YANG Instance Data File Format
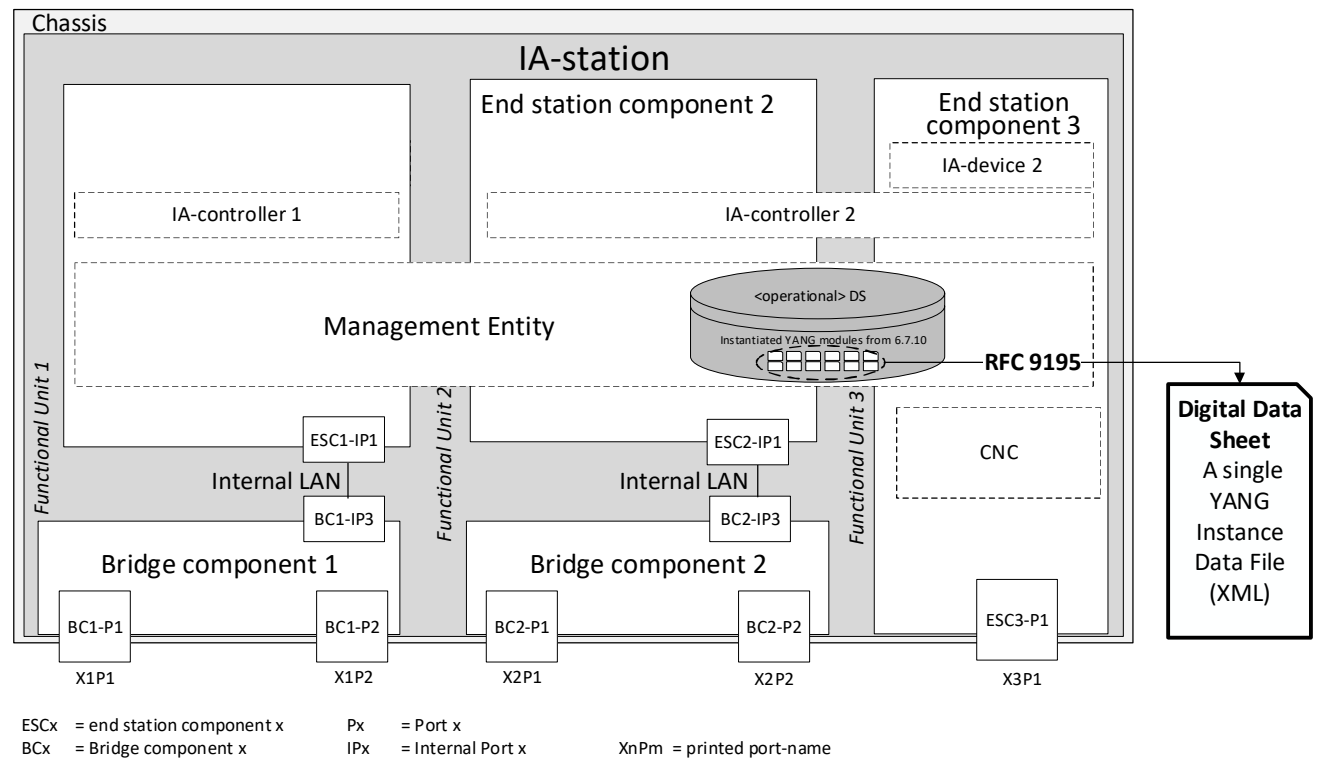# RFC 9195 / RFC 8525

Question regarding example of an instance file

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Overview:
IEC/IEEE 60802 Digital Station Description

- IEC/IEEE 60802 conform stations (IA stations) must be able to provide their digital station description i.e. digital data sheets "offline" i.e. as a single file.

- Digital station description of an IA station is a collection of instantiated data nodes of all YANG modules that are present in the local database of the IA-Station.

- The data sheet must contain a single instance data set and no additional data.

- The identity of the datastore with which the instance data set is associated must be reported.

