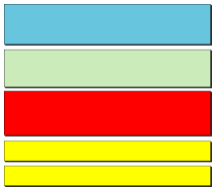

Chapter 16

Host Configuration: BOOTP and DHCP

Objectives

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Upon completion you will be able to:

- *Know the types of information required by a system on boot-up*
- *Know how BOOTP operates*
- *Know how DHCP operates*
- *Understand the differences between BOOTP and DHCP*
- *Understand the DHCP transition state diagram*

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16.1 BOOTP

The Bootstrap Protocol (BOOTP) is a client/server protocol that configures a diskless computer or a computer that is booted for the first time. BOOTP provides the IP address, net mask, the address of a default router, and the address of a name server.

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The topics discussed in this section include:

Operation
Packet Format

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Figure 16.1 *Client and server on the same network*

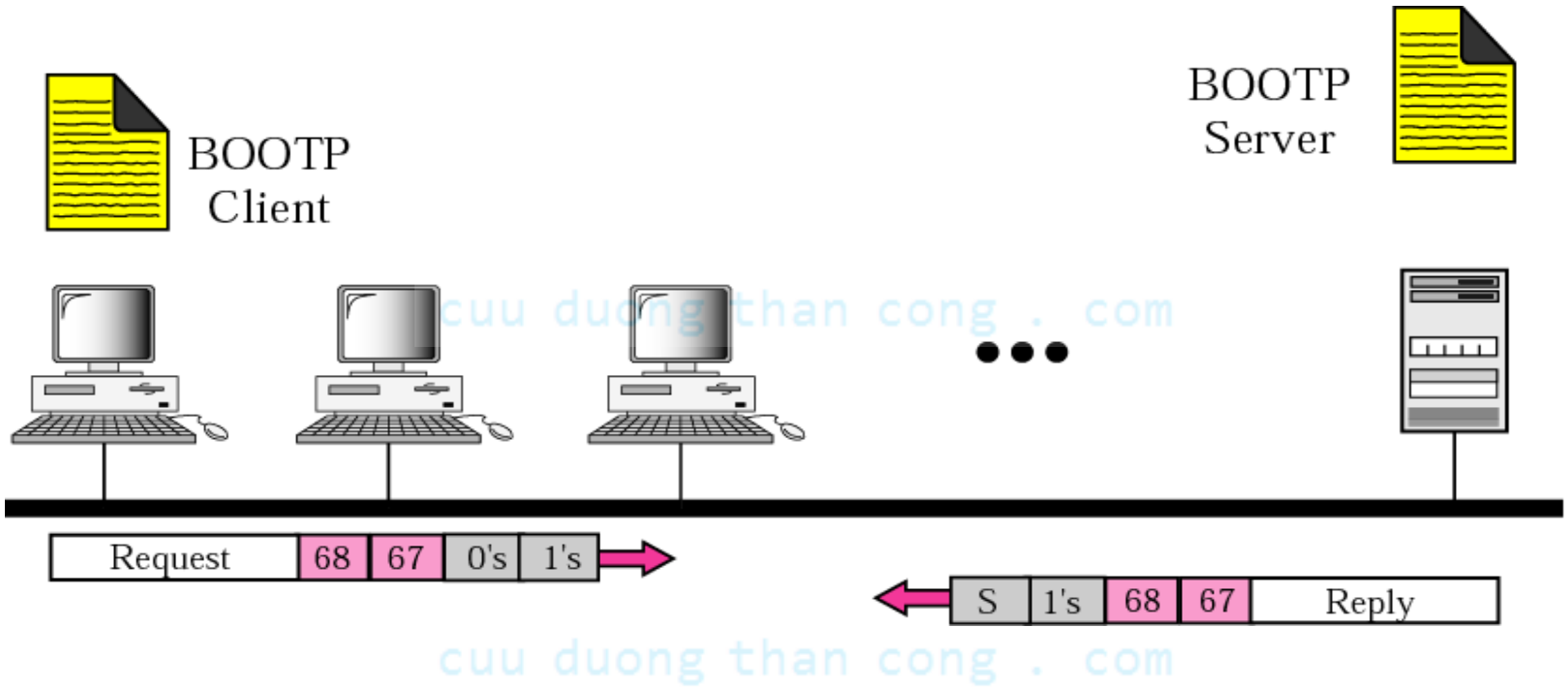

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Figure 16.2 *Client and server on two different networks*

