

DCC User Gateway Interface Design Specification

Annex - Service Request Definitions 17 – DUIS Shared Data Types

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17 DUIS Defined Data Types shared across Service Requests

This section defines those Data Types that are included in a number of requests and / or responses, for example sr:FutureDatedAbstractType (included in Future Dated Service Requests) or sr:Date (included in Service Requests where the date can contain wildcards).

Note that in many cases shared XML data types are defined in both the DUIS XML Schema, with the “sr” namespace, and the MMC XML Schema, with the “ra” namespace. In such cases the XML schema definitions are duplicated in DUIS XML and MMC XML apart from the namespace.

Within the DUGIDS document set only the types with the “sr” namespace are described in detail, and references to the “ra” namespace equivalent should be regarded as identical apart from the namespaces and the fact that “ra” namespace types have most attributes as optional.

17.1 Definitions

17.1.1 RequestIDType

It is included in the header of all requests and in all solicited responses.

17.1.1.1 Data Type Format

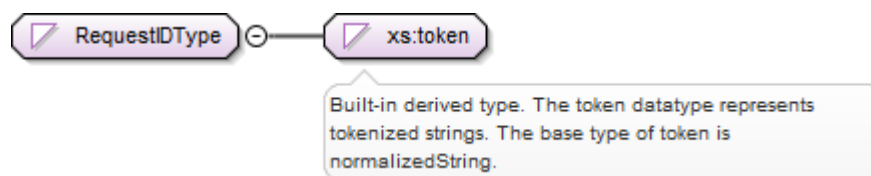


Figure 1 DUIS Data Type RequestIDType Structure

17.1.1.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
RequestIDType	<p>Concatenation of the following 3 components separated by “.”</p> <ul style="list-style-type: none"> 1 EUI-64 value (type sr:EUI – see section 17.1.3.2), formatted in 8 octets (an octet is two hex digits) with a “-” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive 1 EUI-64 value (type sr:EUI – see section 17.1.3.2), formatted in 8 octets (an octet is two hex digits) with a “-” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive 1 integer value ≥ 0 and $< 2^{64}$, e.g. 1234 <p>The regular expression to validate this value is defined in the DUIS schema.</p> <p>The validation allows an integer from 0 to 18,446,744,073,709,551,615</p>	<p>Restriction of xs:token (base type xs:normalisedString)</p> <p>Pattern as per DUIS Schema</p>	<p>request: Yes</p> <p>solicited response from DCC: Yes</p> <p>solicited response from Device: Yes</p> <p>unsolicited response (Device or DCC Alert): N/A</p>	None	N/A	Non-Sensitive

Table 1 DUIS Data Type RequestIDType Data Items

17.1.2 ResponseIDType

It is included in the header of all solicited responses from Devices, Device Alerts and DCC Alerts.

17.1.2.1 Data Type Format

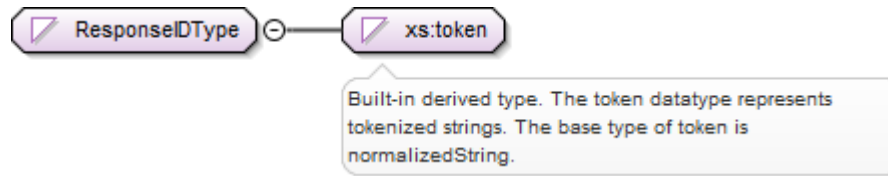


Figure 2 DUIS Data Type ResponseIDType Structure

17.1.2.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ResponseIDType	<p>Concatenation of the following 3 components separated by “.”</p> <ul style="list-style-type: none"> 1 EUI-64 value (type sr:EUI – see section 17.1.3.2), formatted in 8 octets (an octet is two hex digits) with a “.” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive 1 EUI-64 value (type sr:EUI – see section 17.1.3.2), formatted in 8 octets (an octet is two hex digits) with a “.” as a separator, for example “AA-22-33-44-55-66-77-88”. It is case insensitive 1 integer value ≥ 0 and $< 2^{64}$, e.g. 1234 (type xs:nonNegativeInteger) <p>The regular expression to validate this value is defined in the DUIS schema.</p> <p>The validation allows an integer from 0 to 18,446,744,073,709,551,615</p>	<p>Restriction of xs:token (base type xs:normalizedString)</p> <p>Pattern as per DUIS Schema</p>	<p>solicited response from DCC: N/A</p> <p>solicited response from Device: Yes</p> <p>unsolicited response (Device or DCC Alert): Yes</p>	None	N/A	Non-Sensitive

Table 2 DUIS Data Type ResponseIDType Data Items

17.1.3 EUI

It is used by all Device ID's definitions.

17.1.3.1 Data Type Format

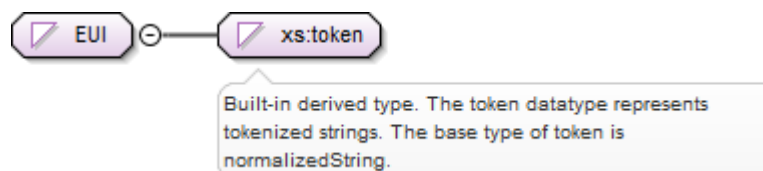


Figure 3 DUIS Data Type EUI Structure

17.1.3.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
EUI	1 EUI-64 value, formatted in 8 octets (an octet is two hex digits) with a "." as a separator, for example "AA-22-33-44-55-66-77-88". It is case insensitive	Restriction of xs:token (base type xs:normalizedString) (pattern = "[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}-[A-Fa-f0-9]{2}")	No	None	N/A	Non-Sensitive

Table 3 DUIS Data Type EUI Data Items

17.1.4 CommandVariant

It is included in the header of all requests.

17.1.4.1 Data Type Format

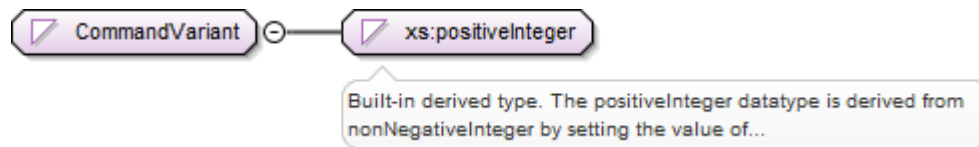


Figure 4 DUIS Data Type CommandVariant Structure

17.1.4.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
CommandVariant	Value to indicate to the DCC Data Systems if a request has to be <ul style="list-style-type: none"> transformed to a GBCS command or sent via the CSP network, returned to the DCC Service User to be locally applied (via a Hand Held Terminal) or both or executed by DCC Valid set: <ul style="list-style-type: none"> 1 2 3 4 5 6 7 8 9, DCC Data Systems internal use only, not to be used by Service Users. 	Restriction of xs:positiveInteger (Enumeration)	request: Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 4 DUIS Data Type CommandVariant Data Items

17.1.5 ServiceReference

It is included in the header of all requests and in the ResponseMessage of all solicited responses.

