

# readme.md for @serve.zone/nupst

## ⚡ NUPST — Network UPS Shutdown Tool

**Keep your systems safe when the power goes out.** NUPST is a lightweight, battle-tested CLI tool that monitors UPS devices via SNMP or NUT (UPSD) and orchestrates graceful shutdowns during power emergencies — including Proxmox VMs, LXC containers, and the host itself.

Distributed as **self-contained binaries** with zero runtime dependencies. No Node.js, no Python, no package managers. Just download and run.

## Issue Reporting and Security

For reporting bugs, issues, or security vulnerabilities, please visit [community.foss.global/](https://community.foss.global/). This is the central community hub for all issue reporting. Developers who sign and comply with our contribution agreement and go through identification can also get a [code.foss.global/](https://code.foss.global/) account to submit Pull Requests directly.

## ▣ Features

- **▣ Multi-UPS Support** — Monitor multiple UPS devices from a single daemon
- **▣ Dual Protocol Support** — SNMP (v1/v2c/v3) for network UPS + UPSD/NIS for USB-connected UPS via NUT
- **▣ Proxmox Integration** — Gracefully shut down QEMU VMs and LXC containers before host shutdown

- **Group Management** — Organize UPS devices into groups with flexible operating modes
  - **Redundant Mode** — Only trigger actions when ALL UPS devices in a group are critical
  - **Non-Redundant Mode** — Trigger actions when ANY UPS device is critical
- **Action System** — Define custom responses with flexible trigger conditions
  - Battery & runtime threshold triggers
  - Power status change triggers
  - Webhook notifications (POST/GET)
  - Custom shell scripts
  - Proxmox VM/LXC shutdown
  - Configurable shutdown delays
- **Multiple UPS Brands** — CyberPower, APC, Eaton, TrippLite, Liebert/Vertiv, and custom OID configurations
- **HTTP API** — Optional JSON status endpoint with token authentication
- **Pause/Resume** — Temporarily suppress actions during maintenance windows
- **Network Loss Detection** — Detects unreachable UPS devices and prevents false shutdowns
- **Power Metrics** — Monitor output load, power (watts), voltage, and current
- **Single Binary** — Zero runtime dependencies. Download, `chmod +x`, run.
- **Cross-Platform** — Linux (x64, ARM64), macOS (Intel, Apple Silicon), Windows

## Quick Start

### One-Line Installation

```
curl -sSL https://code.foss.global/serve.zone/nupst/raw/branch/main/install.sh | sudo bash
```

### Initial Setup

```
# 1. Add your first UPS device (interactive wizard)
sudo nupst ups add

# 2. Test the connection
nupst ups test

# 3. Enable and start monitoring
sudo nupst service enable
sudo nupst service start
```

```
# 4. Check status
nupst service status
```

**That's it!** Your system is now protected. 📦

# 📦 Installation

## Automated Installer (Recommended)

```
curl -sSL https://code.foss.global/serve.zone/nupst/raw/branch/main/install.sh | sudo bash
```

### What it does:

1. Detects your platform (OS + architecture)
2. Downloads the latest pre-compiled binary
3. Installs to `/opt/nupst/nupst`
4. Creates symlink at `/usr/local/bin/nupst`
5. Preserves existing configuration

### Options:

```
# Install specific version
curl -sSL https://code.foss.global/serve.zone/nupst/raw/branch/main/install.sh | \
  sudo bash -s -- --version v5.0.0

# Custom installation directory
curl -sSL https://code.foss.global/serve.zone/nupst/raw/branch/main/install.sh | \
  sudo bash -s -- --install-dir /usr/local/nupst

# Show help
curl -sSL https://code.foss.global/serve.zone/nupst/raw/branch/main/install.sh | bash -s -- --
help
```

## Manual Installation

Download the binary for your platform from [releases](#):

Platform	Binary
Linux x64	nupst-linux-x64
Linux ARM64	nupst-linux-arm64
macOS Intel	nupst-macos-x64
macOS Apple Silicon	nupst-macos-arm64
Windows x64	nupst-windows-x64.exe

```
# Download (replace with your platform)
curl -sSL https://code.foss.global/serve.zone/nupst/releases/download/v5.0.0/nupst-linux-x64 -
o nupst
chmod +x nupst
sudo mv nupst /usr/local/bin/nupst
```

## Via npm

```
npm install -g @serve.zone/nupst
```

“ This downloads the appropriate pre-compiled binary for your platform during installation.

