

STB ATT Communication Protocol(Ver7.5)

2021.01.13

(주)HM Solution

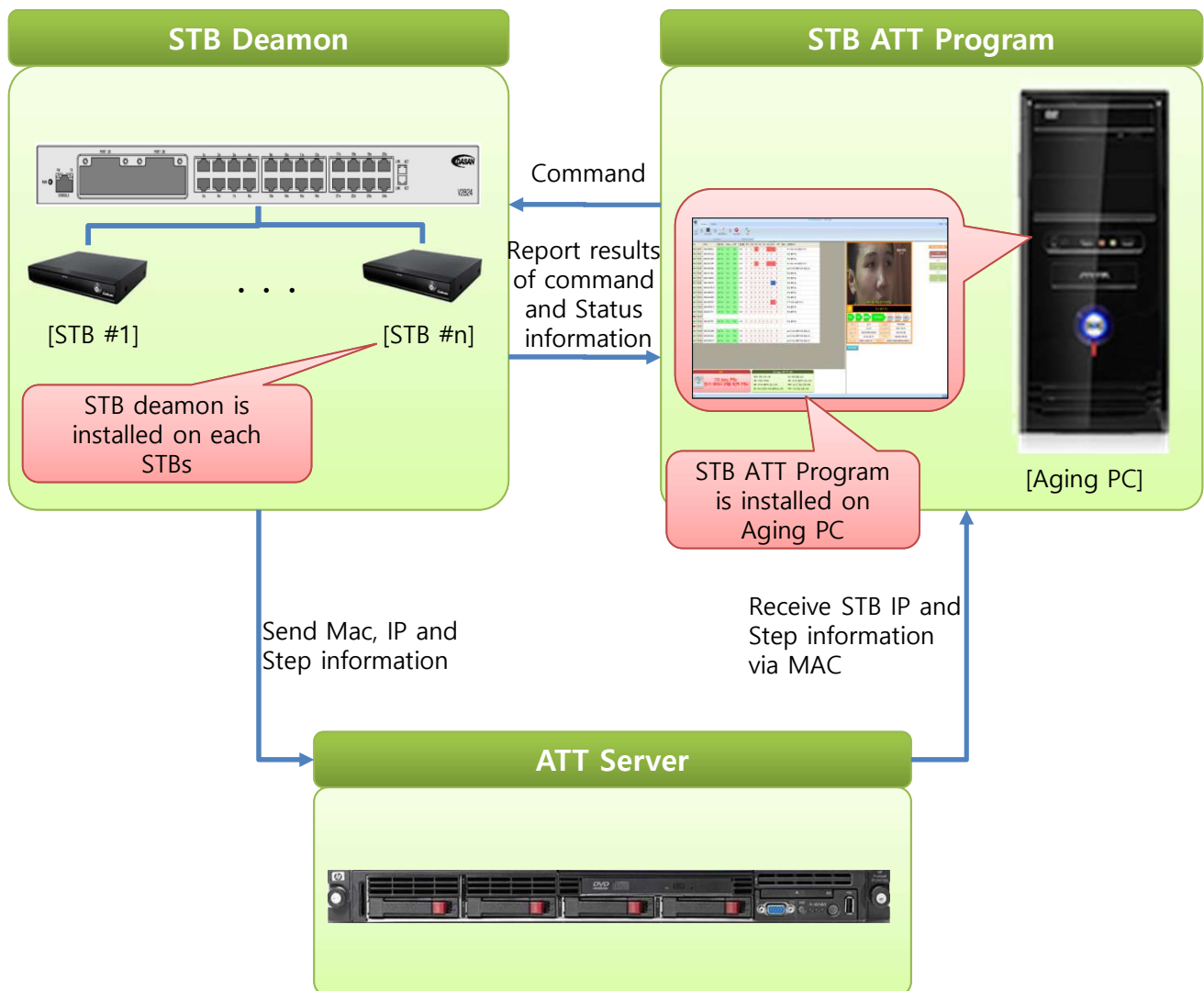
[Revision History]

Ver.	Date	Page	Revision Contents
V7.0			
V7.1	2019-07-29	p23	2.4.8 COMPLETE : Define meaning of items of Result
		p27, p28	3.2 STB Information communication Protocol : Add "Test Url sample in Web Browser"
V7.2	2019-09-19	P8	2.2 Scenario for sending/receiving Information – 4/4
		p15	2.4.2 COMMAND 2/2
		p32	4.3 Major issues
V7.3	2020-04-10	p18,p27,p28	- Delete unused INFO protocol - Modify test URL to communicate server
V7.4	2020-07-10		Delete unused protocol
V7.5	2021-01-13	P15, p24	Define additional Button code for AI2 Max의

1. System Configuration of STB ATT

1.1 STB Deamon

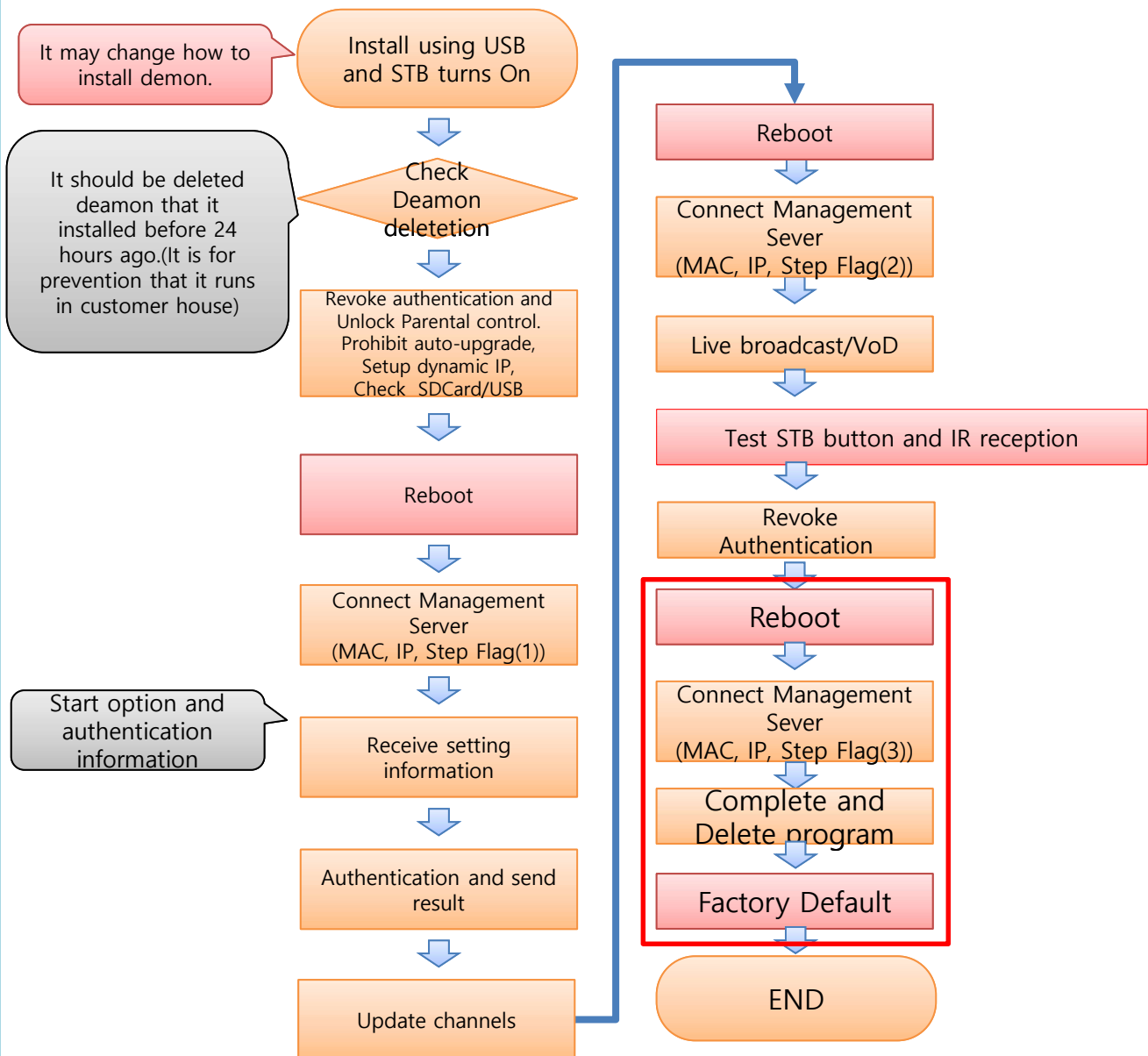
STB ATT program is installed on PC for aging test. And STB Deamon is installed on each STBs for test. STB and Aging PC should be able to configure the network environment and connect to each other so that they can access. STB ATT controls and monitors STBs through STB Deamon via network.



