

Agent Architecture Comparison

Microsoft CoPilot Stack vs. N8N-Based Solution

Enhancing FreshServices Integration with Modern Automation Solutions



March 19, 2025

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Executive Summary

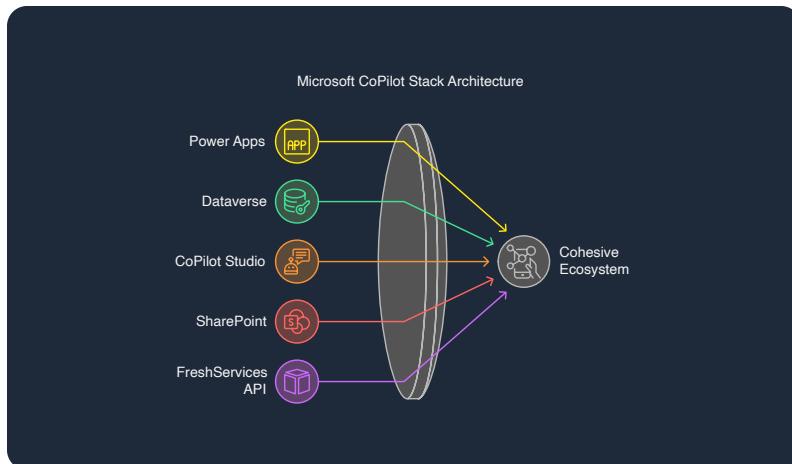
- ① Key business challenge: Building flexible, scalable agents for FreshServices ticket management
- ② Two potential architectures: Microsoft-native vs. Hybrid N8N approach
- ③ Highlights of key differences in flexibility, maintenance, and total cost

Summary

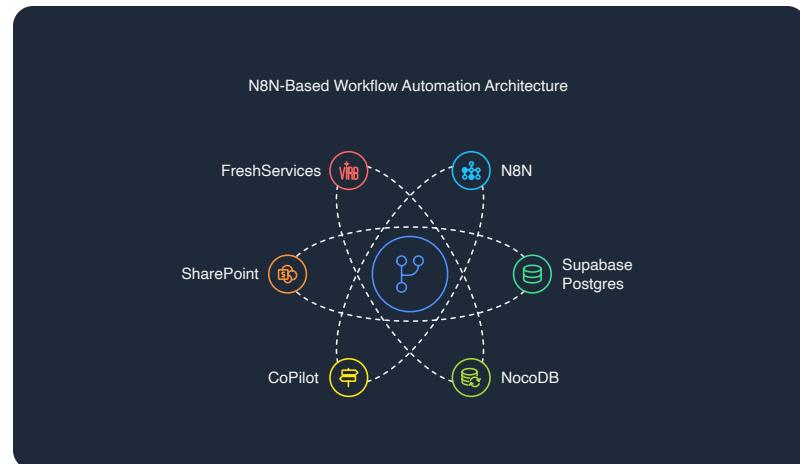
This presentation compares two architectural approaches for enhancing FreshServices ticket management: a Microsoft-native solution using the CoPilot Stack and a hybrid approach leveraging N8N workflows. We'll analyze the trade-offs in terms of development flexibility, integration capabilities, maintenance requirements, and total cost of ownership.

Current Landscape

Current Microsoft Architecture



Proposed Hybrid Architecture



N8N handles technical implementation and heavy lifting behind the scenes, while users continue to interact with familiar Microsoft tools.

Pain Points

Goals

- Automate routine ticket processing tasks

- Manual ticket processing causing delays in response times
- Limited visibility into ticket status and history
- Difficulty scaling support operations with current tools
- Inconsistent ticket categorization and prioritization

- Improve ticket routing and prioritization
- Enable data-driven insights from ticket history
- Create a scalable architecture for future growth

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Microsoft CoPilot Stack Overview

Microsoft CoPilot Stack Architecture

Power Apps

Low-code application development platform

Dataverse

Cloud-based storage solution for business applications

CoPilot Studio

AI-powered virtual agent platform

SharePoint

Document management and storage system

FreshServices API

Integration with ticket management system

Connections:

- CoPilot Studio → Power Apps (Embedded virtual agent)
- Power Apps → Dataverse (Data storage)
- Dataverse → SharePoint (Document storage)

- CoPilot Studio → FreshServices API (Ticket operations)

Key Benefits

- Tight integration with existing Microsoft ecosystem
- Low-code development reduces implementation time
- Centralized administration through Power Platform admin center
- Built-in compliance and security features

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Hybrid Solution Overview

Hybrid Architecture: Microsoft Frontend + N8N Backend

N8N

Handles heavy lifting automation tasks (managed by Umbral)

Supabase Postgres

Backend database (managed by Umbral)

Microsoft Teams

User-facing chat interface

CoPilot

User-facing AI assistant and workflow router

SharePoint

Document storage and knowledge base

FreshServices

Ticketing system with API connections

Connections:

- FreshServices → N8N (Webhooks)
- N8N → Supabase Postgres (Data storage)
- Microsoft Teams → CoPilot (User interface)
- CoPilot → N8N (Workflow routing)

- N8N → SharePoint (Document operations)
- N8N → FreshServices (API operations)

Key Benefits

- **Familiar User Experience:** HG Fenton team continues to use Microsoft Teams and Copilot
- **Technical Complexity Hidden:** N8N and database managed by Umbral, no technical burden on your team
- **Best of Both Worlds:** Microsoft ecosystem for user interactions, N8N for powerful automation
- **Flexible Integration:** 300+ pre-built connectors for future expansion
- **Cost-Effective:** Reduced licensing costs while maintaining Microsoft compatibility

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Solution Approach Comparison

Microsoft Interface vs. Technical Implementation

Category	Microsoft CoPilot Stack	N8N-Based Solution
User Experience	<ul style="list-style-type: none">• Microsoft Teams interface• Copilot for user interactions• SharePoint for documents	<ul style="list-style-type: none">• Microsoft Teams interface• Copilot as user-facing assistant• SharePoint for knowledge base
Technical Implementation	<ul style="list-style-type: none">• IT team manages all components• Power Automate for workflows• Limited customization options	<ul style="list-style-type: none">• Umbral manages technical components• N8N for heavy lifting (invisible to users)• Extensive customization without user burden
Integration Capabilities	<ul style="list-style-type: none">• Microsoft ecosystem focus• Limited third-party options• Licensing for each connector	<ul style="list-style-type: none">• Full Microsoft ecosystem compatibility• 300+ pre-built integrations• No additional connector licensing
Maintenance Requirements	<ul style="list-style-type: none">• HG Fenton team maintains all components• Regular updates needed	<ul style="list-style-type: none">• Umbral handles all technical maintenance• Automatic updates

- Technical expertise required
- No technical burden on HG Fenton team

Hybrid Approach Benefits

The N8N solution offers a unique hybrid approach: your team continues to use familiar Microsoft tools while the technical complexity is managed behind the scenes.

- **Same Microsoft Interface:** Users interact with Teams, Copilot, and SharePoint just as they would in the Microsoft-only approach
- **Hidden Technical Complexity:** N8N handles ingestion and automation workflows without requiring your team to manage them
- **Best of Both Worlds:** Microsoft's familiar interface with N8N's powerful automation capabilities
- **Reduced Technical Burden:** Your team focuses on business outcomes, not technical implementation

Integration Capabilities

Integration Capabilities

Category	Microsoft CoPilot Stack	N8N-Based Solution
Native Integrations	<ul style="list-style-type: none">Microsoft product integrationsPower Automate connectorsMicrosoft Graph API	<ul style="list-style-type: none">300+ pre-built integrationsCustom API integrationsDatabase connectors
API Capabilities	<ul style="list-style-type: none">Limited API customizationBasic authentication methodsConnector-based approach	<ul style="list-style-type: none">Advanced API configurationMultiple authentication methodsCustom request handling
Data Transformation	<ul style="list-style-type: none">Basic data mappingLimited transformation optionsTemplate-based approach	<ul style="list-style-type: none">Custom JavaScript transformationsComplex data mappingAdvanced filtering options
Database Operations	<ul style="list-style-type: none">Dataverse as primary storageLimited external DB operationsMicrosoft-focused	<ul style="list-style-type: none">Direct database operationsSQL query executionMultiple database support

The N8N approach excels in integration flexibility with its extensive library of pre-built connectors and ability to create custom integrations. While the Microsoft Stack offers seamless integration within its ecosystem, it may require premium connectors or custom development for certain third-party systems, potentially increasing costs and complexity.

