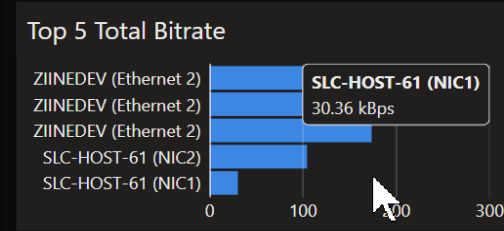
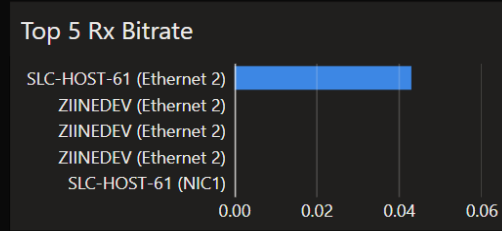
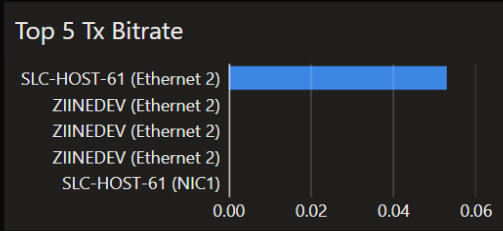
Select a server: **Ziine - MS Server** | Select a drive: **C:/C:**

Disk Usage	Read Rate	Write Rate	Read Latency	Write Latency																														
80.3 %	0 kBps	305 kBps	0 ms	0 ms																														
<div style="width: 80.3%; height: 10px; background-color: red;"></div>	<div style="width: 0%; height: 10px; background-color: green;"></div>	<div style="width: 30.5%; height: 10px; background-color: green;"></div>	<div style="width: 0%; height: 10px; background-color: green;"></div>	<div style="width: 0%; height: 10px; background-color: green;"></div>																														
<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>79.7 %</td><td>80.2 %</td><td>91.4 %</td></tr> </table>	Minimum	Average	Maximum	79.7 %	80.2 %	91.4 %	<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>0 kBps</td><td>802 kBps</td><td>268833 kBps</td></tr> </table>	Minimum	Average	Maximum	0 kBps	802 kBps	268833 kBps	<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>37 kBps</td><td>2400 kBps</td><td>161627 kBps</td></tr> </table>	Minimum	Average	Maximum	37 kBps	2400 kBps	161627 kBps	<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>0 ms</td><td>0 ms</td><td>97 ms</td></tr> </table>	Minimum	Average	Maximum	0 ms	0 ms	97 ms	<table border="1"> <tr><th>Minimum</th><th>Average</th><th>Maximum</th></tr> <tr><td>0 ms</td><td>2 ms</td><td>36 ms</td></tr> </table>	Minimum	Average	Maximum	0 ms	2 ms	36 ms
Minimum	Average	Maximum																																
79.7 %	80.2 %	91.4 %																																
Minimum	Average	Maximum																																
0 kBps	802 kBps	268833 kBps																																
Minimum	Average	Maximum																																
37 kBps	2400 kBps	161627 kBps																																
Minimum	Average	Maximum																																
0 ms	0 ms	97 ms																																
Minimum	Average	Maximum																																
0 ms	2 ms	36 ms																																

Ziine - MS Server: Disk Usage (C:)	Ziine - MS Server: Read Rate (C:)	Ziine - MS Server: Write Rate (C:)	Ziine - MS Server: Avg. Disk sec/Re...	Ziine - MS Server: Avg. Disk sec/Wr...

Network

Monitor network interfaces across all servers



Select a server: **dms-it-dev** [Close] [Previous]

Select an interface: **Ethernet** [Close] [Previous]

Time Range: **Last 5 minutes** | Last 15 minutes | Last hour | Last 24 hours | Last 7 days

Tx Bitrate

0.00 kBps

Rx Bitrate

0.00 kBps

Total Bitrate

36.69 kBps

Utilization

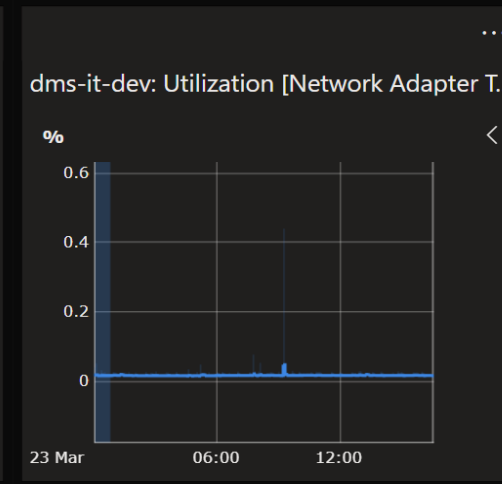
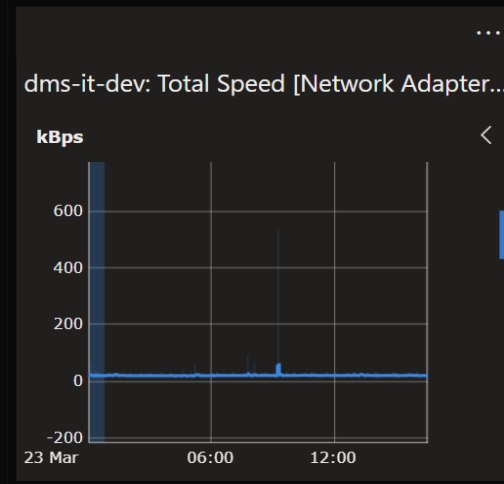
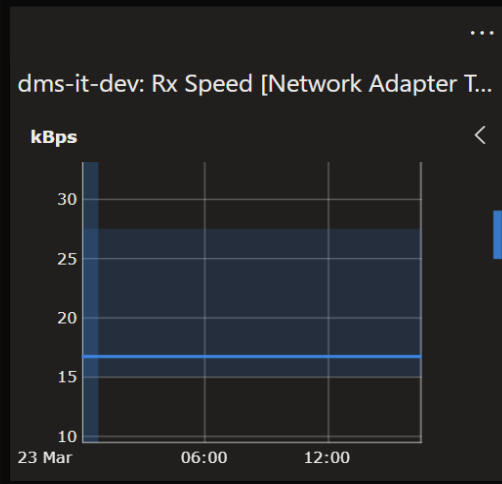
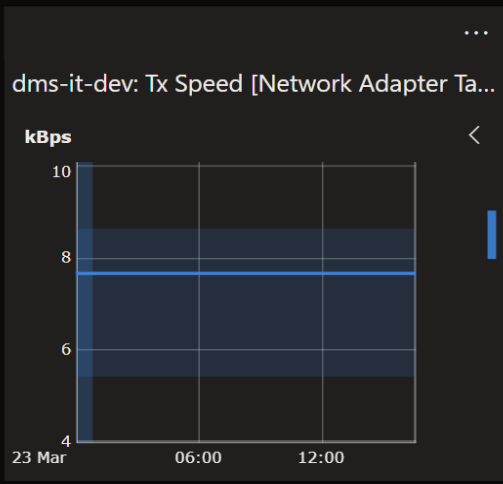
0.03 %

Minimum	Average	Maximum
5.43 kBps	7.68 kBps	8.65 kBps

Minimum	Average	Maximum
15.13 kBps	16.85 kBps	27.62 kBps

Minimum	Average	Maximum
18.00 kBps	23.17 kBps	540.06 kBps

Minimum	Average	Maximum
0.01 %	0.02 %	0.44 %



Software

Overview of all installed software and its version

Active (1)

Element ID 17/175146 (15)
 17/1 (4)

Name Microsoft Platform (15)
 Ziine - MS Server (4)

Name [IDX] (Software Info)
Filter

Vendor (Software Info)

- Microsoft Corporation (210)
- Python Software Foundation (12)
- Skyline Communications (10)
- KeysightTechnologies (2)
- Node.js Foundation (1)
- Microsoft (3)
- IVI Foundation (6)
- Keysight Technologies (5)
- Microsoft Corporations (2)
- IVI Foundation Inc. (1)
- Google LLC (1)
- Net Insight (1)
- Nmap Project (1)
- Riverbed Technology, Inc. (1)
- Martin Prikryl (1)
- The Wireshark developer community, http... (1)
- Kai Kramer (1)
- JetBrains s.r.o (1)
- Microsoft Corp. (1)

Version (Software Info)
Filter

Installation Date (Software Info)

ELEMENT ID	NAME	NAME [IDX] (SOFTWARE INFO)	VENDOR (SOFTWARE INFO)	VERSION (SOFTWARE INFO)	INSTALLATION DATE (SOFTWARE INFO)
▼ VENDOR (SOFTWARE INFO) Python Software Foundation					
17/175146	Microsoft Platform	Python Launcher	Python Software Foundation	3.10.7686.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 pip bootstrap (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 Utility Scripts (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 Core Interpreter (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 Tcl/Tk Support (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 Development Libraries (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 Documentation (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 Standard Library (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 Test Suite (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 Executables (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/175146	Microsoft Platform	Python 3.10.2 Add to Path (64-bit)	Python Software Foundation	3.10.2150.0	03/15/2022
17/1	Ziine - MS Server	Python Launcher	Python Software Foundation	3.10.7686.0	Not initialized
▼ VENDOR (SOFTWARE INFO) KeysightTechnologies					
17/175146	Microsoft Platform	Keysight Communications Fabric 2.2	KeysightTechnologies	2.2.22112.11724	10/20/2022
17/1	Ziine - MS Server	Keysight Communications Fabric 2.2	KeysightTechnologies	2.2.22112.11724	Not initialized
▼ VENDOR (SOFTWARE INFO) Keysight Technologies					
17/175146	Microsoft Platform	Keysight IO Libraries Suite 2022 Update 2	Keysight Technologies	18.2.28229.2	10/20/2022
17/175146	Microsoft Platform	Keysight LXI Mdns Responder 64bit	Keysight Technologies	1.2.25922.11422	10/20/2022
17/175146	Microsoft Platform	Keysight IO Libraries Suite 2022 Update 2	Keysight Technologies	18.2.28229.2	10/20/2022
17/1	Ziine - MS Server	Keysight IO Libraries Suite 2022 Update 2	Keysight Technologies	18.2.28229.2	Not initialized
17/1	Ziine - MS Server	Keysight IO Libraries Suite 2022 Update 2	Keysight Technologies	18.2.28229.2	Not initialized



LA SW[RED]-L02

Model
7280
Serial Number
PMRP8205dw

System Description
Arista Networks EOS version 4.15.1F
running on an Arista Networks
DCS-7280TR-48

