

Competitive Profile

Comparison of TotalNET Advanced Server and Samba

Overview

Samba and TotalNET Advanced Server (TAS) are applications that provide file and print services to client workstations. Both applications run on various flavors of Unix and have been around for more than a decade.

Samba is an Open Source/Free Software (OSS) suite for providing file and print services to SMB/CIFS clients. It is available freely under the GNU General Public License (GPL). Since Samba originated in 1991 with the work of Andrew Tridgell, the developers that volunteer their time to the Samba project have been dedicated to providing seamless interoperability between Unix and Windows clients.

TAS was developed by Syntax, Inc., which was founded in 1983. Throughout the 1980s, Syntax developed interoperability solutions for Microsoft, Novell and IBM clients and DEC VAX, VAX/VMS, and Unix servers via SMB, TCP/IP, and other protocols. A precursor to TAS that provided SMB-based file and print service, called SMBserver, was introduced in 1988, three years before Samba was written.

To satisfy the requirements of a rapidly growing computer industry, Syntax introduced the TotalNET family of products in 1990, which included support for Apple Macintosh clients. In the middle to late 1990s, Syntax combined its separate server products into a single solution: TotalNET Advanced Server. In the fall of 2000, Syntax was acquired by LSI Logic Storage Systems, Inc.

TAS provides file and print services to SMB/CIFS (Windows), Novell NetWare and Mac/Apple clients. It is available for free download in a single-user configuration. Multiple-user licenses can be purchased from LSI Logic Storage Systems, Inc.

This competitive profile provides a description and comparison of the various features available in Samba and TAS and also provides a brief description of the usage of the products.

Product Features

Both TAS and Samba provide support for the CIFS protocol — i.e., they emulate a Microsoft Windows file and print server. TAS also emulates an Apple Server and a bindery-based NetWare server. For the average file service client user, it may be hard to distinguish between an NT server, TAS and Samba. However, there are some characteristics of each of the implementations that become significant in certain situations. This section concentrates on the features that distinguish the two products.

File and Print Services

Both TAS and Samba are essentially file and print servers, and so they provide the kinds of services one would expect from a Windows or NT file/print server. TAS also provides file and print services for Apple and NetWare clients.



AT THE HEART OF INFORMATION

One important distinction is that TAS is designed to enable you to easily configure multiple file services on a single Unix platform. This allows you to consolidate multiple PC-based file/print servers onto a single system.

It is possible to configure multiple file services with Samba, but it requires careful editing of the configuration files. The Samba GUI (SWAT) is not equipped to handle multiple services. In fact, according to SWAT warnings, using SWAT in such a situation could erase the hand-edited configuration. So, if you want to have multiple file services, you must sacrifice use of the Samba GUI.

A necessary feature of file/print servers is the ability for clients to locate them on the network. Both TAS and Samba implement the protocols that allow clients to find them in browse lists. Both can also be used as "building blocks" for Microsoft networks, i.e., they can act as logon servers, browse masters, WINS servers, etc. TAS can similarly be used as building blocks for AppleTalk and NetWare (bindery-based) networks.

Authentication

The authentication support provided by both TAS and Samba is similar — i.e., both provide support for authenticating users, using:

- Unix passwords
- Passwords known to, and maintained by, TAS or Samba in a local file or an LDAP directory
- An authentication proxy server (like a Windows domain controller)
- Kerberos tickets issued by a Windows Active Directory server (domain controller)

Note: Active Directory support for Samba is still in beta testing at the time of writing and is not yet ready for use in a production environment.

However, the way this support is provided differs. TAS allows for the configuration of multiple authentication databases. This allows you to have multiple file servers on the same host, authenticating at different sources. For example, if we were consolidating a NetWare server and two Windows servers on a TAS host, we could configure proxy authentication for the NetWare server and "known" configuration for the first Windows service and LDAP authentication for the second Windows service on the same physical host.

