Common eXist-db / TEI-Publisher Deployment Scenarios - Workshop Overview

- Rough overview of eXist-db / TEI-Publisher
- Deployment of eXist-db / TEI-Publisher for
  - Editors
  - Developers
  - System Administrators
- Differentiation
  - This workshop can’t cover all possible deployment scenarios of eXist-db / TEI-Publisher thus we will concentrate on the ones which are most common from our perspective.
Vitamins for your Applications

Try the all-in-one solution for application building.

eXist-db is Open Source Software licensed under the LGPL

Download eXist-db
Common eXist-db / TEI-Publisher Deployment Scenarios - eXist-db

- Open Source **XML database and more**
- Runs on any system Java runs on (Linux, Unix, MacOS, Windows)
- **Minimal Prerequisites**
  - Java (min. Version 8)
  - 200Mb disk space
  - 512Mb RAM
Common eXist-db / TEI-Publisher Deployment Scenarios - TEI Publisher

- Open Source Instant Publishing Toolbox
- based on Open Source and Open Standards
  - mainly written in W3C XQuery and W3C Web Components
- requires eXist-db XML database
  - TEI Publisher 6 requires minimum eXist-db 5.0.0
O Sieur Moi

1. Un belle chose qu’un seul d’homme
Jusqu’à la fin n’existé de sa manière.
Le fruit est passé sur la terre entière.
La belle chose qu’un seul d’homme
Relatie : 
Mais un seul qu’un seul d’homme
Un seul d’homme est sur sa manière.
Sa flamme est sur sa manière.
Et il est seul d’homme en ses yeux.

2. La belle chose qu’un seul d’homme
Par les êtes d’homme
Les sortiront de
La belle chose.

3. La belle chose
Tant l’homme
Dans l’homme
La belle chose qu’un seul d’homme

Photo by Clément Falize on Unsplash
Common eXist-db / TEI-Publisher Deployment Scenarios - Editors - Docker

- **Docker**: the easiest way to run eXist-db / TEI Publisher
- **Download**, install and run **Docker**
- Download TEI Publisher docker image
  - docker pull existdb/teipublisher:latest
- Initial Startup of the TEI Publisher docker image
  - docker run -p 8081:8080 -p 8444:8443 -v exist-data:/exist-data --name teipublisher existdb/teipublisher:latest
Common eXist-db / TEI-Publisher Deployment Scenarios - Editors - Docker

- `docker stop teipublisher` | stop the container
- `docker start teipublisher` | start the container
- `docker logs teipublisher` | show exist.log
- `docker container ps -a` | Lists all running and stopped containers
- `docker cp teipublisher:/exist-data .` | Copy the contents of the database data volume to the current directory (.) on local disk
- [More information](#) about TEI Publisher Docker images and list of available TEI Publisher images.
Download

All versions of eXist-db are Open Source and may be used in academic, non-commercial and commercial applications.

Community

If you'd like to contribute, ask questions or are looking for the sourcecode please see our github page for details.
Common eXist-db / TEI-Publisher Deployment Scenarios - Editors - install eXist-db

- **Download eXist-db release**
  - MacOS: .dmg
  - Windows: -win.zip
  - All operating systems (OS): .jar

- Double-Click or run in console
  - java -jar exist-installer-5.2.0.jar

- Follow the installation instructions
Common eXist-db / TEI-Publisher Deployment Scenarios - Editors - install TEI Publisher

● **Startup eXist-db**
  ○ **Windows, Linux**: use the eXist-db start menu item or desktop icon
  ○ **Mac OS**, double-click the eXist-db.app icon inside the folder in which eXist-db is installed.
  ○ **Alternative 1 for all OS**: step into eXist-db installation directory and either
    ■ double-click on start.jar or
    ■ call "java -jar start.jar" on a command line.
  ○ **Alternative 2 for all OS**: step into eXist-db installation directory and in the command line run
    ■ bin/launcher.sh (Linux, Mac OS)
    ■ bin\launcher.bat (Windows)
● Click on the “Available” tab, scroll to “TEI Publisher” and click on the arrow down symbol.
It seems you are starting eXist-db for the first time. Please configure your memory settings below.

**After startup, use dashboard or Java client to set a password for admin (empty by default).**

### Java Memory

Memory usage: 102 free/3641 max mb

- **Min Memory**: 64
- **Max Memory**: 2.048

Memory settings only become effective after restart and only apply when eXist-db is started via the system tray launcher.

### Caches

- **General Cache**: 256
- **Collection Cache**: 64

Total cache size should not exceed 1/3 of max memory unless you have more than 2GB available. These sizes are in megabytes.

### Data Directory

- **Application Support/org.exist**: Select

Changing the data directory will create an empty database in the new location (unless there's already data in it).