17.1.5.1 Data Type Format

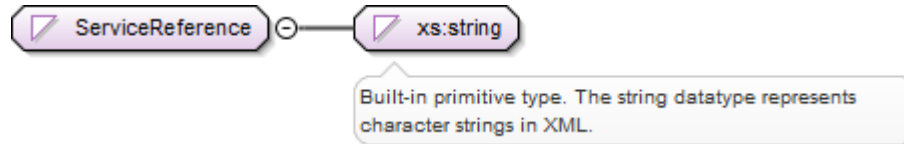


Figure 5 DUIS Data Type ServiceReference Structure

17.1.5.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ServiceReference	Identifier that signals the particular Service Request to DCC (and is driven from the DCC Service User's selection of Service Request) Valid set: <ul style="list-style-type: none">See Main Document Table 33 Service Reference column	Restriction of xs:string (Enumeration)	request: Yes Solicited response (DCC and Device): Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 5 DUIS Data Type ServiceReference Data Items

17.1.6 ServiceReferenceVariant

It is included in the header of all requests and in the ResponseMessage of all solicited responses.

17.1.6.1 Data Type Format

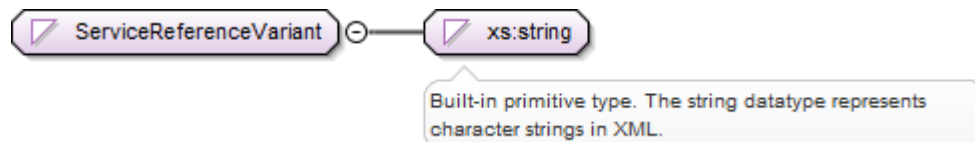


Figure 6 DUIS Data Type ServiceReferenceVariant Structure

17.1.6.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ServiceReferenceVariant	Identifier that signals the particular Service Request Variant to DCC (and is driven from the DCC Service User's selection of Service Request) Valid set: <ul style="list-style-type: none">See Main Document Table 33 Service Reference Variant column	Restriction of xs:string (Enumeration)	request: Yes Solicited response (DCC and Device): Yes Otherwise: N/A	None	N/A	Non-Sensitive

Table 6 DUIS Data Type ServiceReferenceVariant Data Items

17.1.7 ResponseCode

It is included in the header of all responses.

17.1.7.1 Data Type Format

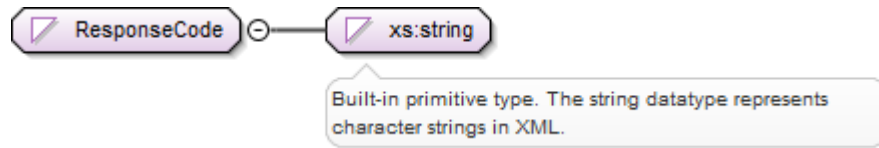


Figure 7 DUIS Data Type ResponseCode Structure

17.1.7.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ResponseCode	Code indicating the success or exceptions generated by the original request. These codes are listed in the Main Document (if generic), this document (if shared by several requests) or at a service request level where there is a specific response code for that request. Valid set: <ul style="list-style-type: none"> See section 17.1.22, Main Document section 12.3 and Annex 1 to Annex 16 validation sections. 	Restriction of xs:string (Enumeration)	Yes	None	N/A	Non-Sensitive

Table 7 DUIS Data Type ResponseCode Data Items

17.1.8 FutureDatedAbstractType

It is added to those Data Types used in Service Requests that can optionally be Future Dated.

17.1.8.1 Data Type Format



Figure 8 DUIS Data Type FutureDateAbstractType Structure

17.1.8.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000¹ 	xs:dateTime	No	None	UTC Date-Time	Non-Sensitive

Table 8 DUIS Data Type FutureDateAbstractType Data Items

¹ This date indicates that an existing Service Request of the same type for the same Device is to be cancelled. The time associated with this date should be 00:00:00.00Z, i.e. the ExecutionDateTime should be 3000-12-31T00:00:00.00Z

17.1.9 MandatoryFutureDatedAbstractType

It is added to those Data Types used in Service Requests that can only be Future Dated.

17.1.9.1 Data Type Format

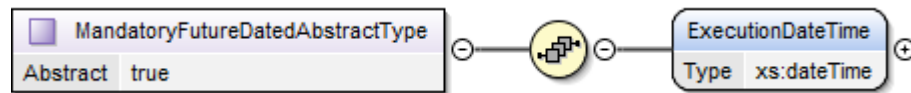


Figure 9 DUIS Data Type MandatoryFutureDateAbstractType Structure

17.1.9.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID Valid set: <ul style="list-style-type: none"> Date-time in the future that is either <= current date + 30 days or the date = 31/12/3000¹ 	xs:dateTime	Yes	None	UTC Date-Time	Non-Sensitive

Table 9 DUIS Data Type MandatoryFutureDateAbstractType Data Items

¹ This date indicates that an existing Service Request of the same type for the same Device is to be cancelled. The time associated with this date should be 00:00:00.00Z, i.e. the ExecutionDateTime should be 3000-12-31T00:00:00.00Z

17.1.10 Date

It supports the definition of date with and without wildcards. Where a date or date-time doesn't support wildcards the xs:date or xs:dateTime types are used instead.

For example in a calendar or schedule, it allows the definition of special dates, e.g. Christmas (only the Month and Day Of Month set to specified values of 12 and 25 respectively) or Sundays (only the Day Of Week set to a specified value of 7). It also supports the definition of dates without wildcards, e.g. 2014/09/30 (Year, Month and Day Of Month set to specified values of 2014, 09 and 30 respectively and Day Of Week set to the non-specified value).