2. STB Deamon communication scenario

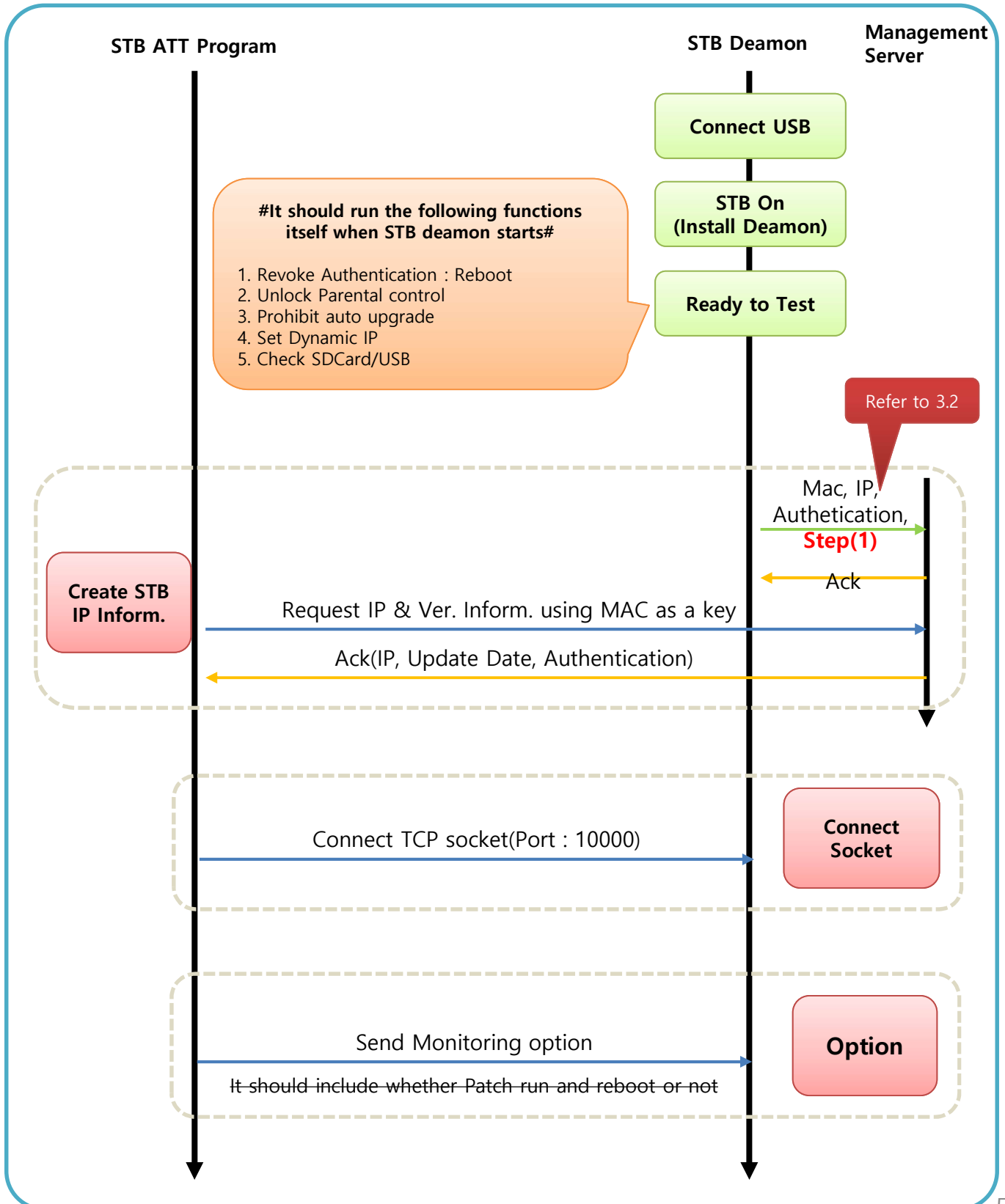
2.1 STB Deamon

The STB daemon is started when the STB is booted, and when the STB obtains the IP, it sends the information to the server and waits until the STB ATT program is connected. The STB status information is transmitted when STB ATT program is connected periodically or when an event occurs. The command is executed when it is received.



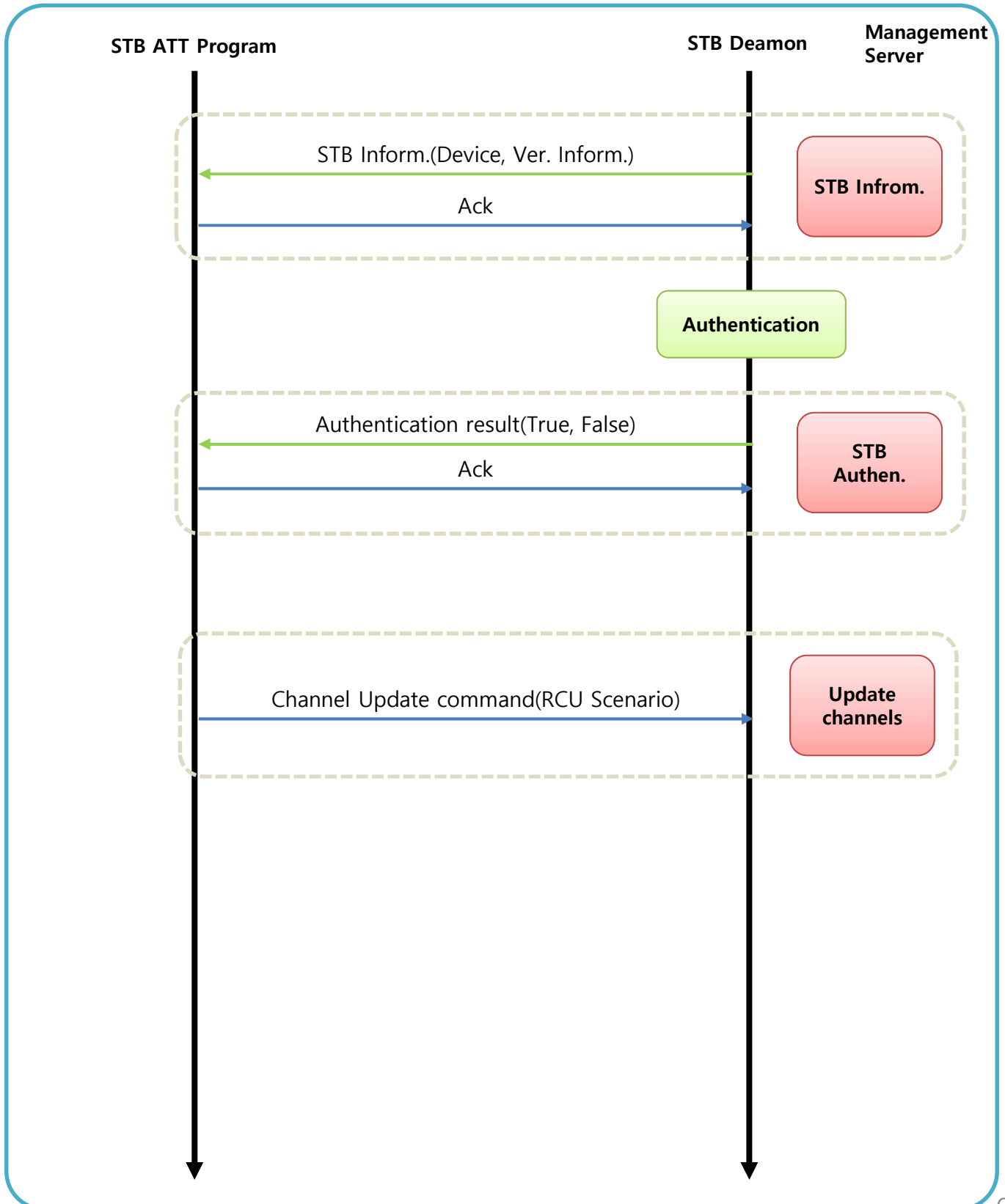
* After completing each step, it is necessary to modify the step information based on reboot status.

