



XVIII ENCONTRO NACIONAL
DE EMPRESAS PROJETISTAS
E CONSULTORES DA ABRAVA

28, 29 E 30 DE NOVEMBRO DE 2018

A EXCELÊNCIA DO PROJETO
DE CLIMATIZAÇÃO E SEU
REFLEXO NO CONFORTO
E CUSTO OPERACIONAL.



Eficiência Através da Inovação: Válvula Eletrônicas e Atuadores Inteligentes com Tecnologia IoT

Leandro Medéa

BELIMO

IoT and Belimo Innovation

Leandro Medéa – Regional Application Consultant



IoT and Belimo Innovation

Agenda

- 1. The IoT vs. The IoP**
- 2. Belimo's Things**
- 3. Arquitetura**
- 4. Belimo's Cloud Hoje**
- 5. Belimo's Cloud Amanhã**
- 6. Equipamentos IoT**
- 7. Segurança e Privacidade**



- Fundada em 1975 - Sede em Hinwil, na Suíça.
- Filial no Brasil inaugurada em 2009.
- Mais de 7 milhões de atuadores vendidos anualmente.
- Companhia Aberta com uma equipe de mais de 1500 em todo o mundo
- Belimo desenvolve, fabrica e distribui atuadores elétricos para dampers de ar, sensores e válvulas para aquecimento, ventilação e sistemas de ar condicionado.

The IoT vs. The IoP

The Internet of People



The IoT vs. The IoP

The Internet of Things

The Internet of Things

Sensores

Conectividade

Atuadores

The IoT vs. The IoP

The Internet of Things



The IoT

Sensores e Atuadores



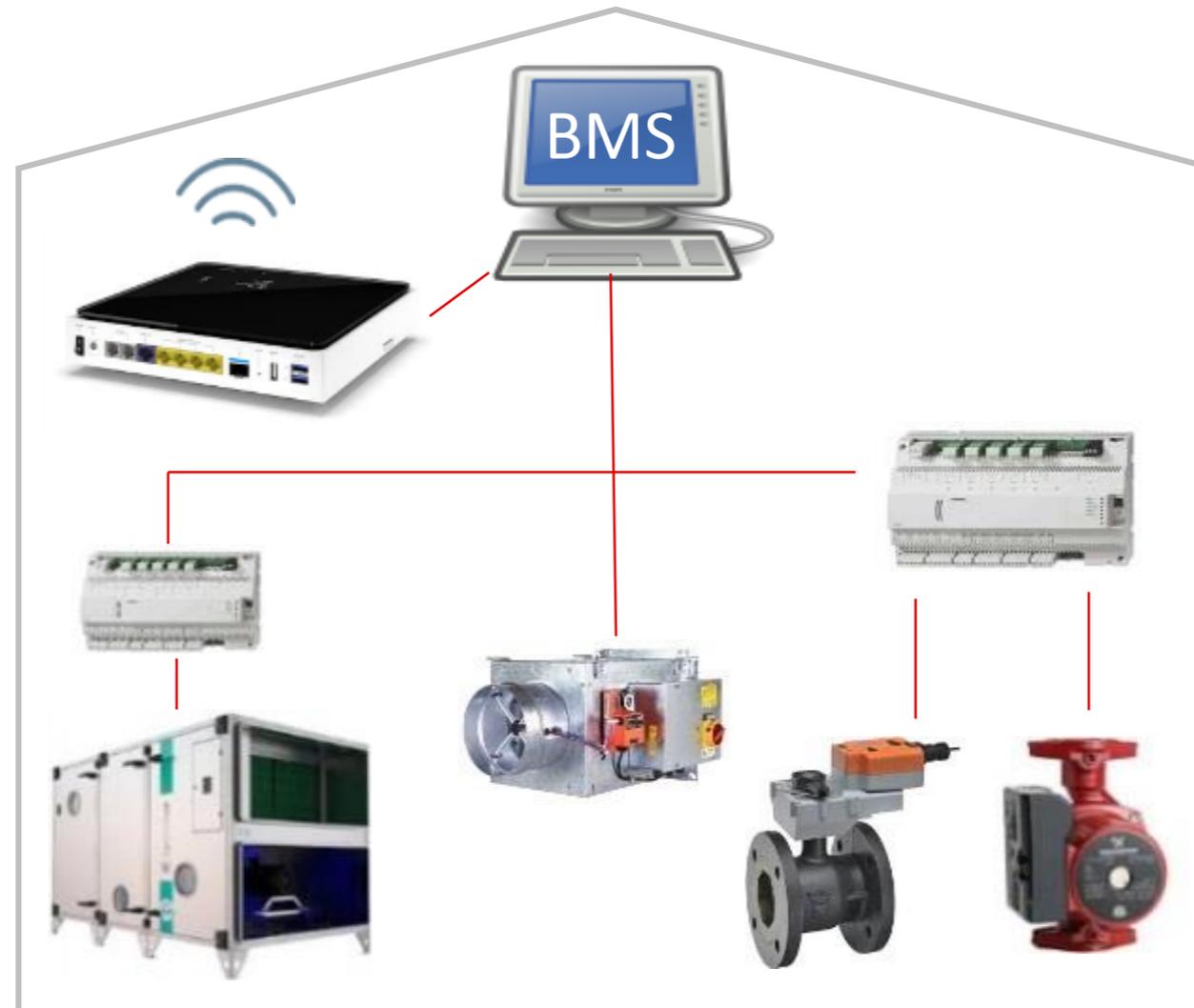
Belimo's Things

Sensores e Atuadores



Building Control Landscape

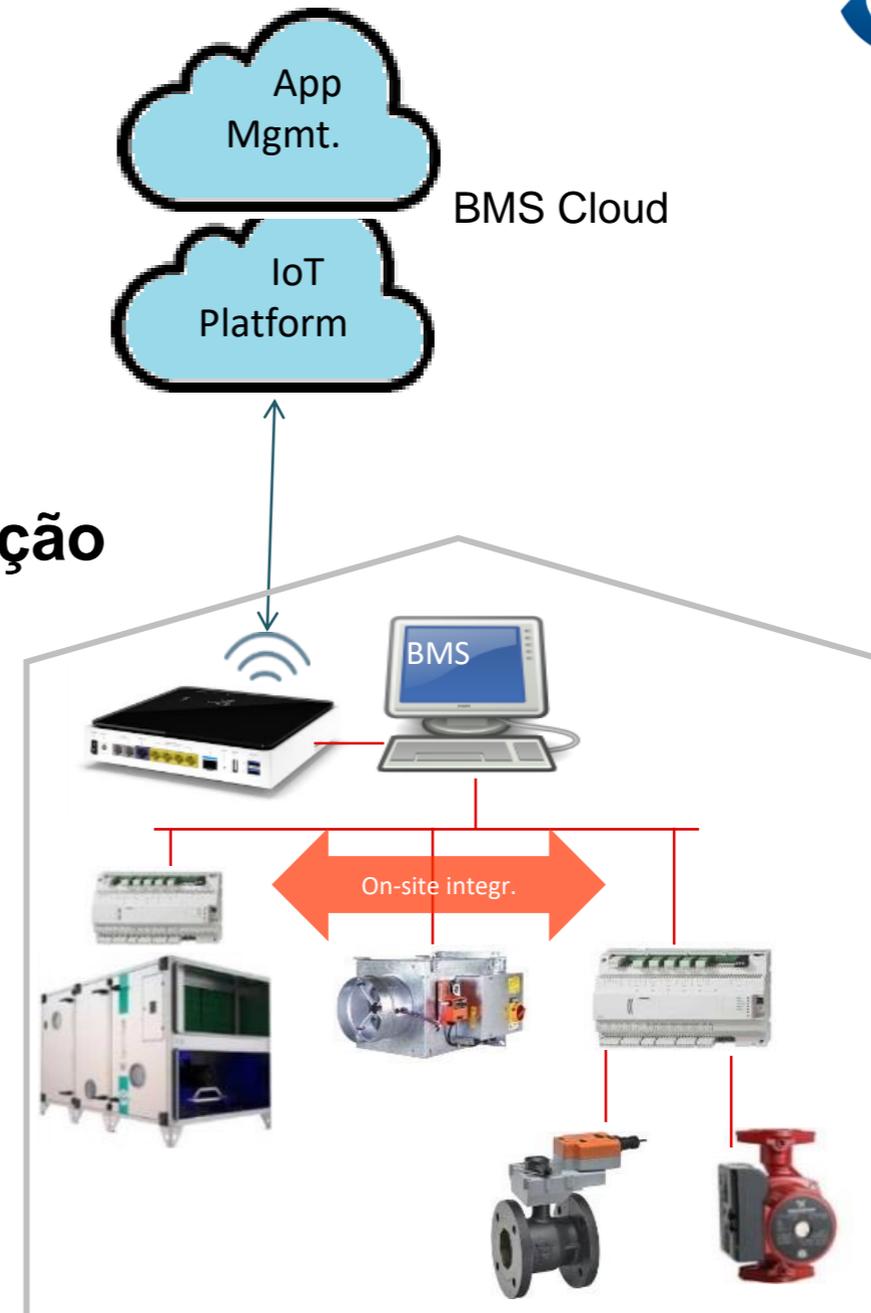
Sistemas DDC – Clássico BMS



Building Control Landscape

BMS Clássico + BMS Cloud

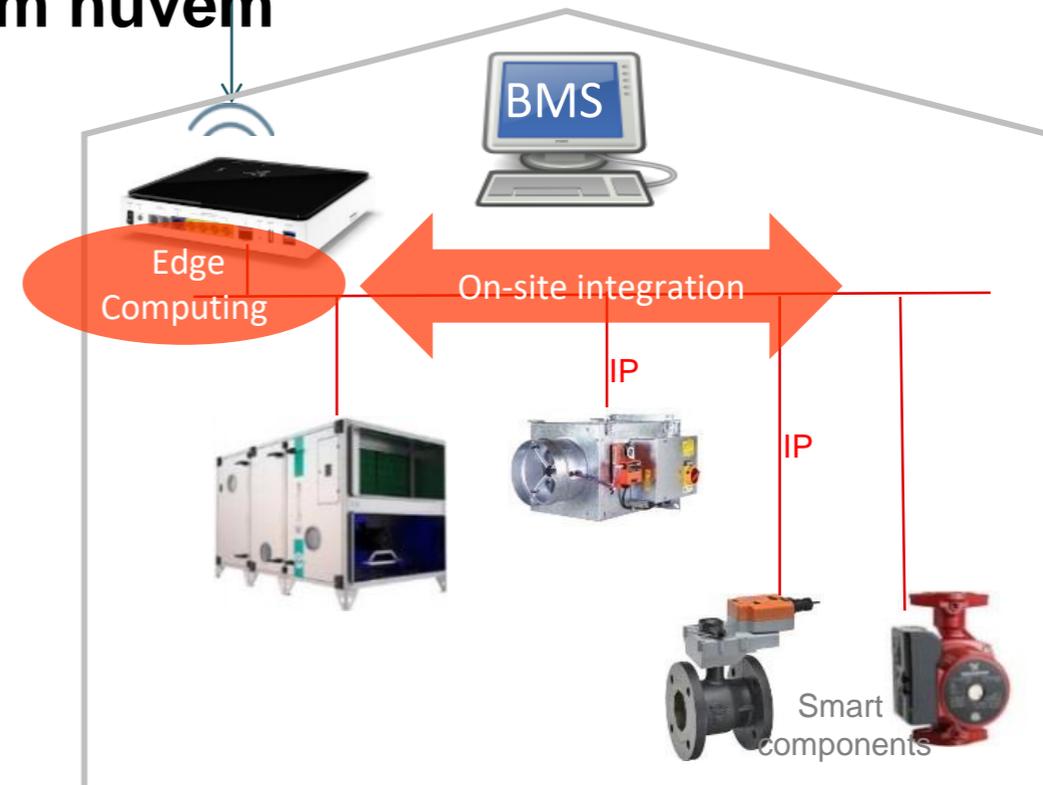
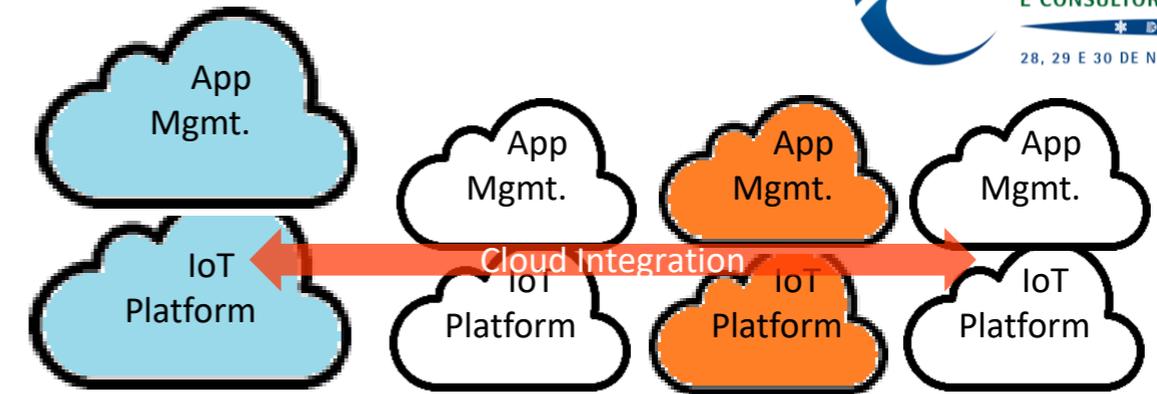
- Lógica de controle local dentro do BMS
- Nuvem para interface do usuário e integração
- Solução Integrada