## Verify Installation

```
nupst --version
nupst help
```

## ☐ CLI Reference

## Command Structure

```
nupst <command> [subcommand] [options]
```

# Global Options

Flag	Description
<code>--version</code> , <code>-v</code>	Show version
<code>--help</code> , <code>-h</code>	Show help
<code>--debug</code> , <code>-d</code>	Enable debug mode (verbose SNMP/UPSD logging)

# Service Management

```
nupst service enable      # Install and enable systemd service
nupst service disable    # Stop and disable systemd service
nupst service start      # Start the service
nupst service stop       # Stop the service
nupst service restart    # Restart the service
nupst service status     # Show service and UPS status
nupst service logs       # Tail live service logs (Ctrl+C to exit)
```

# UPS Device Management

```
nupst ups add            # Add a new UPS device (interactive wizard)
nupst ups edit [id]     # Edit a UPS device
nupst ups remove <id>   # Remove a UPS device
nupst ups list           # List all UPS devices
nupst ups test           # Test all UPS connections
```

During `nupst ups add`, you'll choose a communication protocol:

- **SNMP** — For network-attached UPS with an SNMP agent (default)
- **UPSD/NIS** — For USB-connected UPS managed by a local NUT server

# Group Management

```
nupst group add         # Create a new UPS group
nupst group edit <id>   # Edit a group
nupst group remove <id> # Remove a group
nupst group list        # List all groups
```

# Action Management

```
nupst action add <target-id>          # Add action to a UPS or group
nupst action remove <target-id> <idx> # Remove an action by index
nupst action list [target-id]         # List actions (optionally for a target)
```

## Pause/Resume

Temporarily suppress actions during maintenance (UPS polling continues):

```
nupst pause                # Pause indefinitely
nupst pause --duration 30m # Pause for 30 minutes (auto-resume)
nupst pause --duration 2h  # Pause for 2 hours
nupst pause --duration 1d  # Pause for 1 day (max: 24h)
nupst resume               # Resume immediately
```

When paused:

- UPS polling continues (status is still visible)
- All actions are suppressed (no shutdowns, webhooks, scripts)
- The HTTP API response includes `"paused": true`
- Status display shows a `[PAUSED]` indicator

## Feature Management

```
nupst feature httpServer # Configure HTTP JSON status API
```

## Other Commands

```
nupst config show # Display current configuration
nupst upgrade     # Upgrade to latest version (requires root)
nupst uninstall   # Completely remove NUPST (requires root)
```

## Configuration

NUPST stores configuration at `/etc/nupst/config.json`. The easiest way to configure is through the interactive CLI commands, but you can also edit the JSON directly.

## Example Configuration

```
{
  "version": "4.3",
  "checkInterval": 30000,
  "httpServer": {
    "enabled": true,
    "port": 8080,
    "path": "/ups-status",
    "authToken": "your-secret-token"
  },
  "upsDevices": [
    {
      "id": "ups-main",
      "name": "Main Server UPS",
      "protocol": "snmp",
      "snmp": {
        "host": "192.168.1.100",
        "port": 161,
        "community": "public",
        "version": 1,
        "timeout": 5000,
        "upsModel": "cyberpower",
        "runtimeUnit": "ticks"
      },
    },
    "actions": [
      {
        "type": "proxmox",
        "triggerMode": "onlyThresholds",
        "thresholds": { "battery": 30, "runtime": 15 },
        "proxmoxHost": "localhost",
        "proxmoxPort": 8006,
        "proxmoxTokenId": "root@pam!nupst",
        "proxmoxTokenSecret": "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx"
      },
      {
```

```
        "type": "shutdown",
        "triggerMode": "onlyThresholds",
        "thresholds": { "battery": 20, "runtime": 10 },
        "shutdownDelay": 10
    }
],
"groups": ["datacenter"]
},
{
    "id": "ups-usb",
    "name": "Local USB UPS",
    "protocol": "upsd",
    "upsd": {
        "host": "127.0.0.1",
        "port": 3493,
        "upsName": "ups",
        "timeout": 5000
    },
    "actions": [
        {
            "type": "shutdown",
            "triggerMode": "onlyThresholds",
            "thresholds": { "battery": 15, "runtime": 5 },
            "shutdownDelay": 5
        }
    ],
    "groups": []
}
],
"groups": [
    {
        "id": "datacenter",
        "name": "Data Center",
        "mode": "redundant",
        "description": "Redundant UPS setup",
        "actions": [
            {
                "type": "shutdown",
                "triggerMode": "onlyThresholds",
```

```

    "thresholds": { "battery": 10, "runtime": 5 },
    "shutdownDelay": 15
  }
]
}
]
}

