



Virtual Meetup 



Wednesday, March 12
1pm GMT



Isidro Javier
Mathematician | Computer Scientist
OpenLab'24 CERN



Andrzej Nowicki
Database Engineer
CERN



Agenda

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





- 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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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/dUmp9y7>

Report: <https://lnkd.in/dwkMsm34>

#CERNopenlab #DatabaseManagement #ProjectPresentation

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April 24 • Identifying System Weaknesses to Improve Resilience

May 22 • What's New in Schedules & Services

June 26 • Meet the PagerDuty Agents

Runbook Automation & Rundeck Release Notes v5.10

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



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Jake Cohen

Senior Product Manager
PagerDuty

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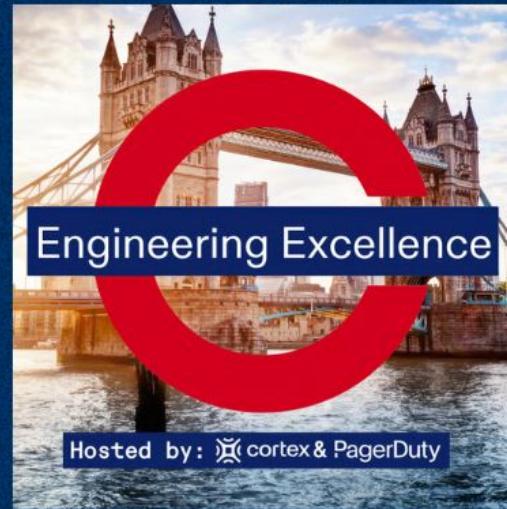
Event

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



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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





Andrzej Nowicki



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



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Isidro Javier García Fernández



Mathematician & Computer Scientist
2024 CERN OpenLab Summer Student



Solutions Consultant - *Supply Chain Company*

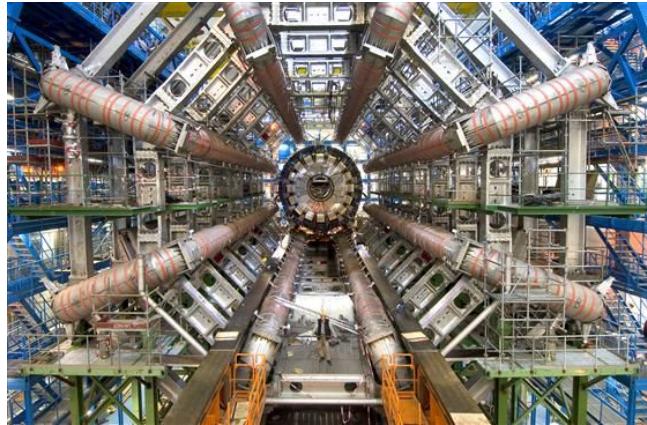


isidrogarciaf



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



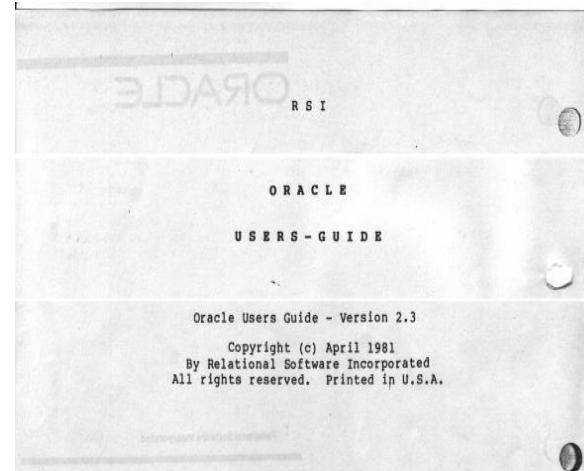
Databases at CERN

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)



Size of the database environment

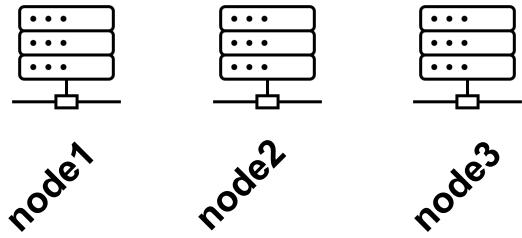
	Total size
Oracle	\approx 5 PB
DBoD (MySQL, PostgreSQL, InfluxDB)	\approx 150 TB
Backups	\approx 3 PB



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



LDAP

Repository used by automation and scripts

LDAP - SC-ENTITY=aisbip_ais2_rac55,SC-CATEGORY=entities,ou=syscontrol,dc=cern,dc=ch - syscontrol

The screenshot shows an LDAP browser interface with a tree view on the left and a detailed view on the right.

