Centralising Authorization in PostgreSQL

Experimenting with LDAP synchronization

Structure of this talk…

- A summary of my experience with implementing a simple form of Centralized Authorisation
- A step by step approach

Authentication versus Authorisation

PostgreSQL LDAP Authentication

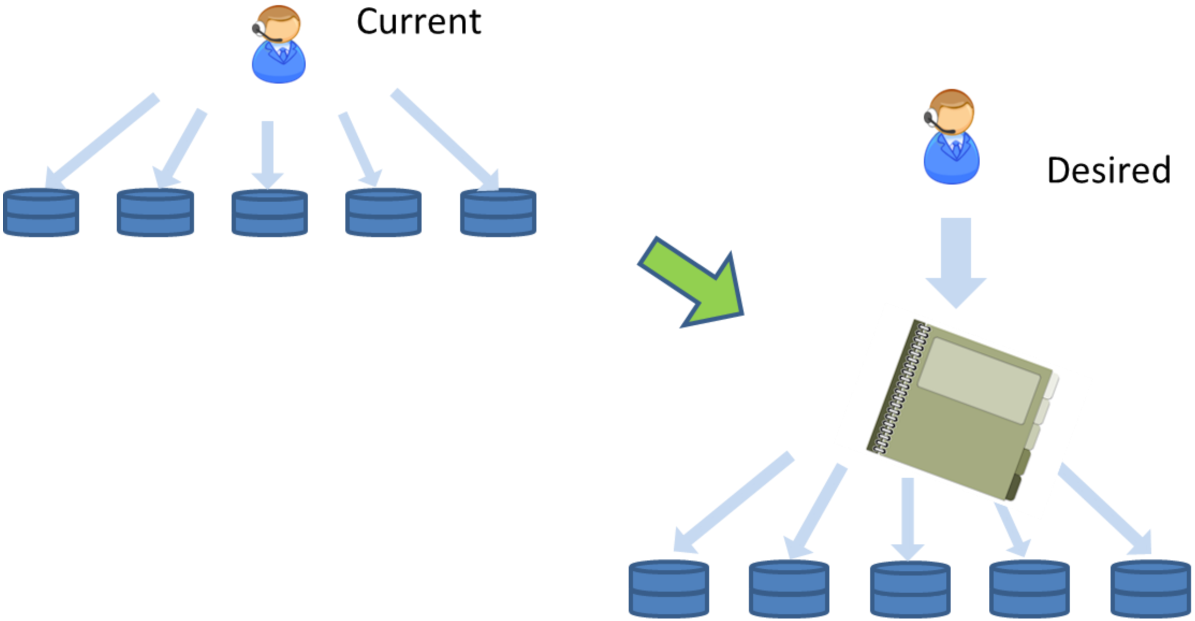
```
ldap ldapserver=servername.ad.company.au ldaptls=1
ldapbasedn="ou=AU,dc=ad,dc=company,dc=au" ldapbinddn="cn=Gary
Evans,ou=consultant,ou=ThirdParty Contractors,ou=Users,
ou=AU,dc=ad,dc=corelogic,dc=asia" ldapbindpasswd="<the password>"
ldapsearchattribute=sAMAccountName
```

Benefits of a centralized approach

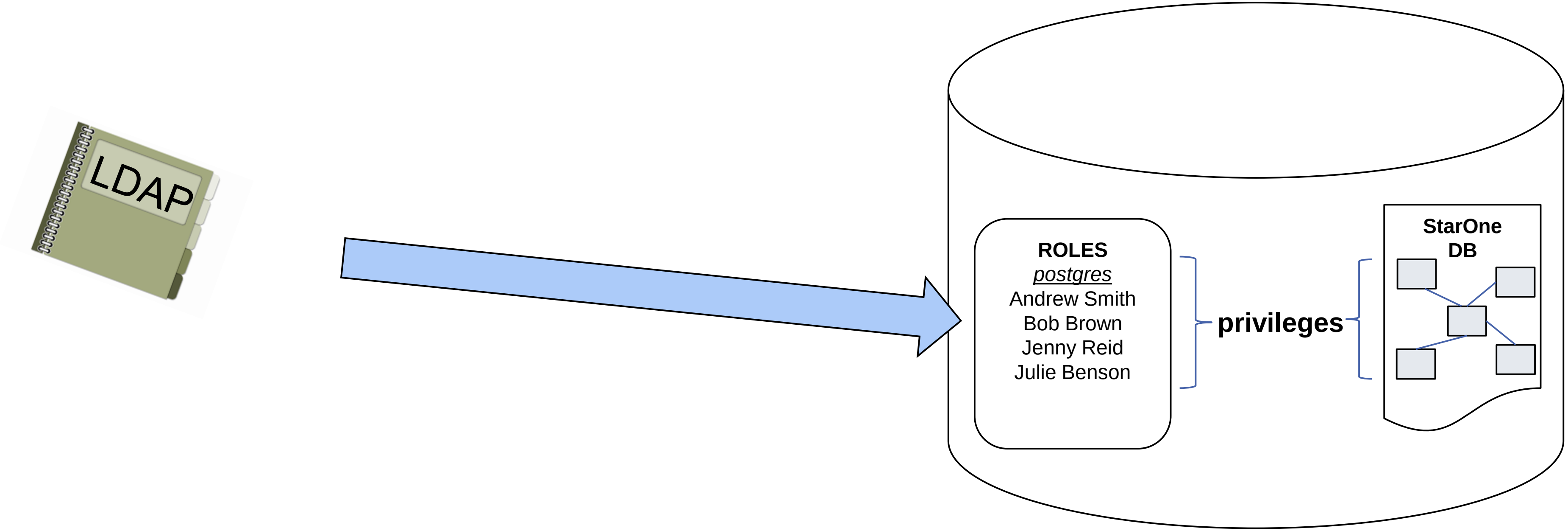
- Single point of control of database users

