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Account Management

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Access Control

- Authentication

- Authorization

Authorization or Who Can Access What?

Unix (Posix) Accounts

- User account
  - User identification (uid or username)
  - uidnumber
  - Default group identification number (gidnumber)
  - Password, Gecos, Home directory, Default shell
- Group entry
  - Group name
  - Group identification number (gidnumber)
  - Password, Uid list

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Storing Authorization Information

- Flat files
  - /etc/passwd

jsmith:*:510:101:John Smith:/home/jsmith:/bin/bash

uid:password:uidnum:gidnum:gecos:homedir:shell

  - /etc/group

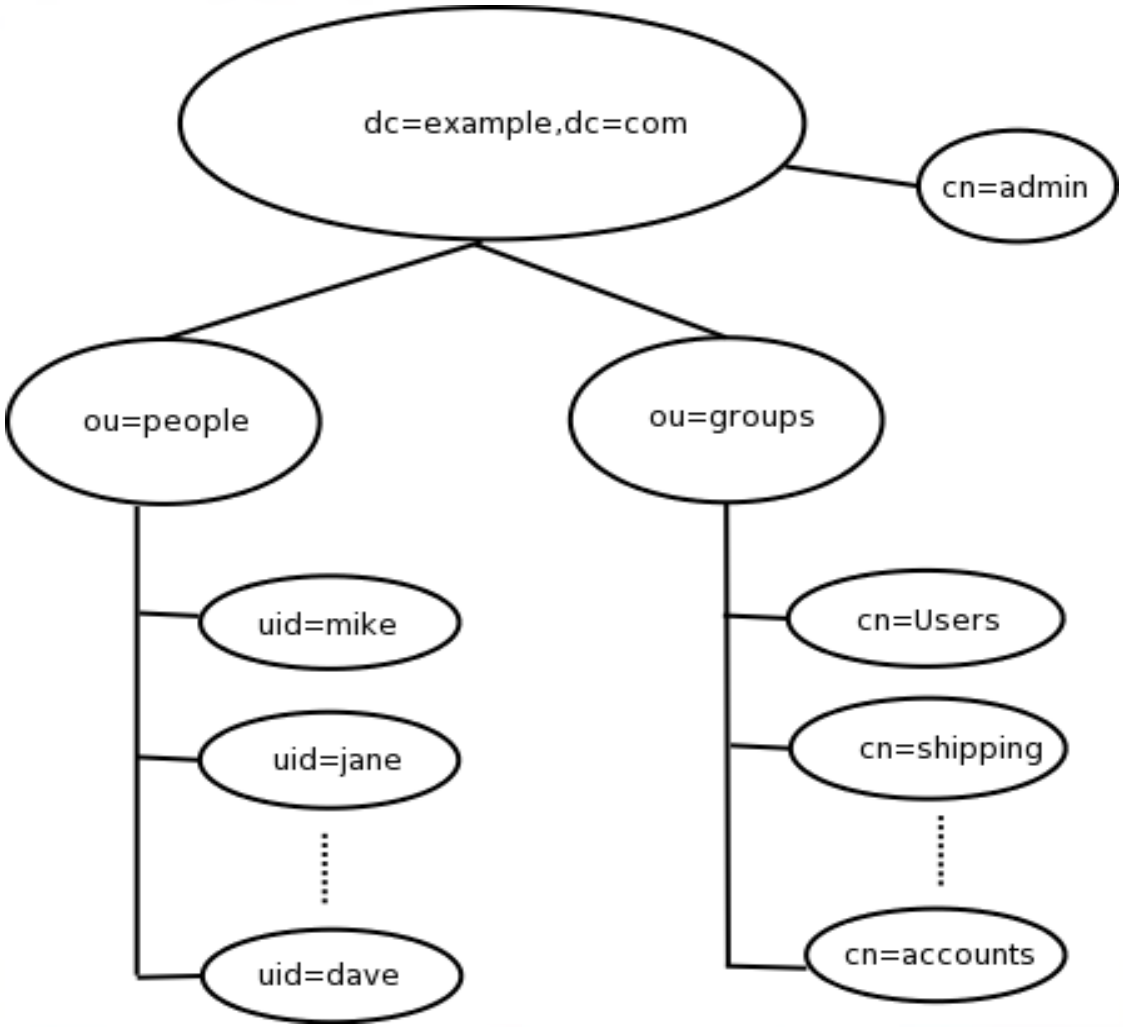
users:x:101:jdoe

gid:password:gidnumber:userlist

Centralized Authorization Info

- Lightweight Directory Access Protocol (LDAP)
  - Can be used to store any directory information
    - telephone book, address book, network information, etc.
  - Based on x.500
- Microsoft ADS (LDAP-based)
- NIS (not really used anymore)

LDAP Structure



Berkeley LDAP Utilities

- ldapadd
- ldapmodify
- ldapdelete
- ldapsearch
- slapcat

LDAP Server Config

- /etc/openldap/slapd.conf
- slapd.conf is now stored in the LDAP directory tree
- slaptest

LDAP Client Config

- /etc/openldap/ldap.conf

uri ldaps://ldap.test.com:636 ldaps://ldap2.test.com:636

base dc=YourCompany,dc=com

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Using Authorization Information

- Name Service Switch
  - /etc/nsswitch.conf

```
passwd:     files ldap
shadow:     files
group:      files ldap
```

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Using Authorization Information

- Pluggable Authentication Modules (PAM)

Uses plugins (libraries) to make authentication and authorization decisions.

Standardized configuration files in /etc/pam.d/

Resources

- File systems
  - Home directory - /home/jsmith
  - Other directories/files

drwxr-x--- 14 jsmith adm 4096 Jun 23 17:42 mydir

- Logins
  - /etc/security/access.conf