Tree View (Left):

- SC-ENTITY=AIS_NRAC_crs
- SC-ENTITY=aisbip2_clone
- SC-ENTITY=aisbip_ais2_rac55 (6)
 - SC-CATEGORY=db-addresses (9)
 - SC-CATEGORY=hosts (2)
 - SC-HOST-NAME=aisbip_ais2_rac55
 - SC-HOST-NAME=aisbip_ais2_rac55
 - SC-CATEGORY=nfs-volumes (11)
 - SC-CATEGORY=ping-entities (1)
 - SC-PING-ENTITY-ID=1
 - SC-CATEGORY=tnsnetservices (7)
 - SC-TNS-NET-SERVICE-NAME=AISBI_IRIS_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBI_SERVICE_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBIAH_SERVICE_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBIP
 - SC-TNS-NET-SERVICE-NAME=aisbip_ais2_rac55
 - SC-TNS-NET-SERVICE-NAME=AISBIP_FIREWALL
 - SC-TNS-NET-SERVICE-NAME=DATAHUB_SERVICE_PROD
 - SC-CATEGORY=tnsnetservices-local (5)
 - SC-TNS-NET-SERVICE-NAME=AISBI_IRIS_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBI_SERVICE_PROD
 - SC-TNS-NET-SERVICE-NAME=AISBIAH_SERVICE_PROD
 - SC-TNS-NET-SERVICE-NAME=aisbip_aisbi_rac52
 - SC-TNS-NET-SERVICE-NAME=DATAHUB_SERVICE_PROD
 - SC-ENTITY=aisbip_devbds2_rac17
 - SC-ENTITY=aisbip2_clone
 - SC-ENTITY=aisbdb2_clone
 - SC-ENTITY=aisbdb_ais1_rac55
 - SC-ENTITY=aisbdb_ais_nrac
 - SC-ENTITY=aisbdb_devbds2_rac17
 - SC-ENTITY=aisdbps_aistest_rac16
 - SC-ENTITY=aisdbps_aistest_rac16
 - SC-ENTITY=AISTEST3_RAC16_crs
 - SC-ENTITY=AISTEST_RAC16_crs
 - SC-ENTITY=alexttest_rac52
 - SC-ENTITY=alionr_allionr_dcsrac

Detailed View (Right):

Attribute Description	Value
objectClass	SC-ORACLE-RDBMS-SERVICE (structural)
SC-ENTITY	aisbip_ais2_rac55
SC-AUTOMATIC-STARTUP	no
SC-CATEGORY	ORADB
SC-CONFIGURATION-DIRECTORY	/ORA/dbs01/syscontrol
SC-DB-ADMIN-LOG-LOCATION	/ORA/dbs01/syscontrol/local/logs
SC-DB-COMPILED-PLATFORM	64
SC-DB-CRS-REFERENCE	AIS2_RAC55_crs
SC-DB-DATABASE-NAME	AISBIP
SC-DB-DATAFILE-LOCATION	/ORA/dbs03/AISBIP/datafile
SC-DB-DBID	1488053994
SC-DB-EXPORT-LOCATION	/ORA/dbeXP
SC-DB-EXPORT-LOG-LOCATION	/ORA/dbs01/syscontrol/local/logs/dbEXP
SC-DB-LOG-LOCATION	/ORA/dbs00/AISBIP/bdump
SC-DB-ORAINST-LOC	/ORA/dbs01/oracle/product/rdbms/orainst.loc
SC-DB-SPFILE-LOCATION	/ORA/dbs00/AISBIP/spfile
SC-DB-TEMP-FILE-SIZE	-1
SC-DB-TNSNAMES	tnsnames ora
SC-DB-TNSNAMES-LOCATION	/ORA/dbs01/oracle/product/rdbms19170_cern1/network/admin
SC-DB-UNIQUE-NAME	AISBIP_AIS2_RAC55
SC-DOMAIN	AISDB
SC-EM-TARGET-NAME	AISBIP.WORLD_AISBIP1
SC-EM-TARGET-NAME	AISBIP.WORLD_AISBIP2
SC-LOGS-OWNER	oracle
SC-MONIT-SMS	true
SC-ORACLE-HOME	/ORA/dbs01/oracle/product/rdbms1923_cern1
SC-OS	Linux
SC-PROFILE	tabxml_generated
SC-PROFILE-TEMPLATE	COMMON_ORA__COMMON_RDBMS__PERL_11_2_0.j2
SC-PROJECT	CET
SC-RMAN-ARCHIVE-POLICY	none
SC-RMAN-BACKUP	normalD
SC-RMAN-COMMAND-DIR	/ORA/dbs01/syscontrol/projects/rman/cmd/rman_templates
SC-RMAN-COMMENT	24.03.2015
SC-RMAN-HOST	
SC-RMAN-PITR-RETENTION	62
SC-RMAN-RECO	1
SC-RMAN-RECOVERCOPY-DELAY	0



Running Configuration

```
# [ oracle@aisbip03:~/ORACLE/dbs01/oracle/home [11:39:39] [19.21.0.0.0 [GRID] SID=GRID] 0 ] #
$ srvctl config database
AISBIP_AIS2_RAC55

# [ oracle@aisbip03:~/ORACLE/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_archive,log_backup
```



