

# LDAP

---

## **Lightweight Directory Access Protocol**

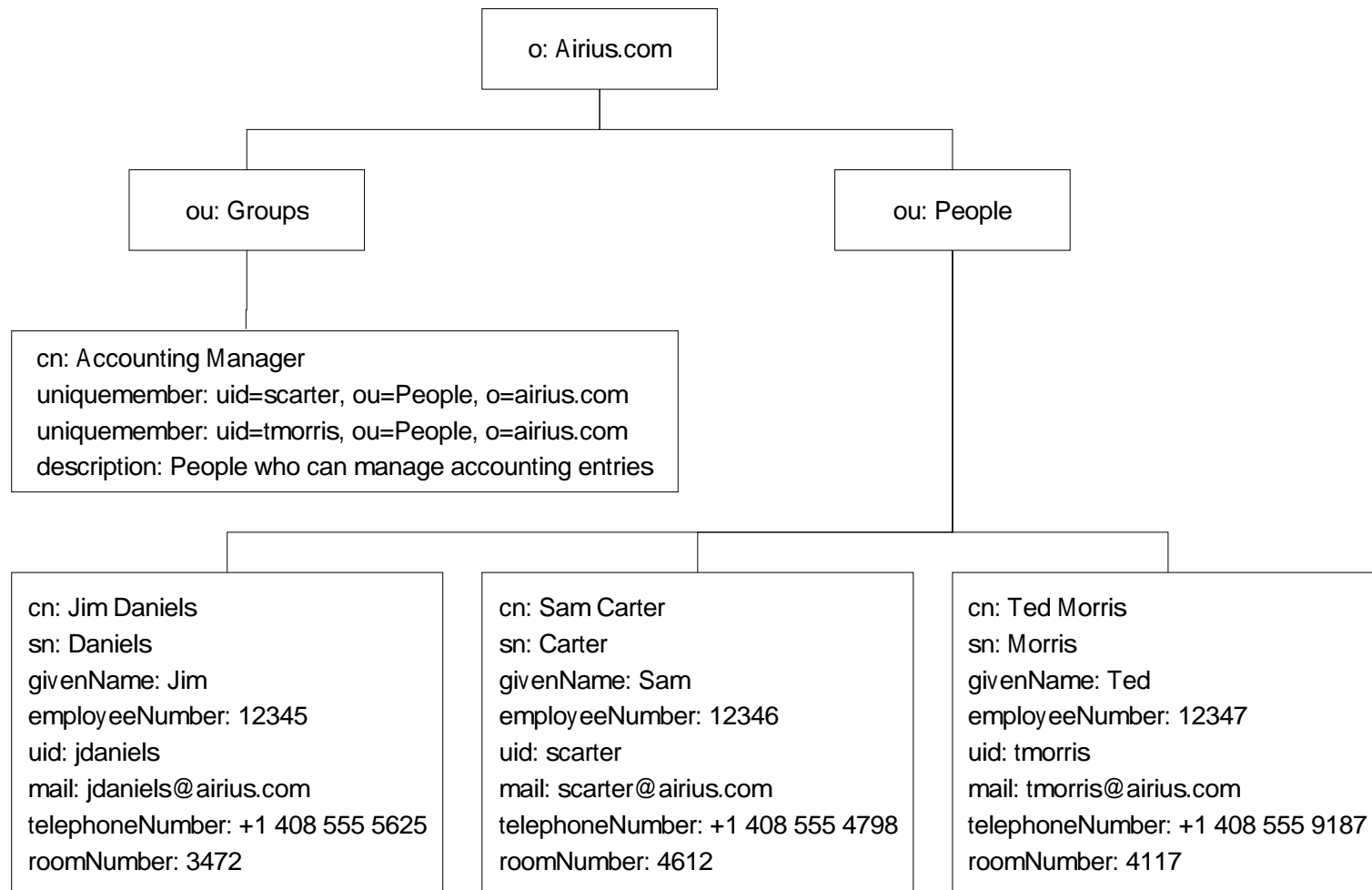
Bernhard R. Fiser, 0109815

[b.fiser@abenteuerland.at](mailto:b.fiser@abenteuerland.at)

