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| CHANGE REQUEST | |
| Meeting ID:\* | TST#30 |
| Source:\* | Maciej Goluch, ORANGE, [maciej.goluch@orange.com](mailto:maciej.goluch@orange.com),  Pawel Srzemecki, ORANGE |
| Date:\* | 2017-07-13 |
| Reason for Change/s:\* | Add essential content of the Procedures and call flows |
| CR against: Release\* | Rel-3 |
| CR against: WI\* | Active <WI-0054>  MNT maintenance / < Work Item number(optional)>  Is this a mirror CR? Yes  No  mirror CR number: (Note to Rapporteur - use latest agreed revision)  STE Small Technical Enhancements / < Work Item number (optional)>  Only ONE of the above shall be ticked |
| CR against: TS/TR\* | TR-0039 ‘Developer guide: Interworking Proxy using SDT’ |
| Clauses \* | 8 |
| Type of change: \* | Editorial change  Bug Fix or Correction  Change to existing feature or functionality  New feature or functionality  Only ONE of the above shall be ticked |
| Impacted other TS/TR(s) |  |
| Post Freeze checking:\* | This CR contains only essential changes and corrections? YES  NO  This CR may break backwards compatibility with the last approved version of the TS? YES  NO |
| Template Version: January 2017 (Do not modify) | |

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## Introduction

This document proposes additional content to the developer’s guideline TR-0039 on how to implement SDT and IPE via a simple example. The main changes are proposed for section 8 “Procedures and call flows”.

### -----------------------Start of change 1 -------------------------------------------

# 8 Procedures and call flows

## 8.1 Introduction

The deployment of the oneM2M standard in the present use case requires procedures that are classified as follows:

* **Registration:** AE registration with CSE: IPE-AE with MN-CSE, ADN-AE with IN-CSE.
* **Resources creation:** a set of <*flexContainer*> resources creation to represent SDT Device in a resource tree.
* **Discovery of resources with filter criteria:** discovery of resources with given containerDefinition attribute filtered with filter criteria to receive associated URI.
* **Discovery of children resources:** discovery of a resource tree associated with particular SDT Device to get access to particular ModuleClass, DataPoint, Action.
* **Change resource:** changing a DataPoint value or triggering an Action throughsendingUPDATE request.

In this developer guide there is an assumption that MN-CSE is registered with IN-CSE. More assumptions are listed in 9.2 clause.

## 8.2 Call Flows from perspective of device adapter developer

### 8.2.1 IPE-AE registration with MN-CSE

The procedure to register device adapter (IPE-AE) with gateway (MN-CSE) is as follows:

* Device adapter (IPE-AE) sends register request to Gateway (MN-CSE)
* Gateway (MN-CSE) responds with status of the registration and Content-Location for the registered entity



Figure 8.2.1-1: AE registration with CSE request

### 8.2.2 SDT Device resource tree creation in MN-CSE

The procedure to create resource tree for particular SDT Device (deviceLight in this use case) is as follows:

* Device adapter (IPE-AE) sends a CREATE request to gateway (MN-CSE) to create <*flexContainer*> for SDT Device.
* Gateway (MN-CSE) responds with URI of the new <*flexContainer*> for SDT Device.
* Device adapter (IPE-AE) sends a CREATE reqest to gateway (MN-CSE) to create a <*flexContainer*> for a single Module with associated customAttributes (DataPoints). Please note that there is sended one such request per each Module.
* Gateway (MN-CSE) responds with URI for created Module.
* Device adapter (IPE-AE) sends a CREATE request to gateway (MN-CSE) to create <*flexContainer*> for a single Action. The <*flexContainer*> which represents Action is set as a child of <*flexContainer*> which represents Module.
* Gateway (MN-CSE) responds with URI for created Action.



Figure 8.2.2-1: Creation of resource tree for SDT Device

## 8.3 Call flows from perspective of utility application developer

### 8.3.1 Application Entity registration in IN/MN-CSE

The procedure to register utility application (ADN-AE-1) with server (IN-CSE) is as follows:

* Utility application (AND-AE-1) sends register request to gateway (IN-CSE)
* Server (IN-CSE) responds with status of the registration and Content-Location for the registered entity



Figure 8.3.1-1: AE registration with CSE request

### 8.3.2 Discovery Requests

The procedure to discover SDT Device is as follows:

* Utility application (AND-AE-1) sends a RETRIEVE request to server (IN-CSE) including filter criteria conditions, especially it could be a *containerDefinition* attribute   
  (e.g. org.onem2m.home.moduleclass.binaryswitch)
* Server (IN-CSE) responds with list of URIs of the discovered resources, if any (especially URI for deviceLight which represents a bulb).



Figure 8.3.2-1: Discovery of SDT Device with filter criteria

### 8.3.3 Control & monitor devices

### 8.3.3.1 Getting URLs for resources

The procedure to retrieve needed URIs for Modules which are associated with particular Device is as follows:

* Utility application (ADN-AE-1) sends a request to server (IN-CSE) with URI of the Device.
* Server (IN-CSE) responds with a list of the Modules URIs.



**Figure 8.3.3.1-1: Discovery of Modules related to SDT Device**

### 8.3.3.2 DataPoint value changing

The procedure to change DataPoint value is as follows:

* Utility application (AND-AE-1) sends an UPDATE request to server (IN-CSE) with <*flexContainer*> which contains the new value of the DataPoint.
* Server (IN-CSE) responds with status of DataPoint UPDATE operation



**Figure 8.3.3.2-1: Change value of a DataPoint**

### 8.3.3.3 Action triggering

The procedure to trigger an Action is as follows:

* Utility application (AND-AE-1) sends an UPDATE request to server (IN-CSE) with empty <*flexContainer*>.
* Server (IN-CSE) responds with status of UPDATE operation



**Figure 8.3.3.3-1: Action triggering procedure**

### -----------------------End of change 1---------------------------------------------