OEM

Monitoring tool for databases

ORACLE Enterprise Manager Cloud Control 13c

Databases

Performance ▾ Availability ▾ Security ▾ Schema ▾ Administration ▾

View Database Load Map Search List

▲ Search
Find Name

View ▾ Add ▾ Remove

Name	Type	Status	Target Version
AUCH_AUDCHNEW_RAC52.cern.ch	Cluster Database : Physical Standby		19.21.0.0.0
ADCR_ADCRNEW_RAC54	Cluster Database : Primary		19.21.0.0.0
AISBID2_CLONE.cern.ch	Cluster Database		19.23.0.0.0
AISBIP_AIS2_RAC55.cern.ch	Cluster Database : Primary		19.23.0.0.0
Instances		N/A	
AISBIP_AIS2_RAC55.cern.ch_AISBIP1	Database Instance : Primary		19.23.0.0.0
AISBIP_AIS2_RAC55.cern.ch_AISBIP2	Database Instance : Primary		19.23.0.0.0
Services		N/A	
aisbi_service_prod	Oracle Database Service		19.23.0.0.0
aisbiha_service_prod	Oracle Database Service		19.23.0.0.0
AISBIP	Oracle Database Service		19.23.0.0.0
AISBIP_AIS2_RAC55.cern.ch_1	Oracle Database Service		19.23.0.0.0

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

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

DEMO

How the DB team is using Rundeck

The screenshot shows the Oracle Rundeck web interface. At the top, there's a header bar with the title "ORACLE RUNDECK" and a URL "https://oracle-rundeck.cern.ch/menu/home". Below the header, a navigation bar has a "Projects" tab selected. A summary box on the left says "8 Projects" with a "New Project +" button. Another summary box on the right says "461 Executions In the last day (1 Failed)" across "4 Projects" and "4 Users". A search bar at the top of the main content area says "Project search: name, label or /regex/". The main content area displays a table of projects:

Projects	Activity	Actions
backup Oracle Backup	None	Action ▾
distribution syscontrol distribution scripts	289	Action ▾
isidro-report	None	Action ▾
oracle-admin Oracle Database administration	25	Action ▾
oracle-api oracle-api realted job	3 (1 Failed)	Action ▾
recovery Oracle Recovery	None	Action ▾
sls Service Availability metrics	144	Action ▾

