Secure VPN access at any time

Industrial Firewalls with mobile networks

Why this presentation?

THE GOAL

Our goal is, that you

- Learn what challenges need to be mastered to get 24x7 remote access

- Understand what a Industrial Firewall is and what for

- Get all information to build a complete system

and have fun listening.

Change of Requirements

THE MOTIVATION

Telemetry is a technology which makes remote sensing and remote transmission of data possible. The word is derived from Greek tele = remote, and metron of = measure.

Typical Applications
- Energy distribution
- Remote monitoring
- Process industry
  Railway, weather, ...

was done with Modems.

- Typical transmission paths
  - HF: Analogue Radio
  - Cable: RS-232/422/485
  - Phone or leased line
  - GSM Network

- Characteristics
  - Low data throughput
  - Small update frequency
  - Focus on data collection
  - Very limited remote actions
  - Specialized protocols
  - Communication not separated from application
  - Connection is initiated by the device in the field

Point-to-point connection, no network

Tele command ➔ Remote action

Condition Monitoring

➔ Monitoring and Predictive Maintenance

Typical application:

• Building control, HVAC

• Wind turbines

• Locomotives

• Manufacturing cells

need a bi-directional 24x7 connection.

The communication can be initiated by the field devices and the control center.

Typical customer environments:
- Scenario 1: Ethernet LAN/WAN
- Scenario 2: Local WIFI
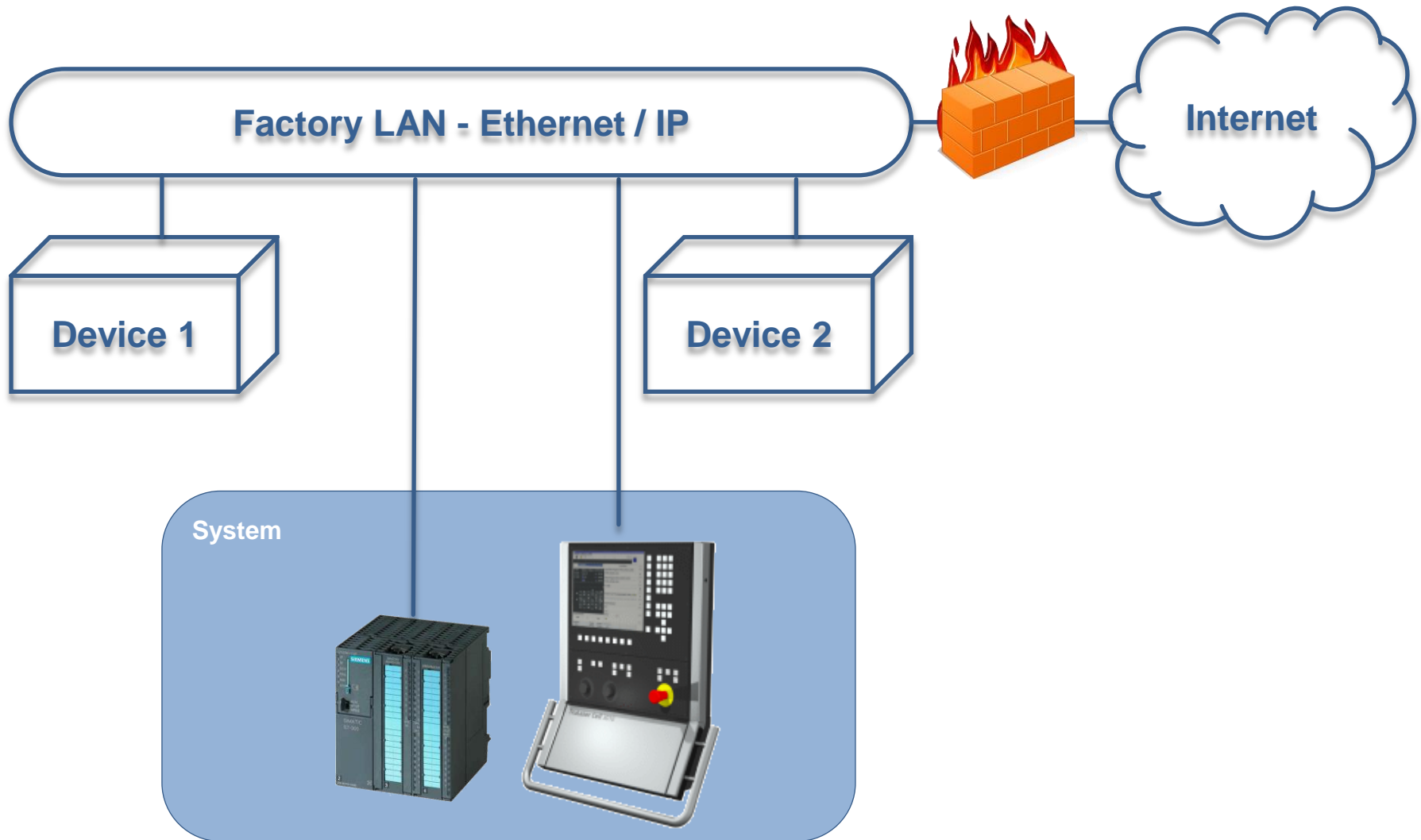- Scenario 3: No local network