- Adding a user can be done by help desk

- Less error prone



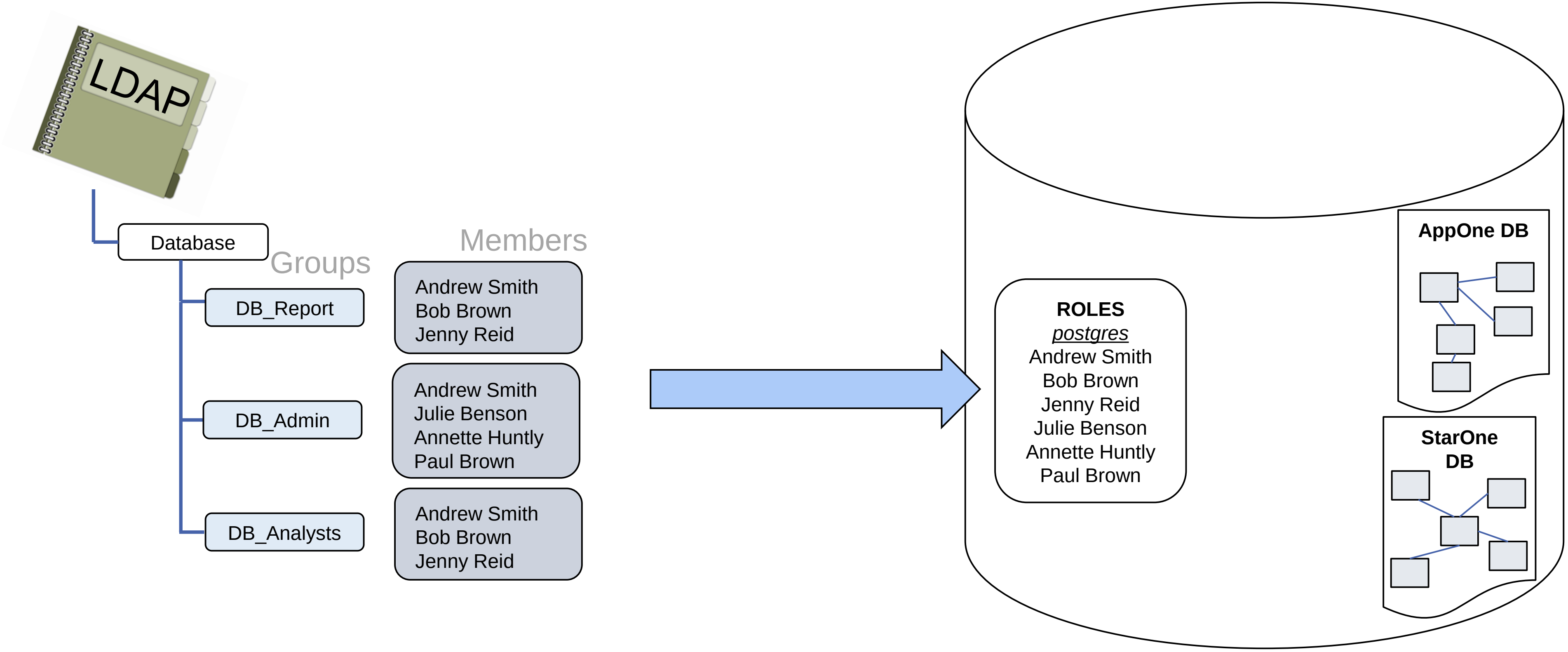
Synchronisation Approach



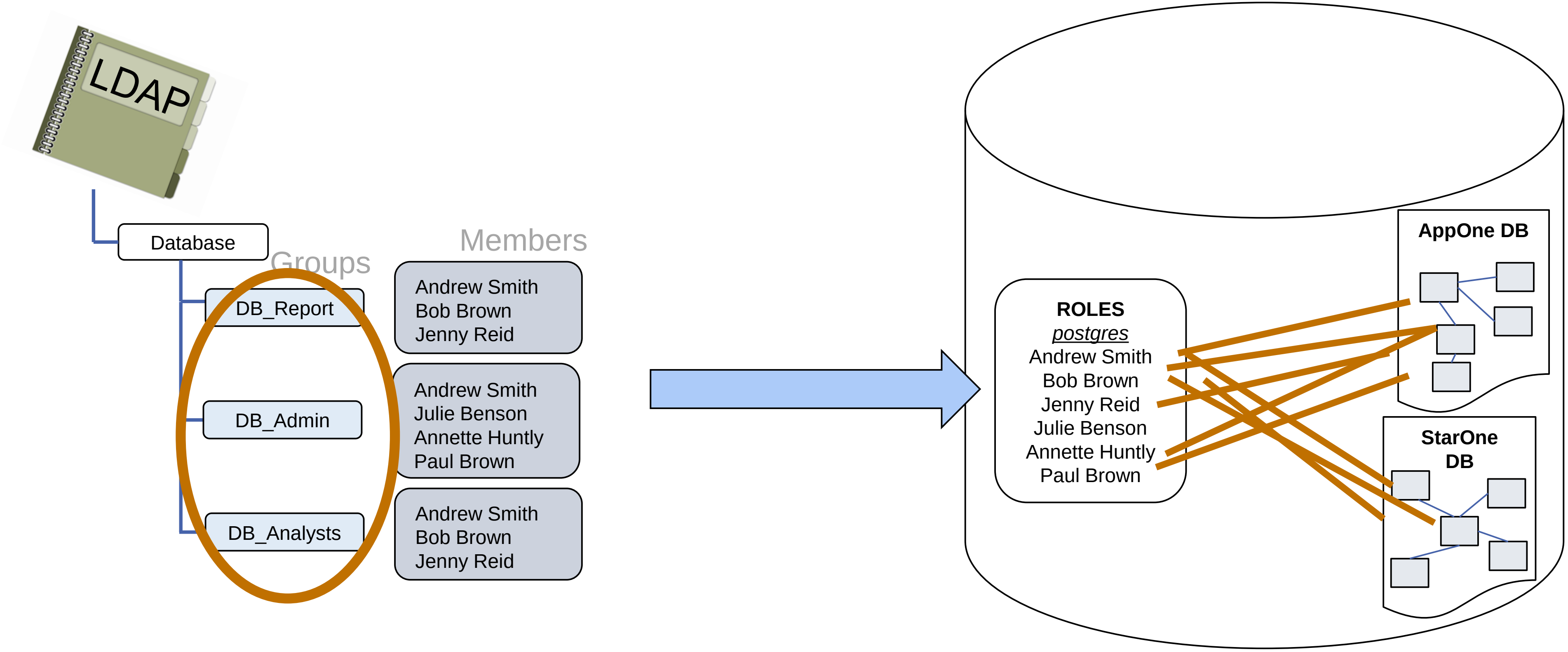
Synchronisation Approach

```
ldapsearch -Z -LLL -h ldapservername -D
gevans@ldapservername -w password
-b dc=ad,dc=companyname,dc=aus
'(&(objectClass=user)(memberOf=CN='"${ADRow[0]}"'
,OU=SQL,OU=Groups,OU=AU,DC=ad,DC=ccompany
name,DC=aus))' sAMAccountName |
sed -e 's/sAMAccountName: \([a-zA-Z]*\)/\1/;tx;d;:x'