The 'Date' Definition of Christmas would be:

```
<ExampleDateWithWildcardsChristmas>
  <Year>
    <NonSpecifiedYear/>
  </Year>
  <Month>
    <SpecifiedMonth>12</SpecifiedMonth>
  </Month>
  <DayOfMonth>
    <SpecifiedDayOfMonth>25</SpecifiedDayOfMonth>
  </DayOfMonth>
  <DayOfWeek>
    <NonSpecifiedDayOfWeek/>
  </DayOfWeek>
</ExampleDateWithWildcardsChristmas>
```

The 'Date' Definition of Sunday would be:

```
<ExampleDateWithWildcardsSunday>
  <Year>
    <NonSpecifiedYear/>
  </Year>
  <Month>
    <NonSpecifiedMonth/>
  </Month>
  <DayOfMonth>
    <NonSpecifiedDayOfMonth/>
  </DayOfMonth>
  <DayOfWeek>
    <SpecifiedDayOfWeek>7</SpecifiedDayOfWeek>
  </DayOfWeek>
</ExampleDateWithWildcardsSunday>
```

The 'Date' Definition of 2014/09/30 would be:

```
<ExampleDateNoWildcards>
  <Year>
    <SpecifiedYear>2014</SpecifiedYear>
  </Year>
  <Month>
    <SpecifiedMonth>09</SpecifiedMonth>
  </Month>
  <DayOfMonth>
    <SpecifiedDayOfMonth>30</SpecifiedDayOfMonth>
  </DayOfMonth>
  <DayOfWeek>
    <NonSpecifiedDayOfWeek/>
  </DayOfWeek>
</ExampleDateNoWildcards>
```

17.1.10.1 Data Type Format

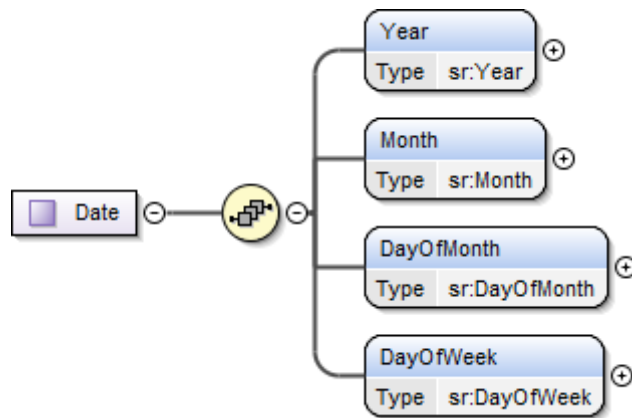


Figure 10 DUIS Data Type Date Structure

17.1.10.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
Year	Specified or non-specified year	sr:Year (see section 17.1.11.2)	Yes	None	N/A	Non-Sensitive
Month	Specified or non-specified month	sr:Month (see section 17.1.12.2)	Yes	None	N/A	Non-Sensitive
DayOfMonth	Specified day of month or last day of month or second last day of month or non-specified day of month	sr:DayOfMonth (see section 17.1.13.2)	Yes	None	N/A	Non-Sensitive

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
DayOfWeek	Specified or non-specified day of week	sr:DayOfWeek (see section 17.1.14.2)	Yes	None	N/A	Non-Sensitive

Table 10 DUIS Data Type Date Data Items

17.1.11 Year

It supports the definition of Year with wildcards.

17.1.11.1 Data Type Format

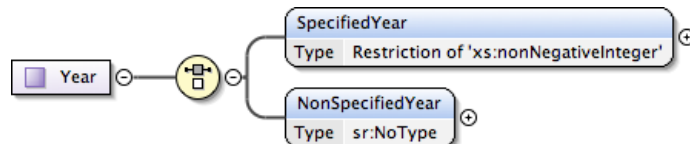


Figure 11 DUIS Data Type Year Structure

17.1.11.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedYear	Four digit year	Restriction of xs:nonNegativeInteger (minInclusive = 2014, totalDigits = 4)	No	None	N/A	Non-Sensitive
NonSpecifiedYear	Tag to indicate wildcard for year	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 11 DUIS Data Type Year Data Items

¹ Year is a choice of two elements, so one of them is mandatory

17.1.12 Month

It supports the definition of Month with wildcards.

17.1.12.1 Data Type Format

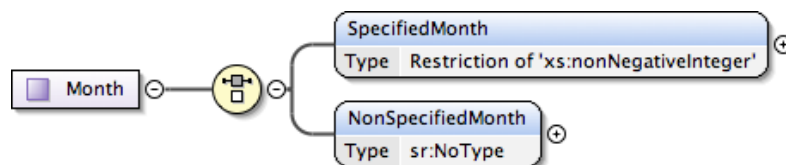


Figure 12 DUIS Data Type Month Structure

17.1.12.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
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Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedMonth	Two digit month	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 12, totalDigits = 2)	No	None	N/A	Non-Sensitive
NonSpecifiedMonth	Tag to indicate wildcard for month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 12 DUIS Data Type Month Data Items

¹ Month is a choice of two elements, so one of them is mandatory

17.1.13 DayOfMonth

It supports the definition of Day of Month with wildcards.

17.1.13.1 Data Type Format

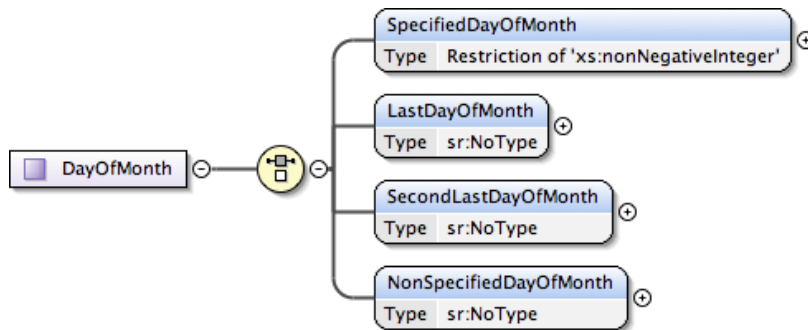


Figure 13 DUIS Data Type DayOfMonth Structure

17.1.13.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedDayOfMonth	Day of the month	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 31, totalDigits = 2)	No	None	N/A	Non-Sensitive
LastDayOfMonth	Tag to indicate last day of month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive
SecondLastDayOfMonth	Tag to indicate second last day of month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive
NonSpecifiedDayOfMonth	Tag to indicate wildcard for day of month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 13 DUIS Data Type DayOfMonth Data Items

¹ Day Of Month is a choice of four elements, so one of them is mandatory

17.1.14 DayOfWeek

It supports the definition of Day of Week with wildcards.