Challenge

- The factory networks are now controlled by the company's IT
  - Company policies must be adhered to
  - Access Security / Security is a crucial issue
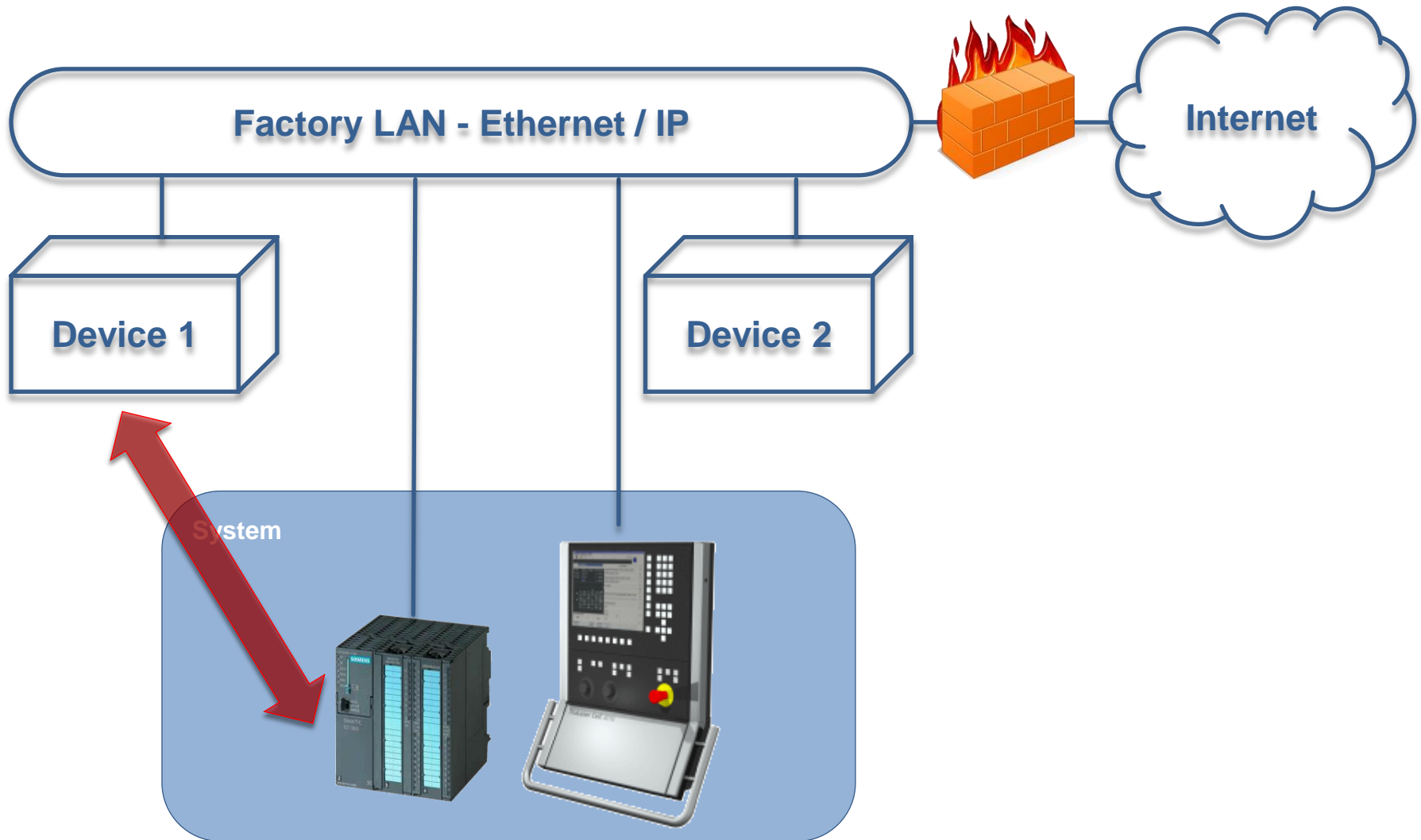 - Restricted access and low flexibility

