readme.md for @serve.zone/onebox

> □□ Self-hosted Docker Swarm platform with Caddy reverse proxy, automatic SSL, and real-time WebSocket updates

Onebox transforms any Linux server into a powerful container hosting platform. Deploy Docker Swarm services with automatic HTTPS, DNS configuration, and Caddy reverse proxy running as a Docker service - all managed through a beautiful Angular web interface with real-time updates.

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What Makes Onebox Different? □□

- **Caddy Reverse Proxy in Docker** - Production-grade HTTP/HTTPS proxy running as a Swarm service with native service discovery, HTTP/2, HTTP/3, and bidirectional WebSocket proxying
- **Docker Swarm First** - All workloads (including the reverse proxy!) run as Swarm services on the overlay network for seamless service-to-service communication
- **Real-time Everything** - WebSocket-powered live updates for service status, logs, and metrics across all connected clients
- **Single Executable** - Compiles to a standalone binary - just run it, no dependencies
- **Private Registry Included** - Built-in Docker registry with token-based auth and auto-deploy on push
- **Zero Config SSL** - Automatic Let's Encrypt certificates with inline `load_pem` (no volume mounts needed)
- **Cloudflare Integration** - Automatic DNS record management and zone synchronization

- **Modern Stack** - Deno runtime + SQLite database + Angular 19 UI

Features

Core Platform

- **Docker Swarm Management** - Deploy, scale, and orchestrate services with Swarm mode
- **Caddy Reverse Proxy** - Production-grade proxy running as Docker service with SNI, HTTP/2, HTTP/3
- **Automatic SSL Certificates** - Let's Encrypt integration with hot-reload and renewal monitoring
- ☁ **Cloudflare DNS Integration** - Automatic DNS record creation and zone synchronization
- **Built-in Registry** - Private Docker registry with per-service tokens and auto-update
- **Real-time WebSocket Updates** - Live service status, logs, and system events

Monitoring & Management

- **Metrics Collection** - Historical CPU, memory, and network stats (every 60s)
- **Centralized Logging** - Container logs with streaming and retention policies
- **Angular Web UI** - Modern, responsive interface with real-time updates
- **Multi-user Support** - Role-based access control (admin/user)
- **SQLite Database** - Embedded, zero-configuration storage

Developer Experience

- **Auto-update on Push** - Push to registry and services update automatically
- **Private Registry Support** - Use Docker Hub, Gitea, or custom registries
- **Systemd Integration** - Run as a daemon with auto-restart
- **Full CLI & API** - Manage everything from terminal or HTTP API

Quick Start

Installation

```
# One-line install (recommended)
curl -sSL https://code.foss.global/serve.zone/onebox/raw/branch/main/install.sh | sudo bash

# Install a specific version
curl -sSL https://code.foss.global/serve.zone/onebox/raw/branch/main/install.sh | sudo bash -s
-- --version v1.11.0

# Or install from npm
pnpm install -g @serve.zone/onebox
```

First Run

```
# Start the server in development mode
onebox server --ephemeral

# In another terminal, deploy your first service
onebox service add myapp \
  --image nginx:latest \
  --domain app.example.com \
  --port 80
```

Access the Web UI

Open `http://localhost:3000` in your browser.

Default credentials:

- Username: `admin`
- Password: `admin`

⚠ **Change the default password immediately after first login!**

Production Setup

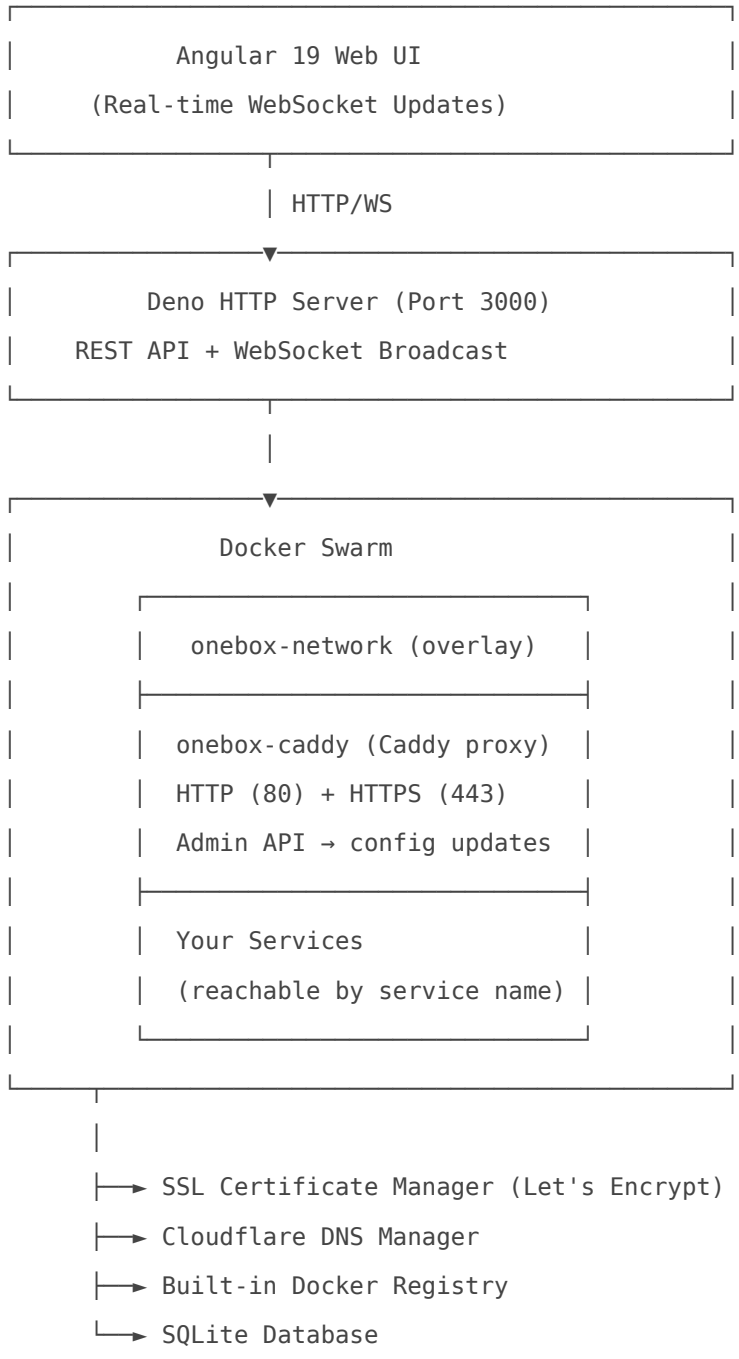
```
# Install as systemd service
sudo onebox daemon install
```

```
# Start the daemon
sudo onebox daemon start

# View logs
sudo onebox daemon logs
```

Architecture □□

Onebox is built with modern technologies for performance and developer experience:



Core Components

Component	Description
Deno Runtime	Modern TypeScript with built-in security
Caddy Reverse Proxy	Docker Swarm service with HTTP/2, HTTP/3, SNI, and WebSocket support
Docker Swarm	Container orchestration (all workloads run as services)
SQLite Database	Configuration, metrics, and user data
WebSocket Server	Real-time bidirectional communication
Let's Encrypt	Automatic SSL certificate management
Cloudflare API	DNS record automation

CLI Reference □□

Service Management

```
# Deploy a service
onebox service add <name> --image <image> --domain <domain> [--port <port>] [--env KEY=VALUE]

# Deploy with Onebox Registry (auto-update on push)
onebox service add myapp --use-onebox-registry --domain myapp.example.com

# List services
onebox service list

# Control services
onebox service start <name>
onebox service stop <name>
onebox service restart <name>

# Remove service
onebox service remove <name>

# View logs
onebox service logs <name>
```

Server Management

```
# Start server (development)
onebox server --ephemeral          # Runs in foreground with monitoring

# Start server (production)
onebox daemon install              # Install systemd service
onebox daemon start                # Start daemon
onebox daemon stop                 # Stop daemon
onebox daemon logs                 # View logs
```

Registry Management

```
# Add external registry credentials
onebox registry add --url registry.example.com --username user --password pass

# List registries
onebox registry list

# Remove registry
onebox registry remove <url>
```

DNS Management

```
# Add DNS record (requires Cloudflare config)
onebox dns add <domain>

# List DNS records
onebox dns list

# Sync from Cloudflare
onebox dns sync

# Remove DNS record
onebox dns remove <domain>
```

SSL Management

```
# Renew expiring certificates
onebox ssl renew

# Force renew specific domain
onebox ssl force-renew <domain>

# List certificates
onebox ssl list
```