TAS and Samba both support the secure authentication mechanism used by Windows clients that avoids transmitting passwords in any form (plaintext or otherwise) over the network. TAS also supports the secure authentication mechanisms used by NetWare and Mac OS clients. Neither TAS nor Samba support the secure authentication option if configured to authenticate users using their Unix passwords, or configured to use an authentication proxy that does not support the secure authentication option.

In TAS, Active Directory support does not require the installation and configuration of a separate Kerberos system. With the TAS package you can configure a CIFS file service "out of the box" to become a member of an Active Directory domain. With the Samba beta support for Active Directory, you need to obtain, build, install and configure the Kerberos and OpenLDAP development libraries and client systems (in addition to the Samba sources).

Additionally, although both TAS and Samba provide support for storing user data in an LDAP directory, Samba's support consists only of being able to look up Windows user data, while TAS provides a wealth of features for manipulating and using LDAP. As part of the Framework GUI, administrators can add, delete, and modify user accounts using a graphical tool that gives feedback about schema violations. Also, TAS may be configured to act as an NIS server that uses LDAP as its data store, thereby unifying Windows, AppleTalk, NetWare, and Unix users into a single database. With TAS, it is also possible to have some file services use LDAP for authentication, and others to use other mechanisms. With Samba, the administrator must choose either LDAP or another mechanism, and this choice must be made at compile time, since Samba's LDAP support is not compatible with any other authentication mechanism. For this reason, no vendor- provided Samba packages have LDAP support enabled.

File Name Handling

With Samba, file names on the server that differ only in case are presented to clients unmodified. Since clients are case-insensitive, this could cause confusion because multiple files on the server would represent a single file on the client. TAS recognizes that this situation can occur (for example if other Unix processes create files on the server) and provides multiple ways to solve the problem. This allows you to choose a solution that best suits your environment.

Legacy Windows programs, which understand only short (8.3 format) filenames, are supported by TAS and Samba by generating both long and short versions of filenames. However, reliable support for generation of short filenames is fairly expensive. So TAS has options that allow support for this feature to be explicitly enabled or disabled for each configured file service, allowing for better performance for those applications that do not need this support. In addition, TAS uses multiple hashing methods and persistent mapping for generating and storing synthetic 8.3 names in lookup tables, to provide reliable mappings with good performance. Samba's support for these names is focused more on performance than on reliability. Samba also does not have an option to turn this feature off, but it provides an option to further reduce the reliability of the mappings to improve performance.

TAS can handle multiple client code pages simultaneously. Filenames are automatically mapped between client and host character sets, making the handling of international clients seamless and extensible.

Samba can dynamically load client code pages. However, handling multiple code pages simultaneously requires some conditional inclusion of configuration in the `smb.conf` file.

File Attribute Handling

By default, Samba ignores the DOS style file attributes, with the exception of the DOS read-only attribute, which is mapped (inversely) to the Unix write permission bit. It is possible to explicitly configure a mapping of DOS attributes to Unix file permissions, but this overloading of Unix file permissions is likely to be confusing to Unix users who need to access the files.

For TAS, the DOS system, hidden and archive attributes are supported via shadow files that store attribute data. TAS also supports storing OS/2 extended attributes and provides the Apple specific (AFP) file and directory attributes, like Copy Protect, Invisible and System.

Both TAS and Samba allow you to turn off support for non-Unix attributes.

Technical Support

Technical support for both TAS and Samba is available at a fee.

For TAS, the company that created the software and has a mature, trained support division provides the technical support. LSI Logic's CustomerCare Services helps provide subscribers with 'peace of mind' through access to certified technical support engineers 24/7/365. Other benefits of the CustomerCare package include free product upgrades and enhancements, product patches, and a searchable online database of FAQs and information.

With Samba, technical support is available from third-party vendors. There is also a wealth of information on the web, although this can sometimes make it hard to find the specific information you need.

Product Usage

This section describes and compares aspects of the products that relate to how each is administered and configured.

Obtaining and Installing Software

TAS is available to download from the LSI Logic Storage Systems web site. The latest version is provided for each of the following platforms:

- Solaris Sparc
- Solaris x86
- AIX
- Irix
- HPUX

Once you have downloaded TAS, you can use the Unix system's native installation program to install it.