Own Systems in Remote Environments
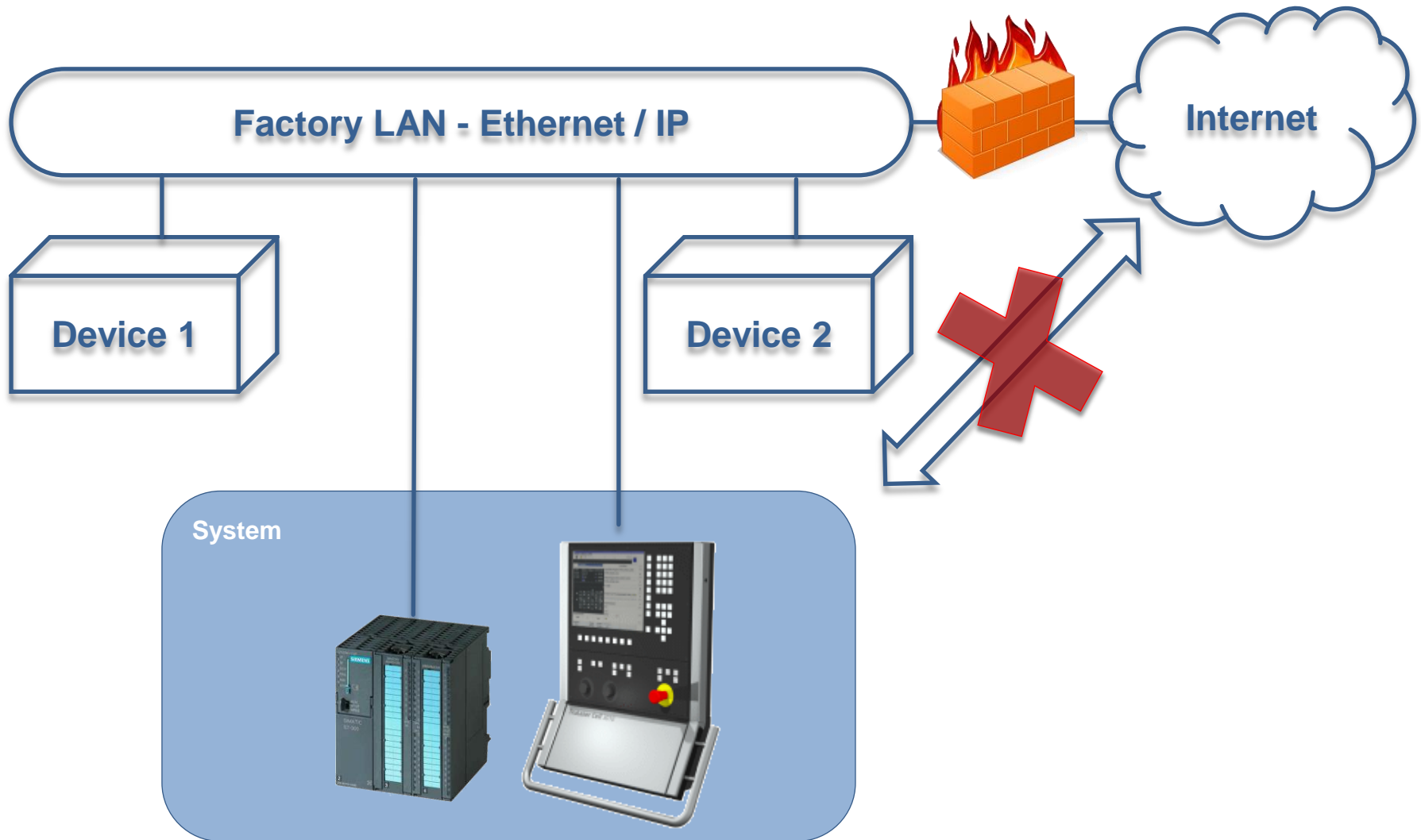
THE CHALLENGES
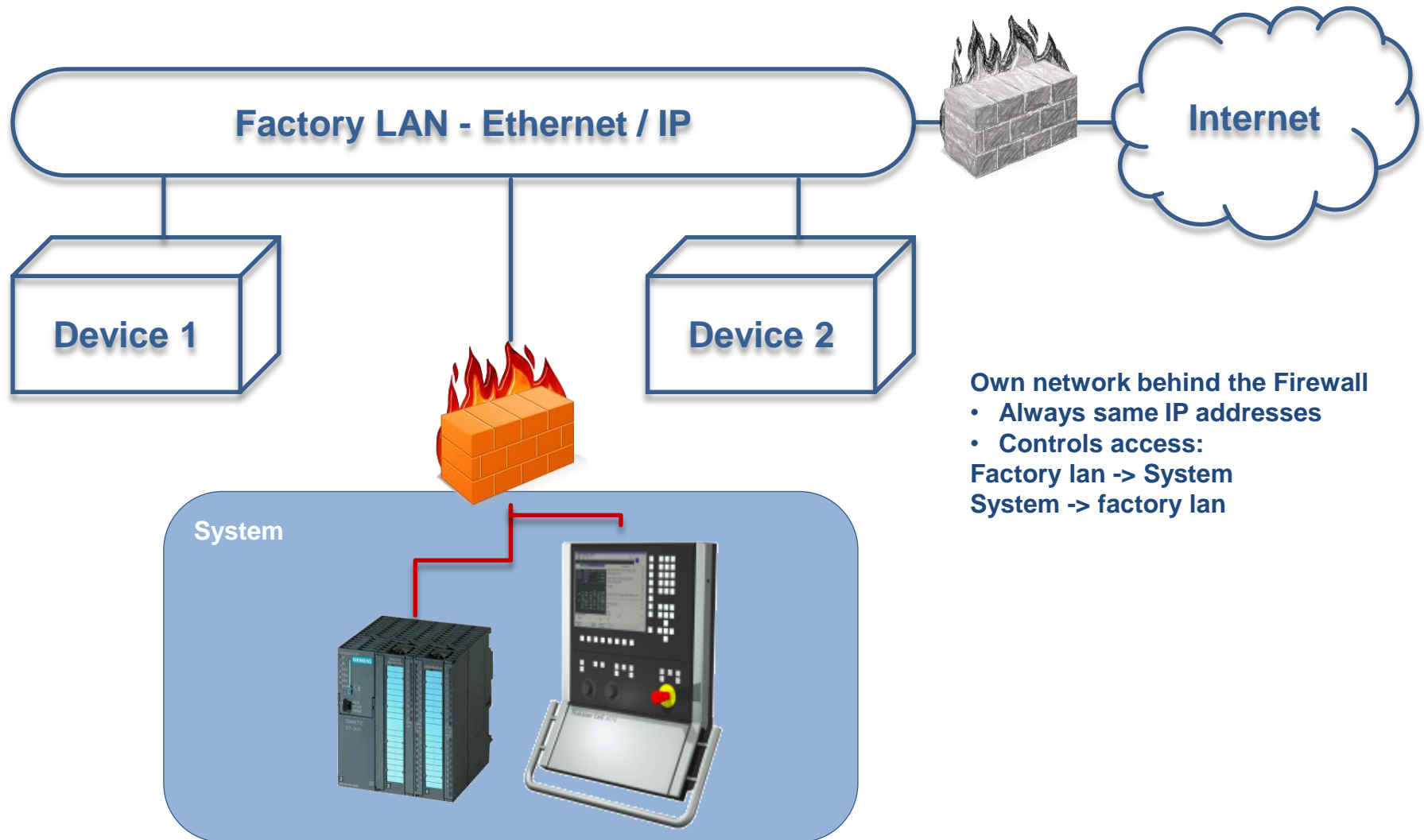
Typical network in a manufacturing cell

Factory LAN - Ethernet / IP

Internet

System

Device 1

Device 2

and can't be accessed remotely.

Factory LAN - Ethernet / IP

Internet

Device 1

Device 2

System

Secure connection

THE SOLUTION

Industrial Firewalls separate systems

Factory LAN - Ethernet / IP

Internet

Device 1

Device 2

System

Own network behind the Firewall
- **Always same IP addresses**
- **Controls access:**

Factory lan -> System
System -> factory lan

and provides safe remote access.

