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POWERING THE FUTURE

WHITEPAPER



TX CONTROL

RELIGUARD®



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ReliGuard®

Advanced High Availability and Backup for Critical Systems

The Complete Solution for Zero Downtime and Total Data Security

ReliGuard® is the High Availability (HA) and advanced backup system developed by TX-Control to ensure business continuity and data security in mission-critical environments. Designed for broadcast infrastructures, corporate networks and data centres, ReliGuard® offers automated MASTER/SLAVE management, synchronised backups and instant recovery to protect hardware, software and data from any possible risk.

Dynamic MASTER/SLAVE Architecture

ReliGuard® utilises a dynamic MASTER/SLAVE management engine, ensuring that each node in the system can automatically adapt to operational conditions.

MASTER Machine Workflow

- **Service Monitoring:** Constantly monitors the health status of TX-Control's critical services.
- **Heartbeat:** If everything is active, sends a heartbeat to the SLAVE nodes to confirm the operational status.
- **Fault Management:** If a critical TX-Control service is found to be non-healthy, it attempts a restart. If it fails, it downgrades the current server to SLAVE and stops polling measurements and other operations.
- **Backup Loss Limit:** Automatically performs a backup of all operation and measurement data on the NAS.

SLAVE Machine Workflow

- **Automatic Monitoring:** Constantly checks the status of services, without sending heartbeats.
- **Dynamic Failover:** If the last heartbeat of the MASTER is older than one minute and the services on the current instance are healthy, the SLAVE node transforms to MASTER in less than 30 seconds.
- **Synchronisation:** Synchronises on the SLAVE instance continuously the data of the MASTER by taking it from the NAS to ensure business continuity in case of failover.

Split-Brain Instances

If two machines both enter MASTER mode (split-brain), the machine with the lower priority is automatically downgraded to SLAVE. This mechanism is configurable for priority IPs (e.g. 172.21.0.1), providing flexibility and control.

Automatic Backup

Synchronised Backup System ReliGuard® implements an automated backup system designed to protect data with a maximum delay of only 5 minutes, providing a superior level of protection in any situation.

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MASTER: Backup Creation

- Every 5 minutes: Saving measurement and configuration data to the NAS
- Daily, Weekly and Monthly Backups:
 - Every night at 23:55: Full backup of daily data
 - Every week at 00:05 on Monday: Full backup of weekly data
 - Every first day of the month at 00:05: Archiving of monthly data for historical analysis

SLAVE: Data Recovery

- Every 5 minutes: Automatic synchronisation of data from the NAS. In the event of a conflict, the most recent keys overwrite the previous ones.
- UPDATED DATA: Even in the event of a power down of less than 10 minutes, the restore ensures no loss.

Multi-Level Data Protection

ReliGuard® not only ensures availability and backups; it also protects against a wide range of risks:

- **Hardware**
 - Server overloads and failures are handled automatically with instant failovers.
- **Software**
 - Crashes of critical services are independently verified and repaired if possible.
- **Data**
 - Protection Protection against ransomware, human errors, and corruption.

NAS Cleanup and Optimisation

ReliGuard® NAS management is intelligently designed to optimise storage space and read performance:

- **Every 3 days:** Deleting incremental backups every 5 minutes.
- **Every 31 days:** Removing the oldest daily backups.
- **Every 3 years:** Deleting obsolete monthly backups.

This approach ensures efficient and sustainable storage management.

Unique Technical Advantages

- **High Reliability:** 99.999% uptime due to continuous monitoring and automatic failover
- **Operational Efficiency:** Data synchronisation with up to a 5-minute delay
- **Scalability:** Support for local (on-premise) and hybrid cloud configurations

Want to Know More?

With ReliGuard®, TX-Control provides enterprise-grade technology for every critical need.



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