Alarm Analytics
DX Spectrum and Grafana

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September 2020

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Agenda

- Introduction
- Motivation
- Spectrum Report Manager Data Access
- Install Grafana
- Integrate Grafana and SRM

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Introduction

Background and Motivation

- DX Spectrum Report Manager (SRM) provides an analysis of the inventory, availability, changes, performance, and fault history of the network assets that are managed in DX Spectrum. You can share reports throughout the enterprise. SRM compiles the required data and presents it in a specified format.
- The SRM data server extracts data from the DX Spectrum knowledge base and stores it in the reporting database. You can generate reports that provide information on various aspects of network assets that are relevant to an organization.
- SRM helps you make informed decisions on IT assets and provides the following information:
  - Assets that have the most issues.
  - Events and Alarms that recur frequently.
  - Number of routers or other gateway devices from a specific vendor that are deployed in the network.
- SRM has typically used CA Business Intelligence (OEM version of JasperReports) for visualization.

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Introduction

Background and Motivation

- Grafana is a multi-platform open source analytics and interactive visualization web application. It provides charts, graphs, and alerts for the web when connected to supported data sources. It is expandable through a plug-in system. End users can create complex monitoring dashboards using interactive query builders.[1]
- Grafana was first released in 2014 by Torkel Ödegaard as an offshoot of a project at Orbitz, it targeted time series databases such as InfluxDB, OpenTSDB, and Prometheus but evolved to support relational sources such as MySQL, PostgreSQL and Microsoft SQL Server.[1]

[1] https://en.wikipedia.org/wiki/Grafana

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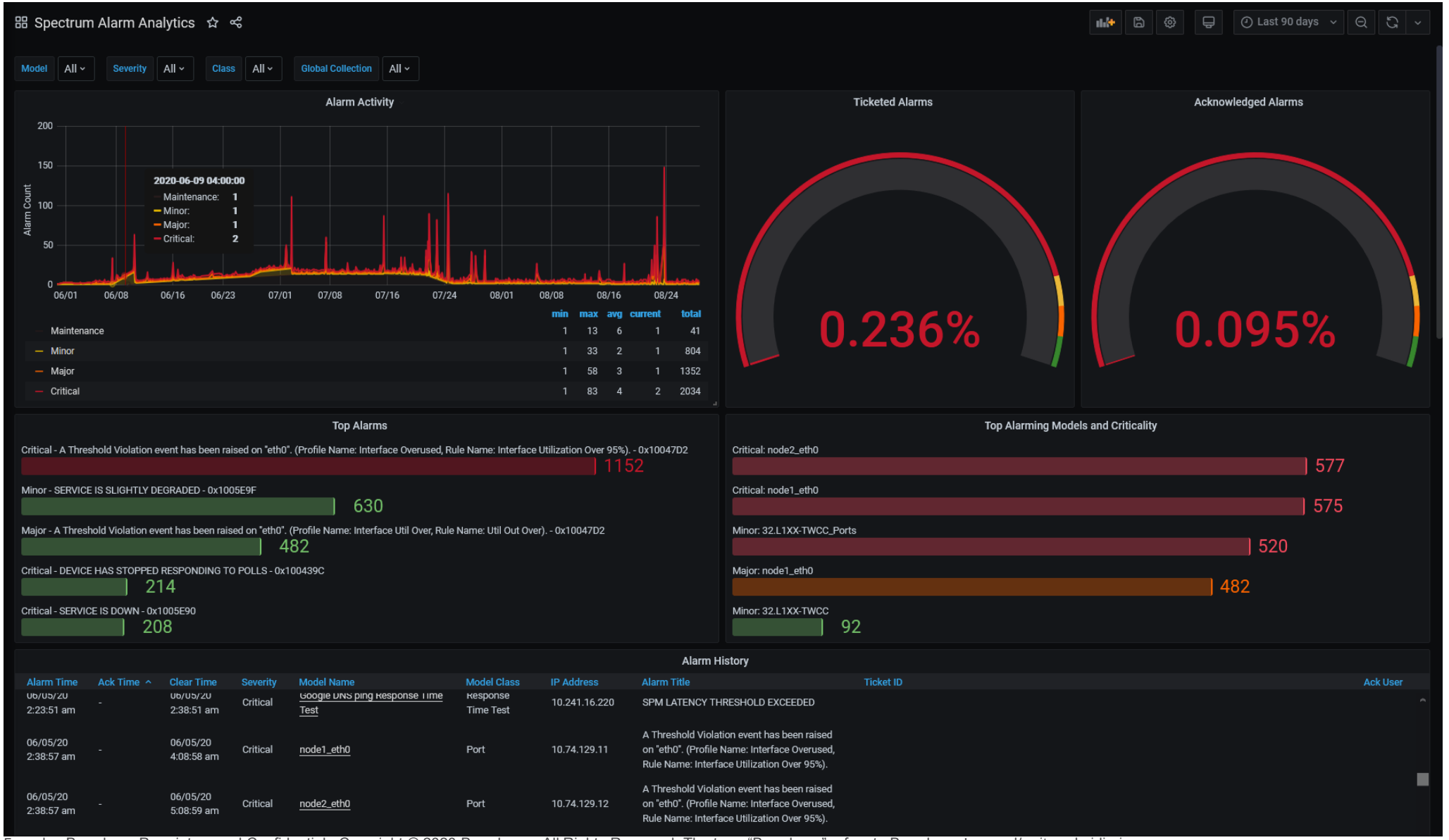
Motivation