2.2 Scenarion for sending/receiving Information – 1/4

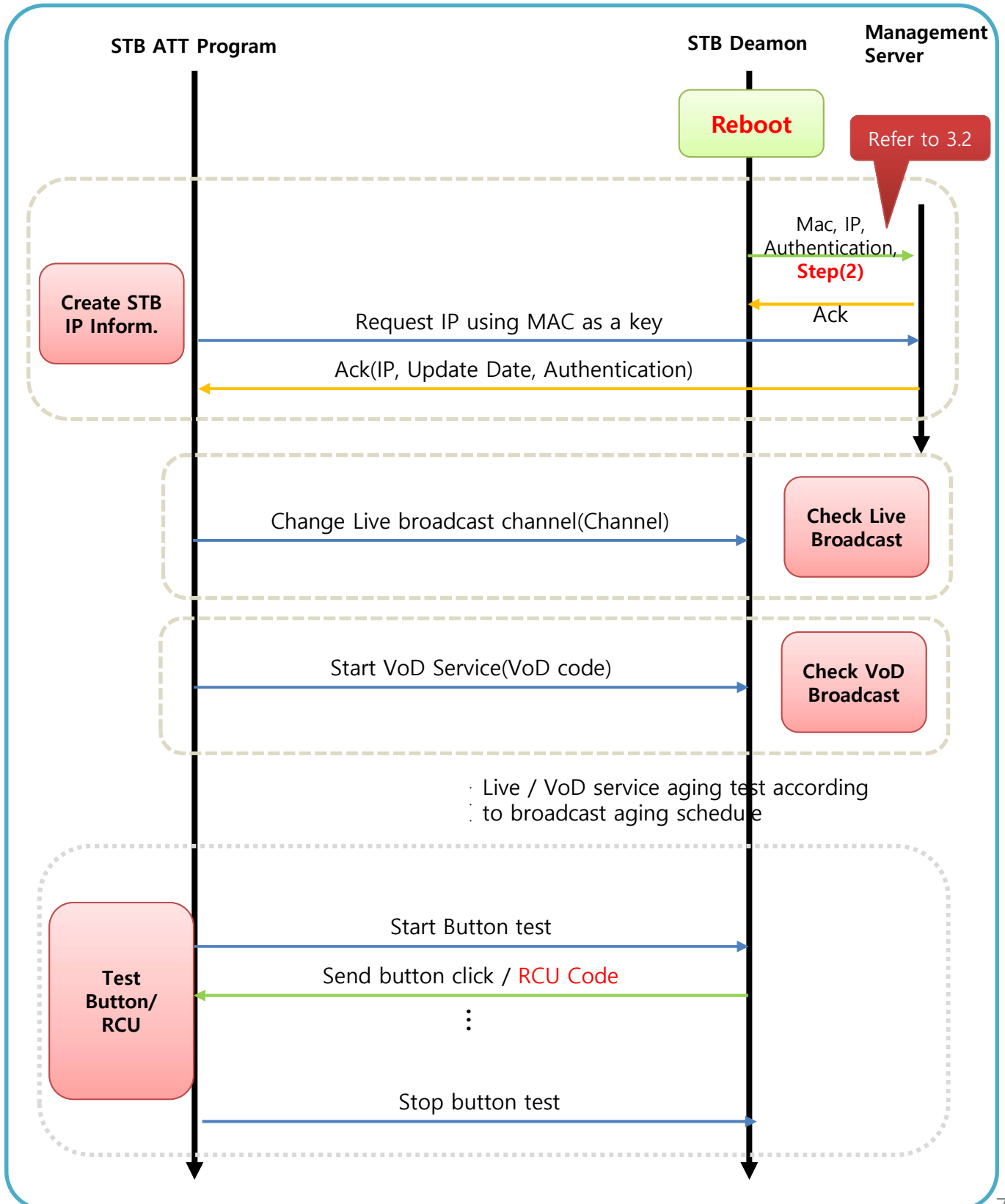


2. STB Deamon communication Scenario

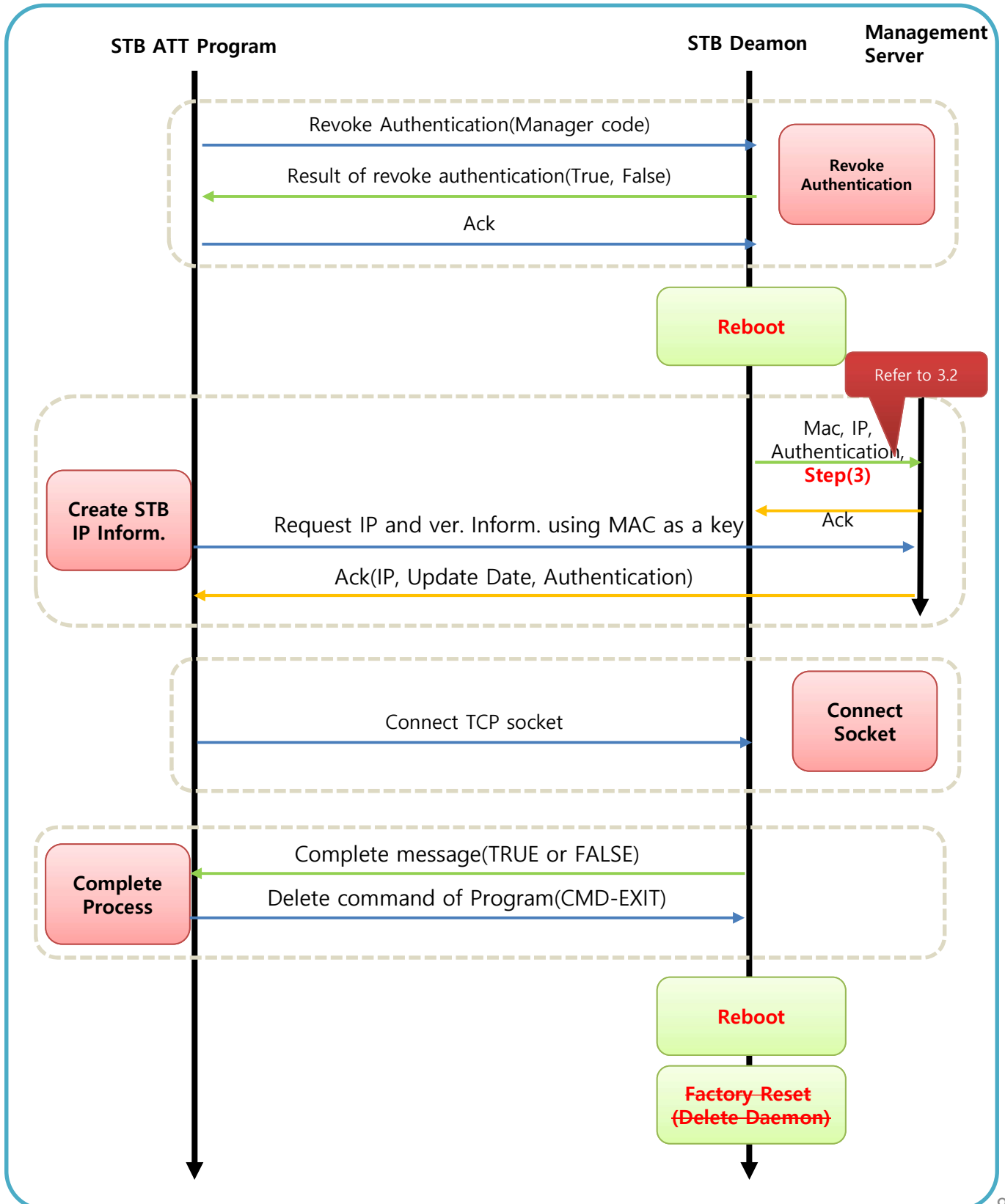
2.2 Scenarion for sending/receiving Information – 2/4



2.2 Scenarion for sending/receiving Information – 3/4



2.2 Scenarion for sending/receiving Information – 4/4

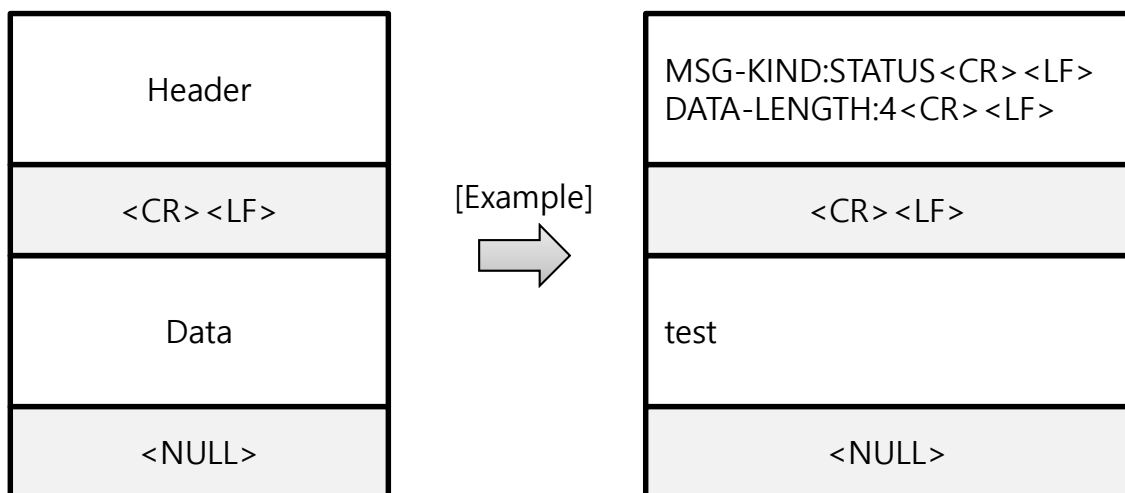


2.3 Concept of STB Deamon communication Protocol

The communication protocol defines the TCP / IP socket communication rule between the STB ATT program and the STB daemon.

Basically, the communication protocol configuration is consist a header and a data area. The header can have several fields. The each field is separated by <CR> <LF>. The header and data area are separated by empty line that field has only <CR> <LF>.

There are several fields in the header, and each field is separated by <CR> <LF>. The length of the header is not defined specifically, but is recognized as a header area until an empty line with <CR> <LF>, and the rest of it is recognized as a data area. Some commands can communicate using only header without data area. The length of data area is defined in header. So data can be read as long as the length of data is. Data for communication uses only text, so there is always NULL (0x00) as the last part of data. You can check where is the last part of data even if you don't check the data length in the header. <NULL> doesn't include the length of data.



- <CR> means 0x0D.
- <LF> means 0x0A.
- <NULL> means 0x00.