17.1.14.1 Data Type Format

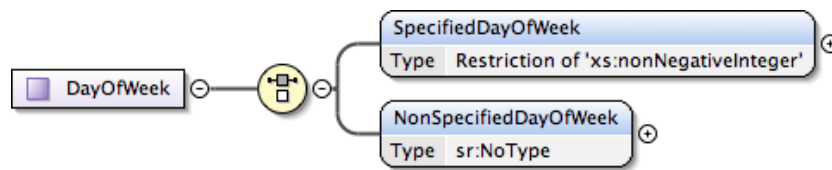


Figure 14 DUIS Data Type DayOfWeek Structure

17.1.14.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedDayOfWeek	One digit day of week, with Monday being 1 and Sunday 7	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 7)	No	None	N/A	Non-Sensitive
NonSpecifiedDayOfWeek	Tag to indicate wildcard for day of week	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 14 DUIS Data Type DayOfWeek Data Items

¹ Day Of Week is a choice of two elements, so one of them is mandatory

17.1.15 ReadLogPeriod

It defines the date-time period (no wildcards) to read a Log.

For example:

StartDateTime = 2014-02-20T00:00:00.00Z

EndDateTime = 2014-02-27T23:59:59.00Z

An End Date of 31/12/3000 will be interpreted by the DCC Data Systems as 'read to the end of the log' (The time associated with this date should be 00:00:00.00Z, i.e. the EndDateTime should be 3000-12-31T00:00:00.00Z). Note that only the current registered User Role, e.g. Import Supplier, will be able to 'read to the end of the log', because the generic authorisation check associated to E4 is applicable to the read log period. See Main Document of this documentation set section 7.4.

17.1.15.1 Data Type Format

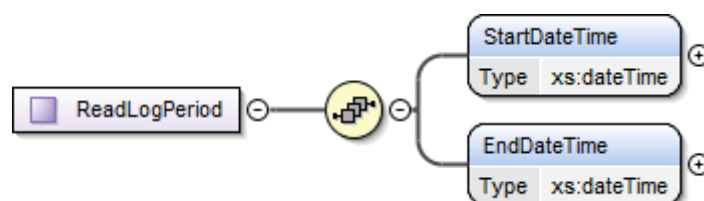


Figure 15 DUIS Data Type ReadLogPeriod Structure

17.1.15.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StartDateTime	The date-time (in UTC) of the start of the data set required Valid set: <ul style="list-style-type: none"> For On Demand Requests, date-time not in the future For Future Dated Requests, date-time <= ExecutionDateTime 	xs:dateTime Note wild cards are not supported	Yes	None	UTC Date-Time	Non-Sensitive
EndDateTime	The date-time (in UTC) of the end of the data set required Valid set: <ul style="list-style-type: none"> >= StartDateTime 	xs:dateTime Note wild cards are not supported	Yes	None	UTC Date-Time	Non-Sensitive

Table 15 DUIS Data Type ReadLogPeriod Data Items

17.1.16 ReadLogPeriodOffset

Included in DSP Scheduled Service Requests that read a Log, to indicate the date-time period (no wildcards) for which the Log is to be read, relative to the current date. The DSP Schedule is created using this data item type. When the DSP Scheduled Service Request is to be run, the actual date-time period is built from it, resulting in a ReadLogPeriod data item type (see section 17.1.15). The DSP Scheduled Service Request Access Control is run against the ReadLogPeriod data items, to check that the Create Schedule sender is authorised to read data for the entire period requested. Otherwise a DCC Alert N7 ("DSP Scheduled" access control failure) will be sent to that DCC Service User.

For example, if the StartDateOffset is -8, the StartTime is 00:00:00, the EndDateOffset is -1 and the EndTime is 23:59:59.0, these values will be recorded on the DSP Schedule. If the DSP Scheduled Service Request is generated on the 28/02/2014, the ReadLogPeriod StartDateTime will be set to 2014-02-20T00:00:00.00Z and the EndDateTime to 2014-02-27T23:59:59.00Z. If access control succeeds (including the DCC Service User that sent the Create Schedule Service Request being authorised to read the corresponding Log between these two date-times), a Command will be generated for the Device to read that Log between these two date-times.

17.1.16.1 Data Type Format

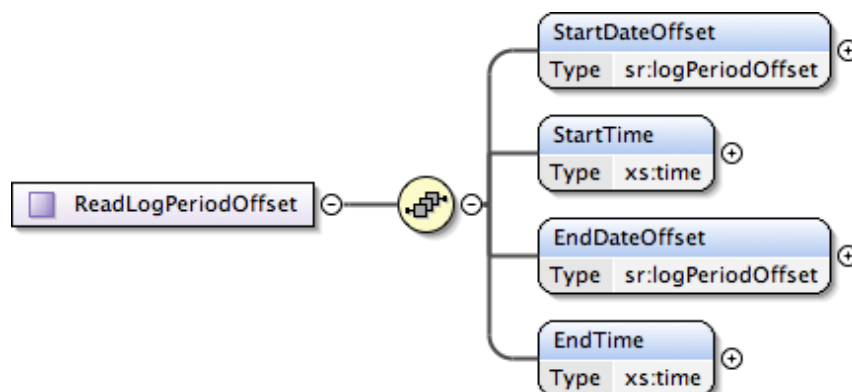


Figure 16 DUIS Data Type ReadLogPeriodOffset Structure

17.1.16.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
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Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
StartDateOffset	Number of days prior to or including the current date to set the start date for the data set required Valid set: between 0 and -400 days e.g. if StartDateOffset = -8, Start Date = Current Date – 8 days	sr:logPeriodOffset defined as a nonPositiveInteger between 0 and -400	Yes	None	N/A	Non-Sensitive
StartTime	The time of day on the Start Date the data has to start to be read e.g. if Start Date = 2014-02-20 and StartTime = 00:00:00.00Z, StartDateTime = 2014-02-20T00:00:00.00Z	xs:time	Yes	None	UTC Time	Non-Sensitive
EndDateOffset	Number of days prior to or including the current date to set the end date for the data set required Valid set: <= 0 and >= StartDateOffset e.g. if EndDateOffset = -1, End Date = Current Date – 1 days and between -400 and 0 days	sr:logPeriodOffset defined as a nonPositiveInteger between 0 and -400	Yes	None	N/A	Non-Sensitive
EndTime	The time of day on the End Date the data has to finish being read e.g. if End Date = 2014-02-27 and EndTime = 23:59:59.00Z, EndDateTime = 2014-02-20T23:59:59.00Z	xs:time	Yes	None	UTC Time	Non-Sensitive

Table 16 DUIS Data Type ReadLogPeriodOffset Data Items

17.1.17 ReadLogPeriodAbstractType

It defines the date-time period to read a Log to be used as a base type of those Service Requests that read a Log and can't be Future Dated.

