

RSDL Mobile-API Guidelines

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AppHMIType

1. Description

Type:	Enum
Sender:	remote-control application
Purpose:	User wants to use RSDL functionality.

User should include AppHMIType.REMOTE_CONTROL into RegisterAppInterface request's "appHMIType" to register remote-control application.

AppHMIType Enum

DEFAULT	The App will have default rights.
COMMUNICATION	Communication type of App.
MEDIA	App dealing with Media
MESSAGING	Messaging App.
NAVIGATION	Navigation App.
INFORMATION	Information App.
SOCIAL	App dealing with social media.
BACKGROUND_PROCESS	Background process app.
TESTING	App only for Testing purposes.
SYSTEM	System App.
REMOTE_CONTROL	Remote control app.

ButtonPress

1. Description

Type:	Function
Sender:	remote-control application
Purpose:	Press a button remotely

Trigger to send:

User wants press button remotely.

Error handling:

1. RSDL validates request from remote-control application and in case it's invalid, RSDL returns *INVALID_DATA* result to the corresponding mobile application's request.

Validation includes:

- Mandatory parameters to be present
- Type of parameters values to correspond MOBILE_API
- Parameters values to be in bounds with MOBILE_API
- Empty parameters are not present in request
- JSON format to be valid
- button names to match the specified module to the vehicle (for example, the button *REPEAT* sent with module *CLIMATE* is invalid):

Radio buttons: VOLUME_UP, VOLUME_DOWN, EJECT, SOURCE, SHUFFLE, REPEAT

Climate buttons: AC_MAX, AC, RECIRCULATE, FAN_UP, FAN_DOWN, TEMP_UP, TEMP_DOWN, DEFROST_MAX, DEFROST, DEFROST_REAR, UPPER_VENT, LOWER_VENT

2. Request

Behavior:

1. The request comes from driver's remote-control application (see OnHMISatus("deviceRank")) and in case it is:

> valid

> allowed by RSDL's policies assigned to this application

RSDL transfers this request to the vehicle's requested module. The response resultCode depends on vehicle's result of processing.

2. The request comes from passenger's remote-control application (see OnHMISatus("deviceRank")) and in case it is:

> valid

> allowed by RSDL's policies: assigned to this application and region regulations

> Remote-Control functionality is turned on through HMI in the vehicle settings

> either auto-allowed by "equipment" settings or has driver's approval

RSDL transfers this request to the vehicle's requested module. The response resultCode depends on vehicle's result of processing.

Request Parameters

Param Name	Type	Mandatory	Additional	Description
moduleDescription	com.smartdevicelink.proxy.rc.datatypes .ModuleDescription	true	-	The zone and module data to retrieve from the vehicle for that zone.
subscribe	Boolean	false	-	If subscribe is true, the head unit will send onInteriorVehicleData notifications for the moduleDescription
appID	Integer	true	-	Id of the application related to this RPC.

ModuleDescription Struct

Param Name	Type	Mandatory	Additional	Description
moduleZone	com.smartdevicelink.proxy.rc.datatypes .InteriorZone	true	-	Defines the location where the module is available for controlling.
moduleType	com.smartdevicelink.proxy.rc.enums .ModuleType	true	-	Defines the module available for controlling.

InteriorZone Struct

Param Name	Type	Mandatory	Additional	Description
col	Integer	true	minValue = 0 maxValue = 100	The value of column from "column-row-level" grid that defines the location.
row	Integer	true	minValue = 0 maxValue = 100	The value of row from "column-row-level" grid that defines the location.
level	Integer	true	minValue = 0 maxValue = 100	The value of level from "column-row-level" grid that defines the location.
colspan	Integer	true	minValue = 0 maxValue = 100	Total number of columns in "column-row-level" grid that defines the location.
rowspan	Integer	true	minValue = 0 maxValue = 100	Total number of rows in "column-row-level" grid that defines the location.
levelspan	Integer	true	minValue = 0 maxValue = 100	Total number of levels in "column-row-level" grid that defines the location.

ModuleType Enum

Param Name	Description
CLIMATE	Names the Climate module of the vehicle
RADIO	Names the Radio module of the vehicle

3. Response

The below list of resultCodes that SDL may use to respond:

SUCCESS - The vehicle successfully processes the request.

INVALID_DATA - validation of request failed.

UNSUPPORTED_RESOURCE - The vehicle does not support the requested module in the requested location

REJECTED - The vehicle rejects GetInteriorVehicleData request because of

- Other tasks of higher priority
- The requested module is busy with another passenger's application.

IGNORED - The vehicle ignores the request because the data and subscription status has not changed since the previous request.

GENERIC_ERROR - The unknown issue occurred or other codes are not applicable. *RSDL waits for response from the vehicle during RSDL's internal timeout for vehicle RPCs ("DefaultTimeout" parameter in SmartDeviceLink.ini file; set to 10 sec by default) and in case it's not received, RSDL returns GENERIC_ERROR result to the corresponding mobile application's request.*

DISALLOWED -one of the following

- the application's policies assigned by RSDL do not list the RPC among allowed ones
- application is registered from passenger's device and RemoteControl is turned off through HMI
- application is registered from passenger's device and regional constrains disallow RemoteControl

USER_DISALLOWED - the driver:

- Denies the permission prompt triggered for the application registered from passenger's device
- Or the driver disallows the group of requests where this RPC is included to

Response parameters

Param Name	Type	Mandatory	Additional	Description
moduleData	com.smartdevicelink.proxy.rc.datatypes ModuleData	true	-	The data from the requested module in the requested location.
isSubscribed	Boolean	true	-	Is a conditional-mandatory parameter: must be returned in case "subscribe" parameter was present in the related request. - if "true" - the "moduleDescription" from request is successfully subscribed and the head unit will send onInteriorVehicleData notifications for the moduleDescription. - if "false" - the "moduleDescription" from request is either unsubscribed or failed to subscribe.

