
STM32F407/STM32F417
(IAP)

1

STM32F407/STM32F417
STM32F407/STM32F417 (IAP)

LwIP TCP/IP

- TFTP IAP
- HTTP IAP

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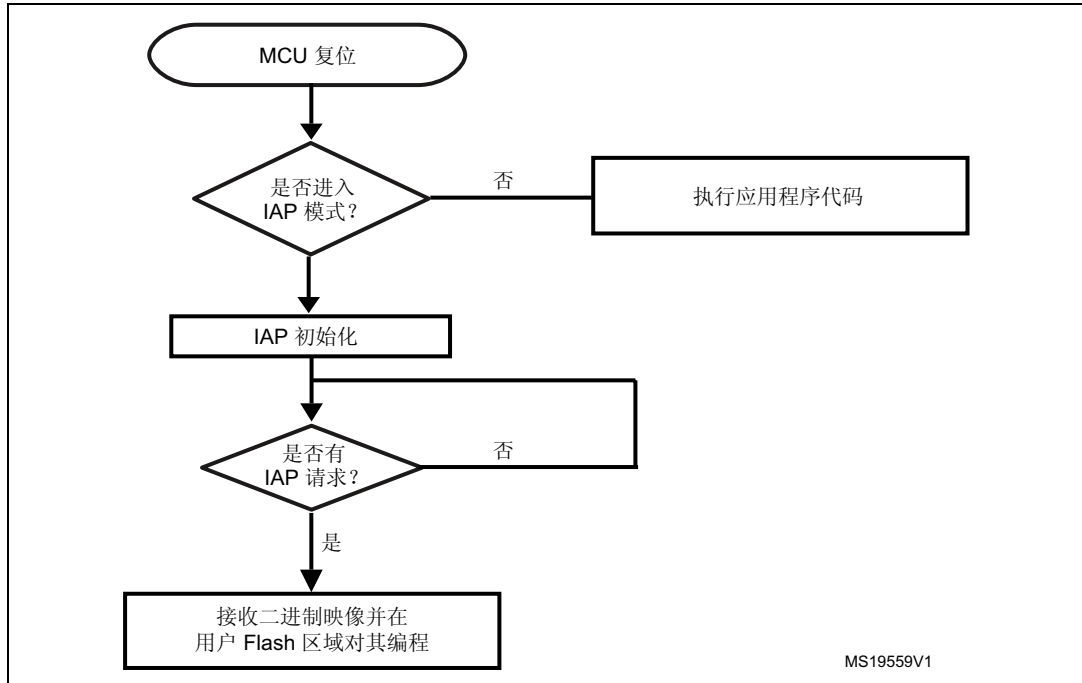
2 IAP

2.1

(IAP) MCU UART USB CAN

- IAP IAP
- IAP Flash IAP MCU
- 1 IAP Flash IAP MCU

1. IAP



2.2

MCU IAP

IAP

- (10/100 Mb/s)
- (LAN WAN)
- FTP TFTP HTTP TCP/IP IAP



2.3 STM32F407/STM32F417 IAP

STM32F407/STM32F417 IAP

- TFTP IAP
 - HTTP IAP
- LwIP (v1.3.2) TCP/IP

2.3.1 TFTP IAP

TFTP IAP
Linux bootloader

TFTP UDP /

IAP LwIP TFTP PC
TFTP

2.3.2 HTTP IAP

HTTP TFTP Internet http

HTTP TCP HTML Web Mozilla Firefox
Microsoft Internet Explorer HTTP (RFC 1867)

