

# هندسة الشبكات

PC Networking

# الشبكات

## تعريف الشبكات

### القسم الأول: أنواع الشبكات السلكية وطرق ربطها

- **LAN (Local Area Network)**
- **WAN (Wide Area Network)**
- **MAN (Metropolitan Area Network)**
- **Network Bus**
- **Network Ring**
- **Network Star**

### القسم الثاني: البروتوكولات

- **TCP/IP**
- **OSI**      **TCP/IP**
- **TCP**      /      •

### القسم الثالث: مكونات الشبكة

**NIC**

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- 
- 
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### القسم الرابع: مشغل الشبكة Network Driver

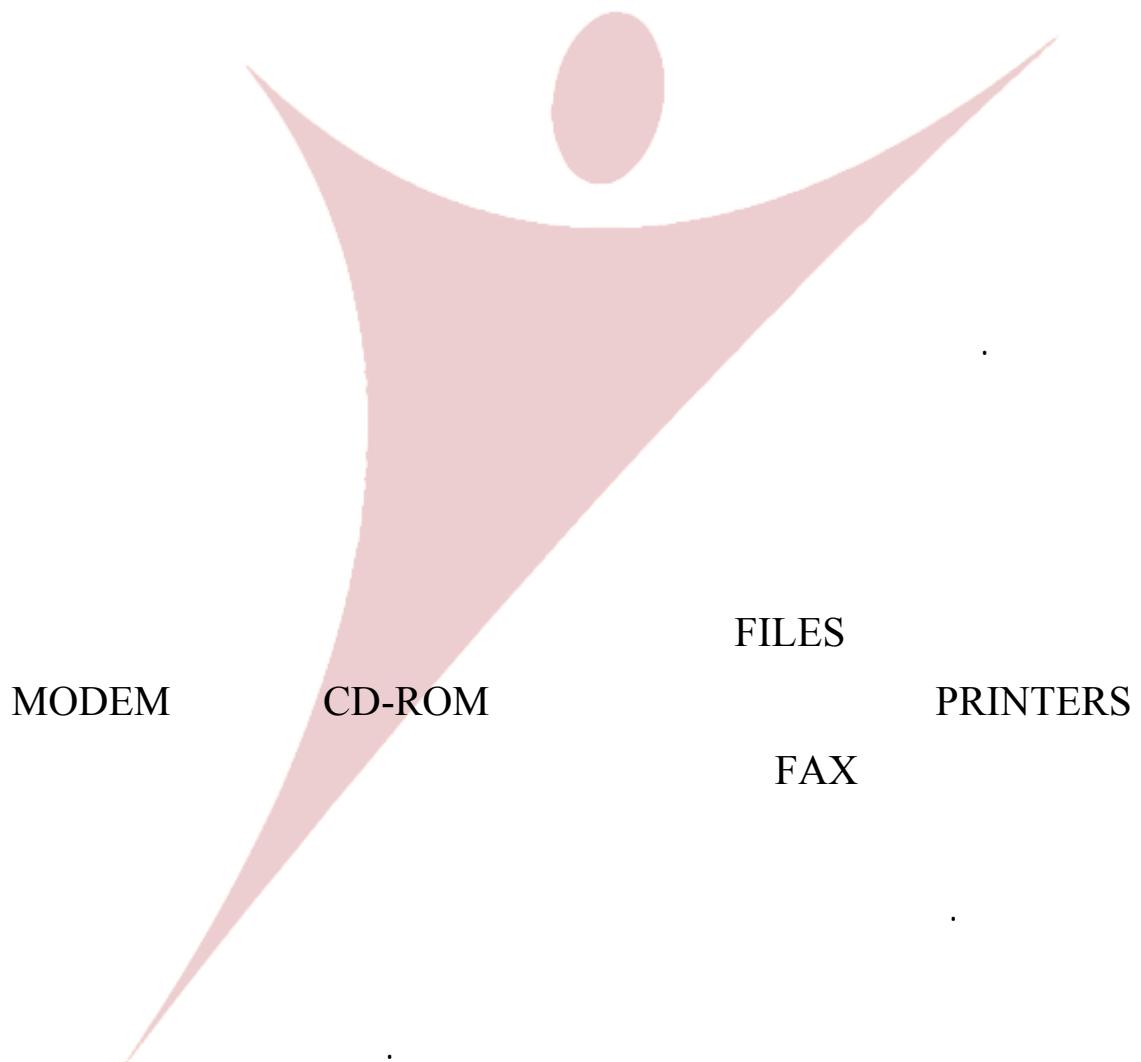
### القسم الخامس: إعداد شبكة بين جهازين في Windows Xp

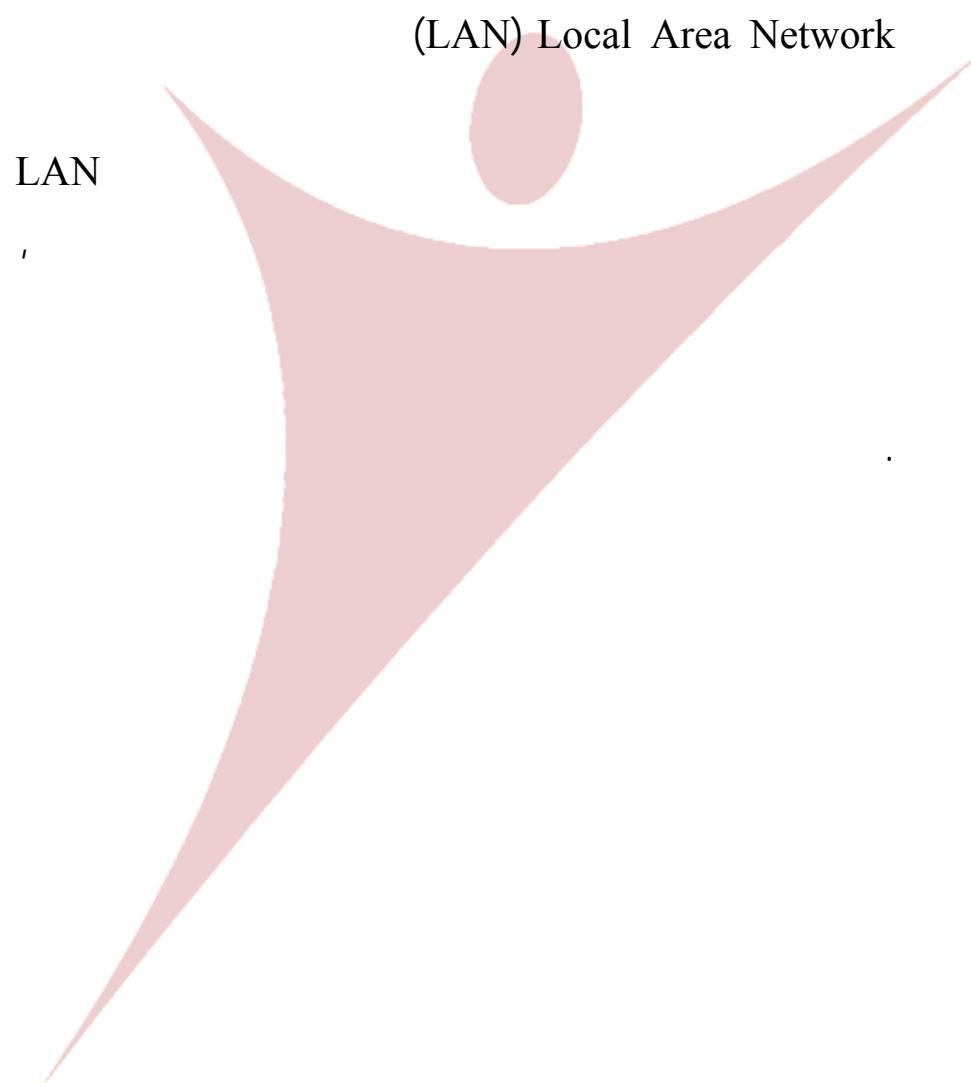
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### القسم السادس: أمن الشبكات

