Create new services for managed WiFi, mesh networks, and smart home

User Services Platform

INTRODUCTION

Everyday there are more and more devices being connected to the Internet. These devices range from simple small sensors to complicated and powerful gateways. Although they may vary in size and complexity, they have one thing in common: they need to be managed. Historically, there were many approaches to device management: from SNMP (Simple Network Management Protocol), which represented device data in a custom format, to TR-069, which introduced a standardized device data model and proved to be a breakthrough solution for device management in the telco industry.

As useful as these standards proved to be, at some point they will not stand up to the test of mass smart deployments and the constant proliferation of devices and become obsolete. This is why the Broadband Forum introduced the User Services Platform (USP, also known as TR-369) – a modern standard for device management that takes into account the future needs of the telco industry.

USP

User Services Platform is a device management standard created by the Broadband Forum as a successor to its highly influential TR-069 standard. It is aimed at developers, vendors, and providers who want to enhance their offer by addressing recent trends, such as managed WiFi, mesh networks, or smart home.

The crucial benefits that distinguish the USP protocol from its predecessor are **distributed architecture and real-time access to data**.

The distributed nature of the protocol means that a single agent (a device) can have multiple controllers subscribed to it. Thus, **several providers can manage a single device simultaneously while having different access settings** (e.g. one can manage WiFi services, while the other manages VoIP).

What is more, the USP protocol supports open sessions, meaning that once a session between the agent and its controller is established, it won't be broken immediately after a designated task is performed, but it will stay alive. **This provides real-time access to data and allows for more efficient telemetry**.

Clearly, these features also require extensive security and privacy settings, which are realized through **dedicated security and authorization mechanisms** (such as encrypted communication via TLS/DTLS, strict access control rules, and regular firmware upgrades).
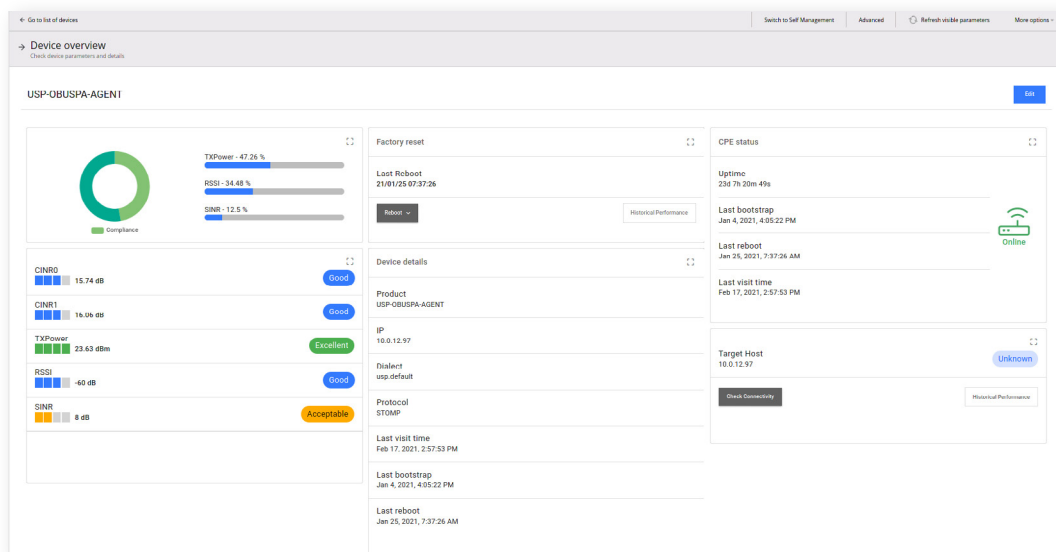
USP architecture
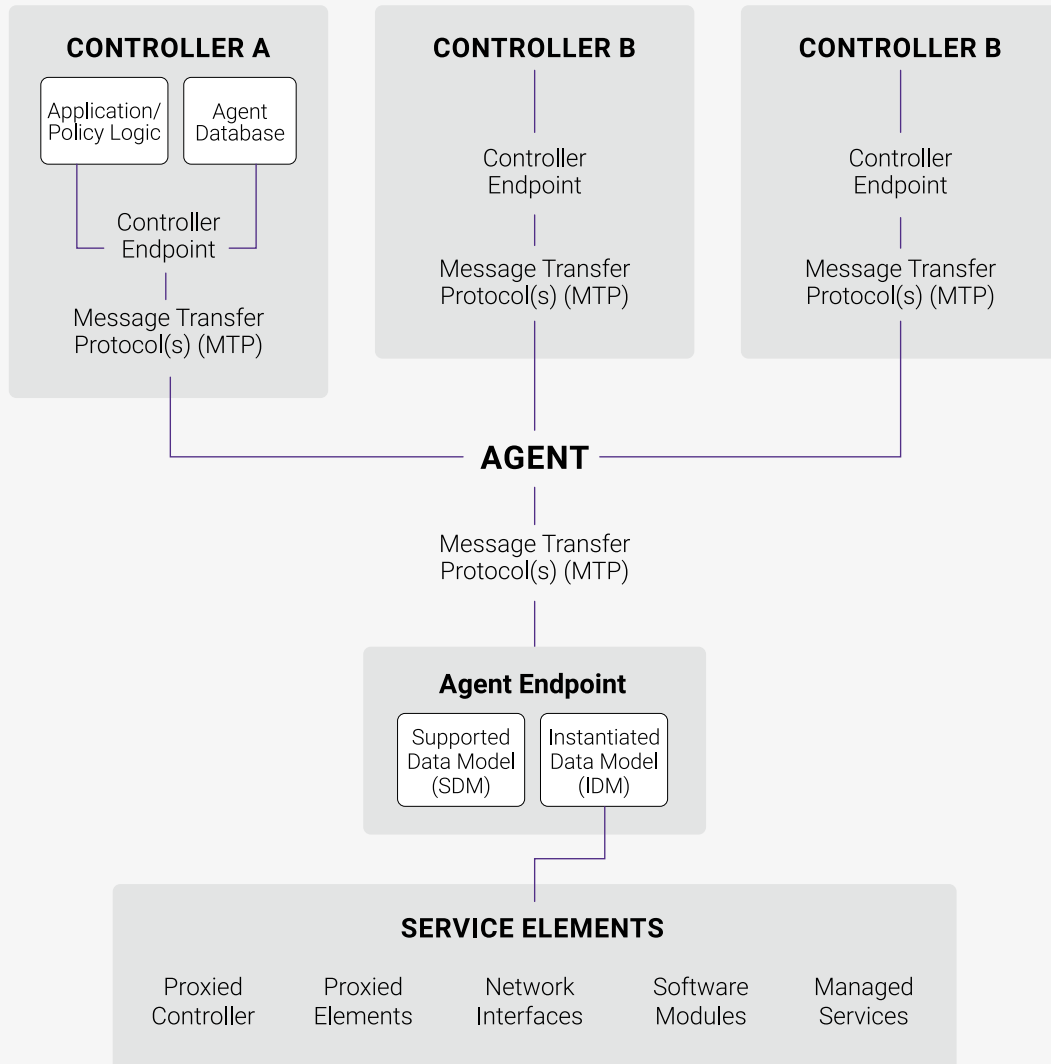
Agent