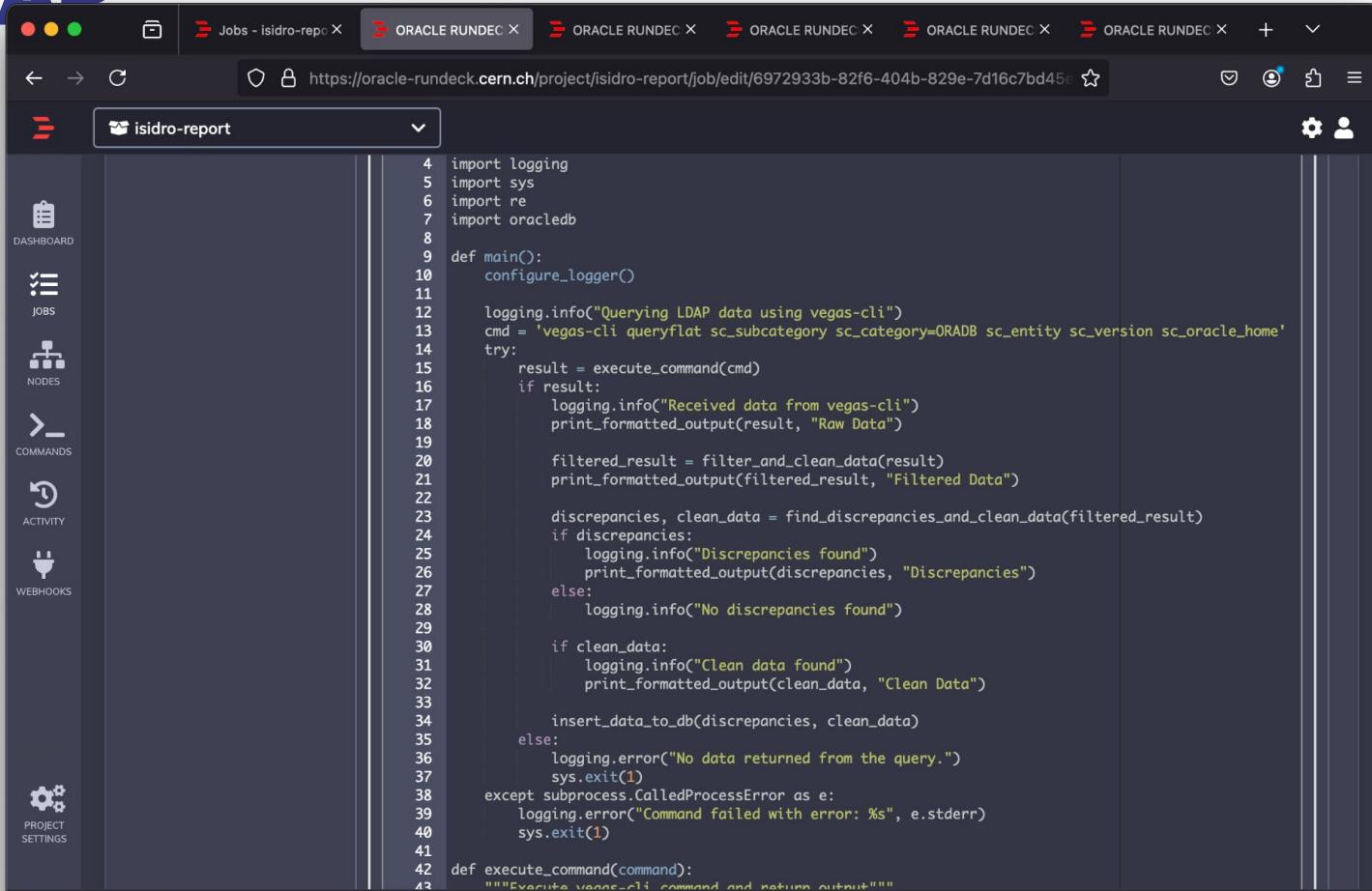
The discrepancies project structure

The screenshot shows the Oracle Rundeck web interface with the following details:

- Project:** Discrepancies_project
- Jobs:** 6 (as indicated by the number in the top right)
- Job Structure:**
 - Discrepancies_project
 - Oracle Configuration Discrepancies Check Gather LDAP, RC, and OEM Data and Detect Discrepancies
 - helpers
 - Query and HTML Output Identify internal and cross-system discrepancies including a fix button
 - Raw RC Data from servers Job helper to take RC data from servers
 - Take LDAP data Query LDAP data using vegas-cli
 - Take OEM data Query OEM data
 - Take Running Configuration Data Query RC data connecting to servers
- Activity:** Activity for Jobs
- Execution History:** 1 - 10 of 1001 Executions (any time) | Save Filter... | Bulk Delete
- Recent Executions:**

Date	Duration	User	Description	Execution ID
02/06/2025 12:42 PM	25 days ago	139	ok	2 minutes by anowicki Discrepancies_project/Oracle Configuration Discrepancies Check #597224
02/06/2025 12:32 PM	25 days ago	139	ok	2 minutes by anowicki Discrepancies_project/Oracle Configuration Discrepancies Check #597122
02/05/2025 10:39 AM	a month ago	139	ok	2 minutes by anowicki Discrepancies_project/Oracle Configuration Discrepancies Check #594124

