

## **E(i)xM installation requirements**

**Version**        **1.0**

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## GENERAL INFORMATION

How many containers are defined in the docker compose config?

15 containers total:

Core Services (5):

- eixm-api - Main API application
- eixm-api-legacy - Legacy API for backward compatibility
- eixm-sapmoni-api - SAP MONI integration API
- eixm-proxy - Reverse proxy
- eixm-web - Web frontend

Infrastructure (10):

- reverse-proxy - Traefik reverse proxy (HTTPS/SSL termination)
- docker-socket-proxy - Security proxy for Docker socket
- mssql-server - Microsoft SQL Server database
- mssql-init - Database initialization (one-time)
- mssql-backup - Automated database backups
- redis - Cache and session storage
- seq - Structured logging server
- env-dashboard - Dashboard for monitoring
- eixm-db-migrations - Database schema migrations (one-time)
- app-init - Application initialization (one-time)

Database: [product](#), [version](#), [expected size](#)

**Product:** Microsoft SQL Server

**Version:** 2022-latest

**Image:** mcr.microsoft.com/mssql/server:2022-latest

Expected database size:

- Initial: ~500 MB - 1 GB
- Growth: Depends on usage
- Recommended: Plan for 50-100 GB minimum for production use
- Backups: Full + transaction log backups (configure retention period)

**Part of docker compose:** Yes, deployed as mssql-server container

[Storage separation - application vs database](#)

No, storage is separated:

Database storage:

- Docker volume: eixm-mssql-data (database files)
- Docker volume: eixm-mssql-backups (database backups)
- NOT stored in /opt/eixm/storage

Application file storage:

- Docker volume: eixm-storage mounted to /opt/eixm/storage
- Stores application related data (for example: uploaded documents, files, attachments)

Other storage:

- eixm-seq-data - Log data
- eixm-redis-data - Cache data
- letsencrypt - SSL certificates

[LV size for /opt/eixm?](#)

Recommended: 20-25 GB (for air-gapped deployment)

**Contents:**

Permanent files (~100 KB):

- Docker Compose files (~50 KB)
- Deployment scripts (~30 KB)
- Configuration files (.env, etc.) (~5 KB)
- SSL certificates (~10 KB)
- Deployment artifacts (~100 KB)

Temporary files during air-gapped deployment (~10-15 GB):

- Air-gapped bundle archive: ~5-10 GB compressed
- Extracted bundle contents: ~5-10 GB (images as tar.gz files)
- Working space for extraction: ~2-3 GB

**Note:** After initial deployment, you can reduce to 5 GB if needed, but keep 20-25 GB to accommodate future updates without resizing.

[Separate LV for /opt/eixm/storage and size?](#)

Not required - /opt/eixm/storage is just a mount point for Docker volume eixm-storage.

Recommendation: Create separate LV for Docker volumes instead:

Option 1: Separate LV for all Docker volumes (recommended)

- Mount point: /var/lib/docker/volumes
- Size: 150-200 GB minimum
- Contains all Docker volumes (database, backups, storage, logs, cache)

Option 2: Separate LVs per volume type

- /var/lib/docker/volumes/eixm-mssql-data - 100 GB (database)
- /var/lib/docker/volumes/eixm-mssql-backups - 50 GB (backups)
- /var/lib/docker/volumes/eixm-storage - 50 GB (application files)
- /var/lib/docker/volumes/eixm-seq-data - 20 GB (logs)
- Others - 10 GB total

**Total recommended:** 200-250 GB for all Docker volumes, in case ERP is not used 25 GB are ok

[Possibility for upfront delivery of docker compose config?](#)

Yes, we can provide the following for gap analysis:

- docker-compose.yaml - Main configuration
- docker-compose.airgap.yaml - Air-gapped deployment overlay
- .env - Environment variables template

Additional files available:

- backup-db.sh - Backup automation script
- airgap-import.sh - Docker image import script
- deploy-airgap.sh - Air-gapped deployment script
- generate-self-signed-cert.sh - Certificate generation script
- import-custom-cert.sh - Custom certificate import script

## TECHNICAL MD DOCUMENT

### # EIXM System Preparation Guide

#### ## Overview

This document describes how to prepare your Linux VM for EIXM deployment. Follow these instructions to set up the required user account, permissions, and directory structure before deploying EIXM.