System Location
Los Angeles

System Uptime
559 days 07h 17m 55s

CPU Usage
12.12 %

Memory Usage
19.57 %

0 ALARMS

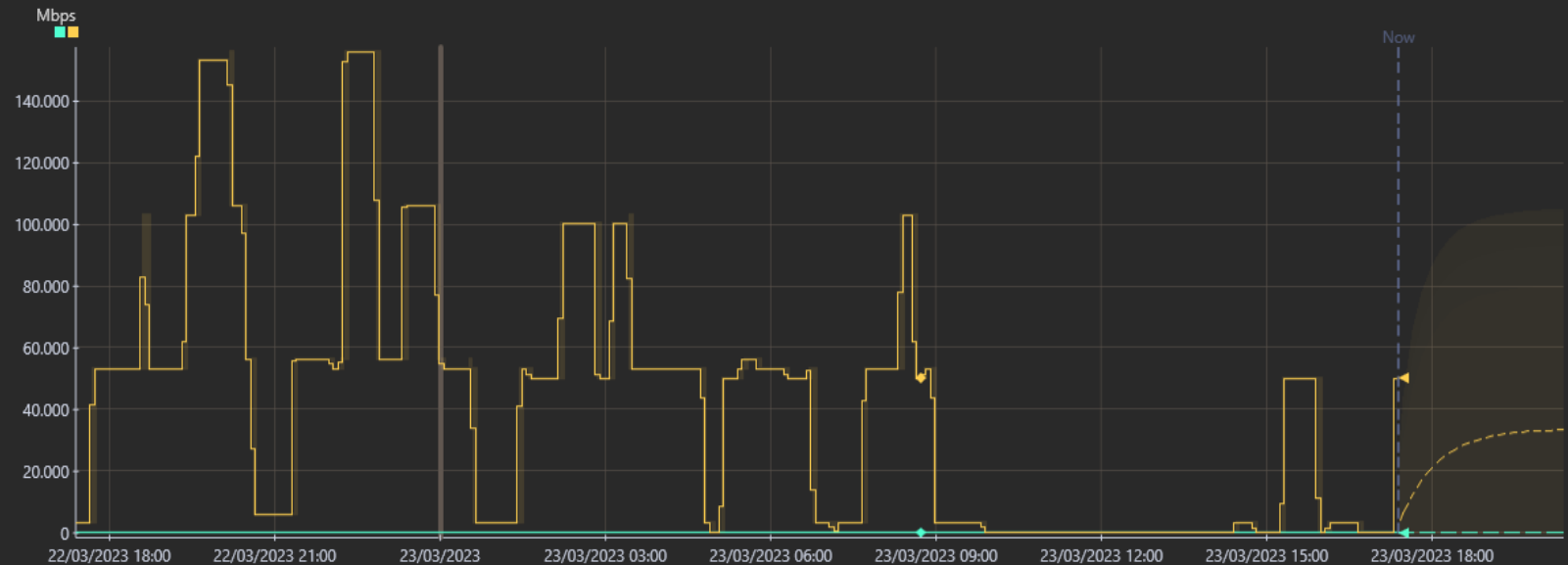


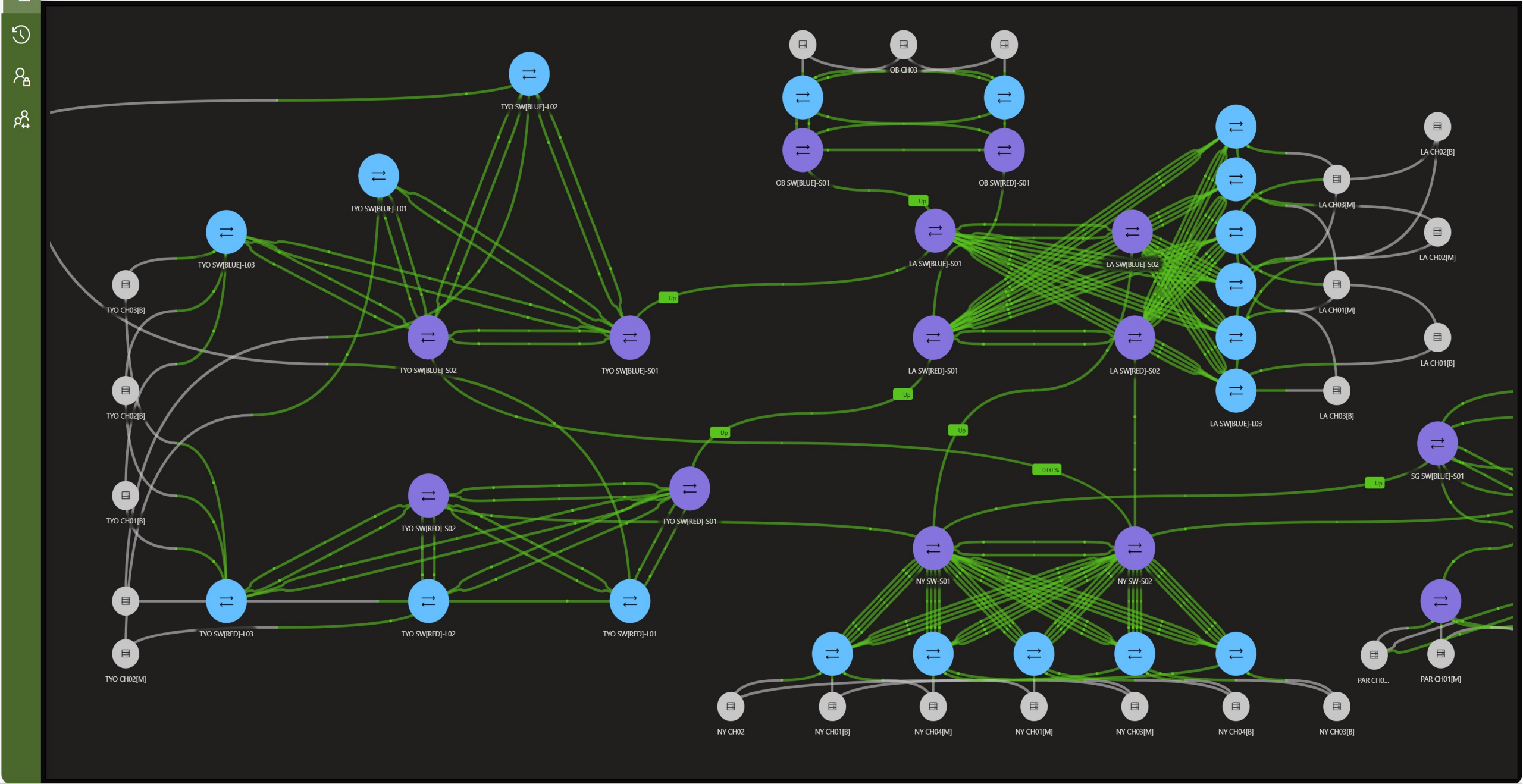
Ethernet2/

Interface Details Multicasts Simulation

Custom... Last 24 hours Week to date Month to date

Admin State	Up
Operational State	Up
Bandwidth	10 Gbps
Rx Bitrate	50.000 Mbps
Rx Utilization	0.50 %
Rx Packet Drops	Normal
Rx Expected Bitrate	Normal
Tx Bitrate	0.000 Mbps
Tx Utilization	0.00 %
Tx Packet Drops	Normal
Tx Expected Bitrate	Normal





Workspace

Surveyor

Topology

Activity

Apps

☰

>

☐

↶

(⌂)

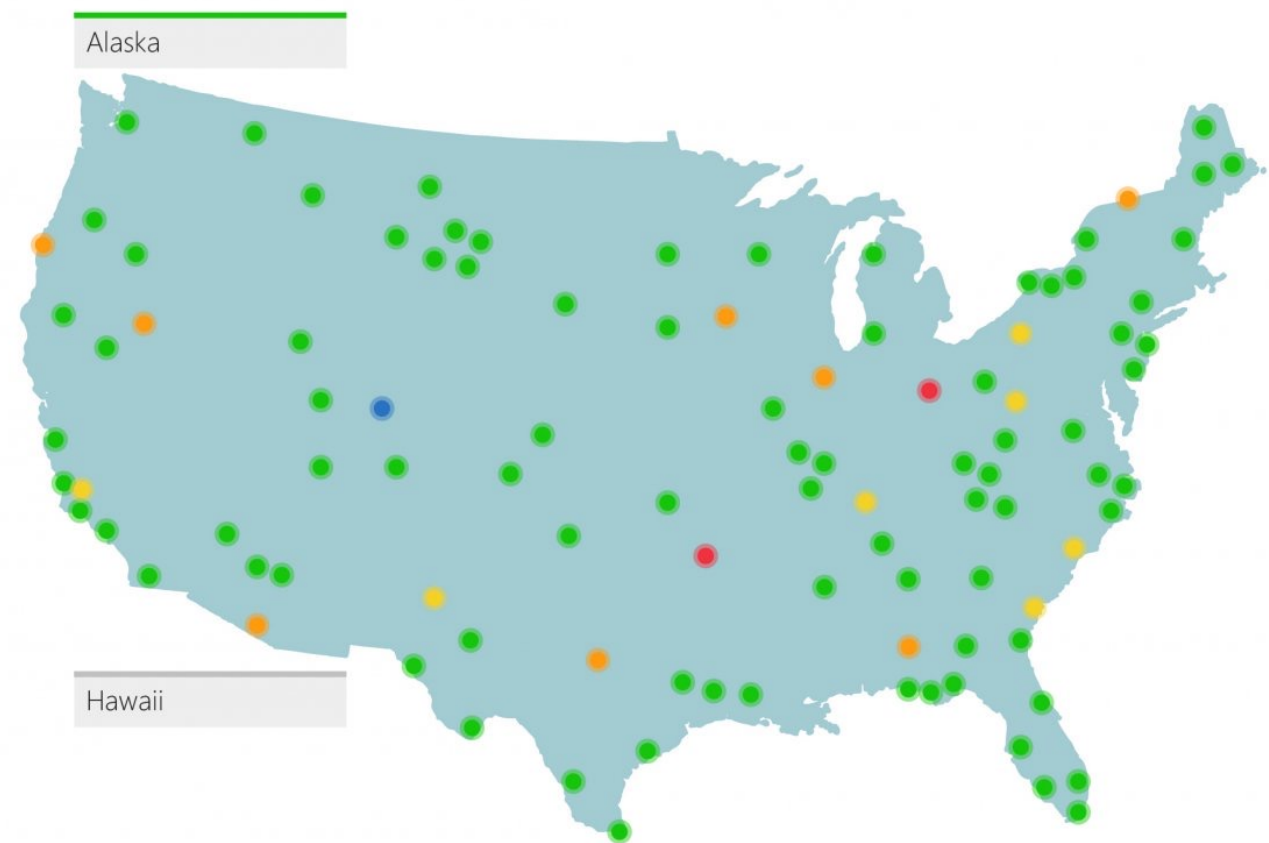
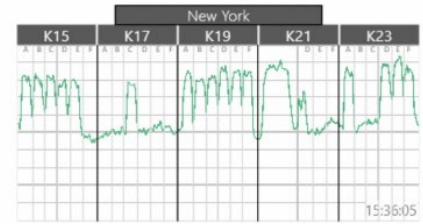
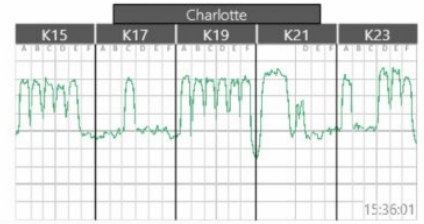
⋮

map all files streams pups trucks

USA ALASKA HAWAII NATIONAL WEATHER

STREAMS 2 PUPS 3 TRUCKS 4 FILES 0

Warnings	1
Minor	0
Major	7
Critical	2
Timeouts	8



Connection has been interrupted... Refresh now

Start editing

NETWORK ANALYTICS

Active (2)

IF Bandwidth

- ≥ 0 and ≤ 1000
- > 1000 and ≤ 10000
- no lower bou... and no upper bou...

Rx Bitrate

= 0

Rx Bitrate %

Not Available

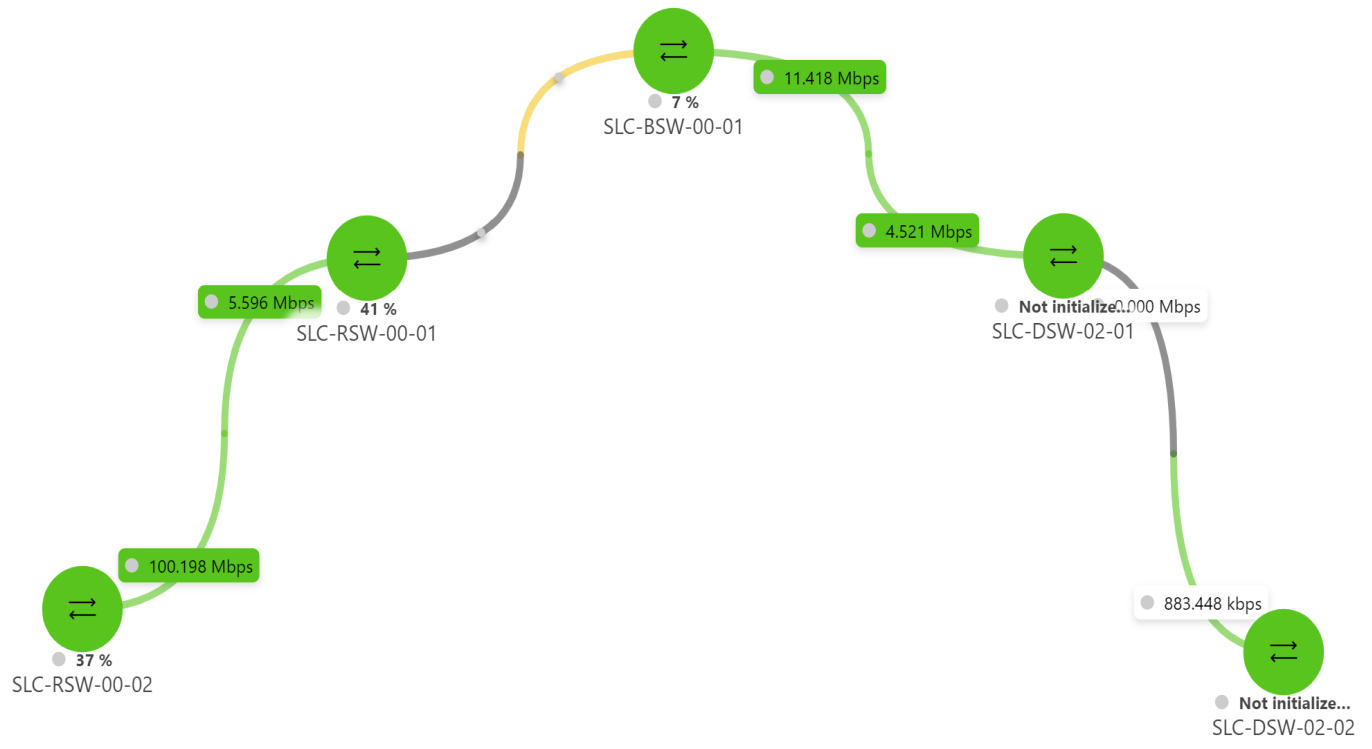
Tx Bitrate

- > 0 and < 200
- > 200 and < 300
- > 300 and < 400
- > 400 and < 500
- no lower bou... and no upper bou...

