

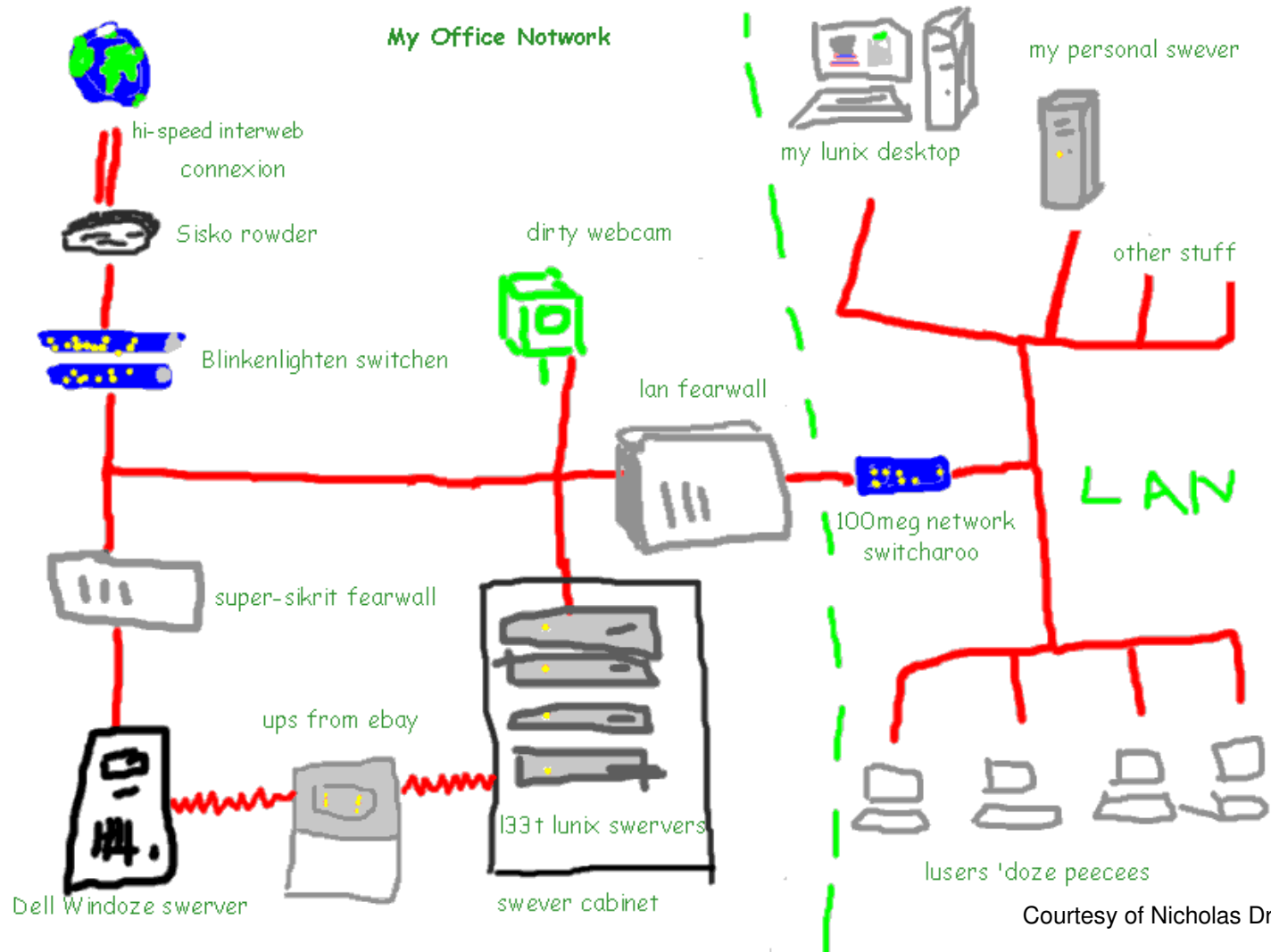


IBM Linux Technology Center

# Linux-based Server Appliance Deployment in an Educational Setting

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SambaXP 2005

# Network Overview



Courtesy of Nicholas Drouet

## Environment

- **UK County-wide school system**
- **Highly distributed**
- **Varied site size (200-1600 users)**
- **Large total deployment**
  - 400 sites
  - 300K users
- **Some centralized management and monitoring**
- **Some localized management**