17.1.17.1 Data Type Format

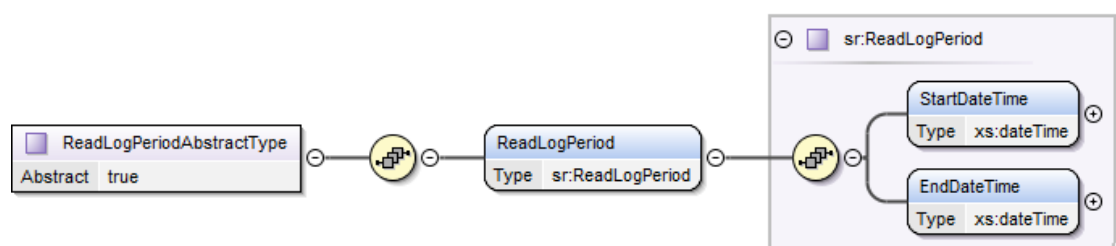


Figure 17 DUIS Data Type ReadLogPeriodAbstractType Structure

17.1.17.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ReadLogPeriod	The start and end date-time period for which the Log is to be read	sr:ReadLogPeriod (see section 17.1.15.2)	Yes	None	N/A	Non-Sensitive

Table 17 DUIS Data Type ReadLogPeriodAbstractType Data Items

17.1.18 ReadLogPeriodFDAbstractType

It defines the date-time period to read a Log to be used as a base type of those Service Requests that read a Log and can optionally be Future Dated.

17.1.18.1 Data Type Format

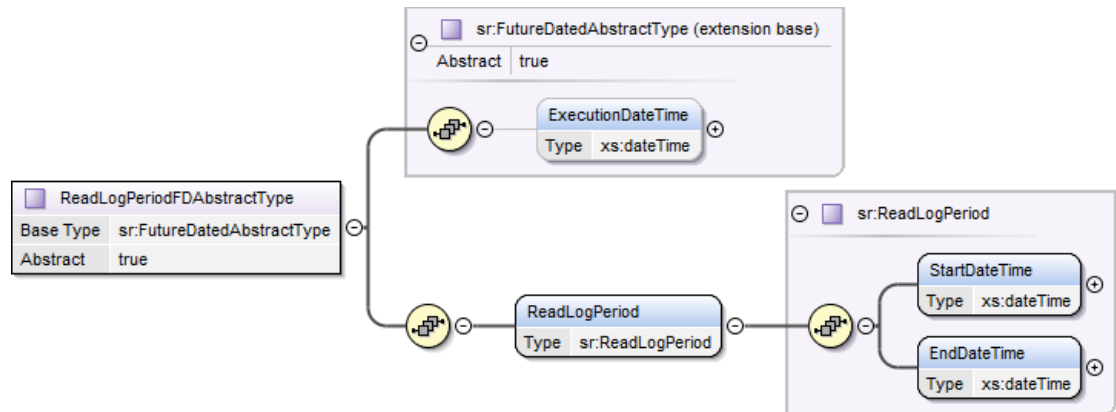


Figure 18 DUIS Data Type ReadLogPeriodFDAbstractType Structure

17.1.18.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
ExecutionDateTime	The UTC date and time the DCC User requires the command to be executed on the Device ID <ul style="list-style-type: none"> Date-time in the future that is either \leq current date + 30 days or the date = 31/12/3000 	xs:dateTime (see section 17.1.8.2)	No	None	UTC Date-Time	Non-Sensitive
ReadLogPeriod	The start and end date-time period for which the Log is to be read	sr:ReadLogPeriod (see section 17.1.15.2)	Yes	None	N/A	Non-Sensitive

Table 18 DUIS Data Type ReadLogPeriodFDAbstractType Data Items

17.1.19 KAPublicSecurityCredentials

Key Agreement Public Security Credentials has to be included in a Read Service Request that returns sensitive data if the DCC Service User role is an Unknown Remote Party (URP) to the Device

17.1.19.1 Data Type Format

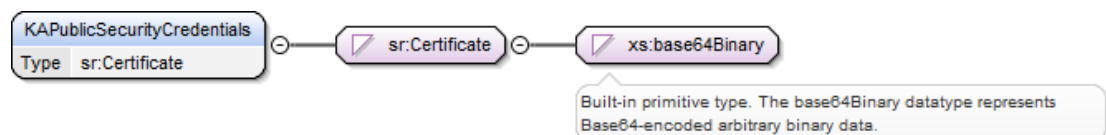


Figure 19 DUIS Data Type KAPublicSecurityCredentials Structure

17.1.19.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
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Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
KAPublicSecurity Credentials	The Key Agreement Public Security Credential (of the requesting DCC Service User) to be used where the request to read sensitive data is from an Unknown Remote Party (e.g. Other User, 'Old' Registered Supplier or, for Device Type Gas Smart Meter, Gas Network Operator)	sr:Certificate (xs:base64Binary)	Yes	None	N/A	Non-Sensitive

Table 19 DUIS Data Type KAPublicSecurityCredential Data Items

17.1.20 ScheduleDatesAndTime

Schedule Dates And Time defines the common elements included in the Electricity Schedules used in Service Requests 6.14.2, i.e. the Schedule Start and End Dates (with wildcards) and the Switch Time.

Note that Schedules are only used in Electricity GBCS Use Cases. Service Request 2.1 Gas UC uses a calendar structure and Service Requests 6.14.2 is not applicable to Gas.