2002/12/03, Version 1.0

# Einführung

## Directory Tree



# Einführung

## Relationenschema

### User table

<u>ID</u>	<u>EMP#</u>	<u>FULL NAME</u>	<u>LAST</u>	<u>FIRST</u> <u>uid</u>	<u>PHONE</u>	<u>EMAIL</u>	<u>ou</u>
<u>1</u>	<u>12345</u>	<u>Jim Daniels</u>	<u>Daniels</u>	<u>Jim</u> <u>jdaniels</u>	<u>+14085555625</u>	<u>jdaniels@airius.com</u>	<u>1</u>
<u>2</u>	<u>12346</u>	<u>Sam Carter</u>	<u>Carter</u>	<u>Sam</u> <u>scarter</u>	<u>+14085554798</u>	<u>scarter@airius.com</u>	<u>1</u>
<u>3</u>	<u>12347</u>	<u>Ted Morris</u>	<u>Morris</u>	<u>Ted</u> <u>tmorris</u>	<u>+14085559187</u>	<u>tmorris@airius.com</u>	<u>1</u>

### Organizational Unit table

<u>ID</u>	<u>NAME</u>	<u>ORGANIZATION</u>
<u>1</u>	<u>People</u>	<u>1</u>
<u>2</u>	<u>Groups</u>	<u>1</u>
<u>3</u>	<u>Accounting</u>	<u>2</u>

### Organization table

<u>ID</u>	<u>NAME</u>
<u>1</u>	<u>Airius.com</u>
<u>2</u>	<u>acme.com</u>

# LDAP Eigenschaften

---

- Schnellere, flexiblere Suchoperationen
- Standardisierte Schemas
- Gute Unterstützung von WAN-Protokollen
- Einfachere Serverkonfiguration

# RDMS Eigenschaften

---

- Bessere Optimierung für Schreibzugriffe
- Komplexe relationale Abfragen
- Transactions

# Geschichtliche Entwicklung

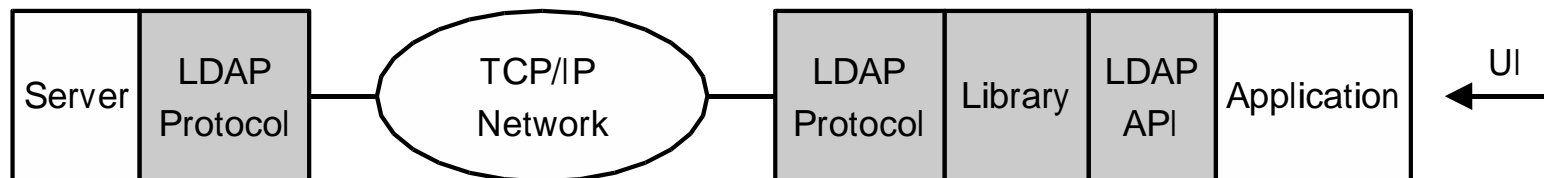
---

- Xerox Clearing House, 80's
- Internetdirectories, DNS, WHOIS
- NIS und NIS+
- NDS
- Active Directory
- X.500

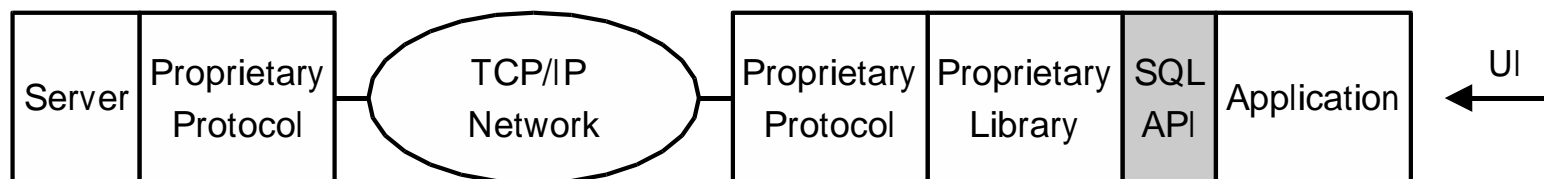
# Das Protokoll

- LDAPv3, RFC3377, Lightweight Directory Access Protocol (v3) Technical Specification. J. Hodges, R. Morgan. September 2002.