Tx Bitrate %

- > 0 and < 50
- > 50 and < 75
- > 75 and < 90
- > 90 and < 100

Not Available

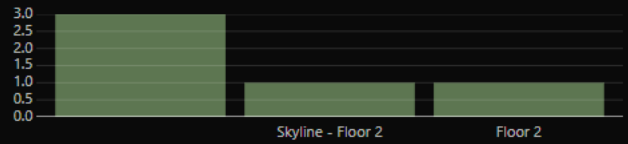




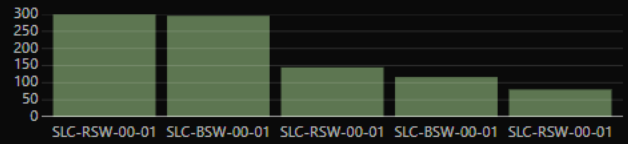
SLC-RSW-00-01

Uptime: 6 days 11h 35m 14s
 Model: 1.3.6.1.4.1.9.1.1208
 System Location:
 System Contact:

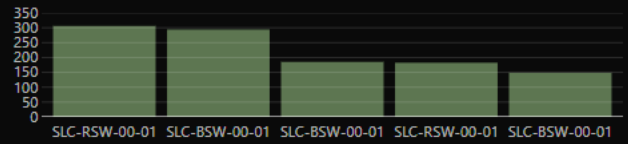
42 % MAX CPU | 28 % AVG CPU | 5 % MIN CPU | 21.8 % MAX MEM | 17.8 % AVG MEM | 15.8 % MIN MEM



299.362 Mbps MAX TX | 4.537 Mbps AVG TX | 0.000 Mbps MIN TX



306.169 Mbps MAX RX | 4.579 Mbps AVG RX | 0.000 Mbps MIN RX



Switches

SLC-RSW-00-01

Ethernet Ports

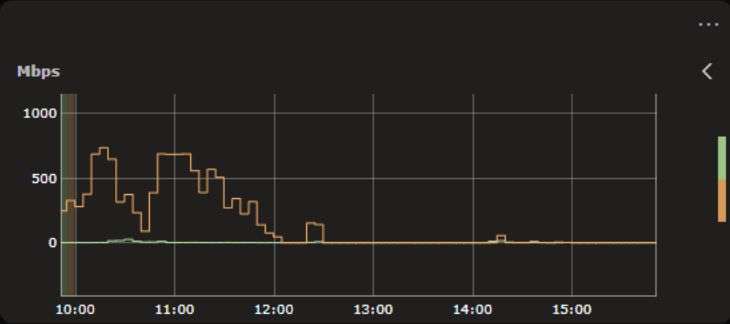
Gi1/0/5 : SLC-NAS02

Details

1.000 Gbps IF BANDWIDTH | 0.010 % IF UTILIZATION % | Up IF ADMIN STATE | Up IF OPER. STATE | Gi1/0/5 IF NAME | 0C.D0.F8.A4.7F.85 IF MAC

Send

39.048 kbps



Receive

100.288 kbps

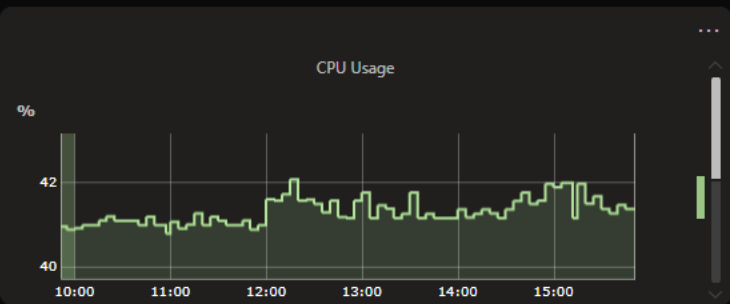
No alarms

ELEMENT NAME	PARAMETER DESCRIPTION	VALUE	TIME
No matching alarms.			

Memory Usage

15.8 %

0.0 % | 100.0 %



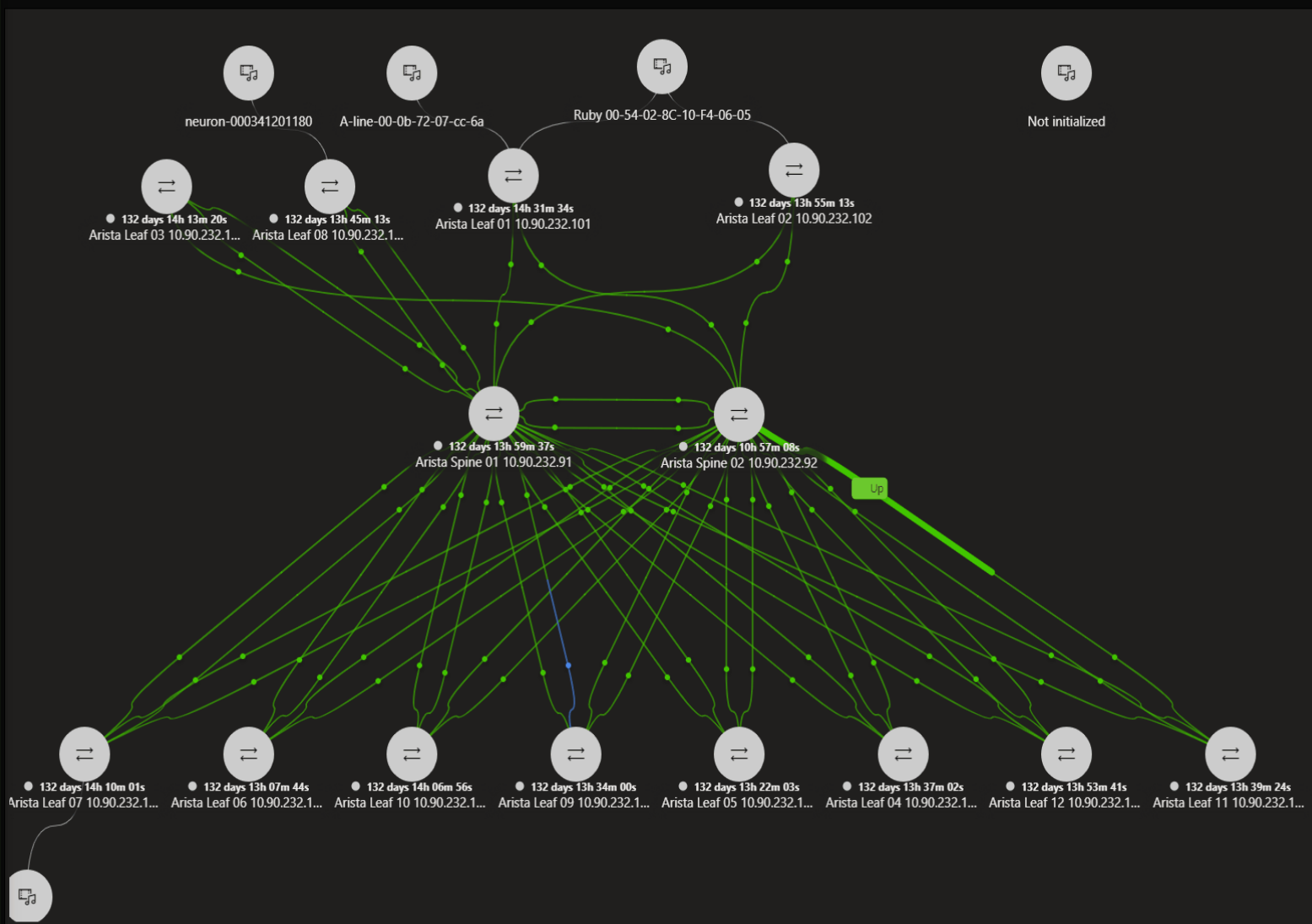
IP Multicast Routes

GROUP (IP MULTICAST ROUTES)	SOURCE (IP MULTICAST ROUTES)	SOURCE MASK (IP MULTICAST ROUTES)	UPSTREAM NEI
230.10.101.15	172.2.4.10	255.255.255.255	0.0.0.0

ARISTA dataminer

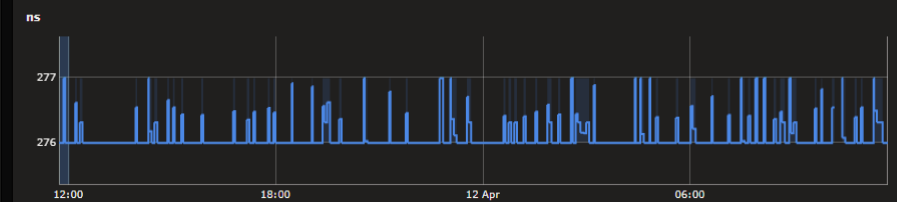
by skyline communications

Arista - Spine Leaf Network powered by DataMiner
Keep a full overview on your switch fabric. Use the DataMiner node-edge component to show alarms on nodes (interfaces) & edges (switches) and use the built-in analytical features to check the PTP state of each interface. Click on an either an interface or switch to populate the trend graphs.

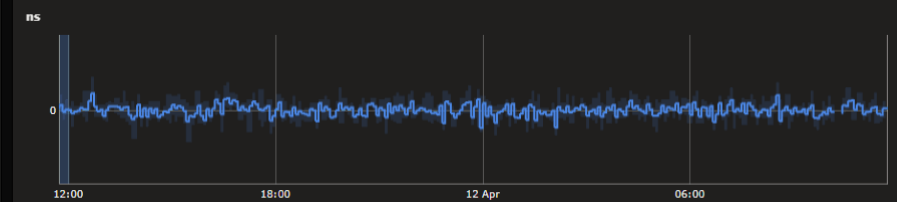


Select a switch on the topology

Mean Path Delay



Offset From Master



Select an interface on the topology

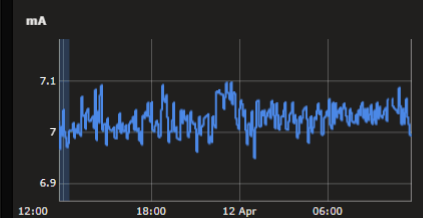
Optical Rx Power (Interfaces Transceiver)



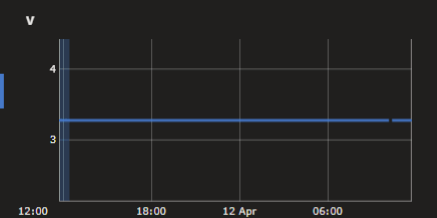
Optical Tx Power (Interfaces Transceiver)



Bias Current (Interfaces Transceiver)



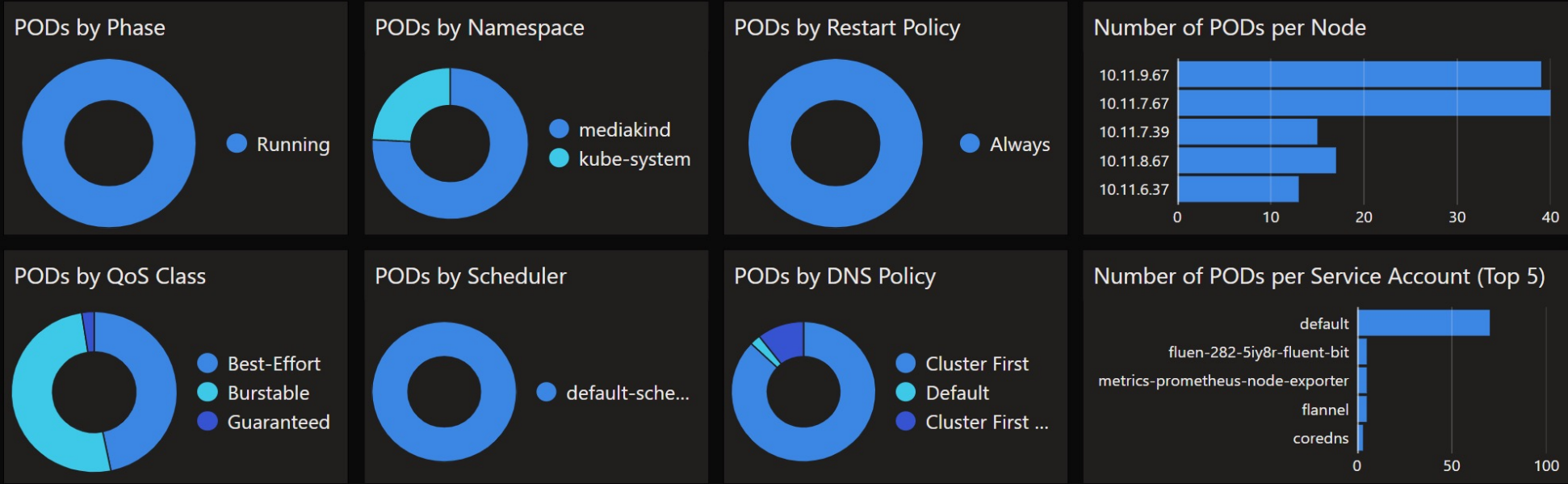
Voltage (Interfaces Transceiver)



- Home
- Nodes
- Services
- PODs**
- Containers
- Namespaces

PODs

Overview of configuration of all PODs



List of PODs

NAME [IDX] (POD)	NAMESPACE (POD)	PHASE (PO...)	CREATION TIMESTAMP (PO...)	HOST IP (POD)	POD IP (POD)	QOS CLASS (POD)	RESTART POLICY
prisma-manifest-conditioning-config-854d86bcb4-d6z9l	mediakind	Running	07/19/2022 00:33:42	10.11.9.67	10.234.3.179	Best-Effort	Always
stream-processor-ui-connector-69d65dc858-z9bpc	mediakind	Running	07/20/2022 14:01:42	10.11.9.67	10.234.3.157	Best-Effort	Always
prisma-viewing-policy-manager-config-76c898cb66-8z5zg	mediakind	Running	07/19/2022 00:34:00	10.11.9.67	10.234.3.178	Best-Effort	Always
fluen-282-5iy8r-fluent-bit-9t92g	mediakind	Running	10/13/2020 15:48:11	10.11.7.39	10.234.4.39	Best-Effort	Always
logrotate-gsb47	mediakind	Running	10/13/2020 15:48:11	10.11.7.39	10.234.4.38	Best-Effort	Always
prometheus-metrics-prometheus-operato-prometheus-0	mediakind	Running	03/22/2023 16:18:01	10.11.8.67	10.234.2.28	Burstable	Always