17.1.20.1 Data Type Format

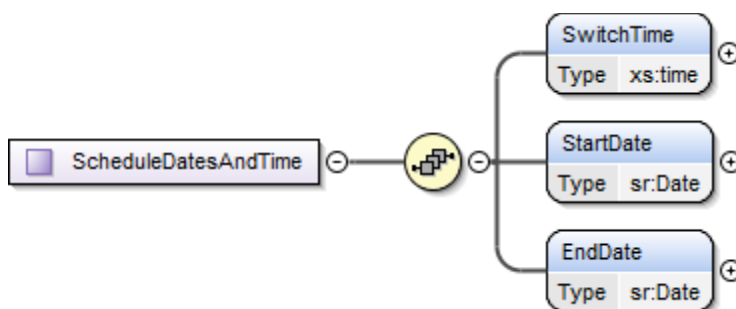


Figure 20 DUIS Data Type ScheduleDatesAndTime Structure

17.1.20.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SwitchTime	The time of day when the schedule is to be activated	xs:time	Yes	None	N/A	Non-Sensitive
StartDate	Start of the date period when the schedule is applicable Valid set: <ul style="list-style-type: none"> Valid date (with wildcards). See section 17.1.10 	sr:Date (with wildcards) (see section 17.1.10)	Yes	None	N/A	Non-Sensitive
EndDate	End of the date period when the schedule is applicable Valid set: <ul style="list-style-type: none"> Valid date (with wildcards). See section 17.1.10 	sr:Date (with wildcards) (see section 17.1.10)	Yes	None	N/A	Non-Sensitive

Table 20 DUIS Data Type ScheduleDatesAndTime Data Items

17.1.21 ScheduleDatesAndTimeWithoutWildcards

Schedule Dates And Time Without Wildcards defines the common elements included in the Electricity Schedules used in Service Requests 2.1. i.e. the Schedule Start and End Dates (without wildcards) and the Switch Time.

Note that Schedules are only used in Electricity GBCS Use Cases. Service Request 2.1 Gas UC uses a calendar structure and Service Requests 6.14.2 is not applicable to Gas.

17.1.21.1 Data Type Format

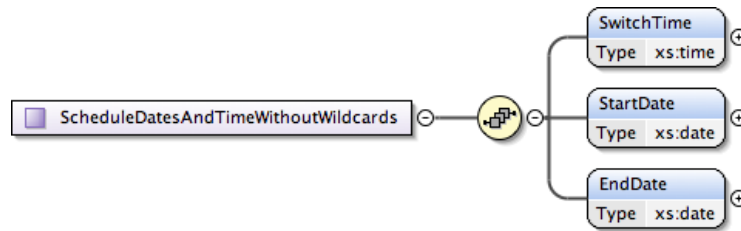


Figure 21 DUIS Data Type ScheduleDatesAndTimeWithoutWildcards Structure

17.1.21.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
SwitchTime	The time of day when the schedule is to be activated	xs:time	Yes	None	N/A	Non-Sensitive
StartDate	Start of the date period when the schedule is applicable Valid set: • Valid date	xs:date	Yes	None	N/A	Non-Sensitive
EndDate	End of the date period when the schedule is applicable Valid set: • Valid date	xs:date	Yes	None	N/A	Non-Sensitive

Table 21 DUIS Data Type ScheduleDatesAndTimeWithoutWildcards Data Items

17.1.22 NoType

A type definition to indicate that the specific data item does not have a type associated with it, and is simply an empty tag.

17.1.22.1 Data Type Format

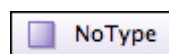


Figure 22 DUIS Data Type NoType Structure

17.1.23 scheduleID

The scheduleID uniquely defines a schedule on held by the DSP for a given device

17.1.23.1 Data Type Format

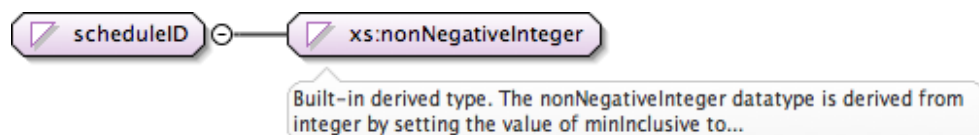


Figure 23 DUIS Data Type ServiceReferenceVariant Structure

17.1.23.2 Data Type Specific Data Items

Data Type	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
scheduleID	Value between 0 and 1,000,000,000,000 that uniquely defines a schedule held by the DSP for a given device.	Restriction of xs:nonNegativeInteger	Yes	None	N/A	Non-Sensitive

17.1.24 GasDateWithWildcards

A number of Gas use cases allow a wildcard setting that allows for a repeating functionality.

For example in a calendar or schedule, it allows the definition of special dates, e.g. Christmas (only the Month and Day Of Month set to specified values of 12 and 25 respectively) or Sundays (only the Day Of Week set to a specified value of 7). It also supports the definition of dates without wildcards, e.g. 2014/09/30 (Year, Month and Day Of Month set to specified values of 2014, 09 and 30 respectively and Day Of Week set to the non-specified value).

The 'GasDateWithWildcards' Definition of Christmas would be:

```
<ExampleDateWithWildcardsChristmas>
  <GasYearWithWildcards>
    <NonSpecifiedYear/>
  </GasYearWithWildcards>
  <GasMonthWithWildcards>
    <SpecifiedMonth>12</SpecifiedMonth>
  </GasMonthWithWildcards>
  <GasDayOfMonthWithWildcards>
    <SpecifiedDayOfMonth>25</SpecifiedDayOfMonth>
  </GasDayOfMonthWithWildcards>
  <GasDayOfWeekWithWildcards>
    <NonSpecifiedDayOfWeek/>
  </GasDayOfWeekWithWildcards>
</ExampleDateWithWildcardsChristmas>
```

The 'Date' Definition of Sunday would be:

```
<ExampleDateWithWildcardsSunday>
  <GasYearWithWildcards>
    <NonSpecifiedYear/>
  </GasYearWithWildcards>
  <GasMonthWithWildcards>
    <NonSpecifiedMonth/>
  </GasMonthWithWildcards>
  <GasDayOfMonthWithWildcards>
    <NonSpecifiedDayOfMonth/>
  </GasDayOfMonthWithWildcards>
  <GasDayOfWeekWithWildcards>
    <SpecifiedDayOfWeek>7</SpecifiedDayOfWeek>
  </GasDayOfWeekWithWildcards>
</ExampleDateWithWildcardsSunday>
```

