

SEDECAL	<i>Proyecto: - -</i>	Revision: D
<i>Código: IIS0015SPRO</i>	R2CP.ETH Network - Message Description	Date: 03/10/2019

R2CP.ETH NETWORK - MESSAGE DESCRIPTION

Software Protocol Specification




Author: Mate, L.  Software Engineer Date: 22/01/2019	Reviewed: Albendea, J.  SW Eng. Manager Date: 03/10/2019	Approved: Varo, Antonio  Software Engineer Date: 03/10/2019

Table of Updates

Revision	Protocol version	Date	Changes / Remarks	Affected Sections	Author
-	2.0.0	10/01/2017	First release	All	Fco Sanchez
-	2.0.1	31/01/2017	Added Network Configuration	2.5	Fco Sanchez
A	2.1.0	26/01/2018	Document Network- Message Description v2.0.1.doc imported into EPDM as IIS0015SPRO for EPDM naming convention	None	J.Albendea
B	2.1.1	13/03/2018	Added File Configuration Update Notification message	3.1	J.A.Torres
C	2.1.2	22/03/2018	Added Snapshot message	2.7	J.A.Torres
D	2.1.3	18/04/2018	Deprecated Snapshot message Added Backup and Snapshot message	2.7, 2.8	J.A.Torres
		03/08/2018	Revised descriptions for messages	2.1, 2.2, 2.3, 2.4	Lucia Maté
		11/10/2018	Restore message included	2.10	Lucía Maté
		16/10/2018	Generator license removed from restore message	2.10	Lucía Maté
		10/12/2018	How to connect to SmartHub explanation	2 (Intro)	Lucía Maté
		19/12/2018	FileCalibrationUpdate	2.7	Lucía Maté

Table of Contents

TABLE OF UPDATES	2
1. INTRODUCTION.....	4
COMPATIBILITY TABLE.....	4
2. NETWORK.....	4
2.1. CONNECTION CHANGED	4
2.2. NODE STATUS	5
2.3. HEARTBEAT	6
2.4. CONNECTION REQUEST.....	6
2.5. NETWORK CONFIGURATION	8
2.6. FILE CONFIGURATION UPDATE NOTIFICATION.....	9
2.7. FILE CALIBRATION UPDATE NOTIFICATION.....	9
2.8. SNAPSHOT. SEE 3.1.....	10
2.9. BACKUP AND SNAPSHOT	10
2.10. RESTORE.....	15
3. DEPRECATED	16
3.1. SNAPSHOT.....	16
4. MESSAGE INDEX TABLE	17

1. INTRODUCTION

This document describes the Network R2CP protocol area.

Compatibility Table

Document Revision	A	B	C	D
Date	6/04/17	13/03/18	22/03/18	27/11/18
Protocol Version	2.1.0	2.1.1	2.1.2	2.1.3

2. NETWORK

To connect to the smarthub, the message sequence is as follows:

- Connect (TCP Client) to 10000 PORT.
- Send the Connection Request Message EVENT with your node ID.
- The SmartHub will check your ID with those configured in ConfigR2CP.xml. If Node ID is present, Smart Hub accepts the incoming connection and notifies it with the Connection Changed EVENT.
- After that, the Smart Hub will send periodically HeartBeat GET Message to the node, who should responde with the HeartBeat EVENT. The period is configurable in the `<keepAliveInterval>10</keepAliveInterval>` field of the ConfigR2CP.xml file.

2.1. Connection Changed

SUBINDEX: 1

ANSWER-EVENT

BYTE	DATA	FORMAT
1	Node Id	[1..31]
2	Connection status	1 connected 0 not connected

DESCRIPTION

This message is notified when a node connects or disconnect to the smarthub.

2.2. Node Status

SUBINDEX: 2

ANSWER-EVENT

BYTE	DATA	FORMAT
1	Node Id	[1..31]
2	Connection status	1 connected 0 not connected

GET

BYTE	DATA	FORMAT
1	Node Id	[1..31]

DESCRIPTION

Gets the connection status for the requested NodeID

2.3. Heartbeat

SUBINDEX: 3

GET

BYTE	DATA	FORMAT
1	Node Id	[1..31]
2	Sequence	[0..255]

ANSWER-EVENT

BYTE	DATA	FORMAT
1	Node Id	[1..31]
2	Sequence	[0..255]

DESCRIPTION

This message is sent from any node to the smarthub, and viceversa, to check the connection status at application level. The node should respond to the GET message with an EVENT.