IAP



3 TFTP IAP

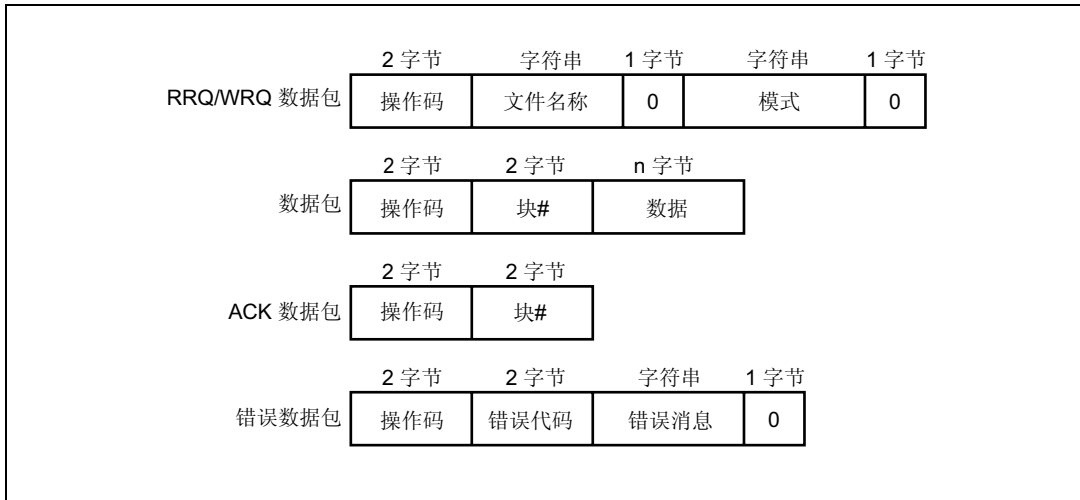
3.1 TFTP

TFTP UDP TFTP TFTP

512

2 TFTP

2. TFTP



1 TFTP

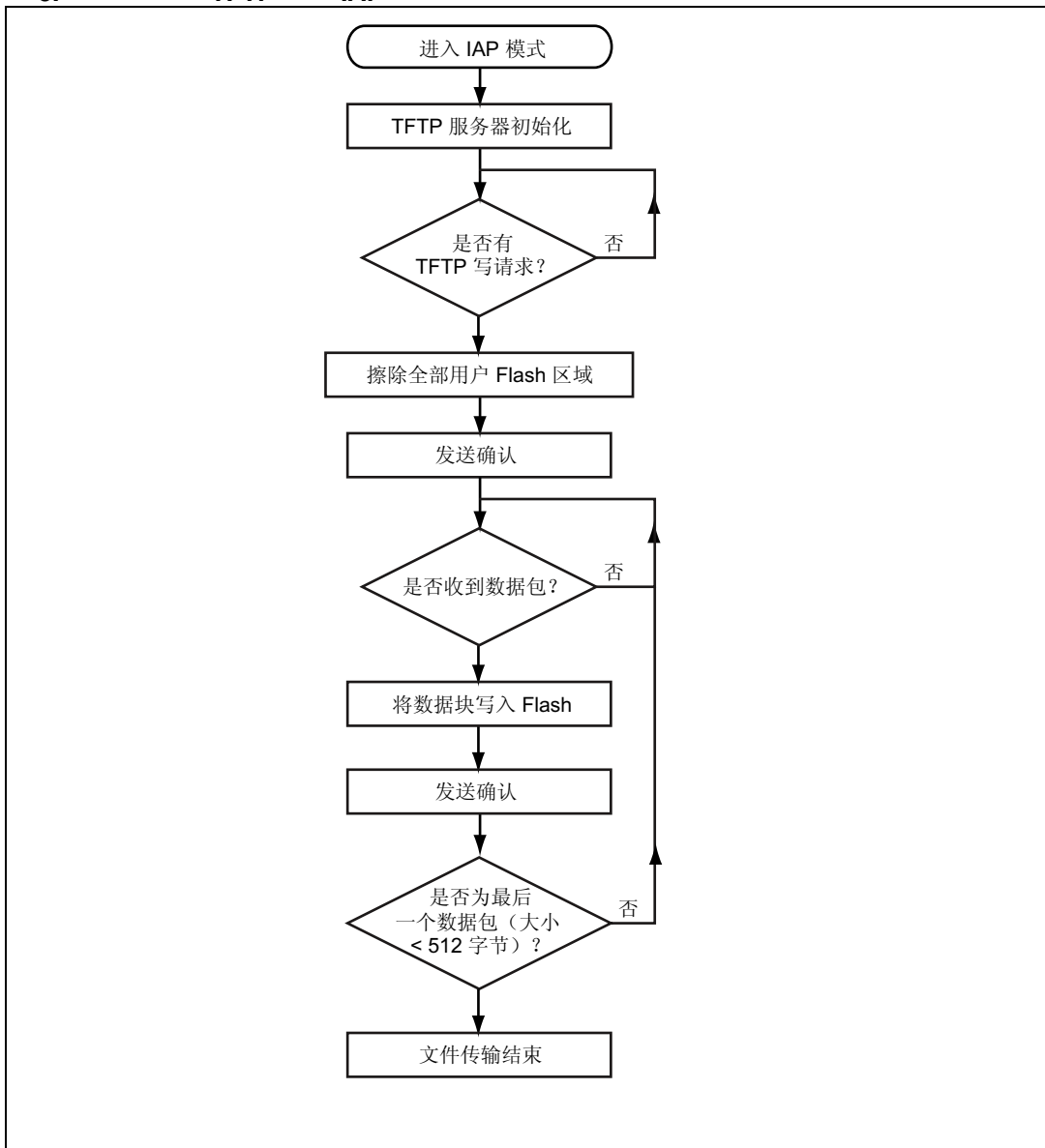
1. TFTP

0x1	(RRQ)
0x2	(WRQ)
0x3	
0x4	(ACK)
0x5	

3.2 TFTP STM32F407/STM32F417 IAP

IAP LwIP TCP/IP TFTP
TFTP TFTP (PC)
TFTP
MCU Flash Flash
512
3 TFTP IAP

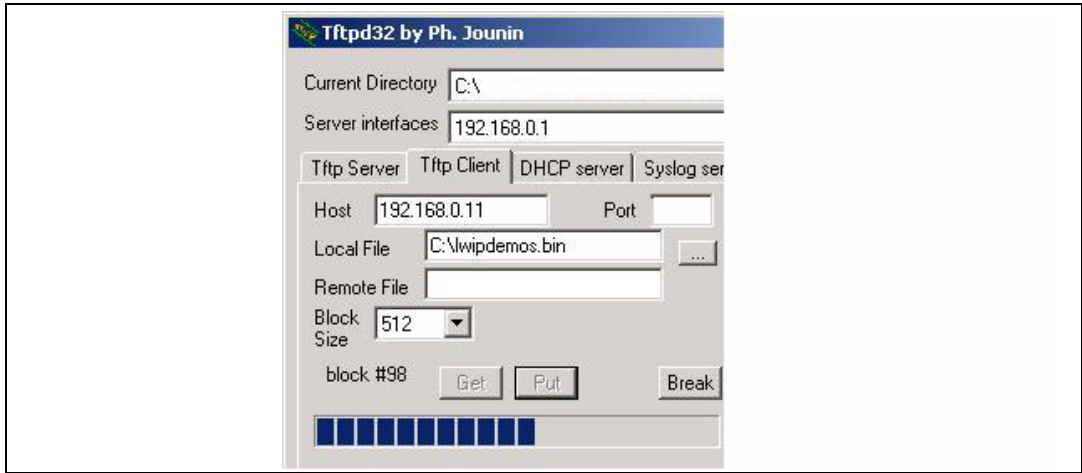
3. TFTP IAP



3.3

- TFTP IAP
- 1. STM324xG-EVAL 2
- 2. *main.h* USE_IAP_TFTP /
USE_DHCP USE_LCD
- 3. IAP 0x0
Flash USER_FLASH_FIRST_PAGE_ADDRESS
main.h
- 4. STM32 Flash
- 5. IAP
- 6. *main.h* USE_LCD LCD IAP
DHCP *main.h* USE_DHCP LCD
- DHCP IP
- 7. IP IAP
- 8. PC TFTP TFTP32 TFTP TFTP32
- 9. STM32 Flash */project/binary*
- 10. TFTP32 **Put**
- 11. USE_LCD IAP LCD
- 12. IAP STM32 Flash
USE_LCD LCD