The 'Date' Definition of 2014/09/30 would be:

```
<ExampleDateNoWildcards>
  <GasYearWithWildcards>
    <SpecifiedYear>2014</SpecifiedYear>
  </GasYearWithWildcards>
  <GasMonthWithWildcards>
    <SpecifiedMonth>9</SpecifiedMonth>
  </GasMonthWithWildcards>
  <GasDayOfMonthWithWildcards>
    <SpecifiedDayOfMonth>30</SpecifiedDayOfMonth>
  </GasDayOfMonthWithWildcards>
```

```
<GasDayOfWeekWithWildcards>
  <NonSpecifiedDayOfWeek/>
</GasDayOfWeekWithWildcards>
</ExampleDateNoWildcards>
```

17.1.24.1 Data Type Format

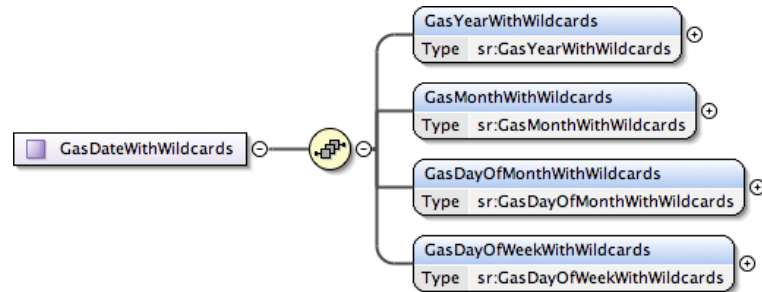


Figure 24 DUIS Data Type GasDateWithWildcards Structure

17.1.24.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory	Default	Units	Sensitivity
GasYearWithWildcards	Specified or non-specified year	sr: GasYearWithWildcards (see section 17.1.25)	Yes	None	N/A	Non-Sensitive
GasMonthWithWildcards	Specified or non-specified month	sr: GasMonthWithWildcards (see section 17.1.26)	Yes	None	N/A	Non-Sensitive
GasDayOfMonthWithWildcards	Specified day of month or last day of month or second last day of month or non-specified day of month	sr: GasDayOfMonthWithWildcards (see section 17.1.27)	Yes	None	N/A	Non-Sensitive
GasDayOfWeekWithWildcards	Specified or non-specified day of week	sr: GasDayOfWeekWithWildcards (see section 17.1.28)	Yes	None	N/A	Non-Sensitive

Table 22 DUIS Data Type Date Data Items

17.1.25 GasYearWithWildcards

It supports the definition of Year with wildcards.

17.1.25.1 Data Type Format

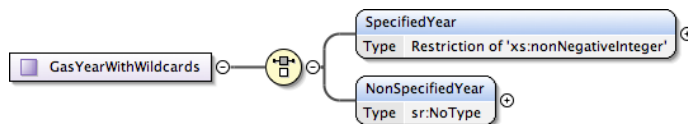


Figure 25 DUIS Data Type GasYearWithWildcards Structure

17.1.25.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedYear	Four digit year	Restriction of xs:nonNegativeInteger (minInclusive = 2014, totalDigits = 4)	No	None	N/A	Non-Sensitive
NonSpecifiedYear	Tag to indicate wildcard for year	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 23 DUIS Data Type GasYearWithWildcards Data Items

¹ GasYearWithWildcards is a choice of two elements, so one of them is mandatory

17.1.26 GasMonthWithWildcards

It supports the definition of Month with wildcards.

17.1.26.1 Data Type Format

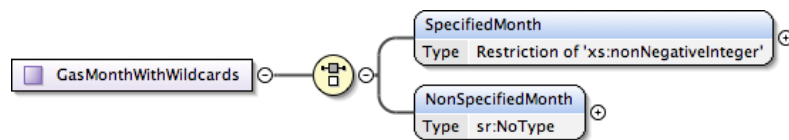


Figure 26 DUIS Data Type GasMonthWithWildcards Structure

17.1.26.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedMonth	The month January = 1 December = 12	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 12, totalDigits = 2)	No	None	N/A	Non-Sensitive
NonSpecifiedMonth	Tag to indicate wildcard for month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 24 DUIS Data Type GasMonthWithWildcards Data Items

¹ GasMonthWithWildcards is a choice of two elements, so one of them is mandatory

17.1.27 GasDayOfMonthWithWildcards

It supports the definition of Day of Month with wildcards.

17.1.27.1 Data Type Format

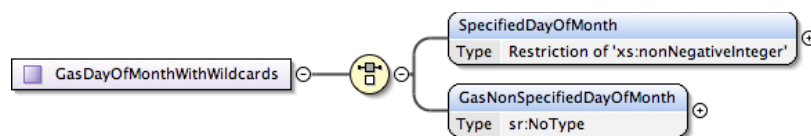


Figure 27 DUIS Data Type GasDayOfMonthWithWildcards Structure

17.1.27.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
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Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedDayOfMonth	The day of the month	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 31, totalDigits = 2)	No	None	N/A	Non-Sensitive
NonSpecifiedDayOfMonth	Tag to indicate wildcard for day of month	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 25 DUIS Data Type GasDayOfMonthWithWildcards Data Items

¹ GasDayOfMonthWithWildcards is a choice of two elements, so one of them is mandatory

17.1.28 GasDayOfWeekWithWildcards

It supports the definition of Day of Week with wildcards.

17.1.28.1 Data Type Format

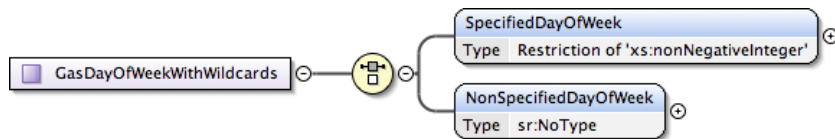


Figure 28 DUIS Data Type GasDayOfWeekWithWildcards Structure

17.1.28.2 Data Type Specific Data Items

Data Item	Description / Valid Set	Type	Mandatory ¹	Default	Units	Sensitivity
SpecifiedDayOfWeek	Day of the week, with Monday being 1 and Sunday 7	Restriction of xs:nonNegativeInteger (minInclusive = 1, maxInclusive = 7)	No	None	N/A	Non-Sensitive
NonSpecifiedDayOfWeek	Tag to indicate wildcard for day of week	sr:NoType (see section 17.1.22)	No	None	N/A	Non-Sensitive