# Requirements

- **Support Windows desktops**
- **Logon with lockdown**
- **Shared files**
- **Printing system with quotas**
- **Web content filtering**
- **Proxy (web and streaming media)**

# Restrictions

- **Mix of central and local hardware**
- **Certain proprietary software already in place**
- **Minimize unsupported software**
- **Function with unreliable WAN**
- **Highly available with basic Future infrastructure considerations**

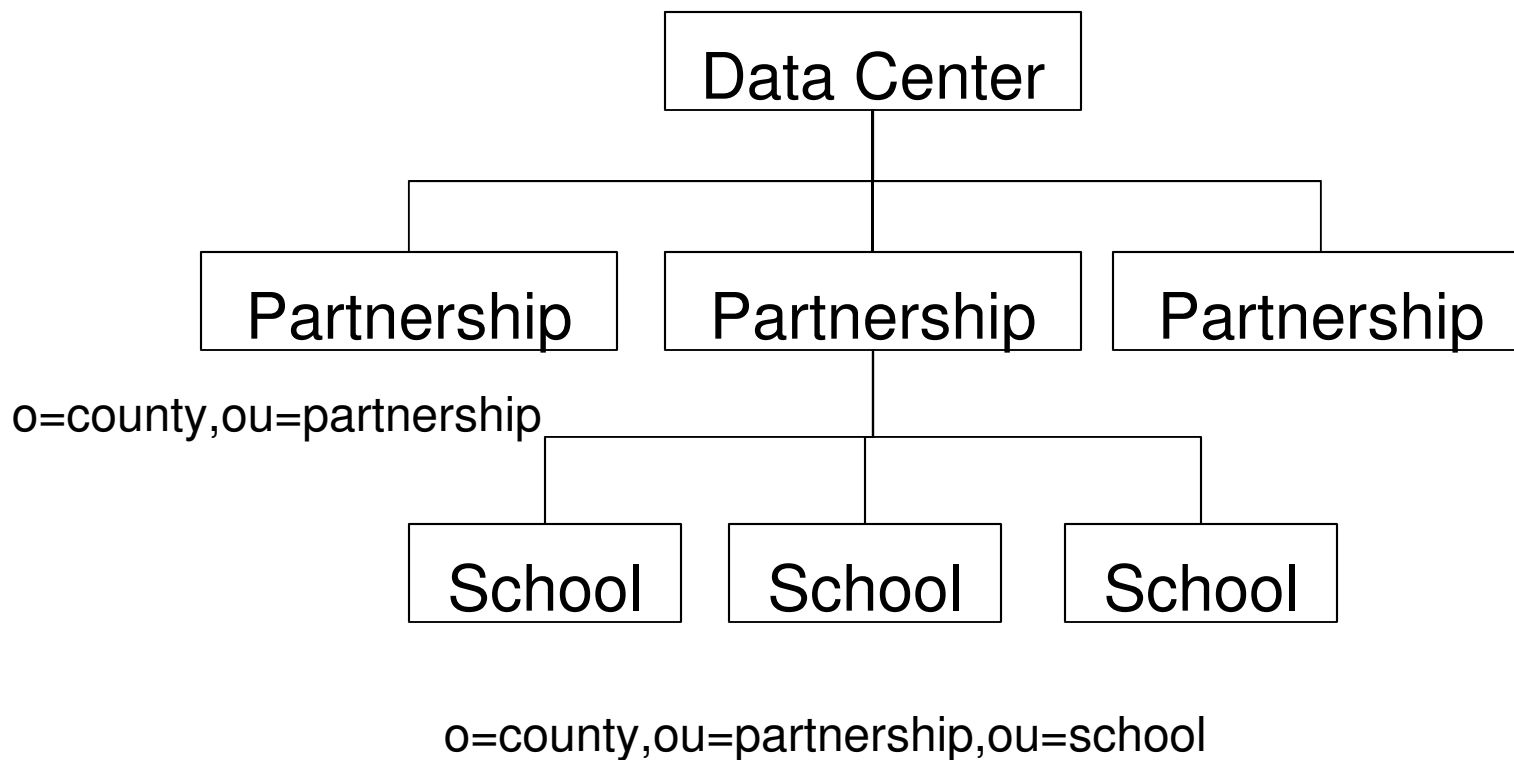
# Software Components

- **IBM Tivoli Directory Server 5.2**
- **Samba 3.0**
- **PyKota**
- **Linux-HA (heartbeat/mon/drdb)**
- **Squid**
- **Identd**
- **SquidGuard / Websense**
- **Helix**