```

# UPS Device Configuration

## Protocol Selection

Each UPS device has a `protocol` field:

Protocol	Use Case	Default Port
<code>snmp</code>	Network-attached UPS with SNMP agent	161
<code>upsd</code>	USB-connected UPS via local NUT server	3493

## SNMP Settings (`snmp` object)

Field	Description	Values / Default
<code>host</code>	IP address or hostname	e.g., <code>"192.168.1.100"</code>
<code>port</code>	SNMP port	Default: <code>161</code>
<code>version</code>	SNMP version	<code>1</code> , <code>2</code> , or <code>3</code>
<code>timeout</code>	Timeout in milliseconds	Default: <code>5000</code>
<code>upsModel</code>	UPS brand/model	<code>cyberpower</code> , <code>apc</code> , <code>eaton</code> , <code>tripplite</code> , <code>liebert</code> , <code>custom</code>
<code>runtimeUnit</code>	Battery runtime unit	<code>minutes</code> , <code>seconds</code> , or <code>ticks</code> (1/100s). Overrides auto-detection
<code>community</code>	Community string (v1/v2c)	Default: <code>"public"</code>

**SNMPv3 fields** (when `version: 3`):

Field	Description	Values
<code>securityLevel</code>	Security level	<code>noAuthNoPriv</code> , <code>authNoPriv</code> , <code>authPriv</code>
<code>username</code>	Authentication username	—

Field	Description	Values
authProtocol	Auth protocol	MD5 or SHA
authKey	Auth password	—
privProtocol	Encryption protocol	DES or AES
privKey	Encryption password	—

## UPSD/NIS Settings (upsd object)

For USB-connected UPS via [NUT \(Network UPS Tools\)](#):

Field	Description	Default
host	NUT server address	127.0.0.1
port	NUT UPSD port	3493
upsName	NUT device name	ups
timeout	Connection timeout (ms)	5000
username	Optional auth username	—
password	Optional auth password	—

**NUT variables mapped:** ups.status, battery.charge, battery.runtime, ups.load, ups.realpower, output.voltage, output.current

## Action Configuration

Actions define automated responses to UPS conditions. They run **sequentially in array order**, so place Proxmox actions before shutdown actions.

### Action Types

Type	Description
shutdown	Graceful system shutdown with configurable delay
webhook	HTTP POST/GET notification to external services
script	Execute custom shell scripts from /etc/nupst/
proxmox	Shut down Proxmox QEMU VMs and LXC containers via REST API

### Common Fields

Field	Description	Values / Default
<code>type</code>	Action type	<code>shutdown</code> , <code>webhook</code> , <code>script</code> , <code>proxmox</code>
<code>thresholds</code>	Battery and runtime limits	<code>{ "battery": 0-100, "runtime": minutes }</code>
<code>triggerMode</code>	When to trigger	See Trigger Modes below

## Trigger Modes

Mode	Description
<code>onlyPowerChanges</code>	Only when power status changes (online ↔ onBattery)
<code>onlyThresholds</code>	Only when battery or runtime thresholds are violated
<code>powerChangesAndThresholds</code>	On power changes OR threshold violations (default)
<code>anyChange</code>	On every polling cycle

## Shutdown Action

```
{
  "type": "shutdown",
  "thresholds": { "battery": 20, "runtime": 10 },
  "triggerMode": "onlyThresholds",
  "shutdownDelay": 10
}
```

Field	Description	Default
<code>shutdownDelay</code>	Seconds to wait before shutdown	5

## Webhook Action

```
{
  "type": "webhook",
  "thresholds": { "battery": 30, "runtime": 15 },
  "triggerMode": "powerChangesAndThresholds",
  "webhookUrl": "https://hooks.slack.com/services/...",
  "webhookMethod": "POST",
  "webhookTimeout": 10000
}
```

Field	Description	Default
-------	-------------	---------

<code>webhookUrl</code>	URL to call	Required
<code>webhookMethod</code>	HTTP method	<code>POST</code>
<code>webhookTimeout</code>	Timeout in ms	<code>10000</code>