Building Control Landscape

BMS + Componentes Smart + Camadas

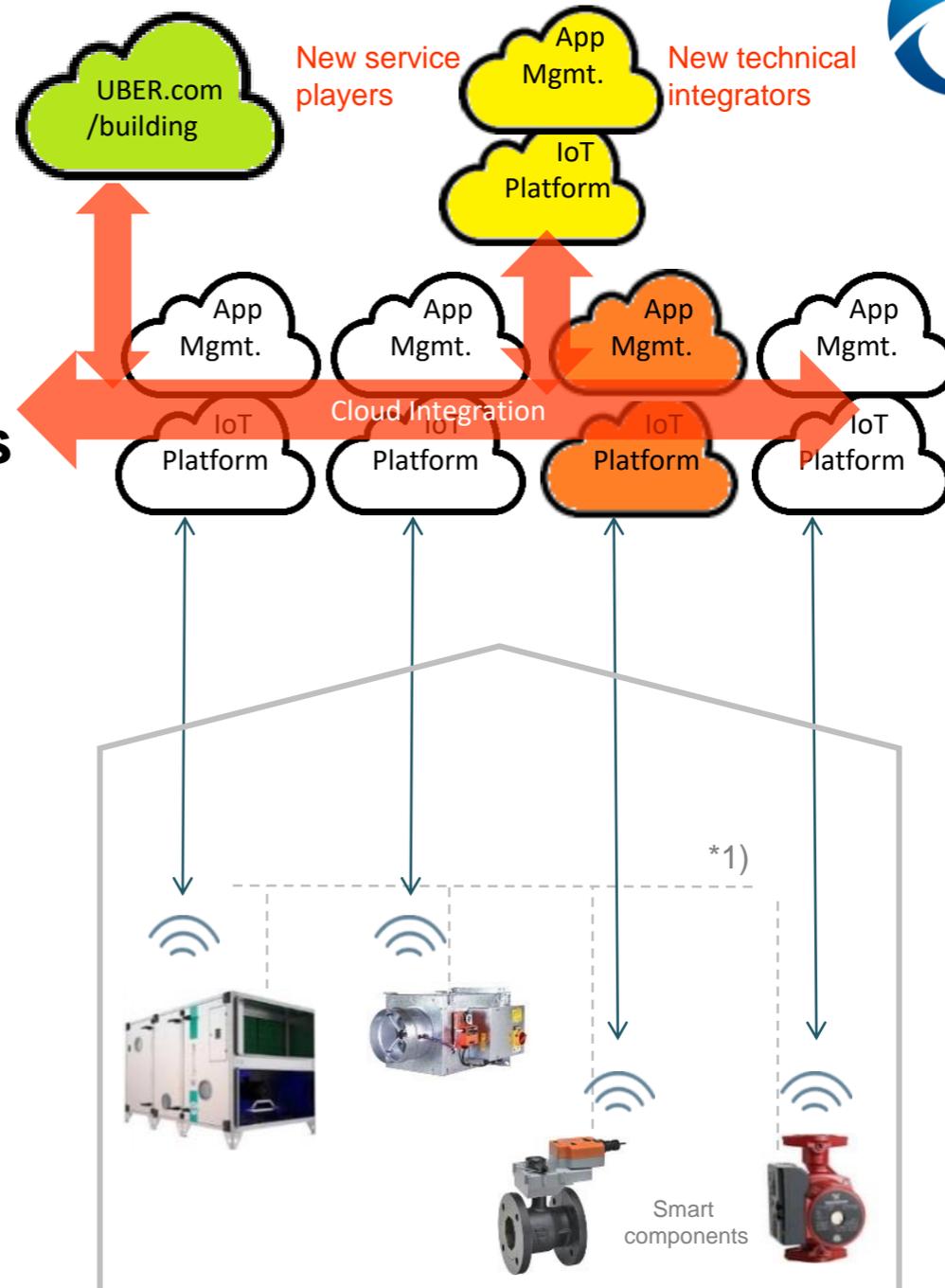
- Lógica de controle local dentro do BMS
- Solução de camadas para conectividade em nuvem
 - Otimização de dispositivos
 - Análise do sistema e FDD



Building Control Landscape

Componentes Smart + Armazenamento na Cloud

- Componentes inteligentes para nuvens
- Fornecedores focados em otimização
- Fornecedor para APIs e Integradores
- Integração na nuvem
 - Controle
 - Análise do sistema



Building Control Landscape

Belimo Hoje

Belimo Cloud

https://www.cloud.belimo.com/ccf/#/devices/overview/e4dde0f5-663f-4f7d-acde-8644abf169e7/details/datapoints/evcloud.150

Overview Device Management Settings Support

Overview > Details > Device Datapoint

Device Datapoint

Temperature 1 embedded of EV 02 3PV

Resampled Historical Data

Zoom 1h 1d 1m 3m 6m 1y

28. Nov 03:00 06:00 09:00 12:00 15:00 18:00 21:00

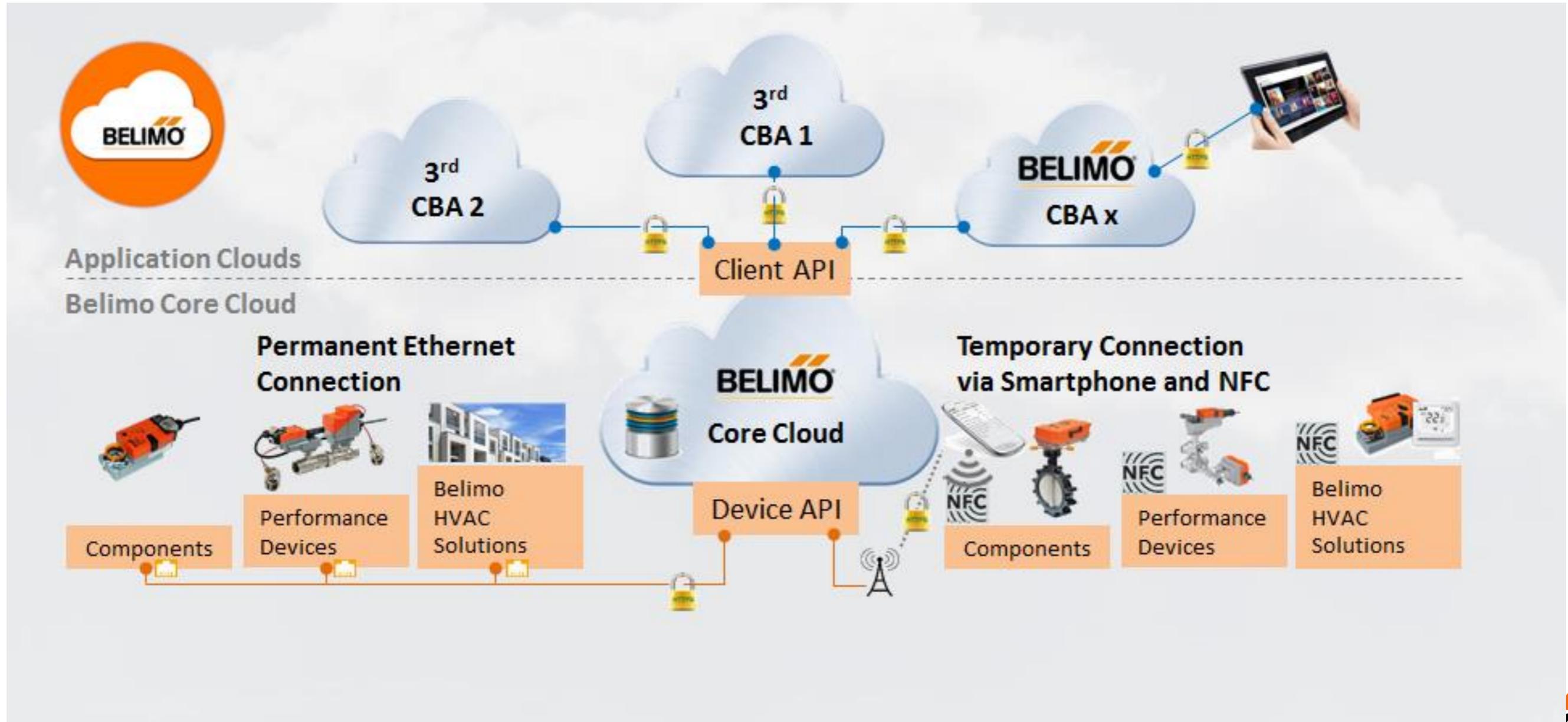
From 28.11.2018 to 29.11.2018

Raw Historical Data

Time	Value
Wed, Nov 28, 2018 1:10 AM	8.492 °C
Wed, Nov 28, 2018 1:10 AM	8.497 °C
Wed, Nov 28, 2018 1:11 AM	8.505 °C

