Potential Architectures

M, Edward (Ed) Borasky

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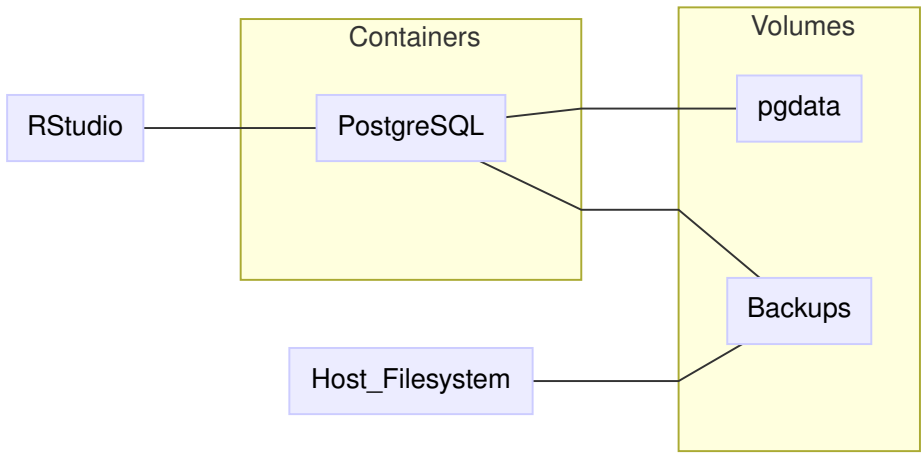
Small architecture

The simplest architecture we can possibly use has just one container, running PostgreSQL.

- We talk to the PostgreSQL container for data analysis from RStudio on the host, using the `DBI` and `RPostgres` packages.
- We talk to the PostgreSQL container for administration by building `docker exec` commands and executing them with `system2`.
- We either mount the `Backups` volume on the host filesystem or we copy files to and from `Backups` with `docker cp` commands wrapped with `system2`.

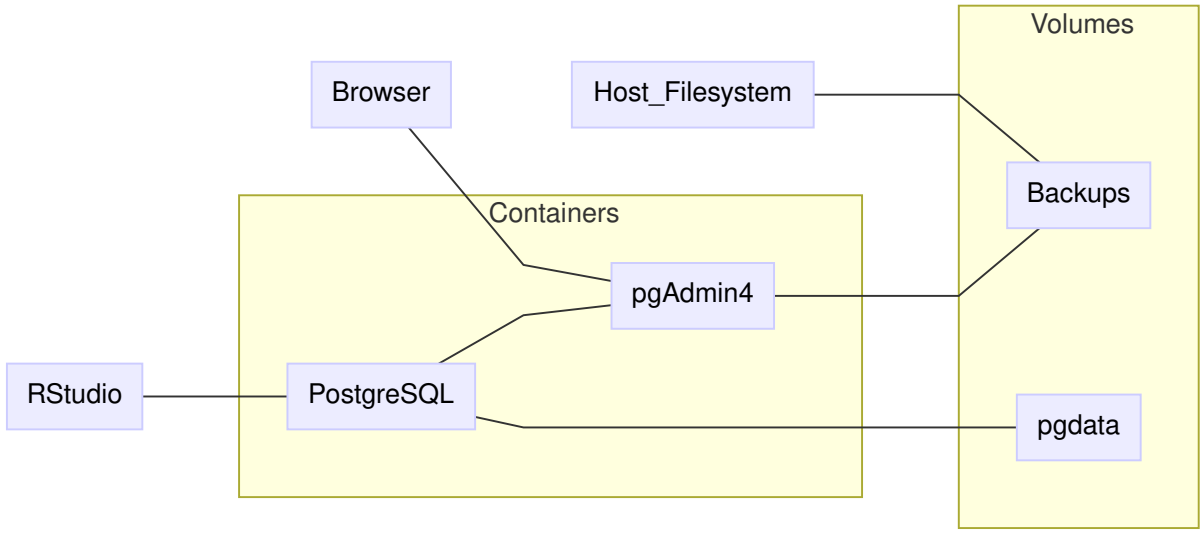
```
graph LR
   Host_Filesystem---Backups
   RStudio---PostgreSQL
   subgraph Containers
   PostgreSQL
   end
   subgraph Volumes
   PostgreSQL---pgdata
   PostgreSQL---Backups
   end
end
```



Medium architecture

The medium architecture adds a `pgAdmin4` container for administering the PostgreSQL server. We have the same workflow for backups, and we still do the data analysis with host RStudio, but we manage the server with a browser pointed at the `pgAdmin4` web service.

```
graph LR
    Host_Filesystem---Backups
    RStudio---PostgreSQL
    Browser---pgAdmin4
    subgraph Containers
    PostgreSQL---pgAdmin4
    end
    subgraph Volumes
    pgAdmin4---Backups
    PostgreSQL---pgdata
    end
end
```



Large architecture

In the large architecture, we add a `rocker/rstudio` container, thus creating a fully-containerized workflow. We talk to the containers via a browser only.

```
graph LR
    Host_Filesystem---Backups
    Browser---Rocker_RStudio
    Browser---pgAdmin4
    subgraph Containers
```

```
    PostgreSQL---pgAdmin4
    Rocker_RStudio---PostgreSQL
    end
    subgraph Volumes
    pgAdmin4---Backups
    PostgreSQL---pgdata
    end
end
```