3. Network timing management (PTP)

Prevent operational disasters caused by PTP

constantly monitor your entire PTP stack to identify, troubleshoot and fix PTP issues easily

automated PTP infrastructure configuration

interface with PTP grandmasters, boundary clocks, transparent clocks, follower devices

integrate with GNSS source, network infrastructure

add info from 3rd party PTP analyzers

easy-to-use operational interface



IDP
Dashboards
Visual Overview
Mediation

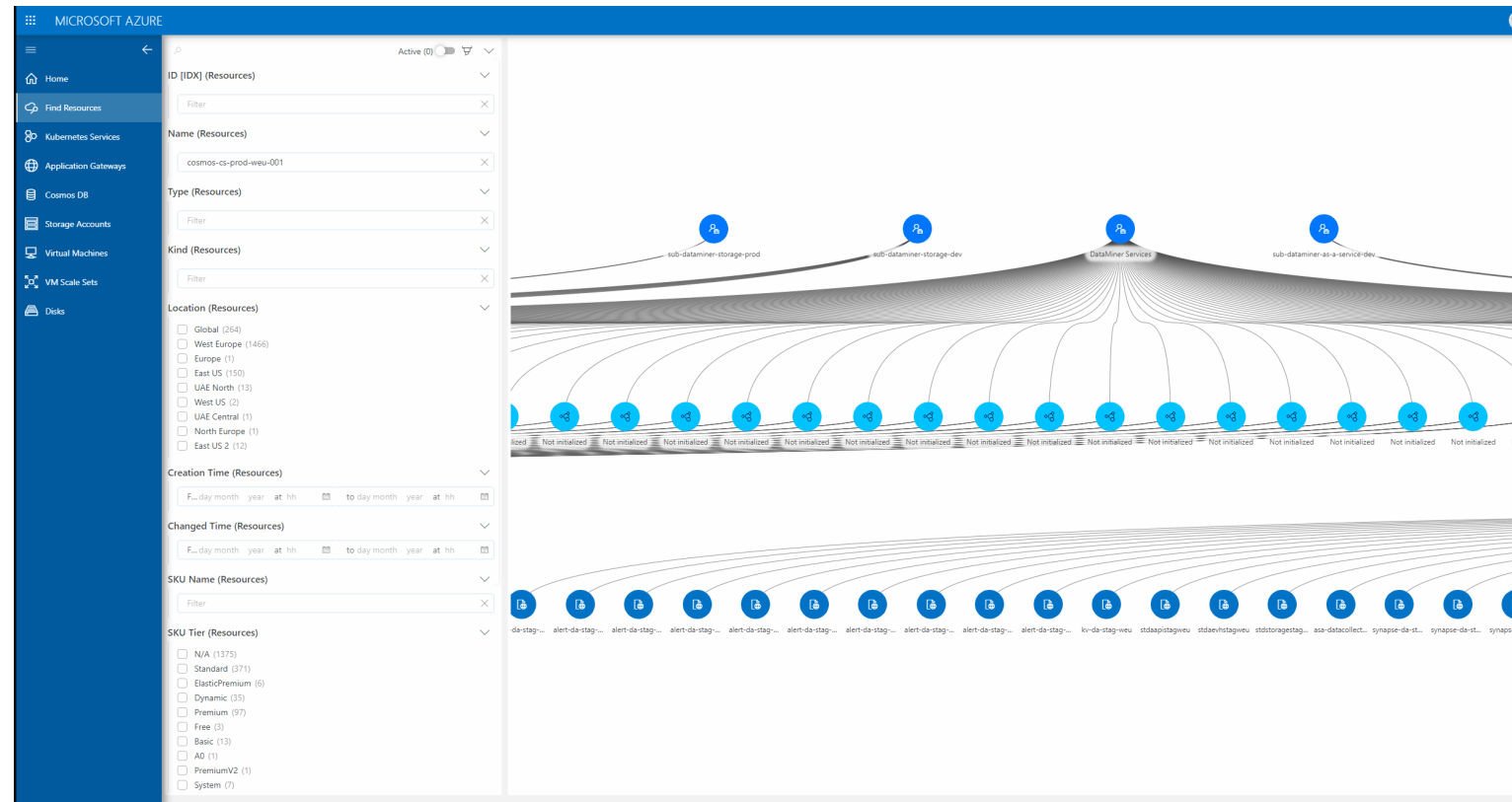


Fox, Disney, Sky, NHK, QVC, NFL, ABC,...

4. Managing multi-cloud workloads

Usage visualization, expense control and planning

Eliminating the need to have as many apps as you have cloud providers!



Supports the visualization of all cloud workloads into a single application.

Delivers instant visibility to the total cloud usage as well as the distribution across different providers and user groups

Fully flexible filtering for visualization of e.g.

- Hierarchy associated with a given instance
- Instances(resources) linked to a specific group or subscription (cost center)

Low Code Apps
Generic Query Index
Node-Edge visualization

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5. Events and jobs bookings
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5. Events & jobs bookings

Manage & automate your work orders from a single platform

central management of all work orders with single pane of glass interface, combined with tailored user interfaces per role / user.

- single source of truth database
- import work orders from several existing scheduling systems
- guided workflow from administrative data entry to booking execution, either via automation or user tasks
- keeps track of all resources
- turn work orders into bookings
 - map with service definitions
 - supports ad-hoc service changes
 - reserve and configure resources
 - connect resources

NAME	START TIME	END TIME	OPERATOR NOTES	COMPANY OF ...	INTEGRATION	STATUS	CONTRACT	COMPANY	PROJECT NUMBER	PRODUCT NUMBER	INFO
YleX Aamu Poiketus, Pehkonen ja Parikka stri...	09/01/2023, 06:30	27/03/2023, 17:00			Feenix	ONGOING	YLE Base	YLE	3054076	4063013/4063034	Automatically created by Feenix
Yle Uutiset kotimaa 2023[3054310]	09/01/2023, 09:00	07/06/2023, 20:58			Celton	ONGOING	YLE Base	YLE	3054210	4063142/4063144/4063145/4063146/4063147/4063148...	Automatically created by Celton
Yle Uutiset selkokuomeksi [3054551]	02/01/2023, 16:40	09/06/2023, 16:44		YLE	Plasma	ONGOING	YLE Base	YLE	3054551	4062769	Automatically created by Plasma
Yle Uutiset alueellasi 8' 2023 [3054562]	02/01/2023, 17:06	09/06/2023, 18:20			Plasma	ONGOING	YLE Base	YLE	3054562	4063767/4063768/4063769	Automatically created by Plasma
Yle Uutiset 2023[3053850]	27/01/2023, 08:00	03/11/2023, 17:00			Celton	ONGOING	YLE Base	YLE	3053850	4062415/4064130	Automatically created by Celton
Yle Huudustadsregionen 2023[3054242]	11/05/2022, 08:00	01/05/2023, 14:00			Celton	ONGOING	YLE Base	YLE	3054242	4063242/4063428/4063747/4064268	Automatically created by Celton
Yhdisteyn MC Oulo_URH_LU2_Lehtikvarti	09/03/2023, 07:00	13/09/2023, 15:00		YLE	None	ONGOING	YLE Base	YLE			
X3M Live X3M Morgon[3053831]	04/01/2023, 06:55	24/03/2023, 17:00			Feenix	ONGOING	YLE Base	YLE	3053831	4062392/4062399/4062404	Automatically created by Feenix
West Ham United FC-AEK Larnaca Pre-match...	16/03/2023, 20:55	16/03/2023, 21:05			Eurovision	CONFIRMED	NENT Base	NENT			Automatically generated by Eurovisio
West Ham United FC-AEK Larnaca KO 2000 g...	16/03/2023, 21:45	16/03/2023, 23:55			Eurovision	CONFIRMED	NENT Base	NENT			Automatically generated by Eurovisio
West Ham United FC-AEK Larnaca End to End...	16/03/2023, 17:00	16/03/2023, 17:55			Eurovision	CONFIRMED	NENT Base	NENT			Automatically generated by Eurovisio
washington buffalo nhl	16/03/2023, 01:00	16/03/2023, 04:30		YLE	None	COMPLETED	YLE Base	YLE			
Voimistelu kotimaa 2023[3054258]	05/09/2022, 10:00	07/05/2023, 18:30			Celton	ONGOING	YLE Base	YLE	3054258	4063022/4063768	Automatically created by Celton
Voimistelu FIG 2023[3054256]	09/01/2023, 10:30	27/03/2023, 12:00			Celton	ONGOING	YLE Base	YLE	3054256	4063017/4063019/4063020	Automatically created by Celton
Villareal CF-RSC Anderlecht Pre-match Feed ...	16/03/2023, 20:55	16/03/2023, 21:05			Eurovision	CONFIRMED	NENT Base	NENT			Automatically generated by Eurovisio
Villareal CF-RSC Anderlecht KO 2000 gnt [2...	16/03/2023, 21:45	16/03/2023, 23:55			Eurovision	CONFIRMED	NENT Base	NENT			Automatically generated by Eurovisio
Villareal CF-RSC Anderlecht End to End Test ...	16/03/2023, 17:00	16/03/2023, 17:55			Eurovision	CONFIRMED	NENT Base	NENT			Automatically generated by Eurovisio
Viki ja Kopsi Show[3053863]	17/01/2023, 12:55	01/06/2023, 15:15			Feenix	ONGOING	YLE Base	YLE	3053863	4063508	Automatically created by Feenix
Valvaka AR-testi 16.3. OHJ25	16/03/2023, 10:30	16/03/2023, 16:30		YLE	None	ONGOING	YLE Base	YLE			
Valvaka alustreeni 2 - OHJ 25	16/03/2023, 14:30	16/03/2023, 16:30		YLE	None	CONFIRMED	YLE Base	YLE			
Valvaka alustreeni 1 - OHJ 25	16/03/2023, 14:30	16/03/2023, 16:30		YLE	None	CONFIRMED	YLE Base	YLE			
Vaalitietys viittoille 160322	16/03/2023, 01:00	16/03/2023, 23:30		YLE	None	ONGOING	YLE Base	YLE			
UT Veteraanipäivä 2023[3053758]	25/01/2022, 10:00	27/04/2023, 22:00			Celton	ONGOING	YLE Base	YLE	3053758	4062278	Automatically created by Celton
UT Puolustusvoimain Ippujuhla 2023[3053818]	21/05/2022, 09:00	04/06/2023, 17:00			Celton	ONGOING	YLE Base	YLE	3053818	4064613/4062371	Automatically created by Celton
UT Puoli setsemän 2023[3053767]	10/01/2023, 09:00	17/05/2023, 18:58			Celton	ONGOING	YLE Base	YLE	3053767	4063108/4063783/4064261/4064287	Automatically created by Celton
UT Nenäpäivä 2023[3054432]	16/02/2023, 14:00	11/11/2023, 00:30			Celton	ONGOING	YLE Base	YLE	3054432	4064364/4064360	Automatically created by Celton
UT Miljoona roskapussia 2023[3053580]	03/05/2022, 08:00	14/06/2023, 20:28			Celton	ONGOING	YLE Base	YLE	3053580	4061025/4063459	Automatically created by Celton
UT Hyivin sanotti 2023[3054696]	15/03/2023, 10:30	20/03/2023, 18:30			Celton	COMPLETED	YLE Base	YLE	3054696	4064031/4064387	Automatically created by Celton
Urheilustudio 2022 - 2023[3052791]	05/11/2022, 11:45	26/03/2023, 18:15			Celton	ONGOING	YLE Base	YLE	3052791	4060644/4063067	Automatically created by Celton
Urheiluruutu [3054204]	01/01/2023, 18:10	30/12/2023, 20:59			Plasma	ONGOING	YLE Base	YLE	3054204	4063172/4063173/4063174/4063175/4063176/4063177...	Automatically created by Plasma
UMK 2024[3054356]	30/08/2022, 09:00	19/10/2023, 12:00			Celton	ONGOING	YLE Base	YLE	3054356	4064455	Automatically created by Celton
Ulkolinja 2023[3053813]	10/10/2022, 08:00	11/12/2023, 16:00			Celton	ONGOING	YLE Base	YLE	3053813	4062360/4062361/4062362/4062368	Automatically created by Celton