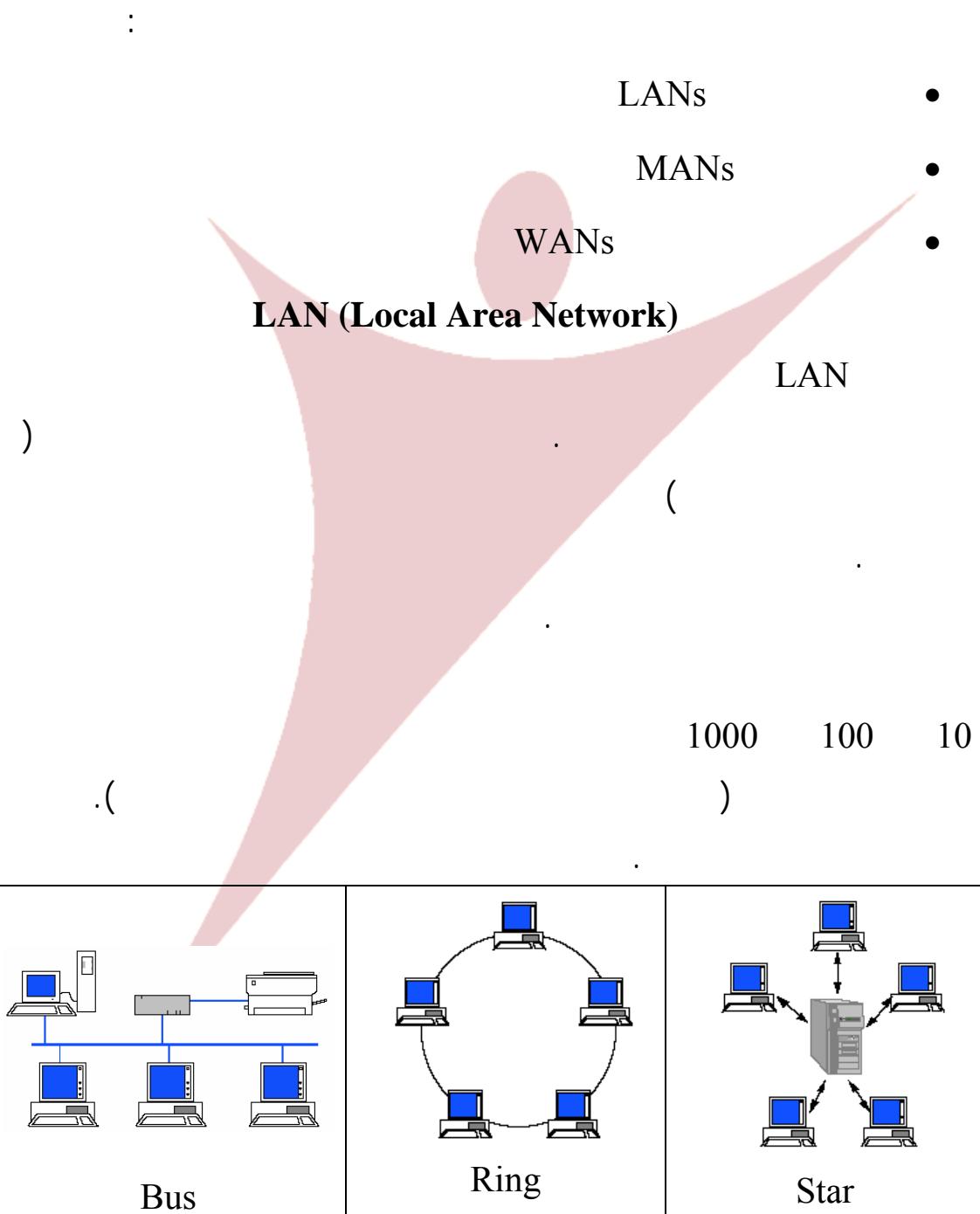
### القسم السابع: مشاكل ونصائح هامة في الشبكات

# الشبكات

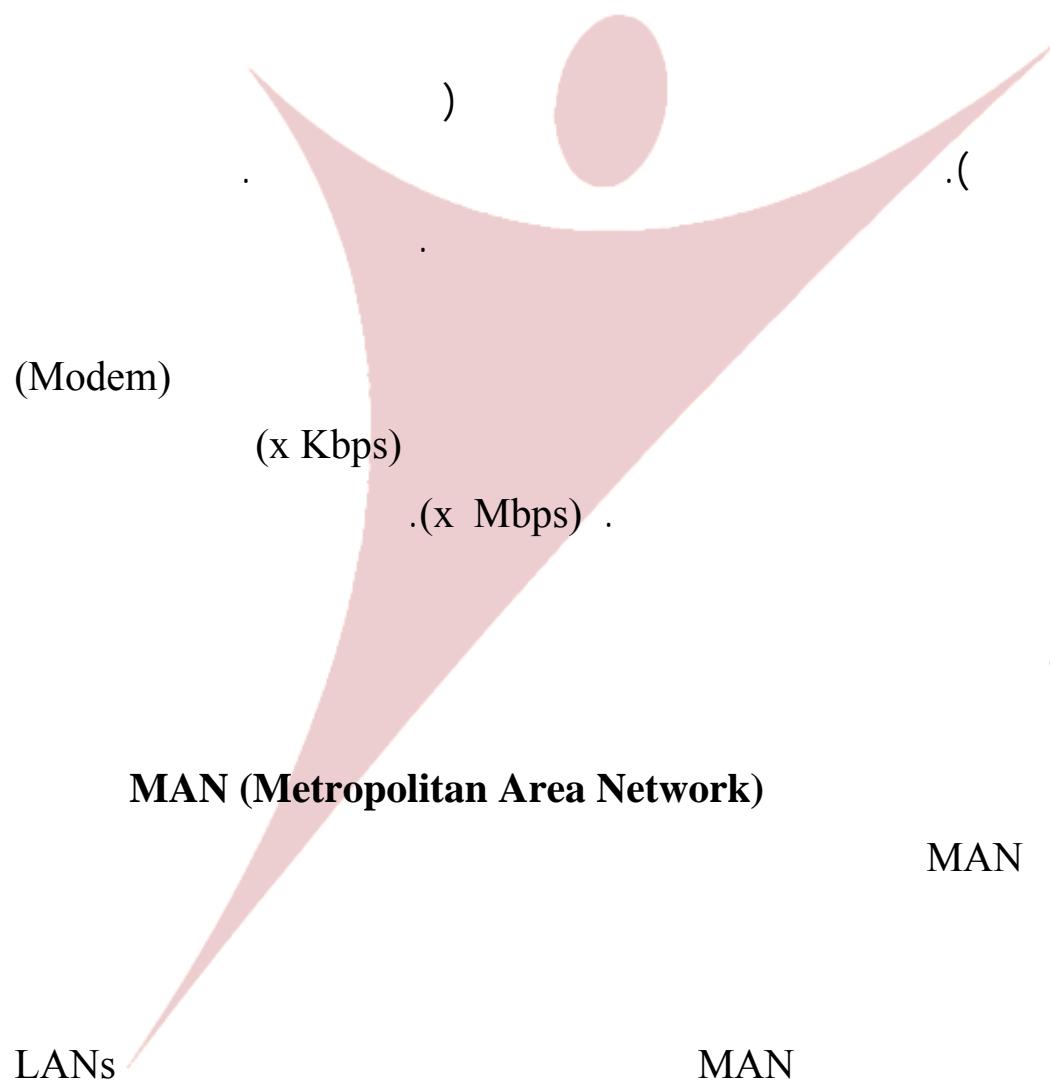




## القسم الأول: أنواع الشبكات السلكية



## WAN (Wide Area Network)



MAN	WAN	LAN	
		2000	
		4 1000 (4 to 1000 Mbps)	
		2	
(Multiplexer)	(Multiplexer)		
T1, X25, ISDN, Modems	T1, X25, ISDN, Modems	Ethernet, Token-Ring, FDDI	
-	-	24/ 24	

## ربط الشبكات:

LAN

Backbone

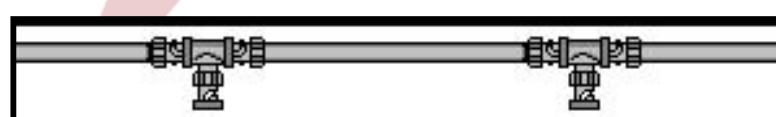
Bus - 1

Star - 2

Ring - 2

: Network Bus

Coaxial



Bus

(Segment )

.Linear Bus

(

)