4. TFTP32



4 HTTP IAP

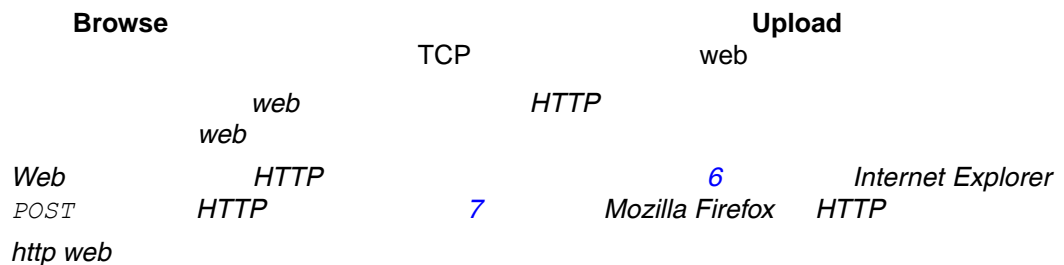
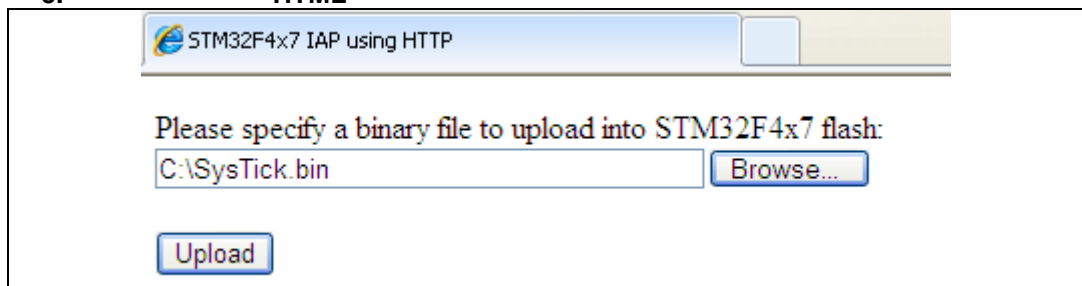
4.1 HTTP

RFC1867 HTTP HTML POST GET HTML

HTML

```
<form action ="/upload.cgi" enctype="multipart/form-data" method="post">
  <p>          STM32F4x7 Flash
  <br>
  <input type="file" name="datafile" size="40">
</p>
<div>
  <input type="submit" value="Upload">
</div></form>
```

5. HTML



6. IE8 HTTP

```

Hypertext Transfer Protocol
POST /upload.cgi HTTP/1.1\r\n
Accept: image/gif, image/jpeg, image/pjpeg, application/x-shockwave-flash, applic.
Referer: http://192.168.0.10/checklogin.cgi\r\n
Accept-Language: en-us\r\n
User-Agent: Mozilla/4.0 (compatible; MSIE 8.0; Windows NT 5.1; Trident/4.0; .NET CLR 1.1.4322;
Content-Type: multipart/form-data; boundary=-----7db1672b29603a8\r\n
Accept-Encoding: gzip, deflate\r\n
Host: 192.168.0.10\r\n
Content-Length: 1969\r\n
[Content length: 1969]
Connection: keep-alive\r\n
Cache-Control: no-cache\r\n
\r\n
MIME Multipart Media Encapsulation, Type: multipart/form-data, Boundary: "-----
[Type: multipart/form-data]
First boundary: -----7db1672b29603a8\r\n
Encapsulated multipart part: (application/octet-stream)
Content-Disposition: form-data; name="datafile"; filename="STM324xG_EVAL_SysTick.bin"\r\n
Content-Type: application/octet-stream\r\n\r\n
Media Type
Last boundary: \r\n-----7db1672b29603a8--\r\n