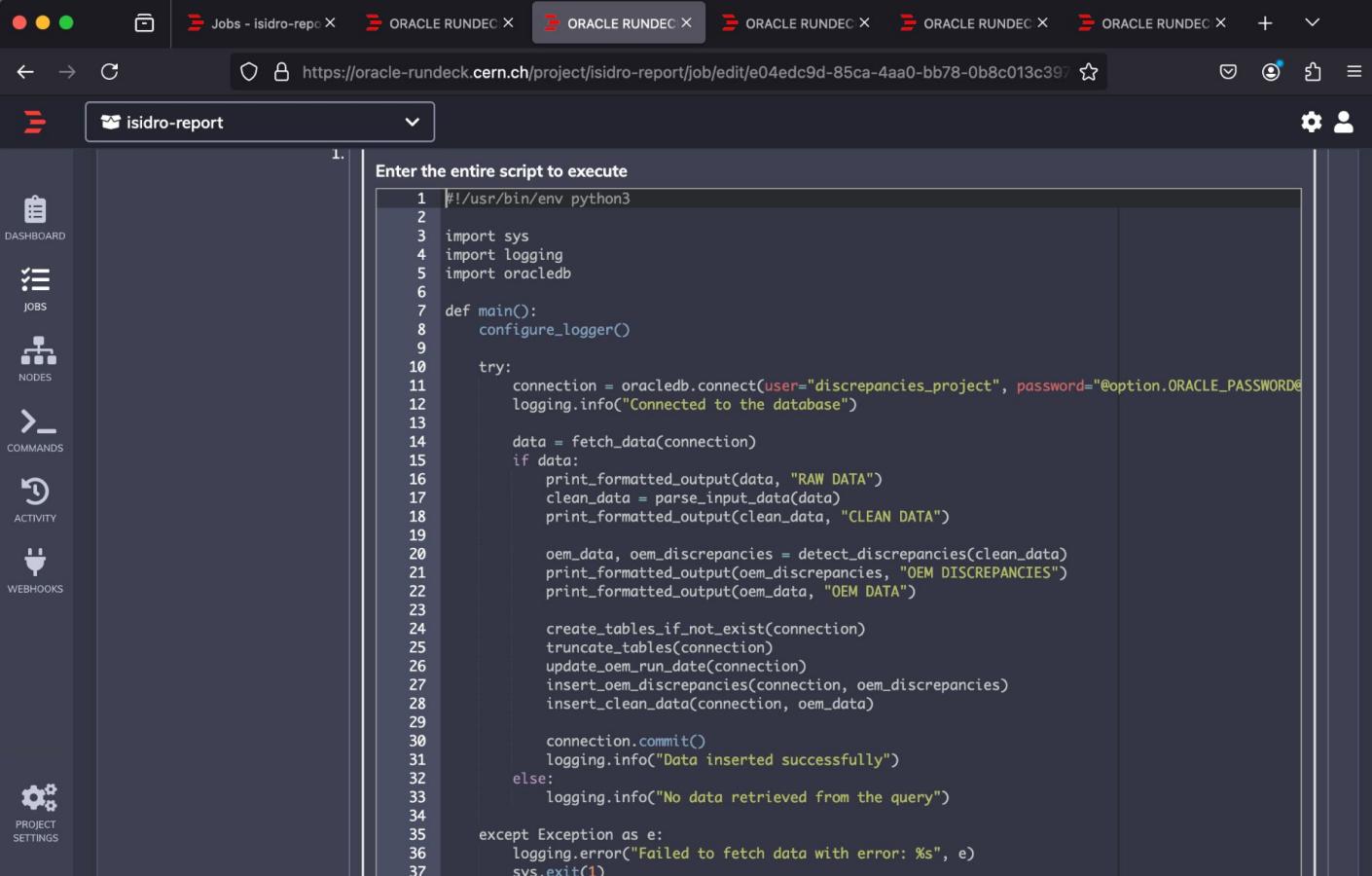
Job in Python interacting with LDAP



The screenshot shows a Rundeck interface with a job titled "isidro-report". The job configuration is displayed in a code editor, showing a Python script. The script imports logging, sys, re, and oracledb, and defines a main() function. It uses logging.info to query LDAP data via vegas-cli, prints raw data, filters and cleans it, finds discrepancies, and inserts data into a database. It handles errors and exits with status 1 if no data is returned.

```
4 import logging
5 import sys
6 import re
7 import oracledb
8
9 def main():
10     configure_logger()
11
12     logging.info("Querying LDAP data using vegas-cli")
13     cmd = 'vegas-cli queryflat sc_subcategory sc_category=ORADB sc_entity sc_version sc_oracle_home'
14     try:
15         result = execute_command(cmd)
16         if result:
17             logging.info("Received data from vegas-cli")
18             print_formatted_output(result, "Raw Data")
19
20             filtered_result = filter_and_clean_data(result)
21             print_formatted_output(filtered_result, "Filtered Data")
22
23             discrepancies, clean_data = find_discrepancies_and_clean_data(filtered_result)
24             if discrepancies:
25                 logging.info("Discrepancies found")
26                 print_formatted_output(discrepancies, "Discrepancies")
27             else:
28                 logging.info("No discrepancies found")
29
30             if clean_data:
31                 logging.info("Clean data found")
32                 print_formatted_output(clean_data, "Clean Data")
33
34             insert_data_to_db(discrepancies, clean_data)
35         else:
36             logging.error("No data returned from the query.")
37             sys.exit(1)
38     except subprocess.CalledProcessError as e:
39         logging.error("Command failed with error: %s", e.stderr)
40         sys.exit(1)
41
42     def execute_command(command):
43         """Execute vegas-cli command and return output"""
44
```

