

# Tech Support Browser Extension - Product Requirements Document

## Executive Summary

A browser extension that automatically monitors network activity, detects technical issues in real-time, and provides intelligent troubleshooting assistance through an integrated chatbot interface powered by documentation search.

## Product Vision

Transform technical support from reactive ticket-based resolution to proactive, context-aware assistance that resolves issues before users even realize they exist.

## Core Features

### 1. Real-time Network Monitoring

- **Background Analysis:** Continuously monitor fetch/XHR requests across all tabs
- **Error Detection:** Automatic identification of failed requests, timeouts, and API issues
- **Smart Filtering:** Focus on application-relevant traffic, ignore analytics/tracking
- **Performance Metrics:** Track response times, payload sizes, and connection issues

### 2. Contextual Issue Detection

- **Pattern Recognition:** Identify common failure signatures (404s, 500s, CORS, timeouts)
- **Domain Intelligence:** Understand which domains/APIs are critical vs. auxiliary
- **Error Correlation:** Link multiple related failures to single root causes
- **Proactive Alerts:** Notify users of issues before they impact workflow

### 3. Integrated Chat Assistant

- **Floating Widget:** Non-intrusive overlay with expand/collapse functionality
- **Context-Aware:** Pre-populate chat with detected network issues and relevant data
- **Visual Network Inspector:** Built-in network tab showing filtered, relevant requests
- **Solution Overlay:** Display fixes directly on problematic web pages