```

7. Mozilla Firefox HTTP

```

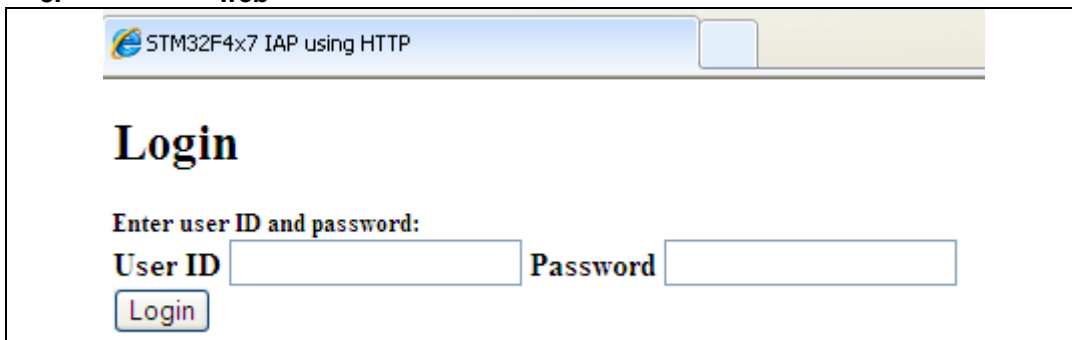
Hypertext Transfer Protocol
POST /upload.cgi HTTP/1.1\r\n
Host: 192.168.0.3\r\n
User-Agent: Mozilla/5.0 (Windows NT 5.1; rv:7.0.1) Gecko/20100101 Firefox/7.0.1\r\n
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
Accept-Language: en-us,en;q=0.5\r\n
Accept-Encoding: gzip, deflate\r\n
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7\r\n
Connection: keep-alive\r\n
Referer: http://192.168.0.3/checklogin.cgi\r\n
Content-Type: multipart/form-data; boundary=-----41184676334\r\n
Content-Length: 1961\r\n
[Content length: 1961]
\r\n
MIME Multipart Media Encapsulation, Type: multipart/form-data, Boundary: "-----
[Type: multipart/form-data]
First boundary: -----41184676334\r\n
Encapsulated multipart part: (application/octet-stream)
Content-Disposition: form-data; name="datafile"; filename="STM324xG_EVAL_SysTick.bin"\r\n
Content-Type: application/octet-stream\r\n\r\n
Media Type
Last boundary: \r\n-----41184676334--\r\n

```

4.2 HTTP STM32F407/STM32F417 IAP

IAP LwIP HTTP Web
 STM32 IP web 8 web
 IAP

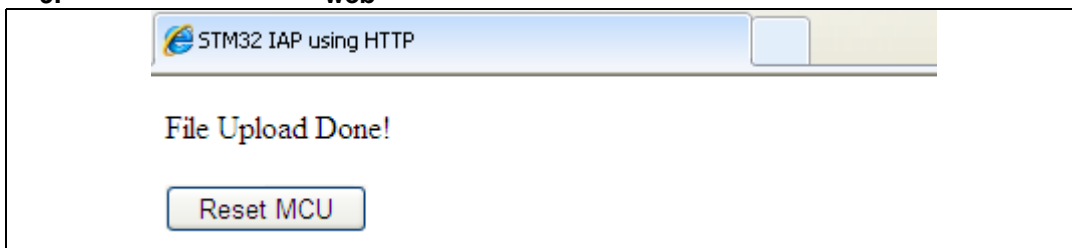
8. web



	User ID	ID	Password	main.h
	Login		web	5
1	User ID	ID	use Password	stm32
2	User ID	ID	Password	web
			STM32 Flash	
			STM32 Flash	
	Upload		5	POST
	Flash			
	Flash			