T

BNC

CSMA/CD

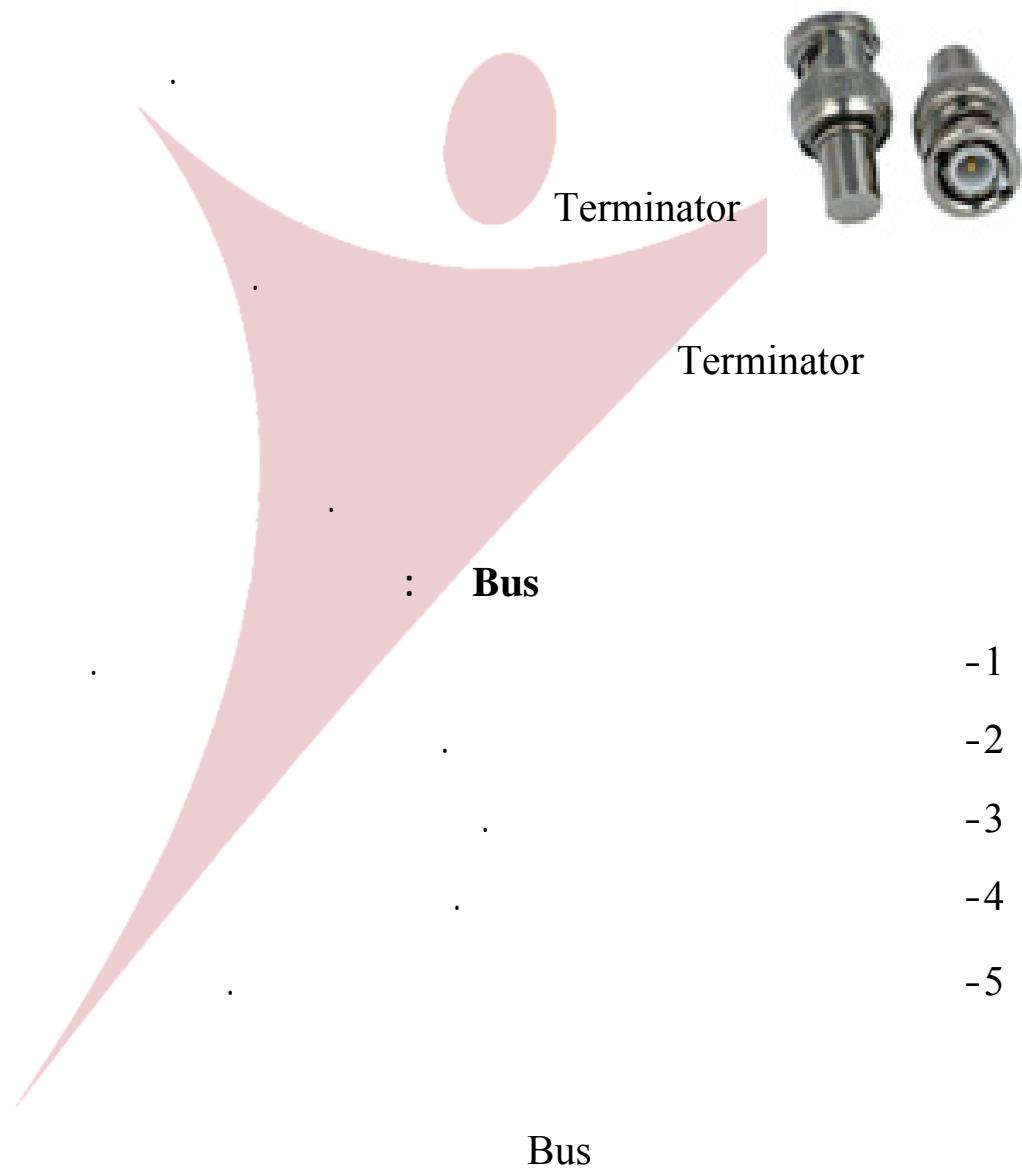
Signals

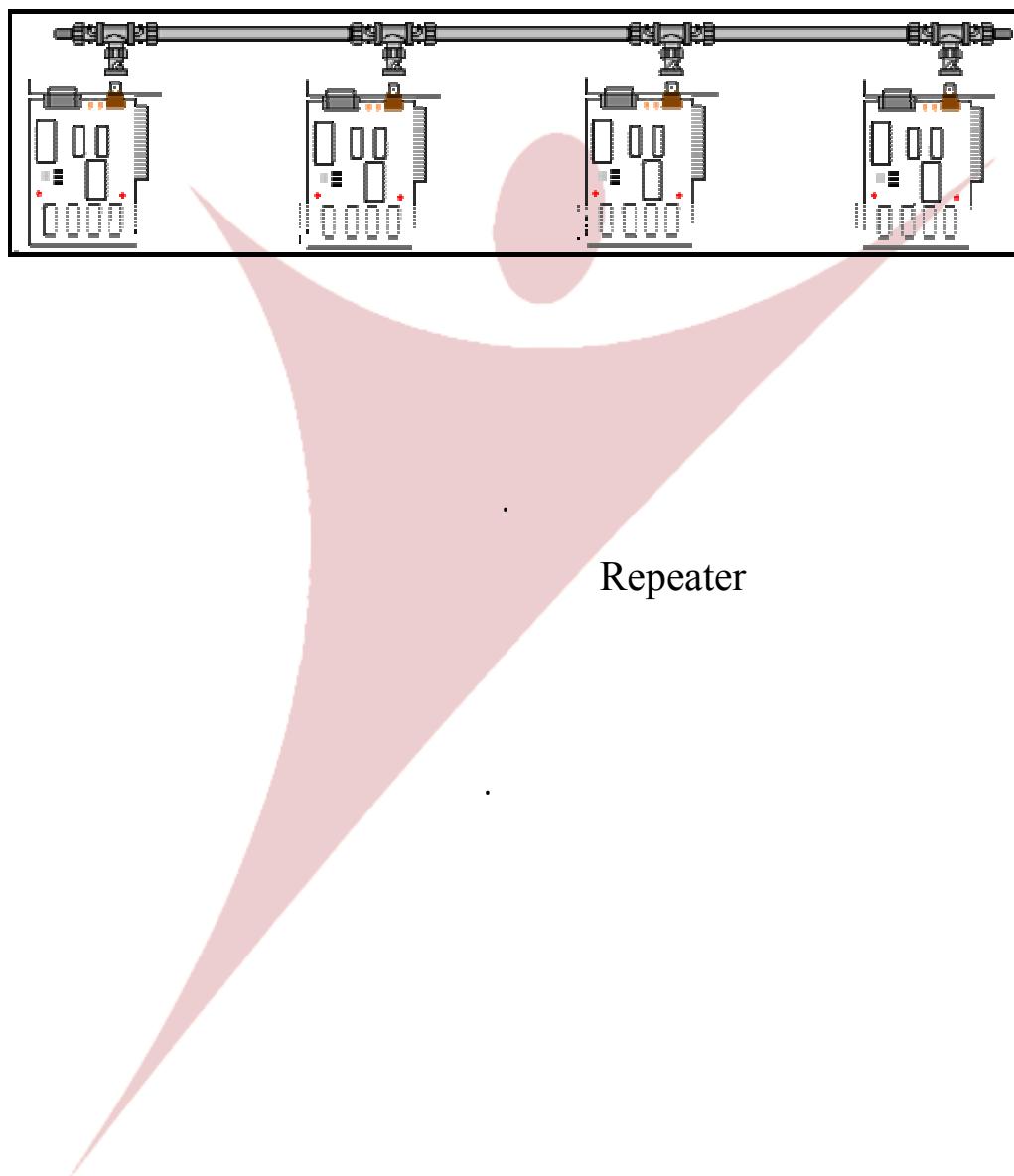
Bus

Collision

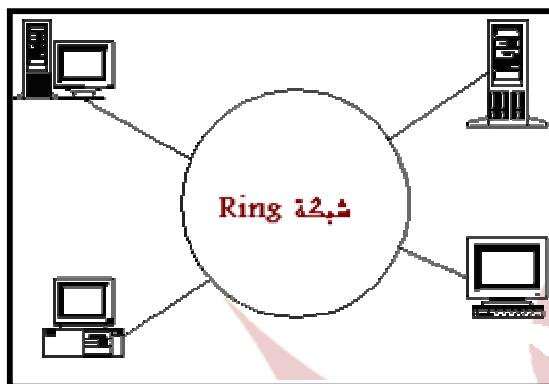
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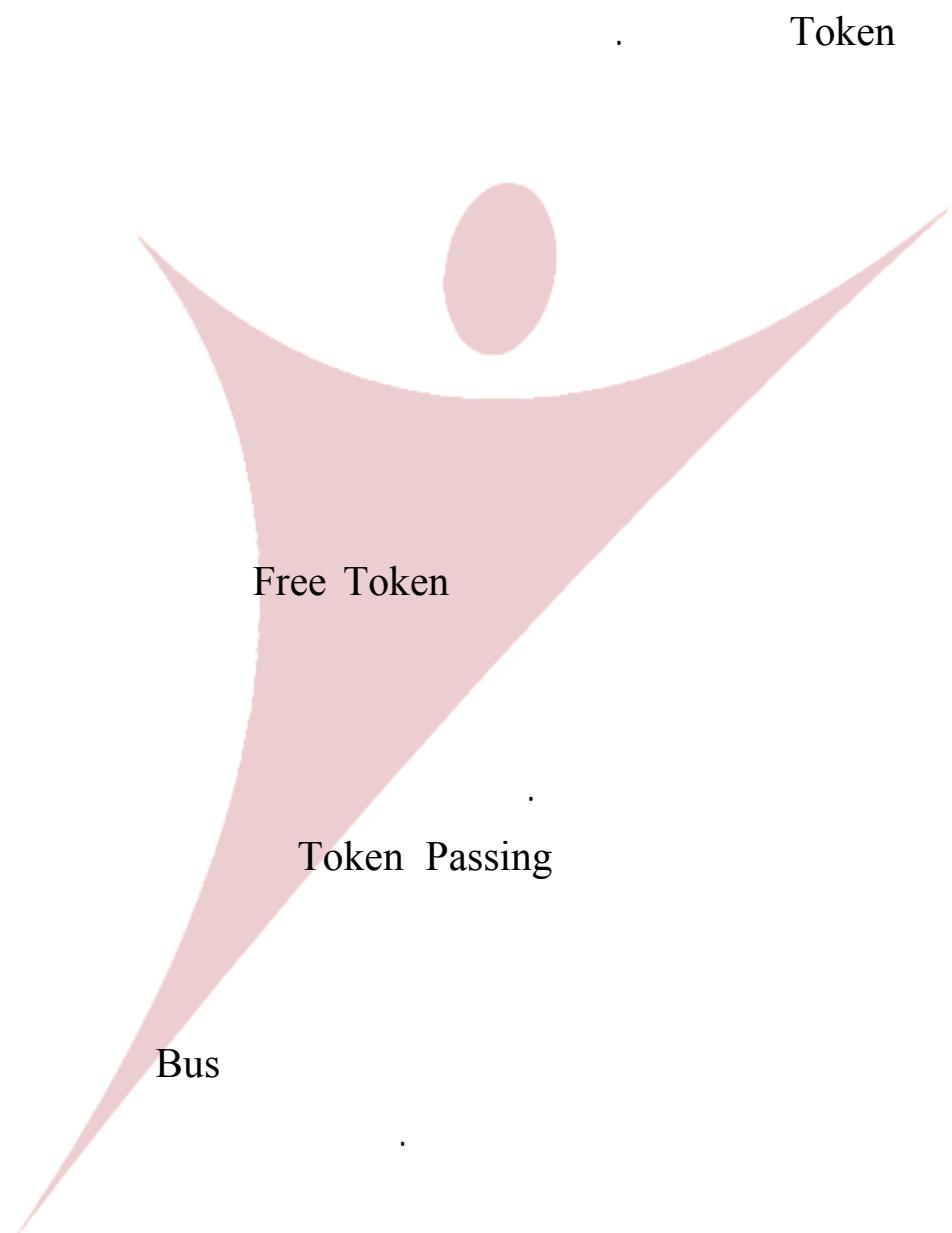
## : Network Ring