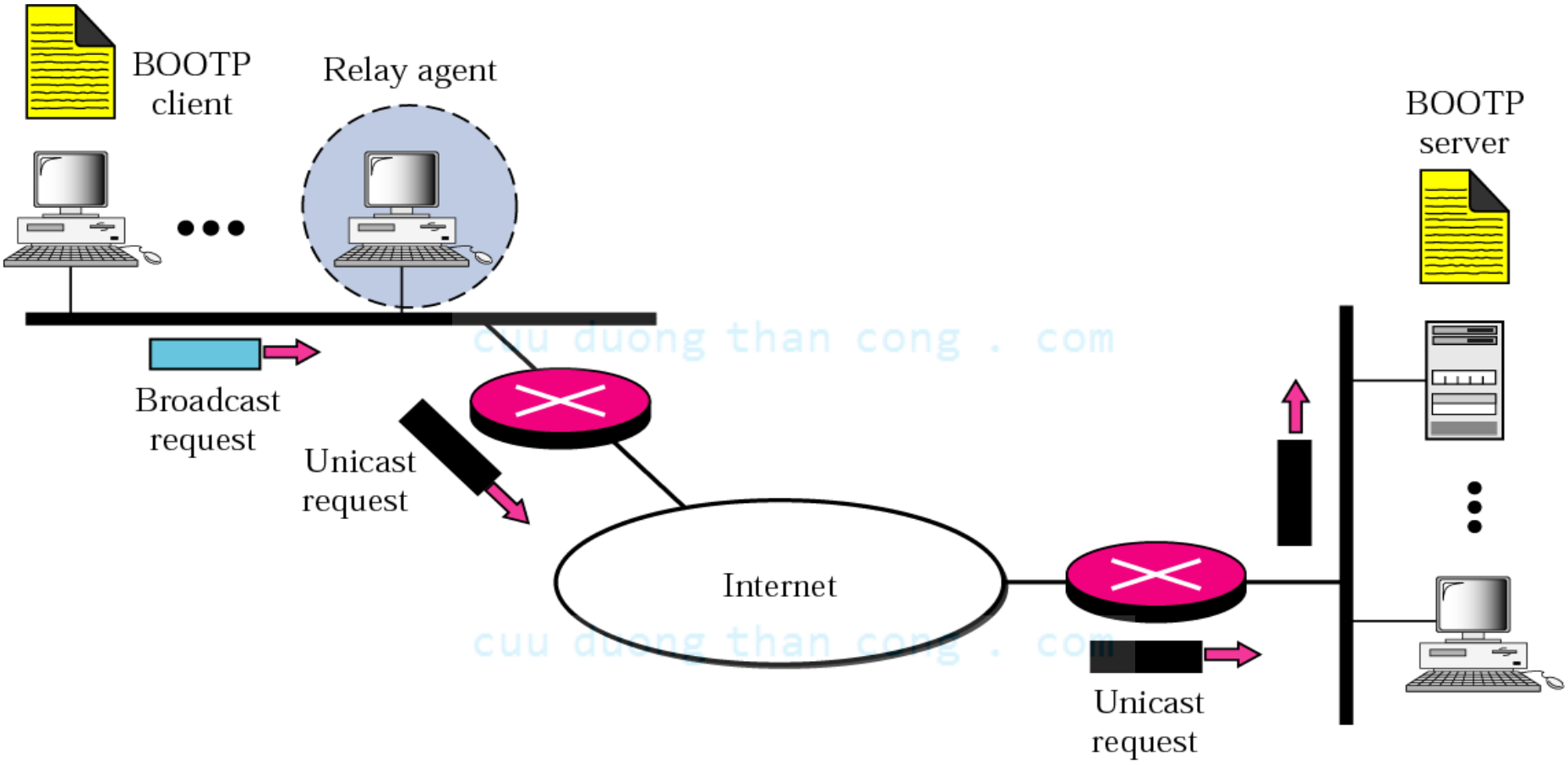

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Figure 16.3 *Use of UDP ports*