2.3 Concept of STB Daemon communication Protocol

2.3.1 Communication Protocol Type 1/2

Direction	MSG-KIND	Contents	Header/Data
PC->STB	OPTION	Image types(jpg or bmp) Image resolution도(640 * 480 등) Image transfer interval(Sec.)	Data : IMAGE-KIND:JPG<CR><LF> IMAGE-RESOLUTION:640-480<CR><LF> IMAGE-CYCLE:1<CR><LF> CITIZEN-NUMBER:1234567<CR><LF> LOGIN-NUMBER:1234567<CR><LF> MANAGER-CODE:92393484884<CR><LF> PARTIAL-PATCH:1<CR><LF>
	COMMAND (Add "COMMAND-KIND" in header)	User control	Header : COMMAND-KIND:USER-CONTROL Data : RCU control scenario is in there 1C,1000<CR><LF> 20,500<CR><LF>
		Channel update	Header : COMMAND-KIND:CHANNEL-UPDATE Data : RCU control scenario is in there 1C,1000<CR><LF> 20,500<CR><LF>
		Partial Patch	Header : COMMAND-KIND:PARTIAL-PATCH Data : RCU control scenario is in there 1C,1000<CR><LF> 20,500<CR><LF>
		Change Live broadcast channels	Header : COMMAND-KIND:CHANNEL Data : RCU control scenario is in there 1C,1000<CR><LF> 20,500<CR><LF>
		Start VoD Service	Header : COMMAND-KIND:VOD Data : RCU control scenario is in there 1C,1000<CR><LF> 20,500<CR><LF>
		Stop VoD Service	Header : COMMAND-KIND:VOD-STOP Data : RCU control scenario is in there 1C,1000<CR><LF> 20,500<CR><LF>
		Revoke Authentication	Head : COMMAND-KIND:LOGOUT Data : N/A
		Start Test of Button/RCU	Head : COMMAND-KIND:HW-TEST-START Data : N/A
		Stop Test of Button/RCU	Head : COMMAND-KIND:HW-TEST-STOP Data : N/A
		Terminate STB daemon	Head : COMMAND-KIND:EXIT Data : N/A

*Deleted content is not used by the daemon, but is delivered as part of the protocol.