### Jetty Ports

- **HTTP Port**: 8080
- **SSL Port**: 8443

Set the ports used by the integrated web server. Please make sure those ports are not used by other processes.

**Save**
<table>
<thead>
<tr>
<th>Package Name</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tambooli Metadata Framework</td>
<td>1.1.4</td>
</tr>
<tr>
<td>TEI Processing Model Toolbox</td>
<td>1.1.4</td>
</tr>
<tr>
<td>TEI Publisher</td>
<td>6.0.0</td>
</tr>
<tr>
<td>TEI Publisher: Processing Model Libraries</td>
<td>2.8.8</td>
</tr>
<tr>
<td>teian, xml annotator</td>
<td></td>
</tr>
<tr>
<td>Transformations from docx to TEI</td>
<td></td>
</tr>
</tbody>
</table>

**Available (60)**

**Installed (7)**

**Dashboard**

- Launcher
- Package Manager
- User Manager
- Backup
- Settings
- Logout admin

**URL:** [http://localhost:8080/exist/apps/dashboard/admin#/packagemanager](http://localhost:8080/exist/apps/dashboard/admin#/packagemanager)
http://localhost:8080/exist/apps/dashboard/
Diese Anwendung dient vorrangig zum Experimentieren mit verschiedenen Dokumenten und deren Transformationen über das TEI Processing Model. Es können eigene Dateien hochgeladen und neue ODDs erstellt werden.

Anmelden zum Hochladen eigener Dateien oder Zugriff auf administrative Funktionen (Standardnutzer: 'tei-demo', Passwort: 'demo').

TEI Publisher Beispielsammlung
Dokumente zur Demonstration diverser Features. Die Auswahl ist in keiner Weise erschöpfend, sondern zeigt nur einen kleinen Ausschnitt des Möglichen. Weitere Beispiele sind jederzeit willkommen!

Spielwiese
Eine beschreibbare Sammlung zum Hochladen eigener Dokumente

Dokumentation
Dokumentation, verfasst in Docbook XML.

http://localhost:8080/exist/apps/tei-publisher
● Further options to install and run eXist-db
  ○ **eXist-db Homebrew Formulae** on Mac OS
    ■ `brew cask install exist-db`
  ○ Advanced Installation
    ■ Headless Installation
    ■ running eXist-db as a service
    ■ see [https://exist-db.org/exist/apps/doc/advanced-installation](https://exist-db.org/exist/apps/doc/advanced-installation)
  ○ **Nightly Builds** - Use at your own risk
eXist-db / TEI Publisher for Developers

Photo by NESA by Makers on Unsplash
Common eXist-db / TEI-Publisher Deployment Scenarios - Developers

- eXist-db / TEI Publisher are both constantly being further developed

- Example 1: Feature “Facets based document filtering”
  - developed for and introduced with TEI Publisher 5 in August 2019
  - Required eXist-db 5.0.0 RC8 or newer

- Example 2: Known eXist-db / TEI Publisher issue gets fixed but there is no new release available yet
Common eXist-db / TEI-Publisher Deployment Scenarios - Developers: TEI Publisher

Commits on Aug 28, 2020

docs(pb-custom-form) add a sample form to be used in pb-browse-docs d...

- tuurma committed yesterday

Commits on Aug 18, 2020

fix(autocomplete) adjust indexes to avoid duplicates between tei- and...

- tuurma committed 11 days ago

Fix: autocomplete for browse page always returned suggestions for tit...

- wolfgangmm committed 11 days ago
Common eXist-db / TEI-Publisher Deployment Scenarios - Developers: TEI Publisher

- **Prerequisites**
  - Git
  - Java
  - Apache Ant

- **open console**
  - `git clone https://github.com/eeditiones/tei-publisher-app.git`
  - step into cloned tei-publisher-app folder and run: `ant`

- **open eXist-db packagemanager**, click “Upload” and select $tei-publisher-app/build/tei-publisher-6.0.0.xar
Common eXist-db / TEI-Publisher Deployment Scenarios - **Developers: TEI Publisher**

```
Last login: Sat Sep  5 14:44:20 on ttys003
$ workspace git clone https://github.com/editiones/tei-publisher-app.git
Cloning into 'tei-publisher-app'...
remote: Counting objects: 100% (160/160), done.
remote: Compressing objects: 100% (58/58), done.
remote: Total 19515 (delta 107), reused 148 (delta 102), pack-reused 19355
Receiving objects: 100% (19515/19515), 91.11 MiB | 4.64 MiB/s, done.
Resolving deltas: 100% (13044/13044), done.
$ workspace cd tei-publisher-app
$ tei-publisher-app git:(master) ant
Buildfile: /Users/windauer/workspace/tei-publisher-app/build.xml

xar:
  [mkdir] Created dir: /Users/windauer/workspace/tei-publisher-app/build
  [zip] Building zip: /Users/windauer/workspace/tei-publisher-app/build/tei-publisher-6.0.0.xar

all:

BUILD SUCCESSFUL
Total time: 1 second
$ tei-publisher-app git:(master) ls -l build/
total 52016
-rw-r--r-- 1 windauer staff 25752968 Sep  5 14:57 tei-publisher-6.0.0.xar
$ tei-publisher-app git:(master)
```
Common eXist-db / TEI-Publisher Deployment Scenarios - Developers: TEI Publisher