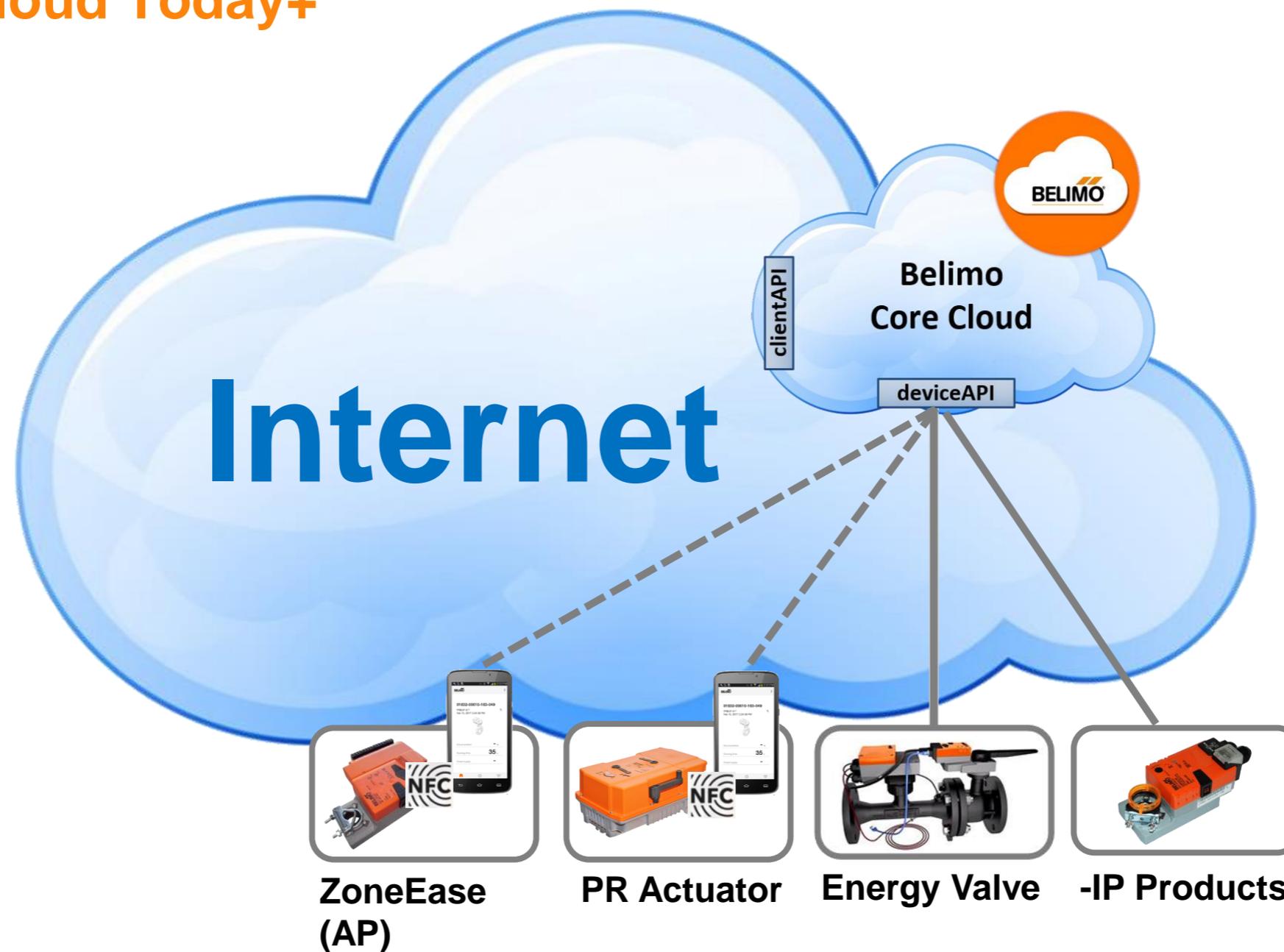
Belimo's Cloud Today

IoT - Diagrama de Infraestrutura



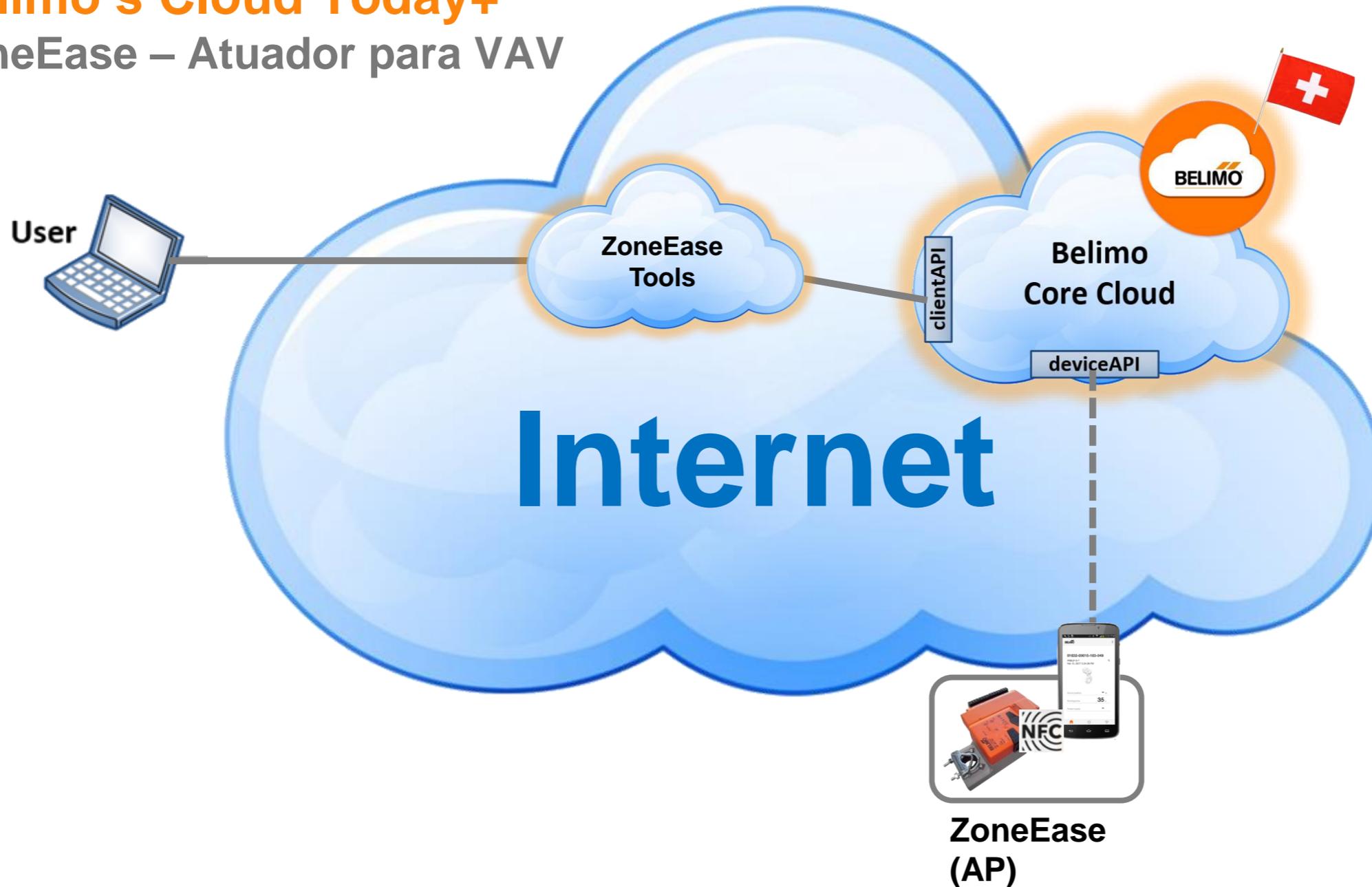
Belimo's Cloud Today+

Produtos - IoT



Belimo's Cloud Today+

ZoneEase – Atuador para VAV



Belimo's Cloud Today+

ZoneEase – Atuador para VAV



Settings > Project Management > Site Model

Site Model

Configuration Progress: Project A

Basic information providing you a quick overview of the configuration progress.

Project A

65% progress
149 devices out of 230 devices are configured. State: 30.11.2016, 9:20am.
[Show 81 Not Configured Devices](#)

3 reported problems
Number of reported problems.
[Show Problems](#)

Site Model: Project A

Building

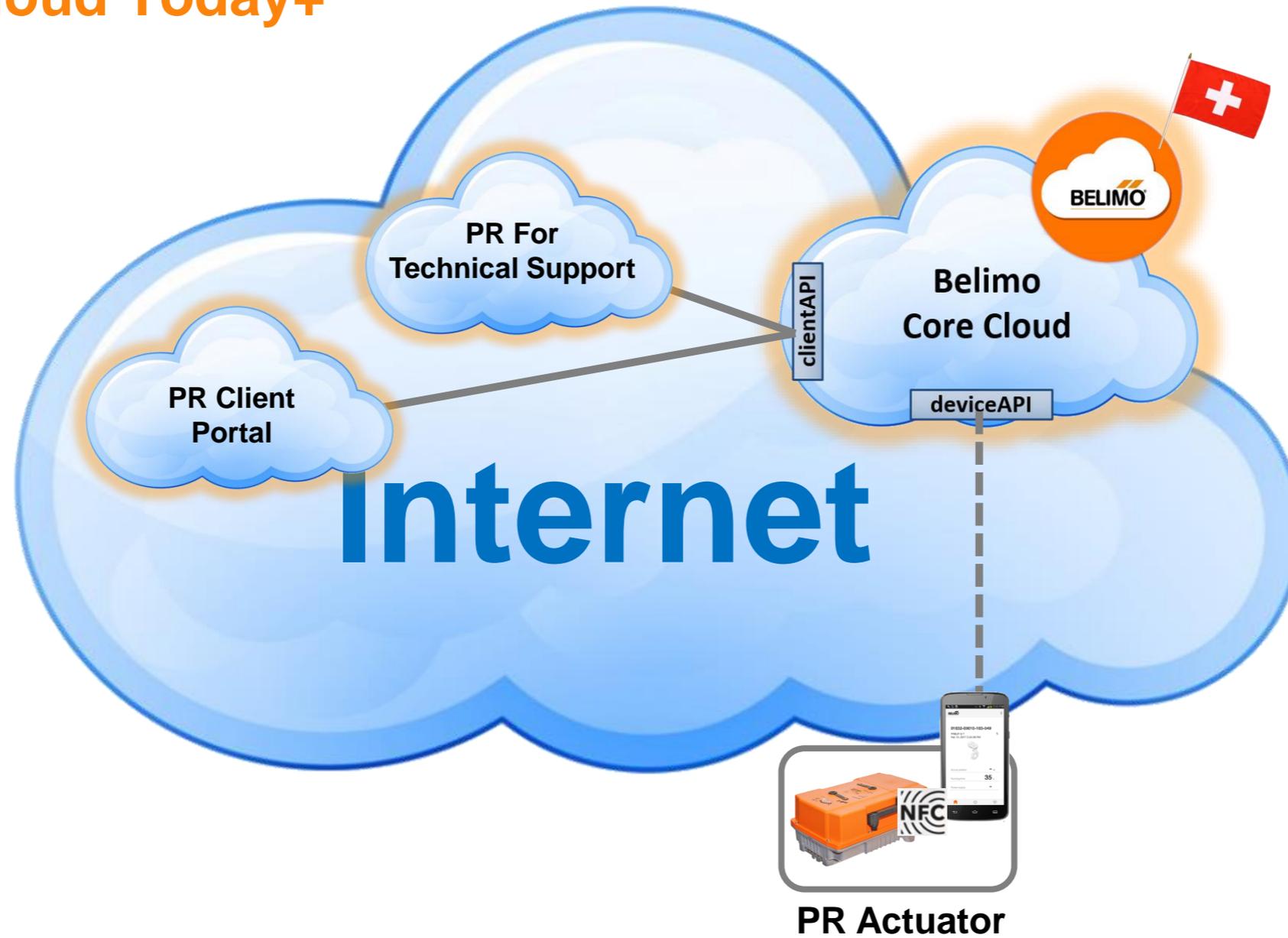
- Floor 1**
 - Room 1
 - Room 2
 - Room 3
- Floor 2**
 - Room 1
 - Room 2
 - Room 3
- Zone 1**
- Zone 2**
- Zone 3**
- Zone 4**

