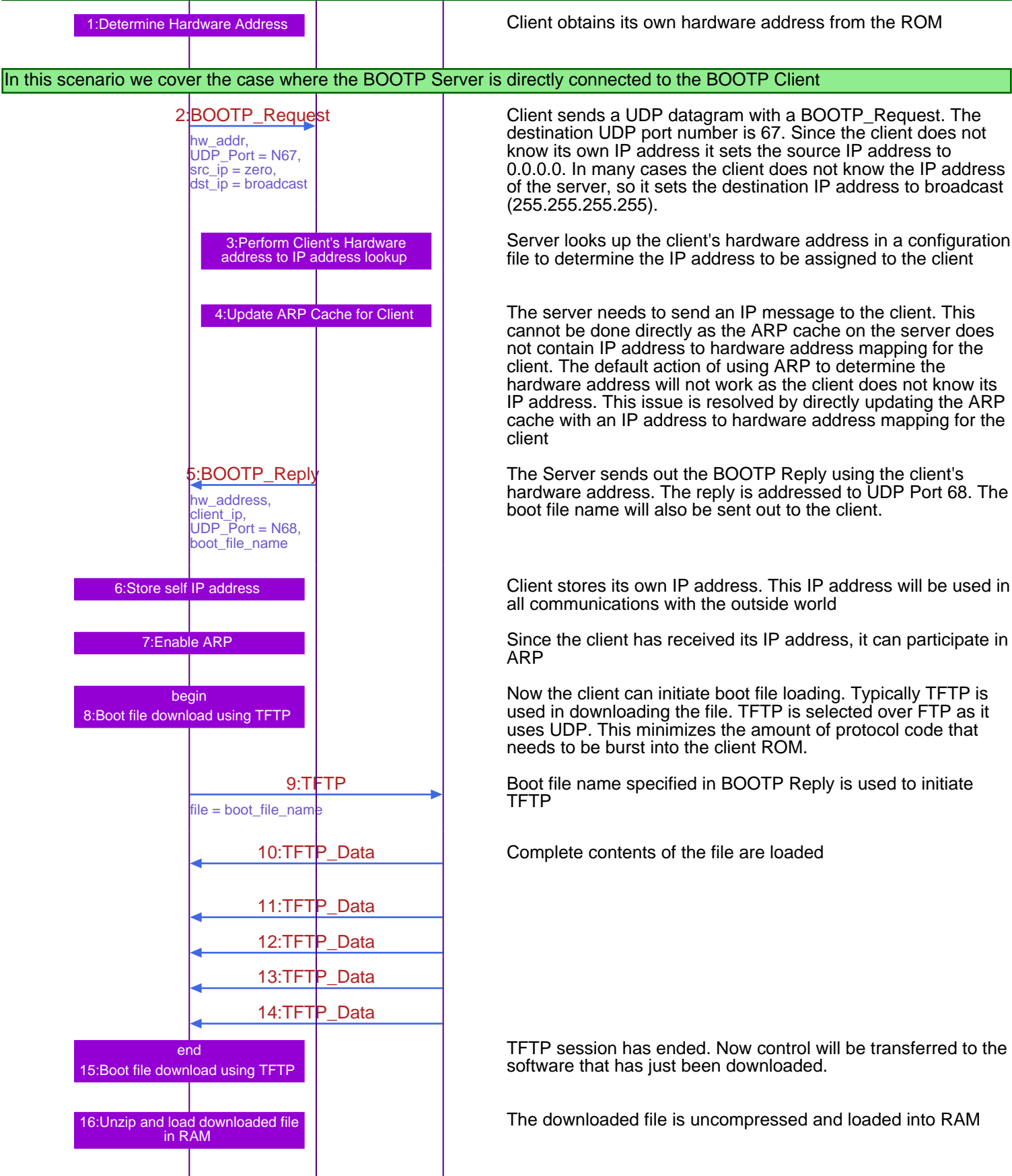




The Bootstrap Protocol (BOOTP) enables a host to boot from ROM and request it's own IP address, a gateway address and a boot file name. The boot file is used to load the disk image into RAM.