```

Synchronisation Approach

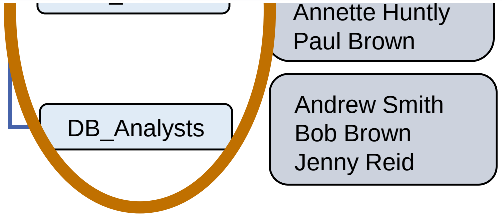


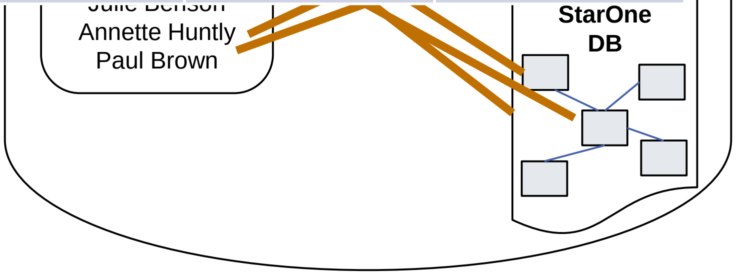
Synchronisation Approach



Synchronisation Approach

ID	Hostname	Dbname	ADGroup	Dbrole	Enabled	CRUD
1	Serverone	AppOne	DB_Report	Read_only	True	F,T,F,F
2	Serverone	StarOne	DB_Report	Reporting	True	F,T,T,F
3	Serverone	AppOne	DB_Admin	Admin_user	True	T,T,T,T
4	Serverone	StarOne	DB_Analysts	Analyst	True	F,T,F,F
5						