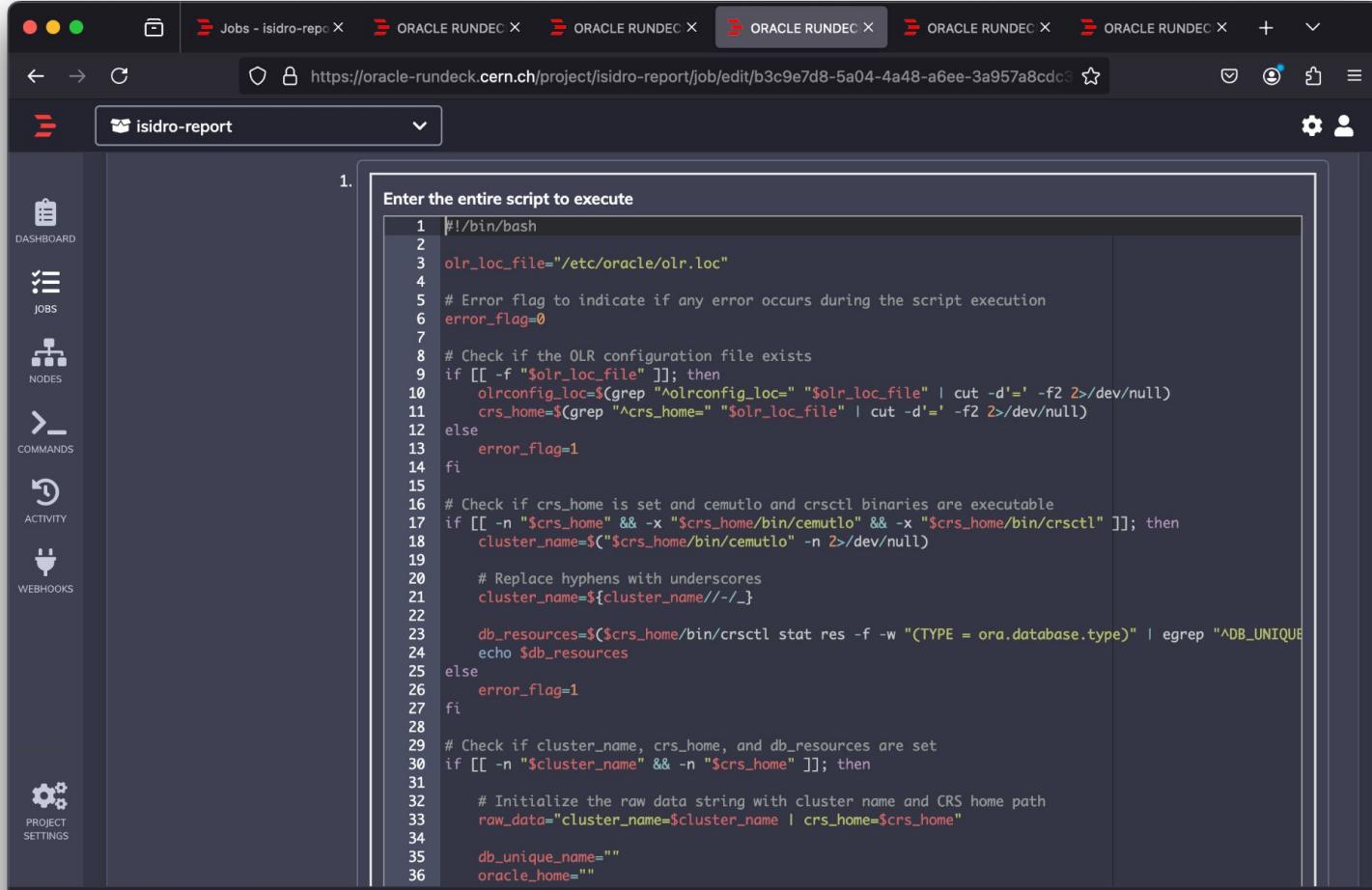
Connecting to an Oracle DB



The screenshot shows a Rundeck interface with a project named "isidro-report". The main area displays a script titled "Enter the entire script to execute". The script is a Python program designed to connect to an Oracle database, fetch data, and insert it into tables. It uses the `oracledb` module and includes logging via `logging.info` statements.

```
1. Enter the entire script to execute
1 #!/usr/bin/env python3
2
3 import sys
4 import logging
5 import oracledb
6
7 def main():
8     configure_logger()
9
10    try:
11        connection = oracledb.connect(user="discrepancies_project", password="@option.ORACLE_PASSWORD")
12        logging.info("Connected to the database")
13
14        data = fetch_data(connection)
15        if data:
16            print_formatted_output(data, "RAW DATA")
17            clean_data = parse_input_data(data)
18            print_formatted_output(clean_data, "CLEAN DATA")
19
20            oem_data, oem_discrepancies = detect_discrepancies(clean_data)
21            print_formatted_output(oem_discrepancies, "OEM DISCREPANCIES")
22            print_formatted_output(oem_data, "OEM DATA")
23
24            create_tables_if_not_exist(connection)
25            truncate_tables(connection)
26            update_oem_run_date(connection)
27            insert_oem_discrepancies(connection, oem_discrepancies)
28            insert_clean_data(connection, oem_data)
29
30            connection.commit()
31            logging.info("Data inserted successfully")
32        else:
33            logging.info("No data retrieved from the query")
34
35    except Exception as e:
36        logging.error("Failed to fetch data with error: %s", e)
37        sys.exit(1)
```

Job in bash



The screenshot shows a Rundeck interface for editing a job named "isidro-report". The left sidebar contains links for DASHBOARD, JOBS, NODES, COMMANDS, ACTIVITY, and WEBHOOKS. The main area has a title "Enter the entire script to execute" and a code editor containing a bash script. The script performs several checks: it looks for an OLR configuration file, checks if crs_home is set and if cemutlo and crsctl binaries are executable, replaces hyphens in cluster_name with underscores, and finally checks if cluster_name, crs_home, and db_resources are set. It initializes raw_data with cluster_name and crs_home, and sets db_unique_name and oracle_home to empty strings.

```
#!/bin/bash
#
# Set the location of the Oracle Listener configuration file
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=$(basename "$crs_home")
    cluster_name=${cluster_name//-/_}
    #
    # Replace hyphens with underscores
    cluster_name=${cluster_name//-/_}
    #
    db_resources=$($crs_home/bin/crsctl stat res -f -w "(TYPE = ora.database.type)" | egrep "^\$DB_UNIQUE_NAME")
    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=""
fi
```



