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Agenda

- New Features in Red Hat Enterprise Linux 6

- Samba and Clustering, a general overview of how it works

- Samba Roadmaps, what is the community working on

- Future developments

New features – Protocol support

- IPv6 support
  - Full support for single and dual (ipv4/ipv6) stack setups
  - No additional configuration need, but IPv6 support relies exclusively on DNS for name resolution (no NETBIOS) and works only over port 445.
- Support for the new SMB2 protocol
  - Currently this feature is considered experimental
  - Must be explicitly enabled (max protocol = smb2)

New Features - Interoperability

- Enhanced trusted domain support

  - Cross forest, transitive, one way

- Extended interoperability with Windows 7 and Windows 2008 R2

  - Supports all Windows security settings (sign/seal/etc)

  - Support for Windows 7 joined to a Samba DC

    - More information on: http://wiki.samba.org/index.php/Windows7

New Features – Interoperability (cont.)

- Automatic machine password change as domain member
  - AD domains may require domain members to change their password regularly
  - This requirement is addressed by a new option:
    - `machine password timeout = 604800 (default)`
    - A value of 0 disables password changes
  - Running winbindd is required in order to use this feature
  - See "wbinfo -c" to force changes manually

New Features - Encryption

- Support for LDAP sign&seal policies
  - AD domains may require all LDAP traffic to be signed and/or sealed.
  - This requirement is addressed by a new option:
    - `client ldap sasl wrapping = plain (default)`
    - `client ldap sasl wrapping = sign`
    - `client ldap sasl wrapping = seal`
    - Sealing implies signing
- Encrypted SMB transport
  - NOTE: Windows clients do not support this extension

New Features - Management

- New, registry based, configuration mode
  - Samba can store the configuration in a registry file editable via network (`net conf` or `regedit32.exe`) and accessible programmatically
  - Activated by `config backend = registry`

- Better support for native Windows management tools (mmc, usrmgr)

- New NetApi remote management api

- Graphical join utility tool (requires registry configuration)

Clustering: Samba + CTDB

- CTDB is a specialized distributed database used to clusterize Samba on top of a distributed file system like GFS2

- By using CTDB Samba is able to properly share files from multiple nodes at the same time (active-active) maintaining full SMB semantics without fatally degrading performances.

- CTDB also provides HA features such as node monitoring, node failover and IP takeover to simplify Samba cluster management, and can also be used to control other applications (like NFS sharing).

Why is CTDB fundamental ?

- In order to fully support SMB semantics, all samba servers need to have very strict coordination.

- Classic sharing methods required to share samba's TDB databases over a distributed filesystem.

- Samba use locking very aggressively over TDB files

  - No distributed file system can cope with the amount of locking and data manipulation done on a traditional TDB database with adequate performances.

- CTDB allows to intelligently share data and messages between nodes only when it is really necessary.

How does CTDB work ?

- CTDB uses *persistent* and *normal* databases.

- Data is always stored on a local, fast, file system.

  - Replication of *persistent* databases is performed by using a global transaction, and then distributing data to all the nodes when the transaction is complete.

  - Replication of *normal* databases is on-demand. Records are retrieved by a node only when needed, and cached locally.

- For *normal* databases every record belongs to a *data master* that has the authoritative copy of the record.

CTDB (cont.)

- The *data master* is dynamically determined based on usage in order to minimize inter-node communication

- When a node goes down a recovery procedure is performed by a designated *recovery master* that reclaims any orphaned record from the surviving nodes caches and becomes the new *data master* for those records.

- Normally the recovery procedure depends on holding a lock on a file on the underlying distributed file system.

CTDB and Samba configuration

- In a clustered environment it is very useful to be able to distribute configuration data automatically to every node.

- By using the registry configuration method, configuration can be immediately distributed to all nodes by CTDB as a persistent database

- Other databases containing users, id mappings, passwords are already shared through CTDB.

Samba Roadmap

- Samba 3.5.x in RHEL 6

- New upstream release schedule changed to 9 months

- Next Samba release 3.6.0 expected by end of 2010

- SMB2 Unix Extensions to be designed together with Microsoft. Announced at SambaXP.

- Samba4 making great progress

  - Full AD replicating DC demonstrated at SambaXP

- Merge of current 3.x code and 4.x code expected next year leading to a 4.0.0 release (no firm schedule yet)

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