Samba is available from many Unix vendors in binary form. However, the features that are supported are likely to be inconsistent since many features can be explicitly included or excluded when the product is built. Additionally, you are not guaranteed that each vendor has the latest version available. Furthermore, instead of downloading a single distribution like TAS, Samba requires the administrator to download, install, and maintain numerous supporting packages.

If you are concerned about having the most up-to-date version of Samba that includes the features you want, you will need to download the Samba source and build the package. This requires a development environment (C compiler) for each platform on which you want to run Samba.

Initial Setup

Once TAS is installed, a special initial setup wizard is available, either via the web-based GUI or from the command line. This wizard allows you to set up a basic TAS server with very little effort.

Samba does not have an initial setup utility. Initial setup must be done either by editing the smb.conf configuration file or by using the administration tools in the SWAT web-based interface,

as described in the following section. Both of these require an understanding of the initial setup requirements before starting.

Administration

File and print servers generally have many configurable options, and TAS and Samba are no exception. Since they are both emulating Windows servers, they provide additional options that allow you to tweak the emulation characteristics.

The administration philosophy adopted by TAS is different from that used by Samba. The TAS GUI attempts to simplify administration by providing an interface that abstracts the myriad configuration options. This allows the administrator to perform specific tasks, rather than having to learn each option.

The Samba approach in SWAT is to make every option visible, forcing the user to have to do research each time something needs to be configured. Worse, SWAT does not have any independent documentation—rather, the help links in SWAT all lead to sections of the man page for the `smb.conf` configuration file. This is an indication of just how little of the complexity of Samba administration is hidden in the SWAT GUI.

Command Line

TAS has command-line utilities for managing practically every aspect of the TAS system. These utilities not only provide an error-checking mechanism for changing TAS configuration, but they also allow administrators to create their own scripts for performing common tasks. The command-line utilities also provide a low-level interface that can be used as a fallback if the Framework web server is unavailable. Every command-line utility shipped with TAS contains a complete man page explaining its proper usage.

Samba does not include a complete set of command line configuration programs. Configuration of Samba requires editing the configuration files, which, in turn, requires researching the option names and semantics.

Graphical User Interface (GUI)

A web-based GUI is available for both TAS and Samba. The TAS GUI, which is known as Framework, and is included in the product, is the recommended way of configuring and administering TAS. It is automatically available once TAS is installed and it provides you with an organized set of options and tasks. Framework shares the same API as the command line utilities for updating configuration files and the TAS runtime (state) database.

Framework is a logically organized interface for point-and-click administration of TAS. A great deal of design work has been put into Framework to make all of the configuration options as self-explanatory as possible. This is important because most TAS configuration options are set up once and then left alone for long periods of time, making it unlikely that an administrator will get frequent practice at using the Framework GUI. Also, there is extensive checking of user input, both at the browser and at the server, to ensure that all configuration change requests are both consistent and reasonable before any system changes are made.

The TAS Framework GUI also has a number of features that are absent from Samba's SWAT GUI. Some examples of these features are a file browser applet for TAS volumes, an interactive

user and group editor, tools for accessing and editing objects in an LDAP directory, and tools for monitoring system status and performance. In addition, Framework allows the administrator to manage NetWare and AppleTalk services, and to share and mount directories over NFS.

The TAS Framework GUI is designed to be a tool for securely administering TAS servers. As such, Framework has support for SSL session encryption, and all sensitive data (such as passwords) is encrypted even if the HTTP session itself is not.

Samba comes with a web-based GUI tool called SWAT (Samba Web Administration Tool). SWAT provides a basic mechanism for editing Samba's configuration file via the web. SWAT is just a thin veneer over the underlying configuration files, with very little additional assistance to the user. For example, SWAT's "Basic" configuration page for "Global" settings includes entries for such items as "preload modules" and "passdb backend", both of which accept freeform strings, and both of which have a "Help" link that just opens the smb.conf man page (actually, ALL of the help links in SWAT just link to sections in the smb.conf man page -- this may explain why the SWAT GUI is so tightly coupled to the smb.conf file format). SWAT also provides "Advanced" and "Developer" views of the configuration files, both of which add even more cryptic configuration options to the screen.