Search

Ground Floor

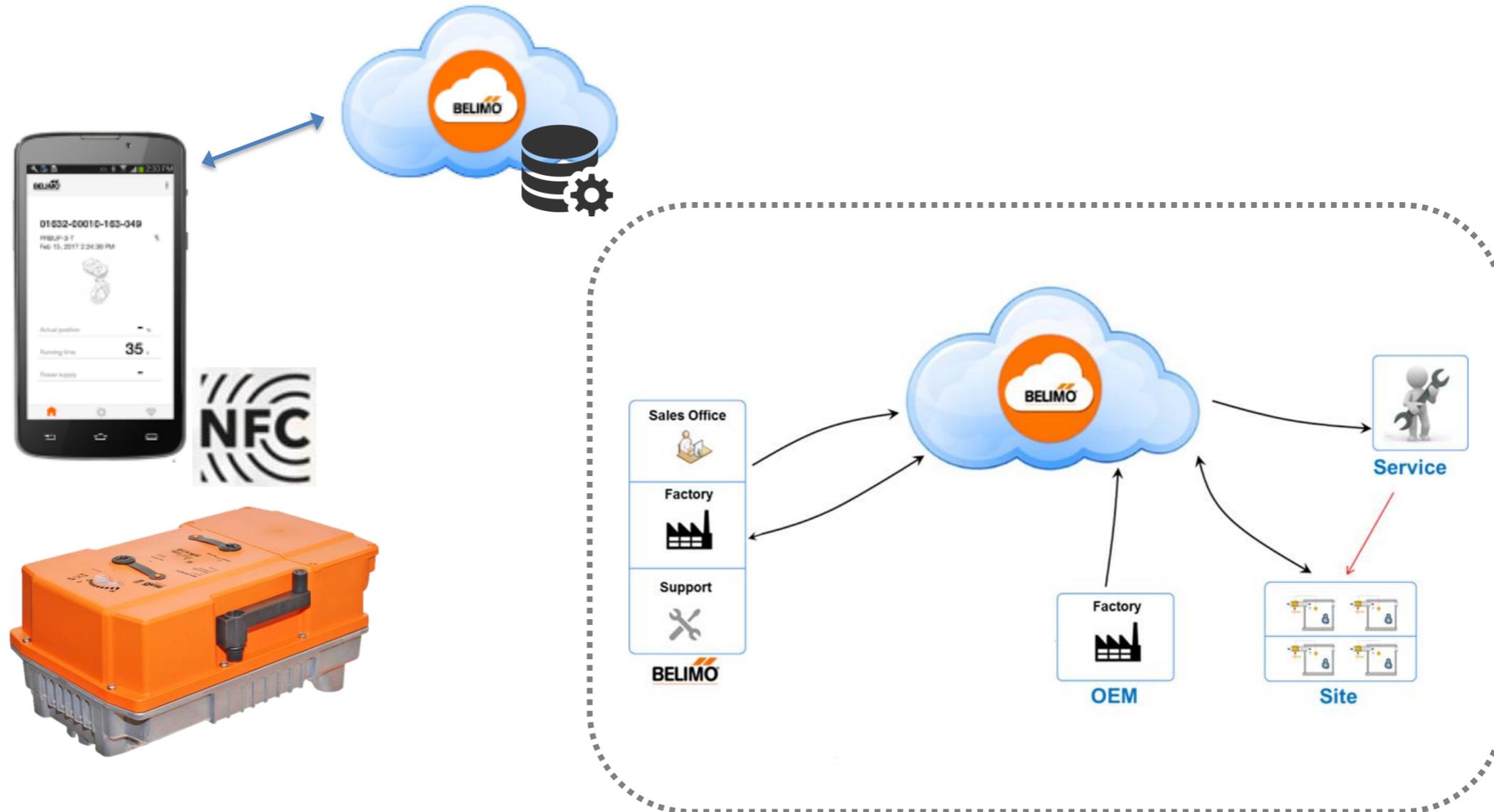
Belimo's Cloud Today+

IoT - NFC



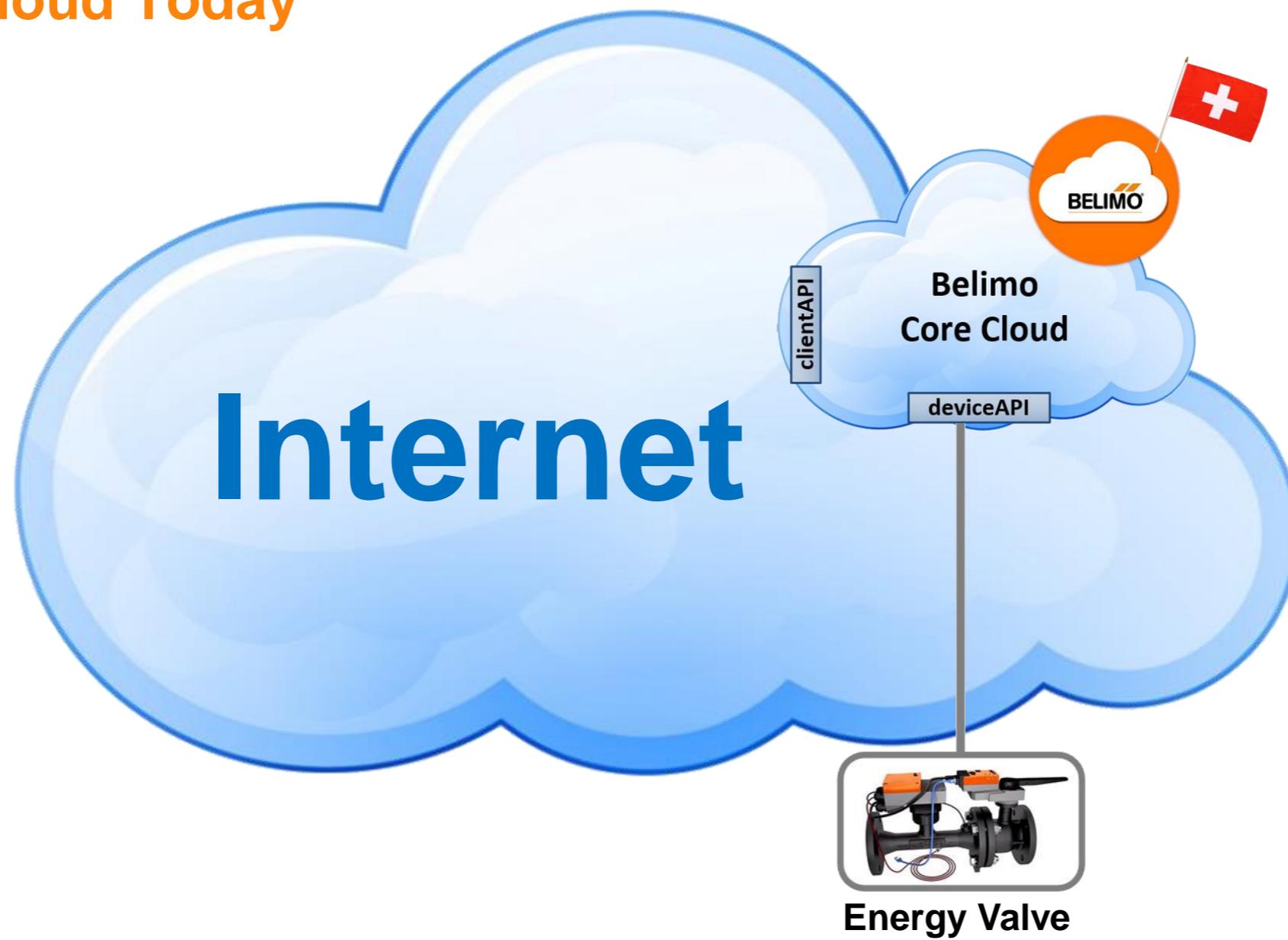
Belimo's Cloud Today+

Atuador para Válvula Borboleta



Belimo's Cloud Today

IoT



Belimo's Cloud Today+

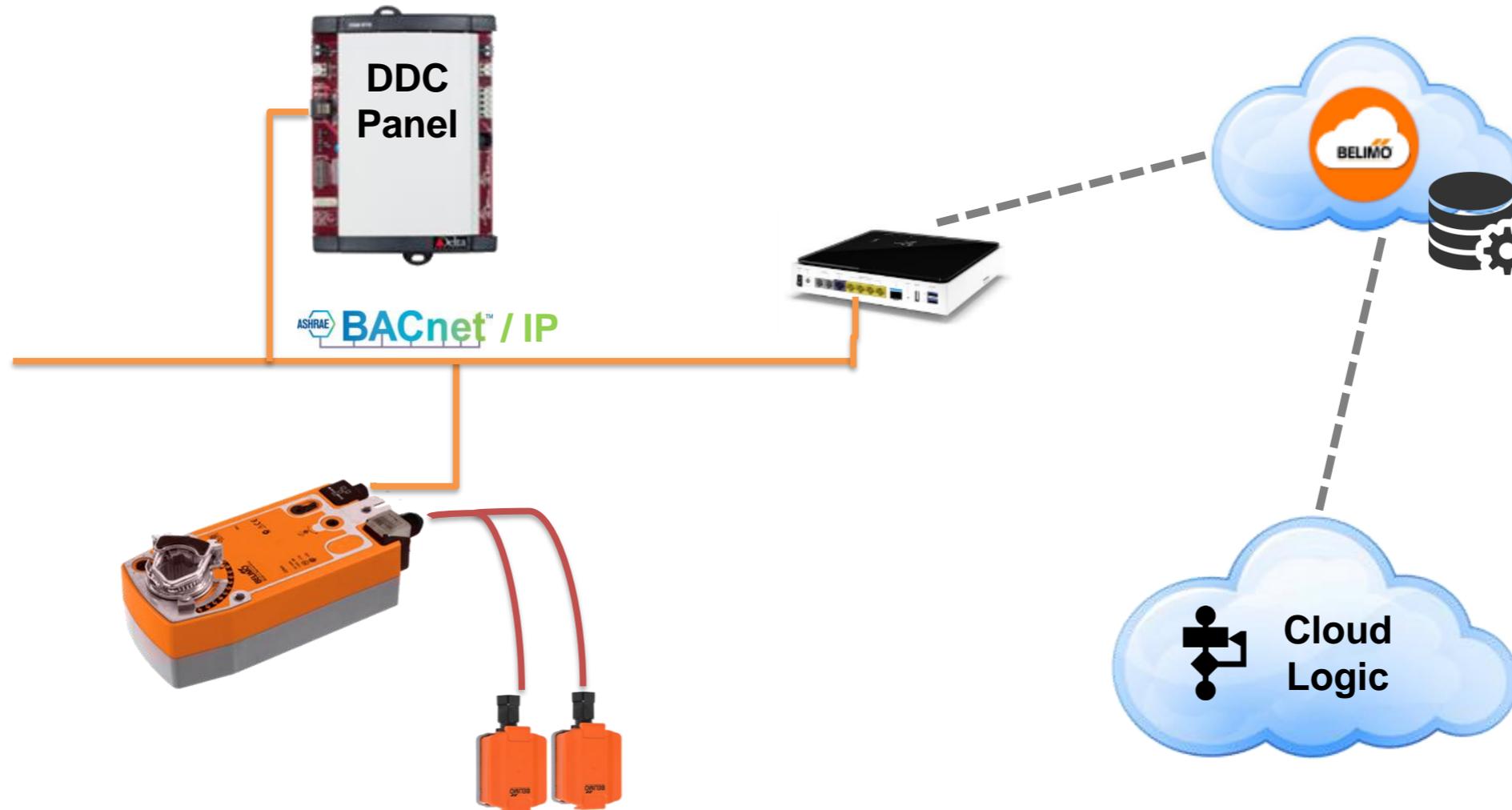
Equipamentos IP - IoT

Product Range - Valve Actuators



Belimo's Cloud Today+

Atuadores IP - IoT



Belimo's Cloud Today+

Atuadores IP - IoT



Device location Device name

Language English Logout

it+

Overview

Data

Status

Settings

Application

Date & time

Users

IP

BACnet/Modbus

Cloud

Maintenance



Status

OK

Control function

Position control

Setpoint

0.0 %

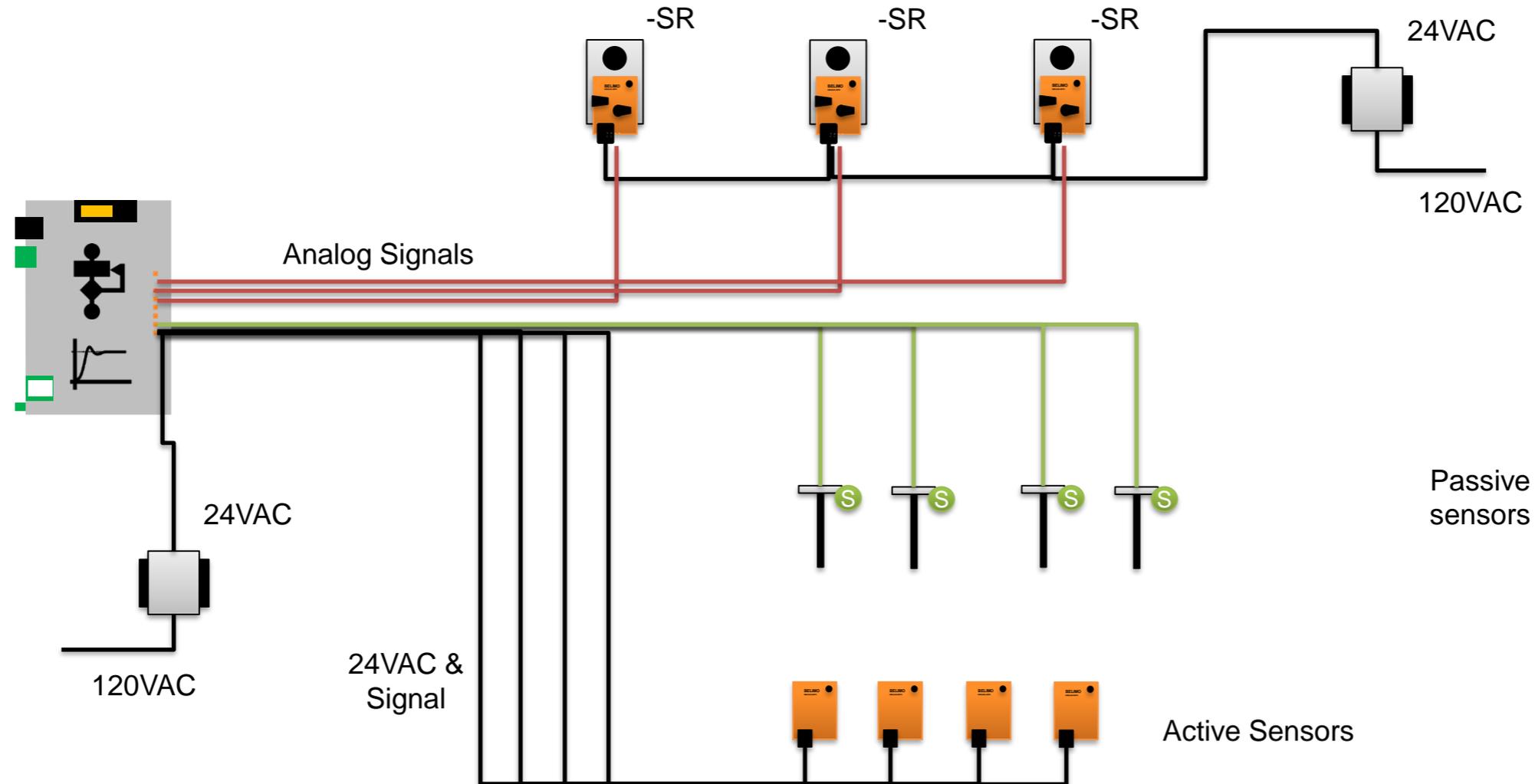
Sensor Mode

Sensor 1: Active (0-10V)