- The format of the instance data set is defined by the "ietf-yang-instance-data" YANG module - RFC 9195.

- The file format is based on the XML encoding.

ESCx = end station component x   Px = Port x
BCx = Bridge component x   IPx = Internal Port x   XnPm = printed port-name

Specifying Content Schema using the Inline Method

RFC 9195 States:

2.1.1. Inline Method

The "inline-yang-library" anydata data node carries instance data (conforming to "ietf-yang-library@2019-01-04") [RFC8525] that specifies the content-defining YANG modules, including revision, supported features, deviations, and any additional relevant data. An example of the inline method is provided in Section 2.2.1.

RFC 8525 is YANG library

Example for the Inline Method uses deprecated modules-state container

Example in RFC 9195:

```
========== NOTE: '\' line wrapping per RFC 8792 ===========
<?xml version="1.0" encoding="UTF-8"?>
<instance-data-set xmlns=\
    "urn:ietf:params:xml:ns:yang:ietf-yang-instance-data">
  <name>acme-router-modules</name>
  <content-schema>
    <inline-yang-library>
      <modules-state \
      xmlns="urn:ietf:params:xml:ns:yang:ietf-yang-library">
        <module>
          <name>ietf-yang-library</name>
          <revision>2019-01-04</revision>
        </module>
        <module>
          <name>ietf-netconf-monitoring</name>
          <revision>2010-10-04</revision>
        </module>
      </modules-state>
    </inline-yang-library>
  </content-schema>
  <revision>
```

„modules-state" is deprecated in RFC 8525 because it does not support NMDA!

```
/*
 * Legacy operational state data nodes
 */

container modules-state {
  config false;
  status deprecated;
  description
    "Contains YANG module monitoring information.";
  leaf module-set-id {
    type string;
    mandatory true;
    status deprecated;
    description
      "Contains a server-specific identifier representing
       the current set of modules and submodules.  The
       server MUST change the value of this leaf if the
       information represented by the 'module' list instances
       has changed.";
  }
  uses module-list {
    status deprecated;
  }
}
```

Example for the Inline Method specifies "features" in "content-data" container

```
<content-data>
  <modules-state \
      xmlns="urn:ietf:params:xml:ns:yang:ietf-yang-library">
    <module>
      <name>ietf-yang-library</name>
      <revision>2019-01-04</revision>
      <namespace>\
        urn:ietf:params:xml:ns:yang:ietf-yang-library\
      </namespace>
      <conformance-type>implement</conformance-type>
    </module>
    <module>
      <name>ietf-system</name>
      <revision>2014-08-06</revision>
      <namespace>urn:ietf:params:xml:ns:yang:ietf-system</namespace>
      <feature>sys:authentication</feature>
      <feature>sys:local-users</feature>
      <deviation>
        <name>acme-system-ext</name>
        <revision>2018-08-06</revision>
      </deviation>
      <conformance-type>implement</conformance-type>
    </module>
    <module>
      <name>ietf-netconf-monitoring</name>
      <revision>2010-10-04</revision>
      <namespace>\
```

From my understanding, "features" should be declared in the "content-schema" container instead of in the "content-data" container.

ietf-yang-library tree view (RFC 8525)

```
module: ietf-yang-library
  +--ro yang-library
     +--ro module-set* [name]
     |  +--ro name               string
     |  +--ro module* [name]
     |  |  +--ro name            yang:yang-identifier
     |  |  +--ro revision?       revision-identifier
     |  |  +--ro namespace       inet:uri
     |  |  +--ro location*       inet:uri
     |  |  +--ro submodule* [name]
     |  |  |  +--ro name         yang:yang-identifier
     |  |  |  +--ro revision?    revision-identifier
     |  |  |  +--ro location*    inet:uri
     |  |  +--ro feature*        yang:yang-identifier
     |  |  +--ro deviation*      -> ../../module/name
     |  +--ro import-only-module* [name revision]
     |     +--ro name            yang:yang-identifier
     |     +--ro revision        union
     |     +--ro namespace       inet:uri
     |     +--ro location*       inet:uri
     |     +--ro submodule* [name]
     |        +--ro name         yang:yang-identifier
     |        +--ro revision?    revision-identifier
     |        +--ro location*    inet:uri
     +--ro schema* [name]
     |  +--ro name               string
     |  +--ro module-set*        -> ../../module-set/name
     +--ro datastore* [name]
     |  +--ro name               ds:datastore-ref
     |  +--ro schema             -> ../../schema/name
     +--ro content-id           string
```

