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Virtual Meetup

zoom

EMEA Rundeck by PagerDuty

Wednesday, March 12
1pm GMT

Isidro Javier
Mathematician | Computer Scientist
OpenLab'24 CERN

Andrzej Nowicki
Database Engineer
CERN

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Agenda

- PD Commons Announcements
- Isidro Javier + Andrzej Nowicki - *CERN Orchestrates with Rundeck*
- Justyn Roberts - *Self-Service Automation with Rundeck*
- Q&A

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- We have an agenda but this is intended to be **YOUR Community** and call - we're happy to go off-topic!
- **Please keep it interactive** - ask questions in the **Q&A** or make comments at any time, leave your feedback in the **post meetup survey**
- Feel free to open your camera but please **keep mic off** during presentations
- This session **is being recorded** but only the individual presentations will be **uploaded to Youtube**

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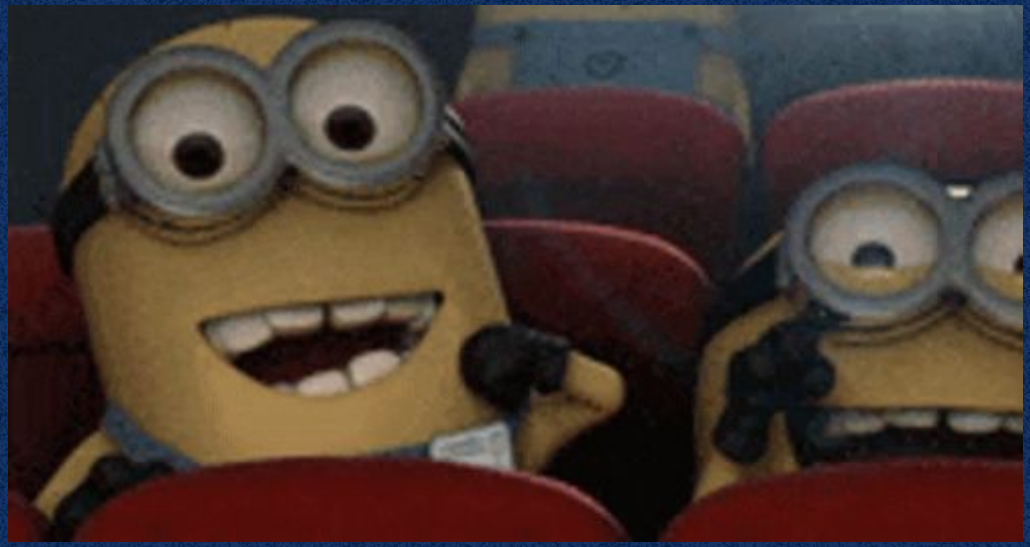
9 Meetups

+11K EMEA downloads



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🎤✨ BE the NEXT **SPEAKER**!

https://bit.ly/4dSpLeA

community-team@pagerduty.com

We have swag up for grabs!

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Isidro Javier García Fernández · 1st

Solutions Consultant | Openlab'24 @CERN | Mathematician and Comput...

5mo · Edited ·

🚀 I have presented my project for the 2024 **CERN openlab** Summer Student Programme! 🎉

🔍 Title: **Oracle** Configuration Discrepancies Check

📊 Description:

At **CERN**, the **#ORACLE** service manages complex databases with clusters and multiple nodes. My project focuses on detecting discrepancies between the running configuration and metadata repositories. By utilizing **Rundeck** automation tool, I identified differences between the information in **#OracleEnterpriseManager**, runtime data, and the configuration management data stored in **#LDAP**. These discrepancies can lead to service instability, unexpected behaviors, and affect maintenance or monitoring scripts. Therefore, it's crucial to detect incorrect configurations, such as wrong Oracle Home paths.

I would like to thank my supervisors, **Andrzej Nowicki** and **Miroslav Potocky**, for their guidance and support throughout the project.

📎 More details

Presentation: **https://lnkd.in/dUmip9y7**

Report: **https://lnkd.in/dwkMsm34**

#CERNopenlab #DatabaseManagement #ProjectPresentation

Coming up:

March 20 • Zero Trust Security + Runbook Automation

April 24 • Identifying System Weaknesses to Improve Resilience

May 22 • What's New in Schedules & Services

June 26 • Meet the PagerDuty Agents

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Runbook Automation & Rundeck Release Notes v5.10

Thursday, March 13, 2025
10 am PDT | 1 pm EDT

twitch.tv/pagerduty

linkedin.com/company/pagerduty

WEBINAR

Supercharge Your Rundeck Plugins with AI

Tuesday 29 April — 16:00 BST

Join this webinar to learn how PagerDuty's AI capabilities can help you!

Save your spot and we'll see you there!

Jake Cohen
Senior Product Manager
PagerDuty

PagerDuty

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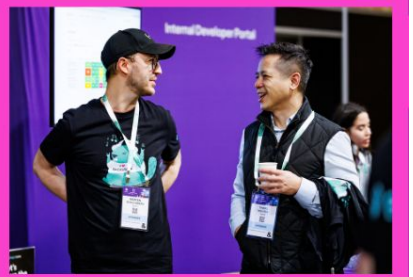
1-4 APRIL | LONDON

SEE YOU THERE!



Find us at booths #N451 & #N400 (Rundeck by PagerDuty Playzone!)

PagerDuty commons/ + aws + cortex

Event

Next stop: Engineering excellence

Thursday, April 3 • 17:45 - 20:45 BST

The Gun, Docklands
Pick-Up/ Drop-Off: outside the
DoubleTree Hilton London ExCeL

Save your spot today: https://lu.ma/0s7ok21y?utm_source=pagerduty

Let's continue the conversation!

Connect with fellow PagerDuty users and digital operations enthusiasts at your one-stop community hub for real-time ops. Join local groups, upcoming events & more!

Scan to join the Developer Community.

Leave a message in the "Introductions" forums telling about this event for a chance to win a special gift!

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CERN Orchestrates with Rundeck

Isidro Javier, Mathematician and Computer Scientist
Andrzej Nowicki, Database Engineer at CERN

Oracle Configuration Discrepancies Check

Ensuring Consistency Between Runtime Setup and Configuration Management Data

Andrzej Nowicki
Isidro Javier García Fernández

Virtual Meetup EMEA Rundeck by PagerDuty

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CERN openlab

CERN

Andrzej Nowicki

12 years of Oracle DB experience
Database Engineer @ CERN since 2020

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CERN

Isidro Javier García Fernández

Mathematician & Computer Scientist
2024 CERN OpenLab Summer Student

SUPPLY CHAIN COMPANY

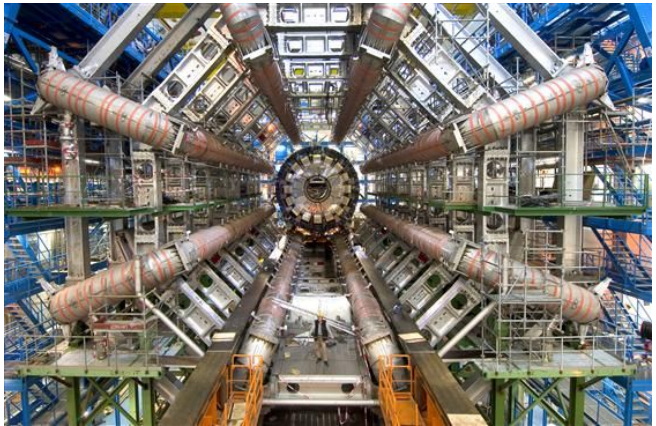
Solutions Consultant - *Supply Chain Company*

isidrogarciaf

CERN openlab

What is CERN?

