

Portal Família - Complete Deployment Guide

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Prerequisites

Hardware Requirements

- Ubuntu Server 20.04 LTS or newer
- Minimum 1GB RAM
- 10GB free disk space
- Network interface connected to your LAN

Software Requirements

- Node.js v18 or higher
 - npm v9 or higher
 - sudo/root access (for firewall integration)
 - Git (optional, for version control)
-

Server Setup

1. Update System

```
sudo apt update && sudo apt upgrade -y
```

2. Install Node.js

```
# Using NodeSource repository
curl -fsSL https://deb.nodesource.com/setup_18.x | sudo -E bash -
sudo apt install -y nodejs

# Verify installation
node --version
npm --version
```

3. Install Required System Packages

```
sudo apt install -y build-essential python3 git sqlite3
```

Installation

1. Clone or Copy the Project

```
# If using git
git clone <repository-url> /opt/portal-familia
cd /opt/portal-familia

# Or if you have a zip file
unzip portal_familia.zip -d /opt/portal-familia
cd /opt/portal-familia
```

2. Install Backend Dependencies

```
cd /opt/portal-familia/backend
npm install
```

3. Install Frontend Dependencies

```
cd /opt/portal-familia
npm install
```

4. Configure Environment Variables

Backend Configuration:

```
cd /opt/portal-familia/backend
cp .env.example .env
nano .env
```

Update the following values:

```

PORT=5000
NODE_ENV=production
FRONTEND_URL=http://your-server-ip:3000

DB_PATH=./database/portal_familia.db

# Generate secure random strings for these:
JWT_SECRET=your_very_secure_jwt_secret_here
SESSION_SECRET=your_very_secure_session_secret_here

# Firewall Integration
ENABLE_FIREWALL=true
FIREWALL_TYPE=iptables # or ufw
NETWORK_INTERFACE=eth0 # Your network interface (check with ip addr)
LOCAL_SUBNET=192.168.1.0/24 # Your local network subnet

```

Frontend Configuration:

```

cd /opt/portal-familia
cp .env.example .env.local
nano .env.local

```

Update:

```
VITE_API_URL=http://your-server-ip:5000/api
```

5. Initialize Database

```

cd /opt/portal-familia/backend
npm run init-db

```

This will create the database and seed it with initial demo data.

Firewall Integration Setup

The Portal Família can control internet access for family members' devices using iptables or ufw.

Option 1: Using iptables (Recommended)

Step 1: Enable IP Forwarding

```

# Temporarily enable
sudo sysctl -w net.ipv4.ip_forward=1

# Permanently enable
echo "net.ipv4.ip_forward=1" | sudo tee -a /etc/sysctl.conf
sudo sysctl -p

```

Step 2: Configure iptables

```
# Allow forwarding by default
sudo iptables -P FORWARD ACCEPT

# Allow established connections
sudo iptables -A FORWARD -m state --state ESTABLISHED,RELATED -j ACCEPT

# Save rules
sudo apt install iptables-persistent
sudo netfilter-persistent save
```

Step 3: Grant sudo Permissions for Firewall Commands

Create a sudoers file for the Portal Família:

```
sudo visudo -f /etc/sudoers.d/portal-familia
```

Add the following content (replace `ubuntu` with your username):

```
# Portal Família firewall control
ubuntu ALL=(ALL) NOPASSWD: /usr/sbin/iptables
ubuntu ALL=(ALL) NOPASSWD: /usr/sbin/sysctl
```

Save and exit. Test with:

```
sudo -l | grep iptables
```

Option 2: Using UFW

Step 1: Enable UFW

```
sudo ufw enable
sudo ufw default allow routed
```

Step 2: Grant sudo Permissions

```
sudo visudo -f /etc/sudoers.d/portal-familia
```

Add:

```
# Portal Família firewall control
ubuntu ALL=(ALL) NOPASSWD: /usr/sbin/ufw
```

Note: UFW requires IP addresses for device blocking. MAC-based filtering is not supported directly with UFW.

Firewall Configuration in .env

Update your `backend/.env`:

```
ENABLE_FIREWALL=true
FIREWALL_TYPE=iptables # or ufw
NETWORK_INTERFACE=eth0 # Check with: ip addr
LOCAL_SUBNET=192.168.1.0/24
```

Finding Your Network Interface

```
# List all network interfaces
ip addr show

# Common interface names:
# - eth0, enp0s3: Ethernet
# - wlan0, wlp3s0: WiFi
# - br0: Bridge
```

Finding Your Local Subnet

```
# Show routing table
ip route show

# Look for line like: 192.168.1.0/24 dev eth0
```

Testing Firewall Integration

1. Start the backend server
2. Use the API or web interface to block a device
3. Verify with:

```
# For iptables
sudo iptables -L FORWARD -v -n

# For ufw
sudo ufw status numbered
```

Production Deployment

Build Frontend for Production

```
cd /opt/portal-familia
npm run build
```

This creates an optimized production build in the `dist` folder.

