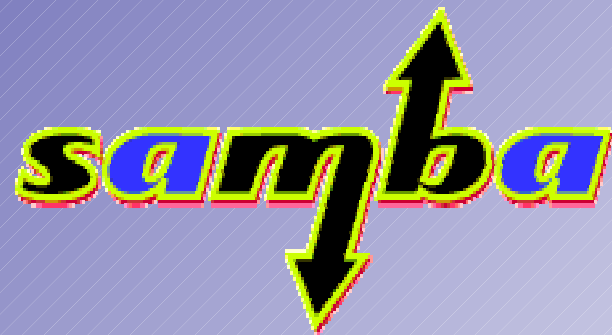# Samba in the Enterprise : Samba 3.0 and beyond

By Jeremy Allison

jra@samba.org
jeremy.allison@hp.com

Where we are now : Samba 2.2

- The current Samba is a credible replacement for a Windows server providing file and print services.

- More robust than Windows, scales to larger machines than Windows.

- Provides better performance than Windows on identical hardware (when used with Linux).
    - See : PC Magazine report (details on next slides).
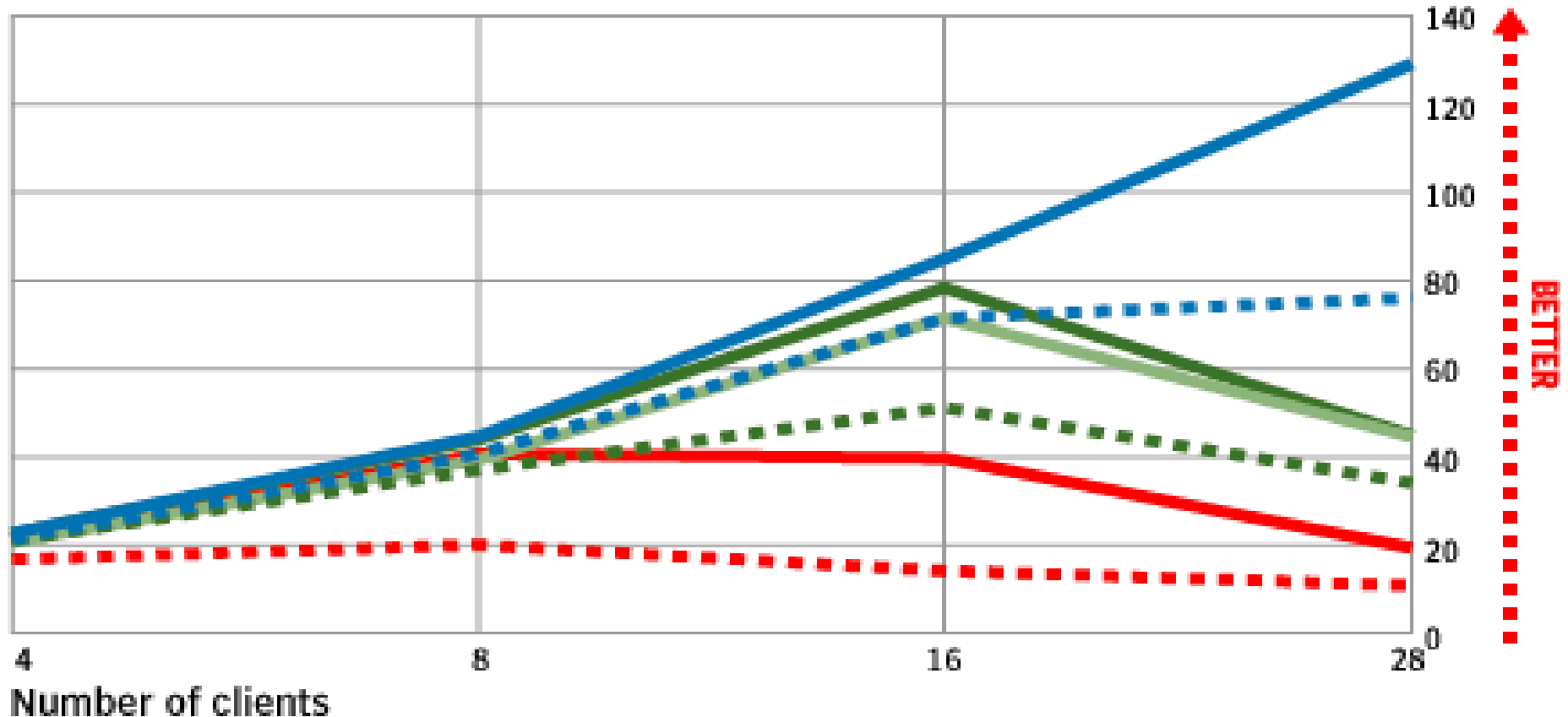   - Samba certainly can't be beaten on cost. ☺

Performance Figures (thoughput)
From PC Magazine.