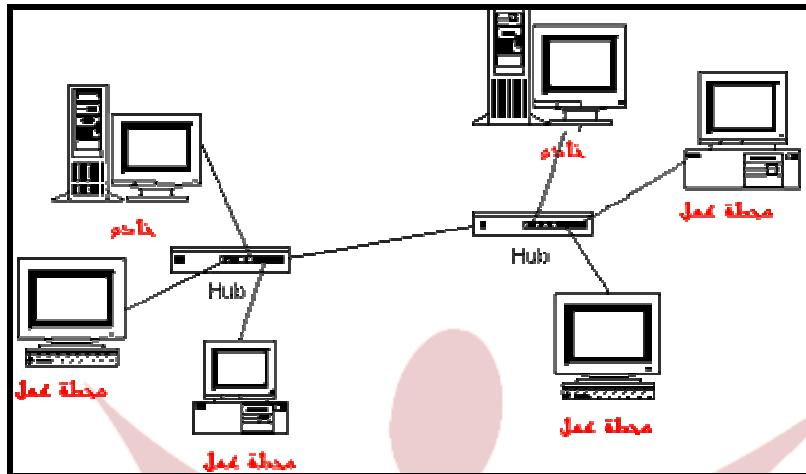
Token

Token Passing

Token Free



## **: Network Star**



(Fast Ethernet)

(Mbps)

100  
10

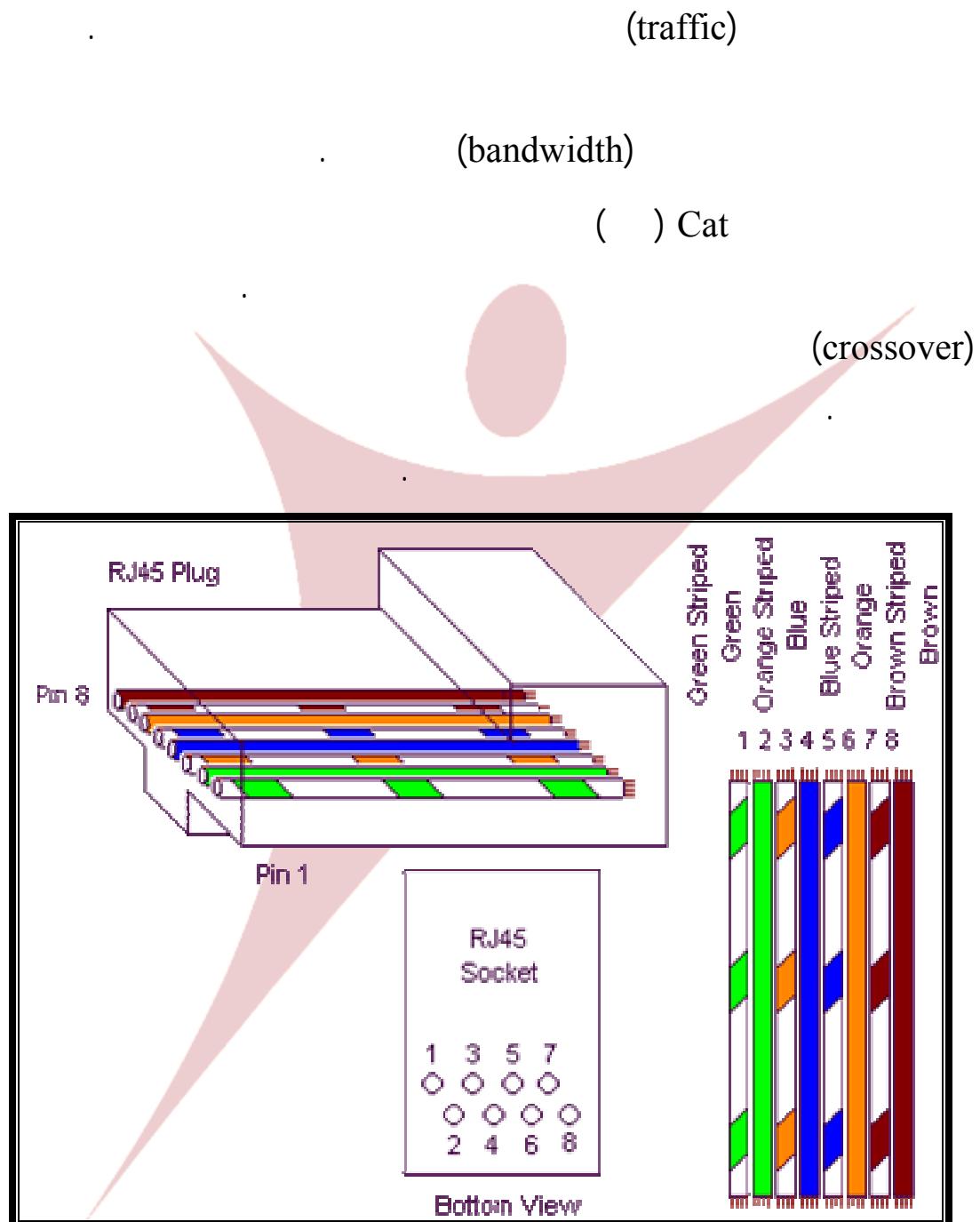


(Cat5)

10/100Base-T RJ-45

RJ-45  
10/100Base-T

Cat5 .