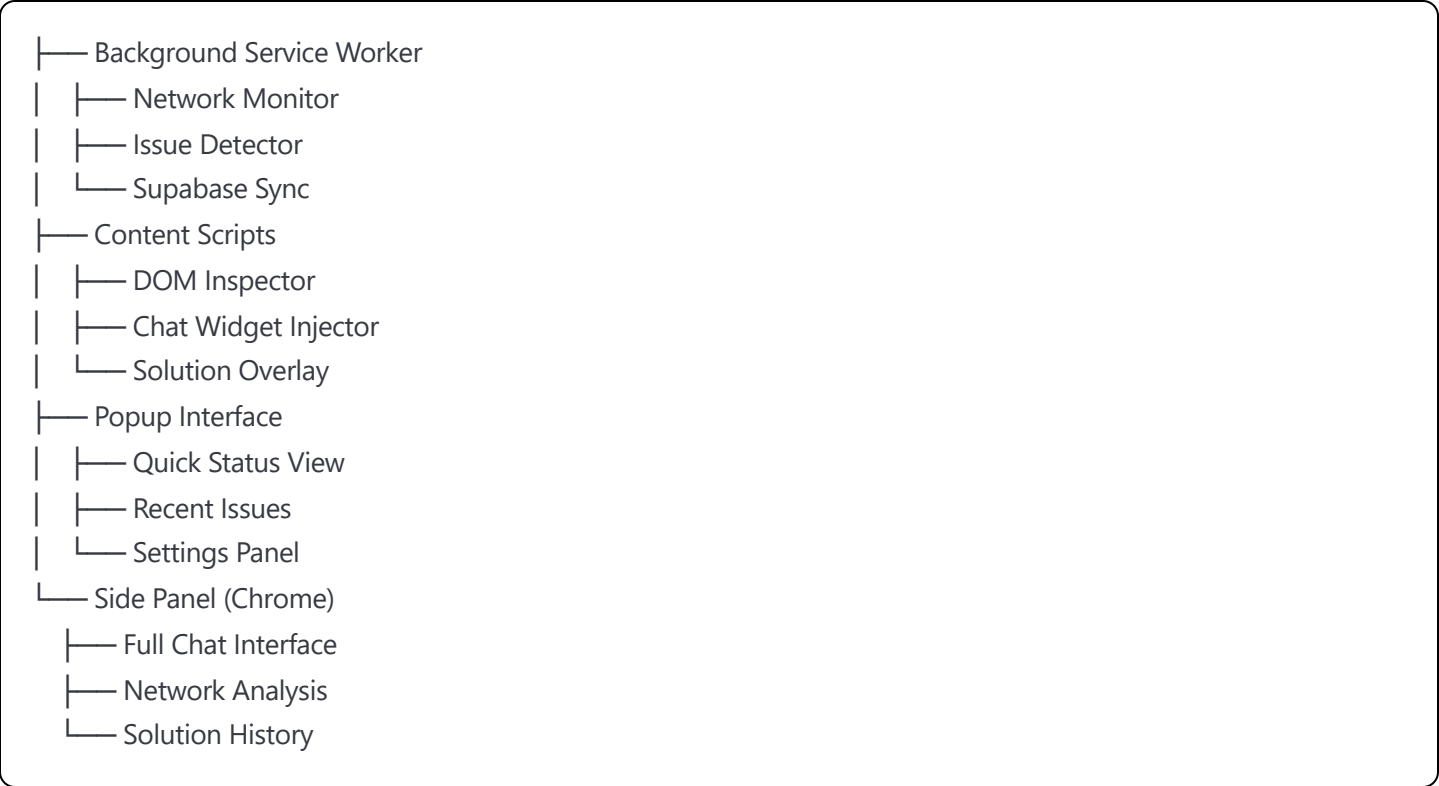
### 4. Extension Architecture

- **Manifest V3 Compliance:** Modern extension architecture with service workers

- **Multi-browser Support:** Chrome, Firefox, Safari, Edge compatibility
- **Minimal Permissions:** Request only necessary permissions with clear justification
- **Offline Capability:** Cache solutions for common issues when network is unavailable

## Technical Architecture

### Extension Components



### Backend Infrastructure

- **Database:** Supabase for knowledge base, user sessions, and analytics
- **Real-time Sync:** Supabase Realtime for chat and collaborative debugging
- **Edge Functions:** Supabase Edge Functions for AI processing and solution matching
- **Storage:** Browser extension storage + Supabase for cross-device sync

