

11.03.2026, SOUG Day Bern

Jenkins & SQLcl

die perfekte Kombination im Umfeld
von Oracle DB Deployments

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code of change





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APEXconnect



ā'pěks world
(forclapex)



Agenda

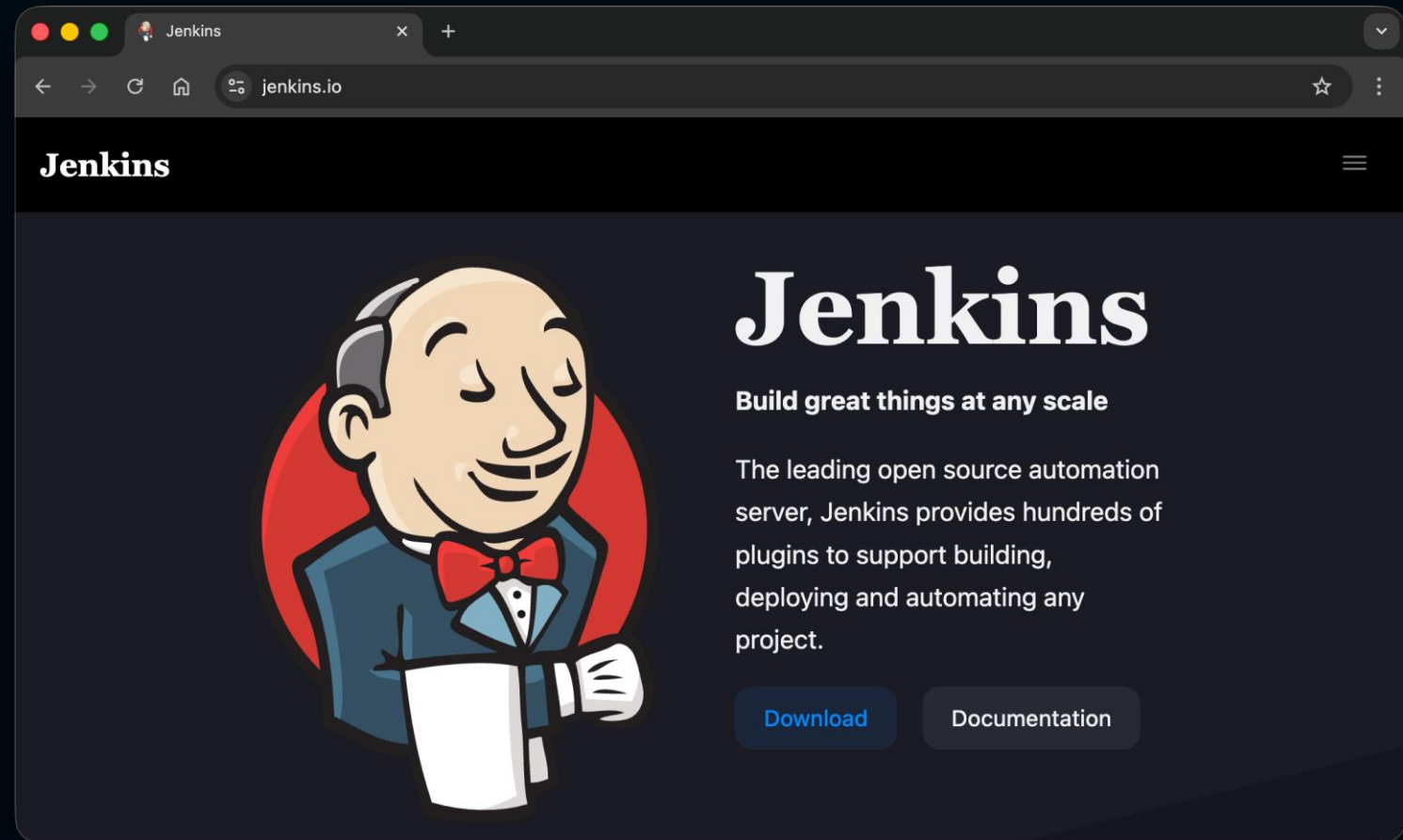
1. Basics
2. Configuration & Setup
3. Scripting
4. Jobs & Pipelines
5. More to know