- European Organization for Nuclear Research
- Founded in 1954, located in Geneva, Switzerland
- The goal is to study the fundamental particles of the universe
- Home of the world's largest particle accelerator - Large Hadron Collider (LHC)
- Involves 24 member states and thousands of scientists globally
- Major experiments: ATLAS, CMS, ALICE, LHCb

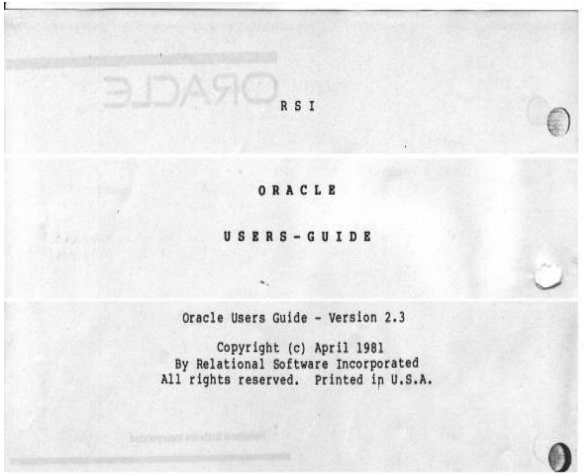



IT @ CERN

Databases at CERN

Oracle since 1982

- 105 Oracle databases, more than 11.800 Oracle accounts
- RAC, Active Data Guard, GoldenGate, OEM, RMAN, APEX, Cloud…
- Complex environment



Database on Demand (DBoD) since 2011

- ≈600 MySQL, ≈400 PostgreSQL, ≈200 InfluxDB
- Automated backup and recovery services, monitoring, clones, replicas
- HA MySQL clusters (Proxy + primary replica)

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Size of the database environment

	Total size
Oracle	**≈5 PB**
DBoD (MySQL, PostrgeSQL, InfluxDB)	**≈150 TB**
Backups	**≈3 PB**

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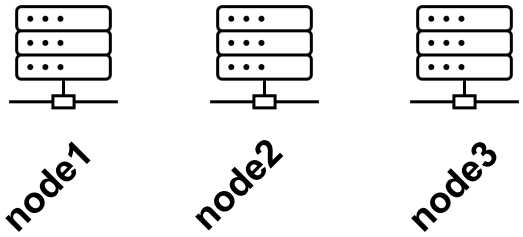
Introduction

Databases at CERN

- RAC Databases
  - Run across multiple servers (nodes) in a cluster
  - Each node runs an instance of the Oracle database



- Database runs from a specific path; environment changes require updates

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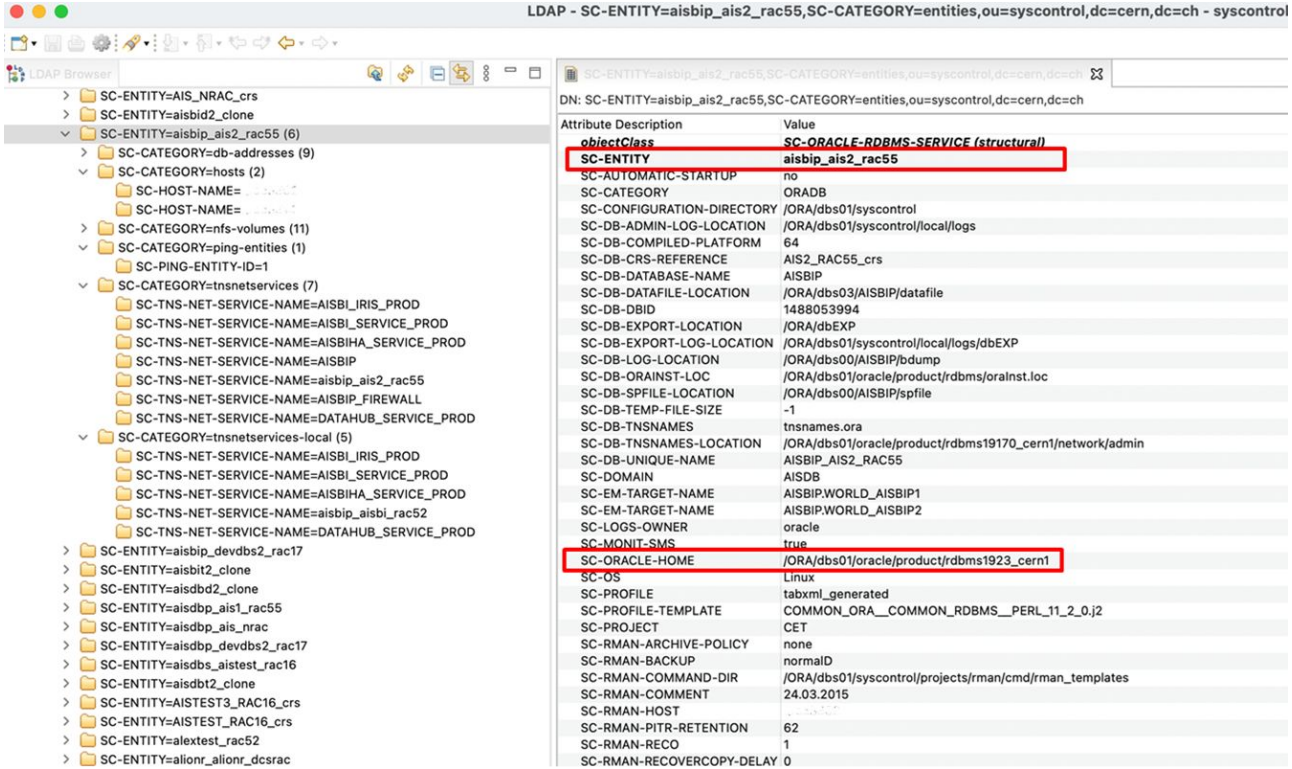
LDAP

Repository used by automation and scripts



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Running Configuration

```
# [ oracle@ :/ORA/dbs01/oracle/home [11:39:39] [19.21.0.0.0 [GRID] SID=GRID] 0 ] #
$ srvctl config database
AISBIP_AIS2_RAC55

# [ oracle@ :/ORA/dbs01/oracle/home [11:39:40] [19.21.0.0.0 [GRID] SID=GRID] 0 ] #
$ srvctl config database -d AISBIP_AIS2_RAC55
Database unique name: AISBIP_AIS2_RAC55
Database name: AISBIP
Oracle home: /ORA/dbs01/oracle/product/rdbms1923_cern1
Oracle user: oracle
Spfile: /ORA/dbs03/AISBIP_AIS2_RAC55/spfileAISBIP.ora
Password file: /ORA/dbs03/AISBIP_AIS2_RAC55/orapwAISBIP
Domain: cern.ch
Start options: open
Stop options: immediate
Database role: PRIMARY
Management policy: AUTOMATIC
Server pools:
Disk Groups:
Mount point paths:
Services: aisbi_service_prod,aisbiha_service_prod,AISBIP,datahub_service_prod,IRIS,itdb_dbr_archivelog_backup
```

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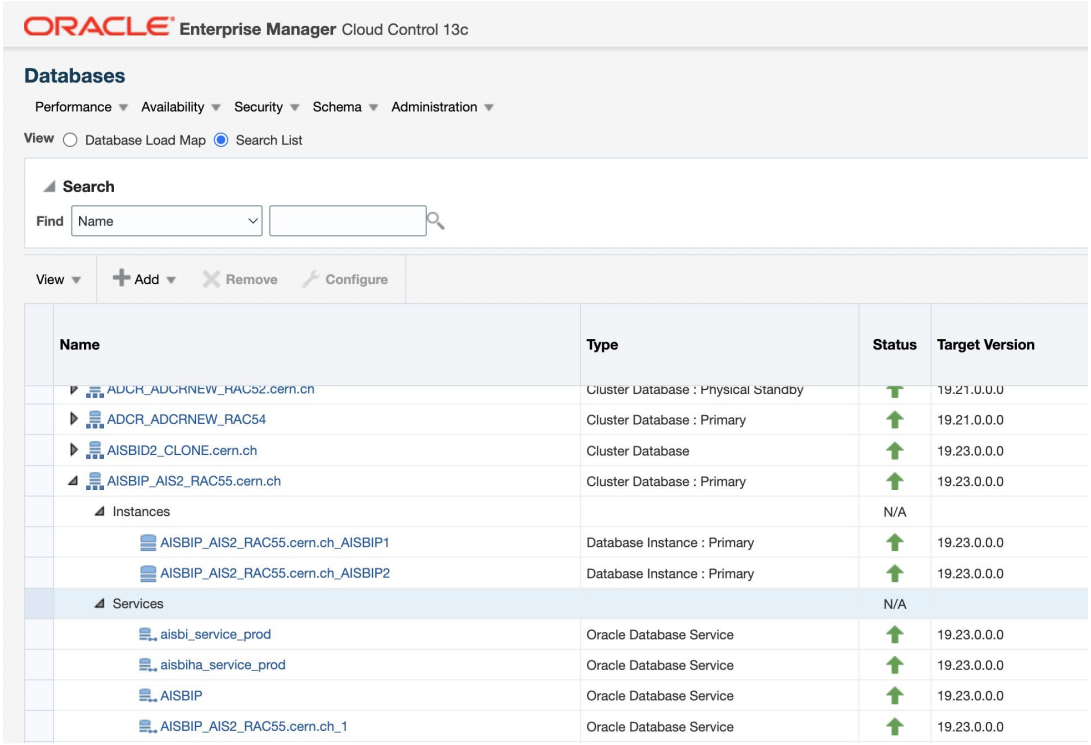
OEM