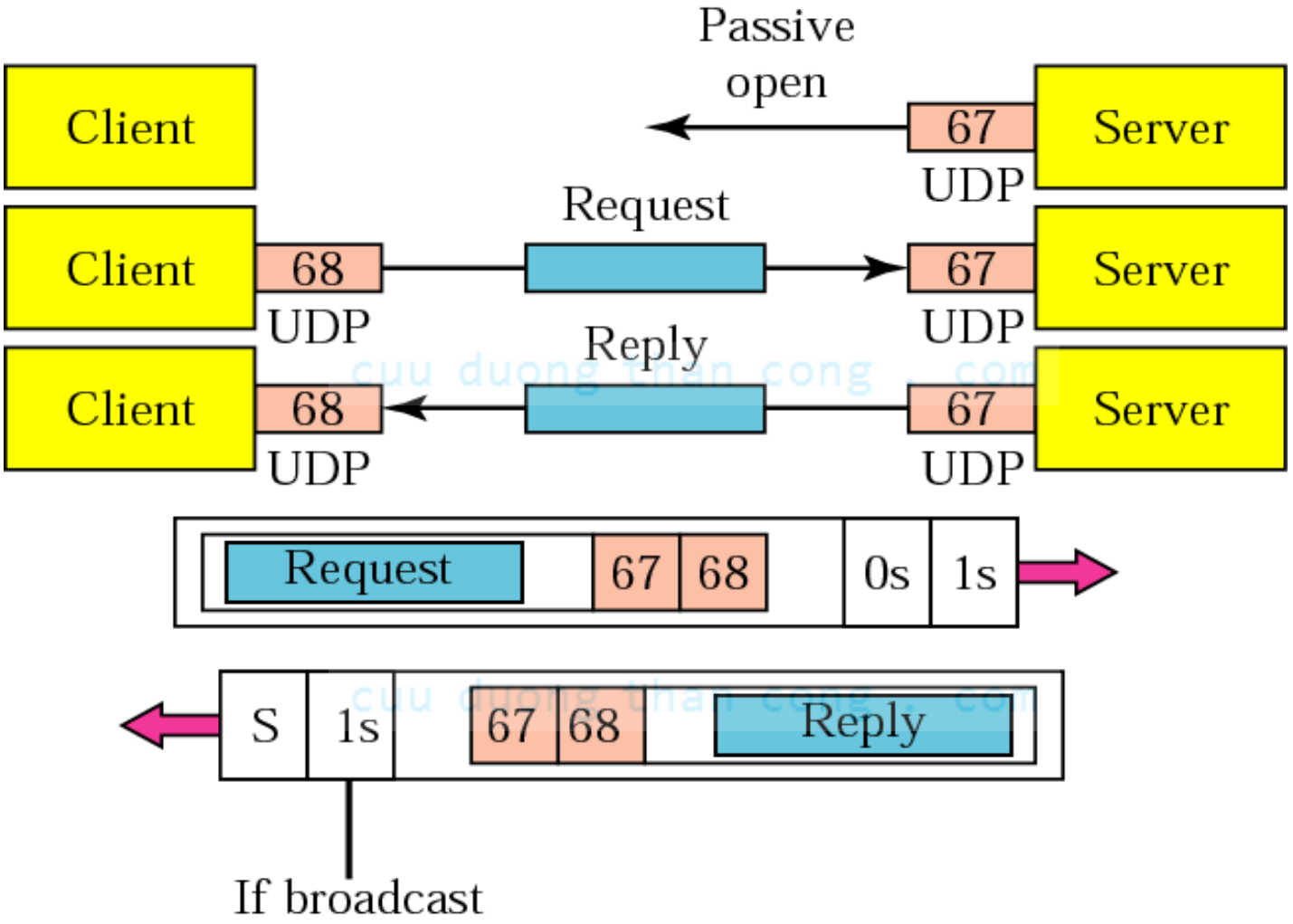

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Figure 16.4 *BOOTP packet format*