Sensor 2: Active (0-10V)

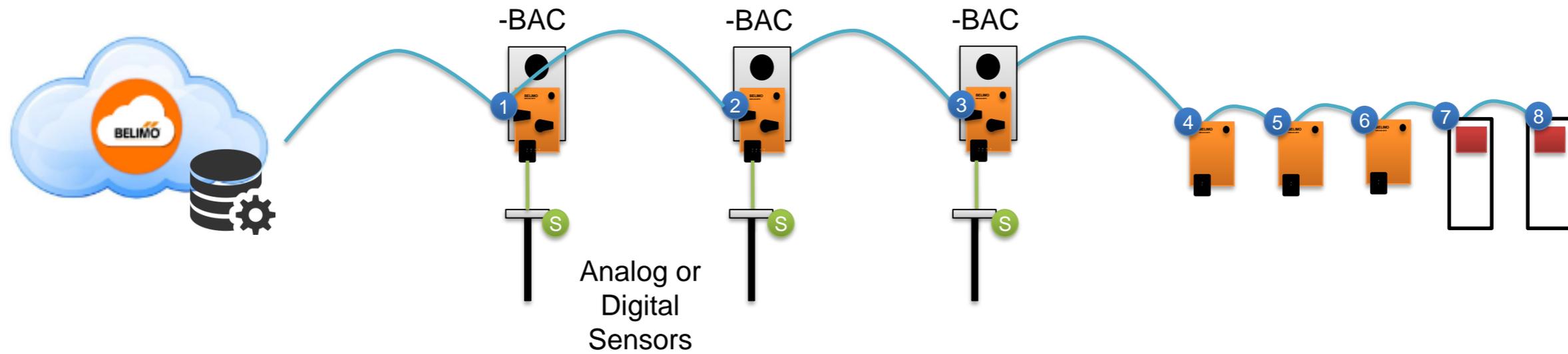
Equipamentos Belimo e Sensores

Instalação - Convencional

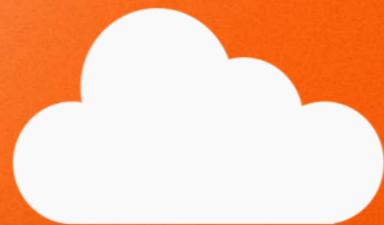


Equipamentos Belimo

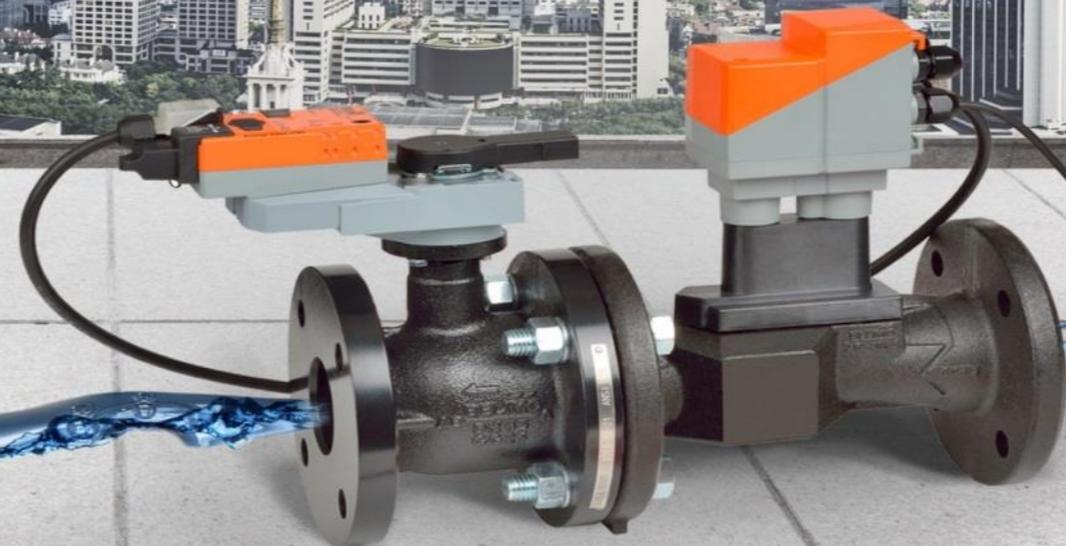
BACnet MS/TP - IoT



Uma Solução Completa e Otimizada Agora Baseada em Nuvem



Cloud-Based
Services





OTIMIZAÇÃO DO DELTA T E VAZÃO DO SISTEMA



- Melhor desempenho e estabilidade do sistema
- Garante o correto delta T
- Economia através da eficiência do sistema
- Notificação de alterações do sistema

The screenshot shows the BELIMO web interface for a "Delta-T Optimize Request". The page has a navigation bar with "Overview", "Device Management", "Settings", and "Support". The main content area is titled "Delta-T Optimize Request" and contains a form with the following fields:

- Subject:** Delta-T Optimize Request
- Device:** Select EV3 Device -
- Usage:** The EV3 is used for both cooling and heating
- Updating:** Manual Automatic
- reCAPTCHA:** Ich bin kein Roboter. (with a checkbox and a refresh button)

Below the form is a "Send Request" button. To the right of the form, there is an "Information" section:

Information:
Request a device specific optimization for your Delta T settings. With the data of your device we will run an analysis and advise recommendations. Please select whether you'd like to set new Delta T values yourself manually or whether you would prefer to have them set automatically. Either way you will receive a notification by email after the data analysis is complete.

Please note that your device should report operational data for at least two months for a successful optimization.

Belimo Energy Valve™

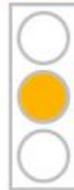
Perfor

OVERVIEW

Reporting Period: Q3, 2018
Name: [EV 02_3PV](#)
Location: Device location
Product: GMD0 00Z 010 22
Valve Size (DN-mm): 100
Report Generated On: Oct 15, 2018 16:26



STATUS

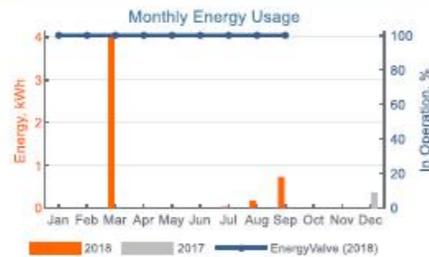


The Energy Valve worked during the quarter, but warnings were reported. Read more about it on the second page.

CURRENT SETTINGS

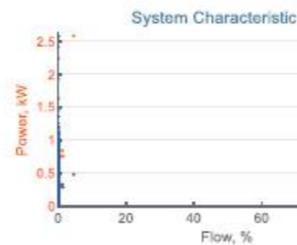
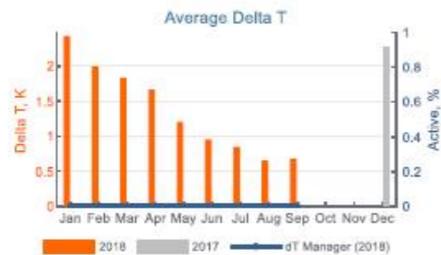
Control Mode: Flow
Override: None
Maximum Flow (Vmax): 52 m3/h
Installation Position: Valve in s
DeltaT Manager: on
DeltaT Setpoint: 4.00 K

ENERGY PERFORMANCE



Total Energy Q1-Q3, 2018: 5 kWh
Total Energy Q1-Q3, 2017: 0 kWh
Cooling Energy Q3, 2018: 1 kWh
Heating Energy Q3, 2018: 0 kWh

DELTA T PERFORMANCE



This service is provided by Belimo Automation AG, services.cloud@belimo.ch
This report is sent to your attention because you activated *Belimo Cloud Services* for your Energy Valve.

Belimo Energy Valve™

Overview of Warnings and Errors



Actions to reduce issues

- Flow
- Verify Vmax setting
 - Verify if pump pressure is sufficient
 - Inspect coils and strainers for clogging
 - Inspect pump armatures
- Actuator
- Gear release button on actuator is engaged

For further help, please contact your local Belimo support or use the [Belimo Cloud support form](#).

This service is provided by Belimo Automation AG, services.cloud@belimo.ch
This report is sent to your attention because you activated *Belimo Cloud Services* for your Energy Valve.

BELIMO

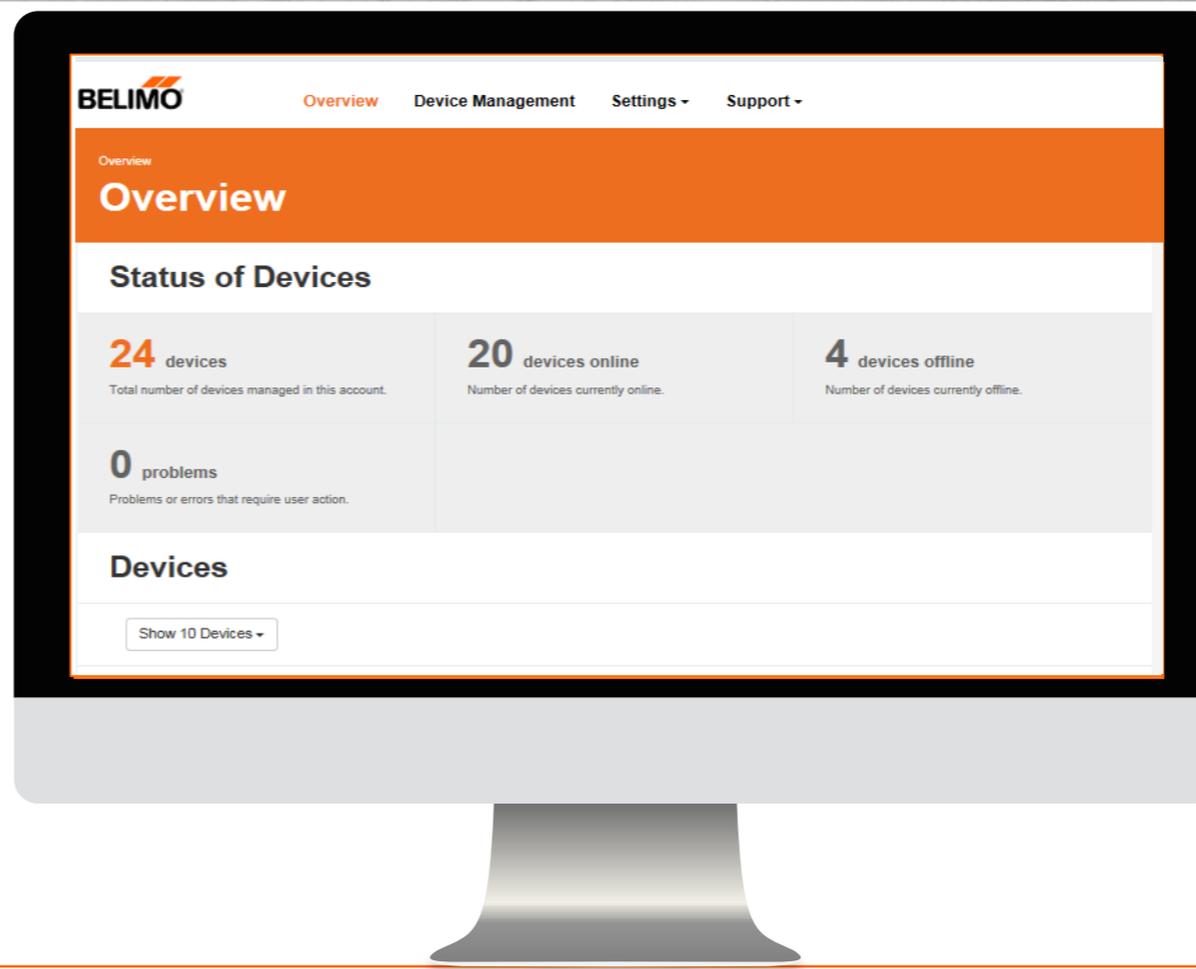
BELIMO®



BELIMO ONLINE SUPPORT



- Resolução de problemas e redução do tempo do equipamento fora de operação
- Menor tempo de resposta
- Conexão direta com especialistas Belimo



Wed 11/28/2018 5:03 PM

 ENC: Energy Valve Software Update

To Medea, Leandro

De: Cloud Services
Enviada em: quarta-feira, 14 de novembro de 2018 04:32
Assunto: Energy Valve Software Update

Energy Valve software update

Dear Energy Valve Customer,

Data protection is a question of trust, and your trust is important to us. This software update will therefore change the time that device ownership information is transferred to the Belimo Cloud. Previously this information was transferred once a device owner was assigned and internet connection was established. With this update, the ownership information will not transfer until the device is claimed in the Belimo Cloud. This update will not have any impact on the user experience.

