

Appendix DVM-Exchange v2.5 Devices

Version 2.5.6

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1 Introduction

This appendix documents the standardized devices that can be exchanged using DVM-Exchange 2.5.

For every device configuration messages and status messages can be exchanged. This appendix describes how to use the standard fields and the 'parameter' fields in these messages in DVM-Exchange 2.5.

2 History

Datum	DVM-Exchange versie	Bijlage-versie	Auteur	Opmerkingen
2013-06-21	2.5	0.1	Erwin Gribnau	Initial version
2013-07-17	2.5	0.2	Erwin Gribnau	Added details to devices
2013-07-19	2.5	0.3	Erwin Gribnau	Changed layout
2013-09-16	2.5	0.4	Erwin Gribnau	Aligned content with IDD version 2.5.3. Included Rolf Krikke's review comments
2013-10-09	2.5	0.5	Erwin Gribnau	Translated to English
2015-02-03	2.5	2.5.6	Rob Olsthoorn	Updated version number to reflect relation with IDD 2.5.x and XSD 2.5. Changed version description. Note: technically this document is the same as the released appendix version 0.5. Fixed examples and match with protocol version 2.5.

2.1 Version numbering scheme

DVM-Exchange version

This version number refers to the IDD DVM-Exchange version number.

Appendix DVM-Exchange 2.5 Devices version 2.5.6

Appendix version

The DVM-Exchange protocol version and schema use a <major>.<minor> version (XSD) and the interface description (IDD) and appendices will use <major>.<minor>.<update> version. The version always increases. Thus when this appendix describes services for DVM-Exchange protocol version 2.5, its version will start at 2.5.0. Hence 2.5.1 will be the next minor revision of the appendix for protocol version 2.5.

3 Supporting devices in a system

Not all systems need to support all devices in this appendix when providing configuration and status updates. For instance, a system that controls variable message signs (DRIP in Dutch) has no knowledge about traffic lights and can therefore not provide configuration and status updates for traffic lights.

The table in this chapter can be used to indicate which devices need to be supported by a system. Note that this is for **providing** configuration and status updates. The way DVM-Exchange 2.5 is designed, every system that receives these configuration and status updates has the ability to receive all of them.

Device	Dutch term	ObjectType in XML	Additions to standard fields?	Support providing configuration and status updates?
Traffic light controller	VRI	TRAFFIC_LIGHT_CONTROLLER	Yes	<input type="checkbox"/>
Ramp metering controller	TDI	RAMP_METERING_CONTROLLER	Yes	<input type="checkbox"/>
Variable message sign	DRIP	VARIABLE_MESSAGE_SIGN	Yes	<input type="checkbox"/>
Parking	Parkeervoorziening	PARKING_FACILITY	Yes	<input type="checkbox"/>
Camera	Videocamera	VIDEO_CAMERA	No	<input type="checkbox"/>
Rotary panel	Rotatiepaneel of kantelwals	ROTARY_PANEL	Yes	<input type="checkbox"/>

4 General

Some parameters fields can be added to all types of services. These are detailed in this chapter.

4.1 DeviceConfiguration

None.

4.2 DeviceStatusUpdate

4.2.1 Parameter fields

Field	Type	Value	Usage
availabilityExplanation	StringType	Explanation for the current availabilityState ¹	Optional ²
stateSourceDescription	StringType	A description how the current deviceState was obtained ³	Optional
stateExplanation	StringType	Explanation for the current serviceState ⁴	Optional

4.2.2 Example

```
<parameter name="availabilityExplanation" xsi:type="StringType" value="..." />  
<parameter name="stateSourceDescription" xsi:type="StringType" value="..." />  
<parameter name="stateExplanation" xsi:type="StringType" value="..." />
```

¹ IRS_DVM.410: Elk status/toestand bericht bevat altijd een verklaring van de actuele status

² The IRS document states that every statusUpdate should always contain an explanation. When using strings to transport these explanations, an empty string ("") is also a valid value. Therefore this design makes them optional. Making them required has no added value.