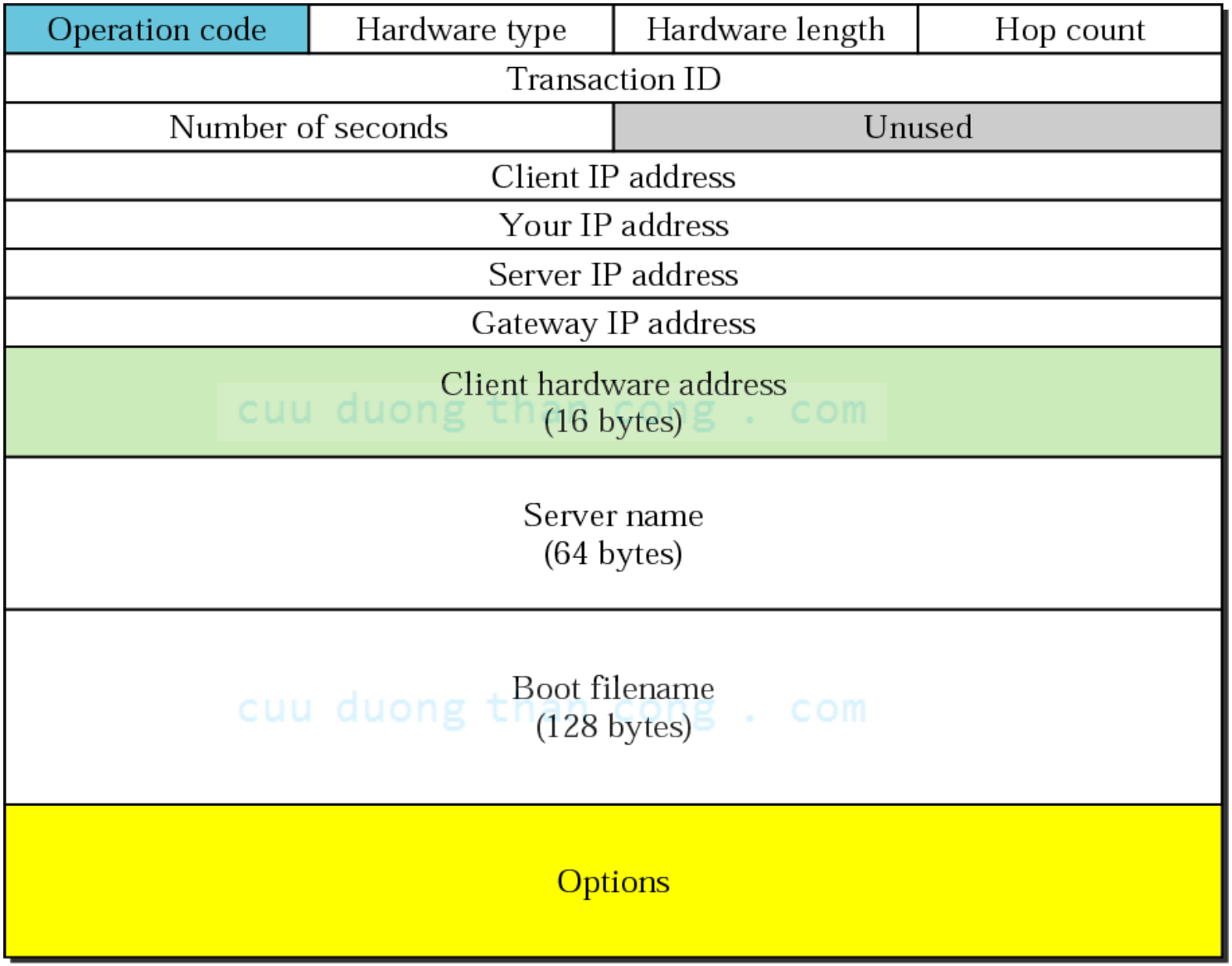

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Figure 16.5 *Option format*

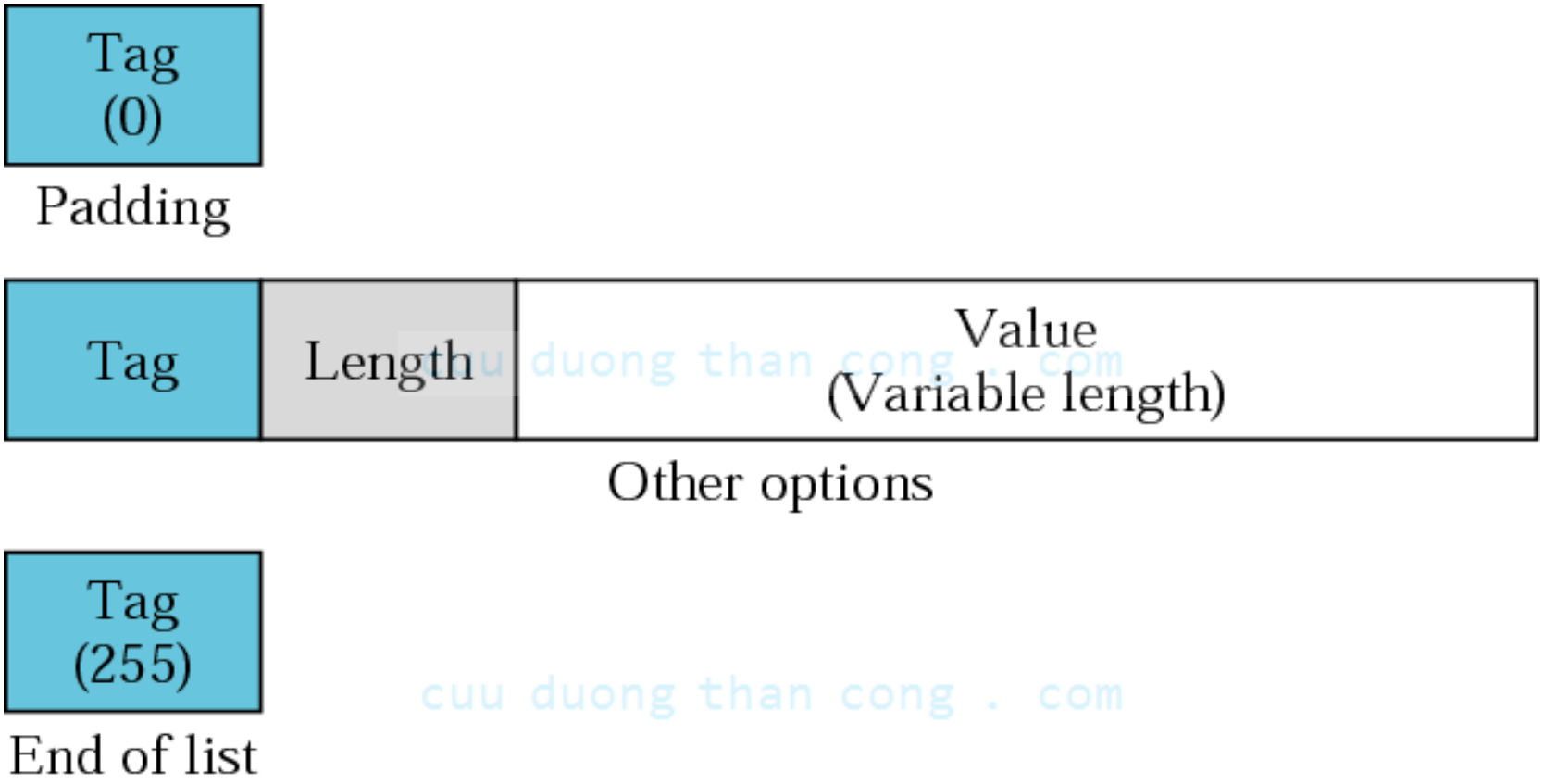

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Table 16.1 Options for BOOTP

Description	*Tag*	*Length*	*Value*
Padding	0		
Subnet mask	1	4	Subnet mask
Time offset	2	4	Time of the day
Default routers	3	Variable	IP addresses
Time servers	4	Variable	IP addresses
DNS servers	6	Variable	IP addresses
Print servers	9	Variable	IP addresses
Host name	12	Variable	DNS name
Boot file size	13	2	Integer
Vendor specific	128–254	Variable	Specific information
End of list	255		

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16.2 DHCP

The Dynamic Host Configuration Protocol (DHCP) provides static and dynamic address allocation that can be manual or automatic.