Job to connect to available servers

The screenshot shows the Rundeck job editor interface. On the left is a sidebar with icons for Dashboard, Jobs, Nodes, Commands, Activity, and Webhooks. The main area is titled "isidro-report". It displays a "Global Log Filters" section with a "Key Value Data" filter. Below this is a "Jobs" section with three steps:

1. **#! 30 lines**
List of available servers
2. **RAW_DATA: \${option.raw_data}**
Node Step
3. **#! 250 lines**
Connect to DB and insert discrepancies and data
\${export.raw_data}

At the bottom are "Cancel" and "Save" buttons.

Put it all together

Discrepancies_project

Oracle Configuration Discrepancies Check

Gather LDAP, RC, and OEM Data and Detect Discrepancies [Less](#)

The ORACLE service at CERN manages complex database setups involving clusters and multiple nodes. This project aims to continuously identify discrepancies between the live database configuration and external configuration sources. By integrating data from various systems, it seeks to ensure that runtime settings align with stored parameters and detect any mismatches, such as incorrect Oracle Home paths.

Succeeded 0.02:06 at 2/6 12pm #597224

you
825a06a8

[Run Again](#)

Log Output »

1% 1/139 COMPLETE	0 FAILED	138 INCOMPLETE	0 NOT STARTED
Node		Start time	Duration
oracle-rundeck-a01.cern.ch	All Steps OK	12:40:18 pm	0.01:56
> # Script	OK	12:40:18 pm	0.00:00
> # Query raw data from LDAP, clean and insert discrepancies and data	OK	12:40:19 pm	0.00:00



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



HTML Report Generation

The screenshot shows the Rundeck web interface with a dark theme. On the left is a sidebar with icons for Dashboard, Jobs, Nodes, Commands, Activity, and Webhooks. The main area has a title bar "isidro-report" and a sub-header "Enter the entire script to execute". Below this is a code editor containing a Python script. The script uses the Oracle DB API to connect to a database, fetch run dates and discrepancies, and generate an HTML report. It includes print statements for logging and outputting the results.

```
1. Enter the entire script to execute
1 #!/usr/bin/env python3
2
3 import sys
4 import logging
5 import oracledb
6 import datetime
7
8 def main():
9     configure_logger()
10
11     try:
12         # Establish a database connection
13         connection = oracledb.connect(user="discrepancies_project", password="@option.ORACLE_PASSWORD")
14         logging.info("Connected to the database")
15
16         run_dates = fetch_run_dates(connection)
17         run_time = datetime.datetime.now().replace(microsecond=0).strftime("%Y/%m/%d %H:%M:%S")
18
19         print("#BEGIN:RUNDECK:DATATYPE:text/html")
20         print("</div>") # nasty hack to escape out of div class in the e-mail
21         print("<style> .report {display:none}</style>")
22         print("<style> #layoutBody .content {display:none}</style>")
23         print("<div class='showMe'>") #put our content in a separate div
24         print(f"<p>This report was generated on {run_time}.</p>")
25
26         if run_dates:
27             print_formatted_output_html(run_dates, "DATA FETCH LOG")
28
29         discrepancies = fetch_discrepancies(connection)
30         if discrepancies:
31             print_formatted_output_html(discrepancies, "DISCREPANCIES")
32         else:
33             logging.info("No discrepancy retrieved from the query")
34
35         ldap_discrepancies = fetch_ldap_discrepancies(connection)
36         if ldap_discrepancies:
37             print_formatted_output_html(ldap_discrepancies, "LDAP_DISCREPANCIES")
```

HTML Report

The screenshot shows a web browser window displaying an Oracle Rundeck project named "isidro-report". The URL is <https://oracle-rundeck.cern.ch/project/isidro-report/execution/show/597224#nodes>. The page content includes:

- A log entry:
 - Message: "Identify internal and cross-system discrepancies including a fix button > HTML OUTPUT"
 - Status: OK
 - Timestamp: 12:42:13 pm
 - Duration: 0.00:00
- Log output:

```
[2025-02-06 16:42:14,093] INFO - Connected to the database
#BEGIN:RUNDECK:DATATYPE:text/html
```
- A note: "This report was generated on 2025/02/06 16:42:14."
- A section titled "DATA FETCH LOG" containing a table:

NAME	RUN_DATE
LDAP	2025/02/06 16:40:20
RC	2025/02/06 16:42:11
OEM	2025/02/06 16:42:13

- A section titled "DISCREPANCIES" which is currently empty.

References

Overview of the Project Aim

<https://zenodo.org/records/13851877>

Thank You!