#### \*\*Supported Linux Distributions:\*\*

- SUSE Linux Enterprise Server (SLES) 15+
- openSUSE Leap 15+
- Ubuntu 22.04+
- Red Hat Enterprise Linux (RHEL) 8+
- Debian 11+
- Other systemd-based distributions with Docker support

\*\*Note:\*\* SUSE-specific configuration notes are included throughout this document where applicable.

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#### ## System Requirements

Your Linux VM must have:

- **OS:** Linux distribution with systemd (see supported list above)
- **Docker:** Docker Engine 20.10+ or Docker CE 20.10+
- **Docker Compose:** Docker Compose V2 (plugin or standalone)
- **RAM:** 16+ GB
- **CPU:** 4+ cores
- **Storage:** 100+ GB available disk space
- **Time Sync:** NTP/chrony configured (for accurate logs and scheduled jobs)
- **Network:** Outbound access to container registries (or air-gapped deployment option)

---

#### ## Deployment User Setup

EIXM requires a dedicated non-root user account for deployment and operation.

##### ### Create the Deployment User

**Recommended username:** `deploy` (or `eixmdeploy`)

```
``bash
```

```
# Run as root or with sudo
```

```
sudo useradd -m -s /bin/bash deploy
```

```
sudo passwd deploy # Set a strong password
```

```
``
```

**Note:** You can use any username you prefer. Replace `deploy` with your chosen username throughout this guide.

##### ### SSH Access Configuration

The deployment user requires SSH access with public key authentication.

**\*\*EIXM vendor will provide you with a public SSH key\*\*** to add to your deployment user's authorized keys.

**\*\*Configure SSH access on the VM:\*\***

```
``bash
# Switch to deployment user (on the VM)
sudo su - deploy

# Create .ssh directory
mkdir -p ~/.ssh
chmod 700 ~/.ssh

# Add the public SSH key provided by EIXM vendor
# Replace <public-key-from-vendor> with the actual key provided
echo "<public-key-from-vendor>" >> ~/.ssh/authorized_keys
chmod 600 ~/.ssh/authorized_keys
exit
``
```

**\*\*Security recommendations:\*\***

- **\*\*Use public key authentication\*\*** (no password login)
- **\*\*Only add public keys\*\*** from trusted sources (your EIXM vendor)
- **\*\*Disable password authentication\*\*** for SSH (optional but recommended)
- **\*\*Do NOT enable root SSH access\*\***

**\*\*To disable password authentication (optional but recommended):\*\***

```
``bash
# Edit SSH config (run as root)
sudo nano /etc/ssh/sshd_config

# Set these values:
# PasswordAuthentication no
# PubkeyAuthentication yes
# PermitRootLogin no

# Restart SSH service
sudo systemctl restart sshd # or 'ssh' on some distributions
``
```

**\*\*After configuration, provide these details to your EIXM vendor:\*\***

- VM hostname or IP address
- SSH port (default: 22)
- Deployment username (e.g., `deploy`)
- Any firewall rules restricting source IPs

---

## ## Required Permissions

### ### 1. Docker Access (Critical)

The deployment user must be able to execute Docker commands without `sudo`.

#### **\*\*Setup:\*\***

```
``bash
```

```
# Add user to docker group (run as root)
```

```
sudo usermod -aG docker deploy
```

```
# User must log out and log back in for group membership to take effect
```

```
# Then verify docker access
```

```
docker ps
```

```
docker --version
```

```
docker compose version
```

```
``
```

#### **\*\*Required Docker capabilities:\*\***

The deployment user needs access to the following Docker commands:

- `docker ps` - List running containers
- `docker pull` - Pull images from registries
- `docker run` - Run containers
- `docker compose up/down` - Manage multi-container applications
- `docker logs` - View container logs
- `docker exec` - Execute commands in running containers
- `docker images` - List images
- `docker load` - Load images from tar archives (air-gapped deployments)

