

Is Your Platform Ready for USP?

Practical Guidance for
TR-369 Migration





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The Evolution of Device Management

2004

TR-069 (CWMP)

- BBF published TR-069, May '04
- Introduced the standard for remotely managing CPEs via ACS
- Allowed provisioning, monitoring, configuration and life cycle management
- Widely adopted by ISPs, globally

2010

TR-181

- TR-181 introduced the hierarchical device interface stack
- This allowed better support for IPv6, Wi-Fi etc as well as support for Virtual and Proxied IoT devices

2018

USP (TR-369)

- Modern evolution of TR-069
- Offers real-time & event-driven device management
- Designed for scalability and security

User Services Platform (TR-369): Advantages

01

Always on communication

- Real-time updates between CPEs and controller
- Faster issue resolution vs. TR-069 polling

02

Enhanced Security

- End-to-end encryption
- Role-based access control
- TLS and certificate-based authentication

03

Smarter Data Collection

- Collects only required data
- Reduces unnecessary traffic

04

Flexible Control

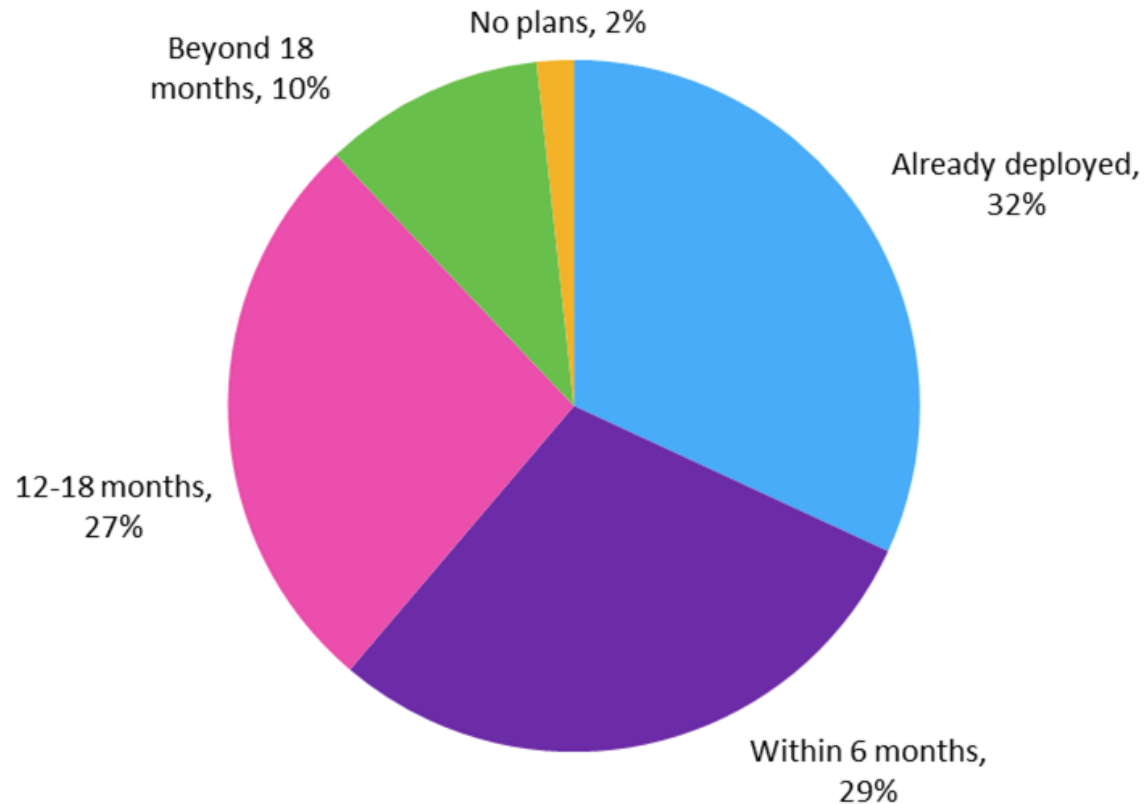
- Primary controller: access, config, firmware
- Secondary controller: Wi-Fi or specialized tasks





Operator Adoption of USP: Deployment

Q22: When will you deploy USP/TR-369 solutions?