Monitoring tool for databases



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Introduction

Monitoring Challenges

- Constantly changing environment
- Updates required in both OEM and LDAP
- Issues when updates fail or are done manually
  - OEM might report the database as down while it is actually up
  - Synchronization issues between running information and metadata repositories

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Objective

Overview of the Project Aim

- Avoid issues with monitoring and script functionality
- Ensure synchronization of running information and metadata repositories
- Detect discrepancies between running setup and configuration.
- Prepare and send a report to DBA team

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DEMO

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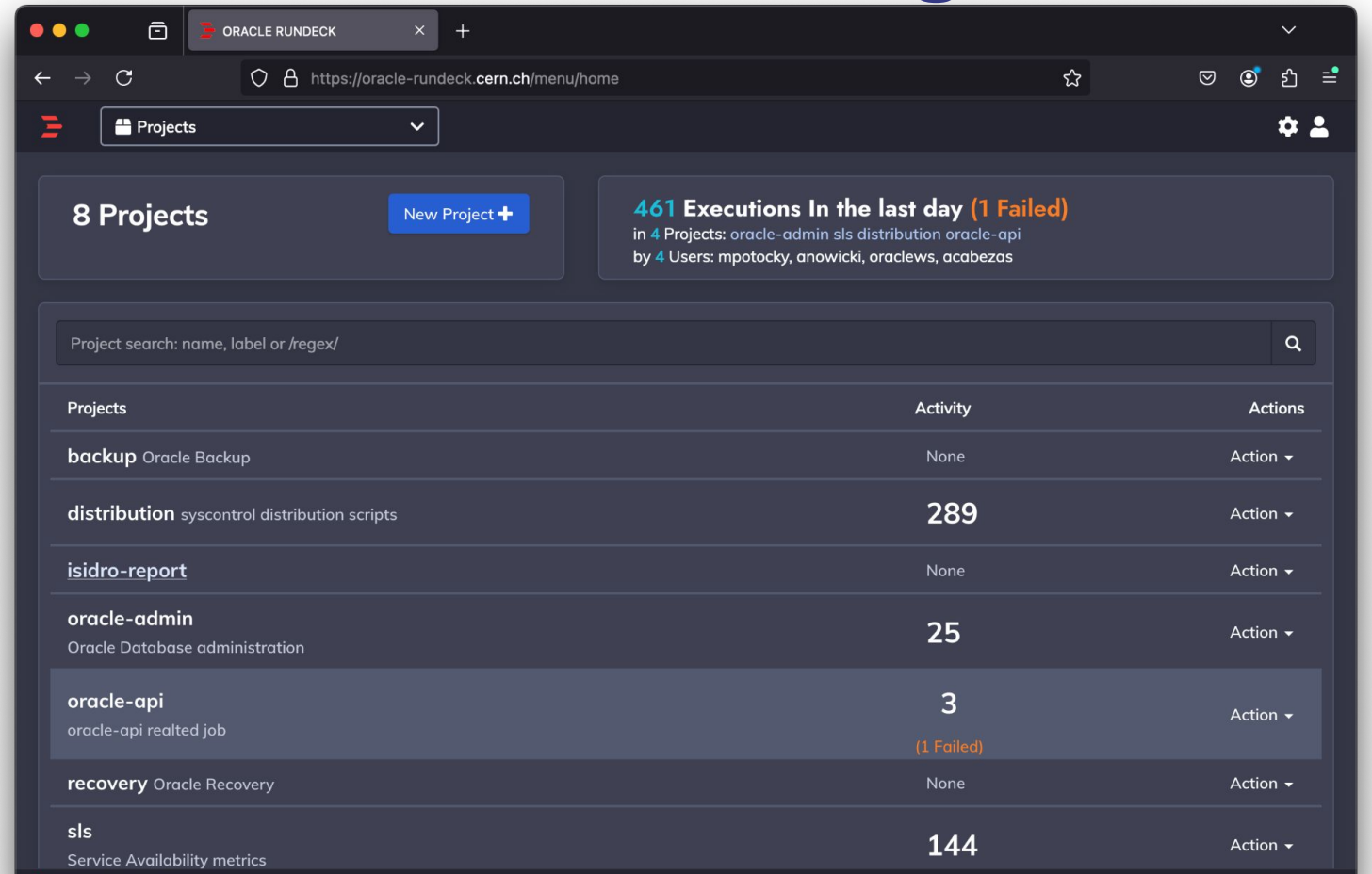
How the DB team is using Rundeck



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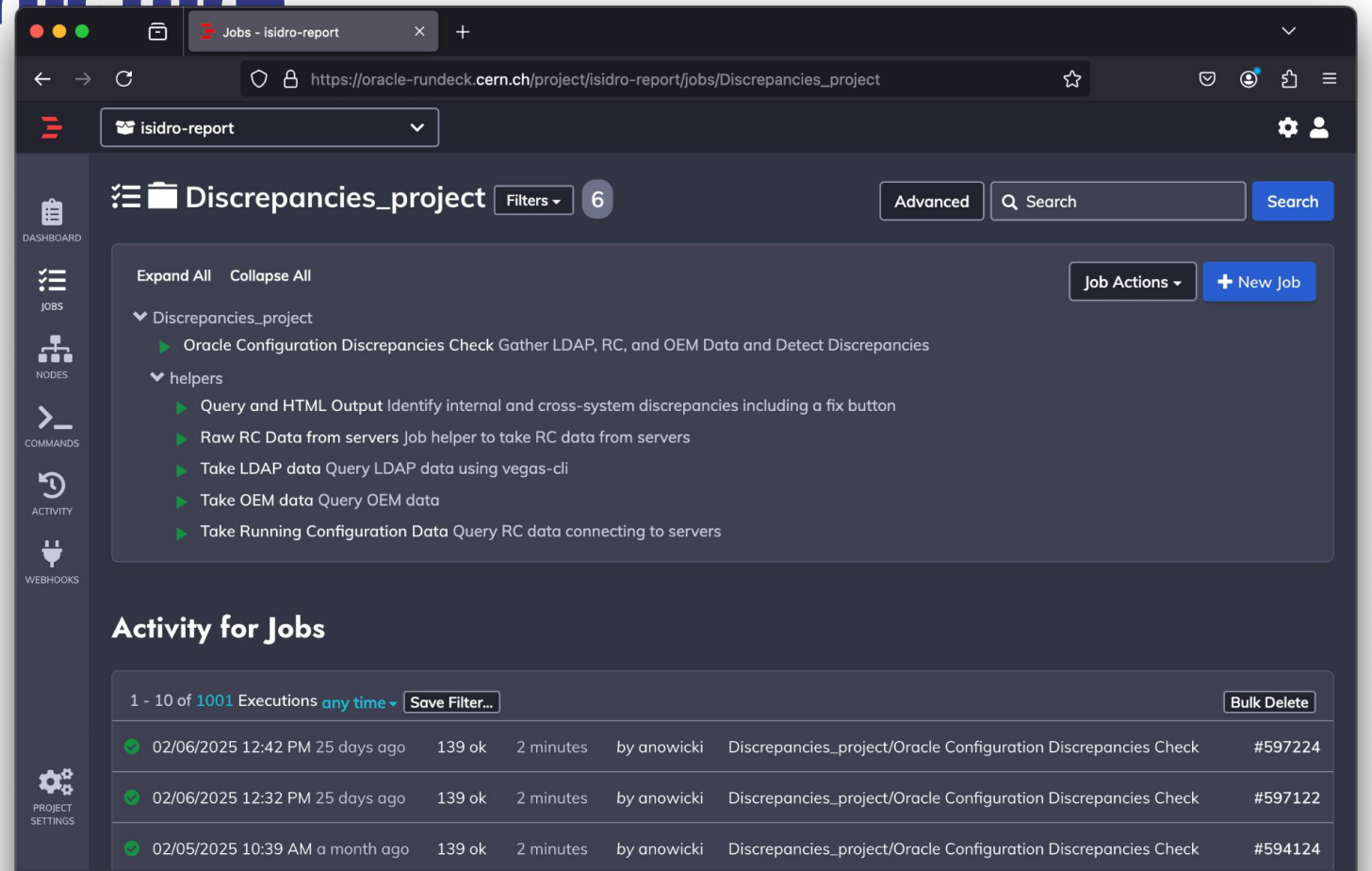
The discrepancies project structure