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Spectrum Report Manager Data Access

- SRM data is stored in a MySQL database that ships with the product
- Two schemas available for access
  - SRMDBAPI – Read only views designed to provide a simple and stable schema for queries
  - Direct access to “reporting” database – Raw access to underlying database. Powerful but more complex and subject to change
- By default, access is restricted so a MySQL user needs to be created and access granted.

- SRM Database schema: https://techdocs.broadcom.com/us/en/ca-enterprise-software/it-operations-management/dx-netops/20-2/Fault-Monitoring-with-DX-Spectrum/managing-client-applications/report-manager/report-manager-db-schema.html
- SRMDBAPI: https://techdocs.broadcom.com/us/en/ca-enterprise-software/it-operations-management/spectrum/10-4-2/installing-and-upgrading/install-report-manager/appendix-d-ca-spectrum-report-manager-database-api-srmdbapi.html
- Reporting: https://techdocs.broadcom.com/us/en/ca-enterprise-software/it-operations-management/spectrum/10-4-2/getting-started/spectroserver-and-ca-spectrum-databases-overview/reporting-database.html

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Spectrum Report Manager Data Access

- Create a user for Grafana to access the SRM DB:

https://techdocs.broadcom.com/us/en/ca-enterprise-software/it-operations-management/dx-netops/20-2/Fault-Monitoring-with-DX-Spectrum/installing-and-upgrading/install-report-manager/appendix-d-ca-spectrum-report-manager-database-api-srmdbapi/how-to-create-additional-srmdbapi-users.html

```
cd $SPECROOT/mysql
./bin/mysql --defaults-file=./my-spectrum.cnf -uroot -proot reporting
GRANT SELECT ON reporting.* TO 'grafana'@'%' IDENTIFIED BY 'somepassword';

GRANT SELECT, EXECUTE ON srmdbapi.* TO 'grafana'@'%' ;
FLUSH PRIVILEGES;
```

- This creates the grafana user with a specified password and provides read-only access.
- You can further restrict access by changing the % to the IP address of the Grafana server.

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Install Grafana

CentOS / Red Hat Enterprise Linux Instructions

- Add Yum repository access
  - /etc/yum.repos.d/grafana.repo

```
[grafana]
name=grafana
baseurl=https://packages.grafana.com/oss/rpm
repo_gpgcheck=1
enabled=1
gpgcheck=1
gpgkey=https://packages.grafana.com/gpg.key
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
```