ModuleData Struct

Param Name	Type	Mandatory	Additional	Description
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moduleType	com.smartdevicelink.proxy.rc.enums ModuleType	true	-	Defines the module the data is provided for.
moduleZone	com.smartdevicelink.proxy.rc.datatypes InteriorZone	true	-	Defines the zone the data is provided for.
radioControlData	com.smartdevicelink.proxy.rc.datatypes RadioControlData	false	-	Must be provided in case the module is RADIO.
climateControlData	com.smartdevicelink.proxy.rc.datatypes ClimateControlData	false	-	Must be provided in case the module is CLIMATE.

ModuleType Enum

Param Name	Description
CLIMATE	Names the Climate module of the vehicle
RADIO	Names the Radio module of the vehicle

InteriorZone Struct

Param Name	Type	Mandatory	Additional	Description
col	Integer	true	minValue = 0 maxValue = 100	The value of column from "column-row-level" grid that defines the location.
row	Integer	true	minValue = 0 maxValue = 100	The value of row from "column-row-level" grid that defines the location.
level	Integer	true	minValue = 0 maxValue = 100	The value of level from "column-row-level" grid that defines the location.
colspan	Integer	true	minValue = 0 maxValue = 100	Total number of columns in "column-row-level" grid that defines the location.
rowspan	Integer	true	minValue = 0 maxValue = 100	Total number of rows in "column-row-level" grid that defines the location.
levelspan	Integer	true	minValue = 0 maxValue = 100	Total number of levels in "column-row-level" grid that defines the location.

RadioControlData Struct

Param Name	Type	Mandatory	Additional	Description
frequencyInteger	Integer	false	minValue = 0 maxValue = 1710	The integer part of frequency value (for 101.7 this value should be 101).
frequencyFraction	Integer	false	minValue = 0 maxValue = 9	The fractional part of frequency value (for 101.7 is 7).
band	Common.RadioBand	false	-	The band: AM, FM or XM.

rdsData	Common.RdsData	false	-	RDS (Radio Data System) information.
availableHDs	Integer	false	minValue = 1 maxValue = 3	Number of HD sub-channels if available
hdChannel	Integer	false	minValue = 1 maxValue = 3	Current HD sub-channel if available.
signalStrength	Integer	false	minValue = 0 maxValue = 100	Current frequency signal strength.
signalChangeThreshold	Integer	false	minValue = 0 maxValue = 100	If the signal strength falls below the set value for this parameter, the radio will tune to an alternative frequency
radioEnable	Boolean	false	-	True if the radio is on, false is the radio is off.
state	Common.RadioState	false	-	The radio state: acquiring, acquired, multi-cast.

RadioBand Enum

Param Name	Description
AM	AM (amplitude modulation) band
FM	FM (frequency modulation) band
XM	XM Satellite Radio

RdsData Struct

Param Name	Type	Mandatory	Additional	Description
PS	String	false	minlength = 0 maxlength = 8	Program Service Name
RT	String	false	minlength = 0 maxlength = 64	Radio Text
CT	String	false	minlength = 24 maxlength = 24	The clock text in UTC format as YYYY-MM-DDThh:mm:ss.sTZD
PI	String	false	minlength = 0 maxlength = 6	Program Identification - the call sign for the radio station
PTY	Integer	false	minValue = 0 maxValue = 31	The program type - The region should be used to differentiate between EU and North America program types
TP	Boolean	false	-	Traffic Program Identification - Identifies a station that offers traffic
TA	Boolean	false	-	Traffic Announcement Identification - Indicates an ongoing traffic announcement

REG	String	false	minlength = 0 maxlength = 255	Region
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RadioState Enum

Param Name	Description
ACQUIRING	-
ACQUIRED	-
MULTICAST	-
NOT_FOUND	-

ClimateControlData Struct

Param Name	Type	Mandatory	Additional	Description
fanSpeed	Integer	false	minValue = 0 maxValue = 100	The speed of the fan.
currentTemp	Integer	false	minValue = 0 maxValue = 100	The temperature currently set on the module.
desiredTemp	Integer	false	minValue = 0 maxValue = 100	The temperature to be set on the module (must be used with SetInteriorVehicleData only).
temperatureUnit	Common.TemperatureUnit	false	-	Units the temperature is measured in: Kelvin, Fahrenheit or Celsius
acEnable	Boolean	false	-	If "true" - air conditioning is ON.
circulateAirEnable	Boolean	false	-	If "true" - air circulation is ON.
autoModeEnable	Boolean	false	-	If "true" - the climate system is in auto mode.
defrostZone	Common.DefrostZone	false	-	Defines the defrost zone: front, rear or all.
dualModeEnable	Boolean	false	-	If "true" - the dual mode in ON and driver's and passenger's zones can have separate climate settings.

TemperatureUnit Enum

Param Name	Description
KELVIN	-
FAHRENHEIT	-
CELSIUS	-

DefrostZone Enum

Param Name	Description
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FRONT	-
REAR	-
ALL	-

GetInteriorVehicleData

1. Description

Type:	Function
Sender:	remote-control application
Purpose:	Obtain vehicle data and/or subscribe to notifications from the specified module in the specified location

Trigger to send:

User wants to subscribe for notifications from the specified module in the specified location.

Error handling:

1. RSDL validates request from remote-control application and in case it's invalid, RSDL returns *INVALID_DATA* result to the corresponding mobile application's request.

Validation includes:

- Mandatory parameters to be present
- Type of parameters values to correspond *MOBILE_API*
- Parameters values to be in bounds with *MOBILE_API*
- Empty parameters are not present in request
- JSON format to be valid
- Module and ControlData to match (for example, request with "RadioControlData" sent together with *CLIMATE* moduleType is invalid)

2. RSDL waits for response from the vehicle during RSDL's internal timeout for vehicle RPCs ("*DefaultTimeout*" parameter in *SmartDeviceLink.ini* file; set to 10 sec by default) and in case it's not received, RSDL returns *GENERIC_ERROR* result to the corresponding mobile application's request.

2. Request

Behavior:

1. The request comes from driver's remote-control application (see *OnHMISStatus("deviceRank")*) and in case it is:

> valid

> allowed by RSDL's policies assigned to this application

RSDL transfers this request to the vehicle's requested module. The response resultCode depends on vehicle's result of processing.