An agent is a representation of a device – it contains service elements representing device data model and exposes device data using the endpoint that communicates using message transport protocols with one or more controllers.

Controller

Controllers are a representation of a management platform used by the CSP. USP introduces the ability for several controllers to communicate using their endpoints with one agent.

# THIS OPENS THE DOOR FOR MANY UP-AND-COMING TRENDS THAT WE OBSERVE IN TELECOMS, SUCH AS:

Managed WiFi services

Thanks to standardization and multicontroller architecture, **USP makes it possible to create systems for external WiFi provisioning, monitoring, and management**, highly sought after from service providers.

Smart homes and mesh networks

With the number of devices in our homes steadily increasing and the demand for data transfer always growing, **USP facilitates the creation of wireless mesh networks and connected environments**.
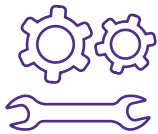
Proactive maintenance

Thanks to improved telemetry, with USP it is possible to not only monitor network usage and activity in real-time, but also **collect historical data** that can be used for machine learning **to proactively identify network issues or optimize WiFi**.

Customer self-care

Multicontroller architecture means that the customers, too, can manage their devices – to a limited degree, of course – thus **reducing the workload of customer care centers and improving customer satisfaction**.

KEY FEATURES OF THE USP

- **Flexible deployment capabilities** for traditional, mobile, and con-strained devices that fulfill the needs of smart home, smart build-ings, and other smart energy applications.

- **Well standardized and modularized device data model** that builds on over 15 years of TR-069 market experience.

- **End-to-end security** guaranteed by encrypted communication via TLS/DTLS, regular firmware upgrades, and strict access control rules.

- **Always-on efficient binary data transfer** thanks to lightweight pro-tocols such as CoAP, STOMP, MQTT, or WebSocket which can run over TCP/UDP.

- **Backwards-compatibility** thanks to Device:2 data model, which enables seamless coexistence between TR-069 and USP in one en-vironment.

- Devices that support IoT protocols can make use of the USP's IoT device proxy, which lets the user **connect to legacy devices and various different architectures**.