Basics_

Basics

Jenkins

www.jenkins.io



Jenkins

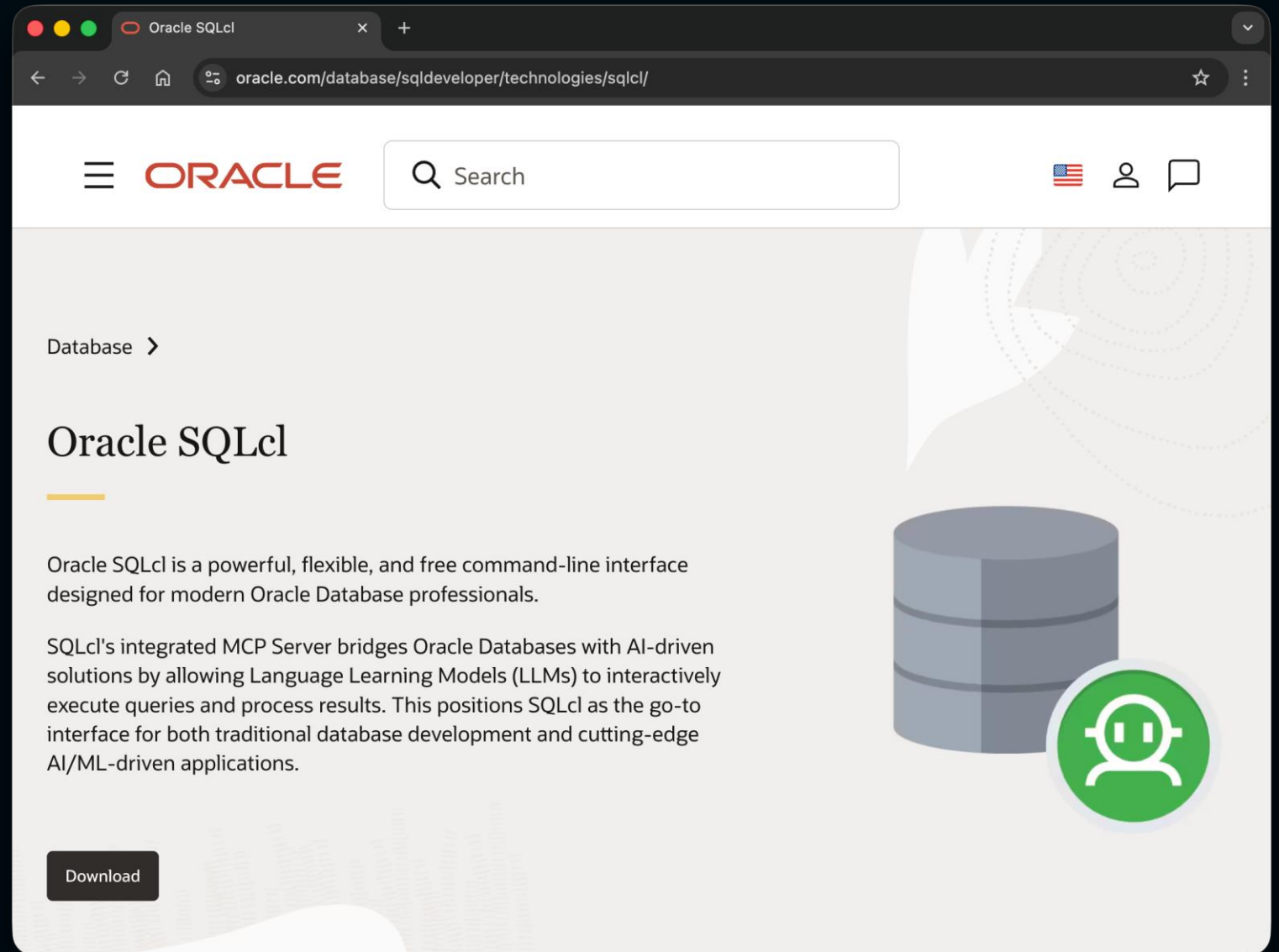
- MIT License
- LTS (Long Term Support) vs Weekly => LTS
- Native vs *.war => Native
- Requirements
 - min Java 17 => opt Java 21
 - min 256 MB RAM => opt 1 GB RAM
 - min 10 GB Space => opt 100 GB Space

Download Jenkins 2.541.2 LTS for:

	Generic Java package (.war)	
	SHA-256:	
	dc9d532e54d4b7eb7d78edcd3217876dd4811b49d1a3b66e599ad4a642d57193	
	Docker	
	Kubernetes	
	Ubuntu/Debian	
	Red Hat Enterprise Linux and derivatives	
	Fedora	
	Windows	
	openSUSE	
	FreeBSD	Third party
	Gentoo	Third party
	macOS	Third party
	OpenBSD	Third party
	OpenIndiana Hipster	Third party

Oracle SQLcl

www.oracle.com/database/sqldeveloper/technologies/sqlcl/



SQLcl

Oracle Free Use License

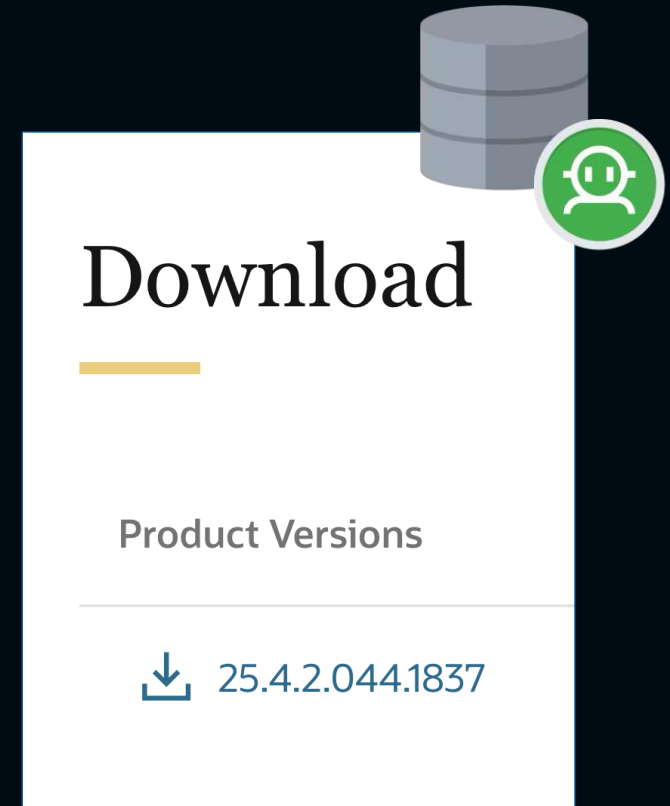
- no costs in combination with Oracle products