³ IRS_DVM.411: Elk status/toestand bericht bevat altijd een beschrijving van de wijze waarop de toestand van het object is verkregen

⁴ IRS_DVM.412: Elk status/toestand bericht bevat altijd een verklaring van de actuele toestand

5 VARIABLE_MESSAGE_SIGN and ROTARY_PANEL

5.1 DeviceConfiguration

5.1.1 Standard fields

Field	Type	Value	Usage
objectType	ObjectType	VARIABLE_MESSAGE_SIGN or ROTARY_PANEL	Required

5.1.2 Parameter fields

None.

5.1.3 Example

```
<body xsi:type="ConfigurationUpdate">
  <updated xsi:type="DeviceConfiguration">
    <objectRef objectId="bd1222" objectType="VARIABLE_MESSAGE_SIGN" />
    <timestamp>2001-12-31T12:00:00+01:00</timestamp>
    <locationForDisplay>
      <latitude>52.03518</latitude>
      <longitude>5.13836</longitude>
      <direction>10</direction>
    </locationForDisplay>
    <name>bd1234</name>
    <owner>RWS</owner>
  </updated>
</body>
```

5.2 DeviceStatusUpdate

5.2.1 Standard fields

Field	Type	Value	Usage
objectType	ObjectType	VARIABLE_MESSAGE_SIGN or ROTARY_PANEL	Required

5.2.2 Parameter fields

Field	Type	Value	Usage
currentImage	ImageType	Current image	Optional

5.2.3 Example

```
<body xsi:type="StatusUpdate">
  <update xsi:type="DeviceStatusUpdate">
    <objectRef objectId="12" objectType="VARIABLE_MESSAGE_SIGN" />
    <timestamp>2001-12-31T12:00:00+01:00</timestamp>
    <availability>AVAILABLE</availability>
    <deviceState>ACTIVE</deviceState>
    <parameter name="currentImage" xsi:type="ImageType">
      <value>
        <mediaType>image/png</mediaType>
        <height>8</height>
        <width>8</width>
        <data>
          iVBORw0KGgoAAAANSUhEUgAAAAGAAAICAMAAADz0U65AAAAAXNSR0IArs4c6QAAAA1wSF1zAADd
          dQAA3XUBrIfDgwAAAA0SU1FB9kLCAE2CbqDvV8AAAAzUExURf////////////////////////////////
          //7+/P///9J2ANV+ANYOAOGZA022A023APPGAPPIACPFKi0AAAAJdFJOUzc4u8THyMrLy5dbzYMA
          AABYkthRACIBR1IAAAANK1EQVQIHQBwQ2AQAgAwQU297D/WjUxCM5IlvQ3pgNre5iAPAIBIBAA
```

```
Qj0Ivs4Vd7bb1RG9PwmsECmJ35FqAAAAE1FTkSuQmCC
  </data>
    </value>
  </parameter>
</update>
</body>
```

6 TRAFFIC_LIGHT_CONTROLLER

6.1 DeviceConfiguration

6.1.1 Standard fields

Field	Type	Value	Usage
objectType	ObjectType	TRAFFIC_LIGHT_CONTROLLER	Required

6.1.2 Parameter fields

Geen.

6.1.3 Example

```
<body xsi:type="ConfigurationUpdate">
  <updated xsi:type="DeviceConfiguration">
    <objectRef objectId="12345" objectType="TRAFFIC_LIGHT_CONTROLLER" />
    <timestamp>2001-12-31T12:00:00+01:00</timestamp>
    <locationForDisplay>
      <latitude>52.10233</latitude>
      <longitude>5.14220</longitude>
      <direction>90</direction>
    </locationForDisplay>
    <name>x1234</name>
    <owner>Gemeente Utrecht</owner>
  </updated>
</body>
```

6.2 DeviceStatusUpdate

6.2.1 Standard fields

Field	Type	Value	Usage
objectType	ObjectType	TRAFFIC_LIGHT_CONTROLLER	Required

6.2.2 Parameter fields

Field	Type	Value	Usage
info	StringType	Extra information about the current state of the traffic light. For example the name of the running program.	Optional