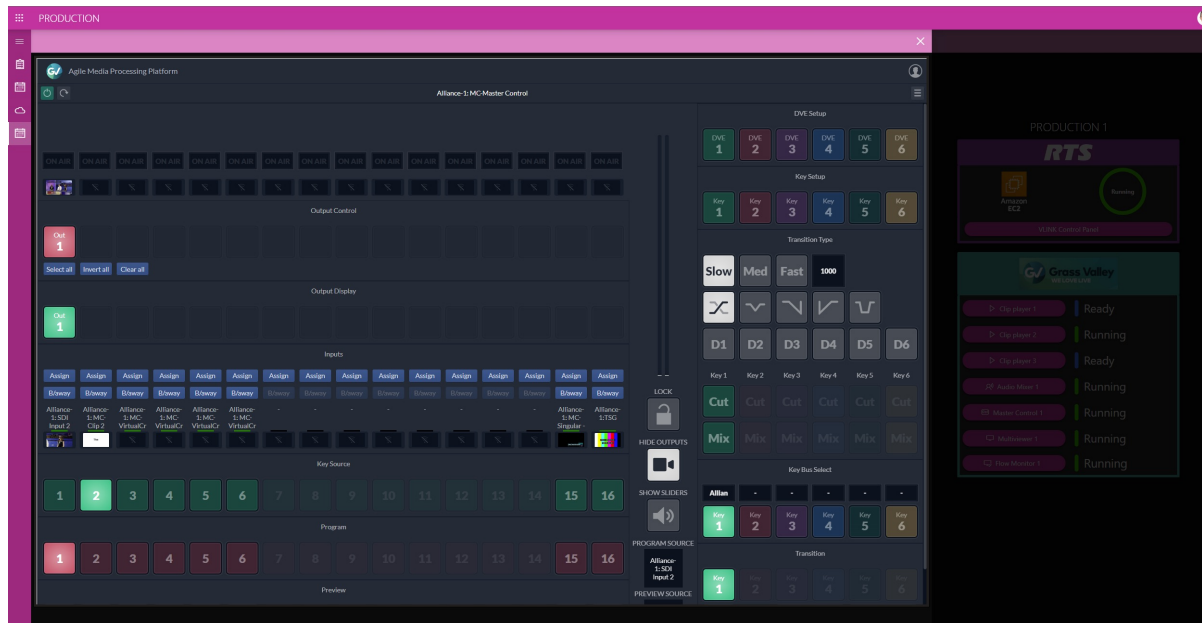
Dataminer Apps
SRM
Automation

6. Production workloads in the cloud

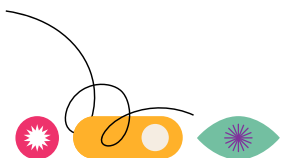
Orchestrate full cloud production lifecycle in an automated and efficient manner

Manage GVAMPP resources as well as resources outside of GV AMPP universe (cloud or on-prem); track resource utilization and costs

- application to manage lifecycle of productions that require cloud-based resources (Grass Valley AMPP)
- Plan, Deploy, Configure, Monitor, Control, Deconstruct
- reserve resources upfront
 - Cloud, On-Prem, People, Rooms, ...
- spin up and configure GV AMPP and 3rd-party resources when needed and turn them down again



Low-Code APPs
DataMiner Object Models (DOM)
Process Automation (PA)



Customer list

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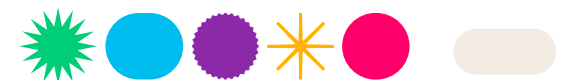
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9. Flow monitoring

Context !

element data

IF KPI's

IF utilization

physical network connectivity

as-is monitored flows

as-engineered flows

virtual signal groups

channel name

UMD label

production reference

booking schedule

...

Streaming telemetry
Flow engineering
DataMiner object models
Low-code apps
Dashboard
Data sharing

Table stakes

Observe "as-engineered" and "as-is" flows across network and edge domains

FLOW TRACKING (OPEN CONFIG)

Sources

- Neuron 1-5
- Neuron 1-4
- Prismon MCR 1-2
- Neuron 1-2 + Prismon 1-2
- Prismon MCR 1-1
- Neuron 1-2
- Prismon MCR 1-1 + 1-2
- Neuron 1-3
- Neuron 1-1
- Neuron Video (1-1) + Audio (1-1)
- Neuron Audio (1-6)
- Demo Group

Flows in selected source

Neuron 1-5 (127605/9/)

ST2110-30 232.108.4.103

Media engineer

Browse virtual signal groups and drill down to flow info

As-is path

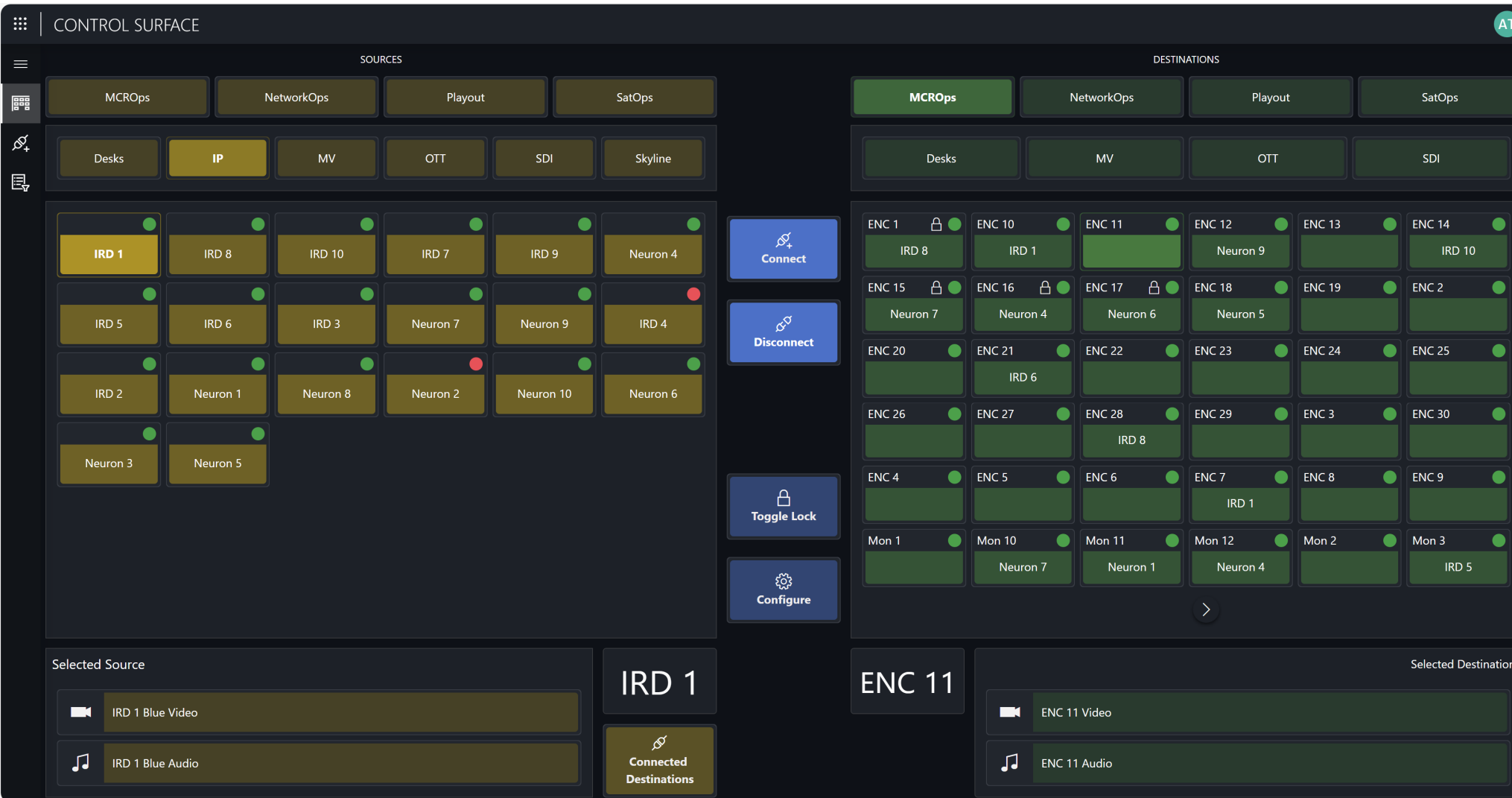
Neuron IS-05

As-engineered path

Neuron IS-05

10. Control surfaces

Personalised, desk-aware, task-oriented, schedule aware



Connect vSG

Disconnect (IP ...)

Grouping

Pagination

Filtering

Dynamic population based on GQI

Customized button editing

Operational status

List views

Ad-hoc controls

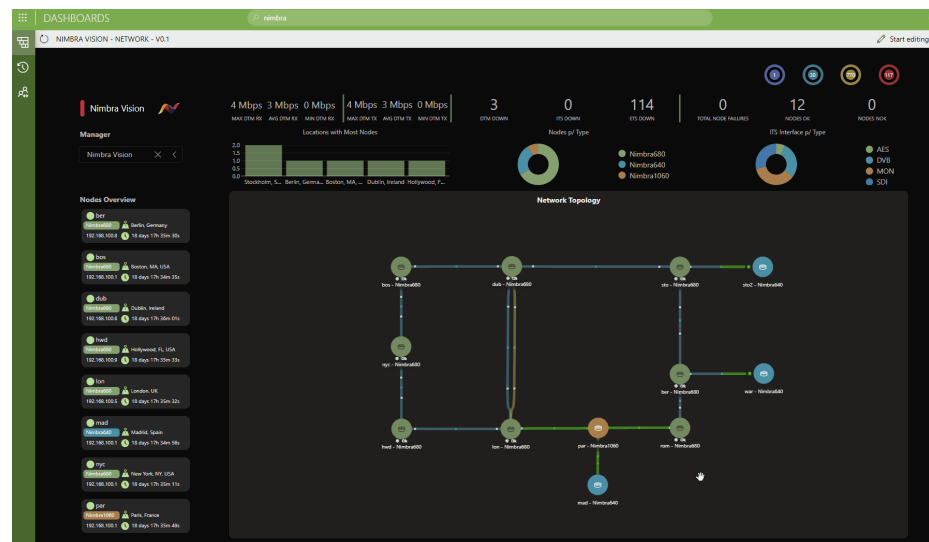
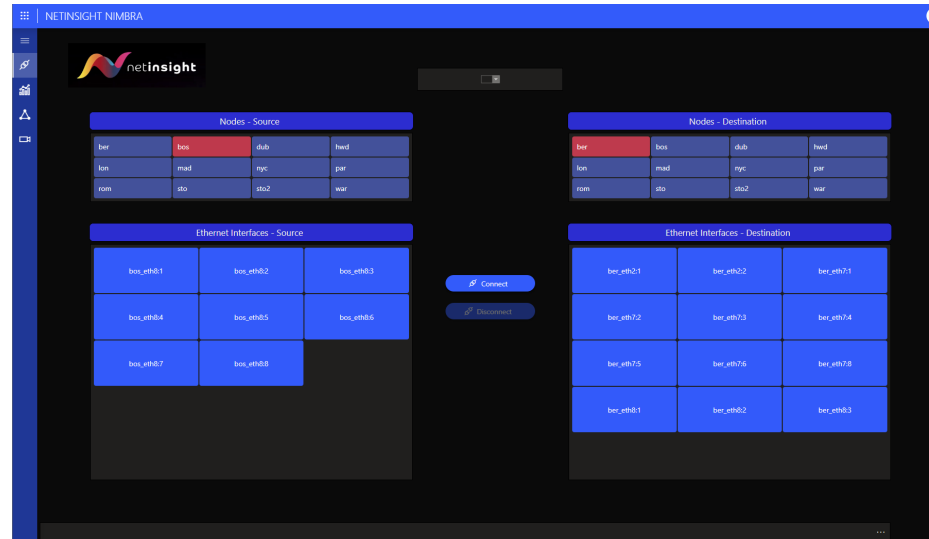
Penalty box

Combine with dashboard widgets

Dashboard sharing

12. Contribution over fiber and cloud

Multi-domain any to any connectivity made easy



end-to-end management of media services across managed networks or cloud

Dataminer Object Models (DOM)
SRM
LowCode Apps

provision ad-hoc or scheduled media services

integrate with NetInsight's managed networks (Nimbra Series) and cloud solution (Nimbra Edge)

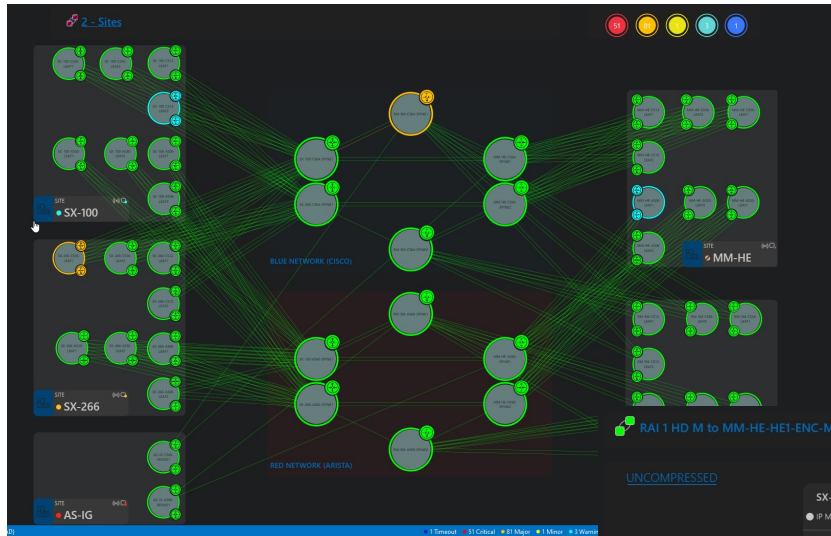
supports 3rd-party edge devices

resource and capacity management

in-depth monitoring

13. SDN for contribution & distribution services

Orchestrate uncompressed & compressed media service on single converged network



DataMiner SDN controller to manage ST2022-6 / ST2110-X / ST2022-2 multicast streams across multiple sites via a capacity-constraint network

multi-format, multi-service, multi-vendor, multi-resolution IP signal switching solution