2.4. Connection Request

SUBINDEX: 4

ANSWER-EVENT

BYTE	DATA	FORMAT
1	Node Id	[1..31]

DESCRIPTION

This message is sent by a Node to the SmartHub to identify itself at connection time.

CONFIDENTIAL

2.5. Network Configuration

SUBINDEX: 5

SET

BYTE	DATA	FORMAT
1 2 3 4	New IP	Network byte order.
5 6 7 8	New Mask	Network byte order.
9 10 11 12	New Gateway	Network byte order.
13 14 15 16	New Smart Hub IP	Network byte order.

GET

No data.

ANSWER-EVENT

BYTE	DATA	FORMAT
1 2 3 4	Current IP	Network byte order.

5	Current Mask	Network byte order.
6		
7		
8		
9	Current Gateway	Network byte order.
10		
11		
12		
13	New Smart Hub IP	Network byte order.
14		
15		
16		

DESCRIPTION

Command to modify and check ip configuration of the node.

2.6. *File Configuration Update Notification*

SUBINDEX: 6

EVENT

No data

DESCRIPTION

The device that modifies any file of the share configuration folder, should notify with this message to the rest of system. After the reception of this EVENT, every component can

- check what file has changed, download it, update information if possible
- download the files, and update information if possible

2.7. *File Calibration Update Notification*

SUBINDEX: 10

EVENT

No data

DESCRIPTION

The device that modifies any file of the share calibration folder, should notify with this message to the rest of system. After the reception of this EVENT, every component can

- check what file has changed, download it, update information if possible
- download the files, and update information if possible

2.8. *Snapshot. See 3.1*

2.9. *Backup and Snapshot*

SUBINDEX: 8

SET

BYTE	DATA	FORMAT
1(1)	Event Logs	0, Disabled 1, Enabled
1(2)	Exposure Logs	0, Disabled 1, Enabled
1(3)	Error Logs	0, Disabled 1, Enabled
2(1)	Configuration	0, Disabled 1, Enabled
2(2)	System Calibration	0, Disabled 1, Enabled
2(3)	Filament Calibration	0, Disabled 1, Enabled

2(4)	Factory	0, Disabled 1, Enabled
2(5)	License	0, Disabled 1, Enabled
2(6)	Exposure Counter	0, Disabled 1, Enabled

EVENT

BYTE	DATA	FORMAT
1	Status	1 – Start 2 – In Progress 3 – Finished 4 – Error

COMMAND PROCESSED FUNCTION RETURN CODES**SET**

BYTE	DATA	FORMAT
1	SEQ Number for the SET request	1 .. 255
2	Return Code	RETURN CODES: 0 OK

DESCRIPTION

The intended use of this command is to archive the current system logs and configuration and calibration files when the operator requests it.

The workflow is as follows:

1. The operator uses the Generate Snapshot option in one console

2. That console checks the nodes of type "Console", "Hub", "Positioner", "Generator" and "Image system" connected to the system and sends them the *SnapShotSETMessage* indicating the action to be performed
3. Each node which receives the *SnapShotSETMessage* initiates their snapshot sequence and notifies it sending a broadcast *SnapShotEVENTMessage* with the "Status=InProgress"
4. Each node notifies the result of their snapshot sequence sending a broadcast *SnapShotEVENTMessage* with the "Status=Finished" or "Status=Error". In case of *Error* the node must send a *SystemMessage* indicating the error

CASES OF USE

1. System backup

- The console sends the message to all the nodes of the system

BYTE	DATA	FORMAT
1(1)	Event Logs	0, Disabled
1(2)	Exposure Logs	0, Disabled
1(3)	Error Logs	0, Disabled
2(1)	Configuration	1, Enabled
2(2)	System Calibration	1, Enabled
2(3)	Filament Calibration	1, Enabled
2(4)	Factory	0, Disabled
2(5)	License	1, Enabled
2(6)	Exposure Counter	1, Enabled

2. Factory backup

- The console sends the message to all the nodes of the system

BYTE	DATA	FORMAT
------	------	--------

1(1)	Event Logs	0, Disabled
1(2)	Exposure Logs	0, Disabled
1(3)	Error Logs	0, Disabled
2(1)	Configuration	1, Enabled
2(2)	System Calibration	1, Enabled
2(3)	Filament Calibration	1, Enabled
2(4)	Factory	1, Enabled
2(5)	License	1, Enabled
2(6)	Exposure Counter	1, Enabled