Factory LAN - Ethernet / IP

Internet

Device 1

Device 2

System

VPN Server

System initiates connection
- **Public IP only for the VPN server needed**

Bidirectional access
Encrypted connection
Robust against intrusion
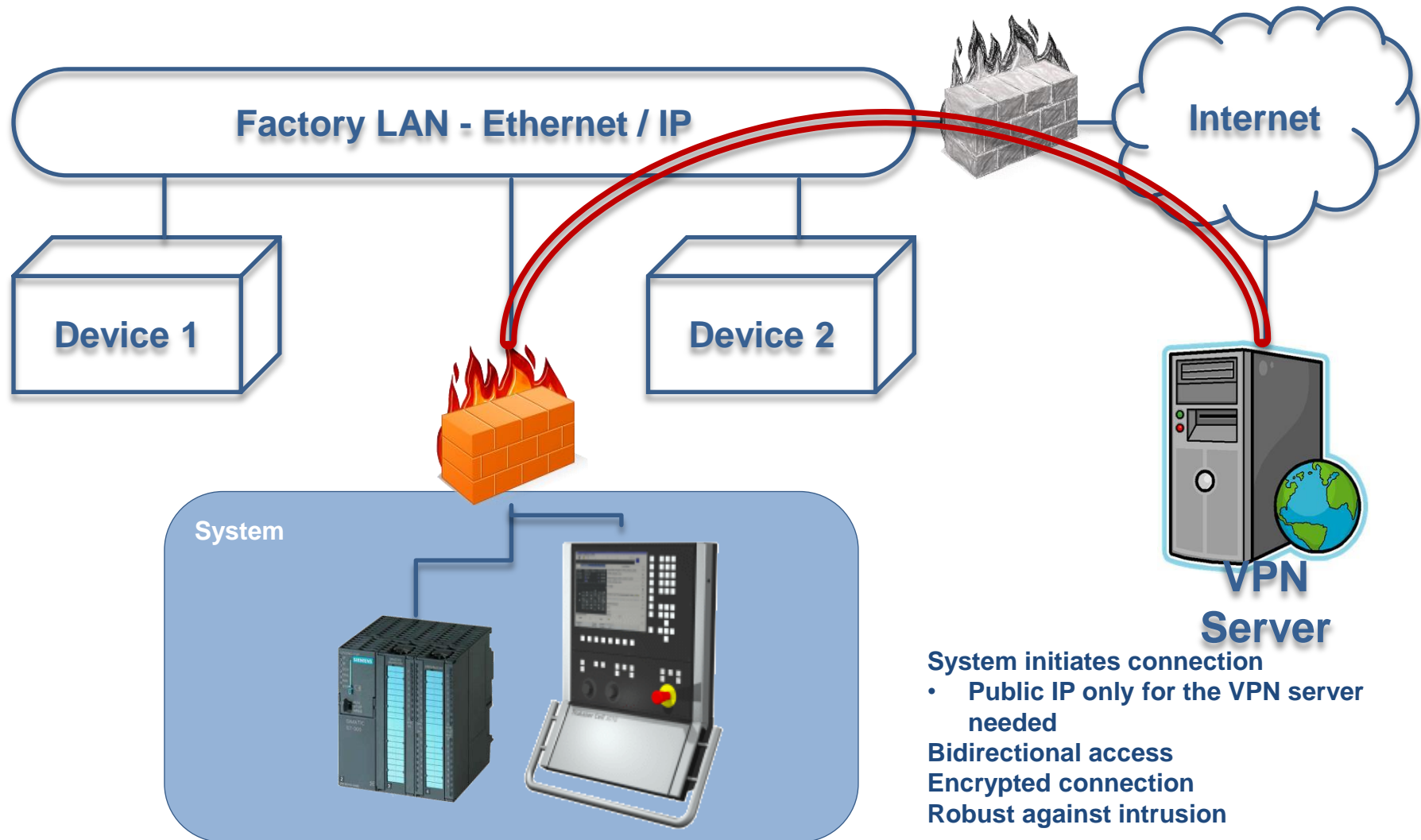
Small and big

THE IMPLEMENTATION

Factory LAN - Ethernet / IP

Internet

Device 1

Device 2

Service

VPN Server

System

Simple configuration
Quick setup
No recurring costs
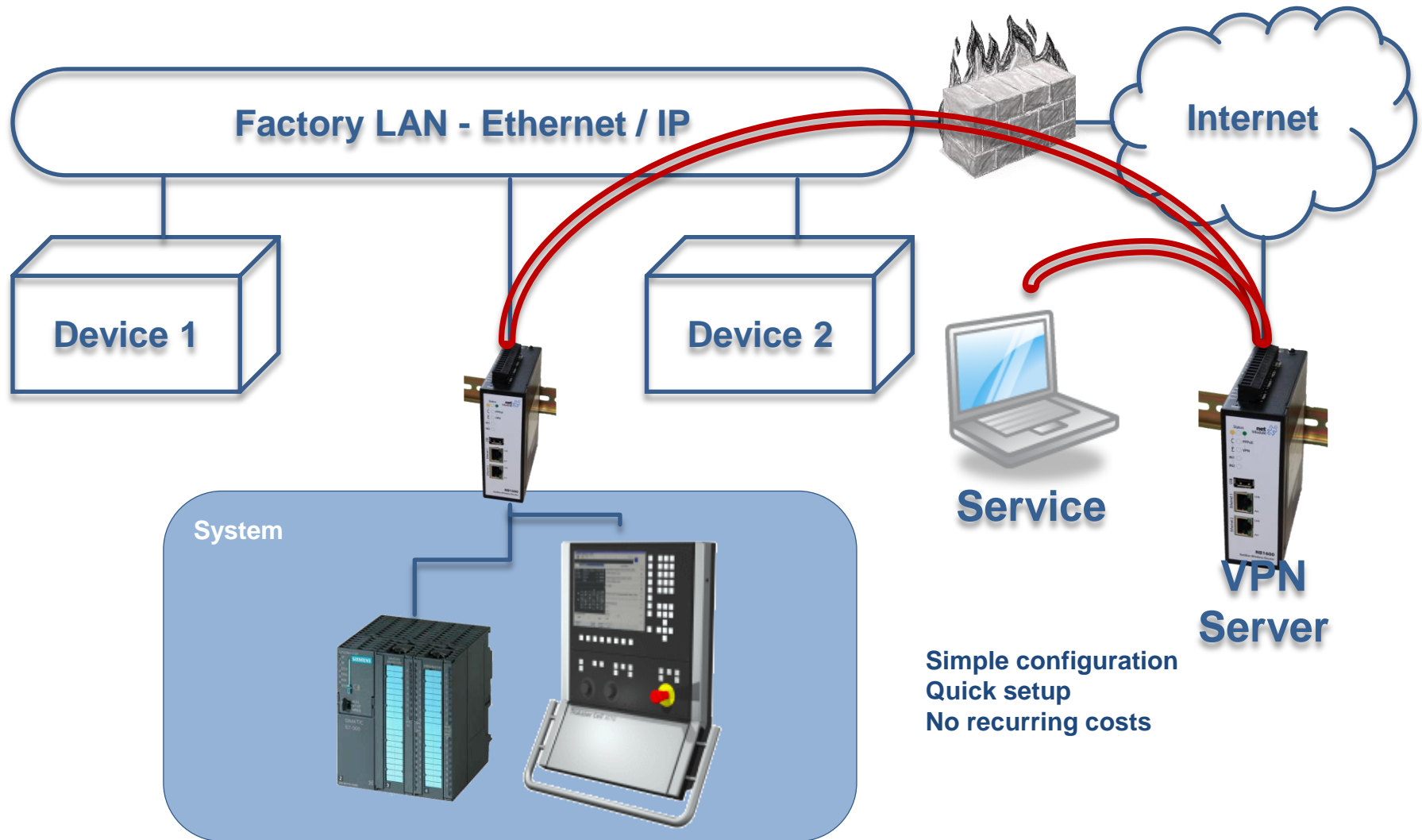
or a small number the NB1600 is sufficient