2. The request comes from passenger's remote-control application (see *OnHMISStatus("deviceRank")*) and in case it is:

> valid

> allowed by RSDL's policies: assigned to this application and region regulations

> Remote-Control functionality is turned on through HMI in the vehicle settings

> either auto-allowed by "equipment" settings or has driver's approval

RSDL transfers this request to the vehicle's requested module. The response resultCode depends on vehicle's result of processing.

Request Parameters

Param Name	Type	Mandatory	Additional	Description
moduleDescription	com.smartdevicelink.proxy.rc.datatypes .ModuleDescription	true	-	The zone and module data to retrieve from the vehicle for that zone.
subscribe	Boolean	false	-	If subscribe is true, the head unit will send onInteriorVehicleData notifications for the moduleDescription

ModuleDescription Struct

Param Name	Type	Mandatory	Additional	Description
moduleZone	com.smartdevicelink.proxy.rc.datatypes .InteriorZone	true	-	Defines the location where the module is available for controlling.
moduleType	com.smartdevicelink.proxy.rc.enums .ModuleType	true	-	Defines the module available for controlling.

InteriorZone Struct

Param Name	Type	Mandatory	Additional	Description
col	Integer	true	minValue = 0 maxValue = 100	The value of column from "column-row-level" grid that defines the location.
row	Integer	true	minValue = 0 maxValue = 100	The value of row from "column-row-level" grid that defines the location.
level	Integer	true	minValue = 0 maxValue = 100	The value of level from "column-row-level" grid that defines the location.
colspan	Integer	true	minValue = 0 maxValue = 100	Total number of columns in "column-row-level" grid that defines the location.
rowspan	Integer	true	minValue = 0 maxValue = 100	Total number of rows in "column-row-level" grid that defines the location.
levelspan	Integer	true	minValue = 0 maxValue = 100	Total number of levels in "column-row-level" grid that defines the location.

ModuleType Enum

Param Name	Description
CLIMATE	Names the Climate module of the vehicle
RADIO	Names the Radio module of the vehicle

3. Response

The below list of resultCodes that SDL may use to respond:

SUCCESS - The vehicle successfully processes the request.

INVALID_DATA - validation of request failed.

UNSUPPORTED_RESOURCE - The vehicle does not support the requested module in the requested location

REJECTED - The vehicle rejects GetInteriorVehicleData request because of

- Other tasks of higher priority
- The requested module is busy with another passenger's application.

IGNORED - The vehicle ignores the request because the data and subscription status has not changed since the previous request.

GENERIC_ERROR - The unknown issue occurred or other codes are not applicable. *RSDL waits for response from the vehicle during RSDL's internal timeout for vehicle RPCs ("DefaultTimeout" parameter in SmartDeviceLink.ini file; set to 10 sec by default) and in case it's not received, RSDL returns GENERIC_ERROR result to the corresponding mobile application's request.*

DISALLOWED -one of the following

- the application's policies assigned by RSDL do not list the RPC among allowed ones
- application is registered from passenger's device and RemoteControl is turned off through HMI
- application is registered from passenger's device and regional constrains disallow RemoteControl

USER_DISALLOWED - the driver:

- Denies the permission prompt triggered for the application registered from passenger's device
- Or the driver disallows the group of requests where this RPC is included to



Response parameters

Param Name	Type	Mandatory	Additional	Description
moduleData	com.smartdevicelink.proxy.rc.datatypes .ModuleData	true	-	The data from the requested module in the requested location.



Module: ModuleData Struct

Param Name	Type	Mandatory	Additional	Description
moduleType	com.smartdevicelink.proxy.rc.enums .ModuleType	true	-	Defines the module the data is provided for.
moduleZone	com.smartdevicelink.proxy.rc.datatypes .InteriorZone	true	-	Defines the zone the data is provided for.

radioControlData	com.smartdevicelink.proxy.rc.datatypes .RadioControlData	false	-	Must be provided in case the module is RADIO.
climateControlData	com.smartdevicelink.proxy.rc.datatypes .ClimateControlData	false	-	Must be provided in case the module is CLIMATE.

ModuleType Enum

Param Name	Description
CLIMATE	Names the Climate module of the vehicle
RADIO	Names the Radio module of the vehicle

InteriorZone Struct

Param Name	Type	Mandatory	Additional	Description
col	Integer	true	minValue = 0 maxValue = 100	The value of column from "column-row-level" grid that defines the location.
row	Integer	true	minValue = 0 maxValue = 100	The value of row from "column-row-level" grid that defines the location.
level	Integer	true	minValue = 0 maxValue = 100	The value of level from "column-row-level" grid that defines the location.
colspan	Integer	true	minValue = 0 maxValue = 100	Total number of columns in "column-row-level" grid that defines the location.
rowspan	Integer	true	minValue = 0 maxValue = 100	Total number of rows in "column-row-level" grid that defines the location.
levelspan	Integer	true	minValue = 0 maxValue = 100	Total number of levels in "column-row-level" grid that defines the location.

RadioControlData Struct

Param Name	Type	Mandatory	Additional	Description
frequencyInteger	Integer	false	minValue = 0 maxValue = 1710	The integer part of frequency value (for 101.7 this value should be 101).
frequencyFraction	Integer	false	minValue = 0 maxValue = 9	The fractional part of frequency value (for 101.7 is 7).
band	Common.RadioBand	false	-	The band: AM, FM or XM.
rdsData	Common.RdsData	false	-	RDS (Radio Data System) information.
availableHDs	Integer	false	minValue = 1 maxValue = 3	Number of HD sub-channels if available

hdChannel	Integer	false	minValue = 1 maxValue = 3	Current HD sub-channel if available.
signalStrength	Integer	false	minValue = 0 maxValue = 100	Current frequency signal strength.
signalChangeThreshold	Integer	false	minValue = 0 maxValue = 100	If the signal strength falls below the set value for this parameter, the radio will tune to an alternative frequency
radioEnable	Boolean	false	-	True if the radio is on, false is the radio is off.
state	Common.RadioState	false	-	The radio state: acquiring, acquired, multi-cast.