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FreshServices Integration Specifics

FreshServices Integration Specifics

Category	Microsoft CoPilot Stack	N8N-Based Solution
API Handling	<ul style="list-style-type: none">Limited FreshServices API handlingBasic authenticationConnector-based approach	<ul style="list-style-type: none">Full FreshServices API supportAdvanced authenticationCustom endpoint handling
Webhook Processing	<ul style="list-style-type: none">Basic webhook receptionLimited processing optionsConstrained data handling	<ul style="list-style-type: none">Advanced webhook processingCustom payload parsingConditional webhook routing
Ticket Processing	<ul style="list-style-type: none">Basic ticket creation/updatesLimited prioritization logicTemplate-based responses	<ul style="list-style-type: none">Advanced ticket prioritizationCustom escalation workflowsDynamic response generation
Historical Analysis	<ul style="list-style-type: none">Basic reportingLimited historical data analysisPredefined metrics	<ul style="list-style-type: none">Historical data analysisCustom reportingTrend identification

The N8N-based solution offers significant advantages for FreshServices integration, particularly in handling complex ticket workflows and webhook processing. The ability to implement custom business logic for ticket prioritization and routing can lead to more efficient support operations and improved response times.

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Maintenance & Governance

Maintenance & Governance

Category	Microsoft CoPilot Stack	N8N-Based Solution
Updates & Maintenance	<ul style="list-style-type: none">• Microsoft-managed updates• Automatic platform upgrades• Managed infrastructure	<ul style="list-style-type: none">• Self-managed updates (Azure VPS)• Control over upgrade timing• Infrastructure management required
Administration	<ul style="list-style-type: none">• Power Platform admin center• Microsoft admin tools• Centralized management	<ul style="list-style-type: none">• NocoDB admin interface• Custom dashboards• Business user-friendly controls
Monitoring	<ul style="list-style-type: none">• Built-in monitoring• Standard alerts• Microsoft-defined metrics	<ul style="list-style-type: none">• Custom monitoring options• Flexible alerting• Tailored metrics and logging
Compliance	<ul style="list-style-type: none">• Microsoft compliance features• Standard security controls• Built-in governance	<ul style="list-style-type: none">• Custom compliance implementation• Flexible security controls• Self-managed governance

Maintenance Trade-offs

The Microsoft Stack offers a more managed approach with automatic updates and centralized administration, reducing maintenance overhead but limiting control. The N8N approach requires more hands-on management but provides greater flexibility in how and when updates are applied, along with custom monitoring and governance options tailored to specific business needs.

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Cost Analysis: Fixed & Per-Interaction

