CTDB database vacuuming for geniuses

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CTDB Project

Motivation: Support for clustered Samba

- Multiple nodes active simultaneously
- Communication between nodes (heartbeat, failover)
- Distributed databases between nodes

Features:

- Volatile and Persistent databases
- Cluster-side messaging for Samba
- IP failover and load balancing
- Service monitoring

Community:

- `https://wiki.samba.org`
- `git://git.samba.org/samba.git`

Overview

- Database models
- Volatile database
  - Data model
  - Vacuuming
  - Recovery
- Zombie outbreak
  - Resurrection of the dead
  - Keeping 'em dead
- Restructure

Database models

Volatile	Persistent
distributed data	replicated data
single copy	multiple copies
data loss on failure	loss-less
per-node per-db per-chain mutex	clusterwide per-db mutex
disk backed	disk backed
cluster-wide traverse	local traverse
shared access	client-server access

Volatile database

Volatile database – data model – record creation

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- **Vacuuming**

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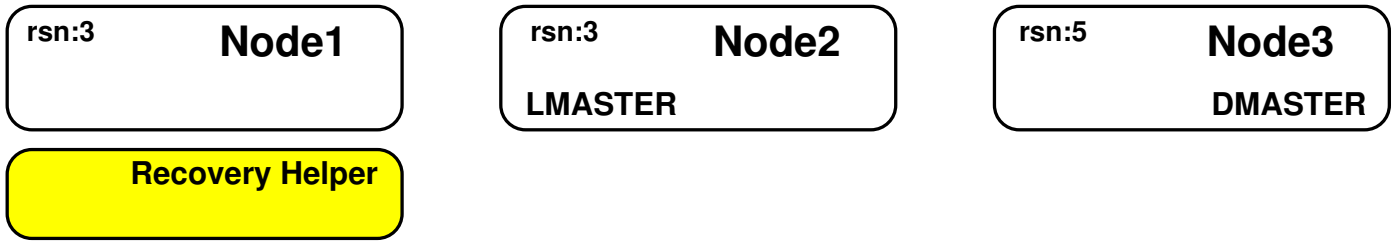
Volatile database – recovery



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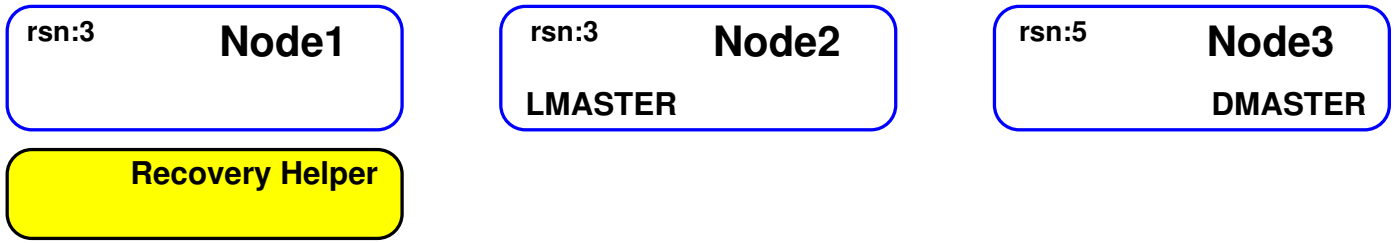

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- Recovery: Freeze database

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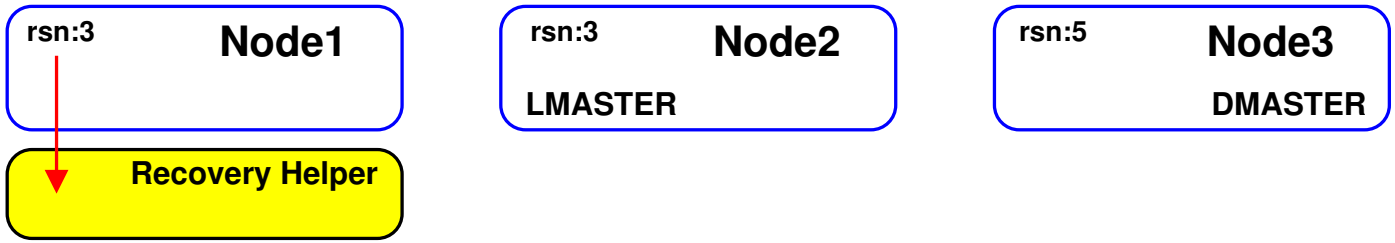