RadioBand Enum

Param Name	Description
AM	AM (amplitude modulation) band
FM	FM (frequency modulation) band
XM	XM Satellite Radio

RdsData Struct

Param Name	Type	Mandatory	Additional	Description
PS	String	false	minlength = 0 maxlength = 8	Program Service Name
RT	String	false	minlength = 0 maxlength = 64	Radio Text
CT	String	false	minlength = 24 maxlength = 24	The clock text in UTC format as YYYY-MM-DDThh:mm:ss.sTZD
PI	String	false	minlength = 0 maxlength = 6	Program Identification - the call sign for the radio station
PTY	Integer	false	minValue = 0 maxValue = 31	The program type - The region should be used to differentiate between EU and North America program types
TP	Boolean	false	-	Traffic Program Identification - Identifies a station that offers traffic
TA	Boolean	false	-	Traffic Announcement Identification - Indicates an ongoing traffic announcement
REG	String	false	minlength = 0 maxlength = 255	Region

RadioState Enum

Param Name	Description
ACQUIRING	-
ACQUIRED	-
MULTICAST	-
NOT_FOUND	-

ClimateControlData Struct

Param Name	Type	Mandatory	Additional	Description
fanSpeed	Integer	false	minValue = 0 maxValue = 100	The speed of the fan.
currentTemp	Integer	false	minValue = 0 maxValue = 100	The temperature currently set on the module.
desiredTemp	Integer	false	minValue = 0 maxValue = 100	The temperature to be set on the module (must be used with SetInteriorVehicleData only).
temperatureUnit	Common.TemperatureUnit	false	-	Units the temperature is measured in: Kelvin, Fahrenheit or Celsius
acEnable	Boolean	false	-	If "true" - air conditioning is ON.
circulateAirEnable	Boolean	false	-	If "true" - air circulation is ON.
autoModeEnable	Boolean	false	-	If "true" - the climate system is in auto mode.
defrostZone	Common.DefrostZone	false	-	Defines the defrost zone: front, rear or all.
dualModeEnable	Boolean	false	-	If "true" - the dual mode is ON and driver's and passenger's zones can have separate climate settings.

TemperatureUnit Enum

Param Name	Description
KELVIN	-
FAHRENHEIT	-
CELSIUS	-

DefrostZone Enum

Param Name	Description
FRONT	-
REAR	-
ALL	-

GetInteriorVehicleDataCapabilities

1. Description

Type:	Function
Sender:	remote-control application
Purpose:	Obtain vehicle capabilities on available modules controls in available locations

Trigger to send:

User wants to obtain vehicle capabilities on available modules controls in available locations.

Error handling:

1. RSDL validates request from remote-control application and in case it's invalid, RSDL returns `INVALID_DATA` result to the corresponding mobile application's request.

Validation includes:

- Mandatory parameters to be present
- Type of parameters values to correspond `MOBILE_API`
- Parameters values to be in bounds with `MOBILE_API`
- Empty parameters are not present in request
- JSON format to be valid
- Module and ControlData to match (for example, request with `"RadioControlData"` sent together with `CLIMATE` `moduleType` is invalid)

2. Request

Behavior:

1. The request comes from driver's remote-control application (see `OnHMISStatus("deviceRank")`) and in case it is:

> valid

> allowed by RSDL's policies assigned to this application

RSDL transfers this request to the vehicle's requested module. The response `resultCode` depends on vehicle's result of processing.

2. The request comes from passenger's remote-control application (see `OnHMISStatus("deviceRank")`) and in case it is:

> valid

> allowed by RSDL's policies: assigned to this application and region regulations

> Remote-Control functionality is turned on through HMI in the vehicle settings

> either auto-allowed by "equipment" settings or has driver's approval

RSDL transfers this request to the vehicle's requested module. The response `resultCode` depends on vehicle's result of processing.

Request Parameters

Param Name	Type	Mandatory	Additional	Description
zone	<code>com.smartdevicelink.proxy.rc.datatypes</code> <code>.InteriorZone</code>	false	-	If included, only the corresponding modules able to be controlled by that zone will be sent back. If not included, all modules will be returned regardless of their ability to be controlled by specific zones.

moduleTypes	com.smartdevicelink.proxy.rc.enums .ModuleType	false	array = true minSize = 1 maxSize = 1000	If included, only the corresponding type of modules a will be sent back. If not included, all module types will be returned.
appID	Integer	true	-	Applications ID

InteriorZone Struct

Param Name	Type	Mandatory	Additional	Description
col	Integer	true	minValue = 0 maxValue = 100	The value of column from "column-row-level" grid that defines the location.
row	Integer	true	minValue = 0 maxValue = 100	The value of row from "column-row-level" grid that defines the location.
level	Integer	true	minValue = 0 maxValue = 100	The value of level from "column-row-level" grid that defines the location.
colspan	Integer	true	minValue = 0 maxValue = 100	Total number of columns in "column-row-level" grid that defines the location.
rowspan	Integer	true	minValue = 0 maxValue = 100	Total number of rows in "column-row-level" grid that defines the location.
levelspan	Integer	true	minValue = 0 maxValue = 100	Total number of levels in "column-row-level" grid that defines the location.

ModuleType Enum

Param Name	Description
CLIMATE	Names the Climate module of the vehicle
RADIO	Names the Radio module of the vehicle

3. Response

Behavior:

The below table lists resultCodes that the vehicle may use to respond:

SUCCESS - The vehicle successfully processes the request.

INVALID_DATA - validation of request failed.

REJECTED - The vehicle intends to trigger "read capabilities from file" RSDL's logic.