Internet

Factory LAN - Ethernet / IP
Device 1 | Gerät 2
System

Factory LAN - Ethernet / IP
Device 1 | Device 2
System

Factory LAN - Ethernet / IP
Device 1 | Device 2
System

Service

VPN Server

Up to 10(25) tunnels
Network mapping, NAT or routed
Redundancy option
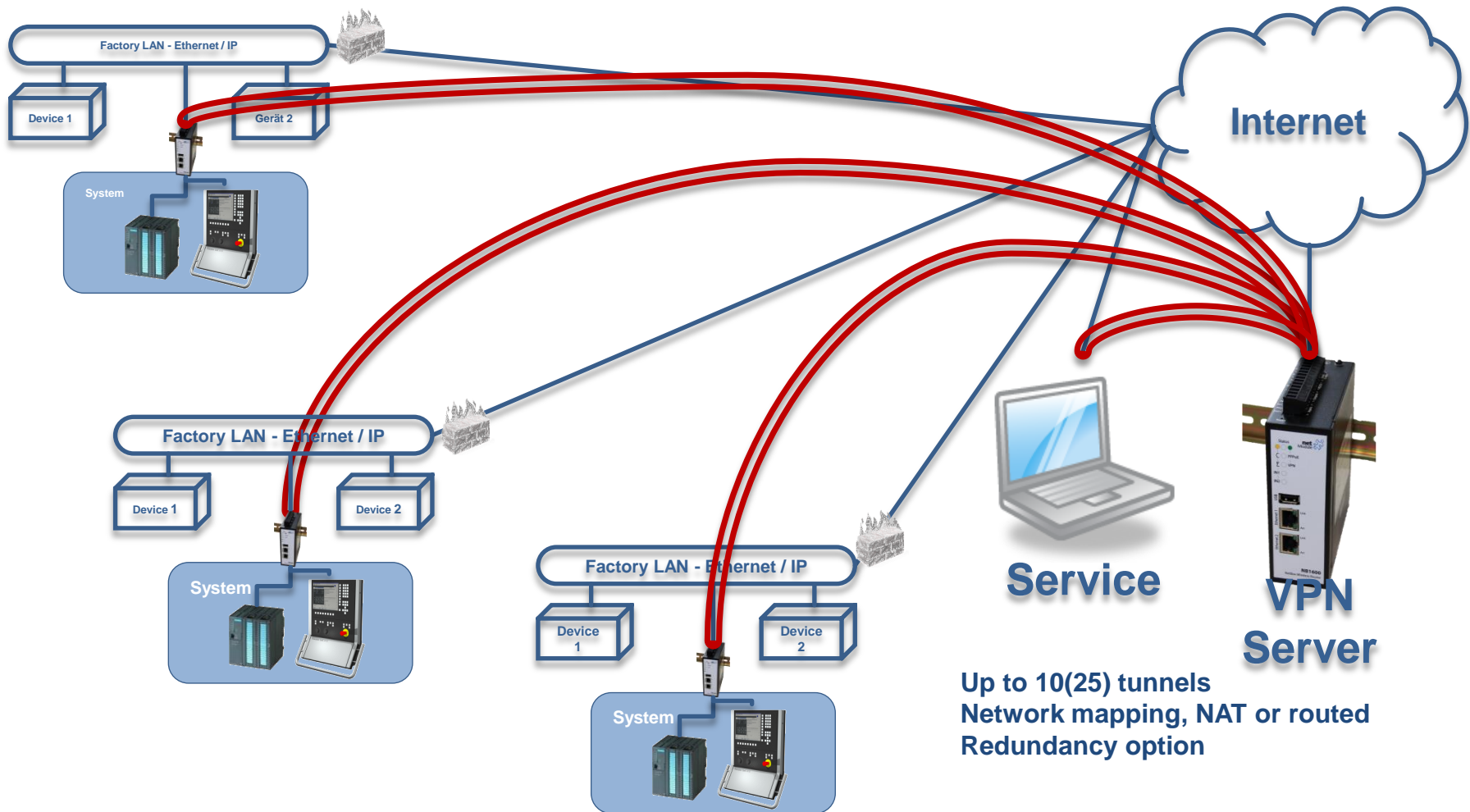
and shows the status of all systems.