#### **\*\*Verify Docker access:\*\***

```
``bash
```

```
# Run these commands as the deployment user
```

```
docker ps
```

```
docker images
```

```
docker compose version
```

```
docker network ls
```

```
``
```

#### **\*\*Alternative: Minimal sudo permissions (if Docker group access is restricted)\*\***

If your security policy does not allow adding the user to the `docker` group, configure minimal sudo permissions:

```
``bash
```

```
# Create sudoers file for deployment user (run as root)
```

```
sudo visudo -f /etc/sudoers.d/deploy
```

```
# Add these lines (replace 'deploy' with your username):
```

```
deploy ALL=(ALL) NOPASSWD: /usr/bin/docker
```

```
deploy ALL=(ALL) NOPASSWD: /usr/bin/docker-compose
```

```
deploy ALL=(ALL) NOPASSWD: /usr/local/bin/docker-compose
```

```
deploy ALL=(ALL) NOPASSWD: /usr/bin/systemctl restart docker
deploy ALL=(ALL) NOPASSWD: /usr/bin/systemctl stop docker
deploy ALL=(ALL) NOPASSWD: /usr/bin/systemctl start docker
```

```
# Save and exit
# Set proper permissions
sudo chmod 440 /etc/sudoers.d/deploy
``
```

**Note:** Docker group membership is the **preferred and recommended** approach. The sudo alternative should only be used if required by your organization's security policies.

### ### 2. File System Access

EIXM requires specific directories for storing configuration, application data, and backups.

**Create directory structure:**

```
``bash
# Create directories (run as root)
sudo mkdir -p /opt/eixm
sudo mkdir -p /opt/eixm/certs
sudo mkdir -p /opt/eixm/storage
sudo mkdir -p /opt/eixm/backups

# Set ownership to deployment user (replace 'deploy' with your username)
sudo chown -R deploy:deploy /opt/eixm

# Set permissions
sudo chmod 755 /opt/eixm
sudo chmod 700 /opt/eixm/certs # Certificates are sensitive
sudo chmod 775 /opt/eixm/storage
sudo chmod 775 /opt/eixm/backups
``
```

**Directory purposes:**

- `/opt/eixm/`` - Deployment files and configuration
- `/opt/eixm/certs/`` - SSL certificates and private keys
- `/opt/eixm/storage/`` - Application file storage (Docker volume mount)
- `/opt/eixm/backups/`` - Database backups

**Permissions breakdown:**

Path	Owner	Group	Permissions	Purpose
<code>/opt/eixm/`</code>	deploy	deploy	755 (rwxr-xr-x)	Deployment files
<code>/opt/eixm/certs/`</code>	deploy	deploy	700 (rwx-----)	SSL certificates
<code>/opt/eixm/storage/`</code>	deploy	deploy	775 (rwxrwxr-x)	Application storage
<code>/opt/eixm/backups/`</code>	deploy	deploy	775 (rwxrwxr-x)	Database backups
<code>/opt/eixm/.env`</code>	deploy	deploy	600 (rw-----)	Configuration secrets

### ### 3. Network Configuration

**\*\*Required Network Access:\*\***

**\*\*Inbound:\*\***

- **\*\*SSH (port 22)\*\*** - For deployment access (can be restricted by source IP if required)
- **\*\*HTTPS (port 443)\*\*** - For users to access the EIXM application
- **\*\*HTTP (port 80)\*\*** - Optional, for HTTP to HTTPS redirect

**\*\*Outbound:\*\***

- **\*\*Docker image registries\*\*** - For pulling container images (HTTPS/443)

**\*\*Note:\*\*** For air-gapped deployments, outbound access is not required.

**\*\*Firewall Setup:\*\***

**\*\*For RHEL/CentOS/SUSE (firewalld):\*\***

```
``bash
# Allow HTTPS traffic (run as root)
sudo firewall-cmd --permanent --add-service=https
sudo firewall-cmd --permanent --add-service=http # Optional
sudo firewall-cmd --reload

# Verify firewall configuration
sudo firewall-cmd --list-all
``
```