GENERIC_ERROR - The unknown issue occurred or other codes are not applicable. *RSDL waits for response from the vehicle during RSDL's internal timeout for vehicle RPCs ("DefaultTimeout" parameter in SmartDeviceLink.ini file; set to 10 sec by default) and in case it's not received, RSDL returns GENERIC_ERROR result to the corresponding mobile application's request.*

DISALLOWED -one of the following

- the application's policies assigned by RSDL do not list the RPC among allowed ones
- application is registered from passenger's device and RemoteControl is turned off through HMI
- application is registered from passenger's device and regional constrains disallow RemoteControl

USER_DISALLOWED - the driver:

- Denies the permission prompt triggered for the application registered from passenger's device
- Or the driver disallows the group of requests where this RPC is included to

OnHMISatus

1. Description

Type:	Function
Sender:	RSDL
Purpose:	Notify the connected device's rank is changed to either driver's or passenger's.

1. Behavior

1. RSDL sends `OnHMISatus("deviceRank")` notification in cases:

-> after successful registration of remote-control application

-> after the driver changes the rank of device through vehicle HMI

RSDL uses device's rank for policies assignment: the same application will get different set of permissions depending on whether the related device is ranked as "driver's" or as "passenger's"

Param Name	Type	Mandatory
audioStreamingState	<code>com.smartdevicelink.proxy.rpc.enums.AudioStreamingState</code>	true
systemContext	<code>com.smartdevicelink.proxy.rpc.enums.SystemContext</code>	true
hmiLevel	<code>com.smartdevicelink.proxy.rpc.enums.HMILevel</code>	true
deviceRank	Note: Not included into fords implementation of Android SDK	true

HMILevel Enum

Param Name	Description
FULL	The application has full use of the SDL HMI.
LIMITED	This HMI Level is only defined for a media application using an HMI with an 8 inch touchscreen
BACKGROUND	App cannot interact with user via TTS, VR, Display or Button Presses.
NONE	Application has been discovered by SDL, but application cannot send any requests or receive any notifications

SystemContext Enum

Param Name	Description
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MAIN	No user interaction (user-initiated or app-initiated) is in progress.
VRSESSION	VR-oriented, user-initiated or app-initiated interaction is in-progress.
MENU	Menu-oriented, user-initiated or app-initiated interaction is in-progress.
HMI_OBSCURED	The app's display HMI is currently being obscured by either a system or other app's overlay.
ALERT	Broadcast only to whichever app has an alert currently being displayed.

AudioStreamingState Enum

Param Name	Description
AUDIBLE	Currently streaming audio, if any, is audible to user.
ATTENUATED	Some kind of audio mixing is taking place. Currently streaming audio, if any, is audible to the user at a lowered volume.
NOT_AUDIBLE	Currently streaming audio, if any, is not audible to user. made via VR session.

DeviceRank Enum

Param Name	Description
DRIVER	The application is running on device ranked as driver's.
PASSENGER	The device is ranked as passenger's.

OnInteriorVehicleData

1. Description

Type:	Function
Sender:	RSDL
Purpose:	Notify the application subscribed to the specified module in the specified location about the data change.

Error handling:

1. RSDL validates notification from the vehicle and in case it's invalid, RSDL discards it (not transfer it to the specified mobile application).

Validation includes:

- Mandatory parameters to be present
- Type of parameters values to correspond HMI_API
- Parameters values to be in bounds with HMI_API
- JSON format to be valid.
- Module and ControlData to match (*for example, notification with "RadioControlData" sent together with CLIMATE moduleType is invalid*)

2. Behavior

1. In case the remote-control application is subscribed (see [GetInteriorVehicleData](#)), the vehicle will send OnInteriorVehicleData notifications upon the data changes in the subscribed module in the subscribed zone.

RSDL re-sets the application's subscription status (that is, stops sending OnInteriorVehicleData notifications) in cases:

- > the device rank is changed (see `OnHMISStatus("deviceRank")`)
- > for applications from passenger's device, the device location is changed
- > for applications from passenger's device, the Remote Control is disabled through HMI

▼

Param Name	Type	Mandatory	Additional	Description
moduleData	Common.ModuleData	true	-	Data changed in the specified module in the specified location
appID	Integer	true	-	Internal SDL-assigned Id of the application related to this RPC.

▼

ModuleData Struct

Param Name	Type	Mandatory	Additional	Description
moduleType	com.smartdevicelink.proxy.rc.enums .ModuleType	true	-	Defines the module the data is provided for.
moduleZone	com.smartdevicelink.proxy.rc.datatypes .InteriorZone	true	-	Defines the zone the data is provided for.

radioControlData	com.smartdevicelink.proxy.rc. datatypes .RadioControlData	false	-	Must be provided in case the module is RADIO.
climateControlData	com.smartdevicelink.proxy.rc. datatypes .ClimateControlData	false	-	Must be provided in case the module is CLIMATE.

ModuleType Enum

Param Name	Description
CLIMATE	Names the Climate module of the vehicle
RADIO	Names the Radio module of the vehicle

InteriorZone Struct

Param Name	Type	Mandatory	Additional	Description
col	Integer	true	minValue = 0 maxValue = 100	The value of column from "column-row-level" grid that defines the location.
row	Integer	true	minValue = 0 maxValue = 100	The value of row from "column-row-level" grid that defines the location.
level	Integer	true	minValue = 0 maxValue = 100	The value of level from "column-row-level" grid that defines the location.
colspan	Integer	true	minValue = 0 maxValue = 100	Total number of columns in "column-row-level" grid that defines the location.
rowspan	Integer	true	minValue = 0 maxValue = 100	Total number of rows in "column-row-level" grid that defines the location.
levelspan	Integer	true	minValue = 0 maxValue = 100	Total number of levels in "column-row-level" grid that defines the location.