Installation

- only zip & environment path

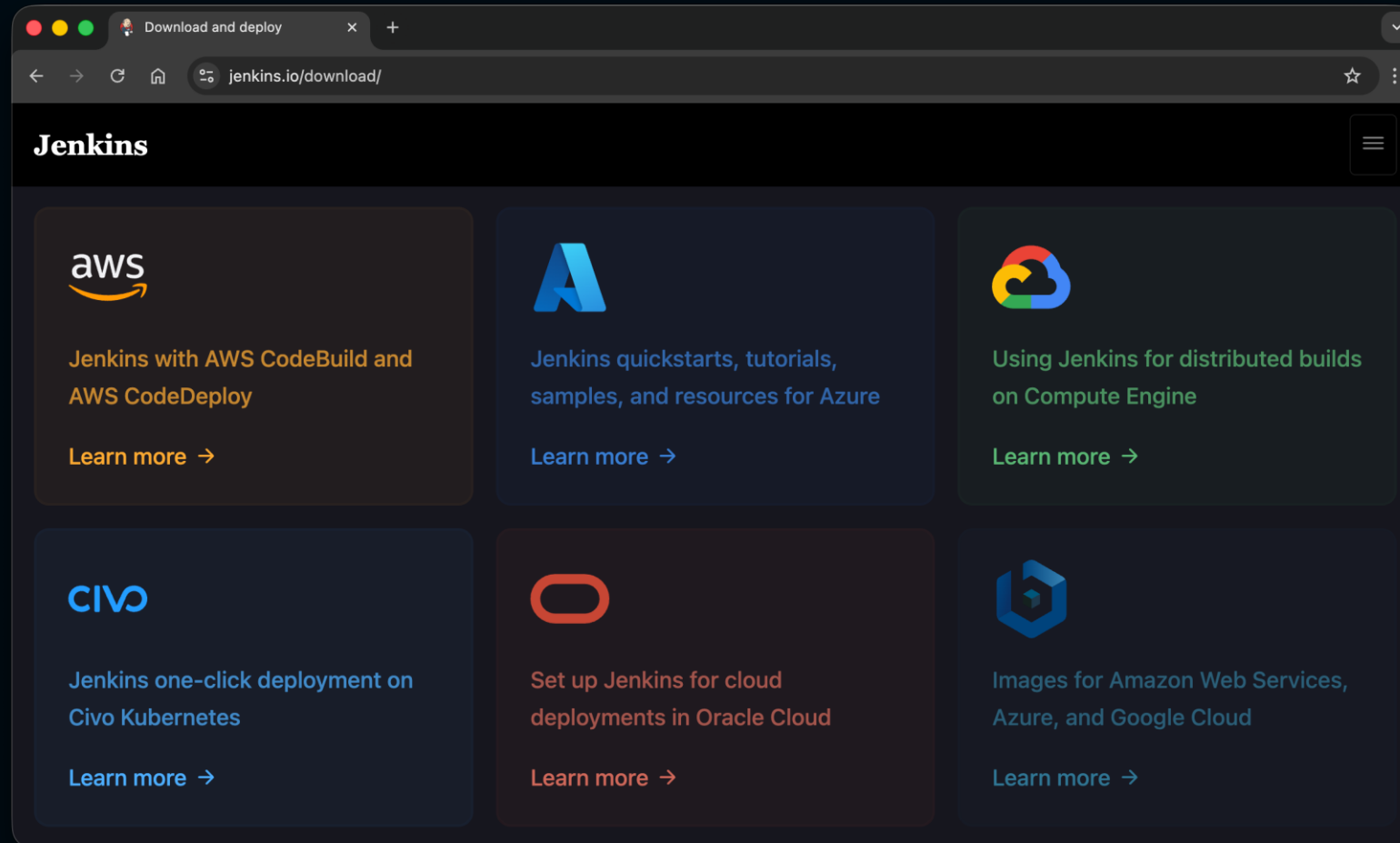
Requirements

- min **Java 17** => opt **Java 21**
- **100 MB** Space



Configuration & Setup_

Jenkins @ Cloud



Jenkins @ Premises

Jenkins entsperren

Um sicher zu stellen, dass Jenkins von einem autorisierten Administrator sicher initialisiert wird, wurde ein zufällig generiertes Passwort in das Log([wo ist das?](#)) und diese Datei auf dem Server geschrieben:

```
C:\ProgramData\Jenkins\.jenkins\secrets\initialAdminPassword
```

Bitte kopieren Sie das Passwort von einer dieser Quellen und fügen Sie es unten ein.

Administrator-Passwort

••••••

Jenkins Plugins

- Default Plugins => ok
- Most important Plugins
 - Folders
 - Timestampper
 - Pipeline
 - Git
 - LDAP
 - Email Extension / Mailer

Getting Started

Organization and Administration

Build Features

Build Tools

Build Analysis and Reporting

Pipelines and Continuous Delivery

Source Code Management

Distributed Builds

User Management and Security

Notifications and Publishing

Appearance

Languages

All | None | Suggested

show: selected

Selected (18/52)

Note that the full list of plugins is not shown here. Additional plugins can be installed in the **Plugin Manager** once the initial setup is complete. [See the documentation for more information.](#)

Organization and Administration (2/4)

✓ Folders

This plugin allows users to create "folders" to organize jobs. Users can define custom taxonomies (like by project type, organization type etc). Folders are nestable and you can define views within folders. Maintained by CloudBees, Inc.

2 >

✓ OWASP Markup Formatter

Uses the OWASP Java HTML Sanitizer to allow safe-seeming HTML markup to be entered in project descriptions and the like.

Build Features (4/9)

✓ Build Timeout

This plugin allows you to automatically terminate a build if it's taking too long.

7 >

✓ Credentials Binding

Allows credentials to be bound to environment variables for use from miscellaneous build steps.

9 >

✓ Timestampper

Adds timestamps to the Console Output

7 >

✓ Workspace Cleanup

This plugin deletes the project workspace when invoked.

30 >

Build Analysis and Reporting (1/5)

✓ JUnit

Allows JUnit-format test results to be published.

27 >

Pipelines and Continuous Delivery (4/7)

✓ Pipeline

A suite of plugins that lets you orchestrate automation, simple or complex. See [Pipeline as Code with Jenkins](#) for more details.

