Quickstart Installation

Canton Network Quickstart Guide | 2025

Version: 1.0.0-2025-02-13

Contents

Canton Network Quickstart Installation

Overview

The CN-QS and its guides are a work-in-progress (WIP). As a result, the CN-QS guides may not accurately reflect the state of the application. If you find errors or other inconsistencies, please contact your representative at Digital Asset.

This guide walks through the installation and `LocalNet` deployment of the Canton Network Quickstart (CN-QS).

Prerequisites

Access to the CN-Quickstart Github repository and CN Docker repository is needed to successfully pull the Digital Asset artifacts from JFrog Artifactory.

Access to the *Daml-VPN* connection or a SV Node that is whitelisted on the CN is required to connect to DevNet. The GSF publishes a list of SV nodes who have the ability to sponsor a Validator node. To access `DevNet`, contact your sponsoring SV agent for VPN connection information.

If you need access or additional support, email support@digitalasset.com.

The CN-QS is a Dockerized application and requires Docker Desktop. Running CN-QS is resource intensive. We recommend allocating 32 GB of memory to Docker Desktop. If your machine does not have that much memory consider declining Observability when prompted.

Other requirements include:

- Curl
- Direnv
- Nix
- Windows users must install and use WSL 2 with administrator privileges

Nix Download support

Check for Nix on your machine.

```
nix --version
```

If the command returns something like:

```
Nix (Nix) 2.25.2
```

Congratulations, you're done.

Recommended installation for MacOS.

```
sh <(curl -L https://nixos.org/nix/install)
```

Recommended installation for Linux.
(Windows users should run this and all following commands in WSL 2).

```
sh <(curl -L https://nixos.org/nix/install) --daemon
```

Step-by-step Instructions

Clone From Github

Clone and cd into the `cn-quickstart` repository into your local machine.

```
git clone https://github.com/digital-asset/cn-quickstart.git
cd cn-quickstart
direnv allow
```

```
(base) cn-quickstart ~ % direnv allow
direnv: loading ~/Projects/daml/cn-quickstart/.envrc
direnv: using nix
direnv: export +AR +AS +CC +CONFIG_SHELL +CXX +HOST_PATH +IN_NIX_SHELL +LD +LD_DYLD_PATH +MACOSX_DEPLOYMENT_TARG
ET +NIX_BINTOOLS +NIX_BINTOOLS_WRAPPER_TARGET_HOST_aarch64_apple_darwin +NIX_BUILD_CORES +NIX_BUILD_TOP +NIX_CC
+NIX_CC_WRAPPER_TARGET_HOST_aarch64_apple_darwin +NIX_CFLAGS_COMPILE +NIX_DONT_SET_RPATH +NIX_DONT_SET_RPATH_FOR
_BUILD +NIX_ENFORCE_NO_NATIVE +NIX_HARDENING_ENABLE +NIX_IGNORE_LD_THROUGH_GCC +NIX_LDFLAGS +NIX_LDFLAGS_FOR_BUI
LD +NIX_NO_SELF_RPATH +NIX_STORE +NM +NODE_PATH +PATH_LOCALE +RANLIB +SIZE +SOURCE_DATE_EPOCH +STRINGS +STRIP +T
EMP +TEMPDIR +TMP +ZERO_AR_DATE +__CF_USER_TEXT_ENCODING +__darwinAllowLocalNetworking +__impureHostDeps +__prop
agatedImpureHostDeps +__propagatedSandboxProfile +__sandboxProfile +__structuredAttrs +buildInputs +buildPhase +
builder +cmakeFlags +configureFlags +depsBuildBuild +depsBuildBuildPropagated +depsBuildTarget +depsBuildTargetP
ropagated +depsHostHost +depsHostHostPropagated +depsTargetTarget +depsTargetTargetPropagated +doCheck +doInstal
lCheck +mesonFlags +name +nativeBuildInputs +out +outputs +patches +phases +preferLocalBuild +propagatedBuildInp
uts +propagatedNativeBuildInputs +shell +shellHook +stdenv +strictDeps +system ~JAVA_HOME ~PATH ~TMPDIR ~XDG_DAT
A_DIRS
```

Artifactory

Necessary artifacts are located in Digital Artifact's JFrog Artifactory. These files are accessed through the repository's build system using a `~/.netrc` configuration file.