- Install: yum install grafana

```
[root@lvntest019442 ~]# yum install grafana
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: mirror.chpc.utah.edu
 * extras: centos3.zswap.net
 * updates: centos3.zswap.net
grafana/signature                                                 |  488 B  00:00:00
Retrieving key from https://packages.grafana.com/gpg.key
Importing GPG key 0x24098CB6:
 Userid     : "Grafana <info@grafana.com>"
 Fingerprint: 4e40 ddf6 d76e 284a 4a67 80e4 8c8c 34c5 2409 8cb6
 From       : https://packages.grafana.com/gpg.key
Is this ok [y/N]: y
grafana/signature                                                 | 2.9 kB  00:00:04 !!!
grafana/primary_db                                                |  76 kB  00:00:00
Resolving Dependencies
--> Running transaction check
---> Package grafana.x86_64 0:7.1.5-1 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================================
 Package              Arch                 Version                Repository             Size
================================================================================================
Installing:
 grafana              x86_64               7.1.5-1                grafana                50 M

Transaction Summary
================================================================================================
Install  1 Package

Total download size: 50 M
Installed size: 162 M
Is this ok [y/d/N]: y
Downloading packages:
warning: /var/cache/yum/x86_64/7/grafana/packages/grafana-7.1.5-1.x86_64.rpm: Header V4 RSA/SHA256
Signature, key ID 24098cb6: NOKEY
Public key for grafana-7.1.5-1.x86_64.rpm is not installed
grafana-7.1.5-1.x86_64.rpm                                        |  50 MB  00:00:03
Retrieving key from https://packages.grafana.com/gpg.key
Importing GPG key 0x24098CB6:
 Userid     : "Grafana <info@grafana.com>"
 Fingerprint: 4e40 ddf6 d76e 284a 4a67 80e4 8c8c 34c5 2409 8cb6
 From       : https://packages.grafana.com/gpg.key
Is this ok [y/N]: y
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : grafana-7.1.5-1.x86_64                                                   1/1
### NOT starting on installation, please execute the following statements to configure grafana to s
tart automatically using systemd
 sudo /bin/systemctl daemon-reload
 sudo /bin/systemctl enable grafana-server.service
### You can start grafana-server by executing
 sudo /bin/systemctl start grafana-server.service
POSTTRANS: Running script
  Verifying  : grafana-7.1.5-1.x86_64                                                   1/1

Installed:
  grafana.x86_64 0:7.1.5-1

Complete!
[root@lvntest019442 ~]#
```

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Install Grafana

CentOS / Red Hat Enterprise Linux Instructions

- Install Chromium to be able to render graphs as images (useful for embedding graphs in portals)
- Available in EPEL Repository
- Install EPEL, if not already available: yum -y install epel-release
- Install Chromium from EPEL repository: yum -y install chromium

```
Installed size: 387 M
Downloading packages:
(1/4): minizip-1.2.7-18.el7.x86_64.rpm                                      |  34 kB  00:00:00
warning: /var/cache/yum/x86_64/7/epel/packages/chromium-common-85.0.4183.83-1.el7.x86_64.rpm: Header V4 RSA/SHA256
Signature, key ID 352c64e5: NOKEY
Public key for chromium-common-85.0.4183.83-1.el7.x86_64.rpm is not installed
(2/4): chromium-common-85.0.4183.83-1.el7.x86_64.rpm                        |  16 MB  00:00:01
(3/4): chromium-85.0.4183.83-1.el7.x86_64.rpm                               |  94 MB  00:00:05
(4/4): nss-mdns-0.14.1-9.el7.x86_64.rpm                                     |  43 kB  00:00:00
--------------------------------------------------------------------------------------------------
Total                                                       21 MB/s | 110 MB  00:00:05
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
Importing GPG key 0x352C64E5:
 Userid     : "Fedora EPEL (7) <epel@fedoraproject.org>"
 Fingerprint: 91e9 7d7c 4a5e 96f1 7f3e 888f 6a2f aea2 352c 64e5
 Package    : epel-release-7-11.noarch (@extras)
 From       : /etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : minizip-1.2.7-18.el7.x86_64                                     1/4
  Installing : chromium-common-85.0.4183.83-1.el7.x86_64                       2/4
  Installing : nss-mdns-0.14.1-9.el7.x86_64                                    3/4
  Installing : chromium-85.0.4183.83-1.el7.x86_64                              4/4
  Verifying  : chromium-85.0.4183.83-1.el7.x86_64                              1/4
  Verifying  : minizip-1.2.7-18.el7.x86_64                                     2/4
  Verifying  : nss-mdns-0.14.1-9.el7.x86_64                                    3/4
  Verifying  : chromium-common-85.0.4183.83-1.el7.x86_64                       4/4

Installed:
  chromium.x86_64 0:85.0.4183.83-1.el7

Dependency Installed:
  chromium-common.x86_64 0:85.0.4183.83-1.el7    minizip.x86_64 0:1.2.7-18.el7    nss-mdns.x86_64 0:0.14.1-9.el7

Complete!
[root@lvntest019442 ~]#
```