**\*\*For Ubuntu/Debian (ufw):\*\***

```
``bash
# Allow HTTPS traffic (run as root)
sudo ufw allow 443/tcp
sudo ufw allow 80/tcp # Optional
sudo ufw reload

# Verify firewall status
sudo ufw status
``
```

**\*\*For SUSE (SuSEfirewall2 on older versions):\*\***

```
``bash
# For SLES 12 and older
sudo SuSEfirewall2 open EXT TCP 443
sudo SuSEfirewall2 open EXT TCP 80 # Optional
sudo SuSEfirewall2
``
```

**\*\*Restrict SSH by source IP (optional but recommended):\*\***

```
``bash
# Example: Allow SSH only from specific IP
sudo firewall-cmd --permanent --add-rich-rule='rule family="ipv4" source
address="YOUR.DEPLOY.IP.ADDRESS" service name="ssh" accept'
```

```
sudo firewall-cmd --reload
'''
```

#### ### 4. OpenSSL Access

**\*\*Required for certificate operations:\*\***

```
```bash
# Verify OpenSSL is available
openssl version
'''
```

The deployment user must be able to execute OpenSSL commands for:

- Generating self-signed certificates (if not using organization CA)
- Verifying certificate and key pairs
- Inspecting certificate details

#### ### 5. Time Synchronization

**\*\*Critical for logs, scheduled jobs, and security:\*\***

```
```bash
# Check time synchronization status
timedatectl

# Verify NTP/chrony is active
systemctl status chronyd # RHEL/CentOS/SUSE
# or
systemctl status systemd-timesyncd # Ubuntu/Debian
'''
```

**\*\*If time sync is not configured:\*\***

```
```bash
# For RHEL/CentOS/SUSE (chrony)
sudo yum install chrony # or zypper install chrony
sudo systemctl enable --now chronyd

# For Ubuntu/Debian (systemd-timesyncd)
sudo systemctl enable --now systemd-timesyncd

# Verify time is synced
timedatectl status
'''
```

**\*\*Recommended timezone:\*\*** UTC (but any timezone is acceptable if consistent)

```
```bash
# Set timezone to UTC (optional)
sudo timedatectl set-timezone UTC

# Or set to your preferred timezone
sudo timedatectl set-timezone Europe/Zurich
```

...

### ### 6. Optional but Recommended Utilities

**\*\*Install helpful utilities:\*\***

```
```bash
# For RHEL/CentOS/SUSE
sudo yum install curl jq ca-certificates # or zypper install
```

```
# For Ubuntu/Debian
sudo apt-get install curl jq ca-certificates
```
```

**\*\*These utilities are used for:\*\***

- `curl` - API health checks and troubleshooting
- `jq` - JSON parsing and log analysis
- `ca-certificates` - SSL/TLS certificate validation

---

### ## What We Do NOT Require

To clarify the scope of access needed, EIXM deployment does **\*\*NOT\*\*** require:

- **✗** **\*\*Root SSH access\*\*** - A dedicated non-root user is sufficient
- **✗** **\*\*Full sudo privileges\*\*** - Only Docker and minimal system commands (if needed)
- **✗** **\*\*Manual intervention during deployments\*\*** - Deployments are automated
- **✗** **\*\*Access to other VMs or infrastructure\*\*** - Only this VM is required
- **✗** **\*\*Database root credentials\*\*** - Application uses dedicated database user
- **✗** **\*\*Modifications to system-wide configurations\*\*** - Only user-specific and application-specific settings

---

### ## SUSE Linux Specific Configuration

#### ### AppArmor

SUSE uses AppArmor for security. If you encounter permission denied errors with Docker:

```
```bash
# Check AppArmor status
sudo aa-status

# If needed, put Docker in complain mode
sudo aa-complain /etc/apparmor.d/docker
```
```

#### ### Firewall (firewalld)

SUSE 15+ uses `firewalld`:

```
```bash
# Check firewall status
sudo firewall-cmd --state

# List current configuration
sudo firewall-cmd --list-all
```
```

### SELinux (if enabled)

Some SUSE installations may have SELinux enabled:

```
```bash
# Check SELinux status
getenforce