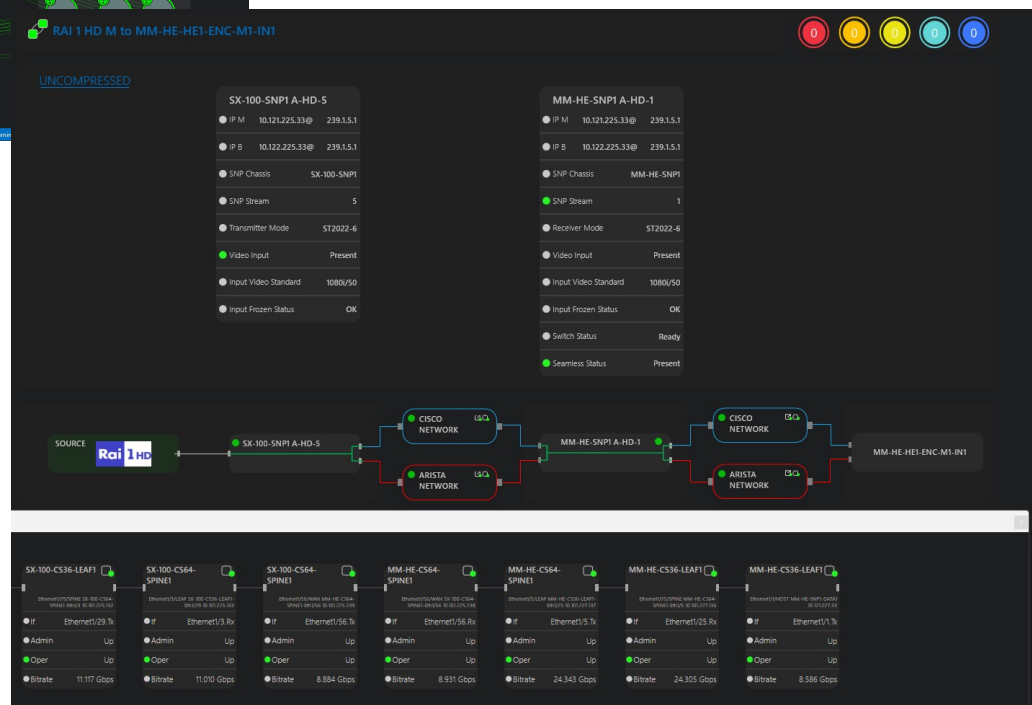
advanced SDN control functionalities, e.g.

- lowest cost & shortest path calculation
- flow policy management
- diverse path routing
- NATing

SDI-like source-to-destination operation

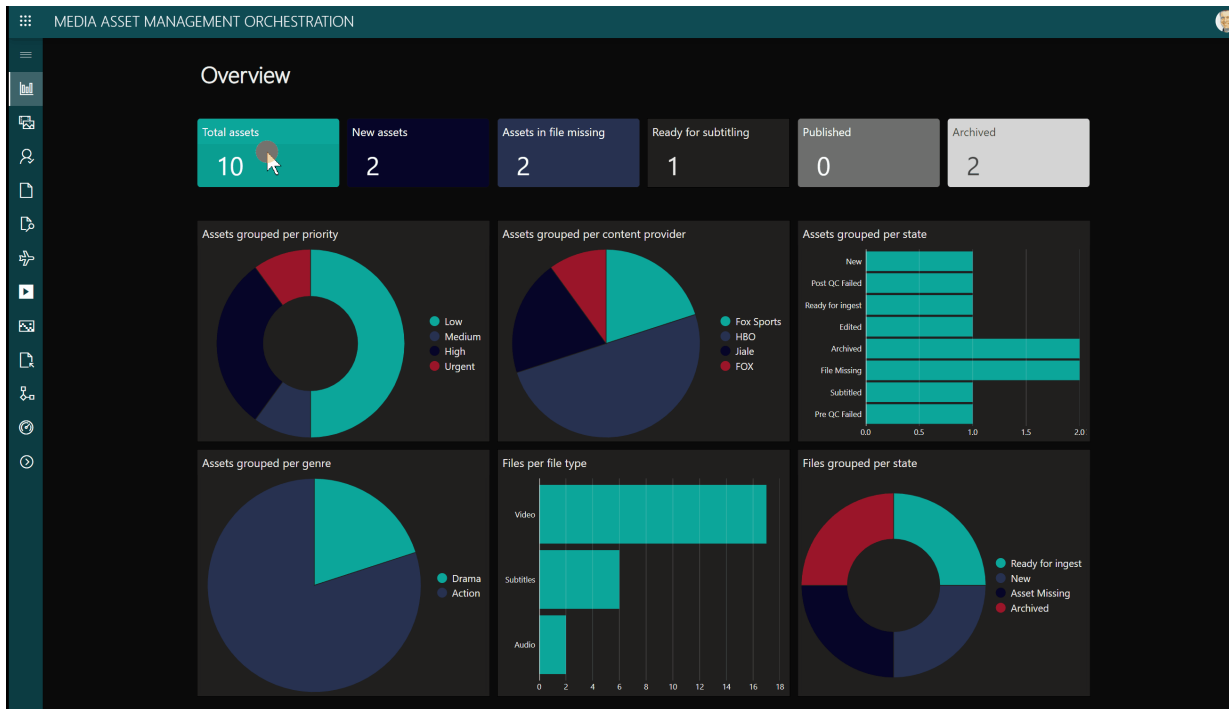
service-aware monitoring

Dataminer SRM



14. Automating file asset workflows

Automate repeat actions : focus on your tasks and your exceptional situations only



Automation of your asset & file workflows

Management of storage & archive

Management of assets and files with house-specific meta data

Read asset ingest schedules from scheduler, PAM, ...

Late arrival board

File ingest workflow templates tailored to the provider, category, ...

Dynamic linking of titles to files

Fully automated processing workflows custom to the operations

Integrated with industry leading technology and SaaS providers including file transfer, transcode, QC, ... functions

Automated resource reservation and utilization reporting (capacity planning)

Monitor asset and file status and position in the process

Small res preview, boxcover view, ...

Individual workstations filtered on schedules and tasks

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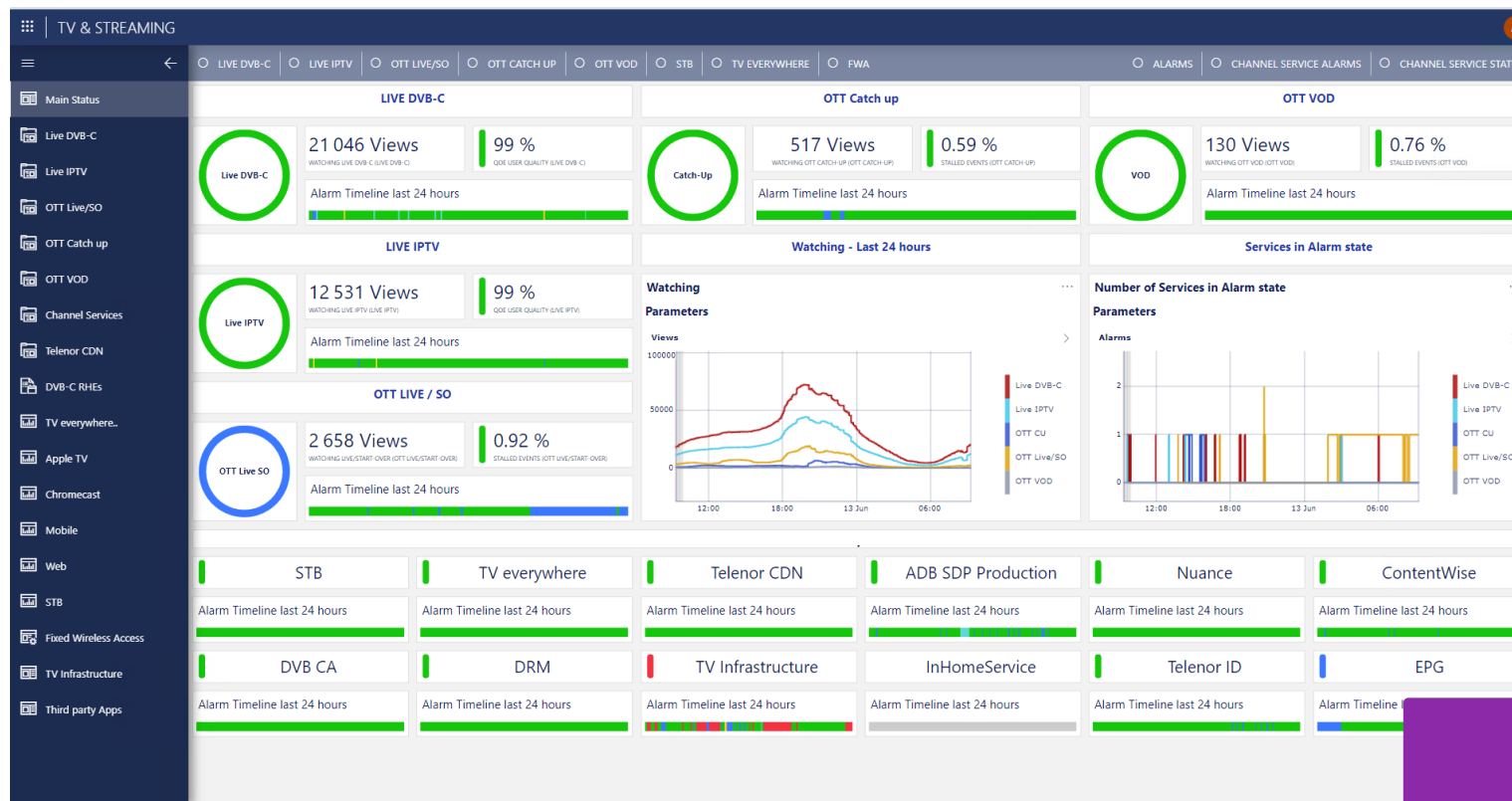
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16. Experience & performance management (EPM)

Imagine every team to find exactly what they need in a layout as works best for them

TV & streaming services application designed to accommodate the needs of all teams, without compromising the experience of any of them.



Access to all EPM data set

Presents exactly what is of the different team's interest

Fully customizable UI, allows for each persona or even workflow to have its own dashboard(s)

DataMiner EPM
Low code apps

- Main Status
- Live DVB-C
- Live IPTV
- OTT Live/SO
- OTT Catch up
- OTT VOD
- Channel Services
- Telenor CDN
- DVB-C RHEs
- TV everywhere..
- Apple TV
- Chromecast
- Mobile
- Web
- STB
- Fixed Wireless Access
- TV Infrastructure
- Third party Apps

LIVE DVB-C

Live DVB-C

21 046 Views

WATCHING LIVE DVB-C (LIVE DVB-C)

99 %

QOE USER QUALITY (LIVE DVB-C)

Alarm Timeline last 24 hours

OTT Catch up

Catch-Up

517 Views

WATCHING OTT CATCH-UP (OTT CATCH-UP)

0.59 %

STALLED EVENTS (OTT CATCH-UP)

Alarm Timeline last 24 hours

OTT VOD

VOD

130 Views

WATCHING OTT VOD (OTT VOD)

0.76 %

STALLED EVENTS (OTT VOD)

Alarm Timeline last 24 hours

LIVE IPTV

Live IPTV

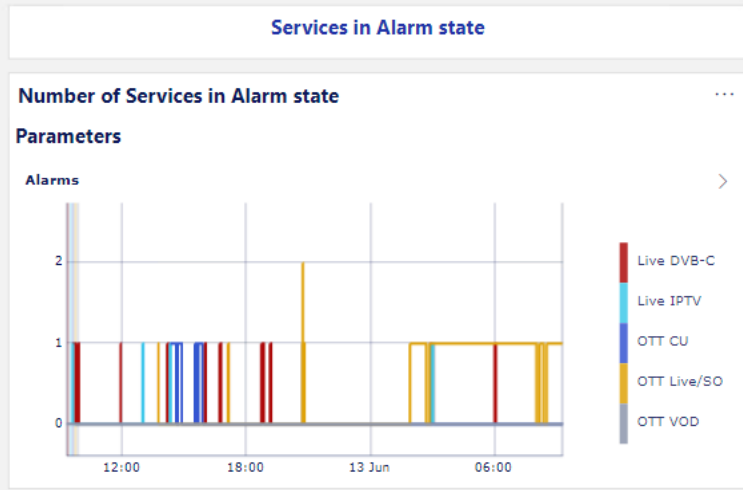
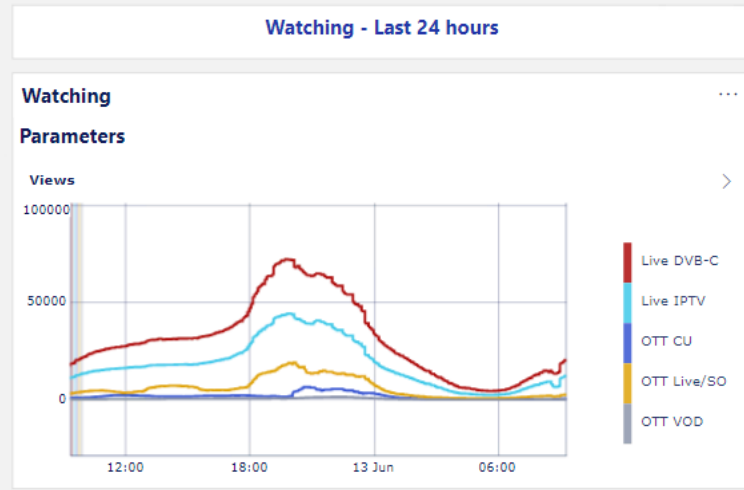
12 531 Views

WATCHING LIVE IPTV (LIVE IPTV)

99 %

QOE USER QUALITY (LIVE IPTV)