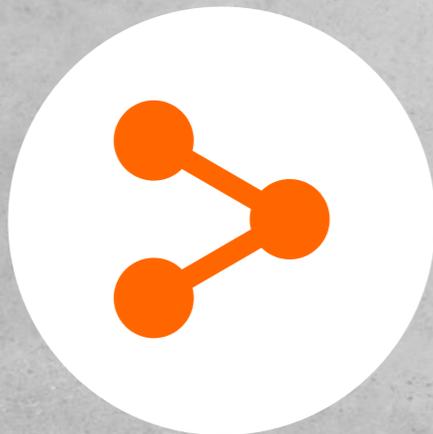
Depending on your selected *cloud update mode* your Energy Valve software will be updated as follows:

- Cloud controlled auto:* Update will be automatically installed within the next few days
- Cloud controlled manual:* Updates will be displayed within the next few days on the Belimo Cloud. Installation has to be triggered for each individual Energy Valve on the cloud
- Device controlled:* Updates will be displayed within the next few days on the web server. Installation has to be triggered for each individual Energy Valve on the local webserver
- Disabled:* No updates will be displayed nor installed

Best regards,
Belimo Cloud Team

This message was generated automatically. Please do not reply.



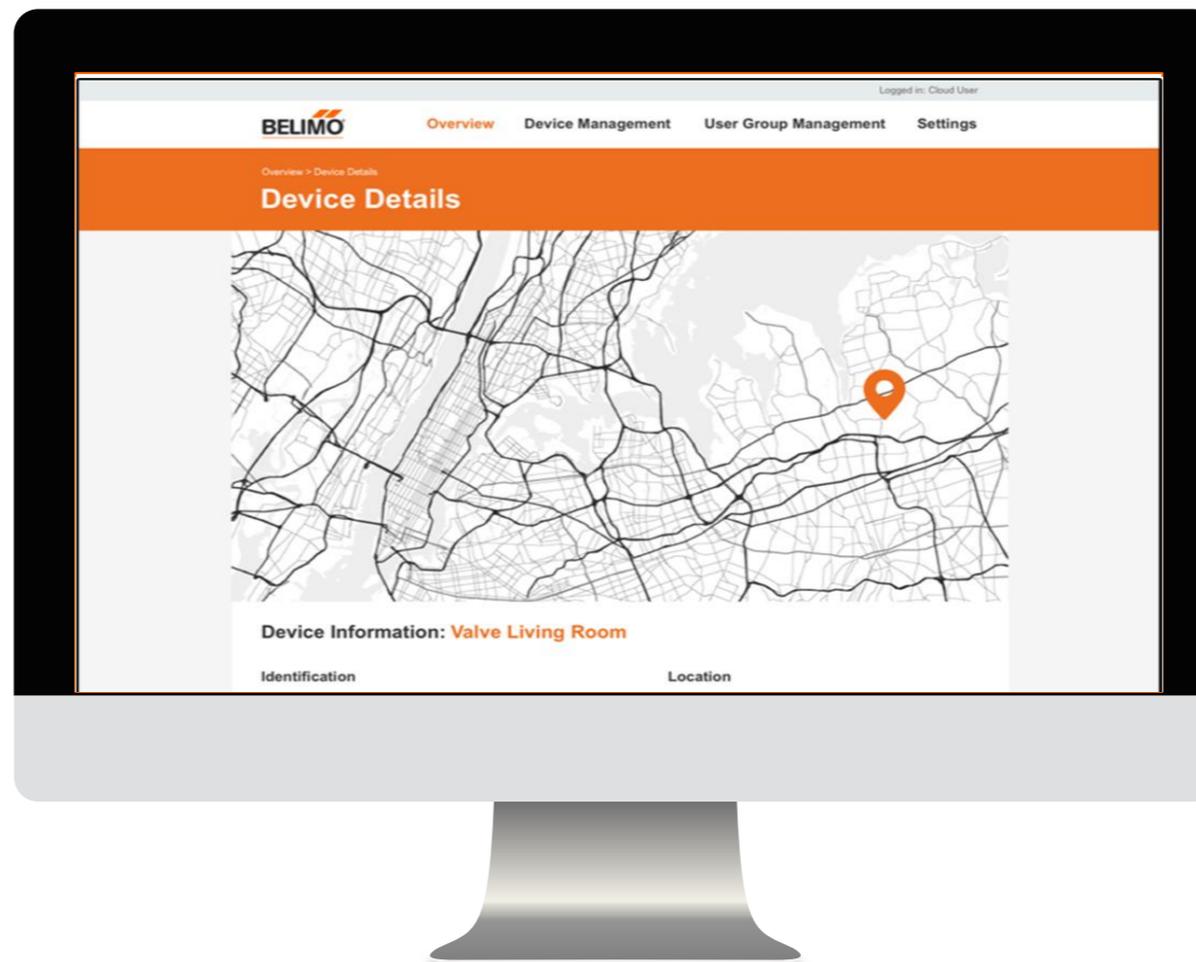


ACESSO A DADOS DE TODO O CICLO DE VIDA



- Acesso a Dados de Todo o Ciclo de Vida
- Interface fácil de usar e visão geral dos KPIs e rendimento do trocador de calor
- Relatório único com todos os dados

- Segurança dos dados e gerenciamento de senhas





GARANTIA ESTENDIDA

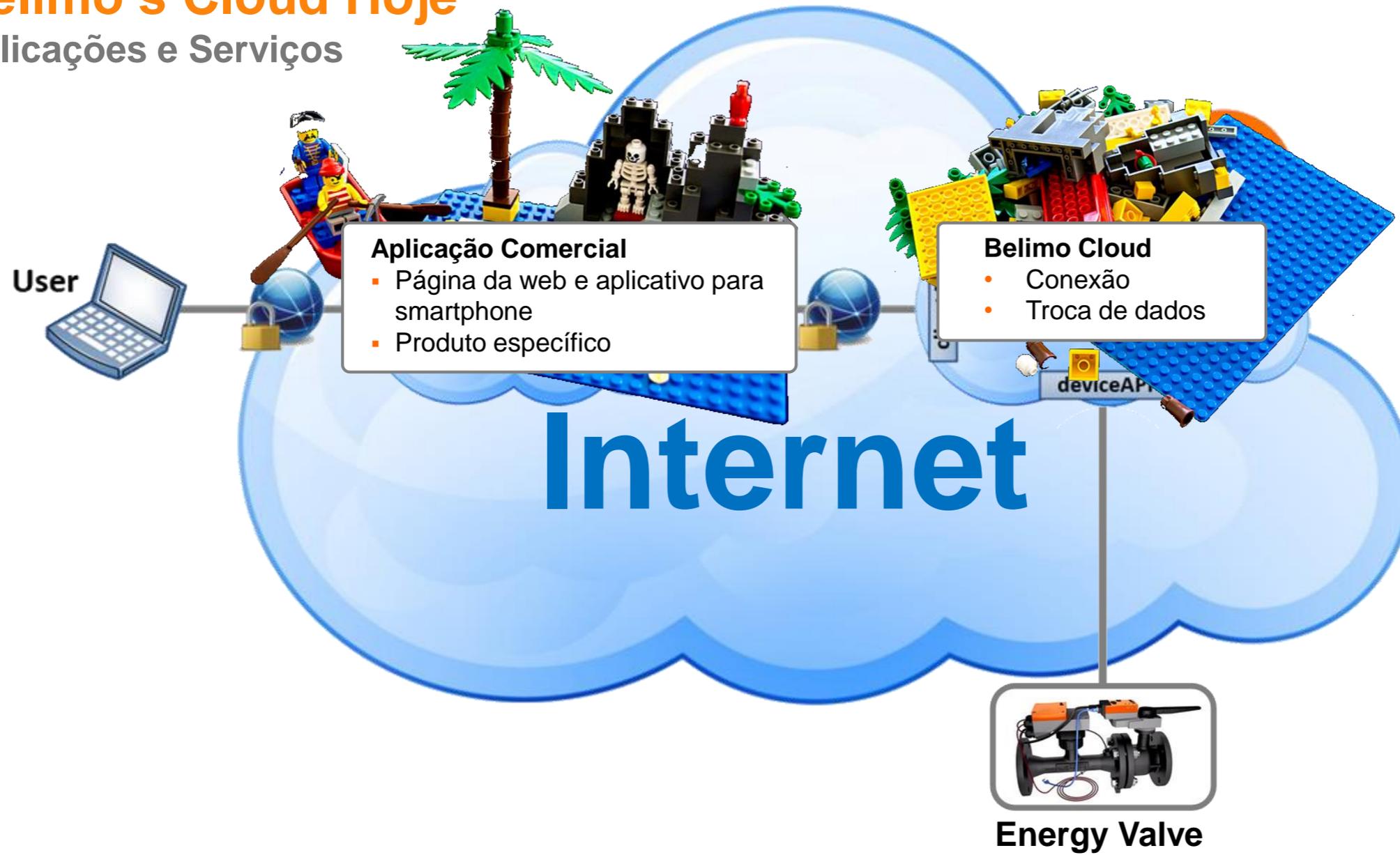


- Maior segurança e tranquilidade
- Menor custo com manutenção
- Aviso do tempo de garantia