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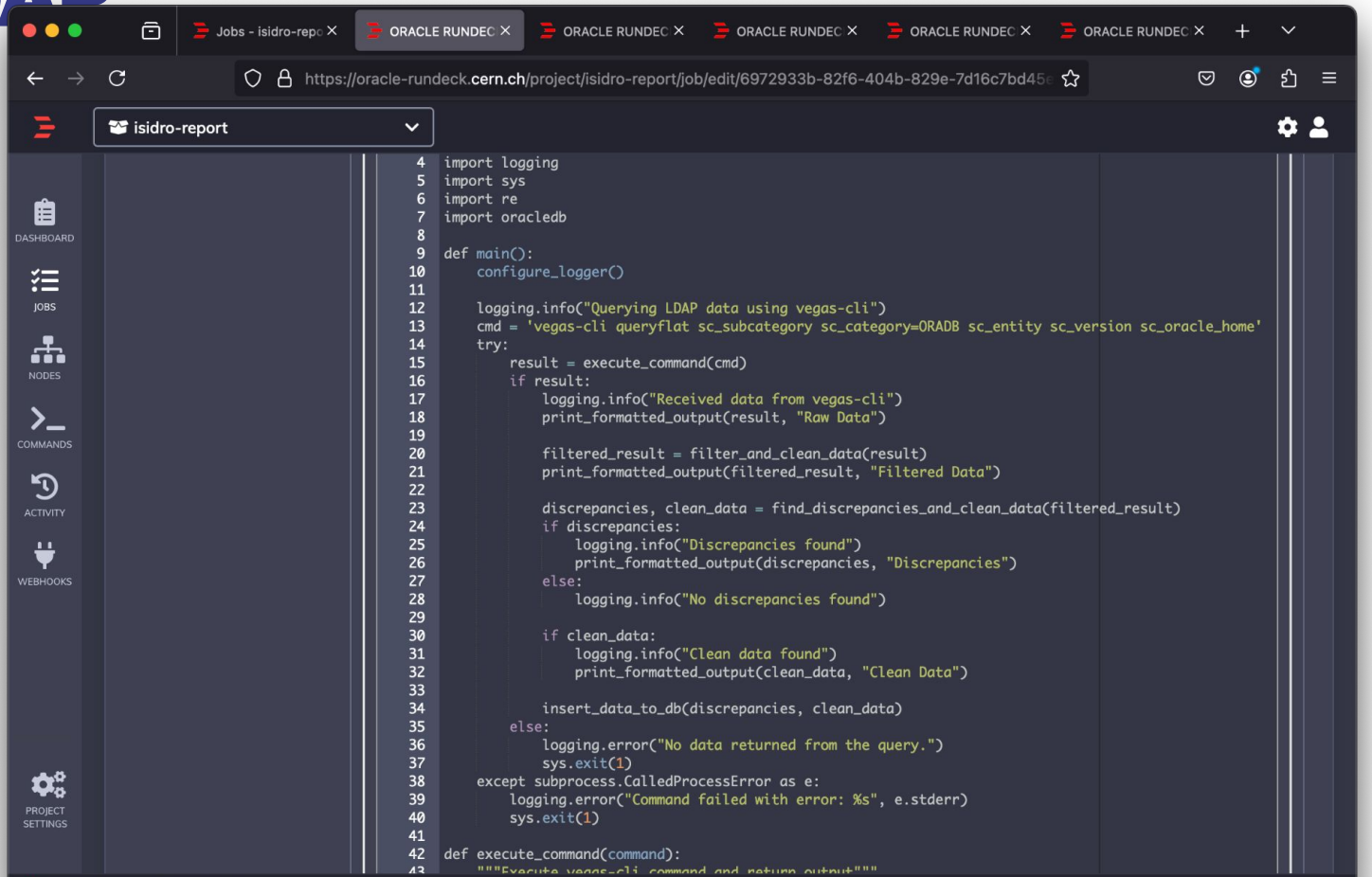
Job in Python interacting with LDAP



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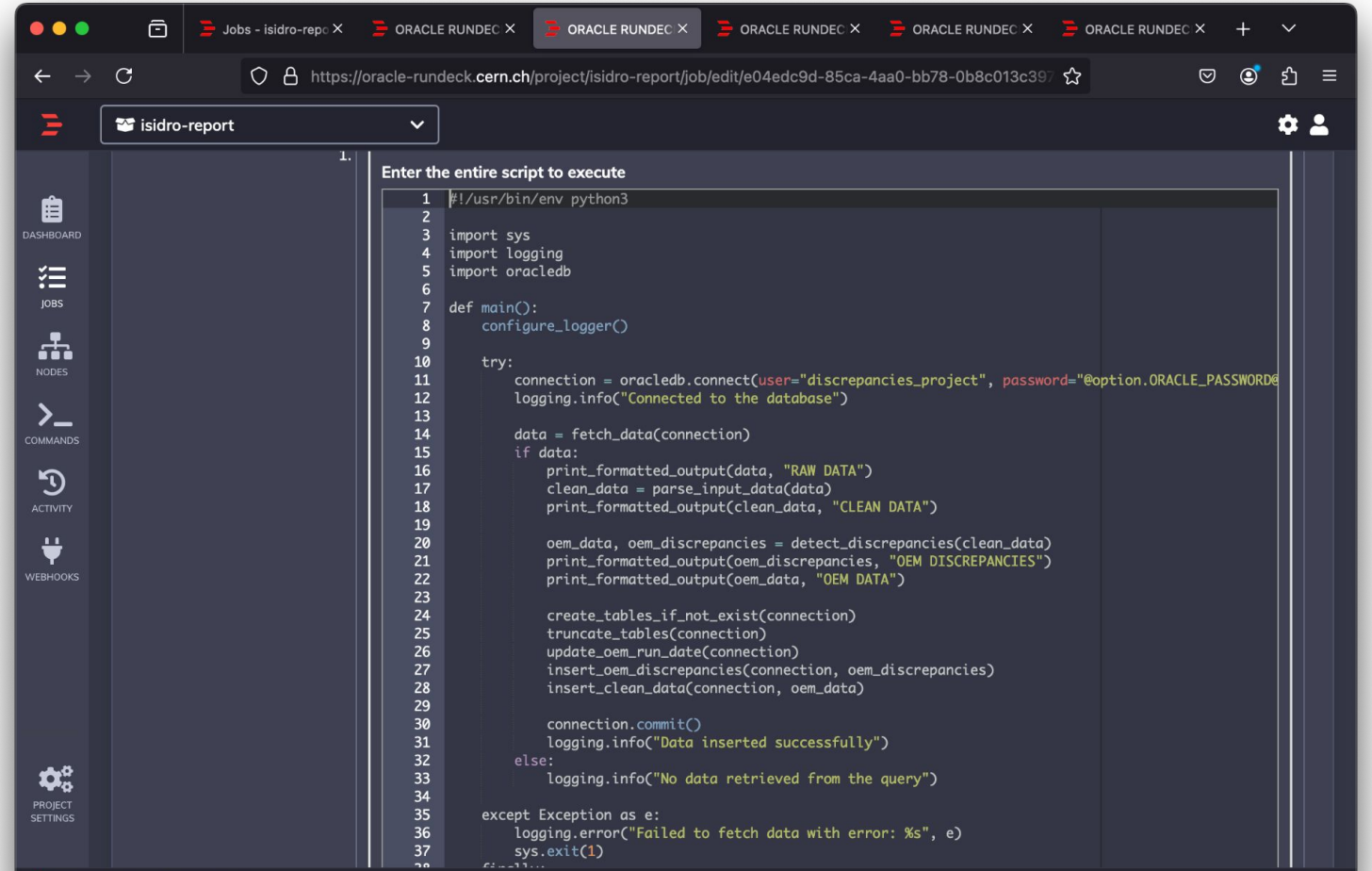
Connecting to an Oracle DB