## Script Action

```
{
  "type": "script",
  "thresholds": { "battery": 25, "runtime": 10 },
  "triggerMode": "onlyThresholds",
  "scriptPath": "pre-shutdown.sh",
  "scriptTimeout": 60000
}
```

Field	Description	Default
<code>scriptPath</code>	Script filename in <code>/etc/nupst/</code>	Required
<code>scriptTimeout</code>	Execution timeout in ms	<code>60000</code>

## ☐ Proxmox Action

Gracefully shuts down QEMU VMs and LXC containers on a Proxmox node before the host is shut down.

```
{
  "type": "proxmox",
  "thresholds": { "battery": 30, "runtime": 15 },
  "triggerMode": "onlyThresholds",
  "proxmoxHost": "localhost",
  "proxmoxPort": 8006,
  "proxmoxTokenId": "root@pam!nupst",
  "proxmoxTokenSecret": "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx",
  "proxmoxExcludeIds": [100, 101],
  "proxmoxStopTimeout": 120,
  "proxmoxForceStop": true,
  "proxmoxInsecure": true
}
```

Field	Description	Default
<code>proxmoxHost</code>	Proxmox API host	<code>localhost</code>

Field	Description	Default
<code>proxmoxPort</code>	Proxmox API port	<code>8006</code>
<code>proxmoxNode</code>	Proxmox node name	Auto-detect via hostname
<code>proxmoxTokenId</code>	API token ID (e.g. <code>root@pam!nupst</code> )	Required
<code>proxmoxTokenSecret</code>	API token secret (UUID)	Required
<code>proxmoxExcludeIds</code>	VM/CT IDs to skip	<code>[]</code>
<code>proxmoxStopTimeout</code>	Seconds to wait for graceful shutdown	<code>120</code>
<code>proxmoxForceStop</code>	Force-stop VMs/CTs that don't shut down	<code>true</code>
<code>proxmoxInsecure</code>	Skip TLS verification (self-signed certs)	<code>true</code>

### Setting up the API token on Proxmox:

```
# Create token with full privileges (no privilege separation)
pveum user token add root@pam nupst --privsep=0
```

“ **⚠ Important:** Place the Proxmox action **before** the shutdown action in the actions array so VMs are stopped before the host shuts down.

## Group Configuration

Groups coordinate actions across multiple UPS devices:

Field	Description	Values
<code>id</code>	Unique group identifier	—
<code>name</code>	Human-readable name	—
<code>mode</code>	Group operating mode	<code>redundant</code> , <code>nonRedundant</code>
<code>description</code>	Optional description	—
<code>actions</code>	Array of action configurations	—

### Group Modes:

- **redundant** — Actions trigger only when ALL UPS devices in the group are critical. Use for setups with backup power units.
- **nonRedundant** — Actions trigger when ANY UPS device is critical. Use when all UPS units must be operational.

# HTTP Server Configuration

```
# Interactive setup
sudo nupst feature httpServer
```

```
{
  "httpServer": {
    "enabled": true,
    "port": 8080,
    "path": "/ups-status",
    "authToken": "your-secret-token"
  }
}
```

## Query the API:

```
# Bearer token
curl -H "Authorization: Bearer your-secret-token" http://localhost:8080/ups-status

# Query parameter
curl "http://localhost:8080/ups-status?token=your-secret-token"
```

## Response format:

```
{
  "upsDevices": [
    {
      "id": "ups-main",
      "name": "Main Server UPS",
      "powerStatus": "online",
      "batteryCapacity": 100,
      "batteryRuntime": 45,
      "outputLoad": 23,
      "outputPower": 115,
      "outputVoltage": 230.5,
      "outputCurrent": 0.5,
      "consecutiveFailures": 0,
      "unreachableSince": 0,
      "lastStatusChange": 1729685123456,
    }
  ]
}
```

```
    "lastCheckTime": 1729685153456
  }
],
"paused": false
}
```

When monitoring is paused:

```
{
  "upsDevices": [...],
  "paused": true,
  "pauseState": {
    "pausedAt": 1729685123456,
    "pausedBy": "cli",
    "resumeAt": 1729686923456
  }
}
```

## ☐☐ Network Loss Detection

NUPST tracks communication failures per UPS device:

- After **3 consecutive failures**, the UPS status transitions to `unreachable`
- **Shutdown actions will NOT fire** on `unreachable` — this prevents false shutdowns from network glitches
- Webhook and script actions still fire, allowing you to send alerts
- When connectivity is restored, NUPST logs a recovery event with downtime duration
- The failure counter is capped at 100 to prevent overflow