Check if a ~/.netrc file already exists.

```
cat ~/.netrc
```

Create or edit the `~/.netrc` file at root.

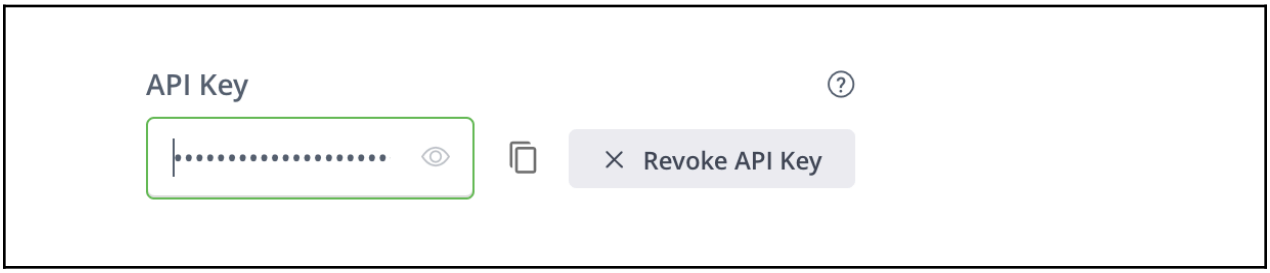
```
vim ~/.netrc
```

Add the Artifactory's login and password.

```
machine digitalasset.jfrog.io
login <username>
password <password>
```

Replace `<username>` with the JFrog Artifactory user profile email.

Replace `<password>` with the API Key. Create an API Key if none exists.



The `~/.netrc` configuration file should look something like:

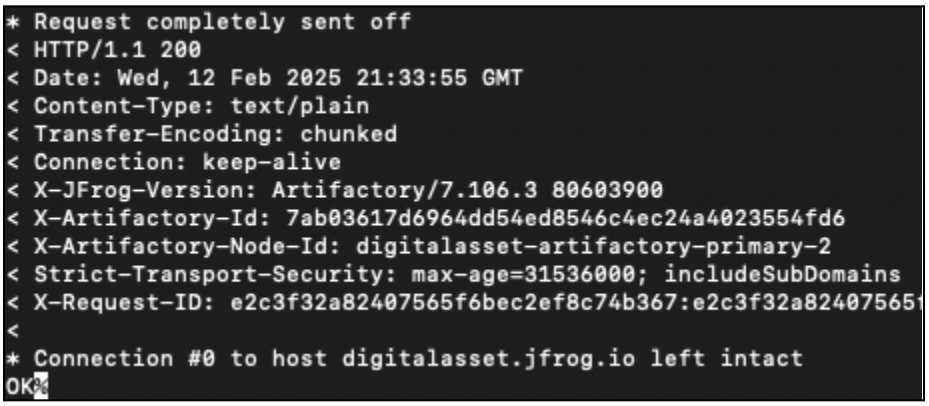
```
machine digitalasset.jfrog.io
login email@domain.com
password plain_text_api_key_or_password
```

Manually set `.netrc`'s correct permissions.

```
chmod 600 ~/.netrc
```

Check for Artifactory connectivity using `.netrc` credentials after populating the username and password.

```
curl -v "https://digitalasset.jfrog.io/artifactory/api/system/ping"
--netrc
```



A response of "`OK`" indicates a successful connection.
Authentication problems often result in a `401` or `403` error. If an error response occurs, double check `~/.netrc` and be sure that `.netrc` is a source file (in root) and not a local file.

Docker

Be sure that Docker Desktop is running.
Login to Docker repositories via the terminal.

```
docker login digitalasset-docker.jfrog.io
```

```
docker login digitalasset-canton-network-docker.jfrog.io
```

```
docker login
```

The last command requires a Docker Hub username and password or *Personal Access Token (PAT)*. Commands should return 'Login Succeeded'.