48 >

✓ GitHub Branch Source

Multibranch projects and organization folders from GitHub. Maintained by CloudBees, Inc.

41 >

✓ Pipeline: GitHub Groovy Libraries

Allows Pipeline Groovy libraries to be loaded on the fly from GitHub.

32 >

✓ Pipeline Graph View

Provides "Pipeline Graph" visualization of a pipeline job run.

47 >

Source Code Management (1/10)

✓ Git

This plugin integrates [Git](#) with Jenkins.

25 >

Jenkins 2.528.2

Back

Install

Jenkins Setup

Erstes Administrator-Konto erstellen

Benutzer

Passwort

Passwort-Wiederholung

Voller Name

E-Mail-Adresse

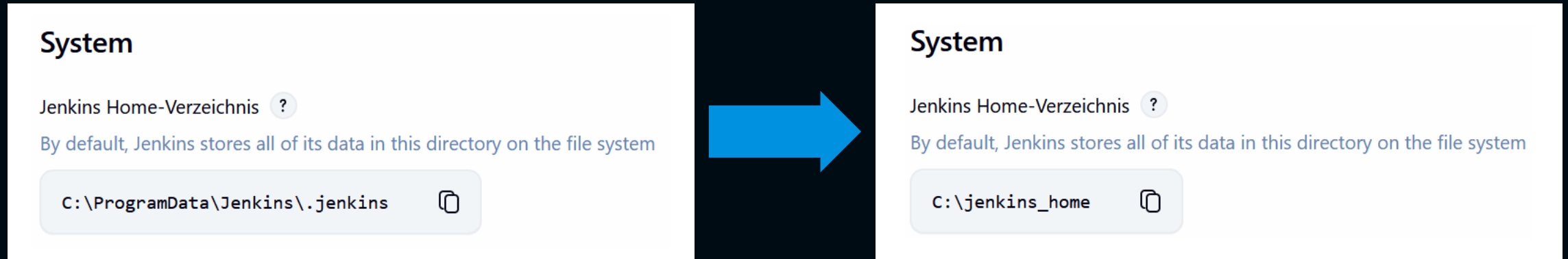
Instance Configuration

Jenkins URL:

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the BUILD_URL environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Jenkins Home



C:\Program Files\Jenkins\Jenkins.xml

```
30 <service>
31   <id>jenkins</id>
32   <name>Jenkins</name>
33   <description>This service runs Jenkins automation server.</description>
34   <env name="JENKINS_HOME" value="%ProgramData%\Jenkins\.jenkins"/>
```

JAVA_HOME	C:\Program Files\Java\jdk-21
JENKINS_HOME	C:\jenkins_home

Jenkins LDAP

Server

Server ?

ldap.domain.com

! Unknown host: ldap.domain.com

Advanced Server Configuration ^ Edited

root DN ?

DC=domain,DC=com

☐ Allow blank rootDN

User search base ?

OU=Rollen

User search filter ?

(&(objectCategory=Person)(sAMAccountName={0})(!(UserAccountControl:1.2.840.113556.1.4.803:=2)))

Group search base ?

OU=Gruppen

Group search filter ?

(&(objectCategory=Group))

Group membership

☒ Parse user attribute for list of LDAP groups

Group membership attribute

memberOf

☐ Search for LDAP groups containing user

Manager DN ?

CN=LDAP-TECHNICAL_USER,OU=Rollen,DC=domain,DC=com

Manager Password ?