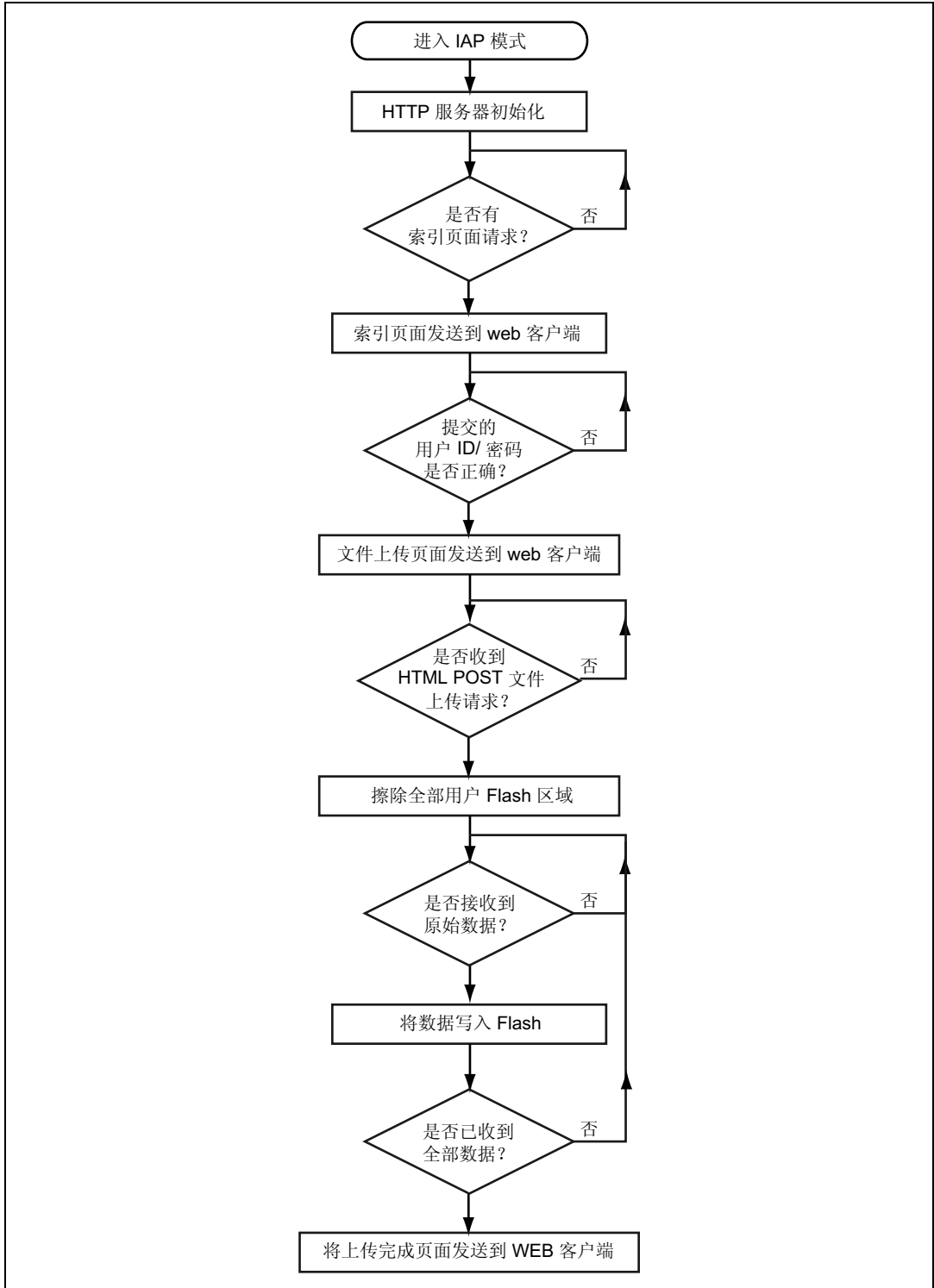
IAP web IAP HTTP MCU

9. web



10 HTTP IAP

10. HTTP IAP



4.3

	HTTP	IAP			
1.	STM324xG-EVAL			2	
2.	<i>main.h</i>	USE_IAP_HTTP			/
		USE_DHCP	USE_LCD		
3.			IAP		0x0
	Flash				USER_FLASH_FIRST_PAGE_ADDRESS
	<i>main.h</i>				
4.	STM32 Flash				
5.	IAP				
6.	<i>main.h</i>	USE_LCD	LCD		IAP
		DHCP	<i>main.h</i>	USE_DHCP	LCD
		DHCP IP			
7.	IP			IAP	
8.	web	Mozilla Firefox	Microsoft Internet Explorer		STM32 IP
9.	web	User ID	ID	" user"	Password
		" stm32"	Login		
10.	<i>fileupload.html</i>	web		STM32 Flash	
	Upload		IAP		
11.	USE_LCD	IAP		LCD	
12.	IAP		web		
13.	RESET MCU	MCU	MCU		STM32 Flash
1		USE_LCD		LCD	
2	Web		Microsoft Internet Explorer 8		Mozilla Firefox 7.0.1

4.4

4.4.1

Internet	Microsoft Internet Explorer	Mozilla Firefox		
	RFC 1521		72	
IAP		Flash		Flash

5

5.1 MAC IP

```

main.h      MAC      IP
            MAC      00:00:00:00:00:02
IP          IP          DHCP
IP          192.168.0.10
            main.h      USE_DHCP      DHCP
DHCP        DHCP      IP
DHCP        IP          (192.168.0.10)
    
```

5.2 STM324xG-EVAL

```

project\inc      2      STM324xG-EVAL
                 main.h      MII      RMII
                 RMII
                 // #define MII_MODE