NETBOX WEB MANAGER

OpenVPN
Administration
Tunnel Configuration
Client Management

IPsec
Administration
Configuration

PPTP Server

Dial-in Server

HOME   INTERFACES   ROUTING   FIREWALL   VPN   SERVICES   SYSTEM   LOGOUT

| Clients | Networking | Routes | Download |

Client Management

Enabled	Client	Connection info
☑	Alice	not connected
☑	Bob	not connected
☑	Eve	from 213.193.75.182 (10.8.0.10) since 2011-11-24 12:09:00
☐	Client4	
☐	Client5	
☐	Client6	
☐	Client7	
☐	Client8	
☐	Client9	
☐	Client10	
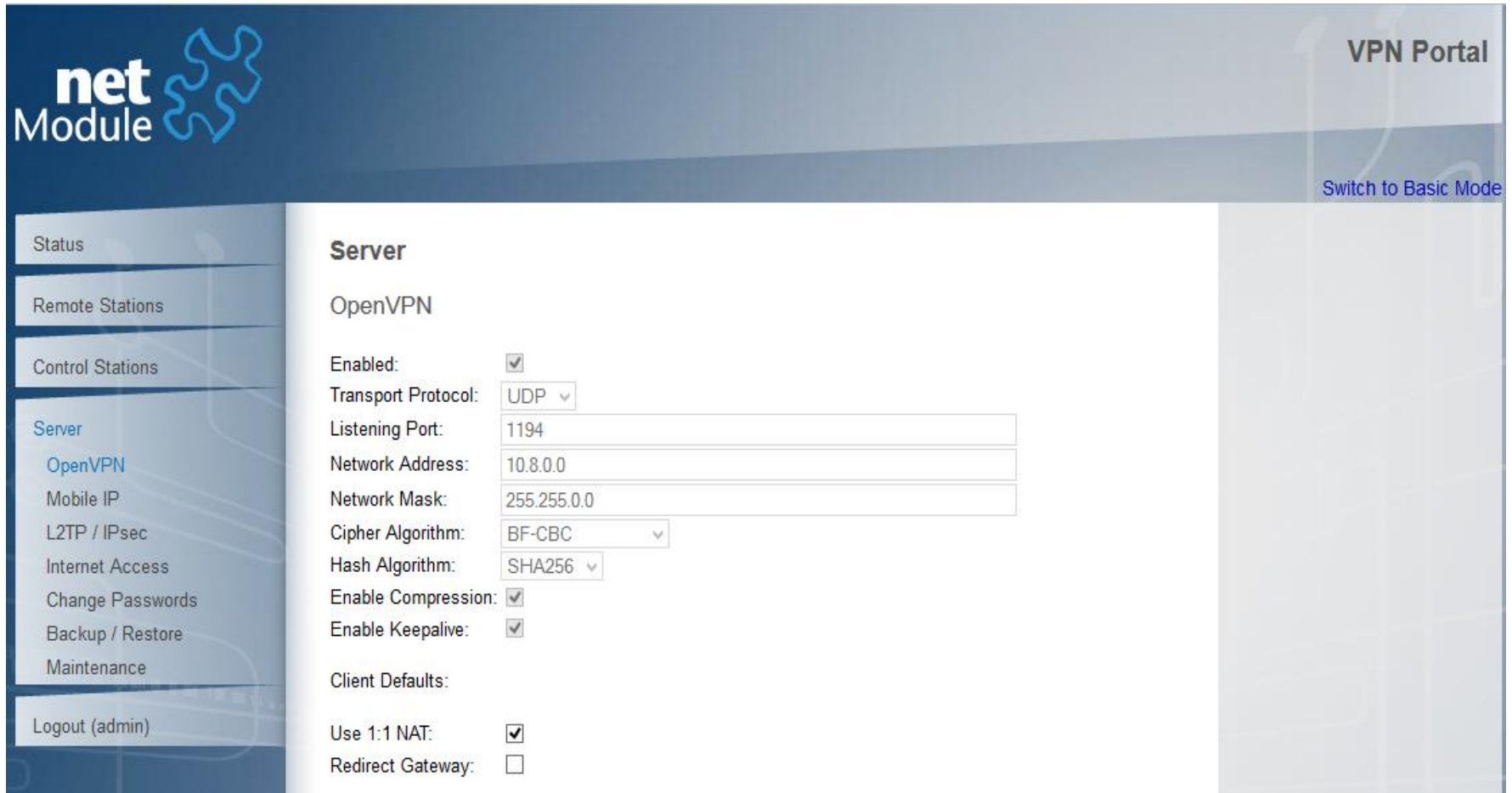
For large installations
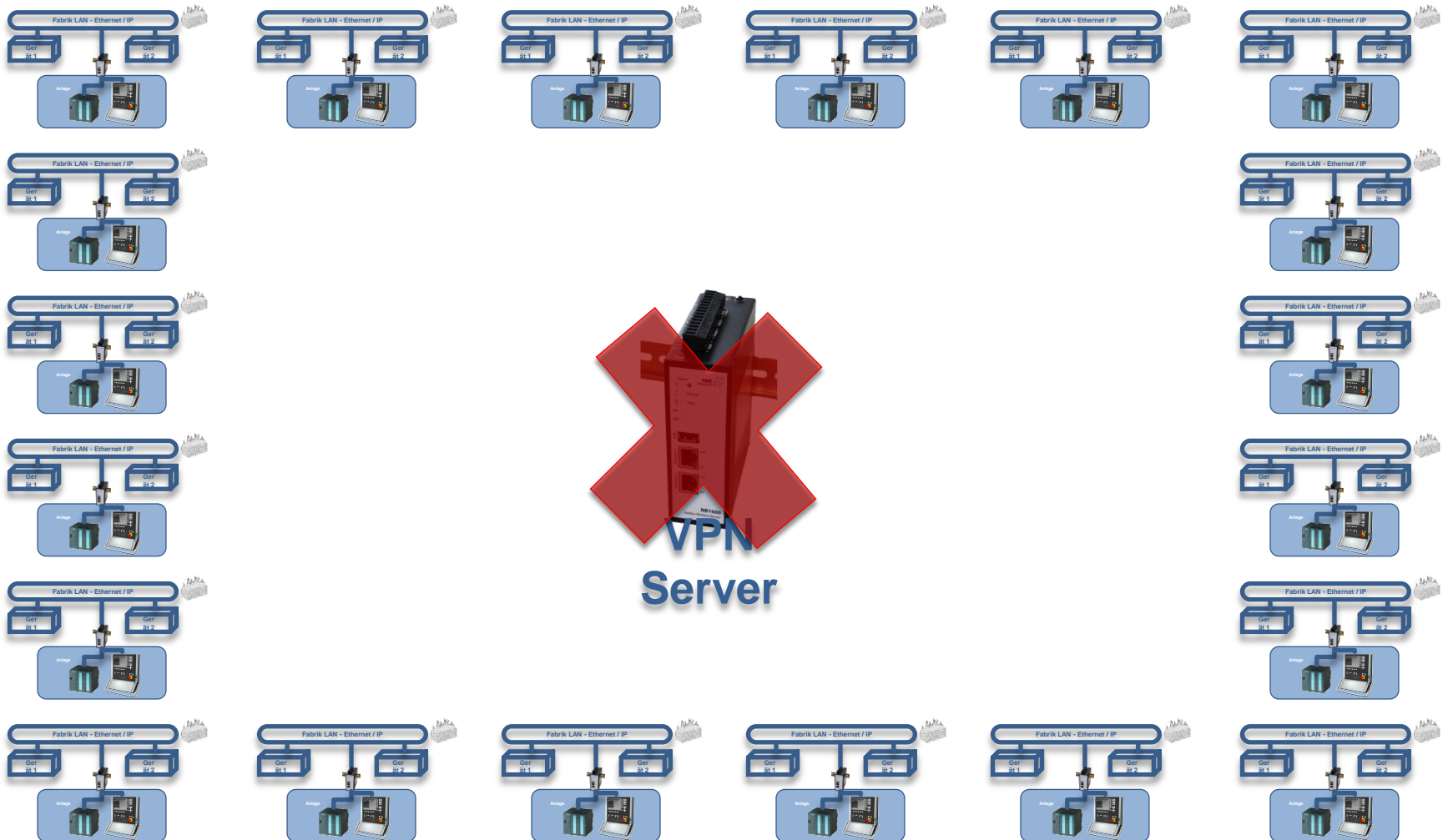
a cloud based appliance is preferred