Performance Figures (response time).

Legend:
- **Samba on PII/233, 128MB RAM** (red solid)
- **Windows 2000 on PII/233, 128MB RAM** (red dotted)
- **Samba on PIII/550, 256MB RAM** (dark green solid)
- **—with oplocks turned off** (light green solid)
- **Windows 2000 on PIII/550, 256MB RAM** (green dotted)
- **Samba on PIII (1 GHz), 512MB RAM** (blue solid)
- **Windows 2000 on PIII (1 GHz), 512MB RAM** (blue dotted)

AVERAGE RESPONSE TIME

Milliseconds

BETTER

Number of clients
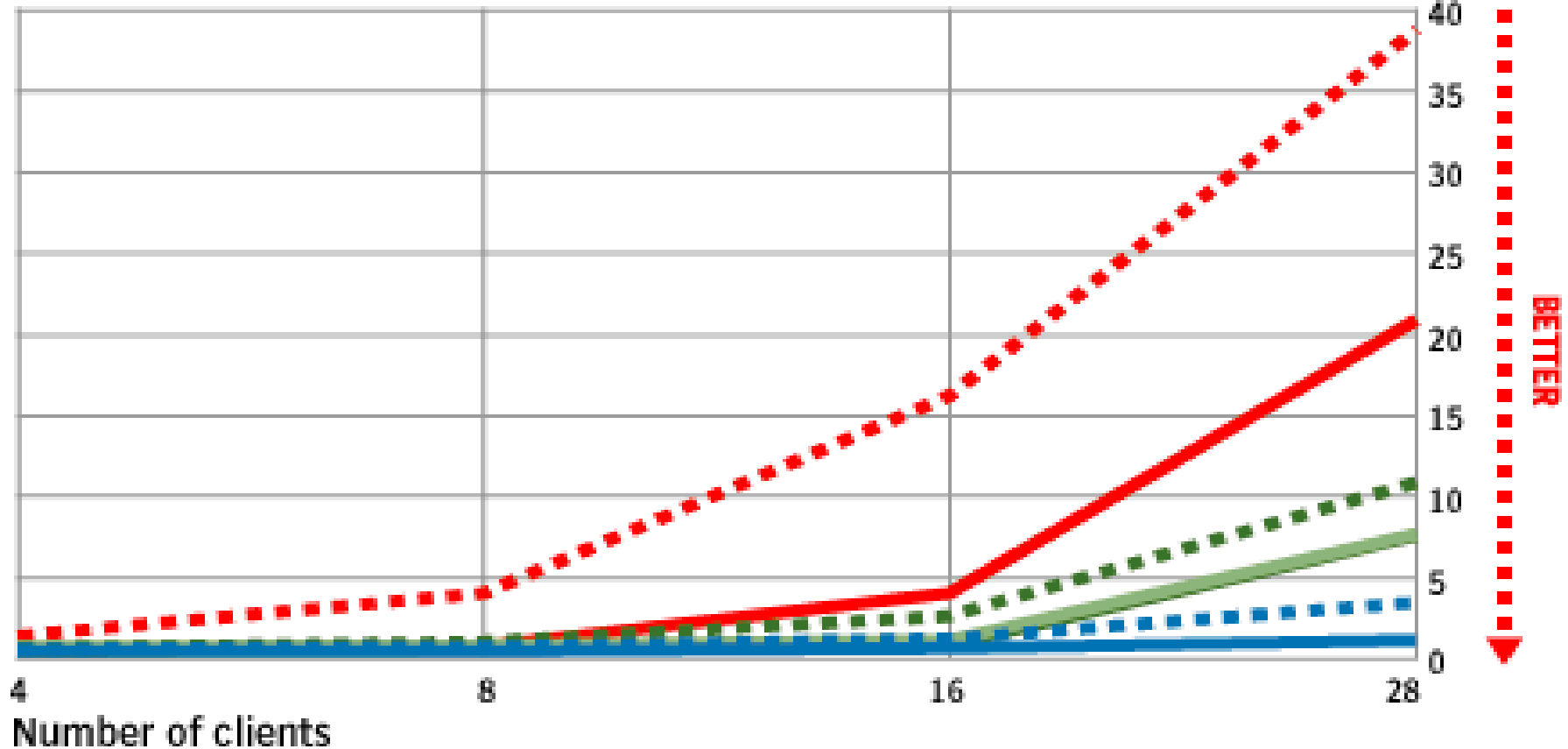
Moving beyond the workgroup

- As Linux expands into the Enterprise, Samba must change in order to grow with it.