Concealed

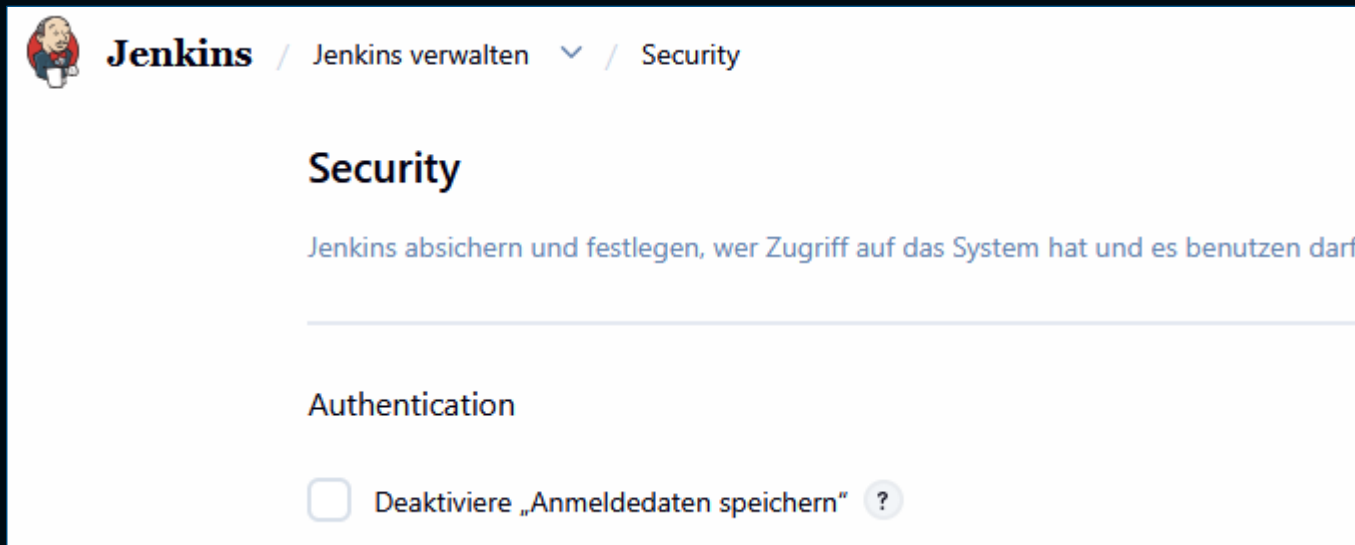
Display Name LDAP attribute ?

displayname

Email Address LDAP attribute ?

mail

Jenkins EntraID



Benutzerverzeichnis (Realm)

Entra ID

Client ID ?
123456xx-123a-123b-1234-12345678901c

Authentication Type
☒ Client Secret
Secret ?
☐ Concealed

☐ Client Certificate

Tenant ?
123456ab-123e-123f-123g-12345678901g

Erweitert ^

Azure Environment
Azure

Cache Duration ?
3600

SQLcl – Symlink & Path

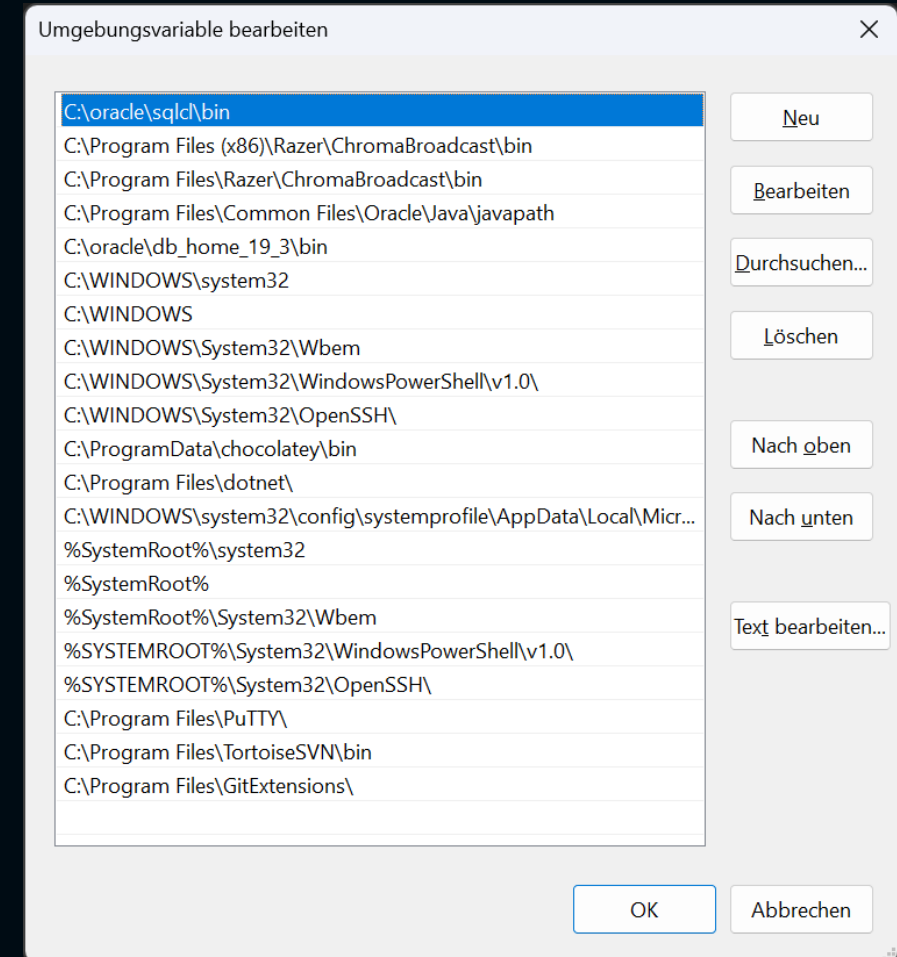
Run command line as “Admin”

```
mklink /d c:\oracle\sqlcl  
C:\Users\username\Downloads\sqlcl\sqlc  
l-25.3.2.317.1117\sqlcl
```