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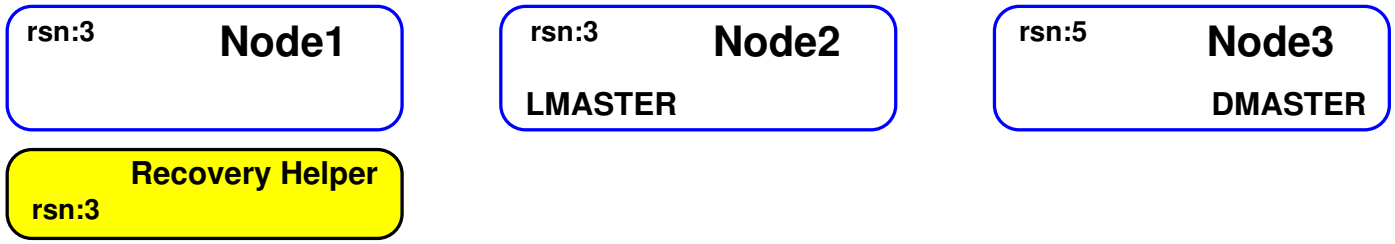

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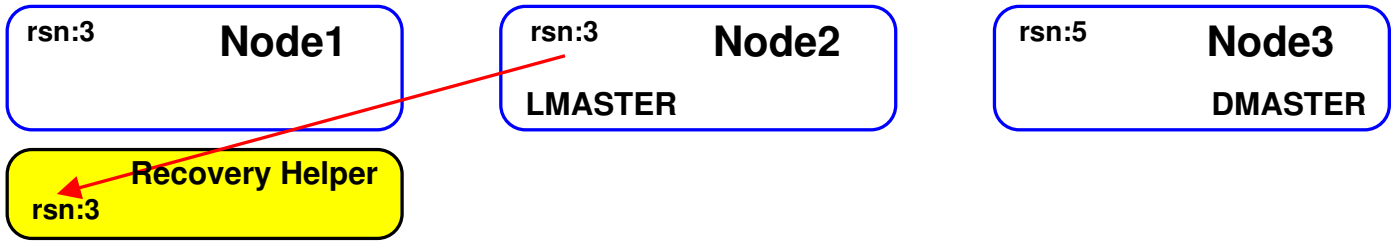

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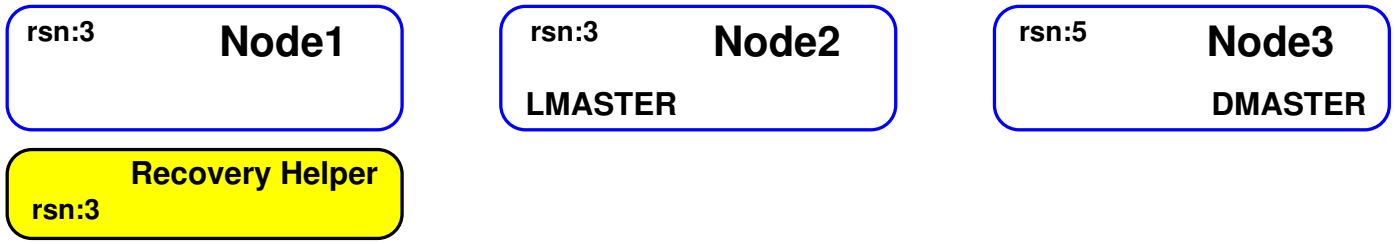