- From upcoming 2025 Broadband Forum research report coming in October
- 116 operators from all parts of the world
- Performed by OMDIA

Major Use-Cases Enabled by USP

01 Managed Wi-Fi

- Mesh support
- Multi-controller architecture
- Real-time visibility

02 App-Enabled Gateway

- Software lifecycle & environment monitoring

03 Network Analytics & AI

- AI-driven traffic optimization
- Self-healing networks
- Behavior-based personalization
- Anomaly & threat detection
- IoT device discovery & tuning
- QoS & SLA automation
- Energy & resource optimization
- Predictive maintenance

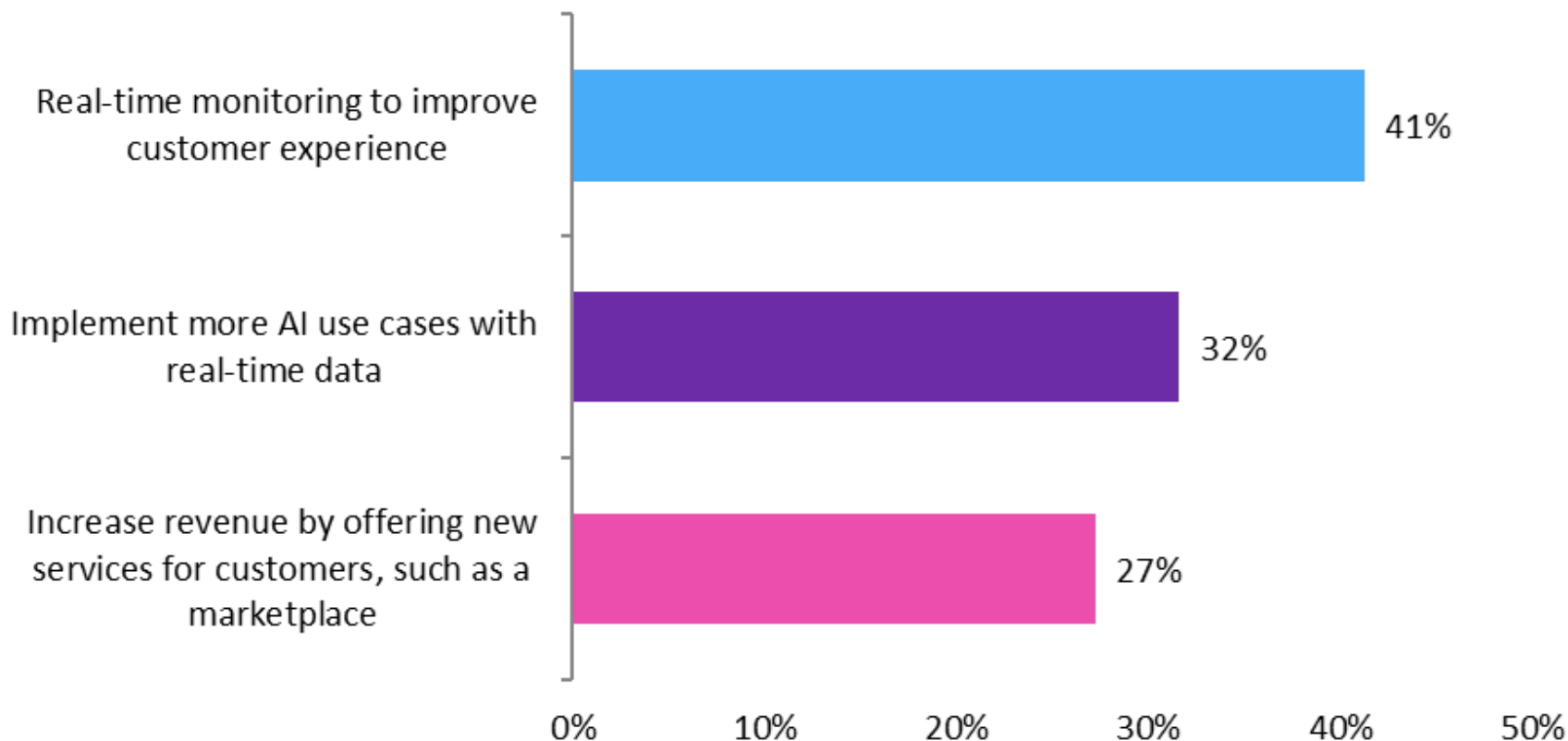
04 Smart Home

- Scales to manage dynamic, high-volume endpoints
-

Operator Adoption of USP: Use Cases



Q23: What would be your priority use case for deploying USP?



