SERVER REQUIREMENTS FOR YOUR YACHT

IDEA DATA SOLUTIONS

Ensuring Reliability, Redundancy, and Resilience at Sea

In data-driven marine environments, server and related networking equipment represent the heart of a superyacht's digital infrastructure. From navigation and maintenance systems to entertainment and security, a well-maintained and redundant server setup is crucial. This document is created to provide best practices for server setup and maintenance onboard superyachts, with a focus on backup strategies, virtual machines (VMs), and ongoing maintenance. It also highlights the importance of server monitoring and offers an overview about potential partners to provide support.

Why Server Reliability Matters at Sea

Superyachts are floating data centres. Server failure at sea can result in loss of critical information, downtime of important systems, and operational inefficiencies. Ensuring reliability through solid infrastructure is not just good practice—it's essential.

Reliability is achieved by combining a proactive monitoring approach with redundancy. Like for any complex equipment on board of a vessel, AV/IT requires standard operating procedures, scheduled planned maintenance and emergency procedures.

Hardware Redundancy: RAID

RAID (Redundant Array of Independent Disks) is a fundamental component of server reliability. Onboard servers should use RAID to protect against data loss due to hardware failure.

Recommended Setup:

- **RAID 1 (Mirroring)** for basic redundancy.
- **RAID 5 or 6** for a balance between performance and fault tolerance.
- **RAID 10** for high performance and redundancy if budget allows.

Benefits:

- Continued operation even if a drive (or multiple depending on the the RAID level) fails.
- Reduced risk of data loss.
- Simplified recovery processes.

BACKUP TO KEEP YOU AFLOAT

Backup Strategy: Onboard and Offsite

A layered backup strategy minimizes risk. Backups should follow a 3 stage setup while at least one of the stages should hold a backup that cant be altered once its written. These setup allows to recover data even in the event of a cyber attack (ransomware encrypting drives, forced deletion etc.).

IDEA's PMS comes by default with the below configuration, our backup manager allows a wide range of configurations to account for different setups.

- **Daily onboard incremental backups** (backup your live data, e.g. databases, configurations)
  - **This data is crucial and valuable,** IDEA's cloud backup runs daily in our default configuration to ensure an immutable offside backup.
- **Weekly full backups.** (backup you documents, manuals etc.)
- **Monthly offsite backups** (cloud or satellite link to onshore servers / IDEA Cloud).

Benefits:

- Rapid recovery onboard.
- Protection from disasters like cyber-attacks, fires or other ship wide events.
- Compliance with cybersecurity and data protection standards.

Virtual Machines (VMs): Efficiency and Flexibility

Virtualization technology allows multiple operating systems and services to run on a single physical server.

Advantages of VMs:

- **Hardware optimization:** Run multiple systems on one machine.
- **Quick recovery:** VMs can be cloned and restored rapidly.
- **Isolated environments:** Prevents one service crash from affecting others.
- **Scalability:** Add or adjust resources as needed.

Use Cases:

- Separate VMs for IDEA's planned maintenance system, navigation data storage, and media servers.
- Sandbox environments for testing software updates.
- Simplified VM migration in case of hardware updates

Recommended tools:

- Proxmox
- Microsoft HyperV

MAINTAIN AND MONITOR

Monthly Server Maintenance Plan

Proactive maintenance avoids downtime and ensures smooth operations.

Checklist:

- Check RAID status and disk health.
- Run security patches and OS updates.
- Update IDEA software components
  IDEA will prompt if you have pending updates during the login. You can always reach out to support@idea-data.com and get help.

- Test restore process from backup.
- Check VM performance and resource usage.
- Validate UPS (Uninterruptible Power Supply) and cooling systems.
- Restart systems if possible

Please note that the lifetime of hardware depends on your needs but is usually around 3-5 years. It's likely that the operating system itself needs to be upgrade earlier.

Server Monitoring

Real-time monitoring ensures issues are detected early, even without a full-time IT staff onboard.

Recommended Tools:

Multiple tools are available, IDEA uses a combination of Zabbix, RAPID7 and CrowdStrike to ensure a safe and reliable operation

Benefits:

- Detect disk failure, CPU overload, memory leaks, or network issues.
- Reduce response time to critical failures.
- Maintain uptime and efficiency.

The monitoring solutions not only provide real team overviews they also enable you to get an asset list, check for end of life systems or plan future hardware upgrades based on current utilisation.

YOUR DOCUMENTATION

Documentation and standard operating

As for any other machinery equipment on board, servers and network infrastructure should follow defined procedures that outline normal operation but also provide guidance in case of failures or emergencies.

Recommended documentations:

- **Scheduled Maintenance Plans:** Define regular intervals for hardware checks, software updates, and system reboots.
- **Access Control Documentation:** Permission Structures: Clearly define roles and access levels for crew, IT staff, and third-party vendors.
- **Emergency Procedures:** failover activation, and communication protocols.
- **System Configuration Records:** Maintain up-to-date logs of hardware specs, OS versions, network settings, and installed software.

There is tooling that can support you providing this documentation but generally to goal is that they are accessible and clear (especially the communication/failure flow protocols). Its recommended to host the documentation onboard and in a cloud environment (with replication) to ensure they are always available no matter the current operation state of the onboard systems.

Our Hardware Partner - YOT:

Our hardware partner YOT delivers enterprise-grade server solutions optimized for marine environments, offering:

- Rugged, compact builds.
- Extended support cycles.
- Remote management capabilities.
- Preconfigured setups for IDEA on board operations

Our recommended server: IDEA SR200

If you're looking for the ultimate solution for your vessel and installing multiple software – not just IDEA – on one server then allow us to present the **IDEA-SR200**.

Pre-installed with optimised IDEA Software. Certified and approved for top performance and reliability, this server has full redundancy meaning you are future-proofed and able to run with high performance.

Why Choose Trusted Partners?

IDEA DATA SOLUTIONS

Working with experienced marine IT providers ensures systems are tailored to the unique demands of yachting.

Maritime Experience
- Proven track record working with superyachts or similar marine environments.
- Familiarity with maritime-specific systems, constraints, and compliance requirements.

Technical Expertise
- Proficiency in AV systems and IT infrastructure (e.g., networking, satellite comms, cybersecurity).
- Ability to troubleshoot both hardware and software issues across integrated systems.

Rapid Response Capability
- Availability for short-notice deployments, especially in remote or international locations.
- Clear escalation paths and 24/7 support options.

Professionalism and Discretion
- Understanding of the privacy and confidentiality expectations in luxury environments.
- Strong interpersonal skills to work seamlessly with crew and guests.

Documentation and Handover
- Provides clear service reports, system updates, and maintenance logs.
- Ensures knowledge transfer to onboard crew or remote support teams.

Vendor and OEM Relationships
- Access to manufacturer support and spare parts.
- Ability to coordinate warranty repairs or system upgrades efficiently.

ABOUT US

- Founded in 2001 in Düsseldorf, Germany
- Successfully completed over 1,300 installations
- More than 500 database set-ups for superyachts
- Working with superyachts ranging between 20m to 180m
- Full in-house development
- Working with individual vessels to entire fleets
- Personal support
- A team of industry professionals