RadioControlData Struct

Param Name	Type	Mandatory	Additional	Description
frequencyInteger	Integer	false	minValue = 0 maxValue = 1710	The integer part of frequency value (for 101.7 this value should be 101).
frequencyFraction	Integer	false	minValue = 0 maxValue = 9	The fractional part of frequency value (for 101.7 is 7).
band	Common.RadioBand	false	-	The band: AM, FM or XM.
rdsData	Common.RdsData	false	-	RDS (Radio Data System) information. Read-only parameter.
availableHDs	Integer	false	minValue = 1 maxValue = 3	Number of HD sub-channels if available. Read-only parameter.

hdChannel	Integer	false	minValue = 1 maxValue = 3	Current HD sub-channel if available.
signalStrength	Integer	false	minValue = 0 maxValue = 100	Current frequency signal strength. Read-only parameter.
signalChangeThreshold	Integer	false	minValue = 0 maxValue = 100	If the signal strength falls below the set value for this parameter, the radio will tune to an alternative frequency. Read-only parameter.
radioEnable	Boolean	false	-	True if the radio is on, false is the radio is off. Read-only parameter.
state	Common.RadioState	false	-	The radio state: acquiring, acquired, multi-cast. Read-only parameter.

RadioBand Enum

Param Name	Description
AM	AM (amplitude modulation) band
FM	FM (frequency modulation) band
XM	XM Satellite Radio

RdsData Struct

Param Name	Type	Mandatory	Additional	Description
PS	String	false	minlength = 0 maxlength = 8	Program Service Name
RT	String	false	minlength = 0 maxlength = 64	Radio Text
CT	String	false	minlength = 24 maxlength = 24	The clock text in UTC format as YYYY-MM-DDThh:mm:ss.sTZD
PI	String	false	minlength = 0 maxlength = 6	Program Identification - the call sign for the radio station
PTY	Integer	false	minValue = 0 maxValue = 31	The program type - The region should be used to differentiate between EU and North America program types
TP	Boolean	false	-	Traffic Program Identification - Identifies a station that offers traffic
TA	Boolean	false	-	Traffic Announcement Identification - Indicates an ongoing traffic announcement
REG	String	false	minlength = 0 maxlength = 255	Region

RadioState Enum

Param Name	Description
ACQUIRING	-
ACQUIRED	-
MULTICAST	-
NOT_FOUND	-

ClimateControlData Struct

Param Name	Type	Mandatory	Additional	Description
fanSpeed	Integer	false	minValue = 0 maxValue = 100	The speed of the fan.
currentTemp	Integer	false	minValue = 0 maxValue = 100	The temperature currently set on the module. Read-only parameter.
desiredTemp	Integer	false	minValue = 0 maxValue = 100	The temperature to be set on the module (must be used with SetInteriorVehicleData only).
temperatureUnit	Common.TemperatureUnit	false	-	Units the temperature is measured in: Kelvin, Fahrenheit or Celsius
acEnable	Boolean	false	-	If "true" - air conditioning is ON.
circulateAirEnable	Boolean	false	-	If "true" - air circulation is ON.
autoModeEnable	Boolean	false	-	If "true" - the climate system is in auto mode.
defrostZone	Common.DefrostZone	false	-	Defines the defrost zone: front, rear or all.
dualModeEnable	Boolean	false	-	If "true" - the dual mode is ON and driver's and passenger's zones can have separate climate settings.

TemperatureUnit Enum

Param Name	Description
KELVIN	-
FAHRENHEIT	-
CELSIUS	-

DefrostZone Enum

Param Name	Description
FRONT	-
REAR	-
ALL	-

SetInteriorVehicleData

1. Description

Type:	Function
Sender:	remote-control application
Purpose:	Control the specified module in the specified location

Trigger to send:

User wants to control the specified module in the specified location.

Error handling:

1. RSDL validates request from remote-control application and in case it's invalid, RSDL returns `INVALID_DATA` result to the corresponding mobile application's request.

Validation includes:

- Mandatory parameters to be present
- Type of parameters values to correspond `MOBILE_API`
- Parameters values to be in bounds with `MOBILE_API`
- Empty parameters are not present in request
- JSON format to be valid
- Module and ControlData to match (for example, request with `"RadioControlData"` sent together with `CLIMATE` `moduleType` is invalid)

"Read only" validation:

RSDL validates the request from remote-control application with the purpose to filter (never send to the vehicle) the read-only parameters, which are the following:

1. RADIO module read-only parameters:
 - `"rdsData"`
 - `"availableHDs"`
 - `"signalStrength"`
 - `"signalChangeThreshold"`
 - `"state"`
 - `"radioEnable"`
2. CLIMATE module read-only parameters:
 - `"currentTemp"`

2. Request

Behavior:

1. The request comes from driver's remote-control application (see `OnHMISStatus("deviceRank")`) and in case it is:

> valid

> allowed by RSDL's policies assigned to this application

RSDL transfers this request to the vehicle's requested module. The response `resultCode` depends on vehicle's result of processing.

2. The request comes from passenger's remote-control application (see `OnHMISStatus("deviceRank")`) and in case it is:

> valid

> allowed by RSDL's policies: assigned to this application and region regulations

> Remote-Control functionality is turned on through HMI in the vehicle settings

> either auto-allowed by "equipment" settings or has driver's approval

RSDL transfers this request to the vehicle's requested module. The response resultCode depends on vehicle's result of processing.

Request parameters

Param Name	Type	Mandatory	Additional	Description
moduleData	com.smartdevicelink.proxy.rc.datatypes .ModuleData	true	-	Data to be set for the specified module in the specified location
appID	Integer	true	-	Application Id of the application related to this RPC.

ModuleData Struct

Param Name	Type	Mandatory	Additional	Description
moduleType	com.smartdevicelink.proxy.rc.enums .ModuleType	true	-	Defines the module the data is provided for.
moduleZone	com.smartdevicelink.proxy.rc.datatypes .InteriorZone	true	-	Defines the zone the data is provided for.
radioControlData	com.smartdevicelink.proxy.rc.datatypes .RadioControlData	false	-	Must be provided in case the module is RADIO.
climateControlData	com.smartdevicelink.proxy.rc.datatypes .ClimateControlData	false	-	Must be provided in case the module is CLIMATE.