Note: n=114
Source: Omdia

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Time to Move Beyond TR-069. Here's Why

- ▼ TR-069 can't support real-time control, mesh Wi-Fi, or modern security
- ▼ CPE vendors are prioritizing USP; delays risk future compatibility
- ▼ Upgrading now avoids costly rework and enables faster service rollout

Motive Home Device Manager supports TR-369 + TR-069, enabling dual-stack, zero-touch provisioning, and scalable diagnostics—all in one platform.

Real life success - Tier 1 European Operator

Challenge:

- Legacy TR-069 protocol limited agility, real-time visibility, and scalability across 7M+ CPEs.

Solution:

- Migration to Motive Home Device Manager (HDM) with TR-369 / USP
- Integration of real-time monitoring, always-on connectivity, and advanced smart home support
- Cloud migration to optimize total cost of ownership

Why Motive:

- Deep USP expertise and broadband innovation leadership
- Scalable automation and analytics to future-proof device management
- Proven partner with 150+ CSPs and 1B+ devices managed

Impact:

- Stronger customer experience through faster diagnostics and proactive service
- Future-ready platform to support smart home growth
- Industry leadership in USP adoption and cloud-based network operations



USP Readiness Checklist

Device Compatibility



- ☒ Target CPEs support TR-369, either natively or via firmware upgrade
- ☒ It is easier if devices use TR-181 data model
- ☒ If required, multi-protocol support (dual-stack) is available for TR-069 + USP transition – depending on your migration strategy
- ☒ CPE supports at least one of the USP message transfer protocols: MQTT, STOMP, or WebSockets



USP Readiness Checklist

Architecture and Integration



- ☒ Your ACS or device manager (e.g., Motive HDM) supports USP control and data transport for analytics
- ☒ You have a strategy for multi-controller orchestration and separation of concerns (e.g., provisioning vs telemetry)
- ☒ Northbound APIs are available for integration with OSS/BSS and analytics layers
- ☒ Your team has access to sandbox environments for agent/controller validation



USP Readiness Checklist

Security and Compliance



- ☒ All USP messages use end-to-end encryption (TLS 1.2 or higher)
- ☒ USP agent supports mutual authentication and role-based access control for controller
- ☒ Regulatory compliance (e.g., GDPR, PIPEDA) is considered in design and implementation
- ☒ You've defined data governance rules for what telemetry can be collected, where it flows, and who can access it



USP Readiness Checklist

Application Lifecycle Management



- ☒ Platform supports Software Module Management (SMM) for containerized apps
- ☒ Customer Support teams are trained to deploy, monitor, and troubleshoot USP-delivered applications
- ☒ Strategic use cases identified (e.g., mesh optimizers, in-home security, parental control, data collection, speed test agents)
- ☒ You've validated that your USP controller supports modular versioning and rollback



USP Readiness Checklist

Analytics and Data Collection



- ☒ Telemetry plans are defined for real-time and periodic data collection
- ☒ Data pipelines can ingest Protobuf-encoded USP data
- ☒ Your NOC or care teams can visualize and act on insights (via HDM, SMP, etc.)
- ☒ Performance monitoring tools support both TR-069 and USP feeds



USP Readiness Checklist

Pilot and Deployment Readiness



- ☒ You've selected a low-risk pilot group of devices or regions for initial USP rollout
- ☒ You have an "NBI Abstraction Layer" that leverages the benefits of USP without necessarily impacting your existing northbound integrations
- ☒ You have KPIs to measure performance, stability, and impact vs. TR-069
- ☒ If required, you're prepared to operate dual stack (CWMP + USP) during transition
- ☒ Firmware and service teams are aligned on update cadence and rollout gates



USP Readiness Checklist

Training and Ecosystem Readiness



- ☒ Technical teams are trained on USP principles and Motive HDM integration
- ☒ Partners and CPE vendors are aligned on certification status and implementation plans
- ☒ Business owners understand new service potential (e.g., monetizable in-home apps)