LDAP Directory:



Relational DBMS:



# LDAPv3 Schema

---

```
objectclass ( 2.16.840.1.113730.3.2.2
  NAME 'inetOrgPerson'
  DESC 'RFC2798: Internet Organizational Person'
  SUP organizationalPerson STRUCTURAL
  MAY (
    audio $ businessCategory $ carLicense $ departmentNumber $
    displayName $ employeeNumber $ employeeType $ givenName $
    homePhone $ homePostalAddress $ initials $ jpegPhoto $
    labeledURI $ mail $ manager $ mobile $ o $ pager $
    photo $ roomNumber $ secretary $ uid $ userCertificate $
    x500uniqueIdentifier $ preferredLanguage $
    userSMIMECertificate $ userPKCS12 ))
```



# Directory Entry

---

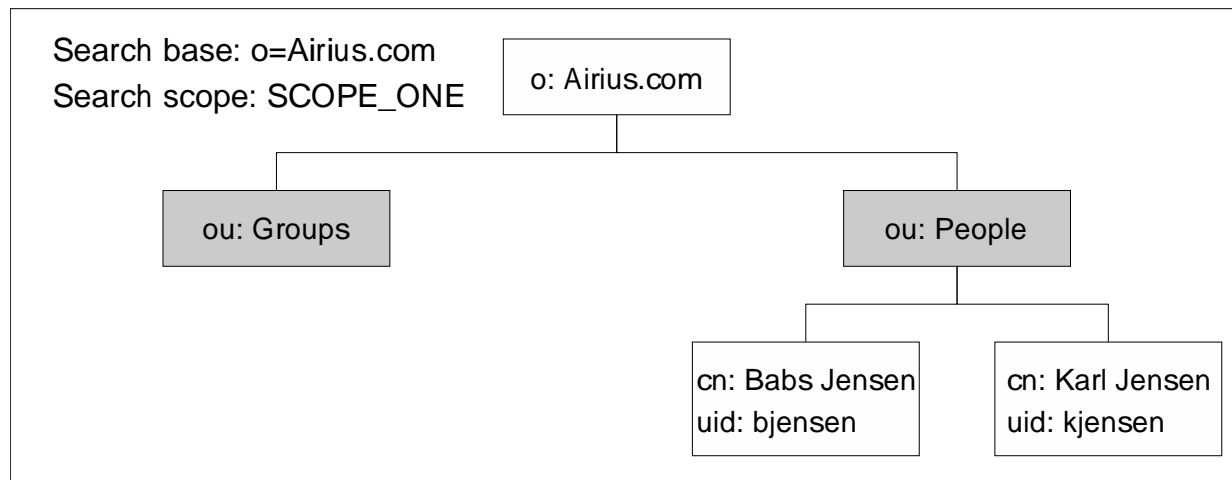
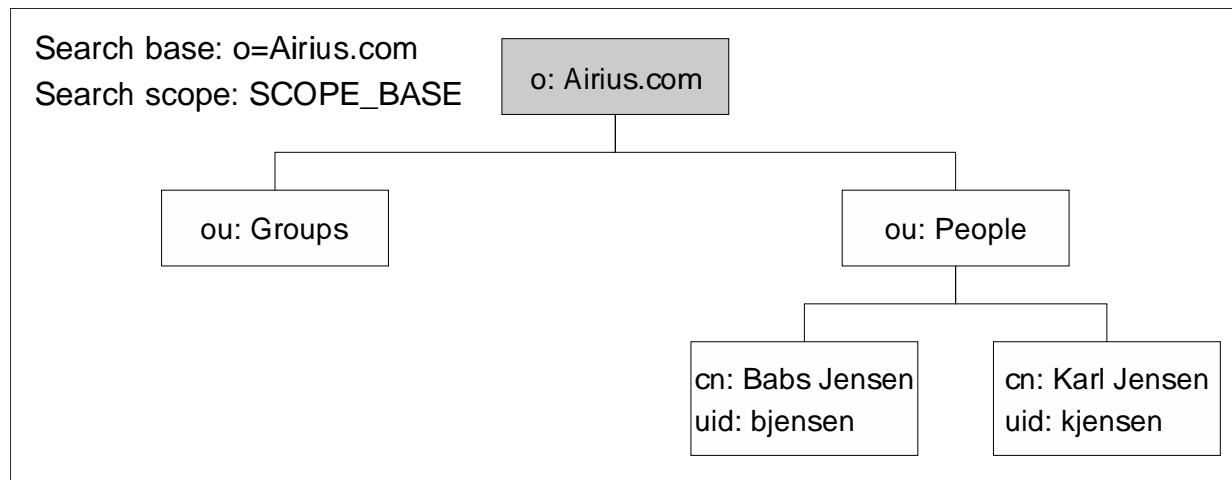
```
dn: uid=scarter, ou=People, o=airius.com
cn: Sam Carter
sn: Carter
givenName: Sam
objectClass: top
objectClass: person
objectClass: organizationalPerson
objectClass: inetOrgPerson
ou: Accounting
ou: People
l: Sunnyvale
uid: scarter
userPassword: 12345678
```