Table 26 DUIS Data Type GasDayOfWeekWithWildcards Data Items

¹ GasDayOfWeekWithWildcards is a choice of two elements, so one of them is mandatory

17.2 Validation

The specific validation applicable to the DUIS Defined Shared Data Types is as follows (see Main Document of this documentation set section 7 for generic access control checks):

Validation Check	Process	Response Code
Is the Execution Date Time in a Future Dated Request valid? ¹	Check that the Execution Date Time is a date-time in the Future and either no later than the current date plus 30 days or the 31/12/3000 ⁵	E1000
Is the Read Log Period Start Date Time not later than the required execution date-time?	Check that the Read Log Period (sr:ReadLogPeriod) Start Date Time is not later than the current date-time for "On Demand" and the Execution Date Time for "Future Dated" requests	E1001
Is the Read Log Period End Date Time valid?	Check that the Read Log Period (sr:ReadLogPeriod) End Date Time is not earlier than the Log Start Date Time	E1003
Is the Read Log Period Offset EndDate Offset valid?	Check that the Read Log Period Offset (sr:ReadLogPeriodOffset) End Date Offset is not earlier than the Read Log Period Offset Start Date Offset	E1004
Are the Public Security Credentials included?	For those Service Request that return Sensitive data and are available to Device URPs ² (e.g. 'Old' Registered Supplier and 'Other User'), check that the Key Agreement Public Security Credentials are included in Service Requests submitted by URPs and not included otherwise	E1006
Are the Public Security Credentials valid? ³	For those Requests that include Public Security Credentials in the body: Check that the certificates used in the chain of trust have NOT expired (i.e. their expiry date is post the date of check or, for Future Dated Requests, post the Execution Date) and that the certificates used in the chain of trust have NOT been revoked (i.e. they are not included in the Certificate Revocation List) Check that all required Certificate Authority certificates are included in the Request and that no unnecessary Certificate Authority certificates have been provided.	E1007 ⁷
Does the Device included in the Request exist? ⁴	For those Requests that include a Device ID in the body, check that the Device ID exists in the Smart Metering Inventory	E1008
Is the Service Request valid for the Target Device?	<ul style="list-style-type: none"> On Demand or Future Dated Service Requests: Check that if the Business Target ID Device Type is GSME that the DCC Service User Role is GIS, and that they are the current registered Supplier for that device. Create Schedule (for DSP Scheduled Service Requests): Check that if the Device ID Device Type is GSME that the DCC Service User Role is GIS, and that they are the current registered Supplier for that device. 	E1010
Is the Service Request Target Device a Dual Band CHF? ⁶	Check that the Service Request's Target Device is a Dual Band Communications Hub	E1011

Table 27 DUIS Defined Shared Data Types Service Request Validation Checks

¹ Validation applicable to Service Requests and GBCS Commands (Signed Pre-Commands). Note that the execution date-times within GBCS Commands will also be checked

² The URPs to which this validation applies are Service Reference Variant dependent

³ Only for Service Requests or Signed Pre-Commands that include Public Security Credentials in the Request body, e.g. those that read sensitive data and are applicable to URPs and those that update security credentials

⁴ Not applicable to Service Reference Variant 12.2 (Device Pre-notification) which is used to add Devices to the Smart Metering Inventory

⁵ This date indicates that an existing Service Request of the same type for the same Device is to be cancelled

⁶ Validation only applicable to Service Requests 6.28, 6.29, 6.30, 6.31 and 6.32. This check will only fail for CHF's recorded by the DCC Data Systems as having a "Single Band (2.4GHz only)" HAN Variant and a Firmware version certified to GBCS v2.0 or later (if the CHF Firmware version is certified to GBCS v1.0 validation error E57 will be returned instead). Please see HAN Variant for the corresponding CHF Device Id returned by Service Request 8.2 (Read Inventory) Response or by the SSI Read Inventory screen

⁷ Please note additional security validation applies from June 2022 Release onwards. Please see DUGIDS main document Appendix 16 for further details.

17.3 Response Codes

The Response Codes applicable to the DUIS Defined Shared Data Types are as follows (see Main Document of this documentation set section 12.3 for generic Response Codes):

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types
E1000	Failed Validation – Invalid Date-Time for Future Dated Request	Error	Future Dated Service Request Execution Date-Time is not valid	Acknowledgement
E1001	Failed Validation – Log Period Start Date Time later than required execution date-time	Error	The Log Period (sr:ReadLogPeriod) Start Date Time is later than the current date-time for "On Demand" or the Execution Date Time for "Future Dated" requests	Acknowledgement
E1003	Failed Validation – Log Period End Date Time earlier than Start Date Time	Error	The Log Period (sr:ReadLogPeriod) End Date Time is earlier than the Log Period Start Date Time	Acknowledgement
E1004	Failed Validation – Log Period Offset End Date smaller than Start Date	Error	The Log Period Offset (sr:ReadLogPeriodOffset) End Date is smaller (earlier) than the Log Period Offset Start Date Time	Acknowledgement
E1006	Failed Validation – Security Credentials mismatch	Error	For those Service Requests that include sensitive data in the Response: Service Requests from Device URPs (e.g. 'old' Registered Supplier and 'Other User') don't include the DCC Service User's Key Agreement Public Security Credentials or are included in other cases	Acknowledgement

Response Code	Response Code Name	Response Code Type	Description	Applicable to Response Types
E1007 ¹	Failed Validation – Invalid Security Credentials	Error	For those Service Requests that include Public Security Credentials in the body: At least one of the certificates used in the chain of trust has expired or been revoked or has an incorrect format, or required Certificate Authority certificates are missing from the Request, or unnecessary Certificate Authority certificates have been provided.	Acknowledgement and DCC Alerts
E1008	Failed Validation – Invalid Device ID	Error	The Device ID included in the Request body doesn't exist in the Smart Metering Inventory	Acknowledgement
E1010	Failed Validation – Invalid Device Type	Error	The Device Type is invalid	Acknowledgement
E1011	Failed Validation – Device not a Dual Band Communications Hub	Error	The DCC does not have this Device recorded as a Dual Band Communications Hub	Acknowledgement

Table 28 DUIS Defined Shared Data Types DCC Data Systems Response Codes

¹ Please note additional security validation applies from June 2022 Release onwards. Please see DUGIDS main document Appendix 16 for further details.