Systemd Services

Create systemd services to run the application automatically.

Backend Service

Create `/etc/systemd/system/portal-familia-backend.service` :

```
[Unit]
Description=Portal Família Backend Server
After=network.target

[Service]
Type=simple
User=ubuntu
WorkingDirectory=/opt/portal-familia/backend
Environment="NODE_ENV=production"
ExecStart=/usr/bin/node src/server.js
Restart=always
RestartSec=10
StandardOutput=append:/var/log/portal-familia-backend.log
StandardError=append:/var/log/portal-familia-backend.log

[Install]
WantedBy=multi-user.target
```

Frontend Service

Create `/etc/systemd/system/portal-familia-frontend.service` :

```
[Unit]
Description=Portal Família Frontend Server
After=network.target

[Service]
Type=simple
User=ubuntu
WorkingDirectory=/opt/portal-familia
Environment="NODE_ENV=production"
ExecStart=/usr/bin/npm run dev
Restart=always
RestartSec=10
StandardOutput=append:/var/log/portal-familia-frontend.log
StandardError=append:/var/log/portal-familia-frontend.log

[Install]
WantedBy=multi-user.target
```

Enable and Start Services

```
# Create log files
sudo touch /var/log/portal-familia-backend.log
sudo touch /var/log/portal-familia-frontend.log
sudo chown ubuntu:ubuntu /var/log/portal-familia-*.log

# Reload systemd
sudo systemctl daemon-reload

# Enable services to start on boot
sudo systemctl enable portal-familia-backend
sudo systemctl enable portal-familia-frontend

# Start services
sudo systemctl start portal-familia-backend
sudo systemctl start portal-familia-frontend

# Check status
sudo systemctl status portal-familia-backend
sudo systemctl status portal-familia-frontend
```

View Logs

```
# Backend logs
sudo journalctl -u portal-familia-backend -f

# Frontend logs
sudo journalctl -u portal-familia-frontend -f

# Or direct log files
tail -f /var/log/portal-familia-backend.log
tail -f /var/log/portal-familia-frontend.log
```

Nginx Reverse Proxy (Optional but Recommended)

For production, use Nginx as a reverse proxy:

1. Install Nginx

```
sudo apt install nginx
```

2. Configure Nginx

Create `/etc/nginx/sites-available/portal-familia`:

```

server {
    listen 80;
    server_name portal-familia.local your-server-ip;

    # Frontend
    location / {
        proxy_pass http://localhost:3000;
        proxy_http_version 1.1;
        proxy_set_header Upgrade $http_upgrade;
        proxy_set_header Connection 'upgrade';
        proxy_set_header Host $host;
        proxy_cache_bypass $http_upgrade;
        proxy_set_header X-Real-IP $remote_addr;
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
    }

    # Backend API
    location /api {
        proxy_pass http://localhost:5000/api;
        proxy_http_version 1.1;
        proxy_set_header Upgrade $http_upgrade;
        proxy_set_header Connection 'upgrade';
        proxy_set_header Host $host;
        proxy_cache_bypass $http_upgrade;
        proxy_set_header X-Real-IP $remote_addr;
        proxy_set_header X-Forwarded-For $proxy_add_x_forwarded_for;
    }
}

```

3. Enable Site

```

sudo ln -s /etc/nginx/sites-available/portal-familia /etc/nginx/sites-enabled/
sudo nginx -t
sudo systemctl restart nginx

```

Now access the app at: <http://your-server-ip/>

Security Hardening

1. Firewall Rules

```

# Allow SSH
sudo ufw allow ssh

# Allow HTTP/HTTPS
sudo ufw allow 80/tcp
sudo ufw allow 443/tcp

# Allow application ports (if not using Nginx)
sudo ufw allow 3000/tcp
sudo ufw allow 5000/tcp

# Enable firewall
sudo ufw enable

```

2. Change Default Credentials

⚠️ IMPORTANT: Change the default admin password immediately!

Default login:

- Username: Papai/Mamãe (or parent name)
- PIN: 0000

Change it in the Settings > Family Members section.