Synchronisation Approach

ID
1
2
3
4
5

```
${PSQL} ${DBMONITOR//HOST/localhost}/schemaname -qtAX --field-separator ' ' \
          -c "SELECT distinct adgroup FROM mapping WHERE enabled = true and hostname='${hostname}'" |
while read -a ADRow ; do

        for adname in $(ldapsearch -Z -LLL -h ldapservername -D gevans@ldapservername -w password -b
dc=ad,dc=companyname,dc=aus
'(&(objectClass=user)(memberOf=CN='"${ADRow[0]}"',OU=SQL,OU=Groups,OU=AU,DC=ad,DC=companyna
me,DC=aus))' sAMAccountName | sed -e 's/sAMAccountName: \([a-zA-Z]*\)/\1/;tx;d;:x')

        do
           ${PSQL} ${PGMONITOR//HOST/$hostname}/ schemaname -qtAX --field-separator ' '\
              -c "CREATE ROLE ${adname} with LOGIN;“

           ${PSQL} ${PGMONITOR//HOST/localhost}/ schemaname -qtAX --field-separator ' ' \
             -c "SELECT distinct dbrole FROM mapping where enabled = true and
                      hostname='${hostname}'" and adgroup = '${adname}' | while read -a DBRRow ; do

                   ${PSQL} ${PGMONITOR//HOST/$hostname}/performance -qtAX --field-separator ' '\
                        -c "GRANT ${DBRRow} TO ${adname};"

           done
```

Synchronisation Approach

ID
1
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```
${PSQL} ${DBMONITOR//HOST/localhost}/schemaname -qtAX --field-separator ' ' \
           -c "SELECT distinct adgroup FROM mapping WHERE enabled = true and hostname='${hostname}'" |
while read -a ADRow ; do

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dc=ad,dc=companyname,dc=aus
'(&(objectClass=user)(memberOf=CN='"${ADRow[0]}"',OU=SQL,OU=Groups,OU=AU,DC=ad,DC=ccompanyn
ame,DC=aus))' sAMAccountName | sed -e 's/sAMAccountName: \([a-zA-Z]*\)/\1/;tx;d;:x')

         do
            ${PSQL} ${PGMONITOR//HOST/$hostname}/ schemaname -qtAX --field-separator ' '\
               -c "CREATE ROLE ${adname} with LOGIN;“

            ${PSQL} ${PGMONITOR//HOST/localhost}/performance -qtAX --field-separator ' ' \
              -c "SELECT distinct dbrole FROM mapping where enabled = true and
                         hostname='${hostname}'" and adgroup = '${adname}' | while read -a DBRRow ; do

                       ${PSQL} ${PGMONITOR//HOST/$hostname}/ schemaname -qtAX --field-separator ' '\
                          -c "GRANT ${DBRRow} TO ${adname};"