- TEI Publisher requires **pb-components** package which is loaded from an external server (CDN).
- Use self-hosted pb-components to run TEI Publisher offline or to use not yet released versions of it. You will need **Node.js**.
- In tei-publisher-app
  - check path to npm in `build.properties.xml`
  - edit the dependencies section of `package.json`
to include the desired version of the `pb-components` library
  - run `npm install` to install dependencies
  - edit `modules/config.xqm` and change the variable `$config:webcomponents` to 'local'
  - run Apache ant `xar-local`
  - deploy created `.xar` file via eXist-db Packagmanager
Common eXist-db / TEI-Publisher Deployment Scenarios - Developers: TEI Publisher

### Development Scenario

```sh
$ tei-publisher-app
git:(master) ant xar-local
```

Buildfile: /Users/windauer/workspace/tei-publisher-app/build.xml

```sh
npm install:
  [echo] @vaadin/vaadin-usage-statistics@2.1.0 postinstall
  /Users/windauer/workspace/tei-publisher-app/node_modules/@vaadin/vaadin-usage-statistics
  [echo] node check.js
  [echo] Vaadin collects development time usage statistics to improve this product.
  To opt-out, either run:
  [echo] npm explore @vaadin/vaadin-usage-statistics -- npm run disable
  [echo] to store disable statistics for the machine, or add
  [echo] "vaadin": { "disableUsageStatistics": true }
  [echo] to the project package.json and re-run npm install to disable statistics
  for the project.
  [echo] For more details, see https://github.com/vaadin/vaadin-usage-statistics
  [echo] added 101 packages from 910 contributors and audited 101 packages in 3.264s
  [echo] 2 packages are looking for funding
  [echo] run `npm fund` for details
  [echo] found 0 vulnerabilities

prepare:
  [copy] Copying 11 files to /Users/windauer/workspace/tei-publisher-app/resources/scripts
  [copy] Copying 1 file to /Users/windauer/workspace/tei-publisher-app/resources/css/leaflet
  [copy] Copying 5 files to /Users/windauer/workspace/tei-publisher-app/resources/images/leaflet
  [copy] Copying 48 files to /Users/windauer/workspace/tei-publisher-app/resources/images/openseadragon
  [copy] Copying 1 file to /Users/windauer/workspace/tei-publisher-app/resources/lib
  [copy] Copying 8 files to /Users/windauer/workspace/tei-publisher-app/resources/css/prism.js
  [copy] Copying 24 files to /Users/windauer/workspace/tei-publisher-app/resources/lib8n/common

xar:
  [zip] Building zip: /Users/windauer/workspace/tei-publisher-app/build/tei-publisher-6.0.0.xar

xar-local:

BUILD SUCCESSFUL
Total time: 6 seconds
Prerequisites
- Git
- Apache Maven

Building eXist-db from Source
- `git clone https://github.com/eXist-db/exist.git`
- `cd exist`
- `git checkout master`
- `mvn -DskipTests package`
- Creates various artifacts
  - Compiled eXist-db version in `exist-distribution/target`
  - eXist-db installer in `exist-installer/target`

More Build Options
Common eXist-db / TEI-Publisher Deployment Scenarios - Developers: eXist-db from source

- Content of $EXIST_HOME/exist-distribution/target
  - exisit-db-5.3.0-SNAPSHOT.dmg - Apple Disk Image
  - exist-distribution-5.3.0-SNAPSHOT-dir - unpacked eXist-db
  - exist-distribution-5.3.0-SNAPSHOT-unix.tar.bz2 - Unix / Linux Package
  - exist-distribution-5.3.0-SNAPSHOT-win.zip - Zipped for Windows
  - exist-distribution-5.3.0-SNAPSHOT.app - MacOS Application
- further resources in the exist-distribution folder that can be ignored: archive-tmp, dependency-maven-plugin-markers, expath-pkgs