Rundeck
by PagerDuty





Self-Service Automation with Rundeck



Justyn Roberts, Sr. Solutions Consultant at PagerDuty

PagerDuty commons/



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Solutions Engineering

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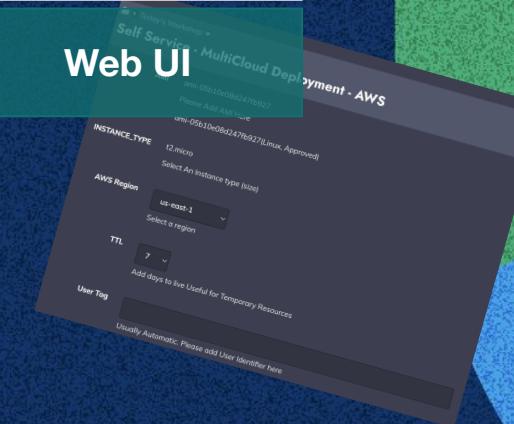
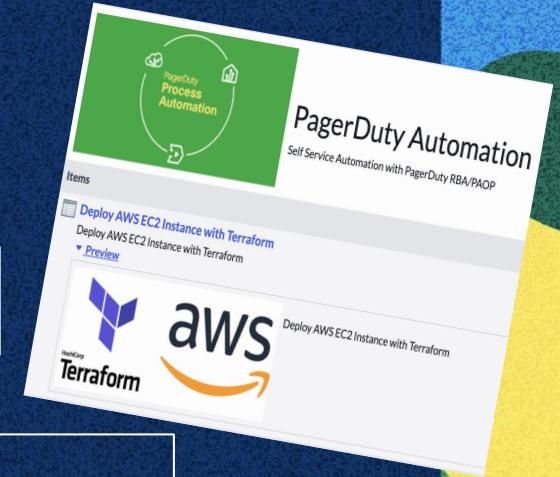
Rundeck ❤️'s self service



Automation Orchestration

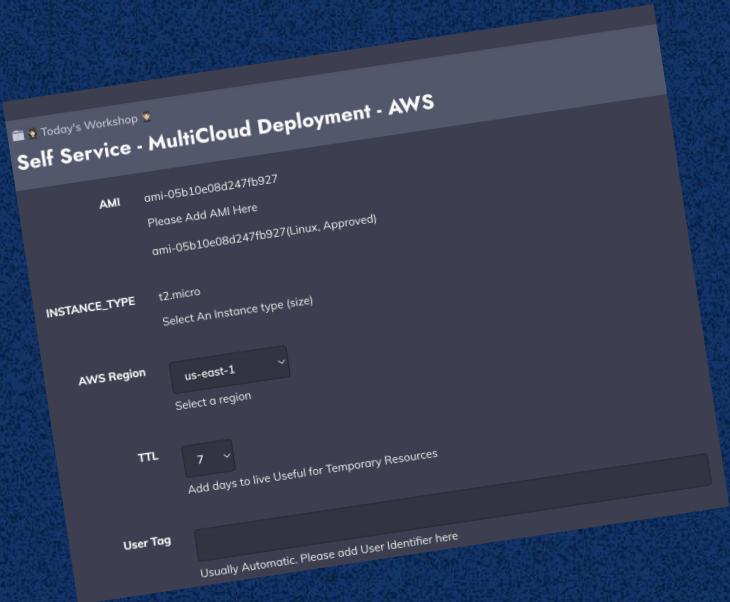
Automation jobs

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

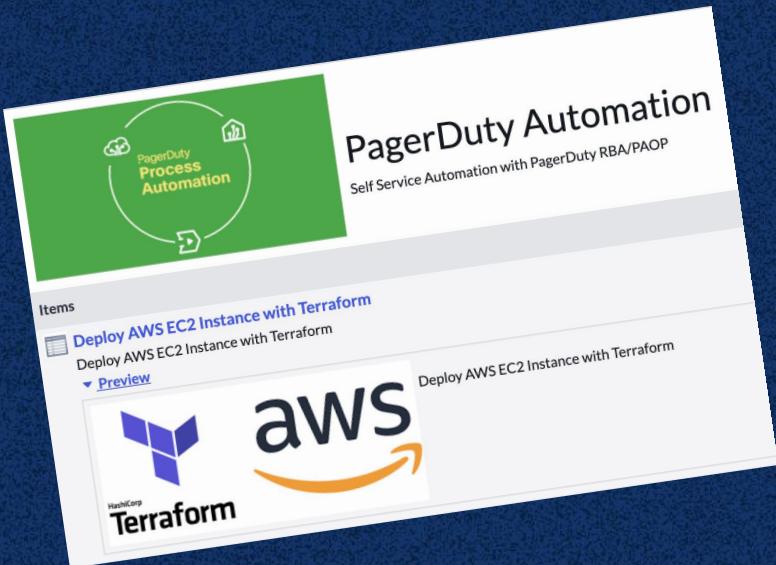


Backstage + Runbook Automation

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



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



community.pageerduty.com
meetup.com/rundeck-europe/