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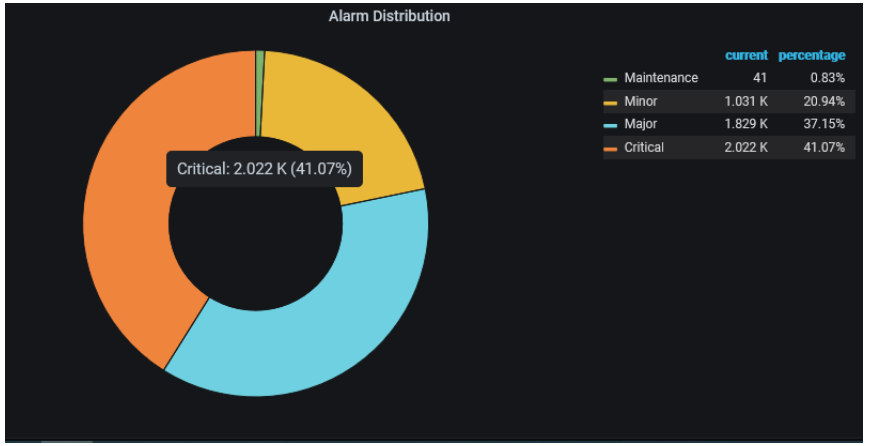
Install Grafana

CentOS / Red Hat Enterprise Linux Instructions

- Grafana has the concept of plugins to modularly support data sources and visualizations
  - MySQL is included so no need to install
  - DX Performance Management OpenAPI plugin available here: https://github.com/CA-PM/OpenAPI-Grafana
  - A number of useful visualizations are included as part of base installation
- Install grafana-image-renderer to be able to render graphs as images
  - https://grafana.com/grafana/plugins/grafana-image-renderer
  - grafana-cli plugins install grafana-image-renderer
- Install grafana-piechart-panel to display Pie Charts
  - https://grafana.com/grafana/plugins/grafana-piechart-panel
  - grafana-cli plugins install grafana-piechart-panel
- Install grafana-polystat-panel to display Poly
  - https://grafana.com/grafana/plugins/grafana-polystat-panel
  - grafana-cli plugins install grafana-polystat-panel



- Make sure ports are open (by default TCP 3000) and restart Grafana
  - firewall-cmd --permanent --add-port=3000/tcp
  - firewall-cmd –reload
  - systemctl restart grafana-server

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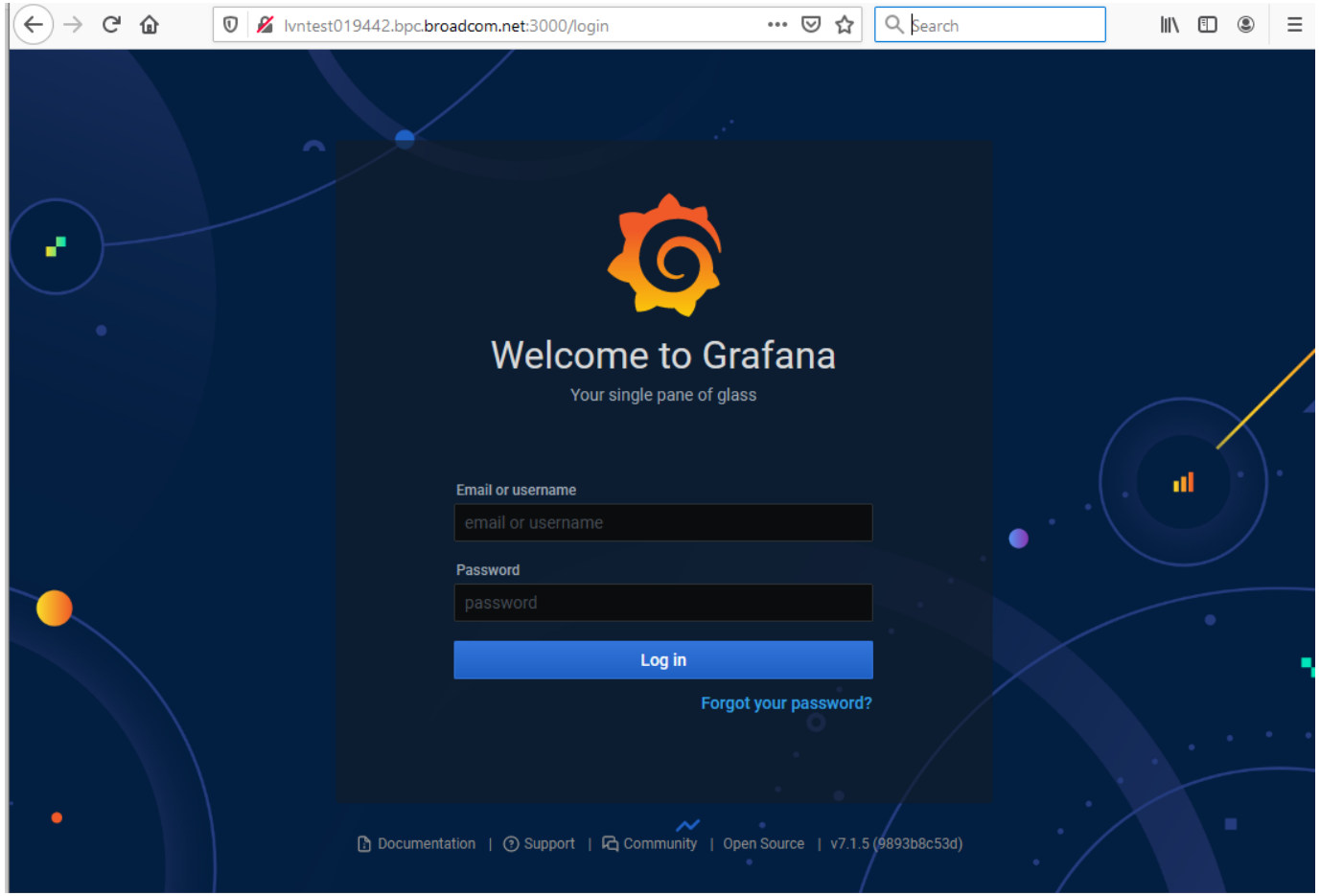
Integrate Grafana and SRM