Monthly Fixed Costs

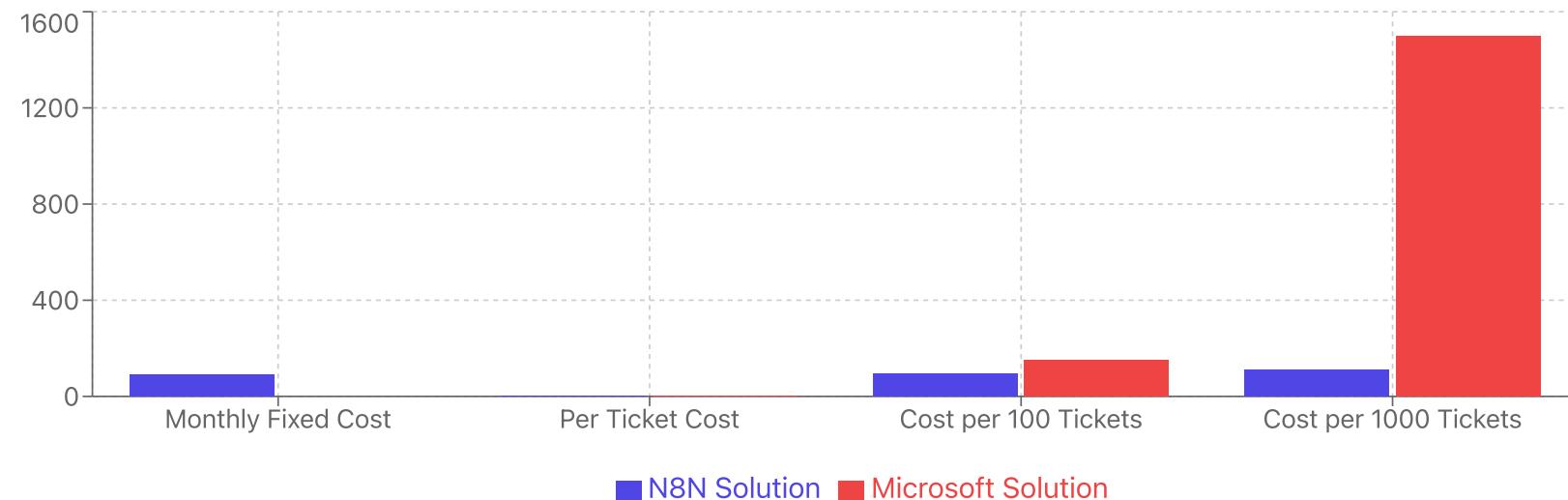
Component	N8N Solution	Microsoft Solution
Infrastructure	\$76.00 (Azure VPS)	Included in licensing
Backups	\$15.00	Included in licensing
Total Fixed Costs	\$91.00	\$0.00 (absorbed in per-interaction costs)

Per-Interaction Costs

Component	N8N Solution	Microsoft Solution
CoPilot Message	\$0.02 per message	\$0.02 to \$0.30 per message
Average Cost per Ticket	\$0.02 per ticket	\$1.25 to \$2.00 per ticket (5-8 interactions @ \$0.25)

Cost Comparison

Cost Comparison by Volume



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Cost Analysis: Annual & Projections

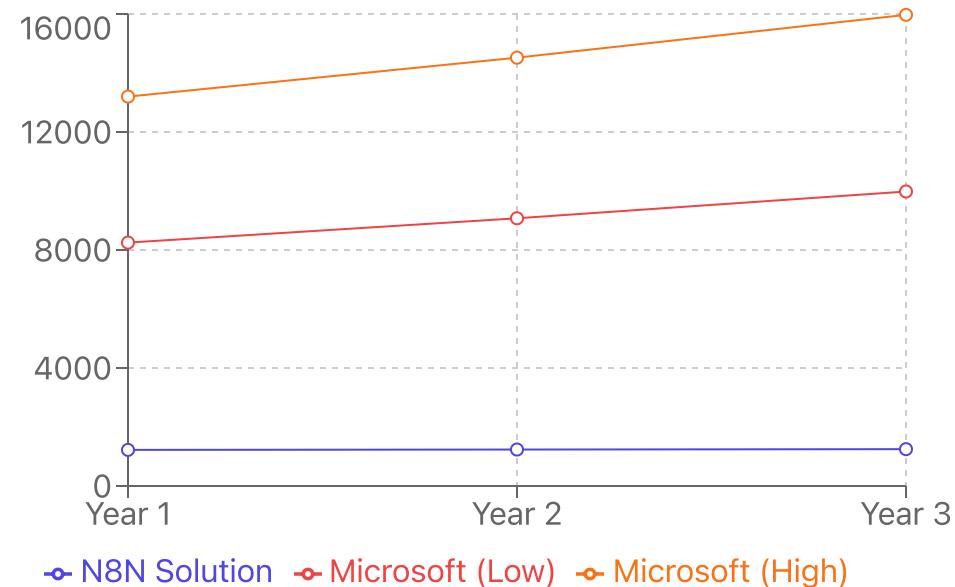
Annual Cost (6,600 Tickets)