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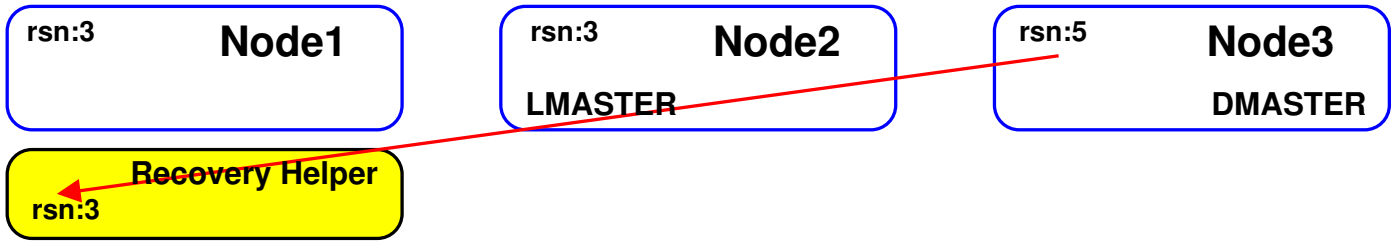

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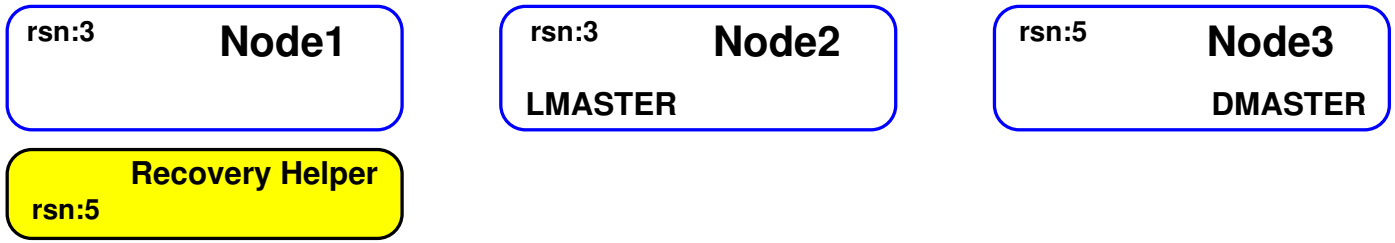

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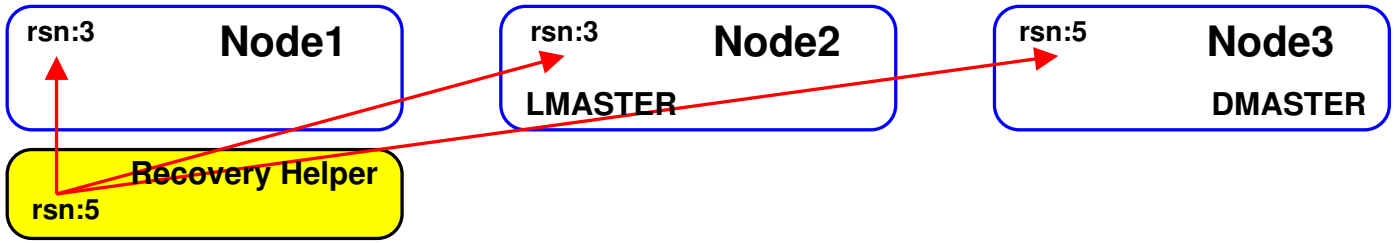

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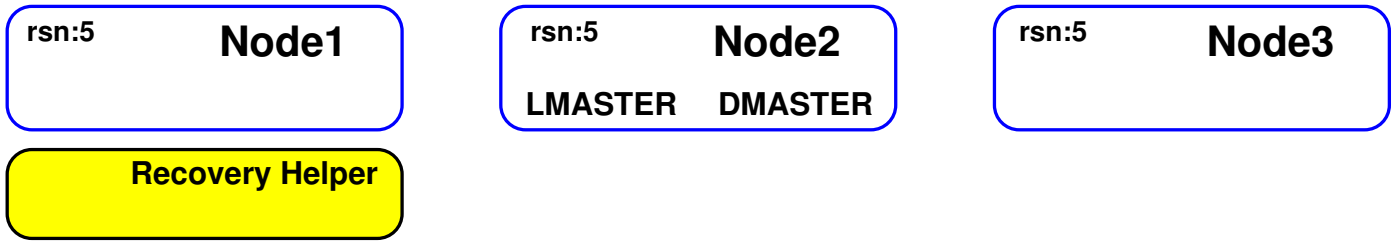