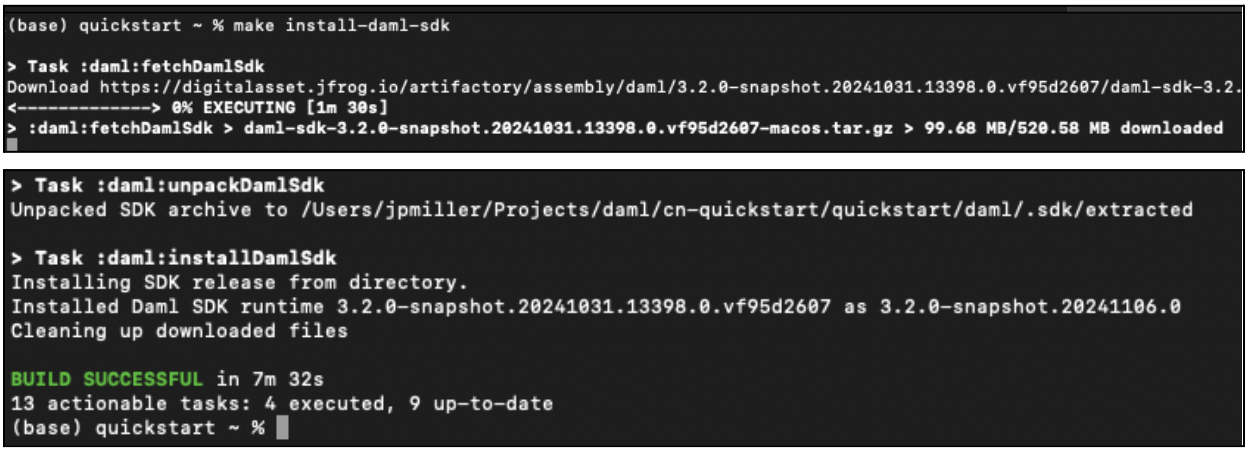
Install Daml SDK

`cd` into the `quickstart` subdirectory and install the Daml SDK from the quickstart subdirectory.

```
cd quickstart
make install-daml-sdk
```

> The `makefile` providing project choreography is in the `quickstart/` directory. `make` only operates within `quickstart/`. If you see errors related to `make`, double check your present working directory.

The Daml SDK is large and can take several minutes to complete.



Deploy a Validator on LocalNet

From the quickstart subdirectory, build the application.

```
make build
```

```
BUILD SUCCESSFUL in 5s
22 actionable tasks: 2 executed, 20 up-to-date
docker compose -f compose.yaml --env-file .env   -f docker/o11y/cadvisor-darwin.yaml -f
[+] Building 1.9s (15/15) FINISHED
 => [await-onboarding-done internal] load build definition from Dockerfile
 => => transferring dockerfile: 248B
```

```
 => CACHED [backend-service 2/2] RUN apt-get update && apt-get install -y jq curl bash
 => [backend-service] exporting to image
 => => exporting layers
 => => writing image sha256:dad288f32e529b879f2d2f07190f0e8660459ee59510ac75e13d2f13f6f8acff
 => => naming to docker.io/library/quickstart-backend-service
 => [backend-service] resolving provenance for metadata file
[+] Building 2/2
 ✔ await-onboarding-done  Built
 ✔ backend-service        Built
```

Once complete, start the application, Canton services and Observability.

```
make start
```

The first time running `make start`, a helper assistant prompts to set up a local deployment. It offers the choice of running `DevNet` or `LocalNet` and enabling `Observability`. In the future, this helper can be accessed by running `make setup`.

Begin the first application in `LocalNet` with `Observability` enabled.

```
Enable LocalNet? (Y/n): Y

Enable Observability? (Y/n): Y
```

> Consider declining Observability if your machine has less than 32 GB of memory to allocate to Docker Desktop.