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The topics discussed in this section include:

Static Address Allocation
Dynamic Address Allocation
Manual and Automatic Configuration
Packet Format
Transition States
Exchanging Messages

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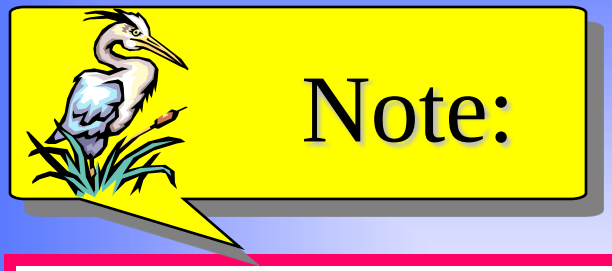

DHCP provides static and dynamic address allocation that can be manual or automatic.

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Figure 16.6 *DHCP packet*

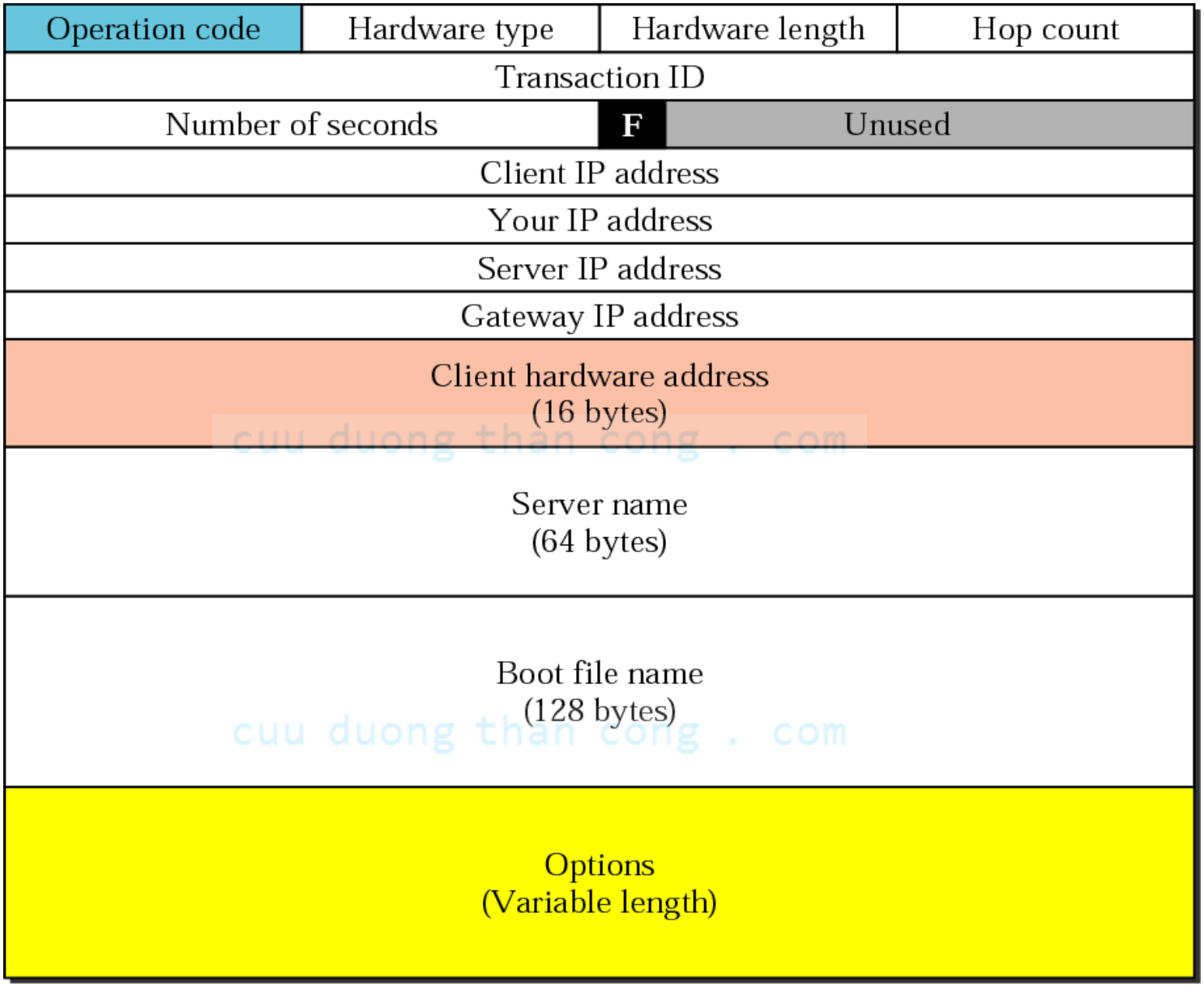

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Table 16.2 Options for DHCP

Value	*Value*
1 DHCPDISCOVER	5 DHCPACK
2 DHCPOFFER	6 DHCPNACK
3 DHCPREQUEST	7 DHCPRELEASE
4 DHCPDECLINE	

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Figure 16.7 *DHCP transition diagram*