2.3 Concept of STB Deamon communication Protocol

2.3.1 Communication Protocol Type 2/2

Direction	MSG-KIND	Contents	Header/Data
STB->PC	STATUS	Video Time Stamp, Audio Time Stamp, Type of played video, error code, etc...	Data : VIDEO-TSTAMP:12321321 AUDIO-TSTAMP:3243324 VIDEO-KIND:2 ERROR-CODE;0 etc....
	INFO	Version Information Device information	SW-UPDATE-DATE:2012-02-12 CHANNEL-VER:3.4 CHANNEL-UPDATE-DATE:2012-01-12 HDD:30,21.23
	LOGIN	Complete message of authentication	TRUE or FALSE
	LOGOUT	Complete message of revoke authentication	TRUE or FALSE
	REBOOT	Reboot message	2 or 3
	IMAGE	Captured-Image	Image-BINARY
	HW-TEST-BUTTON	STB Button test	##RCU Code#### Send one of the following codes CODE:01 // 전원 CODE:0A // 채널 Up CODE:0B // 채널 Down CODE:0C // 볼륨 Up CODE:0D // 볼륨 Down
		RCU Button test	##RCU Code#### Send one of the following codes CODE:09 // MUTE
	COMPLETE	Complete message	TRUE or FALSE
Common	ACK	Reception	

2.4 STB Daemon Communication Detail Protocol

2.4.1 OPTION 1/2

MSG-KIND is an option that the STB ATT program sends to STB daemon after TCP connections. The STB daemon uses that information to decide the image generation cycle and format. It also includes additional information needed for STB daemon to execute functions within the STB.

Items	Contents
Direction of transmission	PC -> STB
Transmission time	Once after TCP connection between STB ATT program and STB daemon
Transmission Interval	Once (for the first time)

Information	Data type	Data
Image Type	IMAGE-KIND	JPEG or BMP
Image Resolution	IMAGE-RESOLUTION	ORIGINAL or 640-480
Image transfer Interval	IMAGE-CYCLE	Seconds(1 or 2 or)
Resident registration number	CITIZEN-NUMBER	Resident registration number for authentication(070718)
Authentication number	LOGIN-NUMBER	Number for authentication (100601010123)
Manager code	MANAGER-CODE	Code for revoke authentication (1239)
Partial Patch execution or not	PARTIAL-PATCH	0 or 1(1 means patch execution)
Partial Patch 후 STB 데몬의 재부팅 수행 여부	PATCH-REBOOT-FLAG	0 or 1(1 means that daemon executes reboot)
Latest S/W version	LATEST-SW-VER	Version(3.2.5)
Latest Partial version	LATEST-PARTIAL-VER	Version(3.2.6)

Use for STATUS transmission Interval

There is no Partial Patch policy any more. So above items are not used, but protocol is in it.

2.4.1 OPTION 2/2

MSG-KIND:OPTION<CR><LF> DATA-LENGTH:??<CR><LF>
<CR><LF>
IMAGE-KIND:JPG<CR><LF> IMAGE-RESOLUTION:640-480<CR><LF> IMAGE-CYCLE:1<CR><LF> CITIZEN-NUMBER:1234567<CR><LF> LOGIN-NUMBER:1234567<CR><LF> MANAGER-CODE:92393484884<CR><LF> PARTIAL-PATCH:1<CR><LF> PATCH-REBOOT-FLA:1<CR><LF> LATEST-SW-VER:1.1.1<CR><LF> LATEST-PARTIAL-VER:1.0.0<CR><LF>
<NULL>

[Example for OPTION transport packet]

2.4.2 COMMAND 1/2

MSG-KIND is the command that the STB ATT program ask STB deamon to execute its function.
When using this syntax, the "COMMAND-KIND" entry should be added in the header.

Items	Contents
Direction of transmission	PC -> STB
Transmission time	When the STB ATT program decide that each STEP is the start point.
Transmission Interval	Once for each command

Information	Data type	Data
User Control	USER-CONTROL	It contains RCU control scenario to execute these commands. 1C,1000<CR><LF> 20,500<CR><LF> 21,500<CR><LF> 22,500<CR><LF> 23,500<CR><LF> 12,500<CR><LF>
Channel Update	CHANNEL-UPDATE	
Partial Patch	PARTIAL-PATCH	
Live broadcast channel change	CHANNEL	
Start VoD Service	VOD	
Stop VoD Service	VOD-STOP	
Revoke Authentication	LOGOUT	N/A
Start Button/RCU Test	HW-TEST-START	N/A
Stop Button/RCU Test	HW-TEST-STOP	N/A
Terminate STB Deamon	EXIT	N/A

```
MSG-KIND:COMMAND<CR><LF>
COMMAND-KIND:LOGOUT<CR><LF>
DATA-LENGTH:0<CR><LF>
```

```
<CR><LF>
```

```
<NULL>
```

[Example for config. of LOGOUT command transport packet]

```
MSG-KIND:COMMAND<CR><LF>
COMMAND-KIND:EXIT<CR><LF>
DATA-LENGTH:0<CR><LF>
```

```
<CR><LF>
```

```
<NULL>
```

[Example for config. of EXIT command transport packet]

2.4.2 COMMAND 2/2

For user control, channel update, partial patch, Live broadcast and VoD broadcast, and VoD stop, IR control scenarios of the customer are transmitted in the data area.

```
#define HWM_KEY_POWER          0x0001
#define HWM_KEY_HOME           0x0002
#define HWM_KEY_TUNER          0x0003
#define HWM_KEY_MENU           0x0004
#define HWM_KEY_HISTORY        0x0005
#define HWM_KEY_CANCEL         0x0006
#define HWM_KEY_LOCK           0x0007
#define HWM_KEY_BREAK          0x0008
#define HWM_KEY_MUTE           0x0009
#define HWM_KEY_CHUP           0x000A
#define HWM_KEY_CHDOWN        0x000B
#define HWM_KEY_VOLUP          0x000C
#define HWM_KEY_VOLDOWN        0x000D
#define HWM_KEY_UP             0x000E
#define HWM_KEY_DOWN           0x000F
#define HWM_KEY_RIGHT          0x0010
#define HWM_KEY_LEFT           0x0011
#define HWM_KEY_ENTER          0x0012
#define HWM_KEY_PLAY           0x0013
#define HWM_KEY_STOP           0x0014
#define HWM_KEY_FASTFORWARD    0x0015
#define HWM_KEY_REWIND         0x0016
#define HWM_KEY_PAUSE          0x0017
#define HWM_KEY_FORWARD_SKIP    0x0018
#define HWM_KEY_BACKWARD_SKIP  0x0019
#define HWM_KEY_RESERVATION     0x001A
#define HWM_KEY_RECORD         0x001B
#define HWM_KEY_SEARCH         0x001C
#define HWM_KEY_CAPTION        0x001D
#define HWM_KEY_ADDITIONAL_SERVICE 0x001E
#define HWM_KEY_JOY            0x001F
#define HWM_KEY_0              0x0020
#define HWM_KEY_1              0x0021
#define HWM_KEY_2              0x0022
#define HWM_KEY_3              0x0023
#define HWM_KEY_4              0x0024
#define HWM_KEY_5              0x0025
#define HWM_KEY_6              0x0026
#define HWM_KEY_7              0x0027
#define HWM_KEY_8              0x0028
#define HWM_KEY_9              0x0029
#define HWM_KEY_POUND          0x002B
#define HWM_KEY_COLOR_RED      0x0031
#define HWM_KEY_COLOR_GREEN    0x0032
#define HWM_KEY_COLOR_YELLOW   0x0033
#define HWM_KEY_COLOR_BLUE     0x0034
#define HWM_KEY_MIC_OFF        0x0040
#define HWM_KEY_BLUETOOTH_MODE 0x0041
#define HWM_KEY_SOUND_EFFECT   0x0042
```

```
MSG-KIND:COMMAND<CR> <LF>
COMMAND-KIND:VOD<CR> <LF>
DATA-LENGTH:123<CR> <LF>
```

```
<CR> <LF>
```

```
1C,1000<CR> <LF>
20,500<CR> <LF>
21,500<CR> <LF>
22,500<CR> <LF>
23,500<CR> <LF>
12,500<CR> <LF>
```

```
<NULL>
```

[Example of VOD command transport packet config.]