Belimo's Cloud Hoje

Aplicações e Serviços



Belimo's Cloud Today

Aplicações e Serviços



All Buildings

All Buildings

New Building

All Sites

Stefan's Dashboard

Settings

Stefan Mischler

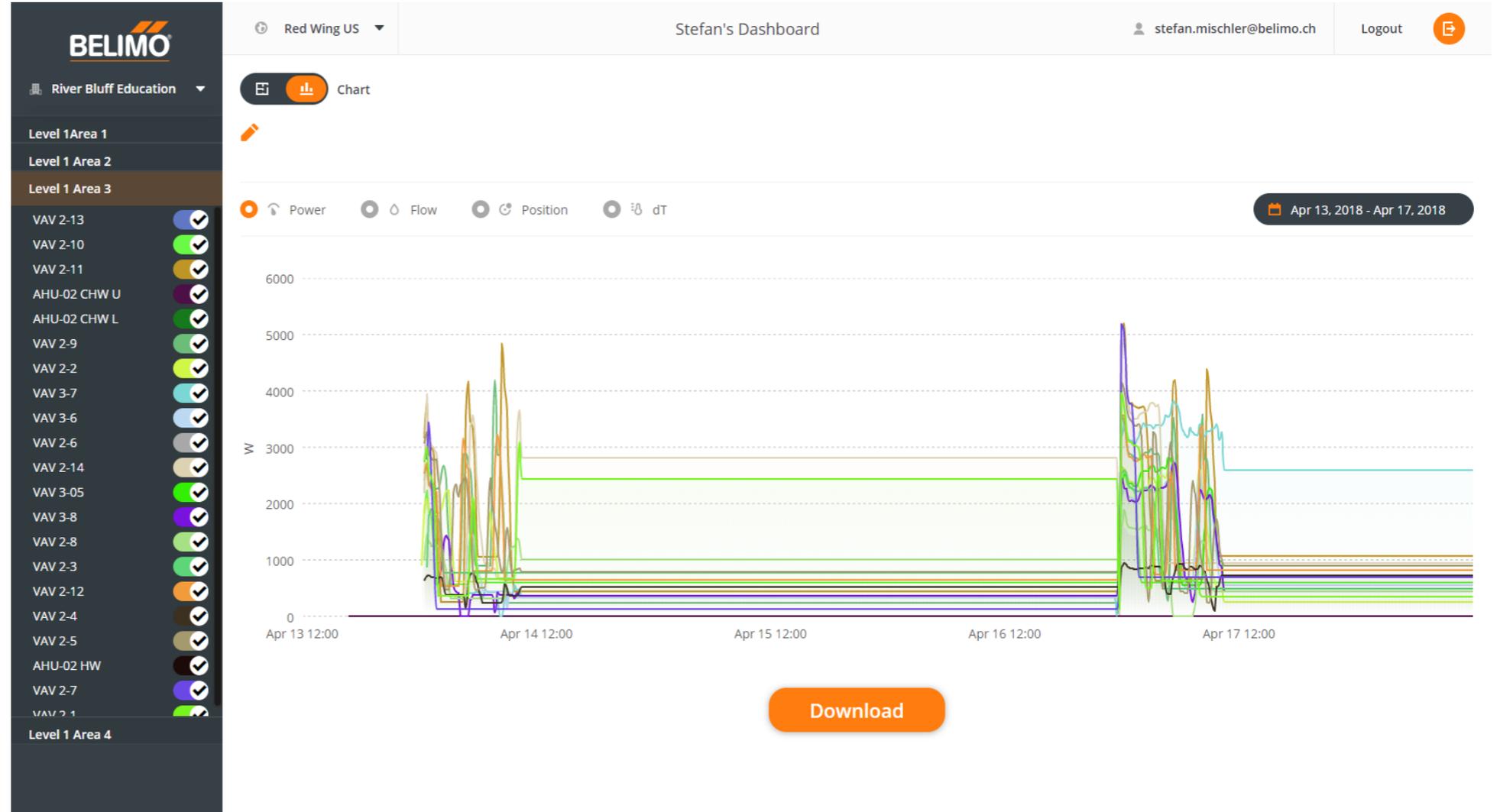
Jan 01, 2018 - Dec 31, 2018

	Cooling Energy	Heating Energy	Status	Status Description
▼ Duebendorf CH	213143 kWh	109752 kWh		
▼ NEST	213143 kWh	109752 kWh		
▼ ehub	213143 kWh	109752 kWh		
65NT_EXP03_Y761_M00	34096 kWh	155 kWh	OK	OK
65NT_EXP07_Y764_M00	0 kWh	0 kWh	OK	OK
65NT_EXP02_Y760_M00	3 kWh	17720 kWh	OK	OK
65NT_EXP05_Y763_M00	11288 kWh	694 kWh	OK	OK
65NT_EXP07_Y762_M00	23036 kWh	6 kWh	OK	OK
65NT_EXP08_Y761_M00	22376 kWh	88 kWh	OK	OK
65NT_EXP07_Y760_M00	22579 kWh	1529 kWh	OK	OK
65NT_HTM16_Y700_M00	16486 kWh	39 kWh	OK	OK
65NT_EXP01_Y760_M00	0 kWh	0 kWh	OK	OK
65NT_EXP06_Y760_M00	2 kWh	0 kWh	OK	OK
65NT_NTM16_Y700_M00	22269 kWh	10 kWh	OK	OK
65NT_EXP05_Y760_M00	39 kWh	0 kWh	OK	OK
65NT_EXP03_Y760_M00	159 kWh	38548 kWh	OK	OK
65NT_MTM16_Y710_M00	2 kWh	18292 kWh	OK	OK

Belimo's Cloud Today

Aplicações e Serviços

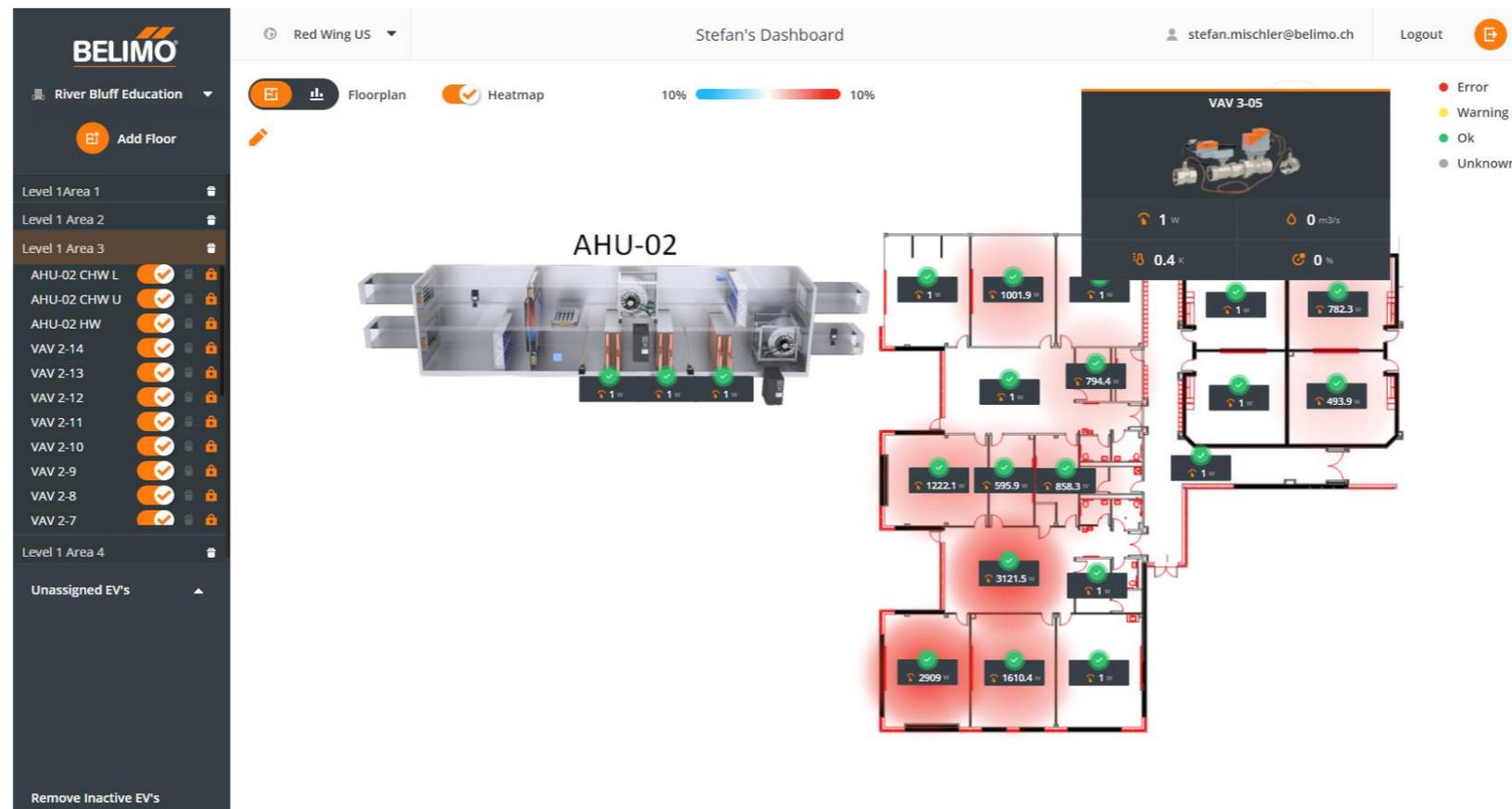
- Energia
- Potência
- Vazão
- Posição da Válvula
- Delta T



Belimo's Cloud Today

Aplicações e Serviços

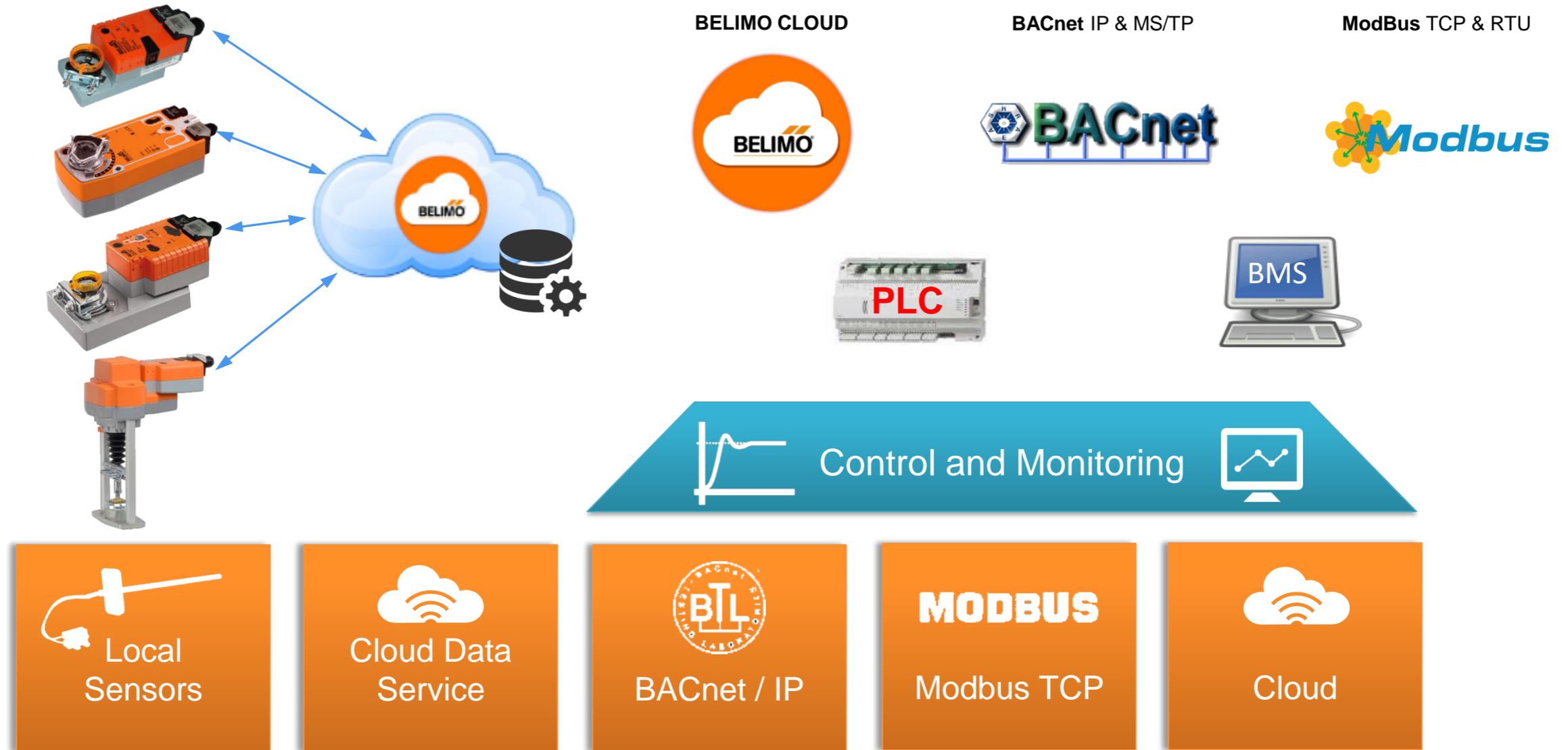
- Entenda a forma de distribuição nos edifícios
- Otimização de energia