Owned or rented server
No or nominal fee
Easy installation by image
Typically 25-250 clients
Routing, NAT and 1:1 NAT support

Full control and no dependence on portal operators

VPN Server

Service   Service   Service
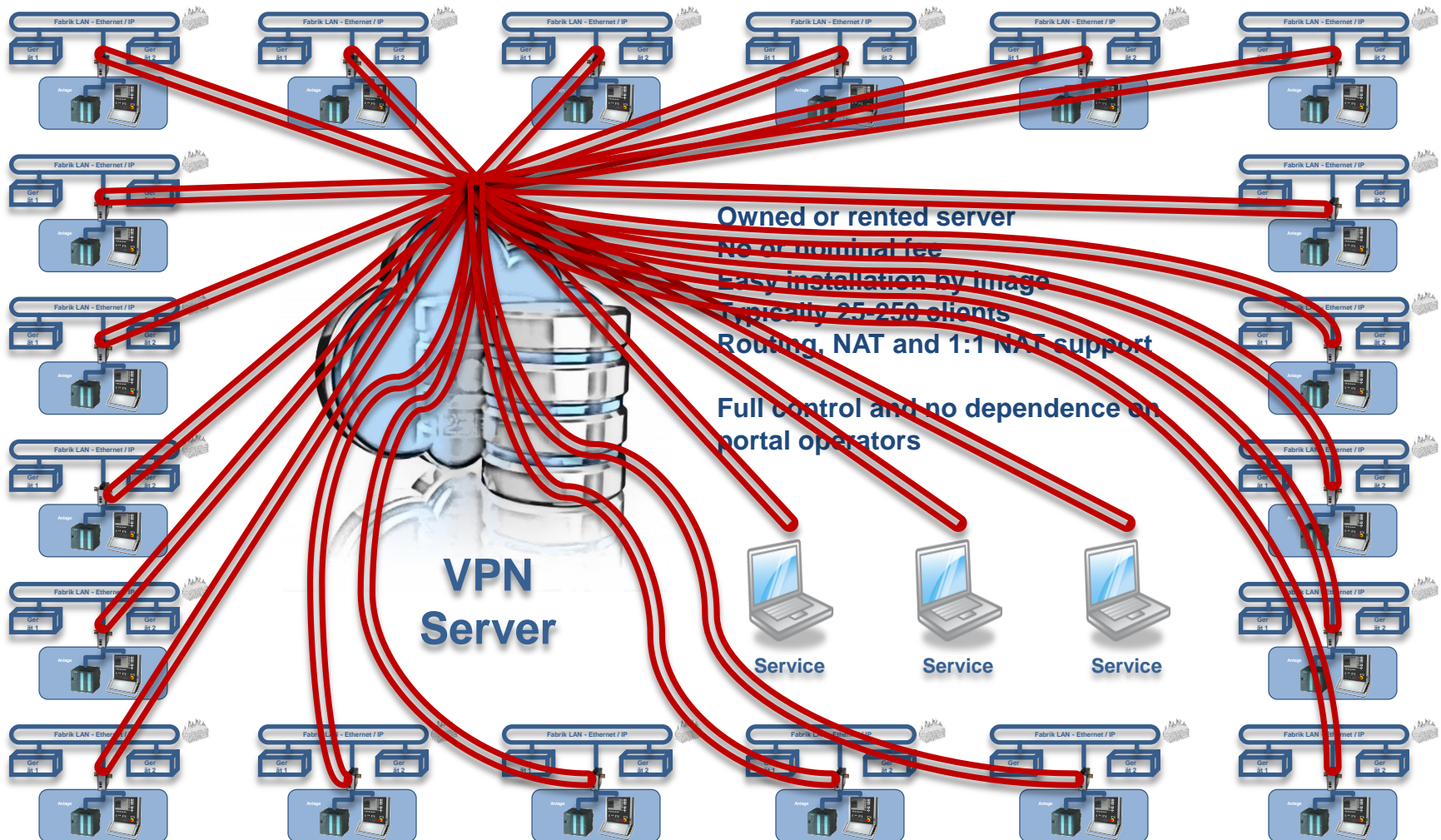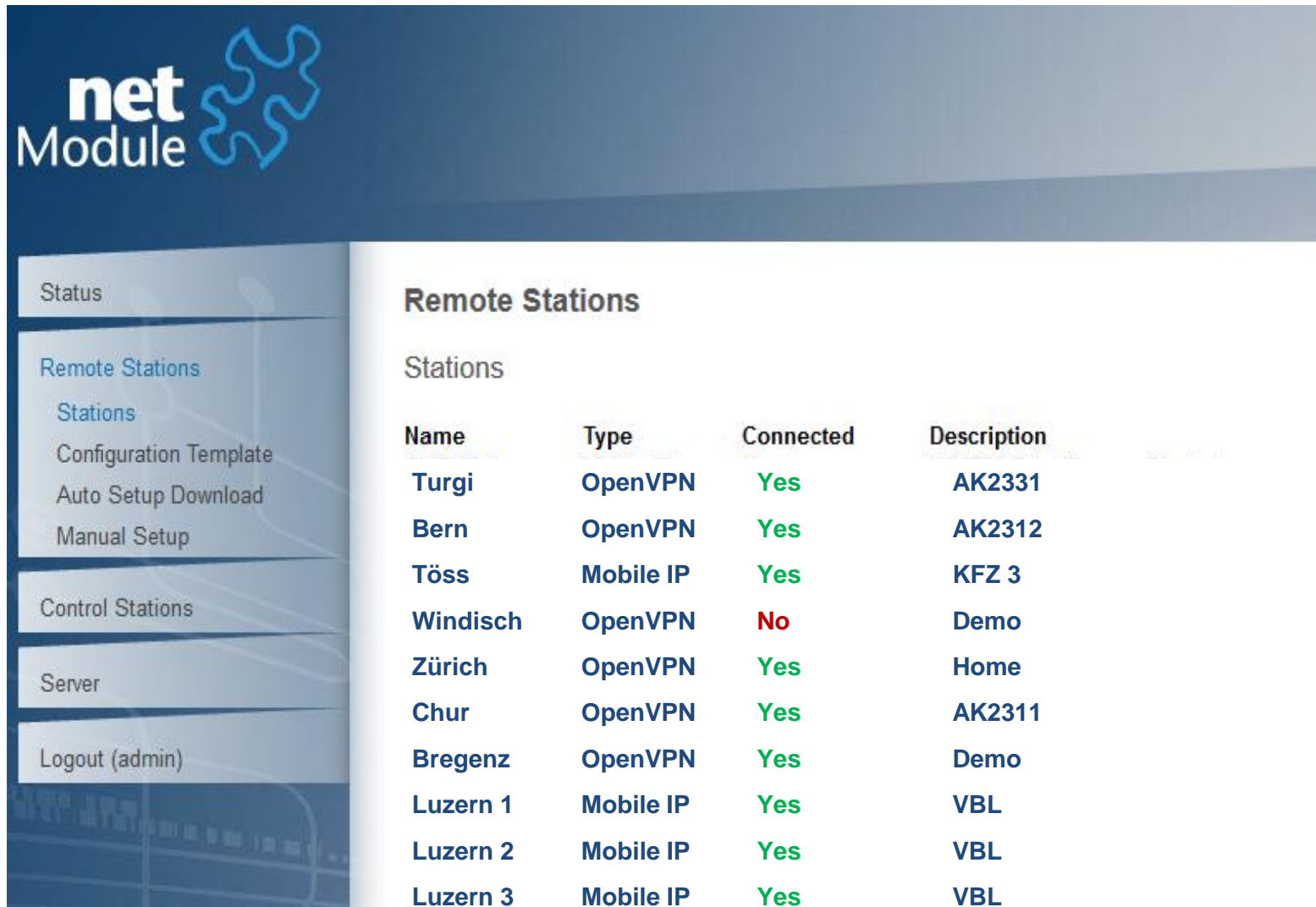
Which is easy to configure

and easy to operate.

Remote Stations

Stations

Name	Type	Connected	Description
Turgi	OpenVPN	Yes	AK2331
Bern	OpenVPN	Yes	AK2312
Töss	Mobile IP	Yes	KFZ 3
Windisch	OpenVPN	No	Demo
Zürich	OpenVPN	Yes	Home
Chur	OpenVPN	Yes	AK2311
Bregenz	OpenVPN	Yes	Demo
Luzern 1	Mobile IP	Yes	VBL
Luzern 2	Mobile IP	Yes	VBL
Luzern 3	Mobile IP	Yes	VBL

Independent of the remote device type.

Vehicles

Railway

1. **LAN-LAN router**
2. **3G/4G router**
3. **WiFi router**
4. **3G/4G + WiFi router -> most flexible solution**

Thank you for your attention

THE END

Contact

NetModule AG
Neuwiesenstrasse 37
CH-8400 Winterthur
Switzerland

NetModule GmbH
Frankfurter Strasse 92
D-65760 Eschborn
Germany

Ralf Fachet
Senior Director Sales & Marketing
Mob: +49 176 62222444
Tel-CH: +41 52 20900 55
Tel-D: +49 6196 779979 5
Fax: +49 6196 779979 9
ralf.fachet@netmodule.com
www.netmodule.com