# Datensuche im Directory

---

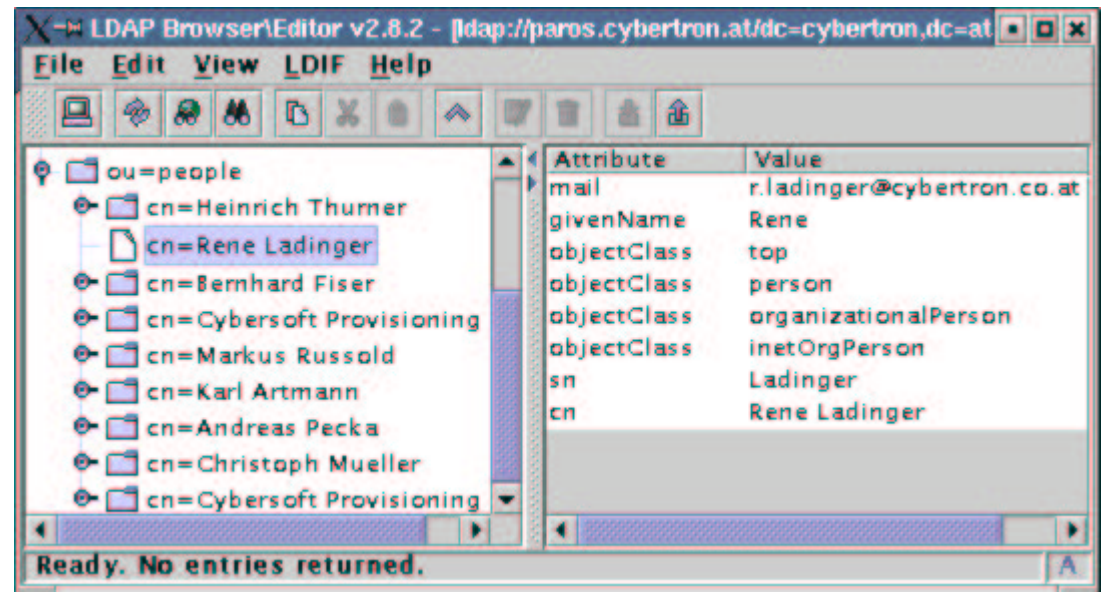
- Suchparameter müssen spezifiziert werden
  - Base DN
  - Scope
  - Filter
  - Attribute

# Datensuche im Directory



# LDAP Clients

- Emailclients (z. B. MS Outlook)
- Webbrowser (z. B. Netscape, Konqueror)
- LDAP Browser



# Literatur

---

- LDAP, Programming with Java, R. Weltman, T. Dahbura. November 2000.
- RFC3377, Lightweight Directory Access Protocol (v3), Technical Specification. J. Hodges, R. Morgan. September 2002.
- ISO/IEC 9075, Information Technology – Database Languages – SQL, International Organization for Standardization.1999.
- RFC2256, A Summary of the X.500(96) User Schema for use with LDAPv3, M. Wahl. December 1997.
- <http://ldap.akbkhhome.com/>, ein Verzeichnis standardisierter LDAP Schemas.
- RFC2849, The LDAP Data Interchange Format (LDIF), Technical Specification. G. Good. June 2000.
- LDAP Browser V2.8.2, <http://www.iit.edu/~gawojar/ldap/>, Jarek Gawor, University of Chicago. April 2001.