Configuration

```
# Show all settings
onebox config show

# Set configuration value
onebox config set <key> <value>

# Example: Configure Cloudflare
onebox config set cloudflareAPIKey your-api-key
onebox config set cloudflareEmail your@email.com
onebox config set cloudflareZoneID your-zone-id
```

System Status

```
# Get full system status
onebox status
```

Upgrade

```
# Upgrade to the latest version (requires root)
sudo onebox upgrade
```

Configuration □□

System Requirements

- **Linux** (x64 or ARM64)
- **Docker** installed and running
- **Docker Swarm** initialized (`docker swarm init`)
- **Root/sudo access** for ports 80/443
- **(Optional) Cloudflare account** for DNS automation

Data Locations

Data	Location
Database	`./onebox.db` (or custom path)
SSL Certificates	Managed by CertManager
Registry Data	`./.nogit/registry-data`

Environment Variables

```
# Database location
ONEBOX_DB_PATH=/path/to/onebox.db

# HTTP server port (default: 3000)
ONEBOX_HTTP_PORT=3000

# Enable debug logging
ONEBOX_DEBUG=true
```

Development □□

Setup

```
# Clone repository
git clone https://code.foss.global/serve.zone/onebox
cd onebox

# Start development server (auto-restart on changes)
pnpm run watch
```

Tasks

```
# Development server (auto-restart on changes)
deno task dev

# Run tests
deno task test

# Watch mode for tests
deno task test:watch

# Compile binaries for all platforms
deno task compile
```

Project Structure

```
onebox/
├── ts/
│   ├── classes/                    # Core implementations
│   │   ├── onebox.ts               # Main coordinator
│   │   ├── reverseproxy.ts         # Reverse proxy orchestration
│   │   ├── caddy.ts                # Caddy Docker service management
│   │   ├── docker.ts               # Docker Swarm API
│   │   ├── httpserver.ts           # REST API + WebSocket
│   │   ├── services.ts             # Service orchestration
│   │   ├── certmanager.ts          # SSL certificate management
│   │   ├── cert-requirement-manager.ts  # Certificate requirements
│   │   ├── ssl.ts                  # SSL utilities
│   │   ├── registry.ts             # Built-in Docker registry
│   │   ├── registries.ts           # External registry management
```

```
│   │   ├── dns.ts                # DNS record management
│   │   ├── cloudflare-sync.ts    # Cloudflare zone sync
│   │   ├── daemon.ts             # Systemd daemon management
│   │   └── apiclient.ts          # API client utilities
│   ├── database/                 # Database layer (repository pattern)
│   │   ├── index.ts              # Main OneboxDatabase class
│   │   ├── base.repository.ts    # Base repository class
│   │   └── repositories/         # Domain-specific repositories
│   │       ├── service.repository.ts
│   │       ├── certificate.repository.ts
│   │       ├── auth.repository.ts
│   │       ├── metrics.repository.ts
│   │       └── ...
│   ├── cli.ts                    # CLI router
│   ├── types.ts                  # TypeScript interfaces
│   ├── logging.ts                # Logging utilities
│   └── plugins.ts                # Dependency imports
├── ui/                           # Angular 19 web interface
├── test/                         # Test files
├── mod.ts                        # Main entry point
└── deno.json                     # Deno configuration
```

API Endpoints

The HTTP server exposes a comprehensive REST API:

Authentication

Method	Endpoint	Description
`POST`	`/api/auth/login`	User authentication (returns token)

Services

Method	Endpoint	Description
`GET`	`/api/services`	List all services
`POST`	`/api/services`	Create/deploy service
`GET`	`/api/services/:name`	Get service details
`PUT`	`/api/services/:name`	Update service

Method	Endpoint	Description
`DELETE`	`/api/services/:name`	Delete service
`POST`	`/api/services/:name/start`	Start service
`POST`	`/api/services/:name/stop`	Stop service
`POST`	`/api/services/:name/restart`	Restart service
`GET`	`/api/services/:name/logs`	Get service logs
`WS`	`/api/services/:name/logs/stream`	Stream logs via WebSocket

SSL Certificates

Method	Endpoint	Description
`GET`	`/api/ssl/list`	List all certificates
`GET`	`/api/ssl/:domain`	Get certificate details
`POST`	`/api/ssl/obtain`	Request new certificate
`POST`	`/api/ssl/:domain/renew`	Force renew certificate