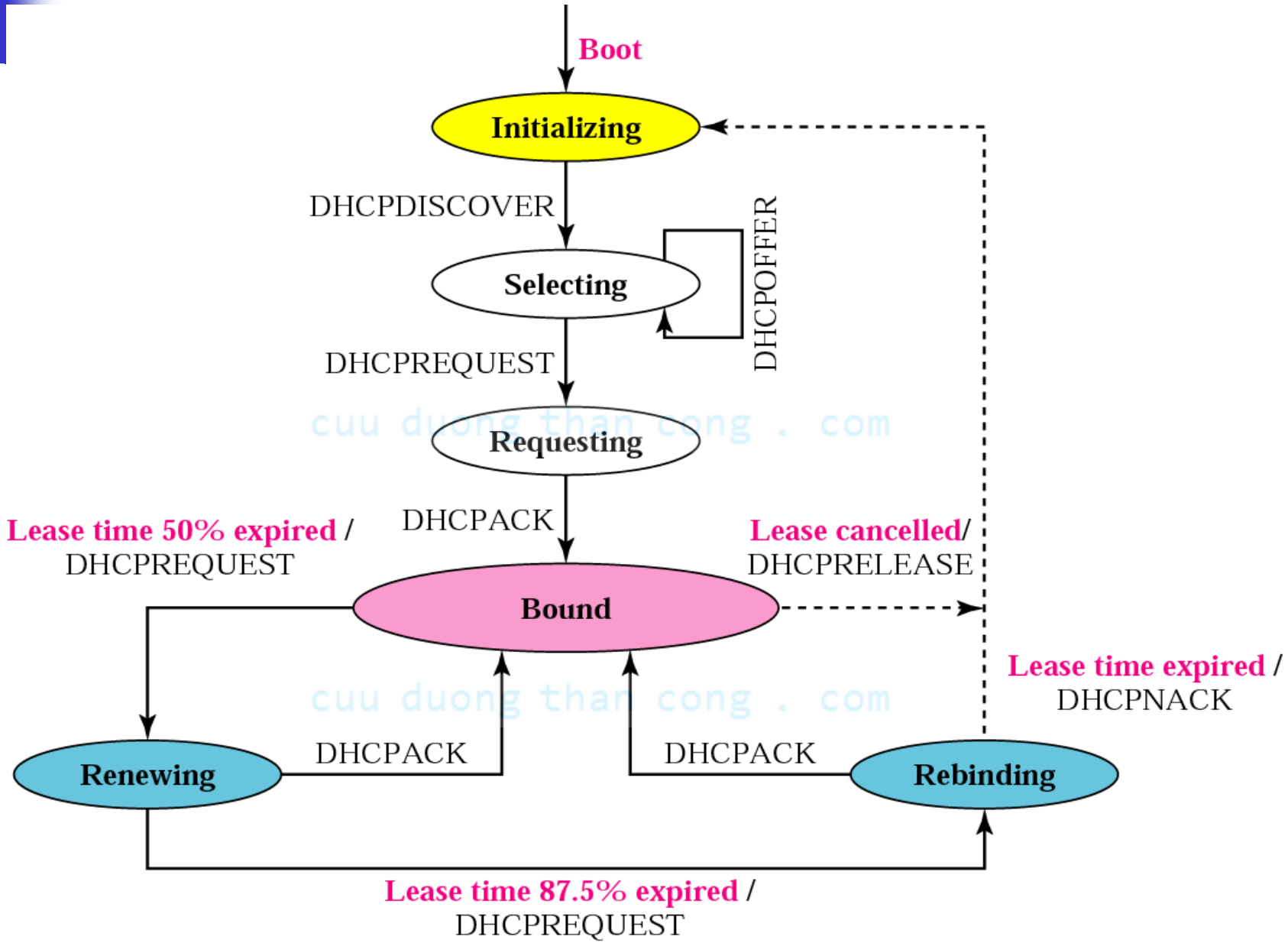

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