- : ALL EXCEPT (adm) jdoe root : ALL

- Printers, Tape drives, Queues, QOS, etc.

Authentication or How Do I Know Who You Are?

Identity Methods

- Passwords
  - Encryption (DES,MD5,SHA)
- One-time password (OTP)
- ssh keys
  - ssh-keygen
  - id_rsa.pub --> /home/jdoe/.ssh/authorized_keys
  - Requires shared home directory file system
  - ssh host-based authentication

Identity Methods (cont.)

- Cert-based
  - Public Key Infrastructure (PKI)
  - Certificate Authorities (CA)
- One-Time Passwords (OTP)

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Storing Authentication Information

- Flat files
  - /etc/shadow

jsmith:1xyRJYAkX$k5wv3HHv73ulSzcUAkq1q.:15842:0:99999:7:::

uid:password:last changed:may be changed:must be changed:
expire warning:disable after expired:disabled:reserved

- LDAP (only use SSL wrapped LDAP)
- Kerberos
  - Returns a tickets you can use for future authentications

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Using Authentication Methods

- Service specific
  - Configure each service to use the authentication system
  - GSISSH
- Pluggable Authentication Modules (PAM)

```
auth    required     pam_env.so
auth    sufficient   pam_unix2.so
auth    sufficient   pam_krb5.so    use_first_pass
auth    required     pam_deny.so
```

Specific Example

- ssh
  - /etc/ssh/sshd_config

```
PubkeyAuthentication yes
PasswordAuthentication yes
KerberosAuthentication yes
UsePam yes
```

Security

- Passwords or passphrases
  - Picking good passwords
    - 14 characters is the minimum
    - Minimum 4 word long passphrase
    - Misspell one of the words to be extra secure
  - Changing passphrases
    - Forcing users to change their passphrase too often is insecure
    - At a minimum, change your passphrase yearly
  - Cracking passphrases
    - John the ripper (GPU enabled now)

Security (cont)

- Keep private keys and certificates safe and protect them with a passphrase
- Two-factor authentication
  - Something you have (OTP, credit card, phone)
  - Something you know (passphrase, PIN)
  - Something you are (fingerprint, retinal scan)