            done
```
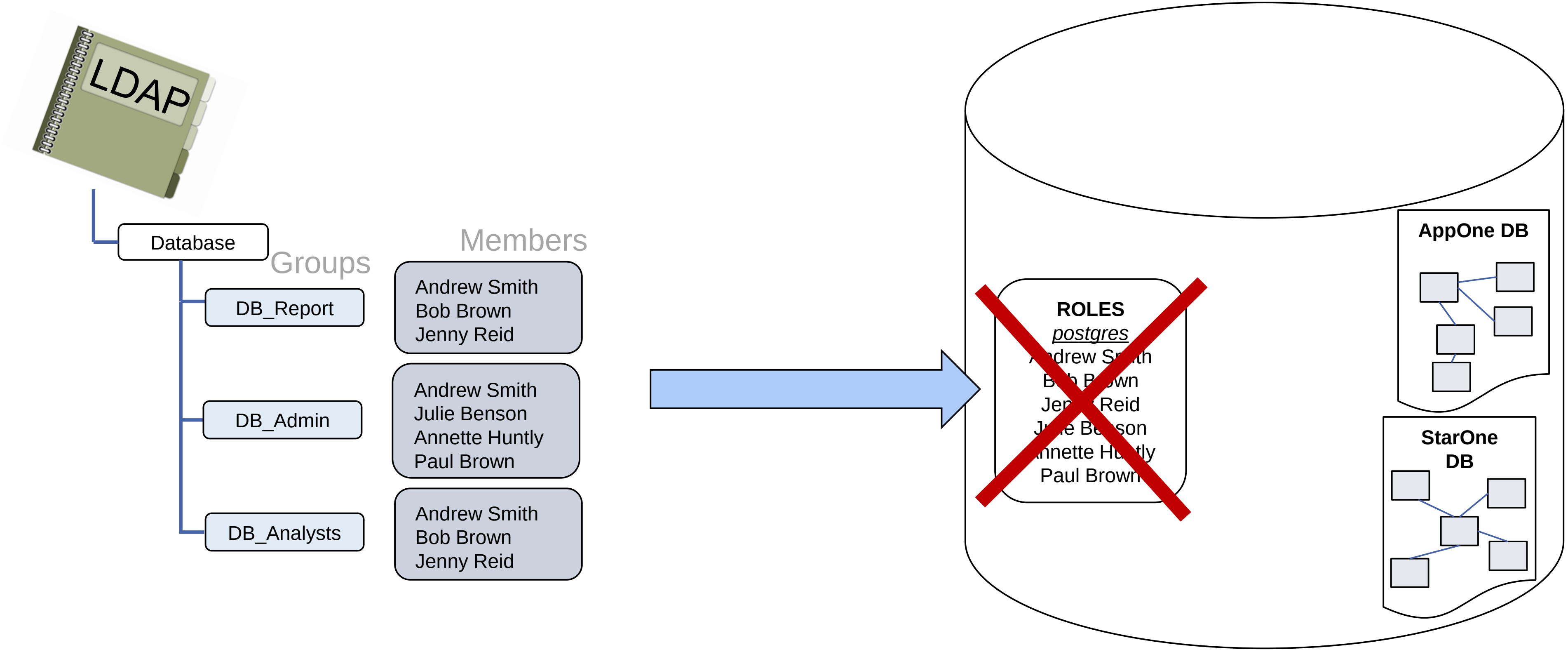
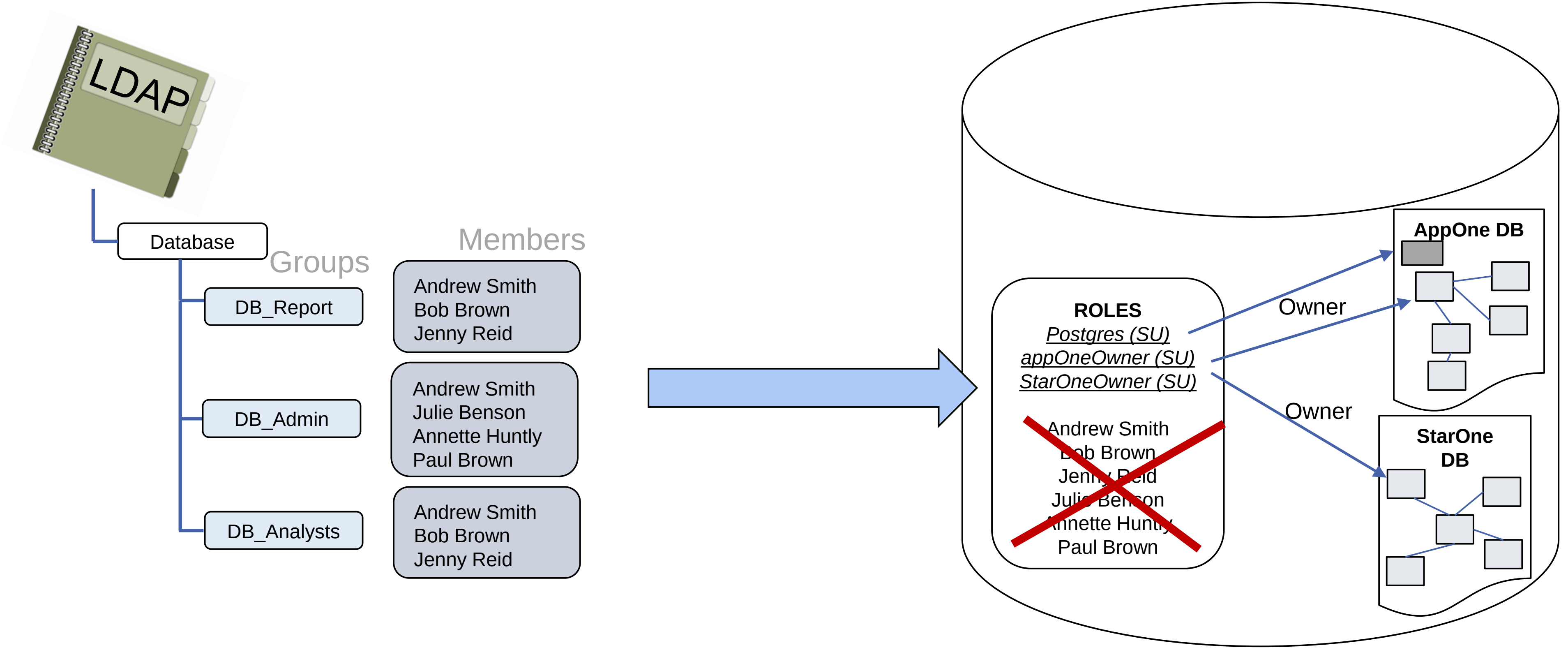
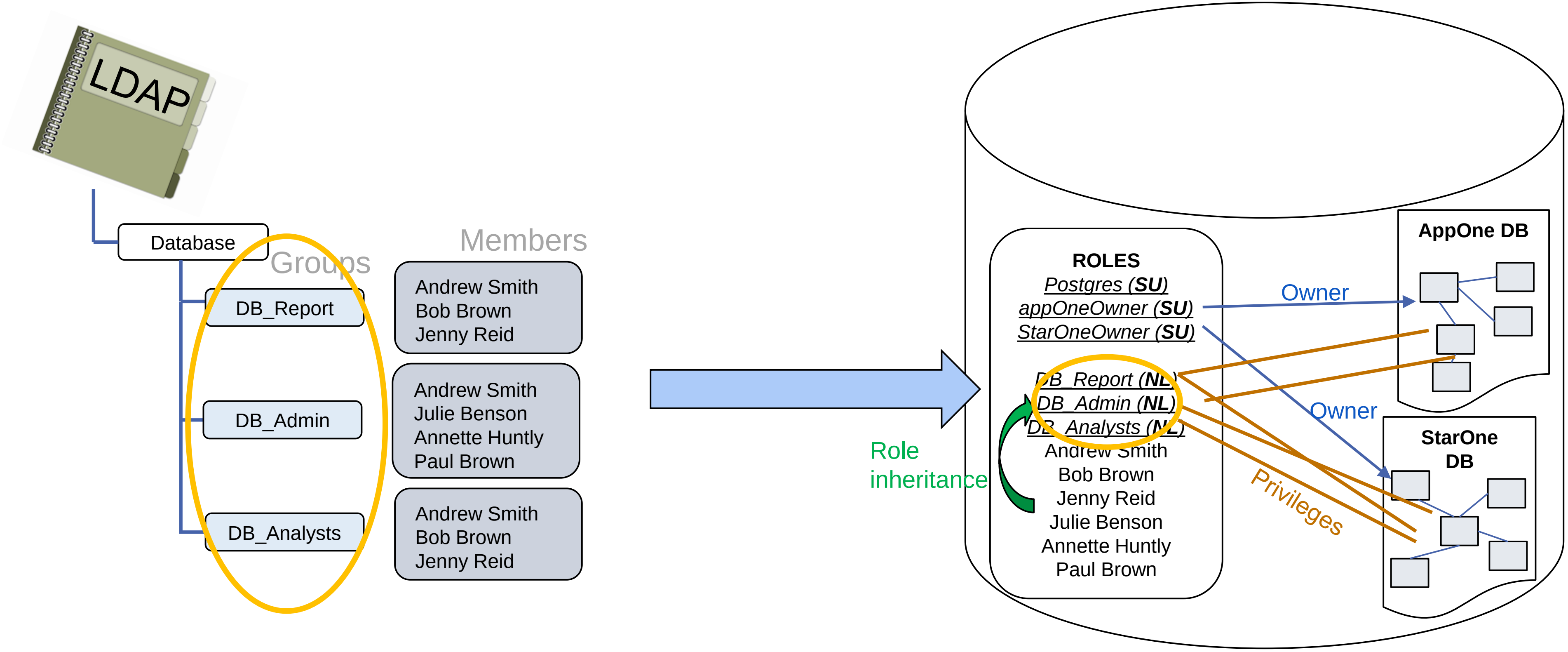

Synchronisation Approach



Synchronisation Approach



Synchronisation Approach



LDAP

Database

Groups

DB_Report

DB_Admin

DB_Analysts

Members