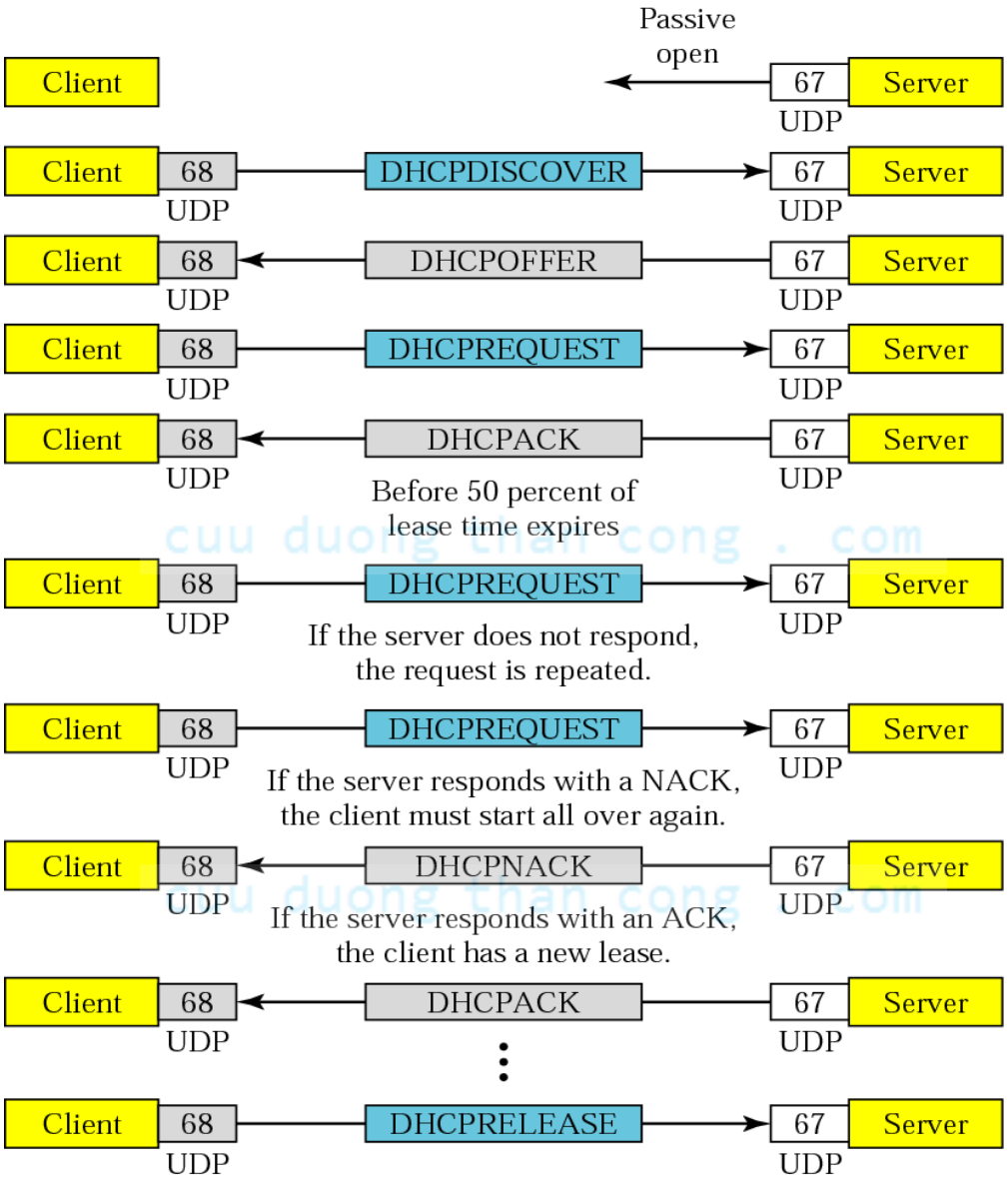
Figure 16.8 *Exchanging messages*



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