1. Click the Search button and wait for 1000 ms.
2. Click 0 and wait for 500 ms
3. Click 1 and wait for 500 ms
4. Click 2 and wait for 500 ms
5. Click 3 and wait for 500 ms
6. Click the OK(Enter) button and wait for 500ms

Add buttons for AI2 Max

2.4.3 STATUS

STATUS information is STB status information that STB daemon sent to STB ATT program regularly (optional).
It send only during Live and VoD aging test

Items	Contents
Direction of transmission	STB -> PC
Transmission time	At the start of Live and VoD Aging test.
Transmission Interval	Periodic(using the transmission interval of OPTION): It will be set to 1 sec.

Information	Data type	Data
Video Timestamp	VIDEO-PTS	23123123
Audio Timestamp	AUDIO-PTS	33124234
Current Video Type	VIDEO-KIND	0 : None, 1 : Live Broadcast, 2 : VoD, 3 : ADV
Error code	ERROR-CODE	STB error status checked by STB daemon (requires definition of error type and code) E0000(OK),E0001, E0002...
The others		It may be added

```
MSG-KIND:STATUS<CR><LF>
DATA-LENGTH:231<CR><LF>
```

```
<CR><LF>
```

```
VIDEO-PTS:1234123<CR><LF>
AUDIO-PTS:1234112<CR><LF>
VIDEO-KIND:2<CR><LF>
ERROR-CODE:E0000<CR><LF>
```

```
<NULL>
```

[Example for configuration of STATUS Transport Packet]

****In case of smart STB, if the Audio PTS is not available, insert and use the Video PTS value into the Audio PTS.**

2.4.3 INFO 1/2

STB daemon sends information to the STB ATT program about STB device information and whether measurement readiness is enabled.

Items	Contents
Direction of transmission	STB -> PC
Transmission time	Once after TCP connection between STB ATT program and STB daemon
Transmission Interval	Once

Information	Data type	Data
S/W last update date	SW-UPDATE-DATE	2012-02-12
Channel version	CHANNEL-VER	3.4
Channel last update date	CHANNEL-UPDATE-DATE	2012-01-12
Total/Available capacity(G)	HDD	30,21.23(Gigabytes)
Self-authentication revocation status	SETUP-LOGOUT	TRUE or FALSE
Unlock Self-parental control	SETUP-CHILDREN-LIMIT	TRUE or FALSE
Set Self-auto upgrade prohibit	SETUP-AUTOUPGRADE-PROHIBITION	TRUE or FALSE
Set Self-Dynamic IP	SETUP-DHCP	TRUE or FALSE
Is SDCARD inserted ?	SDCARD	TRUE or FALSE
Is USB inserted ?	USB	TRUE or FALSE

2.4.3 INFO 2/2

MSG-KIND:INFO<CR><LF> DATA-LENGTH:156<CR><LF>
<CR><LF>
STB-MODEL:TD910H<CR><LF> SW-VER:2.4<CR><LF> SW-UPDATE-DATE:2012-02-12<CR><LF> CHANNEL-VER:3.4<CR><LF> CHANNEL-UPDATE-DATE:2012-01-12<CR><LF> HDD:30,21.23<CR><LF> SETUP-LOGOUT:TRUE<CR><LF> SETUP-CHILDREN-LIMIT:FALSE<CR><LF> SETUP-AUTOUPGRADE-PROHIBITION:TRUE<CR><LF> SETUP-DHCP:TRUE<CR><LF> SDCARD:TRUE<CR><LF> USB:TRUE<CR><LF>
<NULL>

[Example for configuration of INFO transport packet]

2.4.4 LOGIN

STB daemon sends an authentication complete message to the STB ATT program.

Items	Contents
Direction of transmission	STB -> PC
Transmission time	Once after authentication complete
Transmission Interval	Once

Information	Data type	Data
Authentication success ?	RESULT	TRUE or FALSE

```
MSG-KIND:LOGIN<CR><LF>
DATA-LENGTH:13<CR><LF>
```

```
<CR><LF>
```

```
RESULT:TRUE<CR><LF>
```

```
<NULL>
```

[Example for configuration of LOGIN transport packet]

2.4.5 LOGOUT

STB daemon sends authentication revoke message to the STB ATT program.

Items	Contents
Direction of transmission	STB -> PC
Transmission time	Once after authentication revoke complete
Transmission Interval	Once

Information	Data type	Data
Authentication revoke success ?	RESULT	TRUE or FALSE

```
MSG-KIND:LOGOUT<CR><LF>
DATA-LENGTH:13<CR><LF>
```

```
<CR><LF>
```

```
RESULT:TRUE<CR><LF>
```

```
<NULL>
```

[Example for configuration of LOGOUT transport packet]

2.4.6 REBOOT

If a reboot is required, the STB daemon informs the STB ATT program which step of reboot is in.

Items	Contents
Direction of transmission	STB -> PC
Transmission time	Once before reboot
Transmission Interval	Totally twice

Information	Data type	Data
Reboot step	REBOOT-STEP	2 or 3

```
MSG-KIND:REBOOT<CR> <LF>
DATA-LENGTH:15<CR> <LF>
```

```
<CR> <LF>
```

```
REBOOT-STEP:2<CR> <LF>
```

```
<NULL>
```

[Example for configuration of REBOOT transport packet]

2.4.7 IMAGE

STB daemon captures video periodically after authentication and delivers captured image using STB ATT program.

Items	Contents
Direction of transmission	STB -> PC
Transmission time	After the authentication is success, periodical(optional) from the video play start time to the authentication revoke time.
Transmission Interval	Periodic(using Transmission interval of OPTION) : Expect 2 sec.

Information	Data type	Data
Captured Image	N/A	

```
MSG-KIND:IMAGE<CR> <LF>
DATA-LENGTH:20480<CR> <LF>
```

```
<CR> <LF>
```

```
DLKFJOWEIR230RUWEFKLSDFJ23R9FJSDJFDKFJS;DFJS
DF;SDFJK;J;SDFJ;SDJFWEOIFJS;DKFJ;SDFJ;SDJF;SDFJWE
JF;JSDFJKSD;JKFJ;SDF;KFJ;SDFJKLDFDDFSSDFSD
```

```
<NULL>
```

[Example for configuration of IMAGE transport packet]

2.4.8 COMPLETE

After last reboot, STB daemon sends complete message when it connects to STB ATT program

Items	Contents
Direction of transmission	STB -> PC
Transmission time	Once after last reboot
Transmission Interval	Once

Information	Data type	Data
Success ?	RESULT	TRUE or FALSE TRUE : Success to revoke authenticaiton FALSE : Fail to revoke authentication

```
MSG-KIND:COMPLETE<CR><LF>
DATA-LENGTH:13<CR><LF>
```

```
<CR><LF>
```

```
RESULT:TRUE<CR><LF>
```

```
<NULL>
```

[Example for configuration of COMPLETE transport packet]

2.4.9 HW-TEST-BUTTON

STB deamon sends HW TEST Button message when the STB deamon receives a STB Button or RCU signal in HW Test step.

