

# DEPLOYMENT.md — Sentinel

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## TL;DR

```
git clone <repository-url> sentinel && cd sentinel
npm install

cp .env.example .env # Edit DATABASE_PATH and SSH credentials

node src/server.js
```

**Navigate to <http://localhost:3000>**

## Prerequisites

Requirement	Version	Installation
-----	-----	-----
<b>Node.js</b>	18.x or higher	<a href="https://nodejs.org/en/download/">https://nodejs.org/en/download/</a>
<b>npm</b>	8.x or higher	Comes with Node.js
<b>SQLite3</b>	3.x	Pre-installed on most systems
<b>SSH Access</b>	-	SSH keys for monitored hosts
<b>Linux</b>	Ubuntu 20.04+ recommended	For production deployment

**System Requirements:**

- 512MB RAM minimum (1GB+ recommended)
- 100MB disk space minimum
- Port 3000 available (or configure alternative)
- SSH access to monitored VMs/hosts

**Step-by-Step Setup****1. Clone and Install**

```
git clone <repository-url> sentinel
cd sentinel

npm install
```

**2. Configure Environment**

```
cp .env.example .env
nano .env # or use your preferred editor
```

**Required Configuration:**

```
DATABASE_PATH=/path/to/sentinel.db
PORT=3000

NODE_ENV=production
```

**3. Configure SSH Access**

Create SSH credentials file:

```
mkdir -p config
nano config/hosts.json
```

Example `config/hosts.json`:

```
{
  "hosts": [
    {
      "id": "vm1",
      "name": "Claudinator",
      "host": "192.168.1.100",
```

```

    "port": 22,
    "username": "forge",
    "privateKeyPath": "/home/forge/.ssh/id_rsa"
  }
]
}

```

## 4. Initialize Database

The database auto-initializes on first run, but you can verify:

```
node -e "require('./src/services/storage').init()"
```

## 5. Start the Server

**Development:**

```
npm run dev
```

**Production:**

```
npm start
```

## 6. Verify Installation

```
curl http://localhost:3000/health
```

**Expected:** {"status": "ok", "timestamp":

Open browser: <http://localhost:3000>

## Environment Variables

Variable	Description	Example	Required
-----	-----	-----	-----
DATABASE_PATH	SQLite database file location	/var/lib/sentinel/sentinel.db	<input checked="" type="checkbox"/> Yes
PORT	HTTP server port	3000	<input type="checkbox"/> No (default: 3000)
NODE_ENV	Environment mode	production	<input type="checkbox"/> No (default: development)
LOG_LEVEL	Logging verbosity	info , debug , error	<input type="checkbox"/> No (default: info)

CRON_SCHEDULE	Monitoring interval	/5 (every 5 min)	No (default: /5)
SSH_TIMEOUT	SSH connection timeout (ms)	30000	No (default: 30000)
MAX_CONCURRENT_CHECKS	Parallel host checks	5	No (default: 3)

### Optional Configuration Files:

- config/hosts.json — Monitored host definitions (required for monitoring)
- config/alerts.json — Alert rule configuration (optional)
- config/backup-targets.json — Backup monitoring targets (optional)

## Running in Production

### Option 1: systemd Service (Recommended for Ubuntu)

Create service file:

```
sudo nano /etc/systemd/system/sentinel.service
```

```
[Unit]
Description=Sentinel Infrastructure Monitor
```

```
After=network.target
```

```
[Service]
```

```
Type=simple
```

```
User=forge
```

```
WorkingDirectory=/opt/sentinel
```

```
ExecStart=/usr/bin/node /opt/sentinel/src/server.js
```

```
Restart=always
```

```
RestartSec=10
```

```
StandardOutput=append:/var/log/sentinel/access.log
```

```
StandardError=append:/var/log/sentinel/error.log

Environment=NODE_ENV=production

Environment=DATABASE_PATH=/var/lib/sentinel/sentinel.db

[Install]

WantedBy=multi-user.target
```

### Setup and start:

```
sudo mkdir -p /var/log/sentinel /var/lib/sentinel
sudo chown forge:forge /var/log/sentinel /var/lib/sentinel

sudo systemctl daemon-reload

sudo systemctl enable sentinel

sudo systemctl start sentinel

sudo systemctl status sentinel
```

### View logs:

```
sudo journalctl -u sentinel -f
```

## Option 2: PM2 (Alternative)

```
npm install -g pm2
pm2 start src/server.js --name sentinel

pm2 save

pm2 startup # Follow instructions to enable on boot
```

### PM2 Commands:

```
pm2 status
pm2 logs sentinel
```

```
pm2 restart sentinel
```

```
pm2 stop sentinel
```

### Option 3: Screen/tmux (Quick & Dirty)

```
screen -S sentinel  
npm start
```

**Press Ctrl+A, then D to detach**

```
screen -r sentinel # To reattach
```

## Docker

### Dockerfile

```
FROM node:18-alpine
```

**Install build dependencies for better performance**

```
RUN apk add --no-cache python3 make g++ sqlite
```

```
WORKDIR /app
```