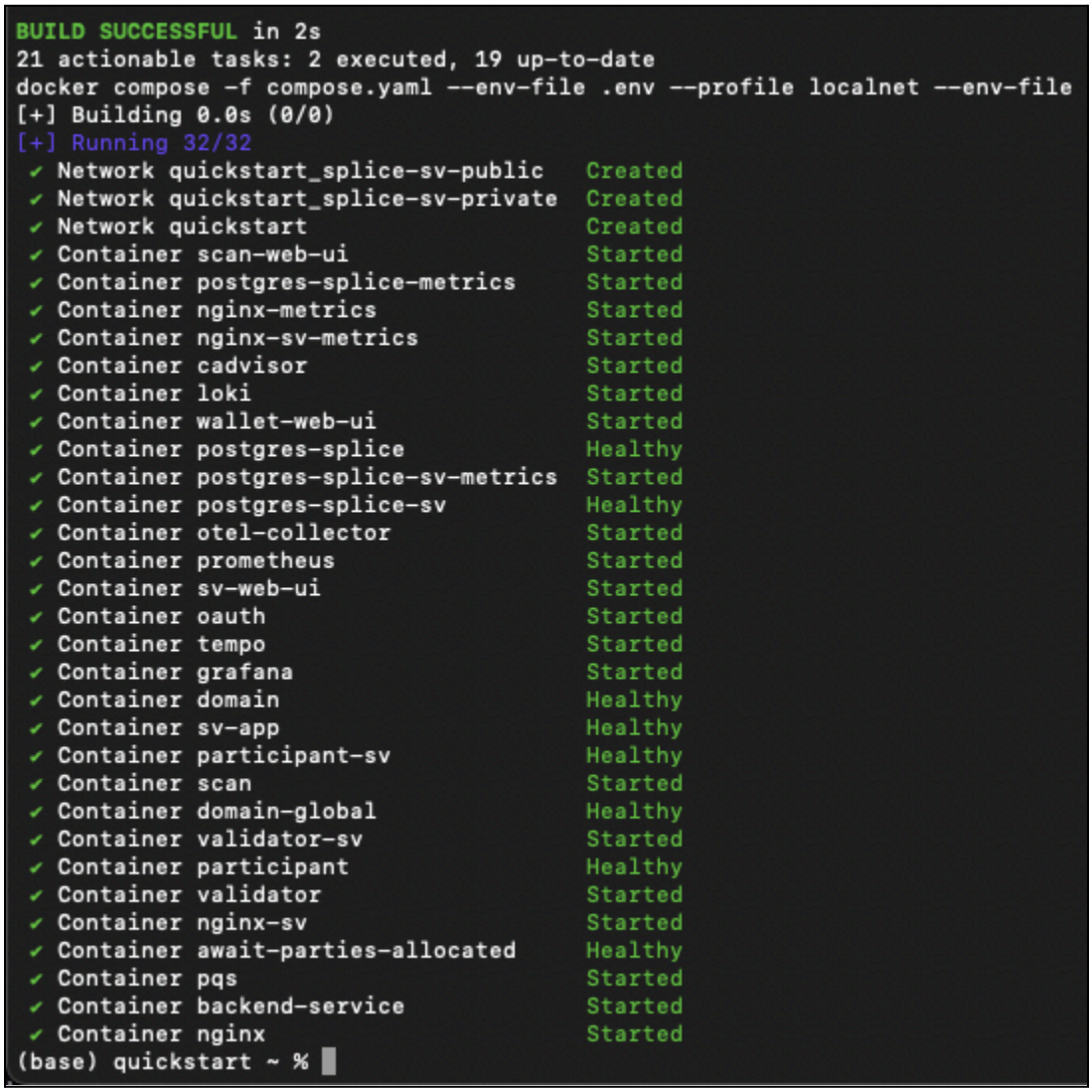
```
./gradlew configureProfiles --no-daemon --console=plain --quiet
Enable LocalNet? (Y/n): Y
  LOCALNET_ENABLED set to 'true'.

Enable Observability? (Y/n): Y
  OBSERVABILITY_ENABLED set to 'true'.

.env.local updated successfully.
Environment updated. Please re-run make start.
(base) quickstart ~ % make start
```

If prompted to re-run `make start`, do so.