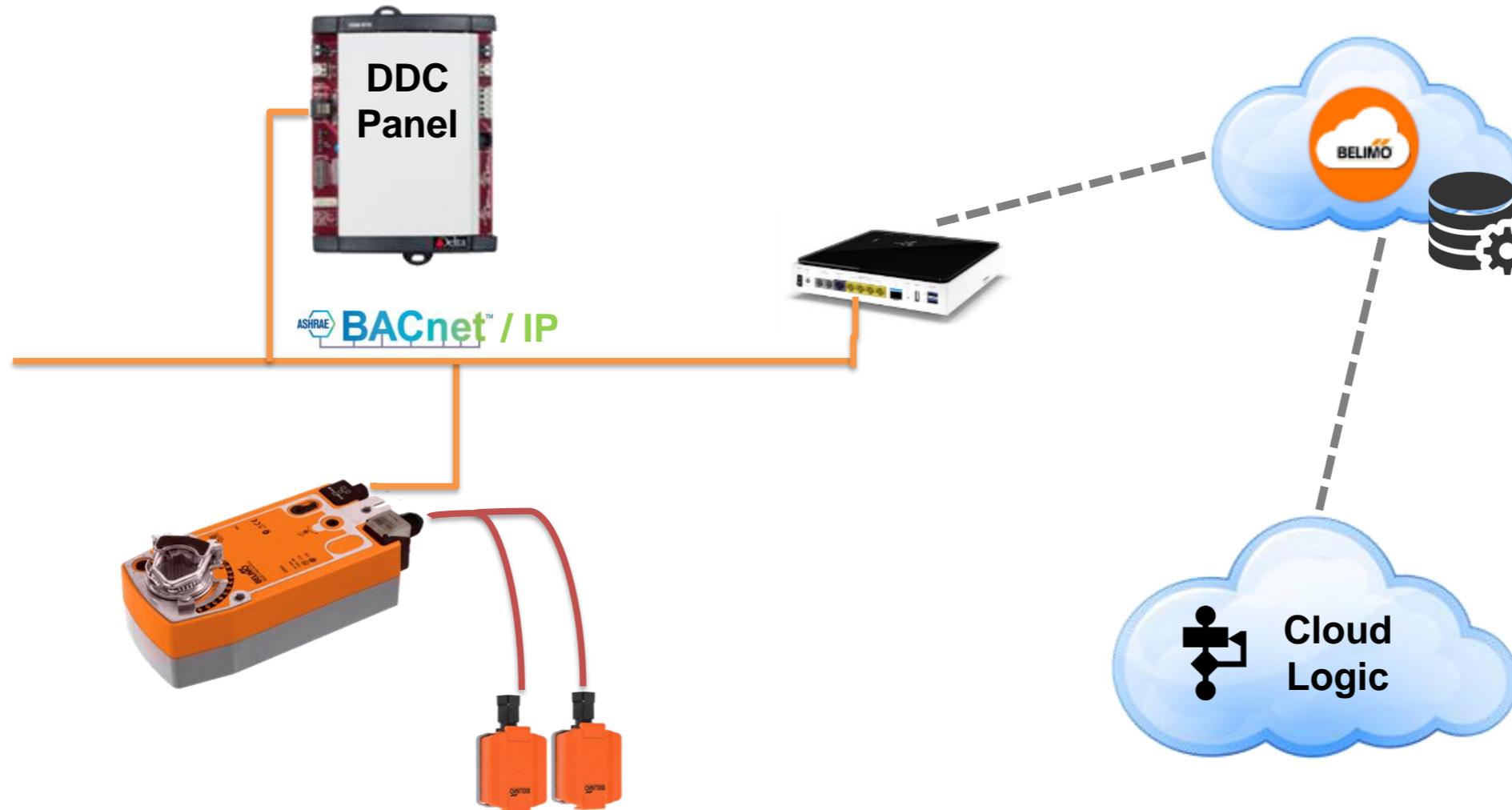
Belimo's Cloud Today+

Atuadores IP - Controles



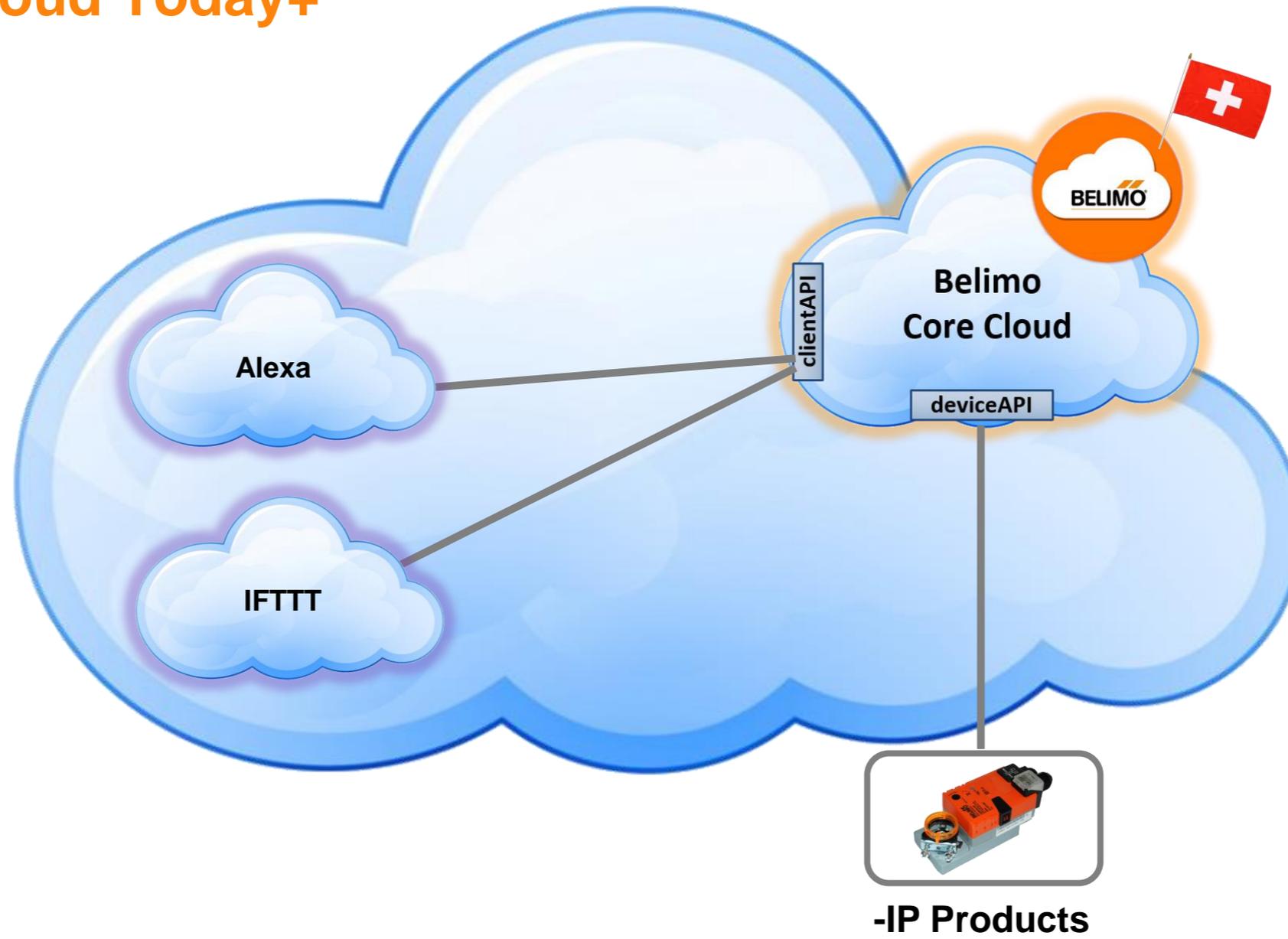
Belimo's Cloud Today+

Atuadores IP



Belimo's Cloud Today+

Possibilidades



Princípios Belimo - IoT

- O negócio da Belimo é a fabricação de dispositivos.
- Tornar os dados coletados facilmente acessíveis é o foco principal da estratégia de IoT da Belimo.
- Protocolo de dados aberto.
- Os aplicativos desenvolvidos pela Belimo estão focados em simplificar o planejamento, comissionamento e a manutenção de dispositivos, tornando os integradores de sistemas e os O&Ms mais eficientes.



Pricípios Belimo - IoT

- **A conectividade dos dispositivos Belimo abrange uma variedade de métodos aceitos pela indústria, tanto com ou sem wifi.**
- **Os novos dispositivos Belimo IoT se conectam à nuvem e os dados gerados por eles são acessíveis por meio da API Belimo.**
- **O acesso à API Belimo é fornecido gratuitamente a qualquer integrador autorizada pelo usuário final.**
- **A Belimo está empenhada em se estabelecer como líder em dispositivos IoT.**



Princípios Belimo - IoT

- **Manter os dados do cliente seguros e protegidos é uma das principais prioridades da Belimo. Nossos produtos conectados em nuvem são projetados usando protocolos de segurança padrão do setor de TI e são auditados regularmente.**
- **Manter a privacidade dos dados do cliente é importante para a Belimo. Os dados específicos do cliente só podem ser acessados por pessoas autorizadas pelo proprietário. A Belimo usa dados estatísticos de uma categoria de produto para aprimorar o conhecimento e melhorar futuros desenvolvimentos de produto.**



IoT's Duas Grandes Perguntas: Segurança e Privacidade?

Os sites da Belimo hospedam vários documentos para ajudar a resolver problemas

- Perguntas frequentes: segurança na nuvem e privacidade
- Termos e condições da nuvem
- Política de Privacidade

Visite:

http://www.belimo.com.br/en_US/iot

FAQ. Belimo Cloud Security & Privacy

How do I know that the products are secure?

Belimo's platform utilizes state-of-the-art security measures for data transmission, storage and access. Authentication and encryption are used for all communication via the Internet. The Belimo platform has undergone rigorous security testing. Multiple assessments have been conducted and are repeated periodically with external cyber security specialists.

Which security tests are performed on the Belimo cloud and cloud products?

- Black box hacking – a friendly hacker tries to hack the involved components without insider knowledge of the device or software and its security mechanisms
- System hardening – a friendly hacker analyzes the components with full knowledge and control of the device and/or software and proposes security improvements if needed
- System architecture review – hardware, software, production processes and infrastructure are all reviewed on a recurring basis

Does Belimo encrypt all data transmissions, including web server-to-server data transmissions?

Yes, all communication channels are authorized, encrypted and based on certificates with asymmetric keys; device to cloud, user to cloud, and cloud to cloud.

What security framework does Belimo utilize?

Belimo utilizes various frameworks and protocols including OAuth2, PKI, SSL, HTTPS.

What is my role in data protection and security?

Installation (see also connection guide):

- Make sure the device is installed in a Local Area Network (LAN) that is protected using enterprise-level security standards.
- The device must be able to connect to the internet, but may not in any case be accessible directly from the internet.

Passwords:

- Make sure you set distinct passwords for each device and your cloud account.
- Be diligent with protecting your passwords and cautious about distribution.

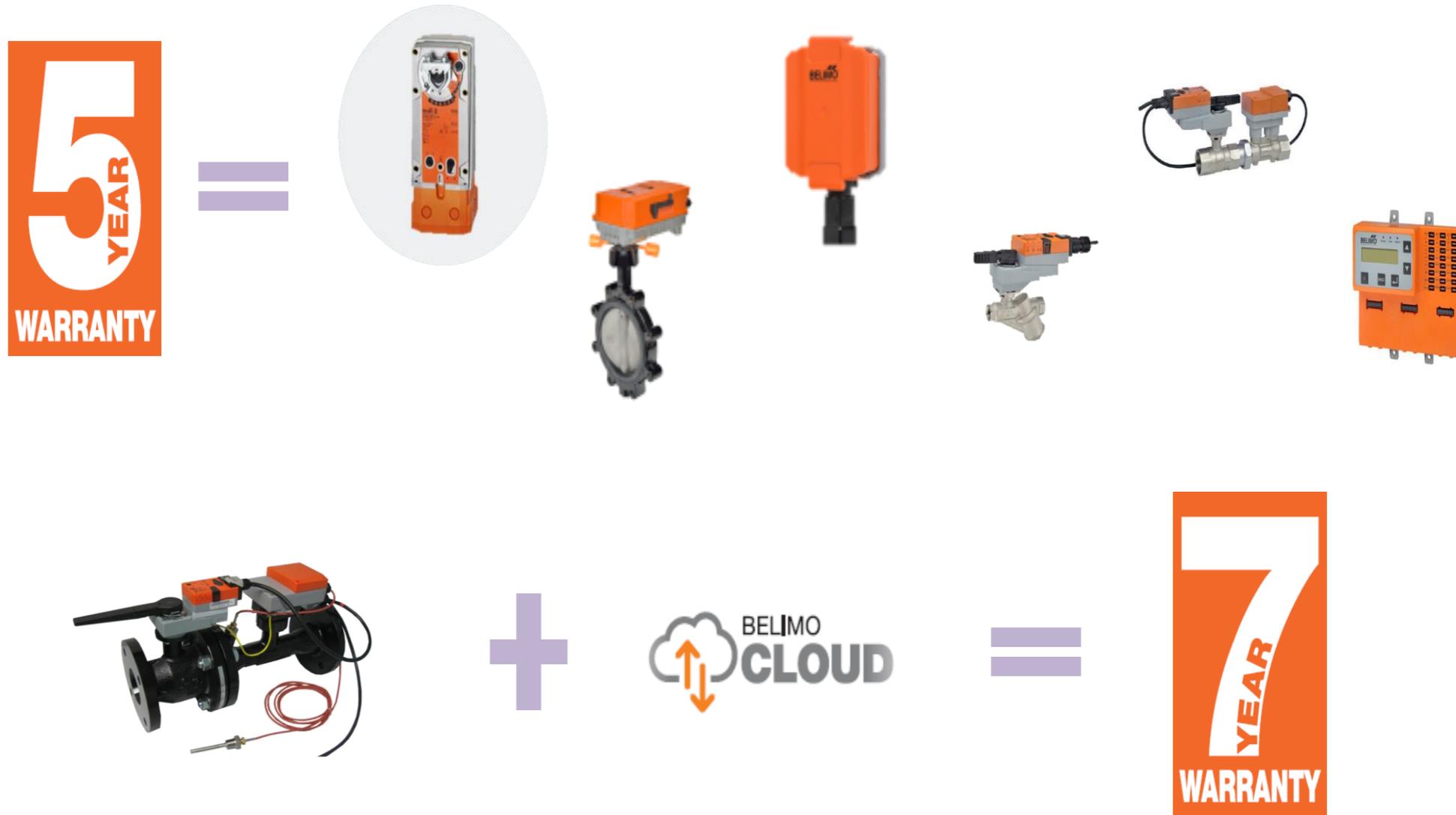
Privacy and Liability:

- When you connect a device to the cloud and have claimed it in your cloud account or cloud group, be sure that you have permission to manage this device from its legal owner and any possible third parties which use the facility in which it resides.

Where is the Belimo cloud located?

The Belimo cloud hosting and data storage is provided by InnoField AG, located in Switzerland. InnoField AG is FINMA (Swiss Financial Market Supervisory Authority) approved and ISO 27001 certified. Alternative cloud storage locations can be made available at the request of the customer.

Garantia:



спасибо 谢谢
GRACIAS 谢谢
THANK YOU
ありがとうございました MERCI
DANKE धन्यवाद
شُكراً **OBRIGADO**



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Leandro Medéa

(11) 99893-4151

leandro.medea@br.belimo.com