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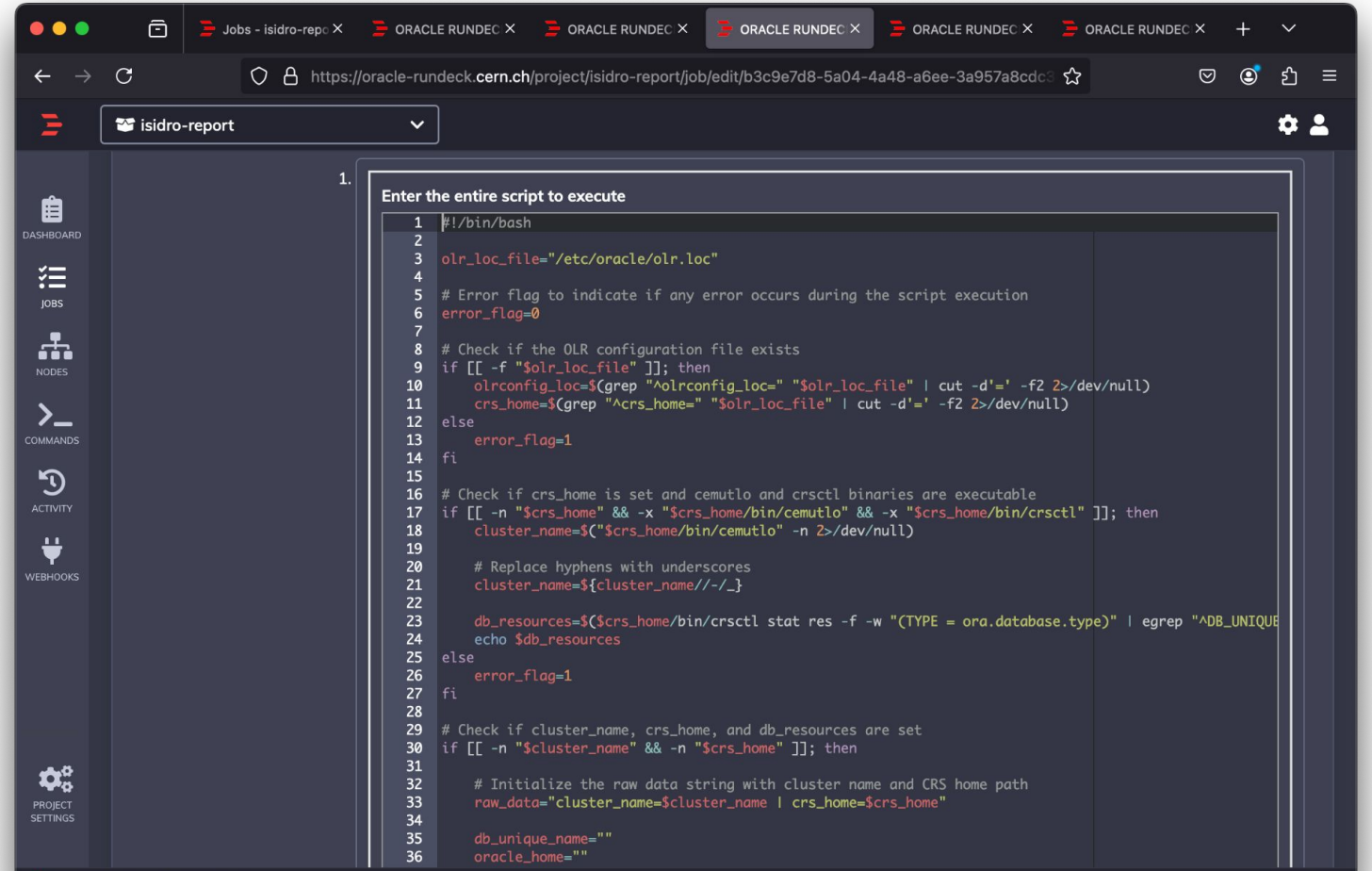
Job in bash




```
#!/bin/bash

olr_loc_file="/etc/oracle/olr.loc"

# Error flag to indicate if any error occurs during the script execution
error_flag=0

# Check if the OLR configuration file exists
if [[ -f "$olr_loc_file" ]]; then
    olrconfig_loc=$(grep "^olrconfig_loc=" "$olr_loc_file" | cut -d'=' -f2 2>/dev/null)
    crs_home=$(grep "^crs_home=" "$olr_loc_file" | cut -d'=' -f2 2>/dev/null)
else
    error_flag=1
fi

# Check if crs_home is set and cemutlo and crsctl binaries are executable
if [[ -n "$crs_home" && -x "$crs_home/bin/cemutlo" && -x "$crs_home/bin/crsctl" ]]; then
    cluster_name=$("$crs_home/bin/cemutlo" -n 2>/dev/null)

    # Replace hyphens with underscores
    cluster_name=${cluster_name//-/_}

    db_resources=$($crs_home/bin/crsctl stat res -f -w "(TYPE = ora.database.type)" | egrep "^DB_UNIQUE
    echo $db_resources
else
    error_flag=1
fi

# Check if cluster_name, crs_home, and db_resources are set
if [[ -n "$cluster_name" && -n "$crs_home" ]]; then

    # Initialize the raw data string with cluster name and CRS home path
    raw_data="cluster_name=$cluster_name | crs_home=$crs_home"

    db_unique_name=""
    oracle_home=""
```