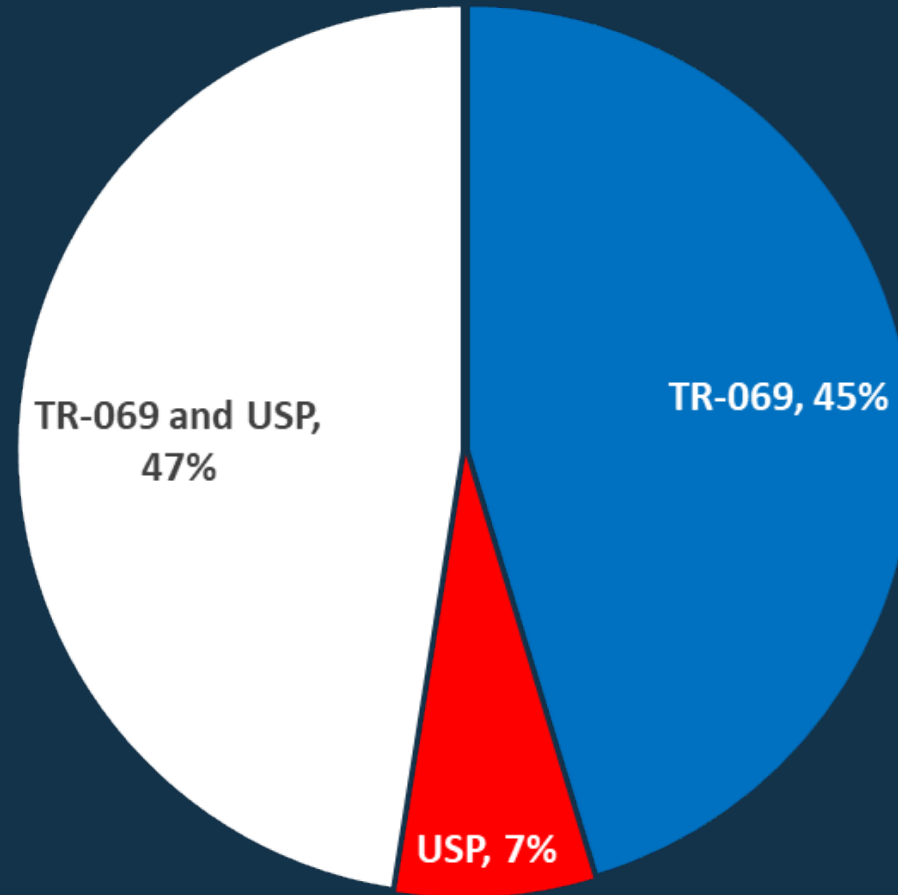
Looking through the lens of testing

- QA Cafe produces CDRouter, the official test platform for both TR-069 and USP
- Deeply involved in the creation and maintenance of both protocols since 2006





CDRouter Customers Testing Device Management



Testing Best Practices

01 Use Certified Devices

BBF.369 Certification ensures products adhere to the standard and will be interoperable with your management systems.

02 Test *Your* Data Model

Even when using the started TR-181 data model objects, every device is different. Make sure you validate every aspect of the products you will deploy.

03 Make it Strategic

Making USP (and TR-069) testing part of your development and CI/CD cycles, and validate vendor results with your own testing.



Certification

Ensure your devices and platform are fully compliant with USP standards by participating in the Broadband Forum's official certification program:



► **Get TR-369
Certified!**

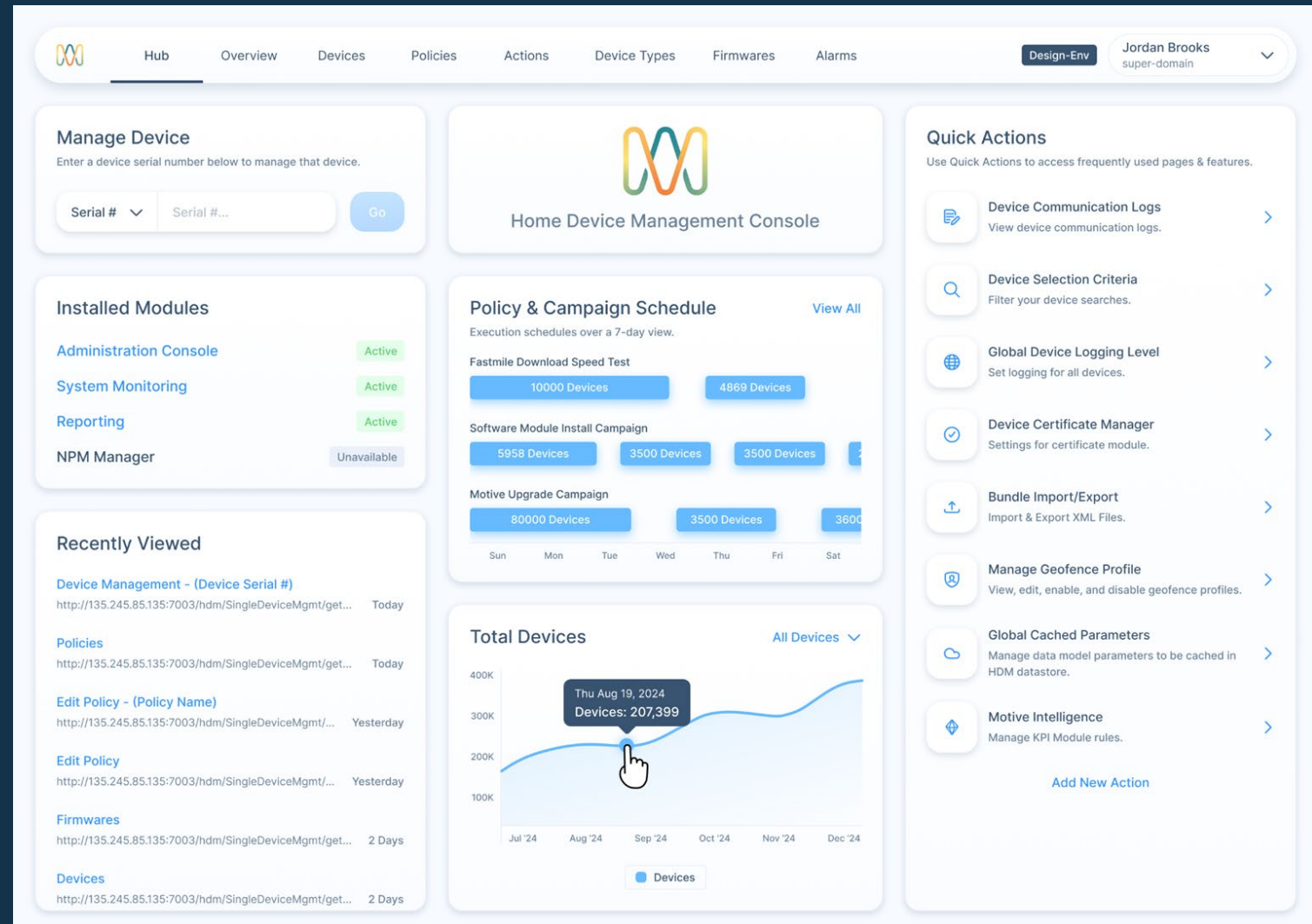


Managing USP Agents with Home Device Manager (HDM)




HDM USP Compatibility

- HDM first introduced USP support in R20.1
- Minimum recommended version: **HDM 23.0.4**
- All 3 MTPs are supported: MQTT, STOMP and WebSocket
- Single HDM can manage **Dual Stack**, **USP** and **TR-069** devices simultaneously
- HDM comes with two controllers for USP:
Device Management Controller and **Data Collection Controller**





Single Device Management



HubOverviewDevicesPoliciesActionsDevice TypesFirmwareAlarms

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super-domain

Manage Device: 485D3512522D

InformationDataService TagsUser TagsDynamic VariablesCustom AttributesAlarmsObject Label Mappings