Items	Contents
Direction of transmission	STB -> PC
Transmission time	Send the received code immediately when STB button or RCU signal is detected in HW-TEST STEP(Button/RCU Test)
Transmission Interval	Once

Information	Data type	Data
Detected signal code	CODE	01 // Power 0A // Channel Up 0B // Channel Down 0C // Volume Up 0D // Volume Down 09 // MUTE // Add button for AI2 Max 40 // Mic Off 41 // Bluetooth Mode 42 // Sound field effect

MSG-KIND: HW-TEST-BUTTON<CR><LF>
DATA-LENGTH:9<CR><LF>

<CR><LF>

CODE:0C<CR><LF>

<NULL>

When STB detects
Volume up button
in STB button

[Example for configuration of
HW-TEST-BUTTON transport packet (Button)]

MSG-KIND: HW-TEST-BUTTON<CR><LF>
DATA-LENGTH:9<CR><LF>

<CR><LF>

CODE:09<CR><LF>

<NULL>

When STB detects
MUTE button
signal in

[Example for configuration of
HW-TEST-BUTTON transport packet (RCU)]

2.4.10 ACK

ACK is sent to confirm that the message was received correctly when it was sent and received by the STB ATT program or STB Deamon

Items	Contents
Direction of transmission	PC -> STB deamon
Transmission time	As soon as message is received
Transmission Interval	Once

* No ACK sent by STB deamon to STB ATT program

They type of MSG-KIND that should send a response
INFO
LOGIN, LOGOUT

MSG-KIND:ACK<CR> <LF> DATA-LENGTH:0<CR> <LF>
<CR> <LF>
<NULL>

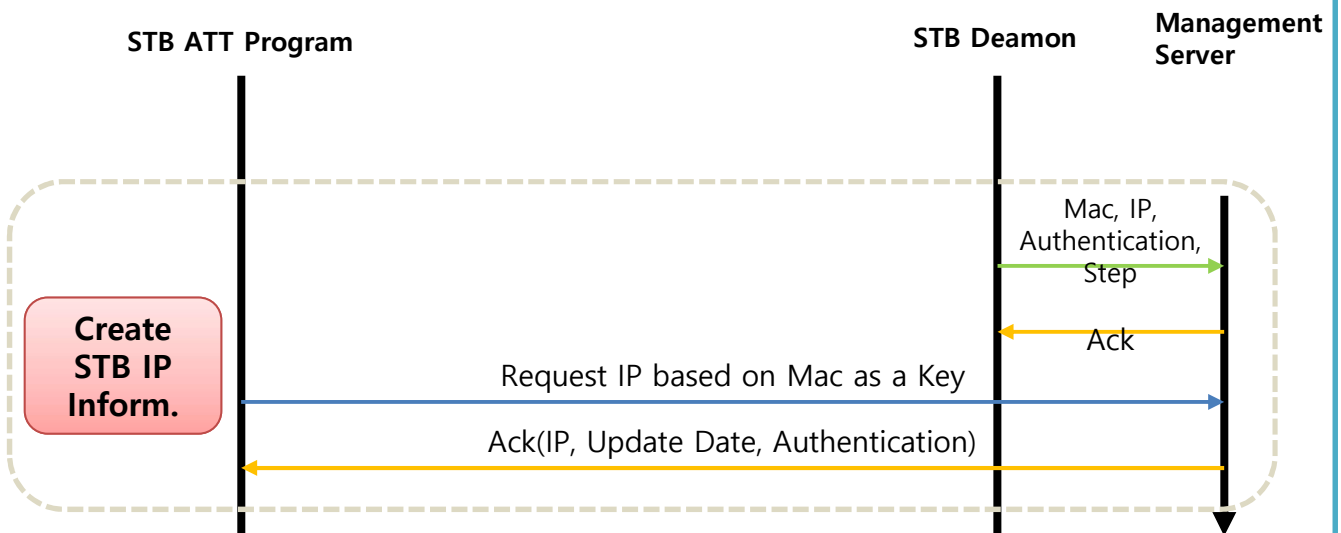
[Example for configuration of ACK transport packet]

3. Management Server Communication

3.1 Management Server communication Overview

STB daemon reports IP and authentication status of STB to the management server when STB is booting for IP Information Management of the STB.

The STB ATT program uses MAC information from STB inputted by the administrator to obtain STB IP information from the management server for network access to STB.



STB IP management DB Table

Name of column	Data type	Description
UPDATE_DATE	Varchar(20)	Time when IP information updated (This inform. is self-generated by the management server when data is received.)
STB_MAC	Varchar(18)	STB MAC Address(Data classification Key)
STB_IP	Varchar(16)	STB IP Address
AUTHENTICATION	Number(1)	STB initial boot Authentication status
REBOOT_STEP	Number(1)	1 ~ 3
STB_SW-VER	Varchar(16)	SW version(1.5.3.1)
STB_PARTIAL_VER	Varchar(16)	Partial Patch version(5.2.3.4)
STB_MODEL	Varchar(16)	STB Model Name(TG4256)

3.2 STB Information communication Protocol(1/2)

The STB Daemon and STB ATT program use the ASP Post query method for communication with Management server.

① STB Daemon Communication

Item	Description
Contents	STB Daemon registers STB's IP information in the management server when STB is connected to a network.
ASP	http://Management server IP:Port No./STBInfo_Insert_new2.asp
Included Information	STB_MAC:001122334455 STB_IP:111.222.111.111 AUTHENTICATION:0(0 : No authentication, 1 : Authentication) REBOOT_STEP:1(1 ~ 3) STB_SW_VER:1.1.1.1 STB_PARTIAL_VER:0.0.0.1 STB_MODEL:TD0202 DAEMON_VER:160614 * Data Classification: &
Query method	POST
Managem. server resp.	SUCCESS : Succeed to update FAILURE : Fail to update

♣ Sample of Test Url in Web Browser : Transmit STB information

```
https://att.skbbroadband.com/control/stbinfo_insert_test.asp?STB_MAC=001122334455&STB_IP=111.222.111.111&AUTHENTICATION=0&REBOOT_STEP=1&STB_SW_VER=1.1.1.1&STB_PARTIAL_VER=0.0.0.1&STB_MODEL=AAA-AI600&DAEMON_VER=190614
```

```
http://att.skbbroadband.com:54321/stbinfo_insert_test.asp?STB_MAC=001122334455&STB_IP=111.222.111.111&AUTHENTICATION=0&REBOOT_STEP=1&STB_SW_VER=1.1.1.1&STB_PARTIAL_VER=0.0.0.1&STB_MODEL=AAA-AI600&DAEMON_VER=190614
```

3.2 STB Information communication Protocol(2/2)

② STB ATT Program communication

Item	Description
Contents	The STB ATT program queries IP information of STB from the management server in order to access STB over the network.
ASP	http://Management server IP:Port No./STBInfo_Query_new.asp
Included Information	STB_MAC:001122334455
Query method	POST
Managem. server resp.	NOTFIND : No information with that MAC (No Information) SUCCESS : There is information with that MAC(Include Information) STB_MAC:001122334455 STB_IP:111.222.111.111 AUTHENTICATION:0(0 : No authentication, 1 : Authentication) UPDATE_DATE:2012-02-28 13:21:21 REBOOT_STEP:2 STB_SW_VER:1.1.1.1 STB_PARTIAL_VER:0.0.0.1 STB_MODEL:TD0202 * Data Classification: ,