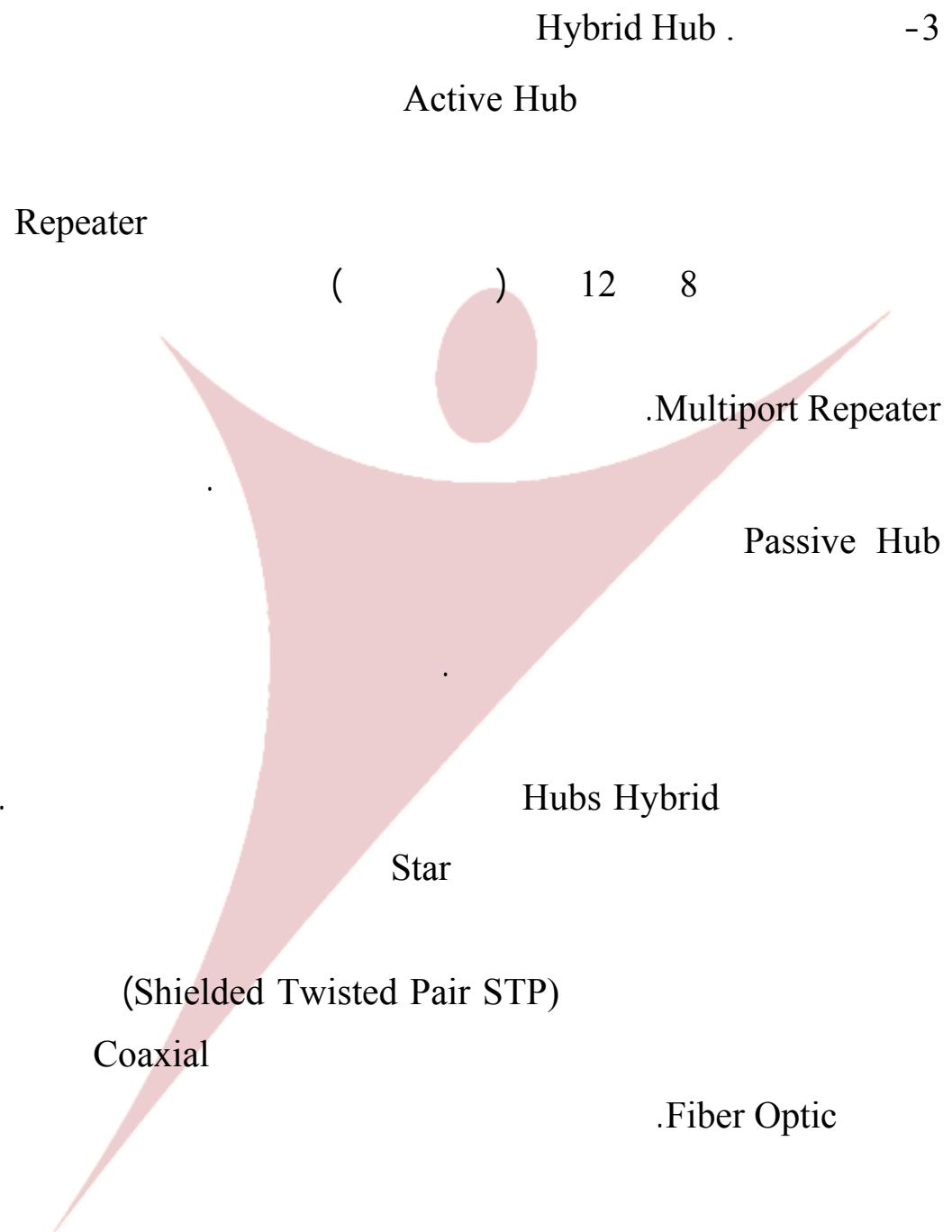


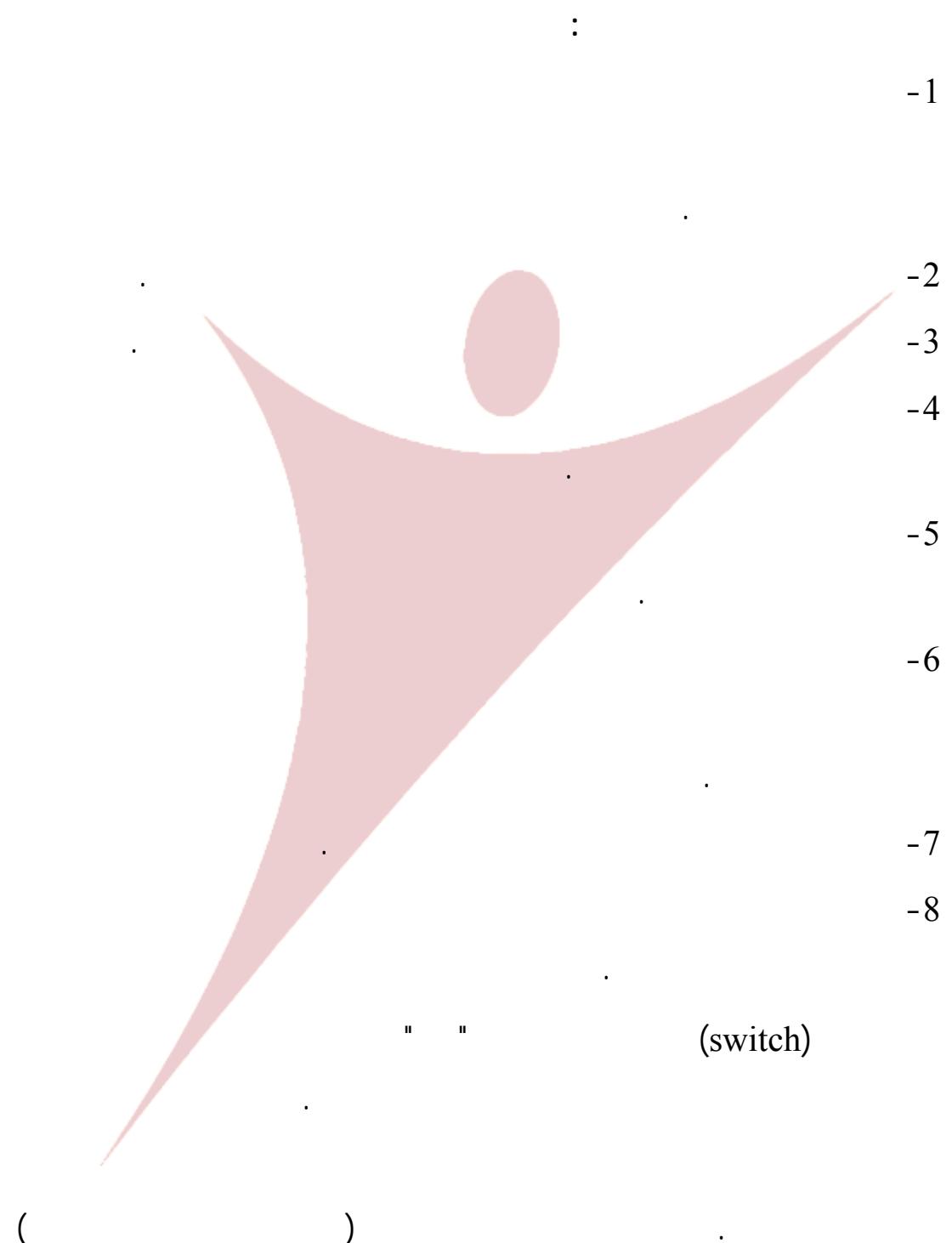
## :Hubs

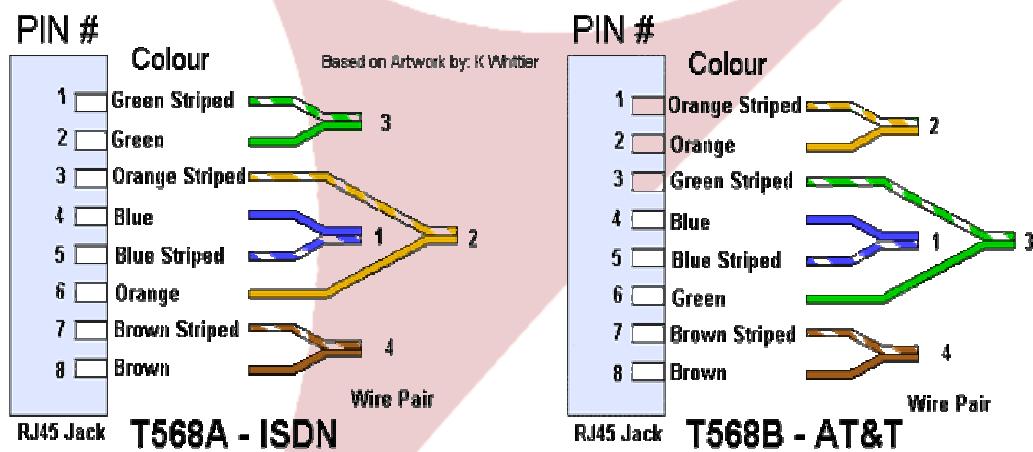


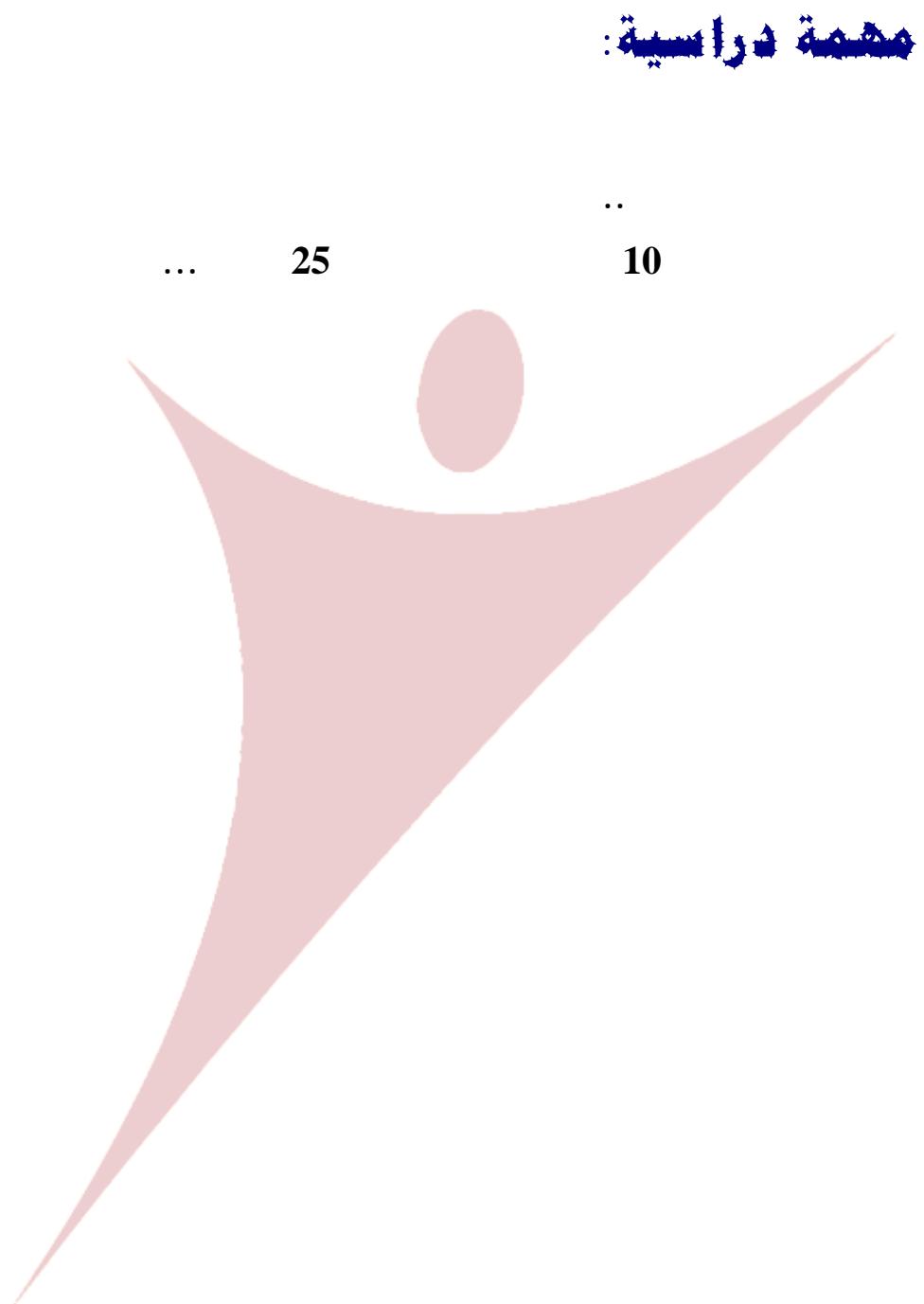
Active Hub . -1

Passive Hub. -2

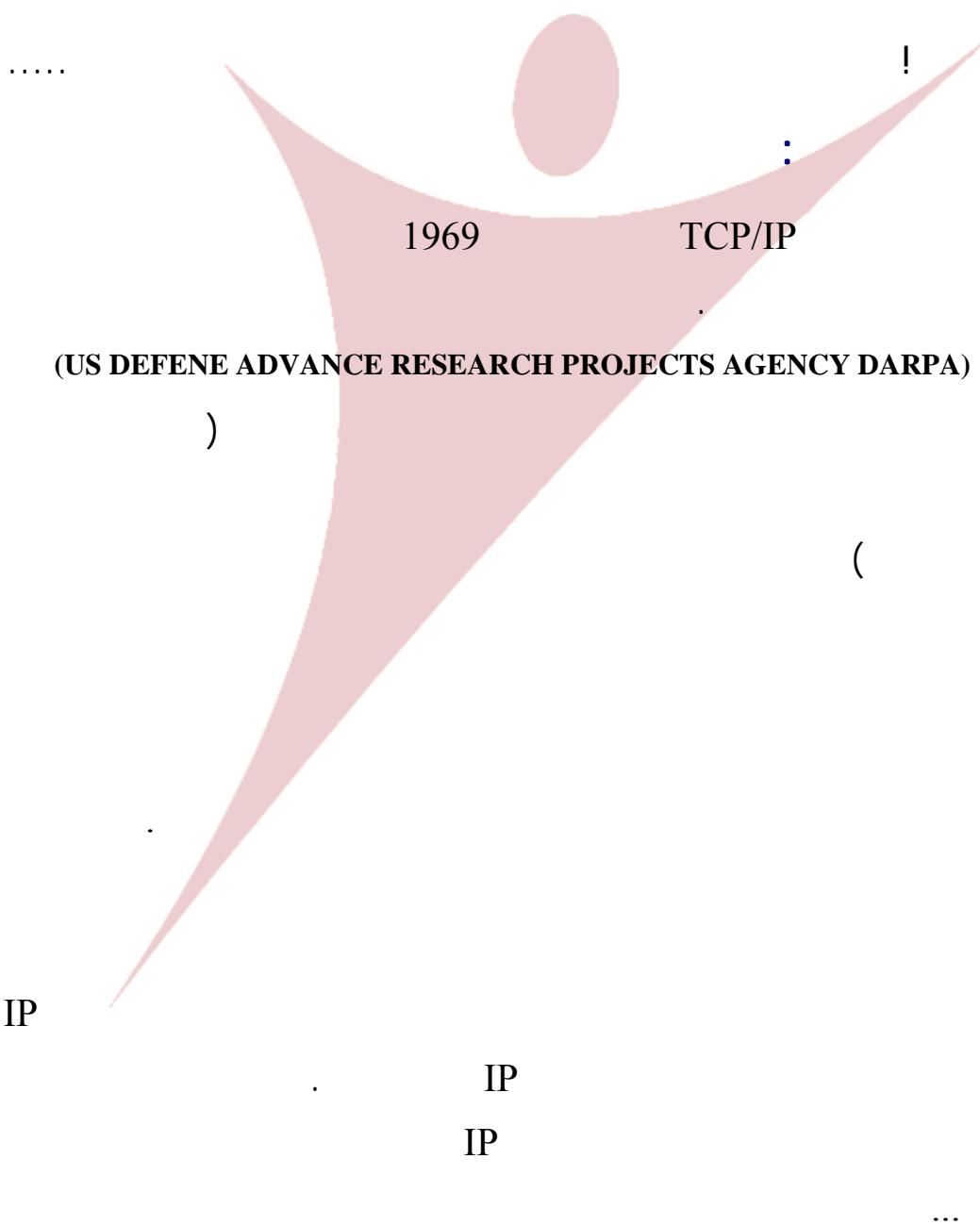




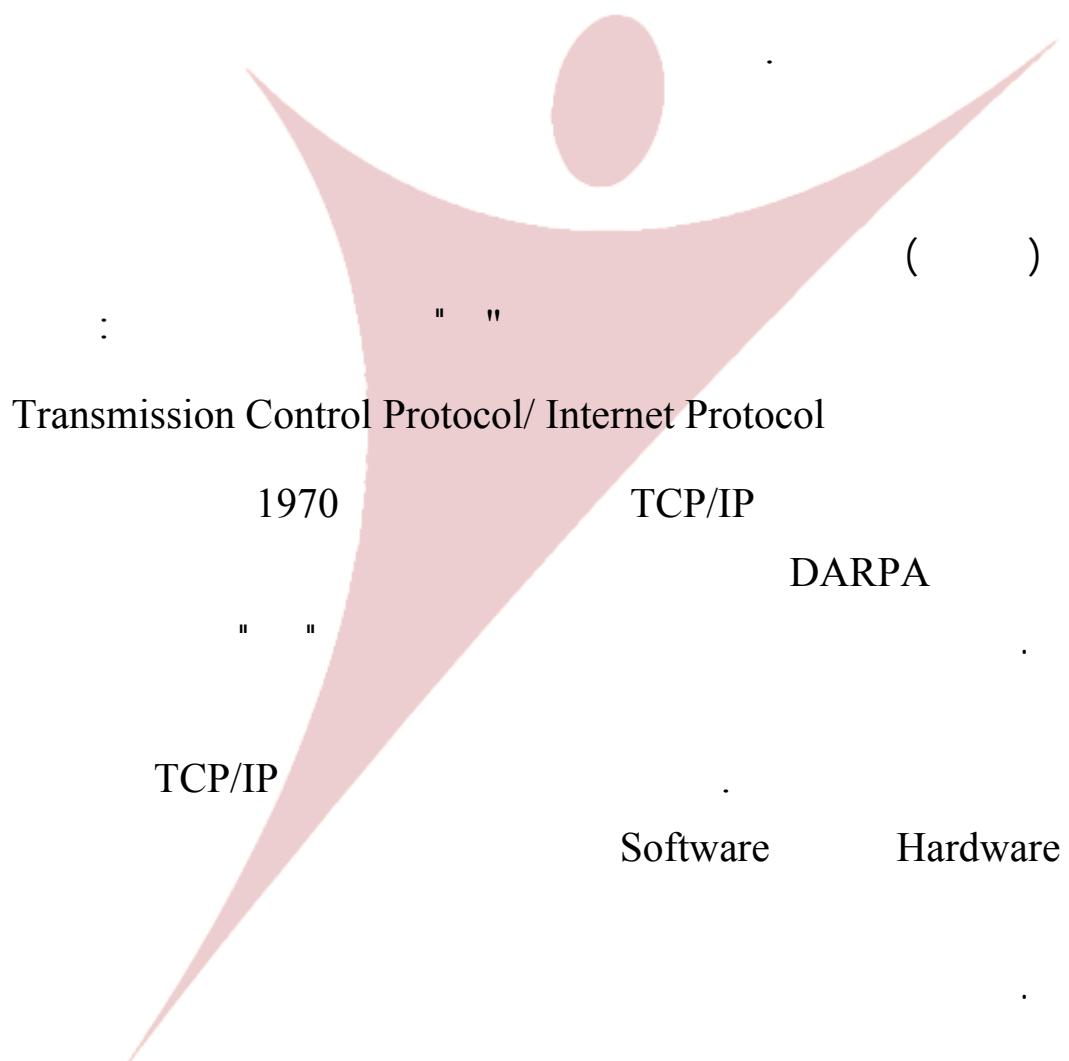