ModuleType Enum

Param Name	Description
CLIMATE	Names the Climate module of the vehicle
RADIO	Names the Radio module of the vehicle

InteriorZone Struct

Param Name	Type	Mandatory	Additional	Description
col	Integer	true	minValue = 0 maxValue = 100	The value of column from "column-row-level" grid that defines the location.
row	Integer	true	minValue = 0 maxValue = 100	The value of row from "column-row-level" grid that defines the location.

level	Integer	true	minValue = 0 maxValue = 100	The value of level from "column-row-level" grid that defines the location.
colspan	Integer	true	minValue = 0 maxValue = 100	Total number of columns in "column-row-level" grid that defines the location.
rowspan	Integer	true	minValue = 0 maxValue = 100	Total number of rows in "column-row-level" grid that defines the location.
levelspan	Integer	true	minValue = 0 maxValue = 100	Total number of levels in "column-row-level" grid that defines the location.

ModuleData Struct

Param Name	Type	Mandatory	Additional	Description
moduleType	Common.ModuleType	true	-	Defines the module the data is provided for.
moduleZone	Common.InteriorZone	true	-	Defines the zone the data is provided for.
radioControlData	Common.RadioControlData	false	-	Must be provided in case the module is RADIO.
climateControlData	Common.ClimateControlData	false	-	Must be provided in case the module is CLIMATE.

ModuleType Enum

Param Name	Description
CLIMATE	Names the Climate module of the vehicle
RADIO	Names the Radio module of the vehicle

InteriorZone Struct

Param Name	Type	Mandatory	Additional	Description
col	Integer	true	minValue = 0 maxValue = 100	The value of column from "column-row-level" grid that defines the location.
row	Integer	true	minValue = 0 maxValue = 100	The value of row from "column-row-level" grid that defines the location.
level	Integer	true	minValue = 0 maxValue = 100	The value of level from "column-row-level" grid that defines the location.
colspan	Integer	true	minValue = 0 maxValue = 100	Total number of columns in "column-row-level" grid that defines the location.
rowspan	Integer	true	minValue = 0 maxValue = 100	Total number of rows in "column-row-level" grid that defines the location.
levelspan	Integer	true	minValue = 0 maxValue = 100	Total number of levels in "column-row-level" grid that defines the location.

RadioControlData Struct

Param Name	Type	Mandatory	Additional	Description
frequencyInteger	Integer	false	minValue = 0 maxValue = 1710	The integer part of frequency value (for 101.7 this value should be 101).

frequencyFraction	Integer	false	minValue = 0 maxValue = 9	The fractional part of frequency value (for 101.7 is 7).
band	Common.RadioBand	false	-	The band: AM, FM or XM.
rdsData	Common.RdsData	false	-	RDS (Radio Data System) information. Read-only parameter.
availableHDs	Integer	false	minValue = 1 maxValue = 3	Number of HD sub-channels if available. Read-only parameter.
hdChannel	Integer	false	minValue = 1 maxValue = 3	Current HD sub-channel if available.
signalStrength	Integer	false	minValue = 0 maxValue = 100	Current frequency signal strength. Read-only parameter.
signalChangeThreshold	Integer	false	minValue = 0 maxValue = 100	If the signal strength falls below the set value for this parameter, the radio will tune to an alternative frequency. Read-only parameter.
radioEnable	Boolean	false	-	True if the radio is on, false if the radio is off. Read-only parameter.
state	Common.RadioState	false	-	The radio state: acquiring, acquired, multi-cast. Read-only parameter.

RadioBand Enum

Param Name	Description
AM	AM (amplitude modulation) band
FM	FM (frequency modulation) band
XM	XM Satellite Radio

RdsData Struct

Param Name	Type	Mandatory	Additional	Description
PS	String	false	minlength = 0 maxlength = 8	Program Service Name
RT	String	false	minlength = 0 maxlength = 64	Radio Text
CT	String	false	minlength = 24 maxlength = 24	The clock text in UTC format as YYYY-MM-DDThh:mm:ss.STZD
PI	String	false	minlength = 0 maxlength = 6	Program Identification - the call sign for the radio station

PTY	Integer	false	minValue = 0 maxValue = 31	The program type - The region should be used to differentiate between EU and North America program types
TP	Boolean	false	-	Traffic Program Identification - Identifies a station that offers traffic
TA	Boolean	false	-	Traffic Announcement Identification - Indicates an ongoing traffic announcement
REG	String	false	minlength = 0 maxlength = 255	Region

RadioState Enum

Param Name	Description
ACQUIRING	-
ACQUIRED	-
MULTICAST	-
NOT_FOUND	-

ClimateControlData Struct

Param Name	Type	Mandatory	Additional	Description
fanSpeed	Integer	false	minValue = 0 maxValue = 100	The speed of the fan.
currentTemp	Integer	false	minValue = 0 maxValue = 100	The temperature currently set on the module. Read-only parameter.
desiredTemp	Integer	false	minValue = 0 maxValue = 100	The temperature to be set on the module (must be used with SetInteriorVehicleData only).
temperatureUnit	Common.TemperatureUnit	false	-	Units the temperature is measured in: Kelvin, Fahrenheit or Celsius
acEnable	Boolean	false	-	If "true" - air conditioning is ON.
circulateAirEnable	Boolean	false	-	If "true" - air circulation is ON.
autoModeEnable	Boolean	false	-	If "true" - the climate system is in auto mode.
defrostZone	Common.DefrostZone	false	-	Defines the defrost zone: front, rear or all.
dualModeEnable	Boolean	false	-	If "true" - the dual mode is ON and driver's and passenger's zones can have separate climate settings.

TemperatureUnit Enum

Param Name	Description
KELVIN	-
FAHRENHEIT	-
CELSIUS	-

DefrostZone Enum

Param Name	Description
FRONT	-
REAR	-
ALL	-

3. Response

Behavior:

The below list of resultCodes that SDL may use to respond:

SUCCESS - The vehicle successfully processes the request.

INVALID_DATA - validation of request failed.

UNSUPPORTED_RESOURCE - The vehicle does not support the requested module in the requested location

REJECTED - The vehicle rejects GetInteriorVehicleData request because of

- Other tasks of higher priority
- The requested module is busy with another passenger's application.

IGNORED - The vehicle ignores the request because the data and subscription status has not changed since the previous request.