**Power status values:** `online` | `onBattery` | `unknown` | `unreachable`

## ☐☐ Monitoring

### Status Display

```
$ nupst service status
```

#### UPS Devices (2):

✓ Main Server UPS (online - 100%, 3840min)

Host: 192.168.1.100:161 (SNMP)

Groups: Data Center

Action: proxmox (onlyThresholds: battery<30%, runtime<15min)

Action: shutdown (onlyThresholds: battery<20%, runtime<10min, delay=10s)

✓ Local USB UPS (online - 95%, 2400min)

Host: 127.0.0.1:3493 (UPSD)

Action: shutdown (onlyThresholds: battery<15%, runtime<5min, delay=5s)

#### Groups (1):

□ Data Center (redundant)

UPS Devices (1): Main Server UPS

Action: shutdown (onlyThresholds: battery<10%, runtime<5min, delay=15s)

## Live Logs

nupst service logs

[2026-02-20 10:30:15] □ NUPST daemon started

[2026-02-20 10:30:15] ✓ Connected to Main Server UPS (192.168.1.100)

[2026-02-20 10:30:45] □ Status check: All systems normal

[2026-02-20 10:31:15] △ Main Server UPS on battery (85%, 45min remaining)

[2026-02-20 10:35:00] △ UPS Unreachable: Backup UPS (3 consecutive failures)

[2026-02-20 10:37:30] ✓ UPS Recovered: Backup UPS (downtime: 2m 30s)

## □ Security

## Architecture

- **Single Binary** — Self-contained executable with zero runtime dependencies
- **Minimal Attack Surface** — Compiled Deno binary with only essential functionality
- **Reduced Supply Chain Risk** — Pre-compiled binaries with SHA256 checksums
- **No Telemetry** — No data sent to external servers

# SNMP Security

Full SNMPv3 support with authentication and encryption:

Security Level	Description
<code>noAuthNoPriv</code>	No authentication, no encryption
<code>authNoPriv</code>	MD5/SHA authentication without encryption
<code>authPriv</code>	Authentication + DES/AES encryption <input type="checkbox"/>

## Network Security

- Connects only to UPS devices and optionally Proxmox on local network
- HTTP API disabled by default; token-required when enabled
- No external internet connections

## Verifying Downloads

```
curl -sSL https://code.foss.global/serve.zone/nupst/releases/download/v5.0.0/nupst-linux-x64 -o nupst
curl -sSL https://code.foss.global/serve.zone/nupst/releases/download/v5.0.0/SHA256SUMS.txt -o SHA256SUMS.txt
sha256sum -c SHA256SUMS.txt --ignore-missing
```

## Supported UPS Models

### SNMP-based

Brand	Config Value	Notes
CyberPower	<code>cyberpower</code>	Full support including power metrics
APC	<code>apc</code>	Smart-UPS, Back-UPS series
Eaton	<code>eaton</code>	Eaton/Powerware UPS
TrippLite	<code>tripplite</code>	SmartPro and similar
Liebert/Vertiv	<code>liebert</code>	GXT, PSI series

Brand	Config Value	Notes
Custom	<code>custom</code>	Provide your own OID mappings

### Custom OIDs example:

```
{
  "upsModel": "custom",
  "runtimeUnit": "seconds",
  "customOIDs": {
    "POWER_STATUS": "1.3.6.1.4.1.1234.1.1.0",
    "BATTERY_CAPACITY": "1.3.6.1.4.1.1234.1.2.0",
    "BATTERY_RUNTIME": "1.3.6.1.4.1.1234.1.3.0"
  }
}
```

“ **Tip:** If your UPS (e.g., HPE, Huawei) reports runtime in seconds instead of minutes, set `"runtimeUnit": "seconds"`. For CyberPower-style TimeTicks (1/100 second), use `"ticks"`. When omitted, NUPST auto-detects based on `upsModel`.

## UPSD/NIS-based

Any UPS supported by [NUT \(Network UPS Tools\)](#) — this covers **hundreds of models** from virtually every manufacturer, including USB-connected devices. Check the [NUT hardware compatibility list](#).

## Updating

### Built-in Update

```
sudo nupst upgrade
```

### Re-run Installer

```
curl -sSL https://code.foss.global/serve.zone/nupst/raw/branch/main/install.sh | sudo bash
```

The installer preserves your configuration and restarts the service if it was running.