Alarm Timeline last 24 hours



OTT LIVE / SO

OTT Live SO

2 658 Views

WATCHING LIVE/START-OVER (OTT LIVE/START-OVER)

0.92 %

STALLED EVENTS (OTT LIVE/START-OVER)

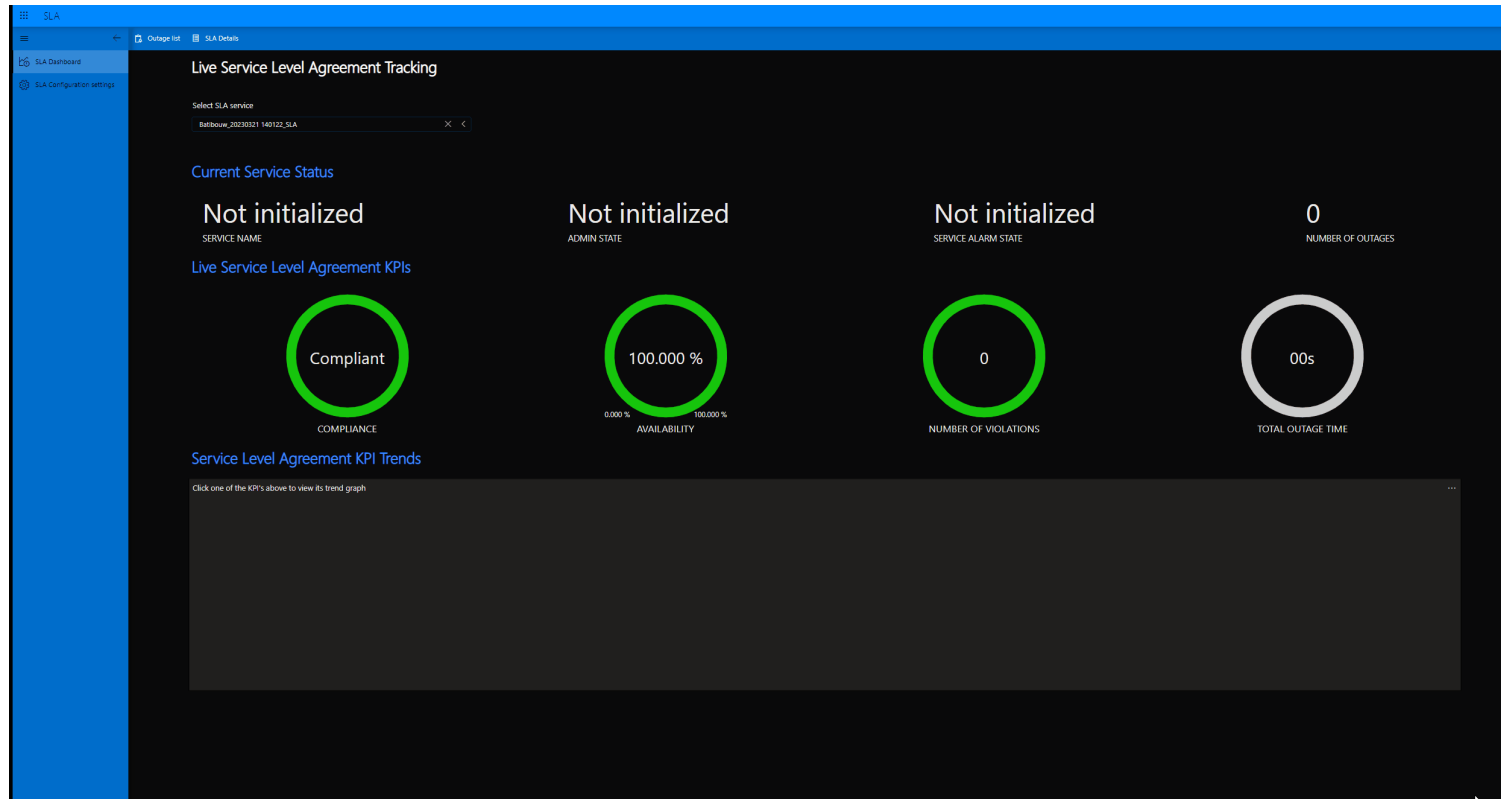
Alarm Timeline last 24 hours

<p>STB</p> <p>Alarm Timeline last 24 hours</p>	<p>TV everywhere</p> <p>Alarm Timeline last 24 hours</p>	<p>Telenor CDN</p> <p>Alarm Timeline last 24 hours</p>	<p>ADB SDP Production</p> <p>Alarm Timeline last 24 hours</p>	<p>Nuance</p> <p>Alarm Timeline last 24 hours</p>	<p>ContentWise</p> <p>Alarm Timeline last 24 hours</p>
<p>DVB CA</p> <p>Alarm Timeline last 24 hours</p>	<p>DRM</p> <p>Alarm Timeline last 24 hours</p>	<p>TV Infrastructure</p> <p>Alarm Timeline last 24 hours</p>	<p>InHomeService</p> <p>Alarm Timeline last 24 hours</p>	<p>Telenor ID</p> <p>Alarm Timeline last 24 hours</p>	<p>EPG</p> <p>Alarm Timeline last 24 hours</p>

17. Service Level Agreements (SLA)

Enabling teams to deliver "proof of performance"

Delivering all that relates your SLA contracts: definition, current and historical performance, service outage occurrence/duration



Dedicated dashboard for presentation of SLA configuration/definition (window, max. single/total violation time, ...)

Fully customizable visualization of actual service/booking SLA status

Included an additional tab with the fully detailed outage list

Option to add further tabs for e.g. SLA history, Top-X, ...

DataMiner SLA component
Process Automation

Agenda

ICT

1. Environmental, facilities & IoT sensors
2. On-premises networks & data centers
3. Network timing management
4. Managing cloud workloads

Events and jobs planning

5. Events and jobs bookings
6. Production workloads in the cloud

Master Control (MCR)

7. Flow and signal group management
8. Flow engineering & documentation
9. Flow monitoring
10. Control surfaces
11. Satellite downlink automation
12. Contribution over fiber and cloud

13. SDN for contribution & distribution services
14. Automating file asset workflows

User experience management (UEX)

15. Service configuration database
16. Experience & performance management
17. Service Level Agreements

OSS / BSS workflows

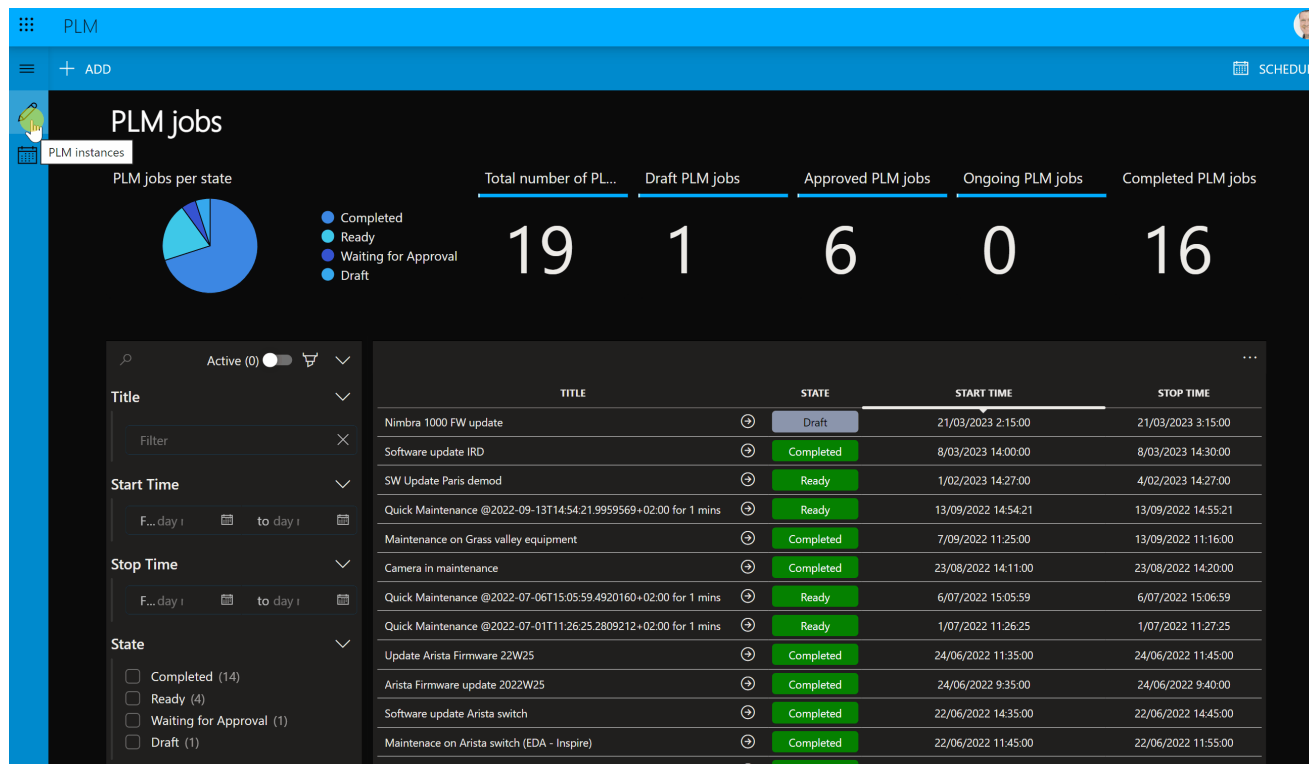
18. Planned Maintenance
19. Incident management
20. Problem mgt & resolve workflows
21. Activity scheduling
22. Operational data management
23. VSAT hub and terminal provisioning
24. From warehouse to operations



18. Planned Maintenance (PLM)

No unexpected outages anymore!

Plan maintenance on your inventory – even cloud capacity !



Data & process-driven maintenance

Pre-defined activities for alarm masking, swap alarm templates, pause SLA calculation

User-defined processes to switch to redundant, redeploy in cloud, etc

No resource conflicts with customer service bookings

Full stack and service awareness

Convenient low-code app for dedicated planning and inventory management teams

Sync maintenance schedules with external and internal platforms (bi-directional)

Seamless integration with change management / ticketing systems



Verizon, Telenor, Etisalat, ...

19. Incident management

Delivering grip, accelerating closure

Fully featured incident management

NAME	STATE	RESOLUTION STEP	SHORT DESCRIPTION	TYPE	CONFIGURATION ITE...	PRIORITY	DESCRIPTION	CALLER ORGANIZATION	CALLER	SLA CONTRACT	PROBLEM	CREATED ON
INC_247	Closed		No data coming in from the server	Element	17/7	Moderate	There is no data coming in from the server on H...	VRT	Miley Sparrow	18754_VRT_OrganizationBased		16/11/2022 8:00:00
INC_123	In progress		No data coming in from the server	Alarm	17/63989	Moderate	There is no data coming in from the server on H...	VRT	Tahmina Mooney	18754_VRT_OrganizationBased		17/11/2022 8:00:00
INC_98745	Resolved		No data coming in from the server	Element	17/62887	Moderate	There is no data coming in from the server on H...	Ziine	Christian Fontal...	18784_Ziine_Corporate		21/11/2022 8:00:00
INC_74236	In progress		No data coming in from the server	Element	17/109502	High	There is no data coming in from the server on H...	Ziine	Rupert Dennis	18784_Ziine_Corporate		24/11/2022 8:50:00
INC_142	Closed		No data coming in from the server	Element	17/62888	Moderate	There is no data coming in from the server on H...		Christian Fontal...	18754_VRT_OrganizationBased		15/11/2022 8:00:00
INC_47523	Closed		No data coming in from the server	Element	17/62887	Moderate	There is no data coming in from the server on H...	Ziine	Rupert Dennis	18784_Ziine_Corporate	PROBLEM_LAB...	24/11/2022 18:15:...
INC_793951	Closed		No data coming in from the server	Element	17/62890	Moderate	There is no data coming in from the server on H...	Ziine	Rupert Dennis	18784_Ziine_Corporate	PROBLEM_LAB...	24/11/2022 8:45:00
INC_4523	Closed											24/11/2022 18:15:...
INC_0003	In progress											29/11/2022 14:59:...
INC_85436	Closed											24/11/2022 8:50:00
INC_1458	In progress											23/11/2022 8:00:00
INC_0007	Closed											29/11/2022 8:25:00
INC_287	In progress											16/11/2022 8:55:00
INC_426	In progress											21/11/2022 8:00:00
INC_47842	In progress											24/11/2022 8:30:00
INC_1111	In progress											30/11/2022 8:25:00
INC_74523	In progress											29/11/2022 13:56:...
INC_458	In progress											24/11/2022 8:00:00
INC_583	Cancelled											16/11/2022 8:00:00
INC_298	In progress											21/11/2022 8:00:00
INC_0009	Closed											16/11/2022 7:00:00
INC_0006	Closed											30/11/2022 17:29:...
INC_186	Closed											22/02/2023 10:29:...
INC_45869	New											22/02/2023 11:49:...
INC_549	Closed											22/11/2022 8:00:00
INC_3861235	In progress											

The reference for all actively working or requiring visibility to incidents

Actual implementations can vary

- simple lists with e.g. incident description, severity, owner and status
- fully featured including database with incident types, resolution workflows and knowledge base items

Possibility to use process automation to

- Initiate dashboard share (s)
- create MS Teams channel, ...

Object models
Low code apps
Process Automation
Dataminer.services

Welcome to the Incident Management space where we keep track of all on-going incidents, and organize our activities to resolve those situations.