♣ Sample of Test Url in Web Browser

: Search transmitted STB information

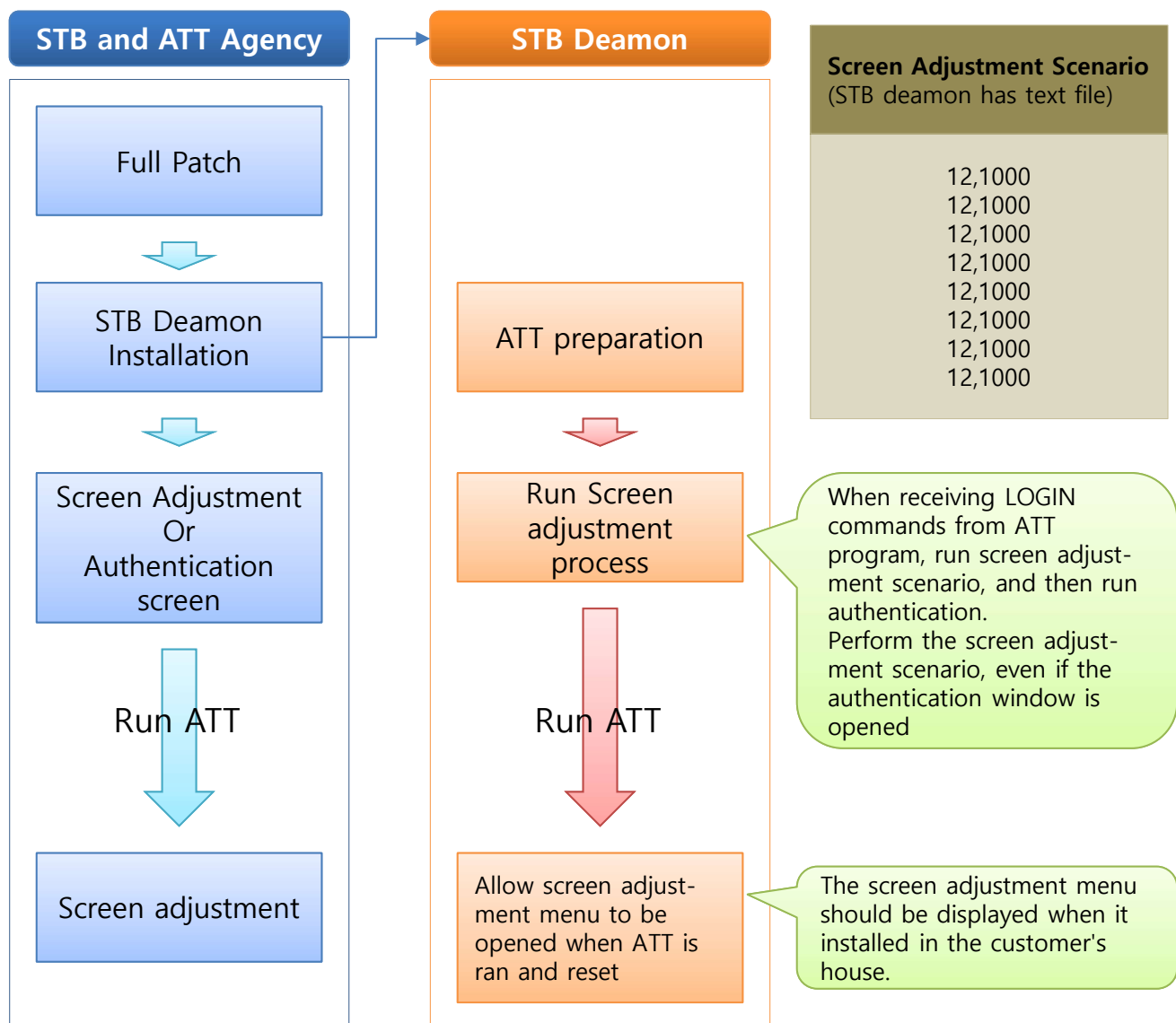
https://att.skbbroadband.com/control/stbinfo_query_test.asp?STB_MAC=001122334455

http://att.skbbroadband.com:54321/stbinfo_query_test.asp?STB_MAC=001122334455

4. Additional Information

4.1 Process for screen adjustment

Smart STB display the menu that requests screen adjustment when booting after factory reset or full batch. STB daemon has a "screen adjustment scenario" in text form, and it is loaded when it runs. And it receives LOGIN messages from ATT programs when it runs. After run the screen adjustment scenario, authentication process will be run.



4.2 Middleware support for daemon(1/2)

Item	Daemon Functions	MW Support
Daemon installation	When you boot from a USB port with a flash drive, Specific script files on flash drive should be able to run, and the scripts performed should be able to copy and execute daemons to specific areas of STB.	
Daemon deletion	1. When ATT is finished normally, 2. When STB boots, daemons must be deleted if the date on which they are installed is more than 24 hours old.	
Revoke Authentication	1. When installing daemon, 2. When you receive an order to revoke authentication from the ATT program, you must revoke the STB's certification.	Provide how revoke the authentication(Remove file ?)
Basic setting function	When Daemon are installed, the settings below should be set automatically. 1. Authenticate. 2. Release the children's watch restriction 3. Upgrade prohibited 4. Dynamic IP Settings	File control or support script
Collection basic information	1. SW update date 2. Channel version 3. Channel update date 4. HDD or Memory information	Provide information collection location
PTS Collection	Collect video and audio PTS value	Provide information collection location
Collection Button/RCU signal inform.	Identify Buttons and RCU signal	Provide information collection location
Run RCU Scenario	Requires the function that can run RCU scenarios from the ATT program on the STB interface *Scenario consists of RCU key and latency time	
Display '*', when authentication number is entered	Set System property and notify ATT boot (sys.skb.hidcert)	Load System property and Display '*' when authenticating in ATT Mode. (UI development Company) # system properties System property value: sys.skb.hidcert ->1, then display '*' and 0 or NULL, then processes normally

4.2 Middleware support for daemon(2/2)

Item	Deamon Functions	MW Support
LED Control	To indicate completion of daemon installation, flash three LEDs (status, network, power) in STB every 0.5 seconds.	Provide how to control LED
Check USB Port	If the Deamon installation is complete, the LED is blinked and the status of the USB port should be checked periodically. If all USB ports are off, then proceed to the next step.	Provide how to check USB Port status
Check HDMI Port	The daemon transmits the connection status to the ATT program when the HDMI is connected at a certain stage. *Features to be added	Provide how to check HDMI Port

4.3 Major issues

Item	Description
Install Deamon	# Start when STB Power is off. 1. Connect USB to STB. 2. Turn on STB 3. Deamon is installed when USB has deamon file during the boot 4. During the Deamon run, authentication should be revoked not to update SW. 5. After install Daemon, LED should be blink every 0.5s. User can pulls out the USB from the STB when LED blink. Before user pulls out the USB, STB show authentication screen.) 6. Daemon inputs basic settings and reboot after user pulls out USB from STB. The basic settings are include the setting that user input authentication code with "*", not real number. 7. STB Deamon should wait to connect with ATT program after sending Step information(include IP and MAC etc) to ATT Server. 8. ATT program connect STB Deamon and start to send command.