Domains

Method	Endpoint	Description
`GET`	`/api/domains`	List all domains
`GET`	`/api/domains/:domain`	Get domain details
`POST`	`/api/domains/sync`	Sync domains from Cloudflare

DNS Records

Method	Endpoint	Description
`GET`	`/api/dns`	List DNS records
`POST`	`/api/dns`	Create DNS record
`DELETE`	`/api/dns/:domain`	Delete DNS record
`POST`	`/api/dns/sync`	Sync DNS from Cloudflare

Registry

Method	Endpoint	Description
`GET`	`/api/registry/tags/:service`	Get registry tags for service
`GET`	`/api/registry/tokens`	List registry tokens

Method	Endpoint	Description
`POST`	`/api/registry/tokens`	Create registry token
`DELETE`	`/api/registry/tokens/:id`	Delete registry token

System

Method	Endpoint	Description
`GET`	`/api/status`	System status
`GET`	`/api/settings`	Get settings
`PUT`	`/api/settings`	Update settings
`WS`	`/api/ws`	WebSocket for real-time updates

WebSocket Messages

Real-time updates are broadcast via WebSocket:

```
// Service lifecycle updates
{
  type: 'service_update',
  action: 'created' | 'updated' | 'deleted' | 'started' | 'stopped',
  service: { id, name, status, ... }
}

// Service status changes
{
  type: 'service_status',
  service: { id, name, status, ... }
}

// System status updates
{
  type: 'system_status',
  status: { docker, reverseProxy, services, ... }
}
```

Advanced Usage □□

Using the Built-in Registry

```
# Deploy a service with Onebox Registry
onebox service add myapp \
  --use-onebox-registry \
  --domain myapp.example.com \
  --auto-update-on-push

# Get the registry token for pushing images
# (Token is automatically created and stored in database)

# Push your image
docker tag myimage:latest localhost:4000/myapp:latest
docker push localhost:4000/myapp:latest

# Service automatically updates! □□
```

Registry Token Management

```
# Create a CI/CD token via API
curl -X POST http://localhost:3000/api/registry/tokens \
  -H "Authorization: Bearer $TOKEN" \
  -H "Content-Type: application/json" \
  -d '{"name": "github-actions", "type": "ci", "scope": ["myapp"], "expiresIn": "90d"}'

# Use token for docker login
docker login localhost:4000 -u ci -p <token>
```

Cloudflare DNS Integration

```
# Configure Cloudflare (one-time setup)
onebox config set cloudflareAPIKey your-api-key
onebox config set cloudflareEmail your@email.com
onebox config set cloudflareZoneID your-zone-id

# Deploy with automatic DNS
```

```
onebox service add myapp \
  --image nginx:latest \
  --domain myapp.example.com

# DNS record is automatically created!

# Sync all domains from Cloudflare
onebox dns sync
```

SSL Certificate Management

SSL certificates are automatically obtained and renewed:

- □ Certificates are requested when a service with a domain is deployed
- □ Renewal happens automatically 30 days before expiry
- □ Certificates are hot-reloaded without downtime
- □ Force renewal: `onebox ssl force-renew <domain>`

Monitoring and Metrics

Metrics are collected every 60 seconds (configurable):

```
# Set metrics interval (milliseconds)
onebox config set metricsInterval 30000

# View in web UI or query database directly
sqlite3 onebox.db "SELECT * FROM metrics WHERE service_id = 1 ORDER BY timestamp DESC LIMIT
10"
```

Troubleshooting □□

Docker Swarm Not Initialized

```
# Initialize Docker Swarm
docker swarm init
```

```
# Verify swarm mode
docker info | grep "Swarm: active"
```

Port Already in Use

```
# Check what's using port 80/443
sudo lsof -i :80
sudo lsof -i :443

# Kill the process or change Onebox ports
onebox config set httpPort 8080
```

SSL Certificate Issues

```
# Check certificate status
onebox ssl list

# Verify DNS is pointing to your server
dig +short yourdomain.com

# Force certificate renewal
onebox ssl force-renew yourdomain.com
```

WebSocket Connection Issues

- Ensure firewall allows WebSocket connections
- Check browser console for connection errors
- Verify `/api/ws` endpoint is accessible

Service Not Starting

```
# Check Docker logs
docker service logs <service-name>

# Check Onebox logs
onebox daemon logs
```

```
# Verify image exists
docker images | grep <image-name>
```

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