3. Database Backups

Create automated backups:

```
# Create backup script
sudo nano /usr/local/bin/backup-portal-familia.sh
```

Add:

```
#!/bin/bash
BACKUP_DIR="/opt/portal-familia/backups"
DB_PATH="/opt/portal-familia/backend/database/portal_familia.db"
DATE=$(date +%Y%m%d_%H%M%S)

mkdir -p $BACKUP_DIR
cp $DB_PATH $BACKUP_DIR/portal_familia_$DATE.db

# Keep only last 7 days of backups
find $BACKUP_DIR -name "portal_familia_*.db" -mtime +7 -delete
```

Make executable and schedule:

```
sudo chmod +x /usr/local/bin/backup-portal-familia.sh

# Add to crontab (daily at 2 AM)
sudo crontab -e
# Add: 0 2 * * * /usr/local/bin/backup-portal-familia.sh
```

4. SSL/HTTPS (Recommended)

Use Let's Encrypt for free SSL:

```
sudo apt install certbot python3-certbot-nginx
sudo certbot --nginx -d your-domain.com
```

Troubleshooting

Backend Won't Start

1. Check logs:

```
bash
sudo journalctl -u portal-familia-backend -n 50
```

2. Verify Node.js version:

```
bash
node --version # Should be v18+
```

3. Check port availability:

```
bash
sudo lsof -i :5000
```

4. Verify environment variables:

```
bash
cat /opt/portal-familia/backend/.env
```

Frontend Won't Start

1. Check logs:

```
bash
sudo journalctl -u portal-familia-frontend -n 50
```

2. Rebuild:

```
bash
cd /opt/portal-familia
rm -rf node_modules
npm install
npm run build
```

Firewall Not Working

1. Verify IP forwarding:

```
bash
cat /proc/sys/net/ipv4/ip_forward # Should output: 1
```

2. Check iptables rules:

```
bash
sudo iptables -L FORWARD -v -n
```

3. Verify sudo permissions:

```
bash
sudo -l | grep iptables
```

4. Check backend logs for firewall errors:

```
bash
tail -f /var/log/portal-familia-backend.log | grep -i firewall
```

5. Test manually:

```
```bash
Block a device
sudo iptables -A FORWARD -m mac -mac-source AA:BB:CC:DD:EE:FF -j DROP

Check rule was added
sudo iptables -L FORWARD -v -n

Remove test rule
sudo iptables -D FORWARD -m mac -mac-source AA:BB:CC:DD:EE:FF -j DROP
```

```

Cannot Connect to API

1. Verify backend is running:

```
bash
curl http://localhost:5000/api/health
```

2. Check firewall rules:

```
bash
sudo ufw status
```

3. Verify CORS settings in `backend/.env`:

```
env
FRONTEND_URL=http://your-server-ip:3000
```

Database Issues

1. Reinitialize database:

```
bash
cd /opt/portal-familia/backend
rm -f database/*.db*
npm run init-db
```

2. Check database permissions:

```
bash
ls -l /opt/portal-familia/backend/database/
# Owner should match the service user
```

Network Configuration Tips

Setting Up as Gateway/Router

If you want the Ubuntu server to act as a gateway for the family network:

1. Configure NAT:

```
```bash
Get your WAN interface (connected to internet)
WAN_IF="enp0s3" # Replace with your WAN interface
LAN_IF="eth0" # Your LAN interface

Enable NAT
sudo iptables -t nat -A POSTROUTING -o $WAN_IF -j MASQUERADE
sudo iptables -A FORWARD -i $LAN_IF -o $WAN_IF -j ACCEPT
sudo iptables -A FORWARD -i $WAN_IF -o $LAN_IF -m state --state RELATED,ESTABLISHED -j ACCEPT

Save rules
sudo netfilter-persistent save
```

```

1. Configure DHCP (optional):

```
bash
sudo apt install isc-dhcp-server
# Edit /etc/dhcp/dhcpd.conf to configure your network
```

Finding Device MAC Addresses

```
# Scan local network
sudo apt install arp-scan
sudo arp-scan --localnet

# Or use arp
arp -a

# Or check router admin panel
```

Default Credentials

Admin Access:

- Name: Papai/Mamãe
- PIN: 0000

Demo Children:

- Henrique: PIN 1234
- Beatriz: PIN 4321

! **Change these immediately after first login!**

Support and Updates

Updating the Application

```
cd /opt/portal-familia

# Backup database first
cp backend/database/portal_familia.db backend/database/portal_familia.db.backup

# Pull updates (if using git)
git pull

# Update dependencies
npm install
cd backend && npm install && cd ..

# Restart services
sudo systemctl restart portal-familia-backend
sudo systemctl restart portal-familia-frontend
```

Getting Help

- Check logs for errors
- Review this guide thoroughly
- Verify all prerequisites are met
- Test each component individually

Performance Optimization

For Raspberry Pi / Low-Power Devices

1. Reduce log retention:

```
bash
# In backend, set up log rotation
sudo nano /etc/logrotate.d/portal-familia
```

2. Use PM2 instead of systemd (optional):

```
bash
sudo npm install -g pm2
pm2 start backend/src/server.js --name portal-backend
pm2 start "npm run dev" --name portal-frontend
pm2 save
pm2 startup
```

3. Enable database WAL mode (already enabled by default)

Deployment Guide Complete!

For any issues not covered here, check the application logs and ensure all prerequisites are properly configured.