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Client obtains its own hardware address from the ROM

In this scenario we cover the case where the BOOTP Server is directly connected to the BOOTP Client

Client sends a UDP datagram with a BOOTP_Request. The destination UDP port number is 67. Since the client does not know its own IP address it sets the source IP address to 0.0.0.0. In many cases the client does not know the IP address of the server, so it sets the destination IP address to broadcast (255.255.255.255).

Server looks up the client's hardware address in a configuration file to determine the IP address to be assigned to the client

The server needs to send an IP message to the client. This cannot be done directly as the ARP cache on the server does not contain IP address to hardware address mapping for the client. The default action of using ARP to determine the hardware address will not work as the client does not know its IP address. This issue is resolved by directly updating the ARP cache with an IP address to hardware address mapping for the client

The Server sends out the BOOTP Reply using the client's hardware address. The reply is addressed to UDP Port 68. The boot file name will also be sent out to the client.

Client stores its own IP address. This IP address will be used in all communications with the outside world

Since the client has received its IP address, it can participate in ARP

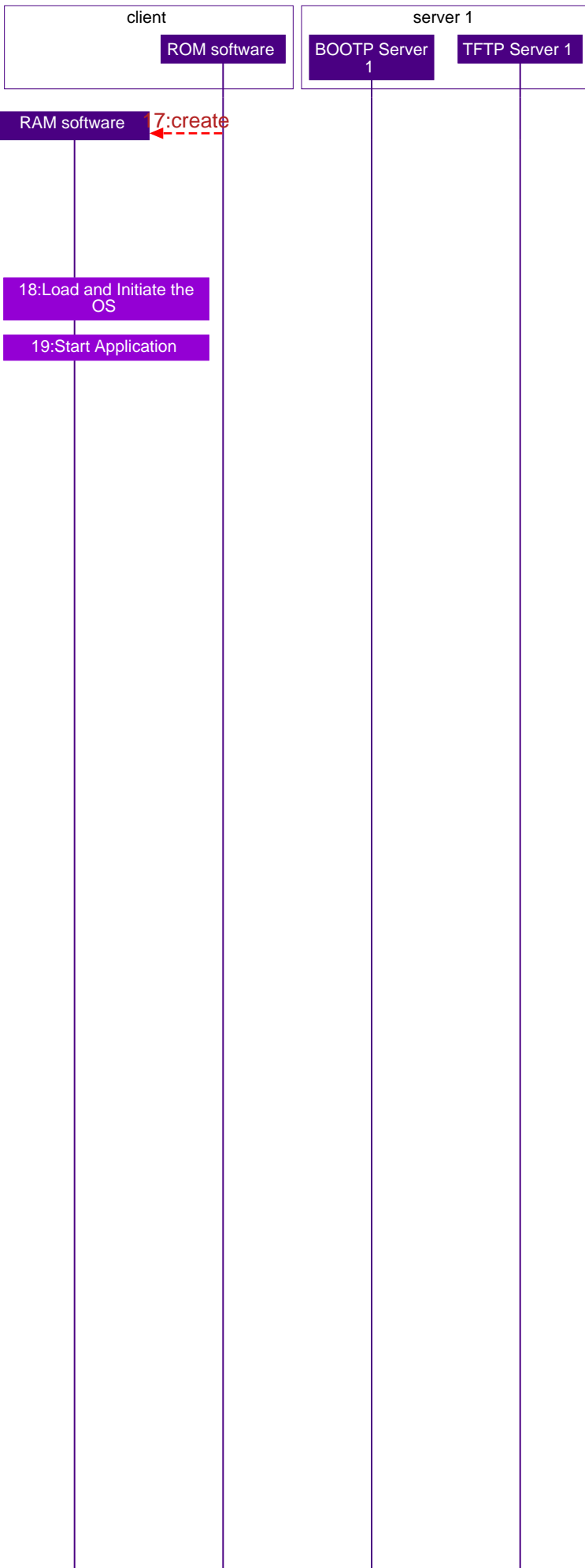
Now the client can initiate boot file loading. Typically TFTP is used in downloading the file. TFTP is selected over FTP as it uses UDP. This minimizes the amount of protocol code that needs to be burst into the client ROM.