Metric	N8N Solution	Microsoft Solution
Fixed Annual Costs	\$1,092.00	\$0.00
Interaction Costs	\$132.00	\$8,250.00 to \$13,200.00
Total Annual Cost	\$1,224.00	\$8,250.00 to \$13,200.00
Average Cost per Ticket	\$0.19	\$1.25 to \$2.00

Three-Year Cost Projection

Timeframe	N8N Solution	Microsoft Solution
Year 1 (6,600 tickets)	\$1,224.00	\$8,250.00 to \$13,200.00
Year 2 (10% growth)	\$1,236.00	\$9,075.00 to \$14,520.00
Year 3 (10% growth)	\$1,248.60	\$9,982.50 to \$15,972.00
3-Year Total	\$3,708.60	\$27,307.50 to \$43,692.00

Three-Year Cost Projection



Cost Comparison Highlights

- The N8N solution requires a fixed infrastructure cost of \$91/month regardless of ticket volume.
- The N8N solution becomes increasingly cost-effective as ticket volume grows.
- The fixed costs of the N8N solution are offset after processing approximately 73 tickets per month.
- The N8N approach could save approximately \$23,598.90 to \$39,983.40 over three years.

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User Experience & Adoption

User Experience & Adoption

Category	Microsoft CoPilot Stack	N8N-Based Solution
User Interface	<ul style="list-style-type: none">• Familiar Microsoft interfaces• Power Apps mobile experience• Microsoft design language	<ul style="list-style-type: none">• NocoDB for prompt management• Custom UI options• Flexible design implementation
Access Control	<ul style="list-style-type: none">• Microsoft identity integration• Role-based permissions• Standard security groups	<ul style="list-style-type: none">• Role-based access control• Custom permission models• Flexible authentication options
Mobile Experience	<ul style="list-style-type: none">• Native Power Apps mobile• Microsoft mobile optimization• Integrated mobile experience	<ul style="list-style-type: none">• Responsive web design• Progressive web app options• Custom mobile optimizations
Training Requirements	<ul style="list-style-type: none">• Microsoft training resources• Familiar to Microsoft users• Standard learning curve	<ul style="list-style-type: none">• Custom training materials• Potentially steeper learning curve• Tailored onboarding process

Adoption Considerations

The Microsoft Stack offers a familiar experience for organizations already using Microsoft products, potentially reducing training requirements. The N8N approach provides more flexibility in UI design and user experience but may require more comprehensive training. Both solutions can deliver excellent user experiences with proper implementation, but organizations should consider their existing technology ecosystem and user familiarity when making a decision.

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Implementation Timeline

Microsoft-Only Approach (90 days total)

Phase 1A - Knowledge Base Setup (Days 1-20) (20 days)

- Export and analyze historical ticket data
- Configure SharePoint storage for vector embeddings
- Set up Microsoft Copilot Studio environment
- Develop initial RAG framework with SharePoint

Phase 1B - Workflow Development (Days 21-45) (25 days)

- Implement Power Automate flows for ticket processing
- Configure Microsoft Teams integration
- Develop user interface components
- Training and documentation

Phase 2A - API Integration (Days 46-65) (20 days)

Hybrid Microsoft + N8N Approach (90 days total)

Phase 1A - Backend Infrastructure (Days 1-15) (15 days)

- Set up Azure VPS environment (managed by Umbral)
- Configure N8N instance for heavy lifting tasks
- Establish secure database connections
- Set up monitoring tools (invisible to end users)

Phase 1B - Microsoft Integration (Days 16-35) (20 days)

- Connect N8N with Microsoft Teams for seamless user experience
- Implement SharePoint integration for document storage
- Configure Copilot as user-facing interface and router

- FreshService API integration
- Real-time ticket processing with Copilot
- Enhanced RAG capabilities with SharePoint

Phase 2B - Optimization & Reporting (Days 66-90) (25 days)

- Performance monitoring implementation
- System optimization
- Confidence score refinement
- Reporting dashboard development

- Ensure all technical complexity is hidden from HG Fenton team

Phase 1C - Workflow Automation (Days 36-50)

(15 days)