                 #define RMII_MODE
                 main.h      MII_MODE      PHY_CLOCK_MCO      MII
PHY              STM32      MCO
1      RMII      CN3      U3      50 MHz
SM7745HEV-50.0M      JP5      50 MHz
                 STM3240G-EVAL
UM1461
2      STM324xG-EVAL      STM3240G-EVAL      STM3241G-EVAL
    
```

2.

	MII			RMII	
JP5	1-2		25 MHz		
	2-3	PA8	MCO 25 MHz		
JP6	2-3	MII		1-2	RMII
JP8		MII			RMII

5.3

3

3.

main.c	
main.h	
httpserver.c/.h	HTTP
tftpserver.c/.h	TFTP
flash_if.c/.h	Flash
netconf.c/.h	
stm32f4x7_eth_bsp.c/.h	STM32F4x7
stm32f4x7_it.c/.h	
fsdata.c	ROM HTML
lwipopts.h	LwIP

LwIP

5.4

4

main.h

4.

	USE_IAP_TFTP	USE_IAP_HTTP	USE_LCD	USE_DHCP
19796	X			
22956	X		X	
28500	X		X	X
31484		X		
33884		X	X	
39820		X	X	X
41196	X	X	X	X

IAR EWARM v6.21.3

5.5 IAP

1. IAP / IAP Flash *main.h*
`USER_FLASH_FIRST_PAGE_ADDRESS`
2. Flash
 - a) *misc.h/.c* `NVIC_SetVectorTable`
`0x08010000`
`NVIC_SetVectorTable(NVIC_VectTab_FLASH, 0x10000);`
 - b) *system_stm32f4x7.c* `VECT_TAB_OFFSET`
`0x08010000`
`#define VECT_TAB_OFFSET 0x10000`
3. Flash
 " USART STM32F40x/STM32F41x (AN3965)"
 IAP

ST " ST"
ST ST
ST ST ST
ST
ST ST ST /
B C A / D
JAN ESCC QML
ST ST / ST ST
ST ST ST
ST

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