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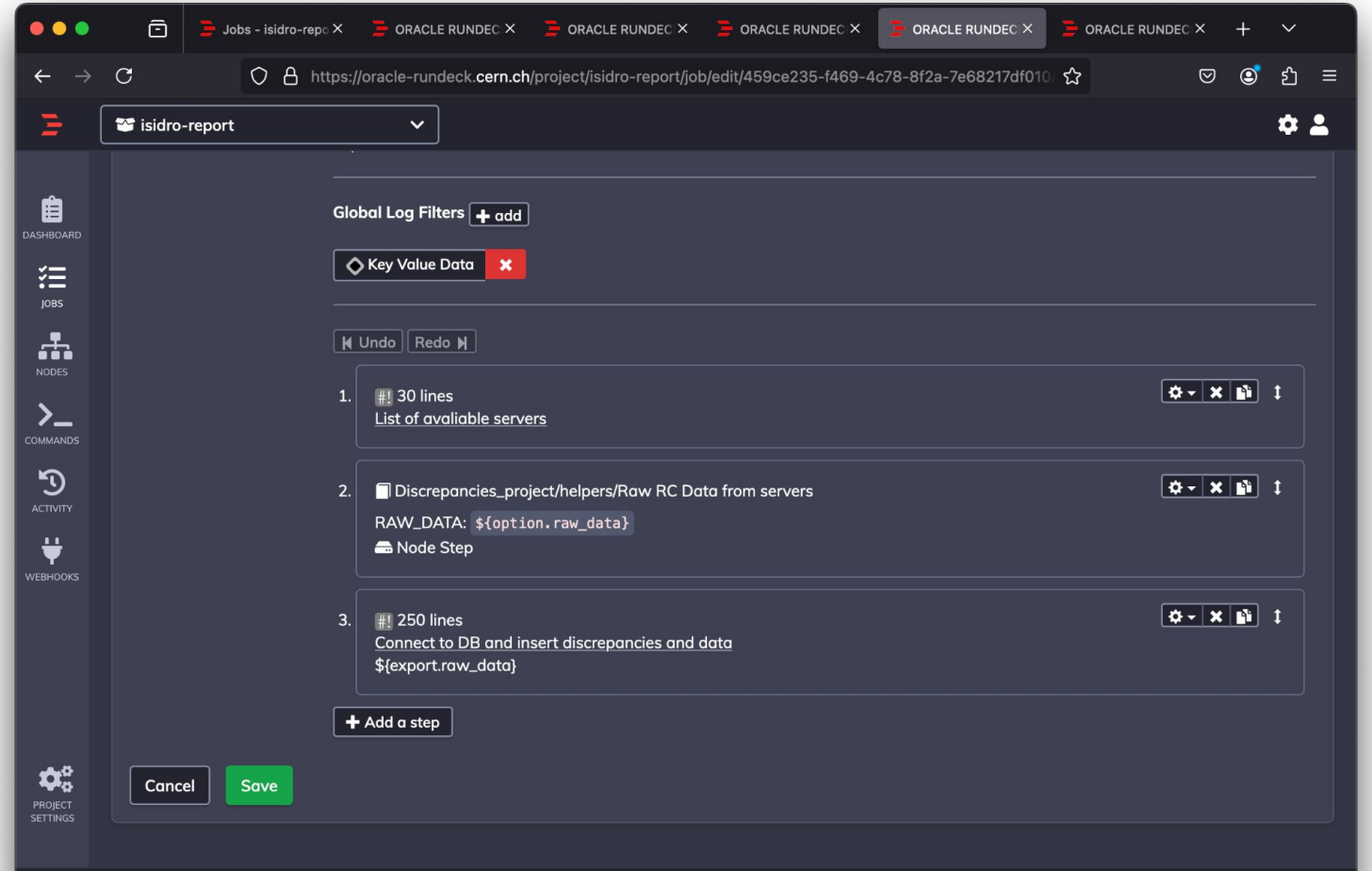
Job to connect to available servers



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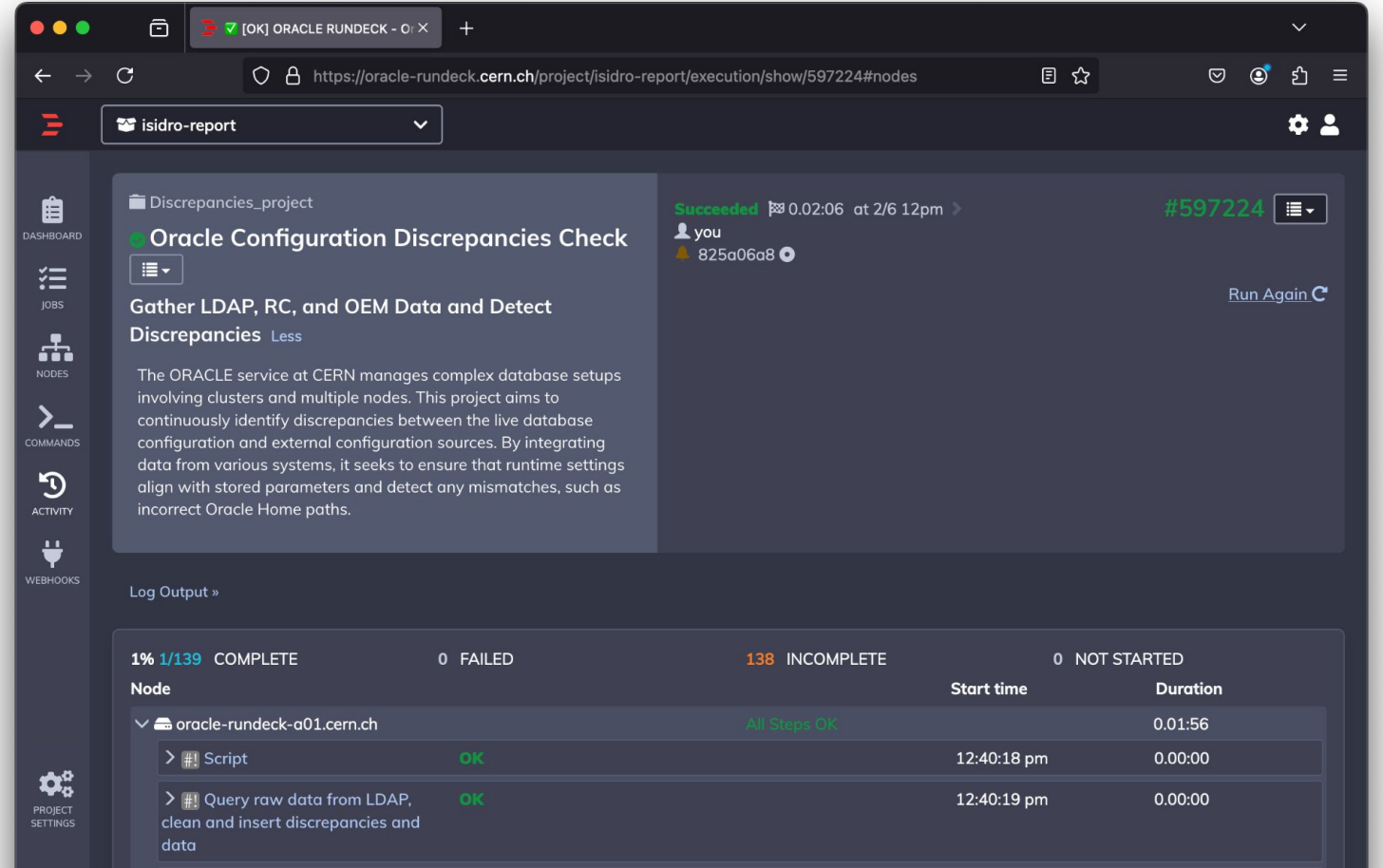
Put it all together



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Put it all together

NAME	LDAP_HOME_PATH	RC_HOME_PATH	OEM_HOME_PATH
ACC_RAC17	/CRS/dbs01/crs1923_cern1	/CRS/dbs01/crs1923_cern1	(null)
CSDB_TESTDBS_RAC16_CSDB1	/ORA/dbs01/oracle/product/rdbms19170_cern1	/ORA/dbs01/oracle/product/rdbms1921_cern2	/ORA/dbs01/oracle/product/rdbms1923_cern1
CSDB_TESTDBS_RAC16_CSDB2	/ORA/dbs01/oracle/product/rdbms19170_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1
EMREPP_CLUSTER	(null)	(null)	/CRS/dbs01/crs19180
INFORLND_AISTEST_RAC16_INFORLND1	/ORA/dbs01/oracle/product/rdbms18110_jvm18110_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms18110_jvm18110_cern1
INFORLNT_AISTEST_RAC16	/ORA/dbs01/oracle/product/rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1923_cern1	/ORA/dbs01/oracle/product/rdbms1921_cern2
INTDB11_INTDBS_RAC16_INTDB111	/ORA/dbs01/oracle/product/rdbms1921_cern0	/ORA/dbs01/oracle/product/rdbms1921_cern2	/ORA/dbs01/oracle/product/rdbms1921_cern0
PAYP_AIS3_RAC55	/ORA/dbs01/oracle/product/rdbms1923_cern1	(null)	/ORA/dbs01/oracle/product/rdbms19170_cern1