3. Snapshot

- The console sends the message to all the nodes of the system

BYTE	DATA	FORMAT
1(1)	Event Logs	1, Enabled
1(2)	Exposure Logs	1, Enabled
1(3)	Error Logs	1, Enabled
2(1)	Configuration	1, Enabled
2(2)	System Calibration	1, Enabled
2(3)	Filament Calibration	1, Enabled
2(4)	Factory	0, Disabled
2(5)	License	1, Enabled

2(6)	Exposure Counter	1, Enabled
------	------------------	------------

4. Filaments calibration backup

- The console sends the message to the generator

BYTE	DATA	FORMAT
1(1)	Event Logs	0, Disabled
1(2)	Exposure Logs	0, Disabled
1(3)	Error Logs	0, Disabled
2(1)	Configuration	0, Disabled
2(2)	System Calibration	0, Disabled
2(3)	Filament Calibration	1, Enabled
2(4)	Factory	0, Disabled
2(5)	License	0, Disabled
2(6)	Exposure Counter	0, Disabled

5. Generator calibration backup

- The console sends the message to the generator

BYTE	DATA	FORMAT
1(1)	Event Logs	0, Disabled
1(2)	Exposure Logs	0, Disabled
1(3)	Error Logs	0, Disabled
2(1)	Configuration	0, Disabled

2(2)	System Calibration	1, Enabled
2(3)	Filament Calibration	0, Disabled
2(4)	Factory	0, Disabled
2(5)	License	0, Disabled
2(6)	Exposure Counter	0, Disabled

6. Exposure counter backup

- The console sends the message to the generator

BYTE	DATA	FORMAT
1(1)	Event Logs	0, Disabled
1(2)	Exposure Logs	0, Disabled
1(3)	Error Logs	0, Disabled
2(1)	Configuration	0, Disabled
2(2)	System Calibration	0, Disabled
2(3)	Filament Calibration	0, Disabled
2(4)	Factory	0, Disabled
2(5)	License	0, Disabled
2(6)	Exposure Counter	1, Enabled

2.10. Restore

Restore different configuration options.

Subindex: 9

Lenght: 1

SET

Restore can be done separately to different

BYTE	DATA	FORMAT
1(1)	Configuration	1, Enabled
1(2)	Generator Calibration	1, Enabled
1(3)	Positioner Calibration	1, Enabled
1(4)	Fillament Calibration	0, Disabled

EVENT

BYTE	DATA	FORMAT
1	Status	1 – Start 2 – In Progress 3 – Finished 4 – Error

3. DEPRECATED

3.1. *Snapshot*

This message is deprecated and it should not be used in future developments.

Use the Backup and Snapshot message (subindex 8) instead.

SUBINDEX: 7**EVENT**

BYTE	DATA	FORMAT
1	Status	1 – Start 2 – In Progress 3 – Finished 4 – Error

DESCRIPTION

The intended use of this command is to archive the current system logs and configuration files when the operator requests it.

The workflow is as follows:

1. The operator uses the Generate Snapshot option in one console
2. That console checks the nodes of type “Console”, “Hub” and “Image system” connected to the system and sends them the *SnapShotEVENTMessage* with the data “Status = Start” (it is not a broadcast EVENT but one message for each of the node found, mapping the node identifier in the destination field of header of the message)
3. Each node which receives the *SnapShotEVENTMessage* with the “Status=Start” initiates their snapshot sequence and notifies it to the console sending the *SnapShotEVENTMessage* with the “Status=InProgress” (it is not a broadcast EVENT but one message mapping the console node in the destination field of header of the message)
4. Each node notifies the result of their snapshot sequence to the console sending the *SnapShotEVENTMessage* with the “Status=Finished” or “Status=Error” (it is not a broadcast EVENT but one message mapping the console node in the destination field of header of the message)

4. MESSAGE INDEX TABLE**NETWORK GROUP INDEX 0xA0**

GROUP	SUBINDEX	DESCRIPTION
NETWORK	1	CONNECTION CHANGED
	2	NODE STATUS
	3	HEARTBEAT
	4	CONNECTION REQUEST
	5	NETWORK CONFIGURATION
	6	FILE CONFIGURATION UPDATE NOTIFICATION
	7	SNAPSHOT
	8	BACKUP AND SNAPSHOT
	9	RESTORE