- Directory services, single sign on, account controls become much more important.

- Integration with Enterprise security systems such as Kerberos are needed.

- Better management and configuration tools are needed to handle large number of servers.

Samba 3.0 Roadmap

- Currently in alpha, rapidly moving towards production release.
  - The aim is to ship in spring 2003.
  - This is software, don't take the above seriously ☺.
- Uses UNICODE in talking to clients.
  - Allows true multi-lingual file name storage (when file names are in UTF8 – the default in RedHat 8).
- Full Kerberos 5 and NTLMv2 support.
 - Single sign-on when using a Windows 2000 Domain.

Samba 3.0 Roadmap (continued).

- Full support for LDAP directory infrastructure using standard LDAP v3 calls.
  - Provided by any LDAP directory server with correct schema.
    - Windows 2000 ADS
    - OpenLDAP
    - Other proprietary LDAP servers (Novell, IPlanet etc.).
- Dynamic password backend selection.
  - Plug-ins with fallback support.

Samba 3.0 File and Print Enhancements.

- Better mapping from Windows access control lists (ACLs) to POSIX ACLs.

  - POSIX ACLs are starting to ship as standard in many Linux distributions.

- 'Stacking' VFS (virtual file system) layer allows dynamic checking of file access.

  - Virus scanning, auditing, security.

- Scalable printing – Major goal for HP.

  - The aim is to support more than 1000 print queues.

- Integrated Microsoft DFS support.

Samba 3.0 Example Module Stack
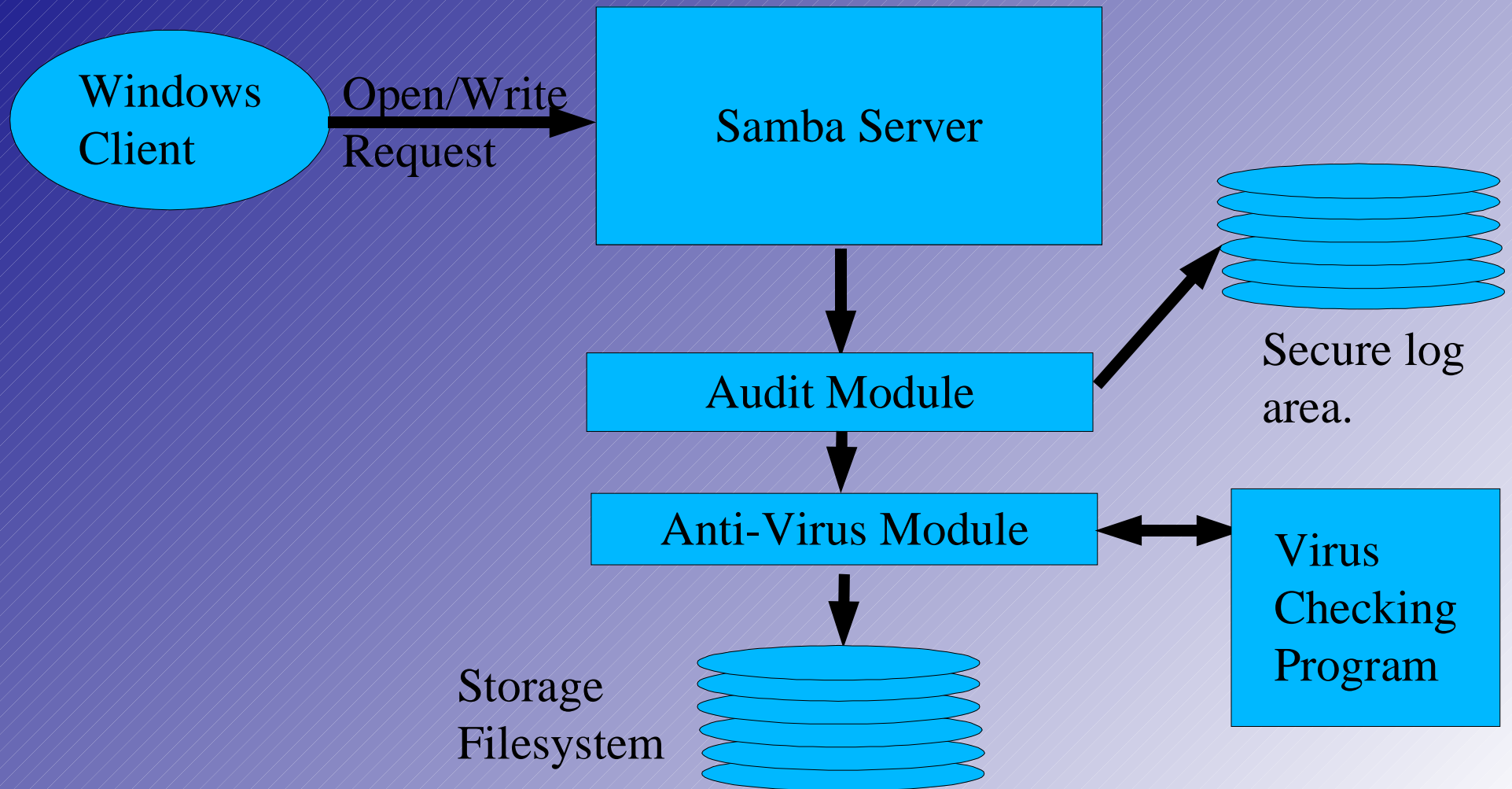
Domain Integration – Account Control