Boot file name specified in BOOTP Reply is used to initiate TFTP

Complete contents of the file are loaded

TFTP session has ended. Now control will be transferred to the software that has just been downloaded.

The downloaded file is uncompressed and loaded into RAM

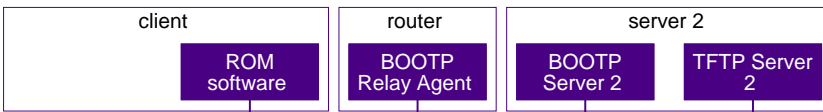


ROM software transfers control to the RAM software. The downloaded software includes the OS as well as the application, so no other downloads are required

Note that the ROM software will include a complete implementation of the TCP/IP stack that would replace the primitive stack in the ROM.

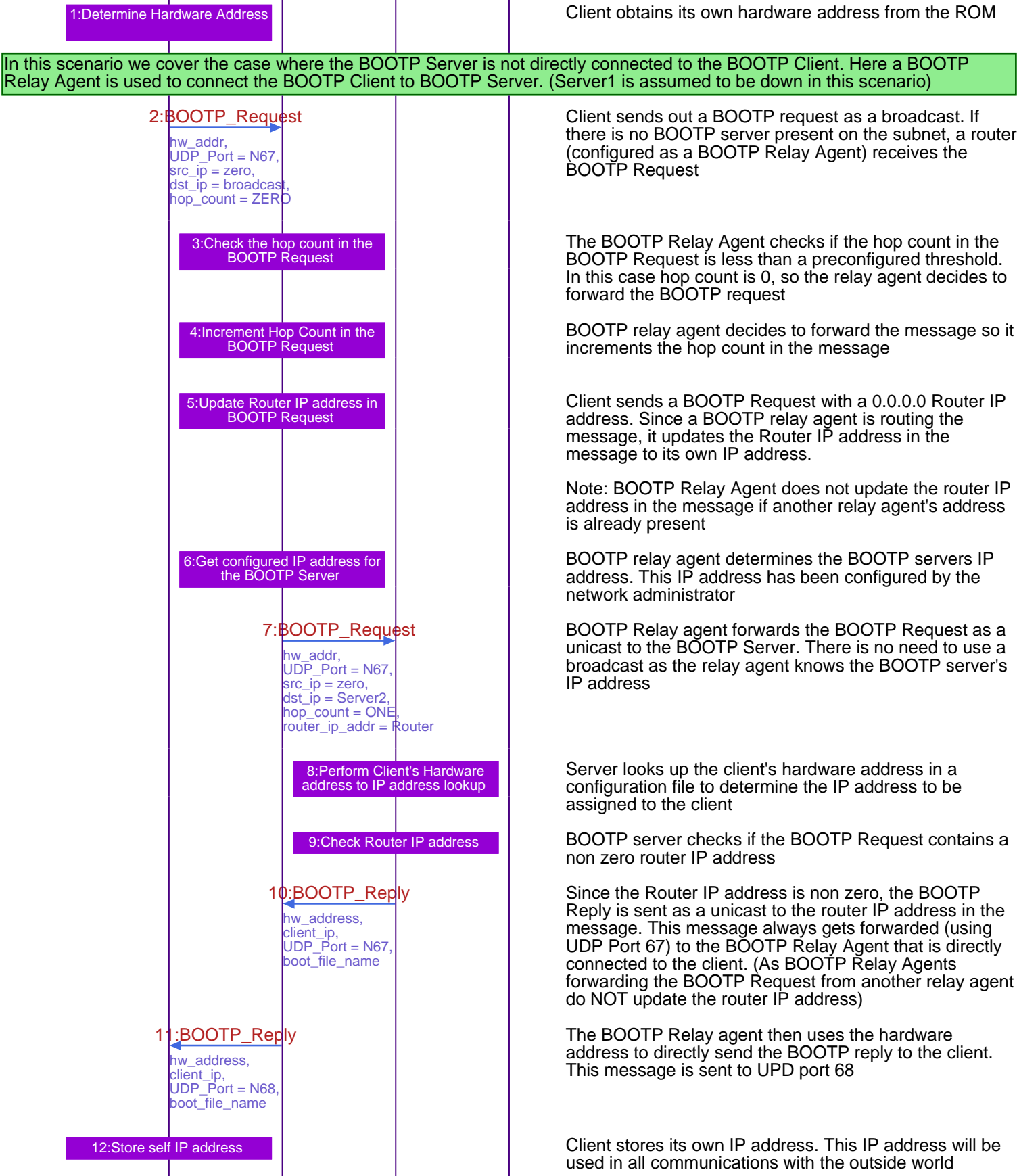
The Downloaded OS is booted

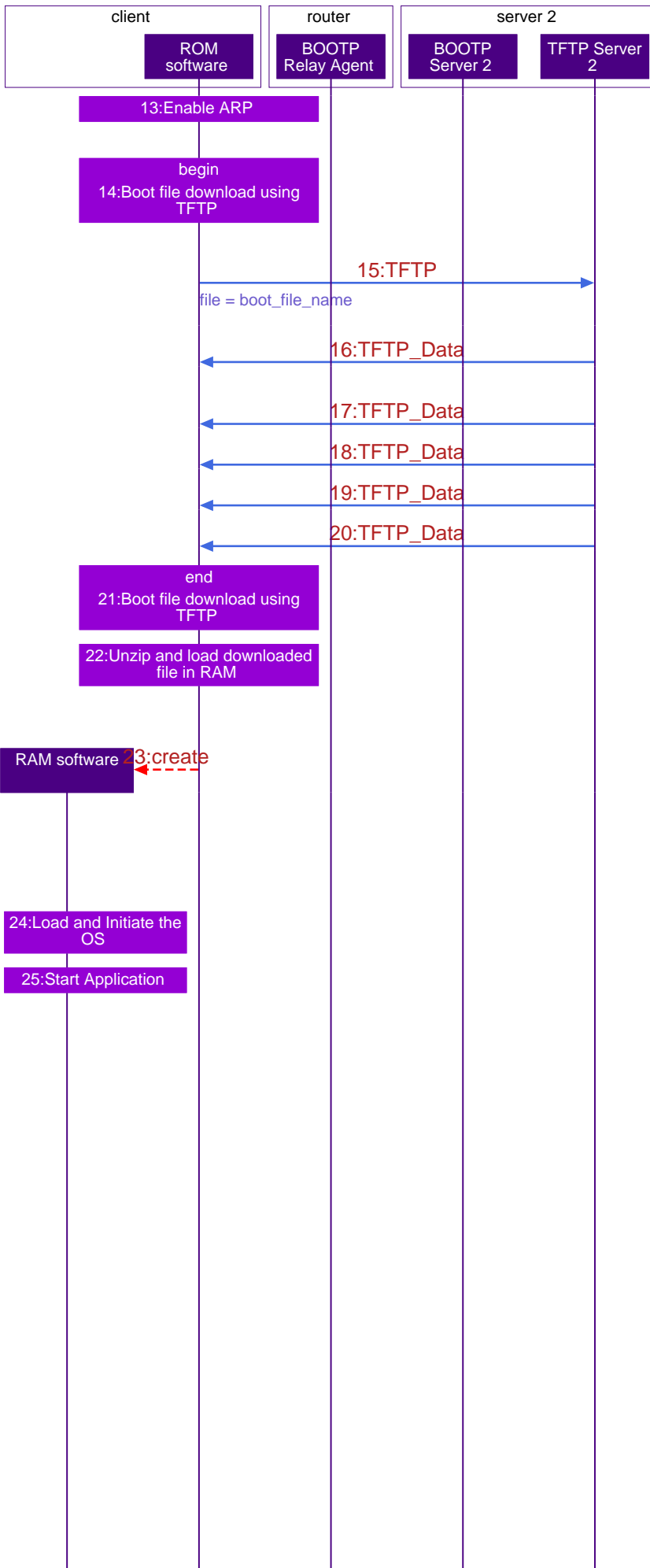
The Downloaded application is started



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The Downloaded OS is booted

The Downloaded application is started