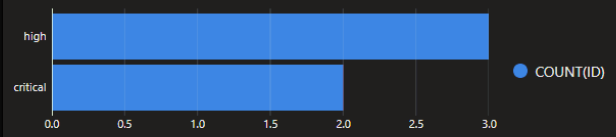
dataminer
by skyline communications

Create new incident

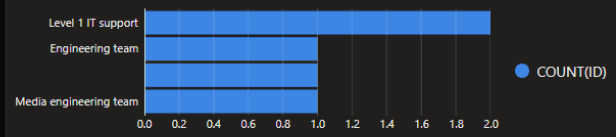
Amount of incidents

5

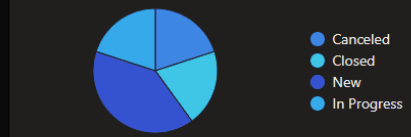
Incidents grouped per priority



Incidents grouped per assigment group



incidents grouped per state



Active (0)

ID

State

- New
- Resolved
- Canceled
- Closed
- In Progress
- On Hold

Priority

- critical
- high
- moderate
- low

Assigned to

ID	STATE	DESCRIPTION	TYPE	CONFIGURATION ITE...	IMPACT	PRIORITY	ASSIGNED ...	ASSIGNMENT GROUP	DUE DATE	LAST MODIFIED	LAST MODIFIED BY
CPU to high of Cisco DCM Y1...	New	Unexpected CPU load on DCM Y145 please have a look what is going wrong			medium	high		Media engineering team	03/07/2023 00:17:...	03/07/2023 00:17:...	Miguel Barquet
Kubernetes update	In Progress	Update to latest kubernetes failed	alarm		high	critical			03/06/2023 16:05:...	03/06/2023 16:06:...	Martijn Vanallemeers
Alarm on Cisco switch	New		alarm		high	high	John Doe	Level 1 IT support	03/06/2023 15:08:...	03/06/2023 15:08:...	Martijn Vanallemeers
VSAT Terminal X119 down	Closed		element	17/169190	high	critical	Peter tech	Engineering team	02/16/2023 15:18:...	02/23/2023 10:19:...	Martijn Vanallemeers
Firewall update	Canceled		element		high	high	John Doe	Level 1 IT support	02/14/2023 14:46:...	02/23/2023 10:07:...	Reinout Daels

1337 alarms

ELEMENT NAME	PARAMETER DESCRIPTION	VALUE	TIME	ROOT TIME
TODAY 37				
ZiineDev2	Alarm Group		Today 15:06:10	Today 15:06:07
ZiineDev2	Alarm Group		Today 15:05:59	Today 15:05:56
ZiineDev2	Alarm Group		Today 15:05:46	Today 15:05:41

20. Problem management

Because visibility accelerates closure

As crucial as incident management in maximizing service uptime!

The screenshot shows a 'PROBLEM MANAGEMENT' dashboard. On the left, there are filters for 'Name', 'Problem name', 'State', 'Priority', 'Assignment group', and 'Assigned to'. The main area displays a table of problems:

NAME	PROBLEM NAME	STATE	SHORT DESCRIPTION	PRIORITY	PROBLEM DESCRIPTION	ASSIGNMENT GROUP
PROBLEM_178	Ziine server is down	Closed	General power failure in HQ	Moderate		Business analysts
PROBLEM_4876	Ziine2 server is down	Closed	General power failure in HQ	High	The connection is lost and it is not possible to moni...	Business analysts
PROBLEM_547	Ziine server is down	Assess	General power failure in HQ	Moderate		
PROBLEM_2008	Ziine server is down	RCA	General power failure in HQ	Moderate		Test Team
PROBLEM_128	Ziine server is down	Closed	General power failure in HQ	High		Audio Operators
PROBLEM_130	Ziine server is down	Closed	General power failure in HQ	Critical		Producers
PROBLEM_129	Ziine server is down	Closed	General power failure in HQ	High		MCR Operators
PROBLEM_4856	Low code apps cannot be loaded	Resolved	General power failure in HQ	Moderate		

Facilitates the identification and classification of problems and linked incidents

Support responsible with assignment, follow up and actual status visualization

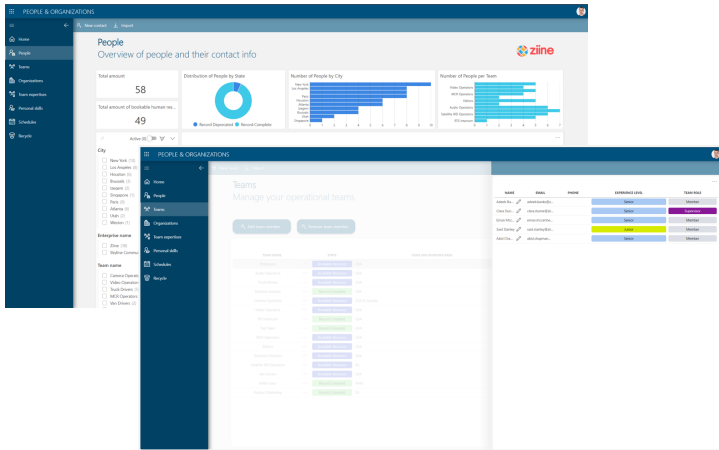
Supports filtering across all data fields e.g. name, state, priority, assigned team/person, ...

Object models
Low code apps

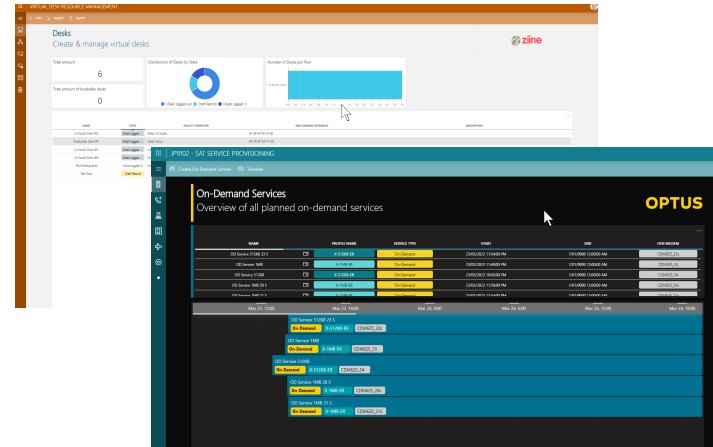
ITIL defines a problem as a (potential) cause of one or more incidents. The focus for problem management is on incident prevention.

22. Operational data management

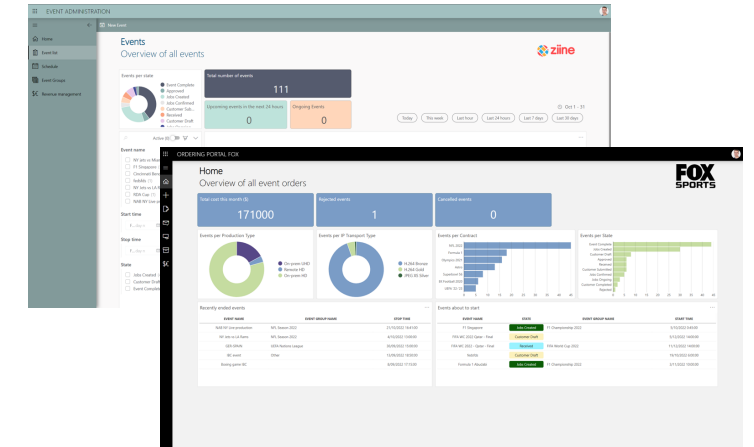
This is what digital transformation is about : data, processes and users



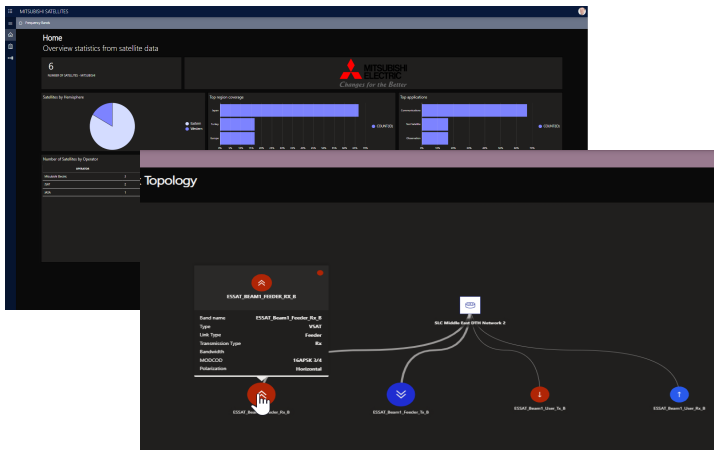
People & Organization



Resources CRUD & scheduling



Event & job scheduling



Satellites, beams & gateways

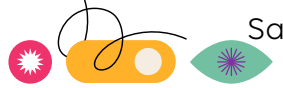


Contracts & rate cards



Field workforce

Digital twin & DOM
Process automation
Low-code apps
User-defined API



23. VSAT hub and terminal provisioning

All you need to manage VSAT networks in a pragmatic manner

Satellite database

Configuration of satellite networks
(beams & carriers)

Provisioning of VSAT hubs

Terminal inventory

Product catalog (SCPC & VSAT)

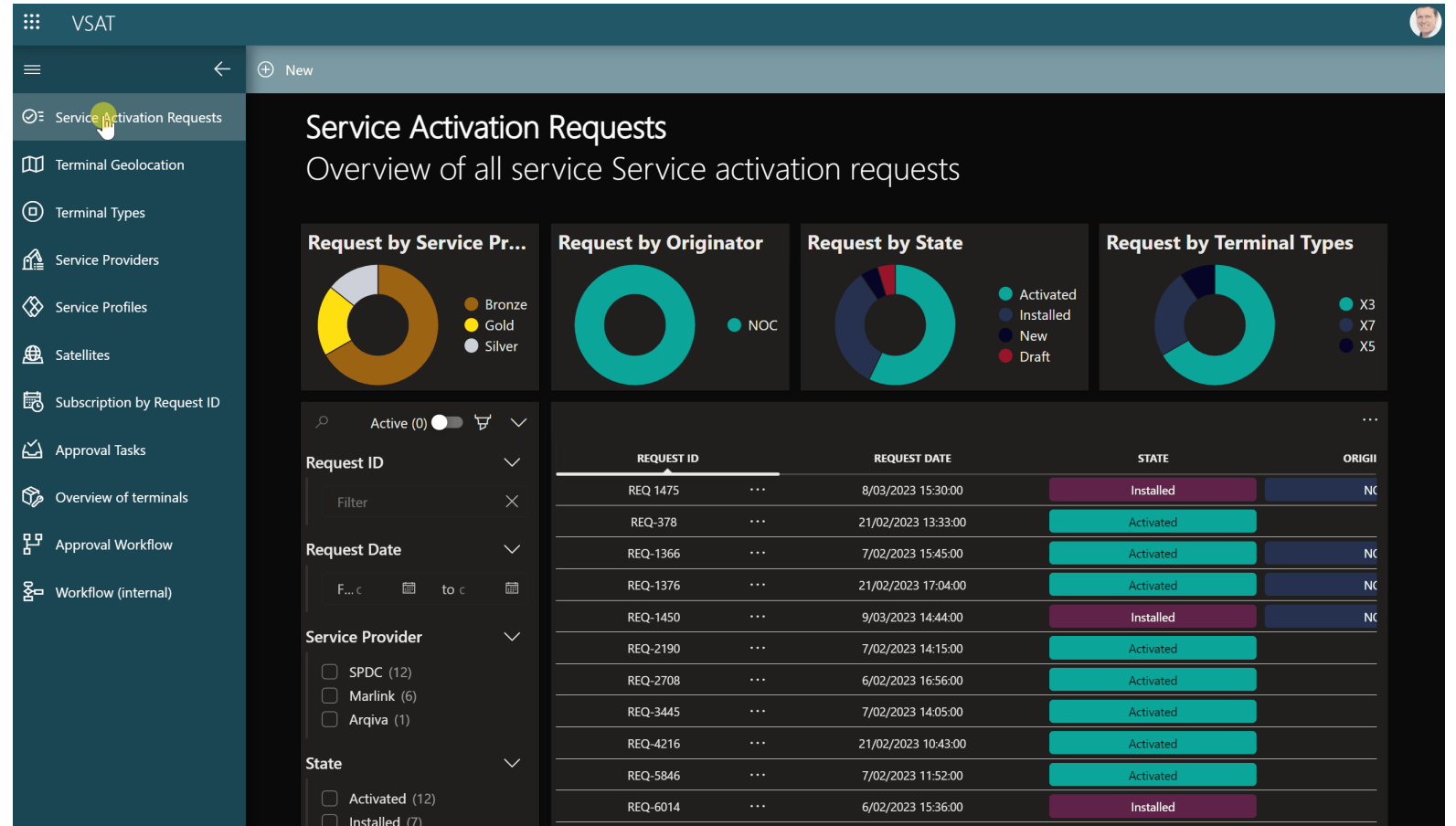
Process-driven terminal provisioning
and activation

Management of subscriptions

Service orchestration (MHz or Mbps)

Comes with all core OSS/BSS functions :
service mgt, change mgt, incident mgt
etc

Integrates in existing OSS/BSS systems



All you need to deploy satellite networks, manage capacity
and services

Low-code apps
Process automation
DataMiner IDP
Flow management (SDN)
SRM

