**3GPP TSG-SA5 Meeting #140-e *S5-216401***

**e-meeting, 15 - 24 November 2021**

**Source: Ericsson**

**Title: DP on YANG solution set for Inventory**

**Document for: Approval, Discussion**

**Agenda Item: 6.4.22**

# 1 Decision/action requested

***Approval***

# 2 References

[1] 3GPP TS 28.632 Inventory Management (IM) Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)

[2] 3GPP TS 28.633 Inventory Management (IM) Network Resource Model (NRM) Integration Reference Point (IRP); Solution Set (SS) definitions

[3] 3GPP TS 32.156 Model repertoire

# 3 Rationale

**Inventory management is needed for 5G SBMA systems.** This need will increase with the introduction of CICD which may resuot in more rquent SW changes.

**SBMA systems need YANG and YAML** solution sets.

As we will have **non-standalone systems supporting** 5G and previous radio networks on the same system, it is **important** that such **4+5G** systems have a **common inventory solution**: the inventory NRM should be the similar or the same. While the interfaces for accessing NRM data have evolved for 5G (Netconf, REST) the information model (NRM) is based on the same principles, which allows reuse of the current inventory NRM.

As the goal is to **keep differences** between the 4G and 5G NRM to **none or to a minimum** it is logical to keep the specification of the NRM in a **single document** (as opposed to creating a new specification for 5G SBMA). Inventory data does not evolve as fast as radio management so NRM commonality is possible.

Inventory NRM contained **two alternatives**. Some vendors required only a HW inventory solution which is defined in Alt.1. Other vendors required a broader inventory solution including HW, SW, Licensing which is defined in Alt.2. These **two opinions "HW only Inventory" and "Broader Inventory" are maintained today** as well, so **both alternatives should be mapped** to SBMA.

We may re-evaluate the earlier debates about

* "HW only Inventory" and "Broader Inventory"
* Inventory overlaps with SW, HW, License management

however, these aspects of management have not changed between 4G and 5G. The same parties will probably still have the same differing opinions.

In Ericsson's opinion a broader inventory (HW, SW, Licensing) is needed. While there is some overlap between Inventory and HW, SW, License management, it is limited, especially if not just the data, but the use-cases are also considered. Some of the overlap is due to non-3GPP interfaces like SW management. The agreed work item (documented in S5-215402) states that "Software, hardware, node and licence inventory are missing in 5G", so they should be added.

Concern was raised about how to handle SupportIOCs defined in the inventory NRM with SBMA and CRUD operations.

* SupportIOCs may have been intended for non-CRUD interfaces, however that does not mean that the same class definitions are not usable for a CRUD. (32.156 Annex F is ambiguous about using CRUD for SupportIOCs.)
* The current text indicates that Alt.2 was intended for usage with FT IRP, but that does not mean that it is not usable with CRUD.
* Even if the original concept did not consider CRUD interfaces, the concept can be enhanced as no specific problems have been found for re-using the current classes with CRUD.
* The existing XML solution set does not differentiate between normal and support IOCs. No reason is seen for YANG or YAML to behave differently. E.g., for YANG both Netconf based data transfer and file-based data is standardized in IETF.

There is a wish to include Inventory in release 17. That is possible with mapping the current NRM as indicated by the NSA\_SBMA work item. However, if we re-interpret the work item to include a re-design of inventory then it will probably be delayed to release 18 or later.

# 4 Detailed proposal

28.632 should be updated to indicate that it is usable for SBMA based systems too (not just IRP based systems); that both FT IRP and CRUD based operations are allowed. The 4 SupportIOCs should be redefined as normal IOCs. The relevant inheritance diagram towards Top should be added (This will not impact the current XML solution set).

28.633 should be updated with a new Annex to include the YANG solution set. It is assumed that later a similar YAML solution will also be added.