Serving the Masses

21,000 users and 5 sysadmins

Andrew Findlay
Brunel University

Andrew.Findlay@ukuug.org **September 2000**

Topics

Design Goals and Issues

Strategy

Design for the Large Scale

Example services

Centralise or distribute?

Risks

Design Goals and Issues

Information Services Mission:

- ... significant contribution to the quality of education ...
- ... proactive provision of support ...
- ... teaching learning and research ...
- ... all staff and students.

Scale: 20000+ users, 5000+ seats

Single Image

Resilience

Security

No shoeleather!

Services

IP Network

User Filestore

Application software

Public workareas

E-Mail

Web

Printing

User Registration

Support for everything

Strategy

Network everything

Simplify

Design for the large scale

Automate routine tasks

Use remote control, not sneakernet

Keep it simple!

- Each user gets
  - One username
  - One password
  - One home store
  - One mailbox
- One network protocol
- Two supported operating systems
  - Originally DOS and Solaris
  - Now NT and Solaris (plus Linux?)

Design for the large scale (1)

Name services (Directories) are the key

- DNS, YP/NIS, LDAP

Central master databases, distributed replicas

- COW holds master data under SCCS
- Calves hold complete replicas

Dynamic address assignment by DHCP

Design for the large scale (2)

- Expendable (dataless) desktop machines
- Scripted installations
  - Jumpstart for Solaris
  - Ghost for NT
- Overnight updates (Solaris)
  - chores.daily and chores.updates scripts
- Automatic file-tree replication: SUP, Rsync
- Servers are created from desktops by script
- Monitoring and Logging

Filestore services

All servers run Solaris (could use Linux)

Access by NFS and SMB

Naming conventions

`/user/me99/me99ikb`

`/vol/PACK/acrobat`

`/vol/nt/general`

Automounters: Amd, pc.mount

Driven by data in nameservice

Choose ‘best’ server at mount time

PC.mount

PC in group CCPC needs two network drives:

CCPC.ntdrives j: /vol/nt/general k: /vol/pc/doc

Look up list of available servers

/vol/nt cedar, aledo, kryten, artemis

Find order of preference for local subnet

merit.134.83.8.0 134.83.8.0 134.83.228.0

Find sharename for the resource

SMB:/vol/nt/general @ntgeneral

Mount the drive!

NT Clients

NISGina, ypbind, Registry updater

ntmount - locate and mount network resources

Rsync (mainly for Start menu!)

InstnetNT - updates User Registry at app launch

atboot - start things at boot time

NTP client

All apps from network

Centralise or Distribute?

Realism: some of each!

Basic central service with local extensions

- Devolved s/w install still hard with NT

Federal model is possible

- Need scalable authentication system
- Need an explicit trust model
- Already happenning (ATHENS etc)
- Application Service Providers?

Risks

Single points of failure

Power / aircon

Sysadmin errors

Crackers

Monoculture

Loss of key staff

Serving the Masses

21,000 users and ~~5~~ ~~4~~ 3 sysadmins

There is a curse. They say:

May you live in interesting times

http://www.brunel.ac.uk/~andrew

Andrew Findlay