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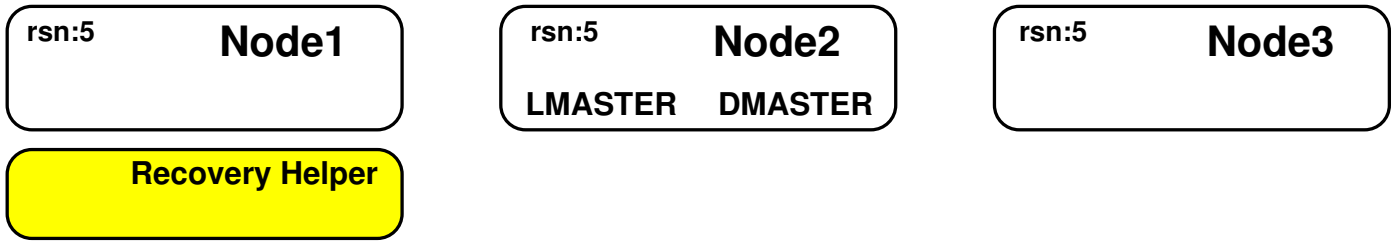

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Zombie outbreak

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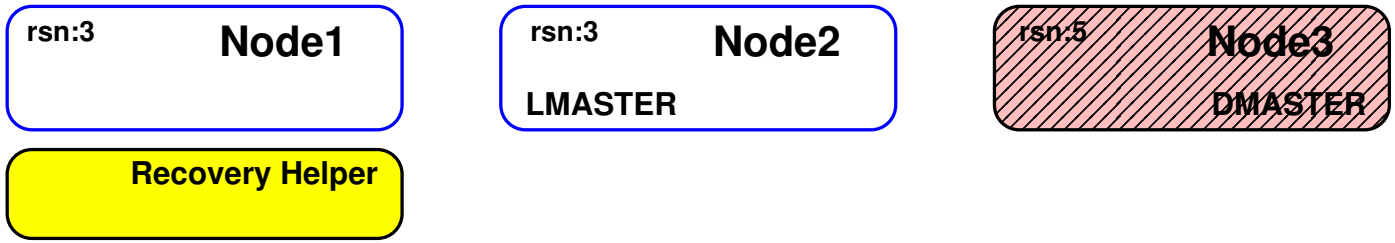

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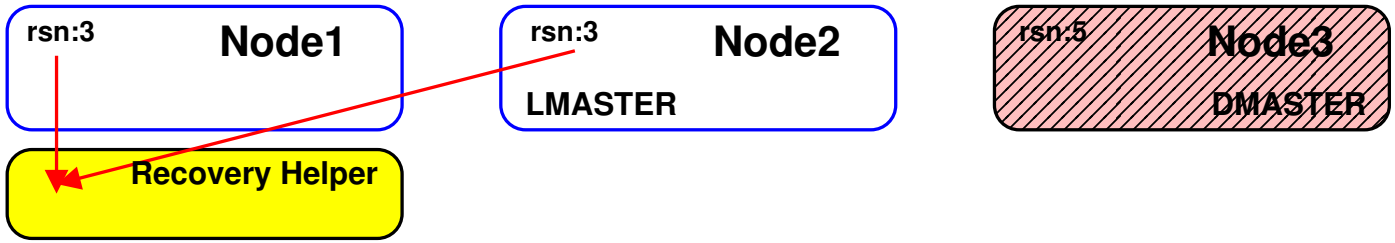