- Login to Grafana
  - Default is http://HOSTNAME:3000
  - Configuration file is /etc/grafana/grafana.ini
  - Restart Grafana after changes
  - admin / admin is default initial login / password
  - Password change is required on initial login



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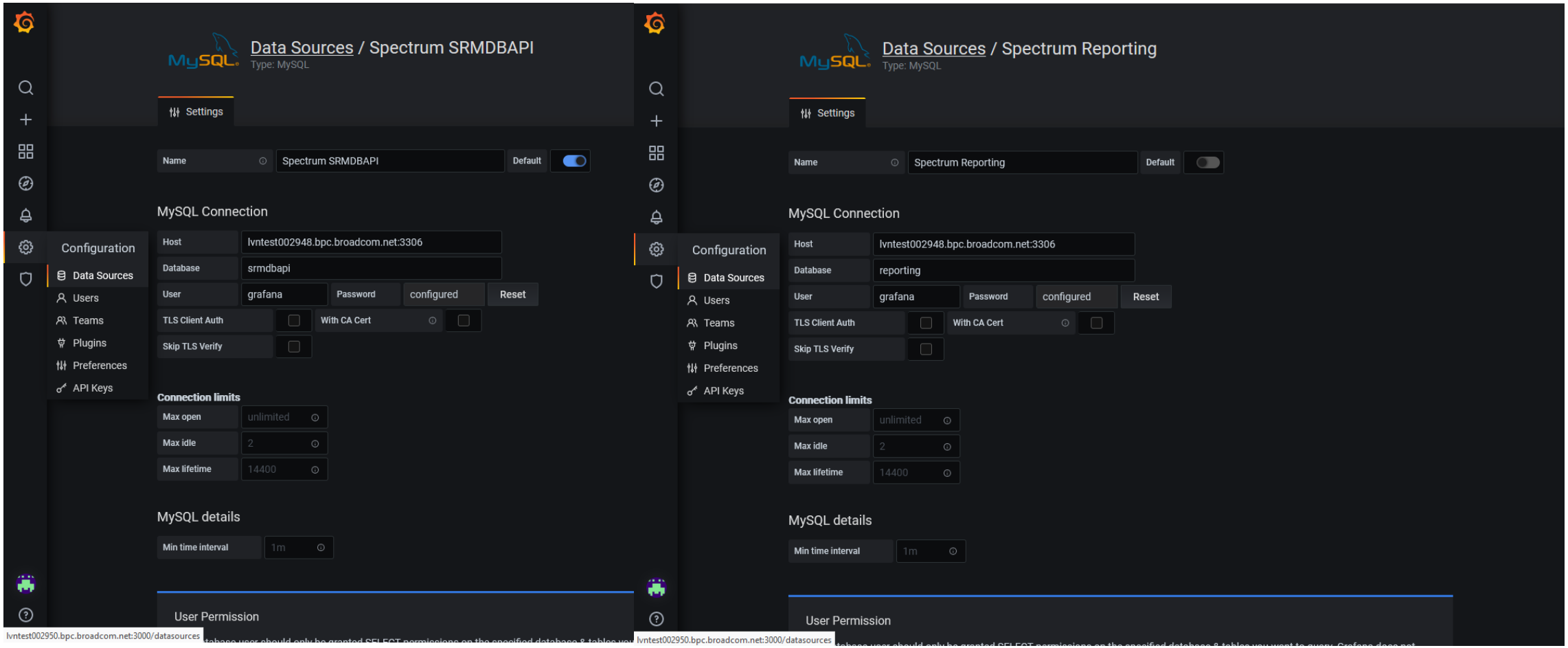
Integrate Grafana and SRM