GENERIC_ERROR - The unknown issue occurred or other codes are not applicable. *RSDL waits for response from the vehicle during RSDL's internal timeout for vehicle RPCs ("DefaultTimeout" parameter in SmartDeviceLink.ini file; set to 10 sec by default) and in case it's not received, RSDL returns GENERIC_ERROR result to the corresponding mobile application's request.*

DISALLOWED -one of the following

- the application's policies assigned by RSDL do not list the RPC among allowed ones
- application is registered from passenger's device and RemoteControl is turned off through HMI
- application is registered from passenger's device and regional constrains disallow RemoteControl

USER_DISALLOWED - the driver:

- Denies the permission prompt triggered for the application registered from passenger's device
- Or the driver disallows the group of requests where this RPC is included to

READ_ONLY - The vehicle has all of requested parameters as "read-only" ones for the requested module in the requested location.

Response parameters

Param Name	Type	Mandatory	Additional	Description
moduleData	com.smartdevicelink.proxy.rc.datatypes .ModuleData	true	-	The data from the requested module in the requested location.

ModuleData Struct

Param Name	Type	Mandatory	Additional	Description
moduleType	com.smartdevicelink.proxy.rc.enums .ModuleType	true	-	Defines the module the data is provided for.

moduleZone	com.smartdevicelink.proxy.rc.datatypes .InteriorZone	true	-	Defines the zone the data is provided for.
radioControlData	com.smartdevicelink.proxy.rc.datatypes .RadioControlData	false	-	Must be provided in case the module is RADIO.
climateControlData	com.smartdevicelink.proxy.rc.datatypes .ClimateControlData	false	-	Must be provided in case the module is CLIMATE.

ModuleType Enum

Param Name	Description
CLIMATE	Names the Climate module of the vehicle
RADIO	Names the Radio module of the vehicle

InteriorZone Struct

Param Name	Type	Mandatory	Additional	Description
col	Integer	true	minValue = 0 maxValue = 100	The value of column from "column-row-level" grid that defines the location.
row	Integer	true	minValue = 0 maxValue = 100	The value of row from "column-row-level" grid that defines the location.
level	Integer	true	minValue = 0 maxValue = 100	The value of level from "column-row-level" grid that defines the location.
colspan	Integer	true	minValue = 0 maxValue = 100	Total number of columns in "column-row-level" grid that defines the location.
rowspan	Integer	true	minValue = 0 maxValue = 100	Total number of rows in "column-row-level" grid that defines the location.
levelspan	Integer	true	minValue = 0 maxValue = 100	Total number of levels in "column-row-level" grid that defines the location.

RadioControlData Struct

Param Name	Type	Mandatory	Additional	Description
frequencyInteger	Integer	false	minValue = 0 maxValue = 1710	The integer part of frequency value (for 101.7 this value should be 101).
frequencyFraction	Integer	false	minValue = 0 maxValue = 9	The fractional part of frequency value (for 101.7 is 7).
band	Common.RadioBand	false	-	The band: AM, FM or XM.
rdsData	Common.RdsData	false	-	RDS (Radio Data System) information.
availableHDs	Integer	false	minValue = 1 maxValue = 3	Number of HD sub-channels if available

hdChannel	Integer	false	minValue = 1 maxValue = 3	Current HD sub-channel if available.
signalStrength	Integer	false	minValue = 0 maxValue = 100	Current frequency signal strength.
signalChangeThreshold	Integer	false	minValue = 0 maxValue = 100	If the signal strength falls below the set value for this parameter, the radio will tune to an alternative frequency
radioEnable	Boolean	false	-	True if the radio is on, false is the radio is off.
state	Common.RadioState	false	-	The radio state: acquiring, acquired, multi-cast.

RadioBand Enum

Param Name	Description
AM	AM (amplitude modulation) band
FM	FM (frequency modulation) band
XM	XM Satellite Radio

RdsData Struct

Param Name	Type	Mandatory	Additional	Description
PS	String	false	minlength = 0 maxlength = 8	Program Service Name
RT	String	false	minlength = 0 maxlength = 64	Radio Text
CT	String	false	minlength = 24 maxlength = 24	The clock text in UTC format as YYYY-MM-DDThh:mm:ss.sTZD
PI	String	false	minlength = 0 maxlength = 6	Program Identification - the call sign for the radio station
PTY	Integer	false	minValue = 0 maxValue = 31	The program type - The region should be used to differentiate between EU and North America program types
TP	Boolean	false	-	Traffic Program Identification - Identifies a station that offers traffic
TA	Boolean	false	-	Traffic Announcement Identification - Indicates an ongoing traffic announcement
REG	String	false	minlength = 0 maxlength = 255	Region

RadioState Enum

Param Name	Description
ACQUIRING	-
ACQUIRED	-
MULTICAST	-
NOT_FOUND	-

Climate:

ClimateControlData Struct

Param Name	Type	Mandatory	Additional	Description
fanSpeed	Integer	false	minValue = 0 maxValue = 100	The speed of the fan.
currentTemp	Integer	false	minValue = 0 maxValue = 100	The temperature currently set on the module.
desiredTemp	Integer	false	minValue = 0 maxValue = 100	The temperature to be set on the module (must be used with SetInteriorVehicleData only).
temperatureUnit	Common.TemperatureUnit	false	-	Units the temperature is measured in: Kelvin, Fahrenheit or Celsius
acEnable	Boolean	false	-	If "true" - air conditioning is ON.
circulateAirEnable	Boolean	false	-	If "true" - air circulation is ON.
autoModeEnable	Boolean	false	-	If "true" - the climate system is in auto mode.
defrostZone	Common.DefrostZone	false	-	Defines the defrost zone: front, rear or all.
dualModeEnable	Boolean	false	-	If "true" - the dual mode in ON and driver's and passenger's zones can have separate climate settings.

TemperatureUnit Enum

Param Name	Description
KELVIN	-
FAHRENHEIT	-
CELSIUS	-

DefrostZone Enum

Param Name	Description
FRONT	-
REAR	-
ALL	-