```bash
+ eXistdb-dev git:(develop) ls -l exist-distribution/target
total 1073872
-rw-r--r-- 1 windauer staff 177565351 Sep  5 15:42 eXist-db-5.3.0-SNAPSHOT.dmg
drwxr-xr-x 10 windauer staff  320 Sep  5 15:41 exist-distribution-5.3.0-SNAPSHOT-dir
-rw-r--r-- 1 windauer staff 175797201 Sep  5 15:42 exist-distribution-5.3.0-SNAPSHOT-unix.tar.bz2
-rw-r--r-- 1 windauer staff 176043100 Sep  5 15:42 exist-distribution-5.3.0-SNAPSHOT-win.zip
drwxr-xr-x  3 windauer staff   96 Sep  5 15:41 exist-distribution-5.3.0-SNAPSHOT.app
```
Common eXist-db / TEI-Publisher Deployment Scenarios - Developers: eXist-db Branches

- **Main eXist-db Git Branches**
  - **develop** - the default Github branch, contains bug fixes and features of the next release
  - **master** - Releases branch

```
commit 3030a5725d295640aacf487b68d6a60f32119b67 (HEAD -> develop, upstream/develop, upstream/HEAD, origin/develop)
Merge: 5a0bf95870 ffa2003be9
Author: Adam Retter <adam.reter@googlemail.com>
Date:   Wed Sep 2 12:44:05 2020 +0200

  Merge pull request #3517 from eXist-db/dependabot/maven/commons-codec-commons-codec-1.15

Bump commons-codec from 1.14 to 1.15
```

```
commit c58d04edc45070e7738489dee072fccc863dc8b1b (HEAD -> master, tag: eXist-5.2.0, upstream/master, origin/master)
Author: Adam Retter <adam.reter@googlemail.com>
Date:   Thu Jan 23 13:36:09 2020 +0100

[maven-release-plugin] prepare release eXist-5.2.0
```
Bug fixes and new features are developed in forks

Example: Lucene-Facets

- add another `git remote` in your eXist-db clone
  ```bash
  git remote add wolfgang git@github.com:wolfgangmm/exist.git
  ```
- `git fetch --all` to fetch all available branches
- `git checkout -b <name> <remote>/<branch>`
  ```bash
  git checkout -b lucene-facets wolfgang/feature/lucene-facets
  ```
- Build and run eXist-db and described in previous slides
Common eXist-db / TEI-Publisher Deployment Scenarios - **Sys Admins**

- A lot of manual tasks remain:
  - setting eXist-db passwords (admin, ...)
  - installing apps like TEI-publisher from the UI
  - configuring eXist (memory, conf.xml, …)
  - preparing the server OS (service installation, file descriptors, …)

- This is repetitive and error-prone when handling multiple servers
  - identical eXist-db instances behind load balancer
  - sites with develop, proofing and production environments

- Ansible to the rescue!
Common eXist-db / TEI-Publisher Deployment Scenarios - Ansible

- **Tool for config management, application deployment and task automation**
  - Declaration of desired server state
  - Automated procedures to bring the server into desired state
    - tasks
    - playbooks
    - roles (for similar, parameterized instances of “things” like eXist-db)
  - existdb-ansible-role

- **Live session: from scratch to installed TEI-publisher: 1 command, 5 minutes**
  - bare Ubuntu 20.04 LTS given to us
  - for Ansible we need
    - SSH access
    - sudo rights to become root
    - python installed
We ran an Ansible playbook `mkserver` against host `existtest` which
- prepared the server including installation of some packages and our admin user
- optionally set up firewall, SSH protection and TLS certificates
- installed and configured an eXist-db instance
  - set up system (packages, users, utils, misc settings)
  - installed eXist from archive or source code
  - configured eXist-db
  - started eXist-db and run automatic deployment of distribution and custom packages
  - hardened eXist-db (passwords)
- set up monitoring agents for this host and instance
- set up an nginx frontend proxy for this eXist-db instance
Common eXist-db / TEI-Publisher Deployment Scenarios - **Ansible Takeaways**

- **Ansible “idempotency”**
  - (re-) running Ansible always creates the same server state
  - detect modifications or config discrepancies between hosts

- **Ansible “vault” as encrypted password store**
  - we use various passwords, keys and privacy tokens in Ansible tasks
  - these MUST NOT be stored in cleartext in config repositories
  - Ansible has builtin “vault” mechanism: AES256 encryption for private data
Common eXist-db / TEI-Publisher Deployment Scenarios - **Ansible Takeaways**

- We did not cover
  - multiple eXist-db installations on the same host
  - installation of eXist-db related software
    - ActiveMQ for replication
    - Cantaloupe IIIF server
    - Jenkins CI server
    - monitoring and performance testing tools
  - performance tuning

- Questions?
Common eXist-db / TEI-Publisher Deployment Scenarios - **Resources**

- **eXist-db**
  - Basic Installation
  - Advanced Installation Methods
  - Source Code, Releases, Mailing List, Slack Chat

- **TEI Publisher**
  - README with Installation Instructions and Documentation
  - Workshop by Wolfgang Meier covering installation and basic usage
  - Mailing List and Slack Chat by E-Editones

- **Ansible**
  - eXist-db Ansible Role

- **Contact us:**
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