While SWAT is a web-based tool, it is not suitable for remote system administration, since it sends all data, including passwords, in clear text on the network, and it has no SSL support. While it is possible to use an SSL tunneling tool such as stunnel to connect to SWAT over SSL, this is really only an option for sites that have extensive Unix administration capabilities.

Configuration Files

TAS configuration files are not designed for editing by end users and are therefore undocumented. The configuration files can be modified using the TAS command line utilities and/or the TAS GUI, using the same underlying API.

Samba's configuration files, on the other hand, are fully documented, and direct editing of these files is the canonical method for controlling Samba. Indeed, the "help" hyperlinks in the SWAT utility all reference parts of the man page for the smb.conf file, and the documentation for SWAT itself warns users that it might ruin their hand-crafted smb.conf files.

Managing File Permissions

One feature of TAS that is lacking in Samba is a graphical tool for managing files and file permissions. The web-based TAS Framework has a GUI file manager that allows the user to create and delete directories, set file permissions, move and copy files and directories, and view the contents of files and their properties. The Framework File Manager also has a universal interface for changing Access Control Lists (ACLs) on files for all supported Unix platforms. There is also a cross-platform command-line utility for changing ACLs.

Both TAS and Samba also provide support for changing file ACLs from the Windows NT/2000 Security Manager. This support is provided on both TAS and Samba by mapping NT ACLs into Unix ACLs, which are specific to the server operating system.

Product Updates

Downloadable patches are available for TAS on the registered users' area of the LSI Logic Storage System web site.

Security patches for Samba's source code are available from www.samba.org, but this is only useful for customer sites that have a full software development environment and a person who understands how to patch and recompile a package's source code. Other customers must wait for their respective vendors to release updated binary packages.

Sun provides patches to their Samba binary package as part of their normal system patch releases (Solaris 9 only). IBM, SGI and HP also provide system patch releases.

National Language Support (NLS)

TAS has been designed to make localization as simple as possible. All localizable strings are externalized and can be altered to suit a specific locale.

In the current samba version (SAMBA_2_2) the localized versions are maintained separately from the default (English) version. This means that one would have to wait for a localized version from a developer capable of modifying the sources and provide a localized version of Samba. In the upcoming beta version, there are catalogues for a few of the strings (primarily for SWAT).

Summary

Although both TAS and Samba are comparable solutions for providing CIFS service from a Unix host, there are some distinct differences that could prove significant to most users. These include:

- Client support
 - TAS seamlessly supports Windows (CIFS), NetWare and Apple clients.
 - Samba supports only Windows (CIFS) clients.
- Authentication Styles
 - TAS allows you to configure multiple file services, each using different authentication styles.
 - Samba forces you to use a single authentication style for all file services.
- Active Directory Support
 - TAS has Active Directory support built in, so no additional installation and configuration is required.
 - Samba requires that you build, install and configure additional libraries and systems to provide Active Directory support.
 - Note: Active Directory support for Samba is still in beta testing at the time of writing and is not yet ready for use in a production environment.
- LDAP Support
 - TAS provides graphical utilities to administer LDAP data and provides ways to centralize user data for all platform types in LDAP.
 - Samba's LDAP support is not compatible with its other authentication mechanisms and so must be chosen when building the package. No tools for administering LDAP are provided.