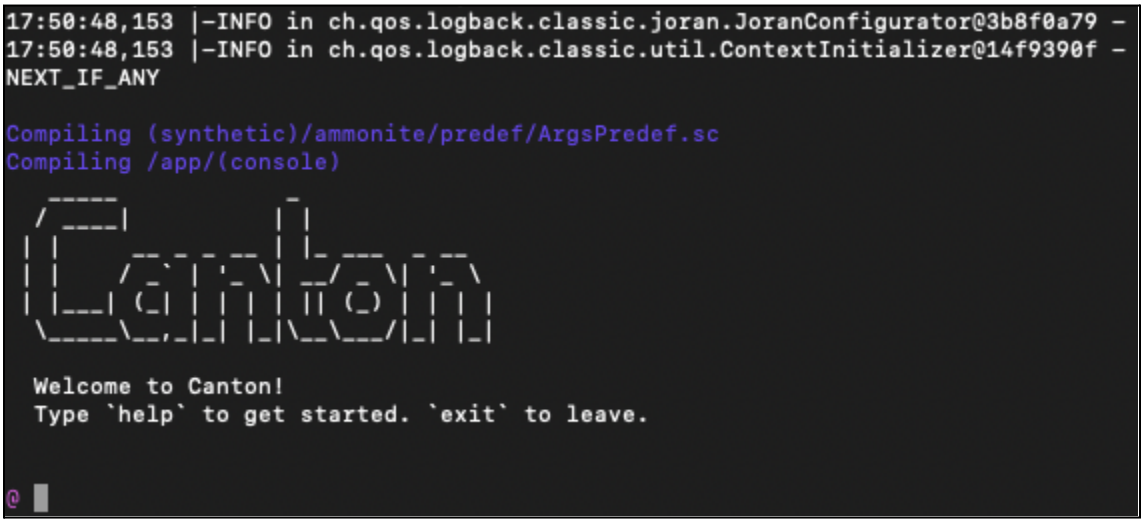
```
make start
```



> `make start` initiates the `LocalNet` containers, which can be computationally demanding. If you see unhealthy containers or error containers on make start try to increase RAM access to Docker to at least 32GB.

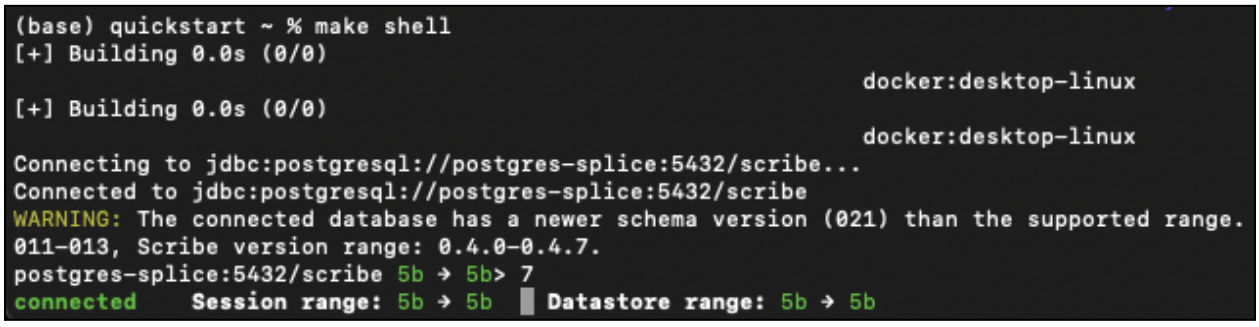
In a separate shell, from the quickstart subdirectory, run the Canton Console.

```
make console
```



In a third shell, from the quickstart subdirectory, begin the Daml Shell.

```
make shell
```



Closing the Application

(If you plan on immediately using the CN-QS then delay execution of this section)

Close Canton Console

When complete, open the Canton console terminal. Run `exit` to stop and remove the console container.

Close Daml Shell

In the Daml Shell terminal, execute `quit` to stop the Shell container.

Close the CN-QS

Finally, close the application and observability services with `make stop` followed by `make clean-all`. This avoids conflict errors on subsequent application builds.

Next Steps

You have successfully installed the CN-QS. The next section, “Exploring The Demo,” provides a demonstration of the application in `LocalNet` and `DevNet` environments.

Resources

Curl
Direnv
Docker Desktop
Docker Hub
GSF List of SV Nodes
JFrog CN Artifactory
Nix
Quickstart GitHub Repository
Validator Onboarding Documentation
WSL 2