- Create the SRMDBAPI and reporting data sources



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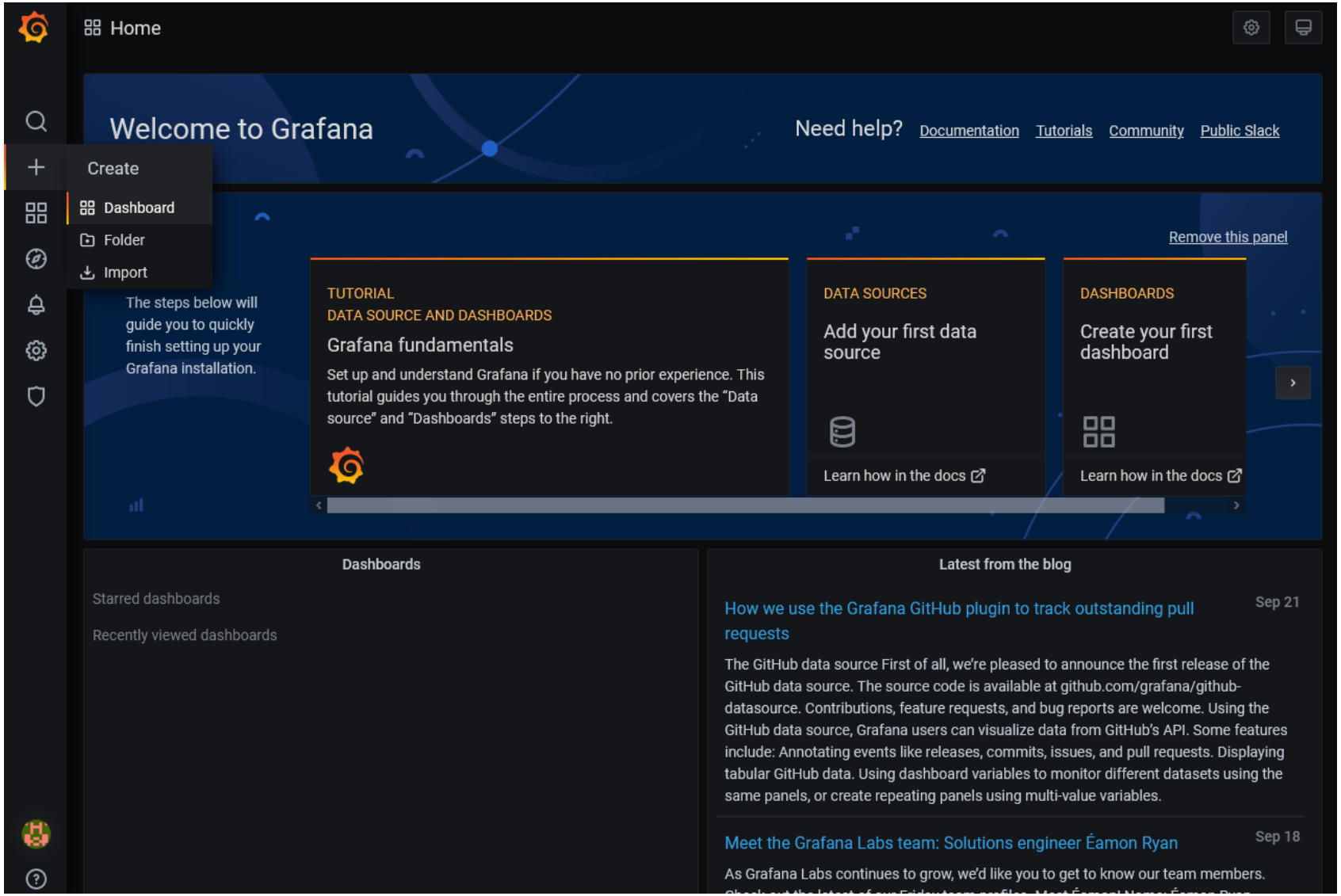
Build and/or Import Dashboards



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Let’s Start Building!

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Thank You

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