if directory exists
`rd c:\oracle\sqlcl`

Unix

```
ln -s /user/downloads/sqlcl/sqlcl-  
25.3.2.317.1117/sqlcl /oracle/sqlcl
```



Scripting_

SQLcl - connect

```
c:\>sql /nolog
sql>conn
user/password@host:port/service_name
Connection failed
... no ocijdbc23 in java.library.path ...
```

```
c:\>sql -thin /nolog
sql>conn
user/password@host:port/service_name
connected
```

<https://www.thatjeffsmith.com/archive/2024/07/oracle-sqlcl-24-2-connection-attempts-and-thick-thin/>

SQLcl – apex export

```
SQL>apex export -applicationid 1000 -split -skipExportDate
```

```
SQL>apex export -applicationid 1000 -split -skipExportDate -  
expSupportingObjects Y -expType APPLICATION_SOURCE,EMBEDDED_CODE  
-overwrite-files
```

```
SQL>apex export -applicationid 1000 -skipExportDate -expType  
READABLE_YAML  
-overwrite-files
```

SQLcl – data pump

```
SQL>datapump export  
      -schemas your_schema  
      -directory data_pump_dir  
      -dumpfile your_schema.dmp  
      -logfile your_schema.log
```

```
SQL>dp export ...
```

```
-- Datapump Directory
```

```
create or replace directory data_pump_dir as '/oracle/data_pump';  
grant read, write on directory data_pump_dir to your_schema;
```

SQLcl – Invalid Objects

```

begin
  select count(1)
  into l_new_invalid
  from user_objects
  where status <> 'VALID';

  l_old_invalid := l_new_invalid + 1;
  while l_new_invalid < l_old_invalid and
        l_new_invalid <> 0
  loop
    dbms_output.put_line('recompile run ' ||
                          (l_round + 1));
    l_round := l_round + 1;
    dbms_utility.compile_schema(
      schema      => l_schema_name
    , compile_all => false);
    l_old_invalid := l_new_invalid;

    select count(1)
    into l_new_invalid
    from user_objects
    where status <> 'VALID';
  end loop;

```

```

if l_new_invalid <> 0
then
  dbms_output.put_line(l_new_invalid ||
    ' objects cannot be made valid');

  for o in (select object_name
            , object_type
            from user_objects u
            where u.status = 'INVALID'
            order by object_name)
  loop
    dbms_output.put_line(o.object_name ||
      ' (' || o.object_type || ') is invalid');
  end loop;

  raise e_objects_not_valid;

else
  dbms_output.put_line('all objects are valid');
end if;

```

SQLcl - project

```
project init -name MyProject -schemas YOUR_SCHEMA -verbose
project export -verbose
project stage -verbose
project release -version 1.0.0 -verbose
project gen-artifact -verbose
project deploy -file artifact/MyProject-1.0.0.zip -verbose
```

Since SQLcl 24.4 & Git

<https://www.thatjeffsmith.com/archive/2025/05/getting-started-with-sqlcl-projects/>

SQLcl project

- Predefined git structure
- Predefined Workflow
- Integrated in SQLcl
- No “custom” adjustments on production

SQLcl custom

- Custom git structure
- Custom workflow
- Support for every sql script

More about SQLcl ... inside DOAG Dev Talk ...