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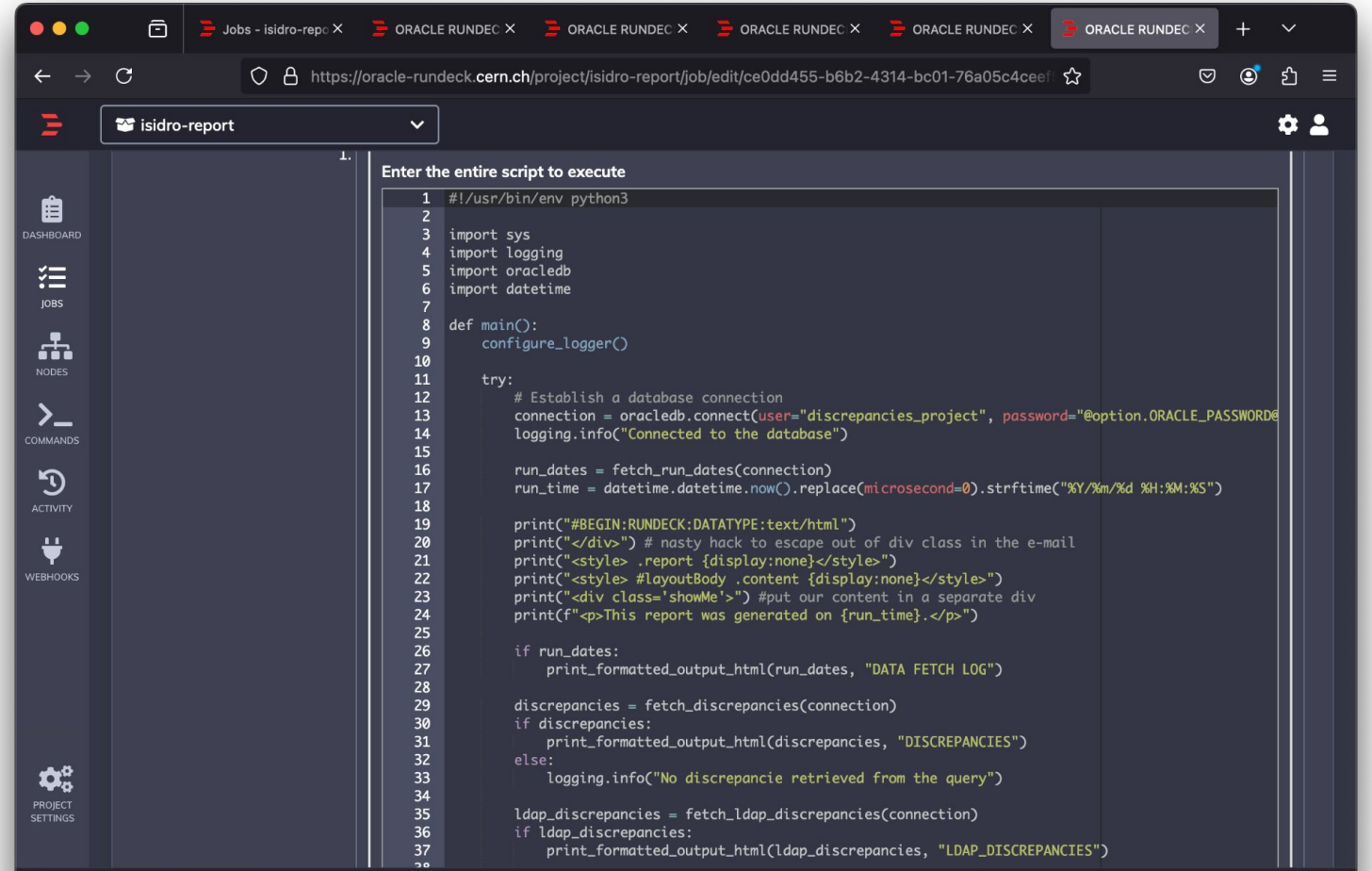
HTML Report Generation



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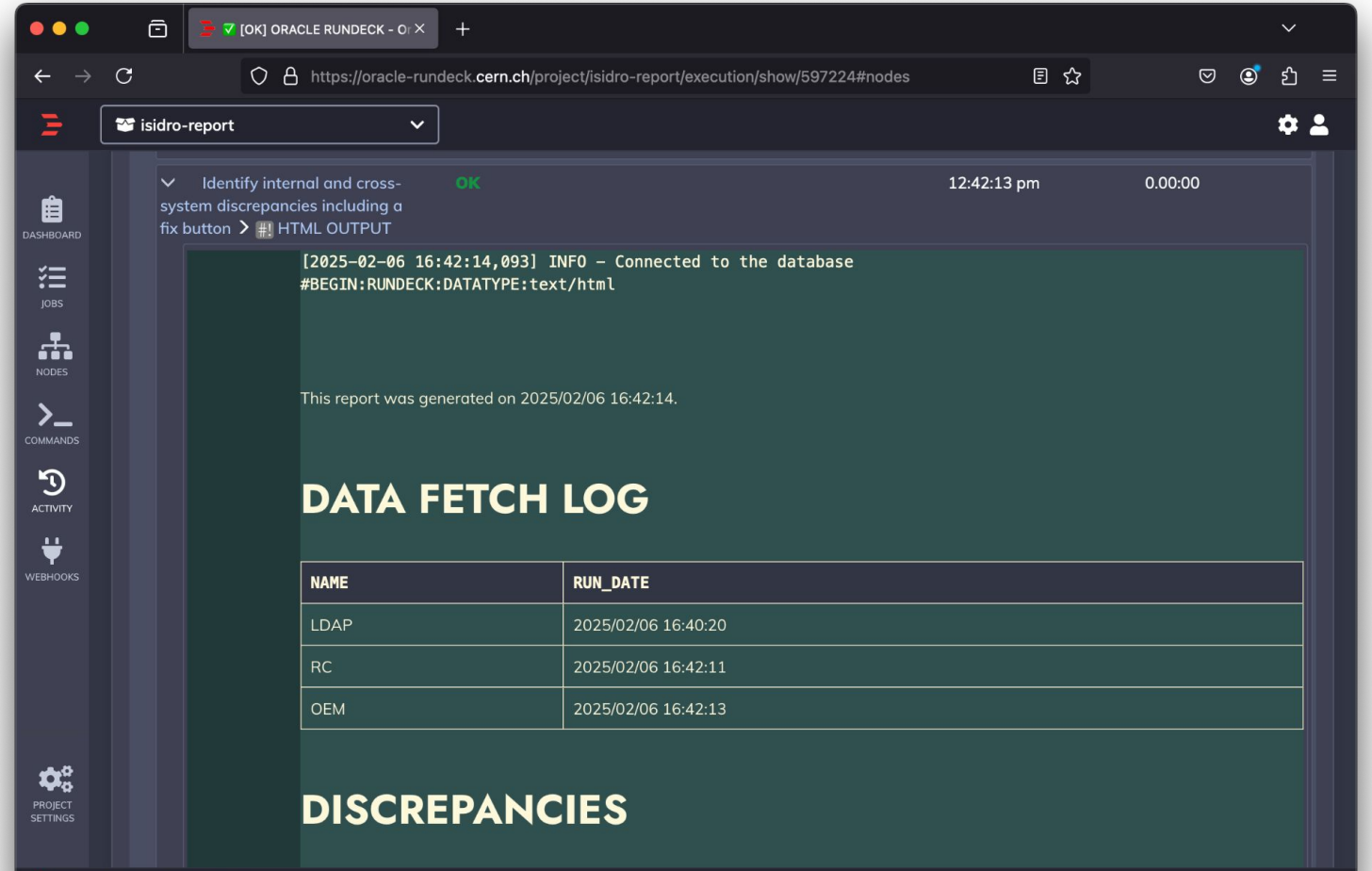
HTML Report



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References

Overview of the Project Aim

https://zenodo.org/records/13851877

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Thank You!