- Build email processing workflows (managed by Umbral)
- Implement existing systems integration
- Develop user training for Microsoft interface only
- Initial deployment with Microsoft-focused user experience

Phase 2 - Advanced Features (Days 51-90) (40 days)

- Enhance FreshService integration (technical aspects handled by Umbral)
- Implement real-time ticket processing via familiar Microsoft interface
- Optimize backend performance (invisible to end users)
- Develop reporting dashboards in Microsoft Power BI
- Continuous improvement with minimal disruption to users

Key Advantages of Hybrid Approach

The hybrid approach leverages the best of both worlds: Microsoft's familiar user interface with N8N's powerful backend automation.

- **Familiar User Experience:** HG Fenton team interacts exclusively with Microsoft Teams and Copilot
- **Technical Complexity Hidden:** All N8N workflows and database operations are managed by Umbral
- **Microsoft Ecosystem Integration:** Seamless connection with SharePoint, Teams, and other Microsoft tools
- **Enhanced Automation:** N8N handles heavy lifting tasks behind the scenes without user involvement

Security Comparison

Security Comparison

Category	Microsoft CoPilot Stack	N8N-Based Solution
Compliance	<ul style="list-style-type: none">Microsoft security complianceBuilt-in compliance featuresRegular security audits	<ul style="list-style-type: none">Azure security complianceCustom compliance implementationSelf-managed security controls
Data Residency	<ul style="list-style-type: none">Microsoft data centersGeographic data controlsMicrosoft data handling policies	<ul style="list-style-type: none">Azure data centersFull control over data locationCustom data handling policies
Authentication	<ul style="list-style-type: none">Microsoft identity platformAzure AD integrationStandard MFA options	<ul style="list-style-type: none">Custom authentication optionsFlexible identity providersAdvanced MFA implementation
Encryption	<ul style="list-style-type: none">Microsoft-managed encryptionStandard encryption protocolsLimited customization	<ul style="list-style-type: none">Custom encryption approachesFlexible encryption optionsFull control over encryption keys

Security Considerations

Both solutions can be implemented with strong security controls. The Microsoft Stack offers a more managed security approach with built-in compliance features and Microsoft's security infrastructure. The N8N solution provides more flexibility and control over security implementation but requires more hands-on management of security controls. Organizations with specific security requirements or compliance needs should evaluate both approaches against their security policies.

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Scalability Considerations

Scalability Considerations

Category	Microsoft CoPilot Stack	N8N-Based Solution
Service Limits	<ul style="list-style-type: none">Power Platform service limitsDataverse capacity constraintsMicrosoft-defined thresholds	<ul style="list-style-type: none">Azure infrastructure scalingDatabase performance tuningCustom scaling architecture
Performance	<ul style="list-style-type: none">Microsoft-managed performanceLimited optimization optionsStandard scaling tiers	<ul style="list-style-type: none">Custom performance optimizationDatabase query optimizationInfrastructure-level tuning
Scaling Costs	<ul style="list-style-type: none">Tier-based pricing modelPer-user cost increasesAdditional capacity fees	<ul style="list-style-type: none">Resource-based scaling costsPredictable infrastructure scalingOptimized resource allocation
High Volume Processing	<ul style="list-style-type: none">Flow run limitationsConnector throttling concernsLimited parallel processing	<ul style="list-style-type: none">Horizontal scaling optionsWebhook handling at scaleQueue-based processing

The N8N approach offers more flexibility for scaling high-volume ticket processing with custom infrastructure optimizations and horizontal scaling options. The Microsoft Stack provides a more managed approach but may face limitations with service quotas and connector throttling at higher volumes. Organizations expecting significant growth in ticket volume should carefully evaluate the scaling capabilities and associated costs of both approaches.