Andrew Smith
Bob Brown
Jenny Reid

Andrew Smith
Julie Benson
Annette Huntly
Paul Brown

Andrew Smith
Bob Brown
Jenny Reid

Role inheritance

ROLES

*Postgres (**SU**)*
*appOneOwner (**SU**)*
*StarOneOwner (**SU**)*

*DB_Report (**NL**)*
*DB_Admin (**NL**)*
*DB_Analysts (**NL**)*
Andrew Smith
Bob Brown
Jenny Reid
Julie Benson
Annette Huntly
Paul Brown

Owner

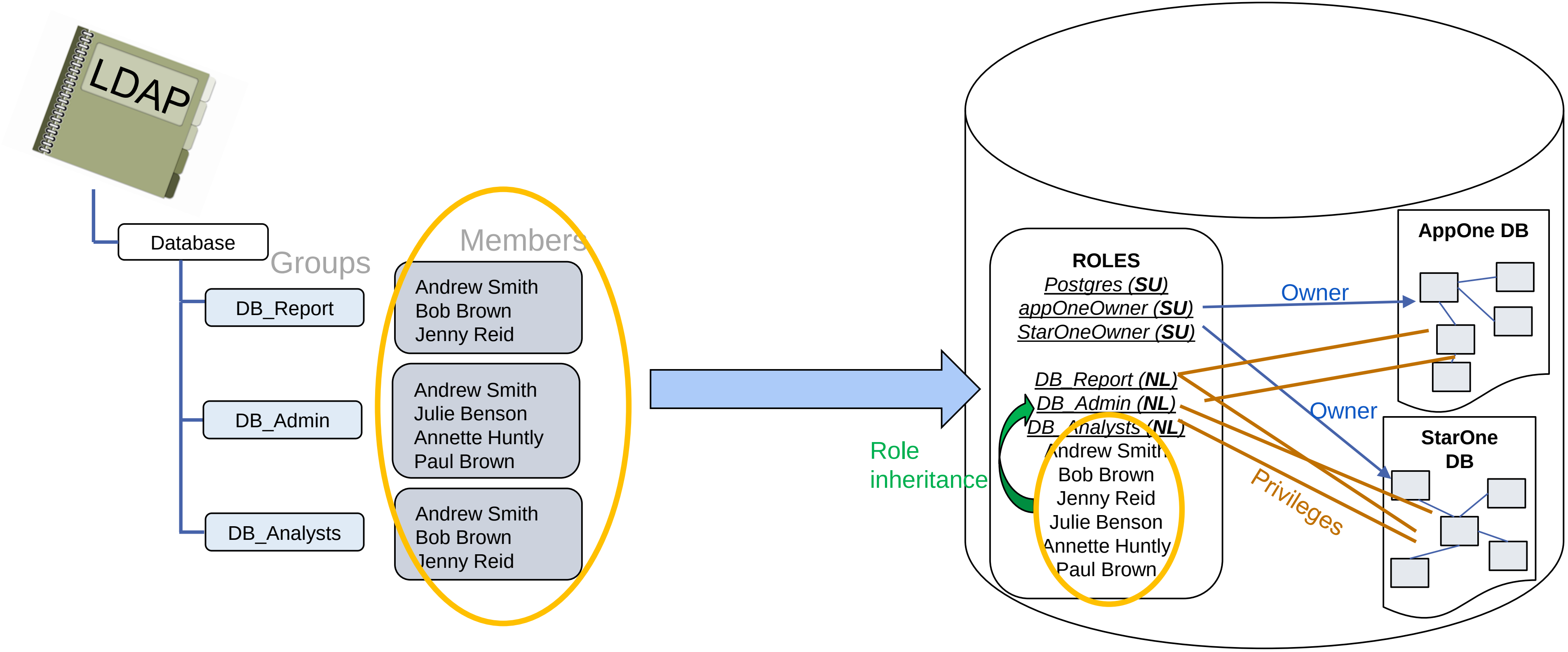
Owner

Privileges

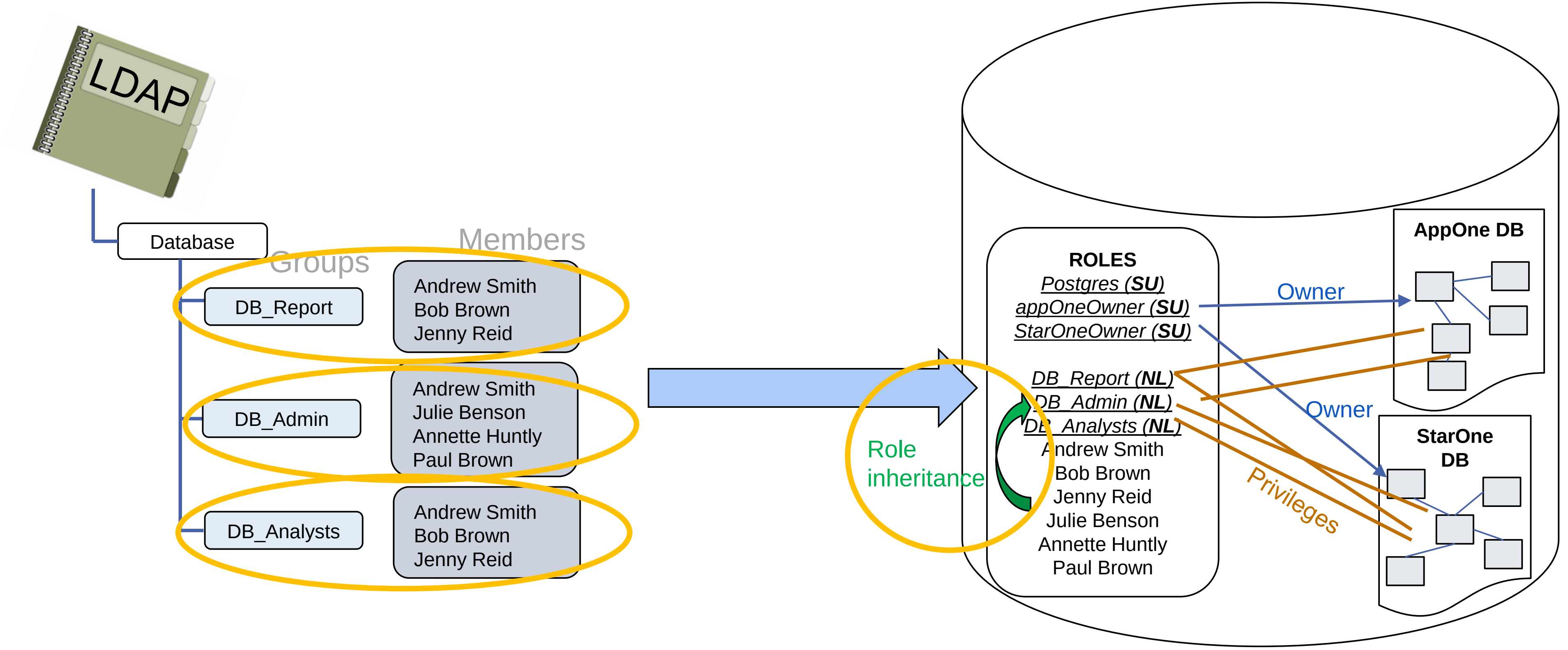
AppOne DB

StarOne DB

Synchronisation Approach

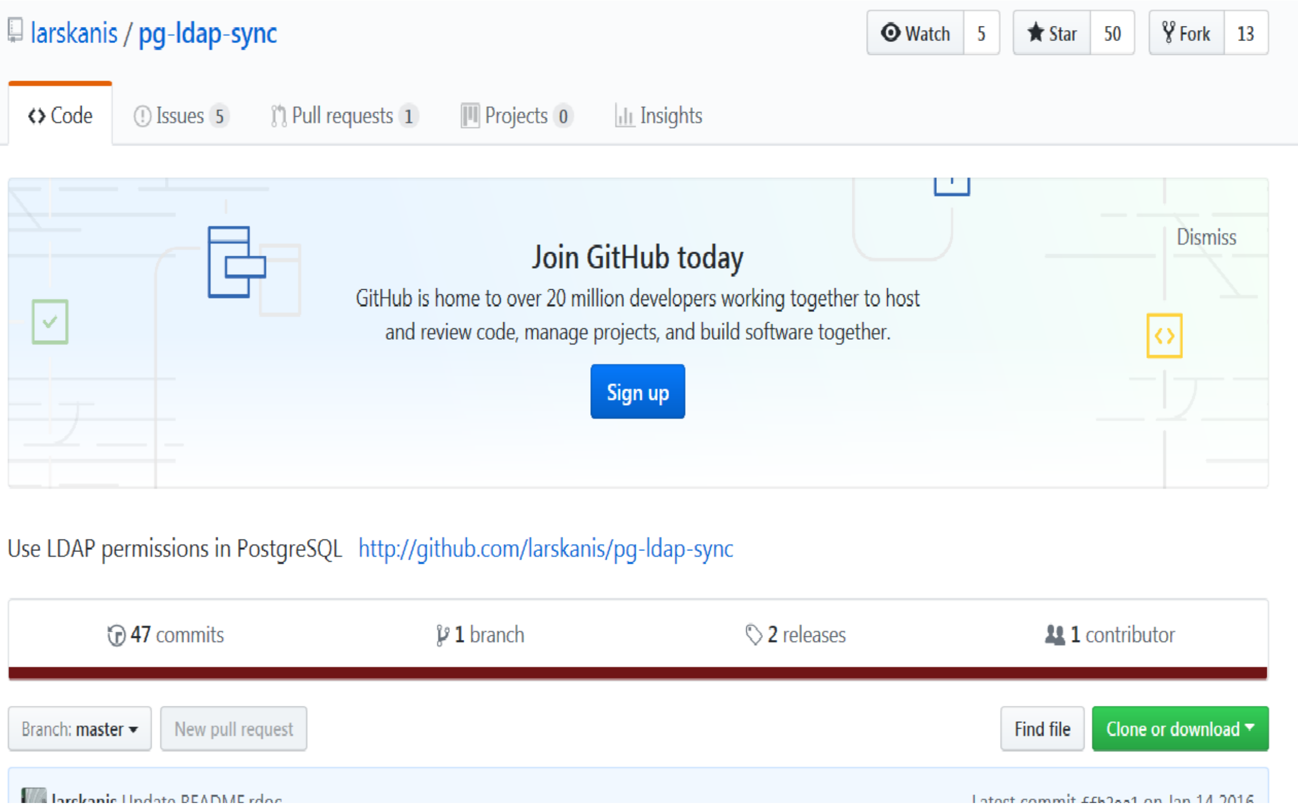


Synchronisation Approach



Existing tool

Pg-ldap-sync



larskanis / pg-ldap-sync

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Use LDAP permissions in PostgreSQL http://github.com/larskanis/pg-ldap-sync

47 commits | 1 branch | 2 releases | 1 contributor

larskanis Update README.rdoc Latest commit ffb2ea1 on Jan 14, 2016