**Copy package files**

```
COPY package*.json ./
```

**Install dependencies**

```
RUN npm ci --only=production
```

## Copy application

---

```
COPY . .
```

## Create volume mount points

---

```
VOLUME ["/app/data", "/app/config"]
```

## Expose port

---

```
EXPOSE 3000
```

## Set environment

---

```
ENV NODE_ENV=production
```

```
ENV DATABASE_PATH=/app/data/sentinel.db
```

## Health check

---

```
HEALTHCHECK --interval=30s --timeout=10s --start-period=5s --retries=3 \
CMD node -e "require('http').get('http://localhost:3000/health', (r) => process.e
CMD ["node", "src/server.js"]
```

## docker-compose.yml

```

version: '3.8'

services:

  sentinel:
    build: .
    container_name: sentinel
    restart: unless-stopped
    ports:
      - "3000:3000"
    volumes:
      - ./data:/app/data
      - ./config:/app/config
      - ~/ssh:/root/.ssh:ro # SSH keys for host monitoring
    environment:
      - NODE_ENV=production
      - DATABASE_PATH=/app/data/sentinel.db
      - PORT=3000
    networks:
      - sentinel-net

networks:

  sentinel-net:
    driver: bridge

```

## Build and Run

```

docker build -t sentinel:latest .
docker run -d \
  --name sentinel \
  -p 3000:3000 \
  -v $(pwd)/data:/app/data \
  -v $(pwd)/config:/app/config \
  -v ~/ssh:/root/.ssh:ro \
  sentinel:latest

```

### With docker-compose:

```

docker-compose up -d
docker-compose logs -f sentinel

docker-compose restart sentinel

```

## Troubleshooting

### Port Already in Use

Error: EADDRINUSE: address already in use :::3000

```

# Find what's using port 3000
sudo lsof -i :3000

```

Or

```
sudo netstat -tlnp | grep 3000
```

Kill the process

```
sudo kill -9 <PID>
```

Or use different port

```
PORT=3001 npm start
```

### Database Locked Error

Error: SQLITE\_BUSY: database is locked

```
# Check for zombie processes
ps aux | grep node
```

Kill old instances

```
pkill -f "node.*sentinel"
```

Restart cleanly

```
npm start
```

### SSH Connection Failures

Error: Error: All configured authentication methods failed Fixes:

1. Verify SSH key permissions:

```
chmod 600 ~/.ssh/id_rsa  
chmod 700 ~/.ssh
```

2. Test SSH manually:

```
ssh -i ~/.ssh/id_rsa forge@192.168.1.100
```

3. Check `config/hosts.json` paths are absolute

4. Ensure user has SSH access to target hosts

## Missing Dependencies

Error: Cannot find module 'better-sqlite3'

```
# Rebuild native modules  
npm rebuild better-sqlite3
```

## Or clean install

```
rm -rf node_modules package-lock.json  
  
npm install
```

## Permission Denied on Database

Error: SQLITE\_CANTOPEN: unable to open database file

```
# Check database directory permissions  
ls -la /var/lib/sentinel/
```

## Fix ownership

```
sudo chown -R forge:forge /var/lib/sentinel
```

## Ensure directory exists

```
mkdir -p $(dirname $DATABASE_PATH)
```

## High Memory Usage

**Symptoms:** Node process consuming excessive memory **Fixes:**

1. Limit concurrent checks in `.env` :

```
MAX_CONCURRENT_CHECKS=2
```

2. Increase check interval:

```
CRON_SCHEDULE=/10 * # Every 10 minutes instead of 5
```

3. Set Node memory limit:

```
NODE_OPTIONS="--max-old-space-size=512" npm start
```

## Dashboard Not Loading

**Checks:**

1. Server is running:

```
curl http://localhost:3000/health
```

2. Check logs:

```
# systemd  
sudo journalctl -u sentinel -n 50
```

## PM2

```
pm2 logs sentinel
```

## Direct

```
tail -f /var/log/sentinel/error.log
```

3. Verify port accessibility:

```
# From remote machine
curl http://<server-ip>:3000/health
```

## Check firewall

```
sudo ufw status
```

```
sudo ufw allow 3000/tcp
```

## Node Version Issues

Error: SyntaxError: Unexpected token '?.' or similar

```
# Check Node version
node --version
```

## Must be 18.x or higher

## Install correct version:

```
curl -fsSL https://deb.nodesource.com/setup_18.x | sudo -E bash -
```

```
sudo apt-get install -y nodejs
```

## Cron Jobs Not Running

Symptom: Monitoring data not updating Debug:

```
# Check cron service is running
```

## Add debug logging to .env:

```
LOG_LEVEL=debug
```

# Restart and watch logs

```
npm start
```

## Verify cron schedule:

```
// Test in Node console  
node -e "console.log(require('node-cron').validate('/5      *'))"  
  
// Should print: true
```

## Need Help?

- Check logs first: `sudo journalctl -u sentinel -n 100`
- Verify prerequisites are met
- Test SSH connections manually
- Review `config/hosts.json` syntax
- Ensure database path is writable

## Related Documentation

- [Readme](#)
- [Architecture](#)