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Self-Service Automation with Rundeck

Justyn Roberts, Sr. Solutions Consultant at PagerDuty

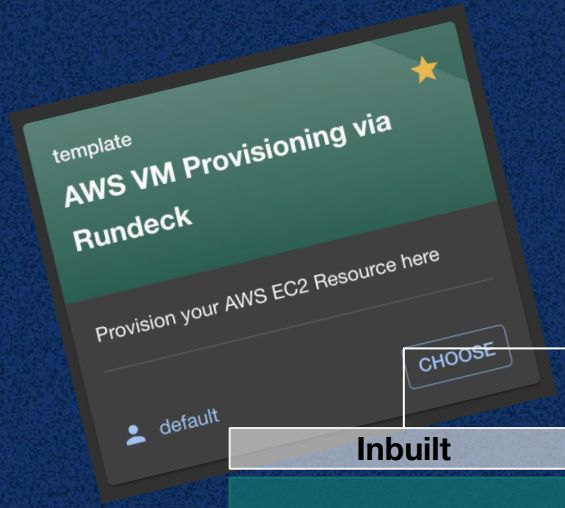
PagerDuty commons/

EMEA Rundeck by PagerDuty

Justyn Roberts
Solutions Engineering

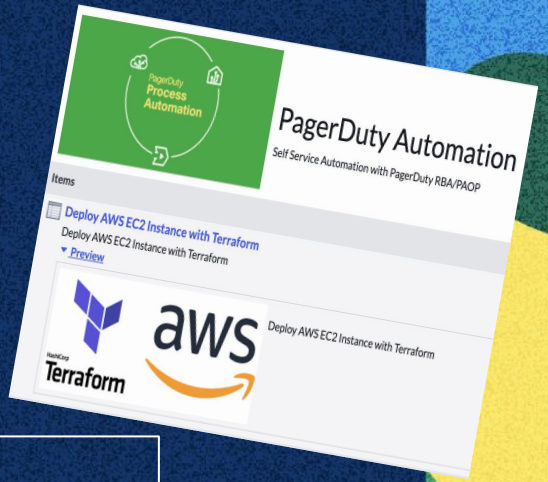
www.github.com/justynroberts
jroberts@pagerduty.com

Rundeck 💚's self service

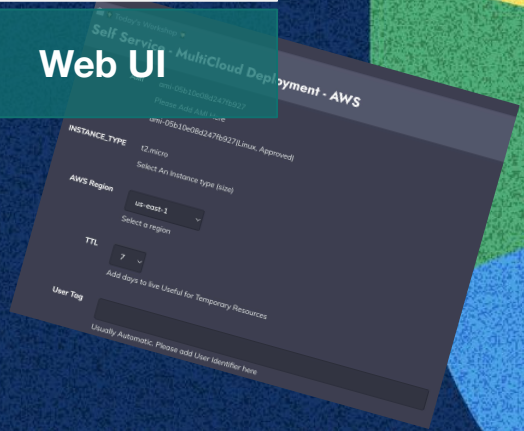


Automation Orchestration

Automation jobs

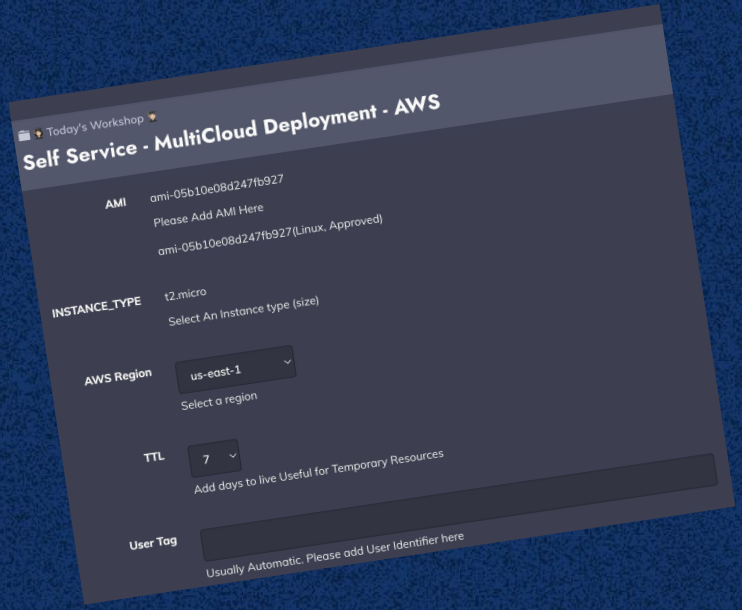


Inbuilt	ITSM Catalogs	IDP	Home Grown
Rundeck	ServiceNow	Backstage	Web UI
Runbook Automation	Jira Service Desk	Cortex	
	...	...	



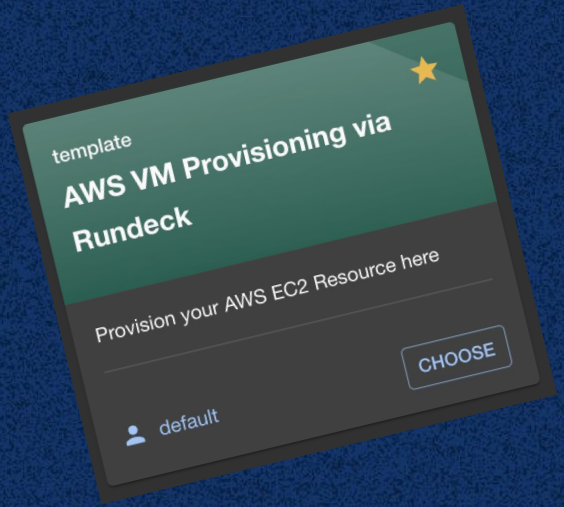
Show + Tell

Rundeck



Show + Tell

Example IDP Self Service Deployment + Runbook Automation Backend

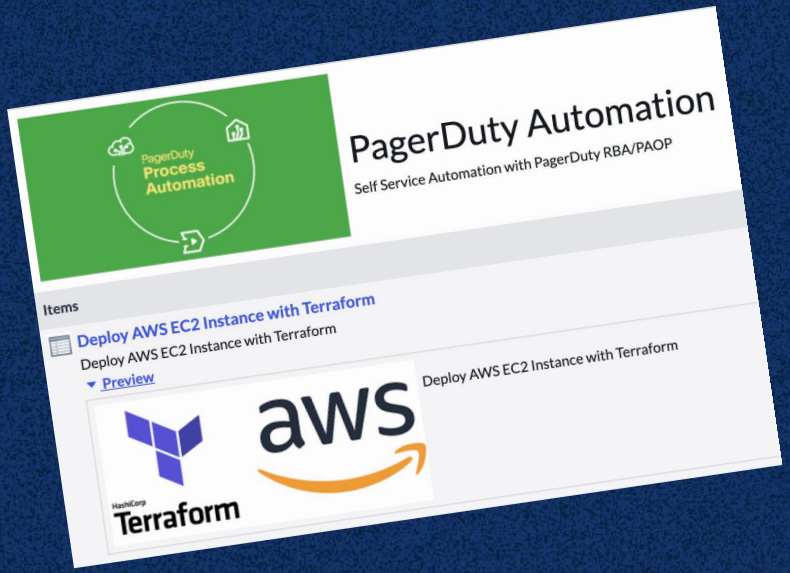


Backstage + Runbook Automation

1. Developed by Spotify: Backstage was initially developed by Spotify to solve its internal infrastructure complexity and later open-sourced for use by other organizations.
2. Plugin Architecture: It's built on a plugin architecture, allowing users to add or develop custom features for their specific needs. This modularity makes it highly extensible and customizable.
3. Software Catalog: One of the core features of Backstage is the Software Catalog, which helps teams organize and manage their services, APIs, libraries, and other components in a single, centralized place.
4. Unified Developer Experience: Backstage focuses on improving the developer experience by offering a unified interface where teams can access all tools and documentation needed for development, which increases productivity.
5. Open Source and Community Driven: Backstage is open-source, supported by a growing community of contributors, and governed by the Cloud Native Computing Foundation (CNCF). This ensures ongoing development, support, and widespread adoption.

Show + Tell

Example ITSM + Rundeck Backend



Takeaways

- Rundeck has always been about self service,scheduled and event driven automation
- You can use Rundeck in other creative ways to extend other platforms
- Enterprise tools ensure scale,security and support

Need help ? jroberts@pagerduty.com

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Thanks for your participation!
See you in the next meetup.

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