General

Device Type
HDM_USP_DT_GC

Mac Address
00:d0:95:d3:b1:f6

Activation Status
Activated

Last Device Time
06/17/2025 10:04

Serial Number
485D3512522D

Subscriber Reference Id
john@bellaliant.ca

Last Activation Time
06/17/2025 08:02

Endpoint ID
ops::AA00BB-HDM_GenericTR181_ProductClass-
dual-1

Originating IP Address
10.99.36.85

First Contact Time
06/17/2025 07:52

Device Class
Regular Device

Online
Yes

Ip Address
135.245.85.135

Last Contact Time
06/17/2025 10:04

Software Version
1.2.3.4

Locking

Status
Unlocked

Locked By
--

Locked Time
--

Device History

End Time	Policy	Function	Status	Sub Status
06/17/2025 12:09	--	Provision CPE for Tr369	Success	Not Available
06/17/2025 12:02	--	Provision CPE for Tr369	Failure	Not Available
06/17/2025 12:01	--	Activation Function For	Success	Not Available
06/17/2025 11:59	--	Provision CPE for Tr369	Failure	Not Available
06/17/2025 11:57	--	Provision CPE for Tr369	Failure	Not Available
06/17/2025 11:52	--	Activation Function For	Success	Not Available

Queued Functions

QueueQueue FunctionsQueue Action

Function

Select a function...

Usp Get Supported Dm


Usp Get Supported Protocol

Usp Operate

Usp Set





Communication Logs

HubOverviewDevicesPoliciesActionsDevice TypesFirmwareAlarms

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View Log

Actions...


```
<06/17/2025 19:05:58> <Debug> <AP-1> <00ABEE> <HDMPC> <hdm_7014> <Caller-none> <[ACTIVE] ExecuteThread: '36' for queue: 'weblogic.kernel.Default (self-tuning)'\> <Usp request message transformed>

version: "1.2"
to_id: "ops::00ABEE-HDMPC-AP-1"
from_id: "self:hdmpt:controller"
header {
  msg_id: "6-1750187158492:661034"
  msg_type: OPERATE
}
body {
  request {
    operate {
      command: "Device.DeviceInfo.FirmwareImage.[Version=="1.0"].Download()"
      command_key: "661034"
      input_args {
        key: "AutoActivate"
        value: "true"
      }
      input_args {
        key: "FileSize"
        value: "23463"
      }
      input_args {
      }
      input_args {
        key: "URL"
        value: "http://cdn.bell.ca:1221/fw_20_20250623.tgz"
      }
      input_args {
        key: "Username"
        value: "username"
      }
    }
  }
}
}
```

```
<04/17/2025 9:29:42> <Debug> <AP-1> <00ABEE> <HDMPC> <hdm_7004> <Caller-none> <usp-incoming-processor-pool-3> <Usp response message transformed>
```




Data Collection from USP Devices

 Hub Overview Devices Policies **Actions** Device Types Firmware Alarms Kyle Puno
super-domain

New Action

Action Name

Bulk Data Profile

Description

Bulk Data Profile

Class

Bulk Data Class

Protocol

USP

Select Function

Configure Bulk Data Profiles

Action Parameters - Configure Bulk Data Profiles

Bulk Data Profiles*

```
{
  {
    "name": "DailyProfile",
    "encodingType": "JSON",
    "reportingInterval": 120,
    "parameters": [
      {
        "name": "NumberOfRetainedFailedReports",
        "value": "1"
      }
    ],
    "parameterObjects": [
      {
        "name": "DeviceInfo",
        "reference": "Device.DeviceInfo."
      },
      {
        "name": "MQTT",
        "reference": "Device.MQTT.Client.[Status==\\Connected\\].\"
      },
      {
        "name": "AllIPInterfaceType",
        "reference": "Device.IP.Interface.*.Type"
      }
    ]
  }
}
```

☒ Show Confirm Dialog

Cancel Create Action



USP Migration Strategies

Strategy:	Description:	Best for:	Highlights:
USP Native	Introduce new devices to the fleet and manage them solely with USP	Greenfield	<ul style="list-style-type: none">• No migration effort• Simple• Optimized for USP from the start
Conversion	Convert existing TR-069 devices to USP through a Firmware Upgrade	Installed base upgrade	<ul style="list-style-type: none">• Extends life of existing devices however 1) depends on the device capacity 2) requires substantial device QA
Dual Stack	Manage devices both with TR-069 and USP by running both clients on the device	Cautious transition	<ul style="list-style-type: none">• More complex, device must manage dual sessions when needed.• Fall back opportunity between two protocols



Incentive to Upgrade & Migrate to USP

Upgrade now, we've built a fast-track program to get you onboard & ahead of the rush!

- HDM22 is EOL
- We'll be following up after the session
- Book a demo call to get a tour of the new features and UI
- Discuss the promotional pricing!



Q&A