- **File Name Handling**
 TAS provides options for mapping file names to suit all needs, including a way to prevent file name collisions that occur due to case-sensitivity issues. TAS also provides ways to suppress certain forms of mapping to improve performance.
 File name collisions due to case-sensitivity are not handled by Samba.
- **Technical Support**
 Support for TAS is reliable, predictable and always available. The quality is high because the TAS developers are available for consultation when necessary.
 Although there are many sources for Samba support, the availability is unpredictable. Paid support for Samba is available but the quality depends on the experience of the vendor.
- **Ease of Installation**
 TAS can be downloaded and installed using the Unix system's native installation program. Then, it's simply a matter of running the Initial Setup Wizard in order to get a basic working server.
 Downloading the source code and building the distribution is the only way to obtain the "standard" Samba distribution. Most Unix vendors provide a Samba distribution, but the version and features are not necessarily consistent. Samba does not provide a quick setup option.
- **Administration**
 TAS provides a simple, user-friendly, graphical interface for administration that hides much of the complexity of the options available. Additionally, TAS provides a full set of command-line programs that enable you to administer from a telnet session, or to do scripting.
 Samba also provides a graphical interface, but it exposes all the complexity one would find when editing the configuration files directly. Samba does not include a full set of command-line programs for administration and configuration.
- **Security**
 The TAS GUI supports SSL and ensures that all passwords are encrypted before being transmitted, even if SSL support is disabled.
 The Samba GUI does not support SSL and transmits everything unencrypted.
- **Additional Utilities**
 TAS provides tools for administering LDAP, managing file permissions, monitoring the system, managing performance, and viewing log files.
 None of the above utilities are available with Samba.
- **National Language Support**
 TAS provides catalogues for all strings used in the product, and has tools for making localization simple.
 Localized version of Samba is maintained separately and creating a version for a new locale requires rebuilding the entire product.

Conclusion

For networks that require only simple CIFS connectivity and that have an experienced Unix administrator to handle installation, configuration and updates, Samba is a credible solution.

For sites where ease of administration and a secure administration interface is important, TAS is a preferable solution. Also, for more complex environments, such as networks that contain a

heterogeneous mixture of CIFS, AppleTalk, and NetWare clients, sites that do not have an experienced Unix administrator, or sites where features such as Active Directory are required, TAS is the logical choice.

Quick Glance' Summary Table

Product Feature	TAS	Samba
Supports Windows (CIFS) Clients	Yes	Yes
Supports NetWare and Apple Clients	Yes	No
Configure multiple file services, each using different authentication styles	Yes	No
Built-in Active Directory support	Yes	No
Prevents file name collisions due to case sensitivity issues even when files are created from Unix	Yes	No
Availability of high quality 24/7/365 Technical Support	Yes	???
Availability of Initial Setup Wizard for ease of installation	Yes	No
Provides graphical administration interface that removes complexity of underlying application	Yes	No
Supports SSL and encrypting of passwords	Yes	No
Provides utilities to administer LDAP, manage file permissions, monitor system, view log files, and manage performance	Yes	No
Provides National Language Support (NLS) and tools to make localization simple	Yes	No

Glossary of Terms

Active Directory

A directory service from Microsoft that uses Kerberos for authentication and LDAP for directory services.

Browse Master

A Windows (or NT) server that is configured to retain a list of all servers and domains on the network. Other systems can contact the browse master to discover what systems are available.

CIFS

Common Internet File System: see SMB

Code page

A document that maps a specific character set.

Framework

The web-based GUI provided with TAS for administration.

Kerberos

An authentication system that is used by Active Directory.

LDAP

Lightweight Directory Access Protocol: although this is the name of the protocol, it also refers to the enterprise-wide directory (database) that uses the protocol.

Logon server

A Windows (or NT) server that is configured to process client users' logon requests. It is also known as a "Windows domain controller."

OpenLDAP

An open source implementation of LDAP.

Proxy Server

A server that is configured to authenticate users on behalf of other file servers.

SMB

Server Message Block: the protocol used by Microsoft for file service. It has been updated and renamed to CIFS.

SSL

Secure Sockets Layer: a protocol designed to provide encrypted communications on the Internet. It is most commonly used for securing web connections.

SWAT

Samba Web Administration Tool: the web-based GUI for administering Samba.

WINS Server

A Windows (or NT) server that resolves NetBIOS names to IP addresses. It is used by clients to find servers in a CIFS network.

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