6.2.3 Example

```
<body xsi:type="StatusUpdate">
  <update xsi:type="DeviceStatusUpdate">
    <objectRef objectId="12345" objectType="TRAFFIC_LIGHT_CONTROLLER" />
    <timestamp>2001-12-31T12:00:00+01:00</timestamp>
    <availability>AVAILABLE</availability>
    <deviceState>ACTIVE</deviceState>
    <parameter name="info" xsi:type="StringType" value="program 3" />
  </update>
</body>
```

7 RAMP_METERING_CONTROLLER

7.1 DeviceConfiguration

7.1.1 Standard fields

Field	Type	Value	Usage
objectType	ObjectType	RAMP_METERING_CONTROLLER	Required

7.1.2 Parameter fields

None.

7.1.3 Example

```
<body xsi:type="ConfigurationUpdate">
  <updated xsi:type="DeviceConfiguration">
    <objectRef objectId="12345" objectType="RAMP_METERING_CONTROLLER" />
    <timestamp>2001-12-31T12:00:00+01:00</timestamp>
    <locationForDisplay>
      <latitude>52.03089</latitude>
      <longitude>5.13609</longitude>
      <direction>123</direction>
    </locationForDisplay>
    <name>tdi123</name>
    <owner>RWS</owner>
  </updated>
</body>
```

7.2 DeviceStatusUpdate

7.2.1 Standard fields

Field	Type	Value	Usage
objectType	ObjectType	RAMP_METERING_CONTROLLER	Required
deviceState	DeviceState	ACTIVE = limiting traffic, INACTIVE = not limiting traffic	Required

7.2.2 Parameter fields

None.

7.2.3 Example

```
<body xsi:type="StatusUpdate">
  <update xsi:type="DeviceStatusUpdate">
    <objectRef objectId="12345" objectType="RAMP_METERING_CONTROLLER" />
    <timestamp>2001-12-31T12:00:00+01:00</timestamp>
    <availability>UNAVAILABLE</availability>
    <deviceState>ACTIVE</deviceState>
  </update>
</body>
```

8 PARKING_FACILITY

8.1 DeviceConfiguration

8.1.1 Standard fields

Field	Type	Value	Usage
objectType	ObjectType	PARKING_FACILITY	Required

8.1.2 Parameter fields

Geen

8.1.3 Example

```
<body xsi:type="ConfigurationUpdate">
  <updated xsi:type="DeviceConfiguration">
    <objectRef objectId="12345" objectType="PARKING_FACILITY" />
    <timestamp>2001-12-31T12:00:00+01:00</timestamp>
    <locationForDisplay>
      <latitude>52.08876</latitude>
      <longitude>5.11978</longitude>
      <direction>0</direction>
    </locationForDisplay>
    <name>Garage Springweg</name>
    <owner>Gemeente Utrecht</owner>
  </updated>
</body>
```

8.2 DeviceStatusUpdate

8.2.1 Standard fields

Field	Type	Value	Usage
objectType	ObjectType	PARKING_FACILITY	Required

8.2.2 Parameter fields

Field	Type	Value	Usage
parkingState	StringType	One of: "AVAILABLE", "FULL", "CLOSED"	Required
capacity	IntegerType	Capacity (>=0)	Optional
parkingSpaces	IntegerType	Available parking spaces (>=0)	Optional

8.2.3 Example

```
<body xsi:type="StatusUpdate">
  <update xsi:type="DeviceStatusUpdate">
    <objectRef objectId="12345" objectType="PARKING_FACILITY" />
    <timestamp>2001-12-31T12:00:00+01:00</timestamp>
    <availability>UNAVAILABLE</availability>
    <deviceState>ACTIVE</deviceState>
    <parameter name="parkingState" xsi:type="StringType" value="AVAILABLE"/>
    <parameter name="capacity" xsi:type="IntegerType" value="600"/>
    <parameter name="parkingSpaces" xsi:type="IntegerType" value="230"/>
  </update>
</body>
```