16.04.26 - 17Uhr – SQLcl

<https://meine.doag.org/event/id.964.doag-devtalk-sqlcl/>

30.04.26 - 17Uhr - CI & CD mit SQLcl Projects

<https://meine.doag.org/event/id.963.doag-devtalk-ci-cd-mit-sqlcl-projects/>

Jobs & Pipelines_

Freestyle Project

- Use of parameters
- Authorization Setting
- Credentials by Credential Store
- Use of Source Code Management

Enter an item name

» *Required field*

**Freestyle project**

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

Configure

-  General
-  Source Code Management
-  Build Triggers
-  Build Environment
-  Build Steps
-  Post-build Actions

Jenkins Pipeline

- Custom Workspace
- Environment Variables
- Options
- Stage and Steps

```

51 pipeline {
52   agent {
53     label {
54       label ""
55       customWorkspace "$quasto_work_dir"
56     }
57   }
58   environment {
59     db_env = "${db}"
60     dev_cred_id = "quasto_dev"
61     test_cred_id = "quasto_test"
62     prod_cred_id = "quasto_prod"
63     dev_app_id = "141"
64     test_app_id = "141"
65     prod_app_id = "141"
66     schema_name = "quasto"
67   }
68   options {
69     disableConcurrentBuilds()
70     skipDefaultCheckout true
71   }
72   stages {
73     stage("PREPARE - Checkout Project Github Repository") {
74     }
75     stage("PREPARE - Checkout Project MT Git Repository") {
76     }
77     stage("PREPARE - Set ENV Vars") {
78     }
79     stage("DB - Export Apps") {
80       steps {
81         withCredentials([usernamePassword(credentialsId:
82           'db_schema_user')]) {
83         }
84         withCredentials([usernamePassword(credentialsId:
85           usernameVariable: 'quasto_github_user')]) {
86         }
87         script {
88           String[] errors = ["ORA-", "SP2-", "error:",
89             String[] warnings = ["warning:"]
90           checkConsoleOutputAfterBuildStep(errors, warn
91         }
89       }
90     }
91   }
92 }

```

Jenkins Pipeline complex

Stage View

	Prepare	Checkout GIT	Drop Users and Tablespaces	Create Users and Tablespaces	Datapump Import	Create Grants and Synonyms	Build Install Script	Run Install Script	Install QS-Schema	Recompile QS-Schema	Import App	Set up Jobcontrol Environment	Declarative: Post Actions
Average stage times: (Average full run time: ~9min 44s)	227ms	7s	1min 6s	5s	4min 11s	56s	45s	52s	15s	5s	13s	14s	1s
#732 Nov 12 10:26 21 commits	187ms	5s	1min 8s	4s	3min 42s	1min 4s	50s	1min 8s	23s	7s	2s failed	78ms failed	1s
#731 Nov 04 11:56 41 commits	281ms	7s	1min 17s	5s	3min 53s	1min 5s	57s	1min 20s	23s	7s	20s	23s	1s
#730 Okt 30 12:41 19 commits							47s	1min 9s	22s	7s	22s	24s	1s
#729 Okt 30 12:27 17 commits	219ms	12s	1min 7s	5s	3min 53s	1min 2s	44s	13s failed	63ms failed	79ms failed	62ms failed	62ms failed	1s
#728 Okt 28 11:57 24 commits	250ms	5s	1min 8s	4s	3min 51s	1min 4s	51s	1min 10s	23s	7s	22s	24s	1s
#727 Okt 23 18:36 No Changes	234ms	4s	58s	5s	3min 37s	1min 3s	51s	1min 13s	19s	7s	22s	24s	1s
#726 Okt 23 18:26 5 commits	203ms	6s	58s	4s	7min 26s	485ms aborted	78ms aborted	78ms aborted	78ms aborted	78ms aborted	94ms aborted	78ms aborted	1s

Jenkins vs gitlab vs Azure DevOps



VS



VS



Azure
DevOps

More to Know—

More to know

Useful Links

<https://www.jenkins.io/>

<https://www.oracle.com/database/sqldeveloper/technologies/sqlcl/>

<https://www.thatjeffsmith.com/>

<https://oracle-base.com/articles/misc/articles-misc#sqlcl>

<https://apex.hyand.com/ords/r/portal/hyand-apex-portal/devops>

Say Hy_

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