## Directory Server

- **IBM WebSphere and SecureWay already in place**
- **Need local ability to manage even when WAN is down**
- **Explored possibility of OpenLDAP with syncrepl**
- **Decided on IBM Tivoli Directory Server 5.2**

# Directory Structure





## Directory Structure

- **Management and Policy information for WebSphere and Tivoli are used at Data Center level**
- **Partnership level is for future plans with policy and management (e.g. budgeting and quotas)**
- **Most server appliance apps are based out of school-level DN**

## Subtree Replication

- **Each school DN is the root of a peer-replicated subtree (Datacenter is the peer)**
- **Enables school apps to run/manage with local directory server while allowing data center to maintain central control**
- **Small directory size (and hardware) at schools**

## ITDS Issues

- **Initial setup was difficult**
- **Schema format slightly different than OpenLDAP**
- **Peer replication does not resolve conflicts (not multi-master)**
  - Use access controls on attributes to minimize conflict potential
  - Policy must be in place to handle conflicts

# Samba 3.0

- **Domain Controller**
  - LDAP passdb backend
  - Desktops locked down via policies
- **File shares**
  - Home directories
  - Class directories
  - Applications
  - CD sharing
- **Print serving**

## Samba 3.0 Issues

- **Schema updates for ITDS**
- **IdealX tools needed but unsupported by standard IBM agreements**
- **No print quota support**
  - Not provided by CUPS either
- **Samba supported, but not always the latest**
  - Samba 3.0 DC improvements not yet available on RedHat EL 3.0

# PyKota

- <http://www.librelogiciel.com>
- **Python-based print quota system for CUPS**
- **User print quota**
- **Allows for auditing/reporting**
- **Storage in LDAP**
- **Printer info via SNMP**

## PyKota Issues

- **Unsupported by standard IBM agreements**
  - Same issue with prerequisite software
- **Schema incompatibilities (caseIgnoreIA5SubstringsMatch) and reformatting for ITDS**
- **Logs everything in LDAP**
- **Will not allow printing if LDAP is unreachable**
- **However, PyKota team was very responsive to requests**

## High Availability

- **Each school has 2 servers, data replicated via drbd**
  - Samba shares
  - Samba config
  - Samba tdb
  - Squid config
  - CUPS config
- **LDAP replication handled by ITDS**
  - Samba domain objects
  - PyKota config and data
- **WebSense replication handled by WebSense Enterprise software**



# Squid

- **Web caching**
- **Cache preloads**
- **Usernames from Identd on clients**

# SquidGuard

- **Web content filtering**
- **Filter based on sources:**
  - Username
  - Address
  - Domain
- **Filter based on destinations:**
  - URL
  - Addresses
- **Public blacklists**
- **Selective Logging**
- **Enterprise management and reporting tools lacking**

# WebSense Enterprise

- **Web content filtering**
- **Enterprise management**
  - Centralised policy management
  - Flexible reporting
- **Issue: local policy additions/customizations**
  - Current fixed by external merging of xml files at each site
  - Will be supported by upcoming version of WebSense

# Management

- **Local school admins and teachers need to perform minor tasks on multiple applications**
- **WebMin-based custom GUI for tasks such as:**
  - Proxy cache management (restart, load, purge)
  - User password reset
  - Share creation
  - Print job management
  - Quota manipulation
  - Usage reporting
  - Application status
- **DataCenter administration requires more training**

## Current State

- **3-school pilot with 2000 users in process**
- **Pilot is proceeding well**
- **Education and tweaking currently**
- **ITDS Scaling questions**
  - We know it scales to 300K users at the Data Center
  - We know it scales to 1600 users locally
  - Replication is the question
    - Can the WAN handle it?
    - Do the updates stack up and flood the server and WAN?

# Questions?