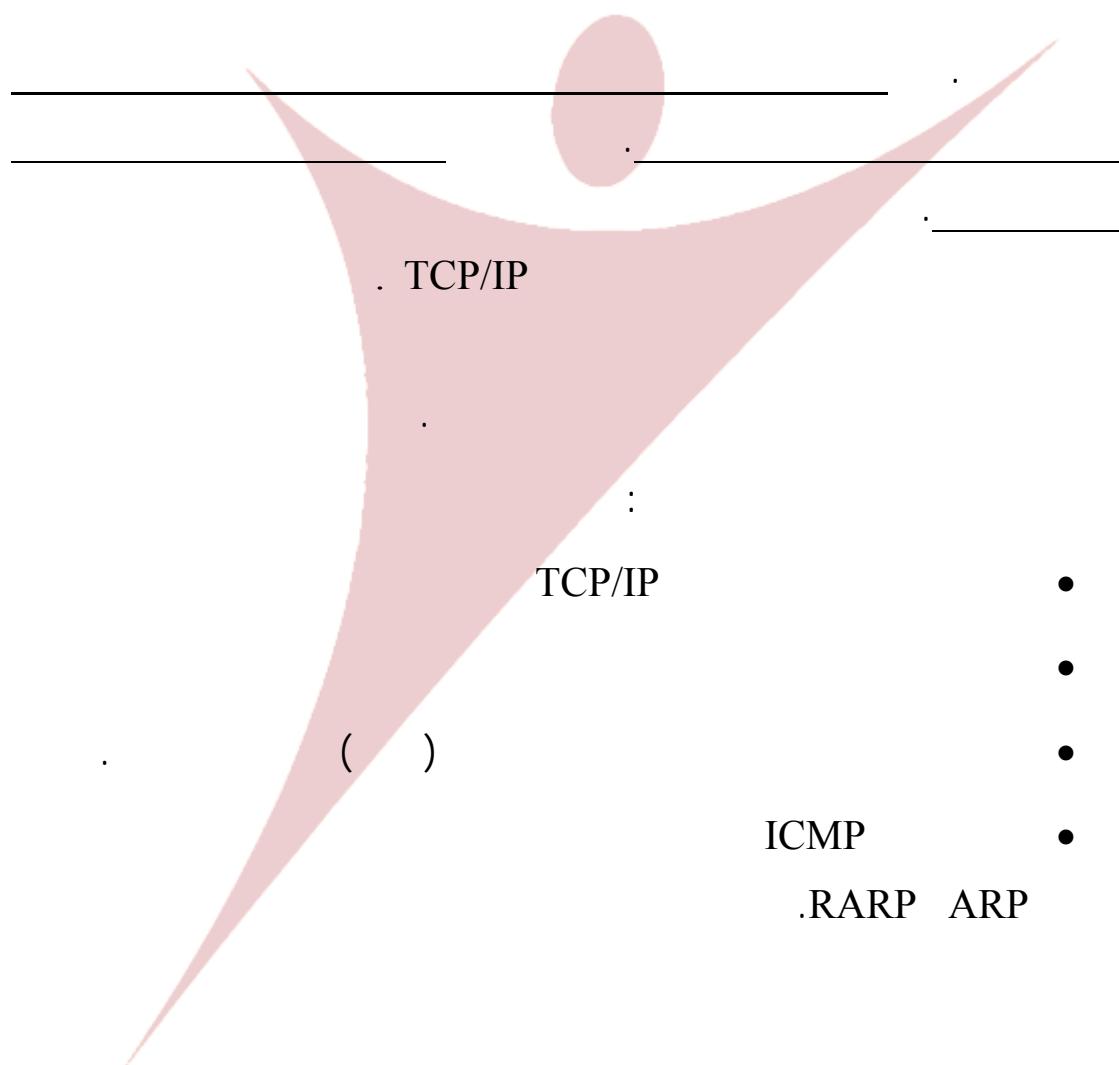


## القسم الثاني: البروتوكولات



## TCP/IP



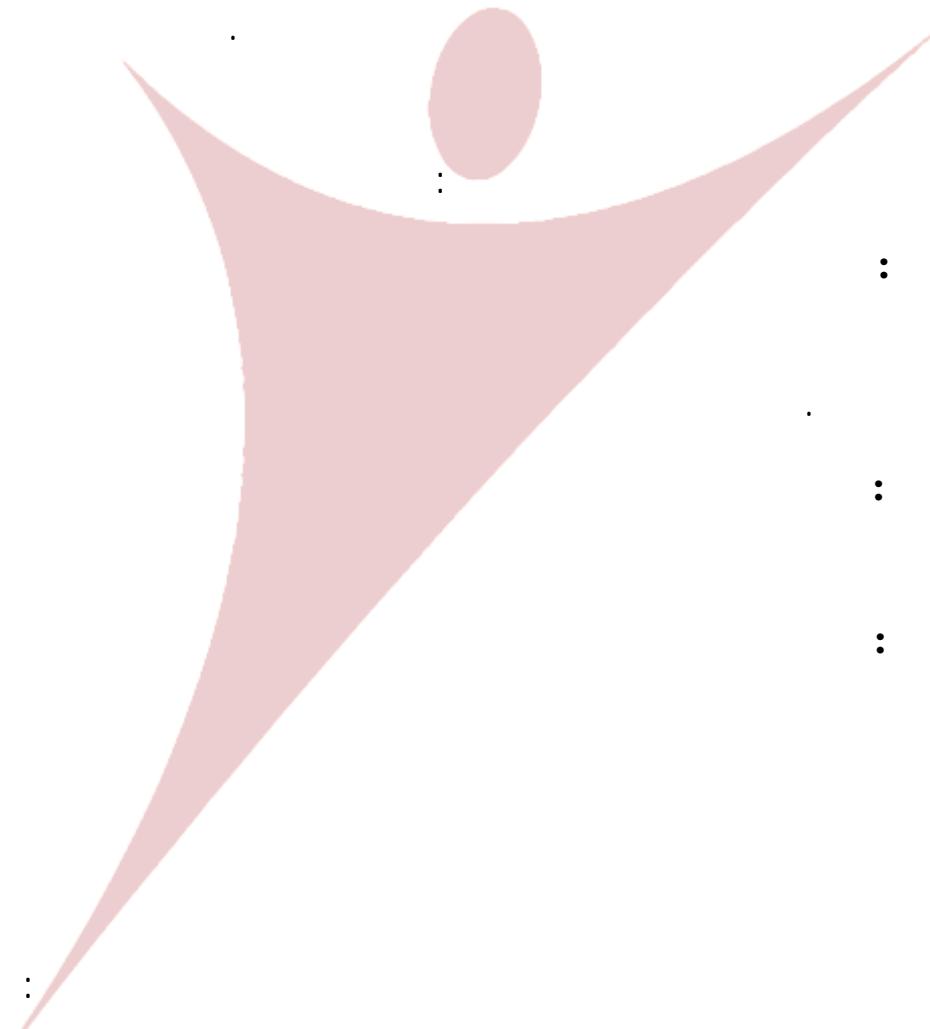


**:OSI      TCP/IP**

(Internet protocol)

(TCP/IP)

(packets)



(TCP) Transmission Control Protocol and (IP) Internet protocol

TCP/IP

**: TCP/IP**

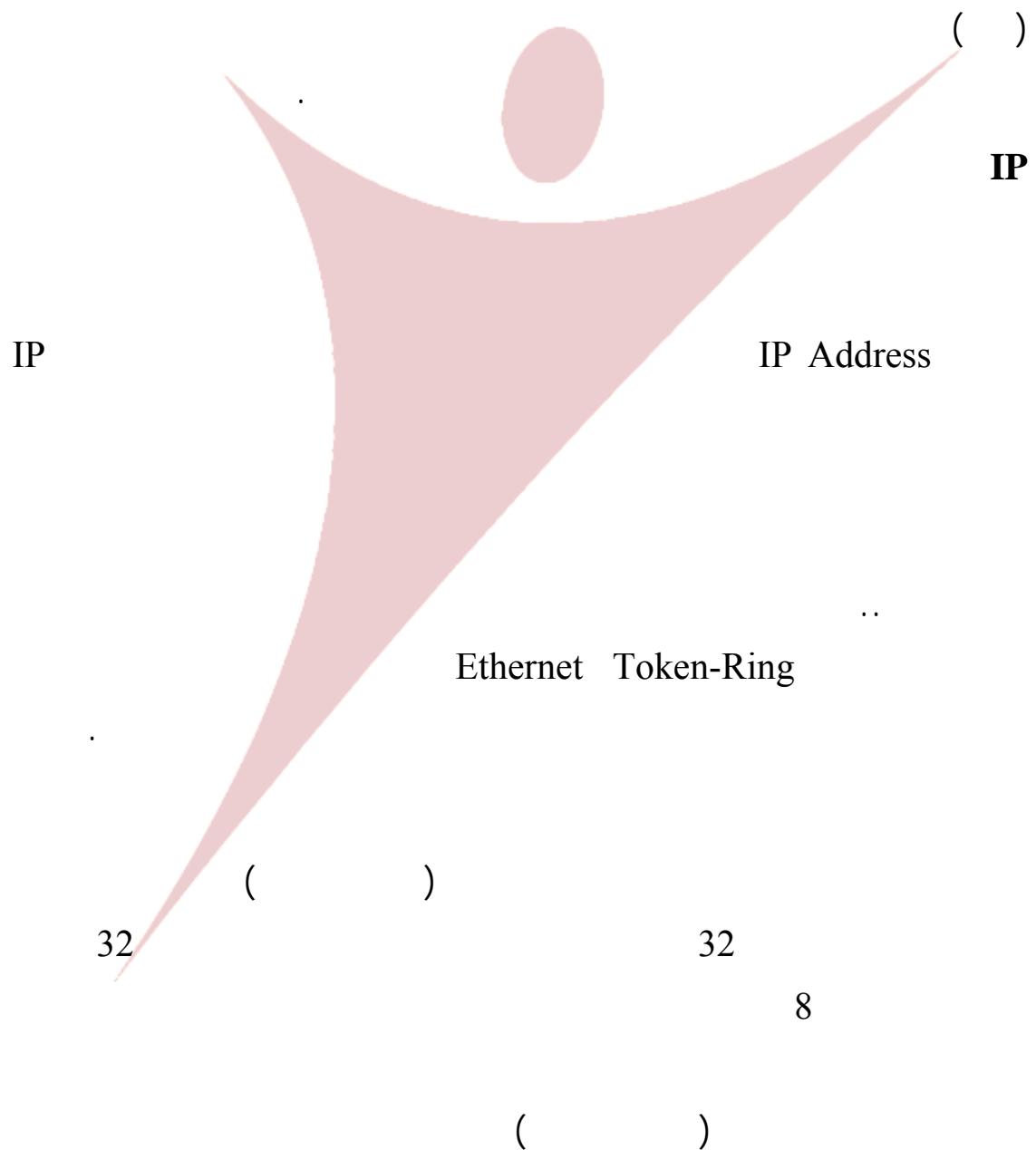
.(DARPA)

TCP/IP

.DARPA

TCP/IP

Berkeley Software Distribution



4

32

255

255

:

208.148.28.60

63.209.3.102

(

)

DOMIAN NAME SERVER

**Class based addressing**

**000.000.000.000 -to- 127.255.255.255**

16777216

$256^3$

**128.000.000.000 -TO- 191.255.255.255**

65536

**192.000.000.000 -TO- 223.255.255.255**

256

( )