## ☐☐ Uninstallation

```
# Interactive uninstall
sudo nupst uninstall

# Or manual removal
sudo nupst service disable
sudo rm /usr/local/bin/nupst
sudo rm -rf /opt/nupst
sudo rm -rf /etc/nupst
sudo rm /etc/systemd/system/nupst.service
sudo systemctl daemon-reload
```

## ☐☐ Troubleshooting

### Binary Won't Execute

```
chmod +x /opt/nupst/nupst
uname -m # x86_64 = x64, aarch64 = arm64
```

### Service Won't Start

```
sudo systemctl status nupst
sudo journalctl -u nupst -n 50
nupst config show
nupst ups test --debug
```

### Can't Connect to UPS

```
# SNMP
nupst ups test --debug
```

```
ping <ups-ip>
nc -zv <ups-ip> 161

# UPSD/NUT
nc -zv 127.0.0.1 3493
upsc upsc@localhost # if NUT CLI is installed
```

## Proxmox VMs Not Shutting Down

```
# Verify API token works
curl -k -H "Authorization: PVEAPIToken=root@pam!nupst=YOUR-SECRET" \
  https://localhost:8006/api2/json/nodes/$(hostname)/qemu

# Check token permissions
pveum user token list root@pam
```

## Actions Not Triggering

```
nupst action list
nupst service logs
# Check if monitoring is paused
nupst service status
```

## 📁 System Changes

### File System

Path	Description
<code>/opt/nupst/nupst</code>	Pre-compiled binary
<code>/usr/local/bin/nupst</code>	Symlink to binary
<code>/etc/nupst/config.json</code>	Configuration file
<code>/etc/nupst/pause</code>	Pause state file (when paused)
<code>/etc/systemd/system/nupst.service</code>	Systemd service unit

# Services

- Creates `nupst.service` systemd unit (when enabled)
- Runs with root permissions (required for system shutdown)

# Network

- Outbound SNMP to UPS devices (port 161)
- Outbound TCP to NUT servers (port 3493)
- Outbound HTTPS to Proxmox API (port 8006, if configured)
- Optional inbound HTTP server (disabled by default)
- No external internet connections

# Migration from v3.x

```
curl -sSL https://code.foss.global/serve.zone/nupst/raw/branch/main/install.sh | sudo bash
```

The installer auto-detects v3.x installations, migrates the configuration, and swaps the binary. Your settings are preserved.

Aspect	v3.x	v4.x+
<b>Runtime</b>	Node.js + npm	Deno (self-contained)
<b>Distribution</b>	Git repo + npm install	Pre-compiled binaries
<b>Runtime Dependencies</b>	node_modules	Zero
<b>Size</b>	~150MB	~80MB
<b>Commands</b>	Flat ( <code>nupst add</code> )	Subcommands ( <code>nupst ups add</code> )

# Development

**Requirements:** [Deno](#) v1.x or later

```
git clone https://code.foss.global/serve.zone/nupst.git
cd nupst

# Run directly
```

```
deno run --allow-all mod.ts help

# Type check
deno task check

# Lint
deno task lint

# Run tests
deno test --allow-all test/

# Compile for current platform
deno compile --allow-all --output nupst mod.ts

# Compile for all platforms
deno task compile
```

## Project Structure

```
nupst/
├─ mod.ts           # Entry point
├─ deno.json        # Deno configuration
├─ ts/
│  ├─ cli.ts       # CLI command routing
│  ├─ nupst.ts     # Main coordinator class
│  ├─ daemon.ts    # Background monitoring daemon
│  ├─ systemd.ts   # Systemd service management
│  ├─ http-server.ts # Optional HTTP JSON API
│  ├─ constants.ts # Centralized constants
│  ├─ snmp/        # SNMP protocol implementation
│  ├─ upsd/        # UPSD/NIS protocol implementation (NUT)
│  ├─ protocol/    # Protocol abstraction layer
│  ├─ actions/     # Action system (shutdown, webhook, script, proxmox)
│  ├─ migrations/  # Config version migrations
│  ├─ helpers/     # Utility functions
│  ├─ interfaces/  # Shared TypeScript interfaces
│  └─ cli/         # CLI command handlers
└─ scripts/        # Build and install scripts
```

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## Company Information

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For any legal inquiries or further information, please contact us via email at [hello@task.vc](mailto:hello@task.vc).

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