Committed to assisting its telco clients in all their deployments, regard-less of their preferred technology, **AVSystem's platforms naturally sup-port the USP protocol** as well. They have been tested against Broadband Forum's USP Agent (OB-USP-Agent) reference implementation (for both STOMP and MQTT). This ensures that **both the agent and the platform will be ready for deployment just as soon as you are** – at whatever scale you choose!

Because USP evolved from TR-069 and is rooted in the same data model (TR-181), **it is easy to migrate to the new protocol thanks to ensured backwards compatibility**. However, it is equally easy to manage both protocols in a shared environment, if you don't want to invest all the way. With over a decade of experience in managing TR-069-based devices, **AVSystem has already successfully rolled-out the features offered by USP in TR-069, ensuring benefits such as extensive device grouping, advanced monitoring, or WiFi optimization in an easy-to-navigate GUI**. This way, our customers can be sure that whatever protocols are used, **their devices will work seamlessly within one platform environment**.

UMP

Unified Management Platform (UMP) is a highly scalable and flexible multi-protocol system for provisioning, management, and monitoring of various types of devices. As an industry-proven device management platform UMP offers many powerful mechanisms that allow efficient management via various protocols, including USP. Some of the platform's features include:

• Automated management of devices and groups;
• Flexible modeling of customer business processes and provisioning workflows;
• Customer care with configurable graphical user interfaces;
• Quality of experience with diagnostics and monitoring of device or groups;
• Comprehensive reporting;
• Device auto-discovery;
• Scalable architecture;
• Easy integration with OSS/BSS systems;
• Multitenancy.

CLOUD ACS

Cloud ACS is AVSystem's dual-stack auto configuration server for TR-069 and now also TR-369-based devices. Available in a software-as-a-service model, it offers all the benefits of the UMP, such as zero-touch provisioning, bulk management, and advanced monitoring in a convenient, cloud-based installation. The benefits of choosing Cloud ACS include:

• Out-of-the box availability with no on-site installation;
• Light and scalable payment plans (pay only for what you need);
• Reduced hardware and maintenance costs;
• Secure cloud infrastructure;
• Free 14-day trial with dedicated support.

ABOUT AVSYSTEM

No IoT deployment is successful without proper device management – this is what AVSystem stands for.

With more than 100 deployments all over the world, AVSystem is an expert in its field. We help companies around the world deliver better quality of service thanks to our top-class device management solutions. We also focus on WiFi VAS & indoor location as well as other systems for SDN and NFV. Apart from creating software, we actively participate in the standardization process of the LwM2M standard to enable secure device management and service orchestration in the IoT ecosystem. 100+ large companies worldwide prove the superiority of AVSystem's technology.
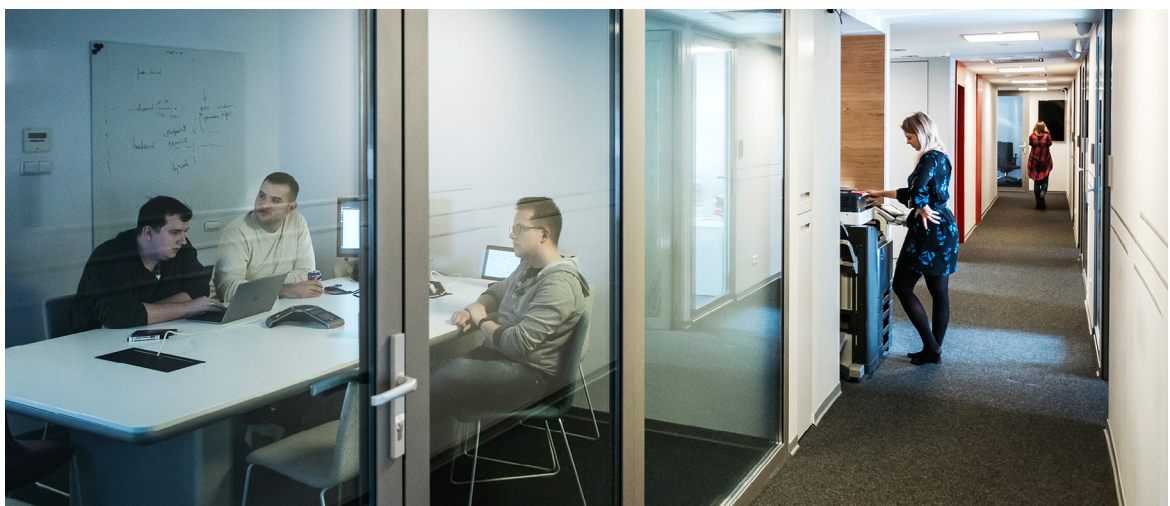
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