# If enforcing and causing issues with Docker
sudo semanage permissive -a container_t
```
```

---

## Verification

### Automated Verification Script

Save this script as `verify-deployment-permissions.sh` and run it to verify all required permissions are in place:

```
```bash
#!/bin/bash

# EIXM Deployment Permission Verification Script
# Usage: ./verify-deployment-permissions.sh [airgap|azure]

MODE=${1:-azure}
RED='\033[0;31m'
GREEN='\033[0;32m'
YELLOW='\033[1;33m'
NC='\033[0m'

echo "====="
echo "EIXM Deployment Permission Verification"
echo "Mode: $MODE"
echo "User: $(whoami)"
echo "====="
echo ""

ERRORS=0

# Check Docker access
echo "1. Checking Docker access..."
```

```

if docker ps > /dev/null 2>&1; then
    echo -e " ${GREEN}✓${NC} Docker access: OK"
else
    echo -e " ${RED}X${NC} Docker access: FAILED"
    echo "    User must be in docker group: sudo usermod -aG docker $(whoami)"
    ERRORS=$((ERRORS + 1))
fi

# Check Docker Compose
echo "2. Checking Docker Compose..."
if docker compose version > /dev/null 2>&1; then
    echo -e " ${GREEN}✓${NC} Docker Compose V2: OK"
else
    echo -e " ${RED}X${NC} Docker Compose: FAILED"
    ERRORS=$((ERRORS + 1))
fi

# Check OpenSSL
echo "3. Checking OpenSSL..."
if openssl version > /dev/null 2>&1; then
    echo -e " ${GREEN}✓${NC} OpenSSL: OK ($(openssl version))"
else
    echo -e " ${RED}X${NC} OpenSSL: FAILED"
    ERRORS=$((ERRORS + 1))
fi

# Check /opt/eixm directory
echo "4. Checking /opt/eixm directory..."
if [ -d "/opt/eixm" ]; then
    if [ -w "/opt/eixm" ]; then
        echo -e " ${GREEN}✓${NC} /opt/eixm: Exists and writable"
    else
        echo -e " ${RED}X${NC} /opt/eixm: Not writable by $(whoami)"
        ERRORS=$((ERRORS + 1))
    fi
else
    echo -e " ${YELLOW}⚠️ ${NC} /opt/eixm: Does not exist (will be created)"
fi

# Check storage directory
echo "5. Checking /opt/eixm/storage directory..."
if [ -d "/opt/eixm/storage" ]; then
    if [ -w "/opt/eixm/storage" ]; then
        echo -e " ${GREEN}✓${NC} /opt/eixm/storage: Exists and writable"
    else
        echo -e " ${RED}X${NC} /opt/eixm/storage: Not writable"
        ERRORS=$((ERRORS + 1))
    fi
else
    echo -e " ${YELLOW}⚠️ ${NC} /opt/eixm/storage: Does not exist (will be created)"
fi

```

```

# Check backup directory
echo "6. Checking /opt/eixm/backups directory..."
if [ -d "/opt/eixm/backups" ]; then
    if [ -w "/opt/eixm/backups" ]; then
        echo -e " ${GREEN}✓${NC} /opt/eixm/backups: Exists and writable"
    else
        echo -e " ${RED}✗${NC} /opt/eixm/backups: Not writable"
        ERRORS=$((ERRORS + 1))
    fi
else
    echo -e " ${YELLOW}⚠️ ${NC} /opt/eixm/backups: Does not exist (will be created)"
fi

# Air-gapped specific checks
if [ "$MODE" = "airgap" ]; then
    echo "7. Checking /opt/eixm/certs directory (airgap)..."
    if [ -d "/opt/eixm/certs" ]; then
        if [ -w "/opt/eixm/certs" ]; then
            echo -e " ${GREEN}✓${NC} /opt/eixm/certs: Exists and writable"
        else
            echo -e " ${RED}✗${NC} /opt/eixm/certs: Not writable"
            ERRORS=$((ERRORS + 1))
        fi
    else
        echo -e " ${YELLOW}⚠️ ${NC} /opt/eixm/certs: Does not exist (will be created)"
    fi

    echo "8. Testing Docker image load capability..."
    if docker load --help > /dev/null 2>&1; then
        echo -e " ${GREEN}✓${NC} Can execute 'docker load'"
    else
        echo -e " ${RED}✗${NC} Cannot execute 'docker load'"
        ERRORS=$((ERRORS + 1))
    fi
fi