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Risk Assessment

Risk Assessment

Category	Microsoft CoPilot Stack	N8N-Based Solution
Vendor Dependency	<ul style="list-style-type: none">• Microsoft vendor lock-in• Dependency on Microsoft roadmap• Limited alternatives	<ul style="list-style-type: none">• Open-source sustainability• Multiple component options• Reduced vendor lock-in
Platform Changes	<ul style="list-style-type: none">• Microsoft-controlled updates• Potential breaking changes• Limited control over timing	<ul style="list-style-type: none">• Control over update timing• Version pinning options• Managed upgrade path
Licensing Changes	<ul style="list-style-type: none">• Microsoft licensing model changes• Potential cost increases• Limited negotiation leverage	<ul style="list-style-type: none">• Open-source licensing stability• Azure infrastructure pricing• Multiple hosting options
Expertise Requirements	<ul style="list-style-type: none">• Microsoft-certified developers• Common skill set• Widely available resources	<ul style="list-style-type: none">• JavaScript/Node.js expertise• DevOps knowledge• Potentially specialized skills

Risk Mitigation Strategies

For the Microsoft Stack, organizations should maintain awareness of Microsoft's roadmap and licensing changes, while budgeting for potential cost increases. For the N8N approach, organizations should invest in proper documentation, knowledge transfer, and potentially maintain support contracts for critical components. Both approaches have different risk profiles that should be evaluated against the organization's risk tolerance and strategic technology direction.

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Recommendation & Next Steps

Microsoft-Only Approach

- Familiar Microsoft ecosystem for end users
- Low-code development for IT team
- Managed updates through Microsoft
- Single vendor relationship

Key Challenge: Your team must manage all technical aspects

Hybrid Microsoft + N8N Approach

- Microsoft interface for users (Teams, Copilot, SharePoint)
- N8N handles technical implementation (managed by Umbral)
- No technical burden on HG Fenton team
- Lower costs with same Microsoft compatibility
- More powerful automation capabilities

Key Benefit: Technical complexity handled by Umbral

Recommendation

We recommend the hybrid approach that leverages Microsoft's familiar user interface while using N8N for technical implementation and heavy lifting tasks. This gives HG Fenton the best of both worlds: the Microsoft ecosystem your

team already knows, with powerful automation that happens behind the scenes without requiring your team to manage it.

Implementation Roadmap

1. Conduct a detailed requirements workshop
2. Map existing Microsoft tools to hybrid solution
3. Develop proof-of-concept with Microsoft interface
4. Create implementation roadmap with minimal disruption to users

User Experience Focus

With the hybrid approach, your team will continue using familiar Microsoft tools like Teams and Copilot. All the technical implementation, ingestion, and automation workflows will be handled by N8N behind the scenes, managed by Umbral. This means you get powerful automation without the technical burden.

Appendix: Technical Details

API Endpoints

FreshServices Tickets API

<https://domain.freshservice.com/api/v2/tickets>

Create, update, and query tickets

FreshServices Webhook

<https://domain.freshservice.com/api/v2/webhooks>

Register webhook endpoints for ticket events

N8N Webhook Endpoint

<https://n8n.yourdomain.com/webhook/freshservice>

Receive webhook events from FreshServices

Database Schema

tickets

Stores ticket data with relationships to other entities

`id` `display_id` `subject` `description` `status` `priority`
`created_at` `updated_at`

notes

Stores ticket conversation history

`id` `ticket_id` `user_id` `body` `created_at`

users

Stores user information

`id` `name` `email` `role` `department_id`

departments

Stores department information

Workflow Example: Ticket Prioritization

```
// N8N JavaScript Code for Ticket Prioritization
function prioritizeTicket(ticket) {
    const keywords = {
        high: ['urgent', 'critical', 'emergency', 'down', 'broken'],
        medium: ['issue', 'problem', 'error', 'not working'],
        low: ['question', 'how to', 'help with', 'guidance']
    };

    // Check subject and description for priority keywords
    const subject = ticket.subject.toLowerCase();
    const description = ticket.description.toLowerCase();

    // Determine priority based on keywords
    if (keywords.high.some(word => subject.includes(word) || description.includes(word))) {
        return 'high';
    } else if (keywords.medium.some(word => subject.includes(word) || description.includes(word))) {
        return 'medium';
    } else {
        return 'low';
    }
}
```

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Q&A

Thank You!

Questions or comments?



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Additional Resources

N8N Documentation

Microsoft Power Platform

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