Network Infrastructure Proposal

Client Organization: Rideline Power Bikes

Technology Area: Network Infrastructure

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Executive Summary

Rideline Power Bikes is a growing e-bike company with 40 employees in sales, service, warehouse, administrative, and multimedia roles. Rapid growth has revealed inefficiencies in their software, which depends on spreadsheets, paper records, and desktop POS systems. These disconnected tools cause bottlenecks, data errors, and slow reporting.

This proposal outlines a phased network and software modernization initiative to address these gaps. The recommended solutions span hybrid networking infrastructure, a unified point-of-sale platform, real-time inventory management, strengthened cybersecurity, team communication, multimedia workflow tools, and centralized file management. Together, these investments will improve operational efficiency, cross department visibility, data security, and the company's ability to scale with confidence.

Business Requirement Needs

Rideline Power Bikes requires a reliable yet secure network infrastructure to support its hardware, software, staff, and operations. The current network lacks security, cost efficiency, reliability, and scalability that matches the current growth of the company.

Business needs of the company:

- Securing payment transactions and sensitive administration files.
- Network coverage must cover the whole Rideline campus.
- Network coverage must be reliable for all departments.
- Guest traffic must be isolated on its own VLAN from main operations and admin network.
- Network outages affecting operations of all departments.
- IT department must have access to all devices and VLANS for security, troubleshooting and performance.

Challenges:

- Outdated systems relying on spreadsheets and paper documentation.
- Limited network security and lack of proper network segmentation.
- Inconsistent wireless coverage across the Rideline campus.
- Lack of centralized management for users, devices, and network resources.
- Poor integration between sales, inventory, service, and customer management systems.
- Limited scalability

Proposed Solution

Hardwired Consulting proposes implementing a modern hybrid network infrastructure combined with cloud-based business software solutions.
The proposed solution includes:

• Implementation of VLAN segmentation to separate Sales, Service, Warehouse, Administration, Multimedia, and Guest networks.
• Deployment of a secure firewall to protect the organization from external threats and control traffic between VLANs.
• Installation of enterprise wireless access points to provide reliable coverage across the Rideline campus.
• Integration of cloud-based business applications such as Zoho One and Square POS for centralized operations.
• Deployment of a Windows Server 2025 system for Active Directory, file sharing, and user authentication.
• Implementation of centralized file storage combining local server storage with cloud backup systems.
• Integration of multimedia production tools for marketing and media teams.
• Use of manufacturer diagnostic tools and a custom application for servicing Rideline and third-party e-bikes.

Detailed Technical Specifications

A centralized server running Windows Server 2025 will provide:

• Active Directory for identity and access management
• Centralized authentication for employees
• File server capabilities for internal document sharing
• Backup and redundancy for cloud-based systems
• Layer 3 managed switches to support VLAN segmentation and routing.
• Enterprise firewall to control network traffic and protect against external threats.
• Business-grade wireless access points to provide reliable wireless connectivity.
• Gigabit Ethernet backbone for high-speed communication between departments.
VLAN segmentation will isolate network traffic between departments:

VLAN 10 – Sales Department
VLAN 20 – Warehouse Department
VLAN 30 – Repair and Service Department
VLAN 40 – Administration and Management
VLAN 50 – Multimedia Production
VLAN 60 – Guest Network (Internet-only access)

Server Infrastructure

A centralized server running Windows Server 2025 will provide:

- Active Directory for identity and access management
- Centralized authentication for employees
- File server capabilities for internal document sharing
- Backup and redundancy for cloud-based systems

Cost Statement

Below is an itemized list of costs.

Item	Quantity	Unit Cost
Switch	1	$4,000
Wireless Access Points	2	$1,600
Network Cabling	1	$700
Network Configuration	1	$3000
Power Back-up	2	$1,500
Network Patch Panels	2	$350
Router	1	$500

Total Cost: $11,150

Implementation Considerations

Phase 1: Network infrastructure deployment (switches, firewall, VLANs, wireless access points)

Phase 2: Server installation and Active Directory setup

Phase 3: Integration of cloud-based applications (Zoho One, Square POS)

Phase 4: Employee training, data migration, and testing

Phase 5: Ongoing monitoring, support, and scaling

Benefits and Justifications

- Operational Efficiency: Streamlined workflows reduce time spent on manual data entry.
- Enhanced Security: VLAN segmentation, firewall, and encrypted cloud storage protect sensitive data.
- Scalability**:** Network designed to grow with the company.
- Centralized Management: IT has full visibility and control over devices and users.

- Improved Communication: Unified software for internal and external collaboration.
- Reliable Network: Enterprise-grade wireless and wired connections ensure minimal downtime.

Possible Risks and Solutions

Risks:

- Budget overspending during implementation.
- Temporary network downtime during installation.
- Employee resistance to new systems.
- Data breach or unauthorized access.
- Data loss during system migration.

Mitigation:

- Provide training sessions and user documentation for employees.
- Conduct regular reviews of software licensing and operational costs.
- Maintain server backups and daily cloud backups.
- Implement role-based access control for sensitive data.
- Use Square POS offline mode to allow transactions during outages.
- Use encrypted cloud storage and secure network protocols.
- Perform full backups and validation before data migration.

Conclusions and Recommendations

Rideline Power Bikes stands at a pivotal point in its growth journey. The current network and software infrastructure, while functional, is fragmented, insecure, and increasingly unable to support the company's operational demands. Without modernization, these limitations will continue to create bottlenecks, data inconsistencies, and security vulnerabilities that could hinder scalability and profitability.

The proposed hybrid network and cloud-based software solution directly addresses these challenges. By implementing VLAN segmentation, enterprise-grade wireless access, a centralized Windows Server 2025 environment, and integrated business applications.