# Check disk space
echo "9. Checking disk space..."
AVAILABLE_GB=$(df -BG /opt 2>/dev/null | awk 'NR==2 {print $4}' | sed 's/G//')
if [ -z "$AVAILABLE_GB" ]; then
    AVAILABLE_GB=$(df -BG / | awk 'NR==2 {print $4}' | sed 's/G//')
fi

if [ "$AVAILABLE_GB" -ge 100 ]; then
    echo -e " ${GREEN}✓${NC} Disk space: ${AVAILABLE_GB}GB available"
elif [ "$AVAILABLE_GB" -ge 50 ]; then
    echo -e " ${YELLOW}⚠️ ${NC} Disk space: ${AVAILABLE_GB}GB available (Low, recommend 100GB+)"
else
    echo -e " ${RED}✗${NC} Disk space: ${AVAILABLE_GB}GB available (Insufficient)"
    ERRORS=$((ERRORS + 1))
fi

```

```

fi

# Check firewall (informational)
echo "10. Checking firewall (informational)..."
if command -v firewall-cmd > /dev/null 2>&1; then
    if sudo -n firewall-cmd --state > /dev/null 2>&1; then
        if sudo firewall-cmd --list-services | grep -q https; then
            echo -e " ${GREEN}✓${NC} Firewall: HTTPS is allowed"
        else
            echo -e " ${YELLOW}⚠️ ${NC} Firewall: HTTPS not explicitly allowed (may be OK)"
        fi
    else
        echo -e " ${YELLOW}⚠️ ${NC} Firewall: Cannot check (insufficient sudo privileges)"
    fi
else
    echo -e " ${YELLOW}⚠️ ${NC} Firewall: firewall-cmd not found"
fi

```

```

echo ""
echo "====="
if [ $ERRORS -eq 0 ]; then
    echo -e "${GREEN}✓ All checks passed!${NC}"
    echo "The user $(whoami) has the required permissions for EIXM deployment."
    exit 0
else
    echo -e "${RED}X $ERRORS error(s) found${NC}"
    echo "Please fix the errors above before proceeding with deployment."
    exit 1
fi
...

```

**\*\*Usage:\*\***

```

``bash
chmod +x verify-deployment-permissions.sh
./verify-deployment-permissions.sh
``

```

---

### ## Quick Setup Guide

Follow these steps to prepare your Linux VM for EIXM deployment:

```

``bash
# 1. Create user and add to docker group (run as root on the VM)
sudo useradd -m -s /bin/bash deploy
sudo usermod -aG docker deploy

# 2. Set up SSH access for deployment user (on the VM)
# First, obtain the public SSH key from your EIXM vendor
sudo su - deploy

```

```
mkdir -p ~/.ssh
chmod 700 ~/.ssh
echo "<public-key-from-vendor>" >> ~/.ssh/authorized_keys
chmod 600 ~/.ssh/authorized_keys
exit
```

```
# 3. Create directory structure (run as root)
sudo mkdir -p /opt/eixm/{certs,storage,backups}
sudo chown -R deploy:deploy /opt/eixm
sudo chmod 755 /opt/eixm
sudo chmod 700 /opt/eixm/certs
sudo chmod 775 /opt/eixm/{storage,backups}
```

```
# 4. Configure firewall (RHEL/CentOS/SUSE)
sudo firewall-cmd --permanent --add-service=https
sudo firewall-cmd --reload
```

```
# For Ubuntu/Debian (ufw)
# sudo ufw allow 443/tcp
# sudo ufw reload
```

```
# 5. Verify time synchronization
timedatectl status
```

```
# 6. Install optional utilities
sudo yum install curl jq ca-certificates # RHEL/CentOS/SUSE
# or
# sudo apt-get install curl jq ca-certificates # Ubuntu/Debian
```