"features" are defined in the module-set list in RFC 8525

ietf-yang-instance-data tree view (RFC 9195)

```
module: ietf-yang-instance-data
  structure instance-data-set:
    +--name?                    string
    +--format-version?          string
    +--includes-defaults?    enumeration
    +--content-schema
    |   +--(content-schema-spec)?
    |      +--:(simplified-inline)
    |      |   +--module*                 module-with-revision-date
    |      +--:(inline)
    |      |   +--inline-yang-library      <anydata>
    |      +--:(uri)
    |          +--same-schema-as-file?    inet:uri
    +--description*             string
    +--contact?                 string
    +--organization?            string
    +--datastore?               ds:datastore-ref
    +--revision* [date]
    |   +--date                 string
    |   +--description?    string
    +--timestamp?               yang:date-and-time
    +--content-data?            <anydata>
```

content-schema contains the "inline-yang-library" leaf which has the "ietf-yang-library" format (RFC 8525)

Question

From my understanding the instance data file should look like the following to slides.

Is that correct?

Example "content-schema"

```xml
<?xml version="1.0" encoding="UTF-8"?>
<!-- this is an example of a instance-data-set for an 608020 IA-Station -->
<instance-data-set xmlns="urn:ietf:params:xml:ns:yang:ietf-yang-instance-data">
    <name>60802-ia-station-example</name>
    <content-schema>
      <inline-yang-library>
        <module-set xmlns="urn:ietf:params:xml:ns:yang:ietf-yang-library">
          <name>ia-station-example-module-set</name>
          <module>
            <name>ietf-system</name>
            <namespace>urn:ietf:params:xml:ns:yang:ietf-system</namespace>
          </module>
          <module>
            <name>ietf-hardware</name>
            <namespace>urn:ietf:params:xml:ns:yang:ietf-hardware</namespace>
          </module>
          <module>
            <name>ietf-interface</name>
            <namespace>urn:ietf:params:xml:ns:yang:ietf-interface</namespace>
          </module>
          <module>
            <name>ietf-dot1q-bridge</name>
            <namespace>urn:ietf:params:xml:ns:yang:ietf-dot1q-bridge</namespace>
            <feature>ingress-filtering</feature>
            <feature>port-and-protocol-based-vlan</feature>
            <feature>flow-filtering</feature>
          </module>
```

Example "content-data"

```xml
<content-data>
  <ietf-system xmlns="urn:ietf:params:xml:ns:yang:ietf-system">
    <system>
      <contact>contact</contact>
      <domain-name>domain-name</domain-name>
      <location>location</location>
    </system>
  </ietf-system>
  <ietf-hardware xmlns="urn:ietf:params:xml:ns:yang:ietf-hardware">
    <hardware>
      <component> <!-- list -->
        <name>name</name>
        <description>description</description>
        <hardware-ref>hardware-ref</hardware-ref>
        <firmware-ref>firmware-ref</firmware-ref>
        <software-ref>software-ref</software-ref>
        <serial-num>serial-num</serial-num>
        <mfg-name>mfg-name</mfg-name>
        <model-name>model-name</model-name>
        <alias>alias</alias>
        <asset-id>asset-id</asset-id>
      </component>
    </hardware>
  </ietf-hardware>
  <ietf-interface xmlns="urn:ietf:params:xml:ns:yang:ietf-interface">
    <interfaces>
      <interface> <!-- list -->
        <name>name</name>
        <description>description</description>
```