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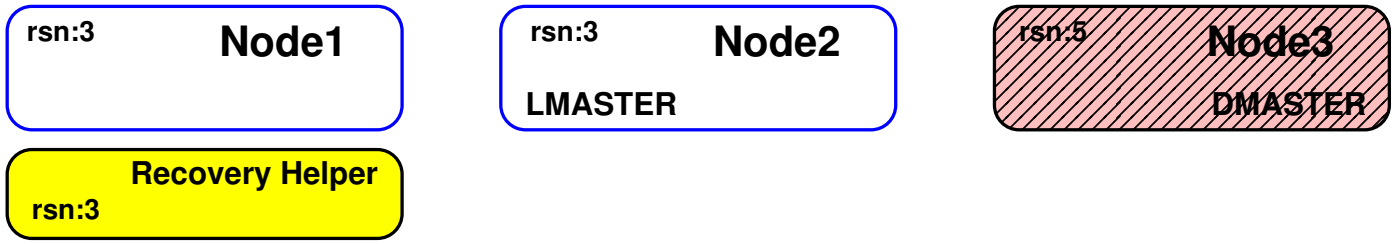

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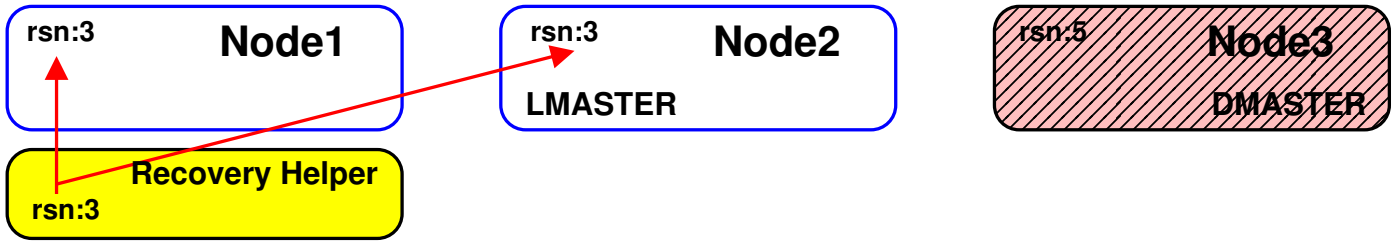

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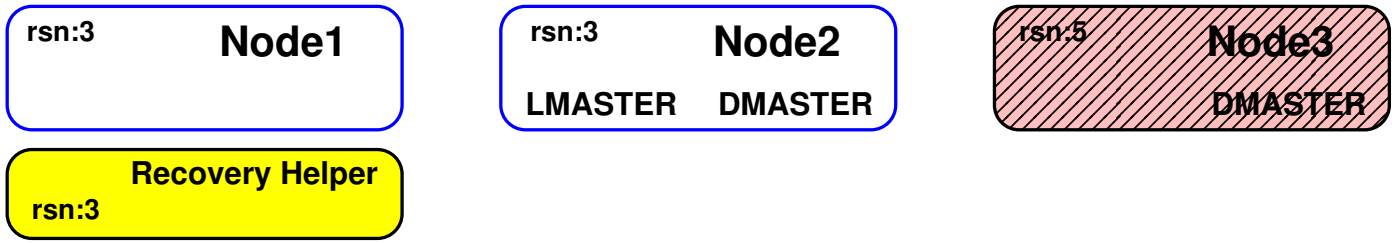

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- Zombie record!

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Restructure

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  - Special control for deleting records
  - Out-of-band modification to database
  - Potential race with recovery

Existing issues with vacuuming

- Vacuuming done in a child process
  - Forks a process from main ctdb daemon
  - Can be very expensive
- Migrating deleted record to lmaster
  - CTDB daemon itself cannot start record migration
  - Migration is triggered from a client
  - Hook vacuuming migration in recovery daemon (ugh!)
- Deleting empty record from other nodes
  - Special control for deleting records
  - Out-of-band modification to database
  - Potential race with recovery
- Hopefully, re-structuring will solve these problems!

CTDB restructure

- Continuing from Martin's talk . . .

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- Vacuuming daemon

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  - Focus on database operations
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  - Handle failures better (what if records cannot deleted?)
- Hope that someone will write the code

Questions / Comments