- Samba 3.0 will support all the restrictions a Windows 2000 server does.
  - Password expiration, logon time restrictions, client machine restrictions etc.
  - All can be retrieved from an Active Directory PDC or set locally in Samba's own account databases.
  - Windows Domain groups can be mapped onto local UNIX groups for greater control.
    - Similar to 'Local' groups on a Windows server.
- Idea is to make integrating Samba servers easy.

Kerberos and NTLMv2 Security

- Samba 3.0 uses MIT Kerberos libraries to interoperate with Windows 2000 Domains.
  - Despite what you may hear, Microsoft Kerberos is standard enough to support UNIX kerberos.
    - So long as you're not trying to serve logons to Microsoft clients.....☺
  - Just tell the Samba server your Kerberos Realm name then add it to the Windows 2000 Domain (using the new 'net' command).
- New NTLMv2 code allows security to be 'upgraded' on Windows networks
  - So long as you don't have Win9x clients.

Management and Configuration Tools.

- The new 'net' command.
  - Allows command line manipulation of a Windows or Samba file and print server.
  - Designed to be familiar to Windows administators moving to Linux.
- Several Microsoft Management (MMC) plugins work against Samba servers.
  - The goal over the 3.0 series is to keep adding additional MMC support to Samba.
- Currently all good Enterprise level file server configuration tools are proprietary.

Samba as a Domain Controller Replacement.

- Potentially the most useful Samba function.

  - Frees an Enterprise from paying Microsoft client license fees.

- Currently only older Domain protocols supported.

  - Windows 2000 protocols are (of course) undocumented.

    - Support for Windows 2000 clients as an Active Directory replacement with OpenLDAP is being actively worked on.

- New 'net vampire' command allows Domain account information to be transparently moved to Samba.

Samba as a Print Server

- Samba now supports all the Windows printer driver download calls.
  - Most Windows printer functions can be replaced with Samba.
  - The only issue is printer driver initialization on non-Intel platforms.
- Due to Linux/UNIX scalability, Samba serves many more print clients than Windows.
- HP is testing 1000 simultaneous print queue systems using large HPUX servers.

HP Samba Sucesses

- HP ships CIFS/9000 – a Samba product on HPUX
  - Replaces old Windows code based product.
- Some typical uses :
  - 5-node rp7400 (N-Class) cluster serving 8000 clients.
  - 3-node rp5400 (L-Class) cluster serving 2000 clients.
  - 3 rp5400 (L-Class) servers, 500 users each.
- Serving everything from Microsoft Office, to CAD/CAM to ClearCase files...
  - If an application works to a Windows file server, it'll work to a Samba file server.

Samba Development – Who is involved ?

- HP employs 5 full time Samba developers

  – Not even counting the CIFS/9000 Team.

- IBM employs 3 full time Samba developers.

- SGI, Sun and Apple all have people assigned to Samba on permanent staff.

- Linux Vendors perform security audits against Samba (SuSE, SCO in particular).

- In addition to the 'students living in basements' ☺

- Samba installation and configuration help can be found worldwide.

Samba is everywhere....
(even if users don't know it ☺)

HP Print Server Appliance

All Linux based NAS
Servers.

PizzaBox Server ☺

Sun/Cobalt Servers

References

- Samba web site :
  - www.samba.org
  - World wide mirrors.
- Samba mailing list :
  - samba@samba.org
- Samba developers mailing list :
  - samba-technical@samba.org

Questions ?