```
# 7. Verify Docker access (as deploy user)
su - deploy
docker ps
docker compose version
cd /opt/eixm
openssl version
...

```

**\*\*Next steps:\*\***

- Run the verification script (see Verification section above)
- Provide SSH access details to EIXM vendor:
  - VM hostname/IP address
  - SSH port (if non-standard)
  - Deployment username
  - Any IP restrictions
- Coordinate deployment schedule

---

**## Troubleshooting**

**### "Permission denied" when running docker commands**

**\*\*Problem:\*\*** User is not in docker group or hasn't logged out/in after being added.

**\*\*Solution:\*\***

```
```bash
```

```
# Verify group membership
```

```
id
```

```
groups
```

```
# If docker group is missing, add user (as root)
```

```
sudo usermod -aG docker $(whoami)
```

```
# Log out and log back in
```

```
exit
```

```
# Then log in again
```

```
```
```

**\*\*Alternative:\*\*** Verify the Docker daemon is running:

```
```bash
```

```
sudo systemctl status docker
```

```
```
```

### "Cannot connect to Docker daemon"

**\*\*Problem:\*\*** Docker service is not running or user doesn't have access.

**\*\*Solution:\*\***

```
```bash
```

```
# Check Docker service status
```

```
sudo systemctl status docker
```

```
# Start Docker if not running
```

```
sudo systemctl start docker
```

```
sudo systemctl enable docker
```

```
```
```

### "Permission denied" for /opt/eixm

**\*\*Problem:\*\*** Directory ownership is incorrect.

**\*\*Solution:\*\***

```
```bash
```

```
# Fix ownership (run as root, replace 'deploy' with your username)
```

```
sudo chown -R deploy:deploy /opt/eixm
```

```
```
```

### SSH key authentication not working

**\*\*Problem:\*\*** Public key is not properly configured.

**\*\*Solution:\*\***

```
```bash
```

```
# Check .ssh directory permissions (as deployment user)
```

```
ls -la ~/.ssh
# Should show: drwx----- (700) for .ssh directory
# Should show: -rw----- (600) for authorized_keys file

# Fix permissions if needed
chmod 700 ~/.ssh
chmod 600 ~/.ssh/authorized_keys

# Verify SSH daemon allows public key auth (as root)
sudo grep "PubkeyAuthentication" /etc/ssh/sshd_config
# Should show: PubkeyAuthentication yes
``
```

### ### Firewall blocking access

**\*\*Problem:\*\*** Cannot access application on port 443.

**\*\*Solution:\*\***

```
``bash
# Check firewall status and rules
sudo firewall-cmd --list-all # RHEL/CentOS/SUSE
# or
sudo ufw status # Ubuntu/Debian

# Verify HTTPS is allowed
sudo firewall-cmd --list-services | grep https
# or
sudo ufw status | grep 443
``
```

---

### ## Security Recommendations

1. **\*\*Dedicated User:\*\*** Use a dedicated service account for EIXM, not a personal account
2. **\*\*Firewall Rules:\*\*** Only open required ports (443 for HTTPS)
3. **\*\*Audit Logs:\*\*** Enable and monitor audit logs for Docker operations
4. **\*\*Regular Updates:\*\*** Keep the system and Docker updated with security patches
5. **\*\*Certificate Security:\*\*** Protect private keys with 600 permissions
6. **\*\*Secrets Management:\*\*** Never commit `.env`` files or secrets to version control
7. **\*\*Least Privilege:\*\*** Only grant minimum required permissions

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### ## Contact

For questions or issues related to system preparation:  
- Contact your EIXM vendor or support team

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**\*\*Document Version:\*\*** 1.0

**\*\*Last Updated:\*\*** 2026-01-27

**\*\*Applies To:\*\*** EIXM v1.0.0+ on Linux with Docker pre-installed

**\*\*Distributions:\*\*** SUSE, RHEL, Ubuntu, Debian, and other systemd-based distributions