### Data Models

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sql
```

-- *Extension Sessions*

extension\_sessions (id, user\_id, browser\_info, install\_date, last\_active)

-- *Network Events*

network\_events (id, session\_id, domain, method, status, error\_type, timestamp)

-- *Issue Reports*

issue\_reports (id, session\_id, issue\_signature, context\_data, resolution\_status)

-- *Solutions Cache*

solution\_cache (id, issue\_type, solution\_data, success\_rate, last\_updated)

-- *User Preferences*

user\_preferences (id, user\_id, monitoring\_domains, notification\_settings, theme)

## User Experience Flow

### 1. Passive Monitoring

1. Extension monitors network activity in background
2. Detects API failures, slow responses, or error patterns
3. Shows subtle notification badge on extension icon
4. Logs issues for later review and pattern analysis

### 2. Active Assistance

1. User clicks extension icon or notification
2. Pre-populated chat with detected issues and context
3. AI analyzes network data and searches solutions
4. Interactive troubleshooting with visual overlays on page

### 3. Proactive Prevention

1. Extension learns user's workflow patterns
2. Predicts potential issues based on network behavior
3. Suggests preventive actions or alternative approaches
4. Provides performance optimization recommendations

# Extension-Specific Features

## 1. Smart Network Capture

- **Selective Monitoring:** User-defined domain whitelist/blacklist
- **Request Filtering:** Focus on API calls, ignore static resources
- **Error Prioritization:** Weight errors by impact and frequency
- **Privacy Protection:** Automatic exclusion of auth tokens and sensitive data

## 2. Contextual Integration

- **Page-Aware Solutions:** Overlay fixes directly on problematic elements
- **Multi-tab Coordination:** Correlate issues across different tabs/domains
- **Form Recovery:** Detect and backup form data before submission failures
- **Session Restoration:** Help recover from authentication timeouts

## 3. Developer Tools Integration

- **DevTools Panel:** Custom panel showing filtered network analysis
- **Console Integration:** Log relevant debugging information
- **HAR Export:** One-click export of relevant network data
- **Bookmark Solutions:** Save working fixes for future reference

## 4. Dark Mode & UI

- **Adaptive Theming:** Match browser/system theme preferences
- **Minimal Footprint:** Lightweight overlay that doesn't interfere with sites
- **Keyboard Shortcuts:** Quick access without mouse interaction
- **Responsive Design:** Works across different screen sizes and zoom levels

# Installation & Onboarding

## 1. Extension Store Deployment

- **Chrome Web Store:** Primary distribution channel
- **Firefox Add-ons:** Mozilla marketplace
- **Edge Add-ons:** Microsoft store
- **Safari Extensions:** Mac App Store

## 2. User Onboarding

1. **Permission Request:** Clear explanation of required permissions
2. **Domain Setup:** Guide user through selecting monitoring domains
3. **Test Issue:** Simulate common problem to demonstrate functionality
4. **Preference Configuration:** Notification settings and UI preferences

## 3. Enterprise Deployment

- **Group Policy:** IT admin deployment for organizations
- **Custom Configuration:** Pre-configured settings for specific tech stacks
- **SSO Integration:** Connect with corporate identity providers
- **Usage Analytics:** Dashboard for IT teams to monitor adoption

## Privacy & Security

### Extension Security

- **Minimal Permissions:** Request only `activeTab`, `storage`, and specific host permissions
- **No Broad Host Access:** User explicitly approves each domain for monitoring
- **Local Processing:** Sensitive analysis performed locally when possible
- **Encrypted Sync:** All data encrypted before sending to Supabase

### Data Handling

- **PII Scrubbing:** Automatic removal of personal information from network logs
- **Token Filtering:** Exclude authorization headers and cookies
- **User Consent:** Explicit opt-in for data sharing and cloud storage
- **Data Retention:** 30-day automatic deletion of detailed network logs

## Performance Considerations

### Resource Management

- **Memory Optimization:** Efficient storage of network events with circular buffers
- **CPU Throttling:** Limit analysis frequency to prevent browser slowdown
- **Network Impact:** Minimal bandwidth usage for cloud sync
- **Battery Awareness:** Reduce monitoring frequency on mobile devices

## Scalability

- **Local Caching:** Store frequent solutions in extension storage
- **Batch Processing:** Group network events for efficient analysis
- **Background Sync:** Optimize data transfer during idle periods
- **Progressive Loading:** Load chat interface components on-demand

## Success Metrics

### Extension-Specific KPIs

- **Daily Active Users:** Users with extension enabled and monitoring
- **Issue Detection Rate:** Percentage of actual problems caught proactively
- **Solution Accuracy:** Relevance of suggested fixes (user feedback)
- **Time to Resolution:** From issue detection to user resolution

### Engagement Metrics

- **Chat Interactions:** Frequency of user engagement with assistant
- **Solution Success Rate:** Percentage of issues resolved without escalation
- **Extension Retention:** 30-day and 90-day active user retention
- **Domain Coverage:** Average number of monitored domains per user

## Implementation Phases

### Phase 1: Core Extension (6 weeks)

- Basic network monitoring and issue detection
- Simple popup interface with dark mode
- Supabase integration for user data
- Chrome Web Store deployment

### Phase 2: Intelligent Assistant (8 weeks)

- AI-powered solution matching
- Integrated chat interface
- Real-time issue notifications
- Multi-browser compatibility

### Phase 3: Advanced Features (6 weeks)

- Proactive issue prevention
- Visual solution overlays
- DevTools integration
- Performance optimization

### Phase 4: Enterprise & Scale (4 weeks)

- Group policy deployment
- Advanced analytics dashboard
- Enterprise SSO integration
- Load testing and optimization

## Distribution Strategy

### Consumer Market

- **Freemium Model:** Basic monitoring free, advanced features premium
- **Web Store Optimization:** SEO for extension marketplaces
- **Developer Community:** Target web developers and QA engineers
- **Content Marketing:** Blog posts about common web issues

### Enterprise Sales

- **IT Decision Makers:** Pitch productivity and support cost reduction
- **Pilot Programs:** Free trials for development teams
- **Integration Partnerships:** Work with existing dev tools
- **Volume Licensing:** Custom pricing for large organizations

## Risk Mitigation

### Technical Risks

- **Browser Updates:** Continuous testing against beta browser versions
- **Manifest V3 Migration:** Early adoption of new extension standards
- **Performance Impact:** Extensive optimization and user testing
- **Cross-browser Compatibility:** Automated testing across all platforms

## Business Risks

- **User Privacy Concerns:** Transparent privacy policy and minimal data collection
- **Competition:** Focus on unique real-time monitoring capabilities
- **Platform Dependencies:** Multi-browser strategy reduces single-point risk
- **Monetization:** Clear value proposition for premium features

## Success Criteria

- 10,000+ active users within 6 months of launch
- 4.5+ star rating across all extension stores
- 40% reduction in support tickets for participating organizations
- 85% user retention after 30 days
- Sub-3 second response time for issue detection and solution suggestion