## **ICMP Internet Control Message Protocol**

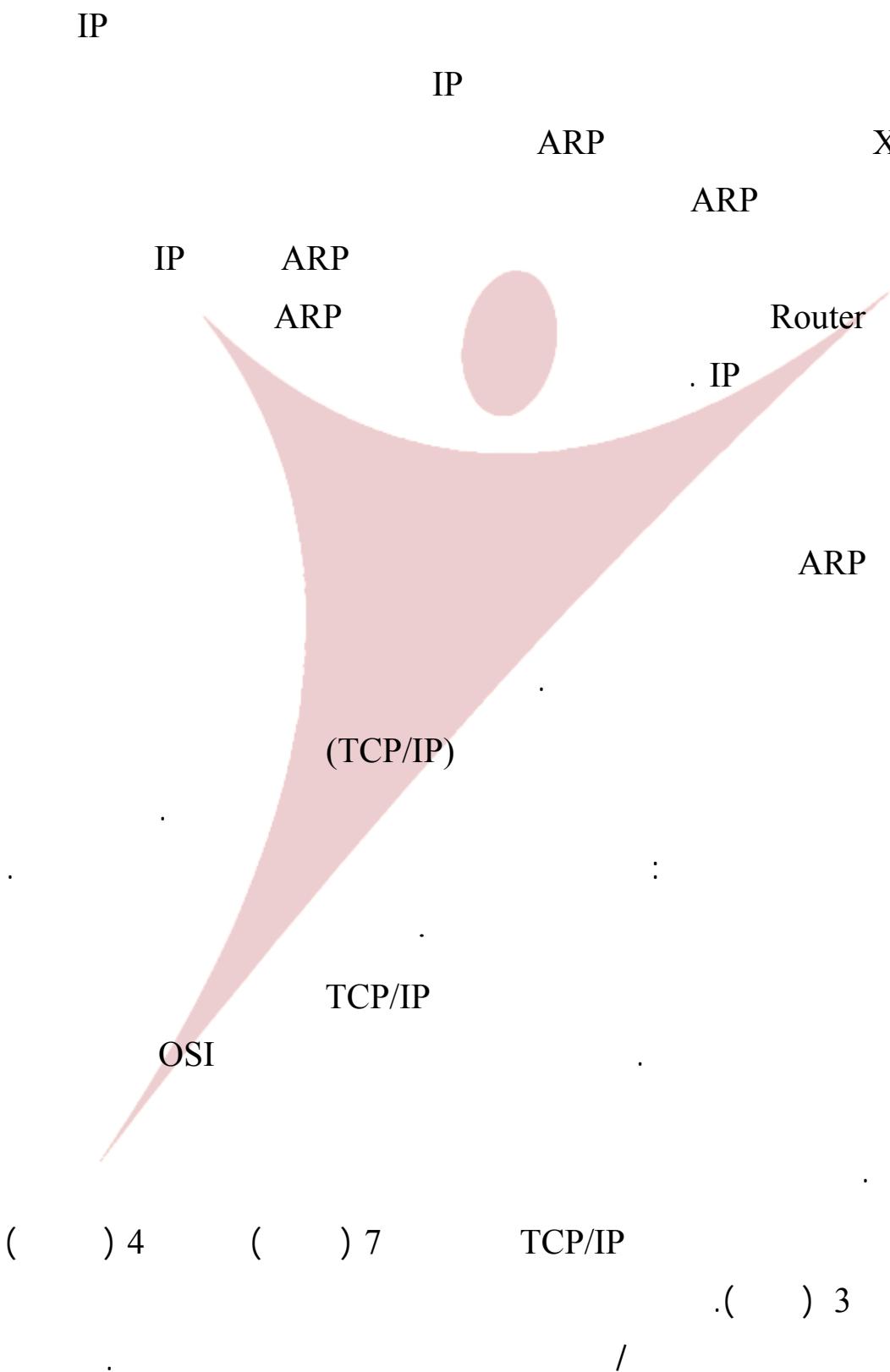
IP

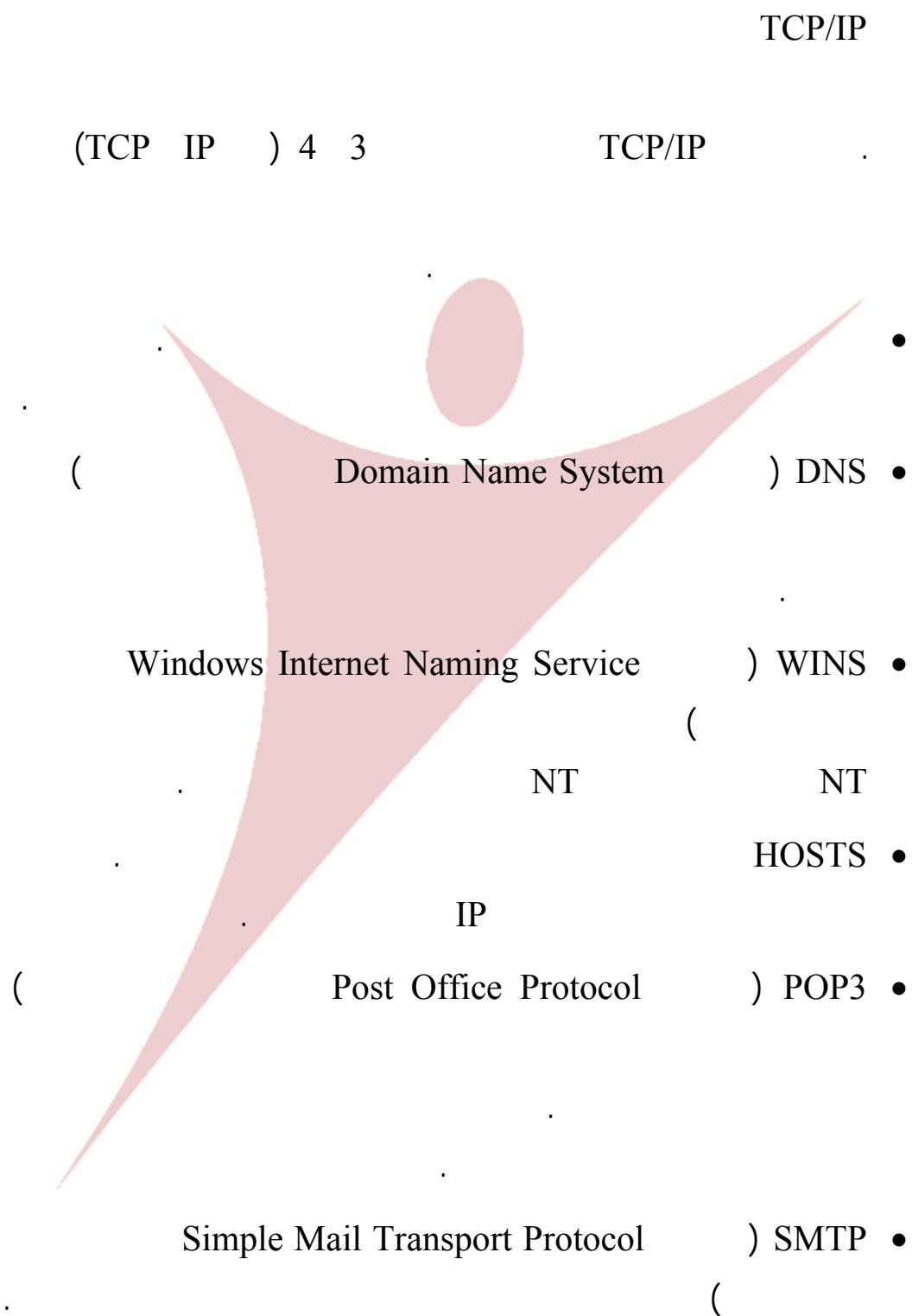
Echo Reply

Echo Request

Ping

## **ARP Address Resolution Protocol**





Simple Network Management Protocol ) SNMP •  
(

( File Transfer Protocol ) FTP •

TCP

.FTP

.( )

Trivial File Transfer Protocol ) TFTP •

UDP

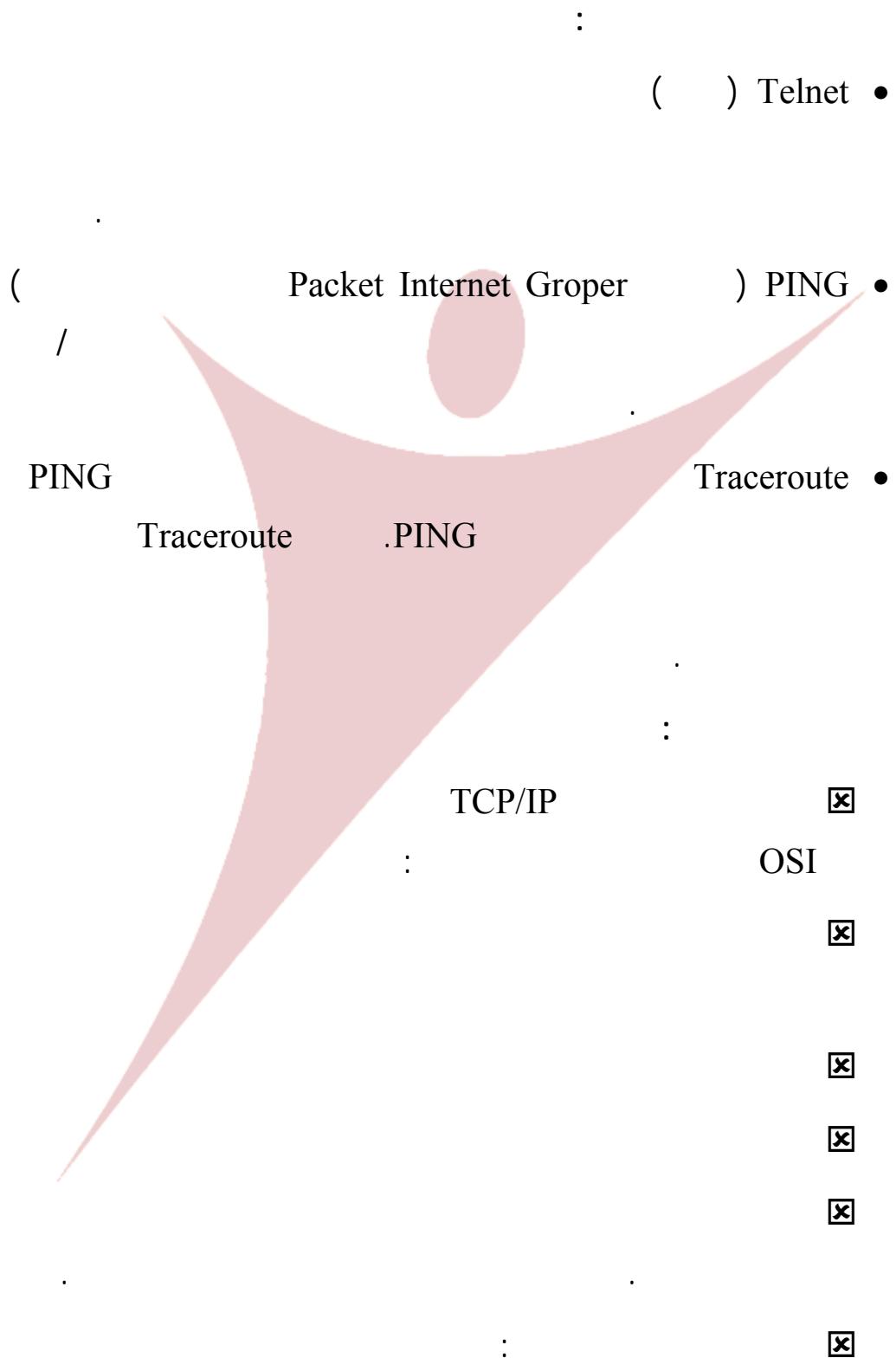
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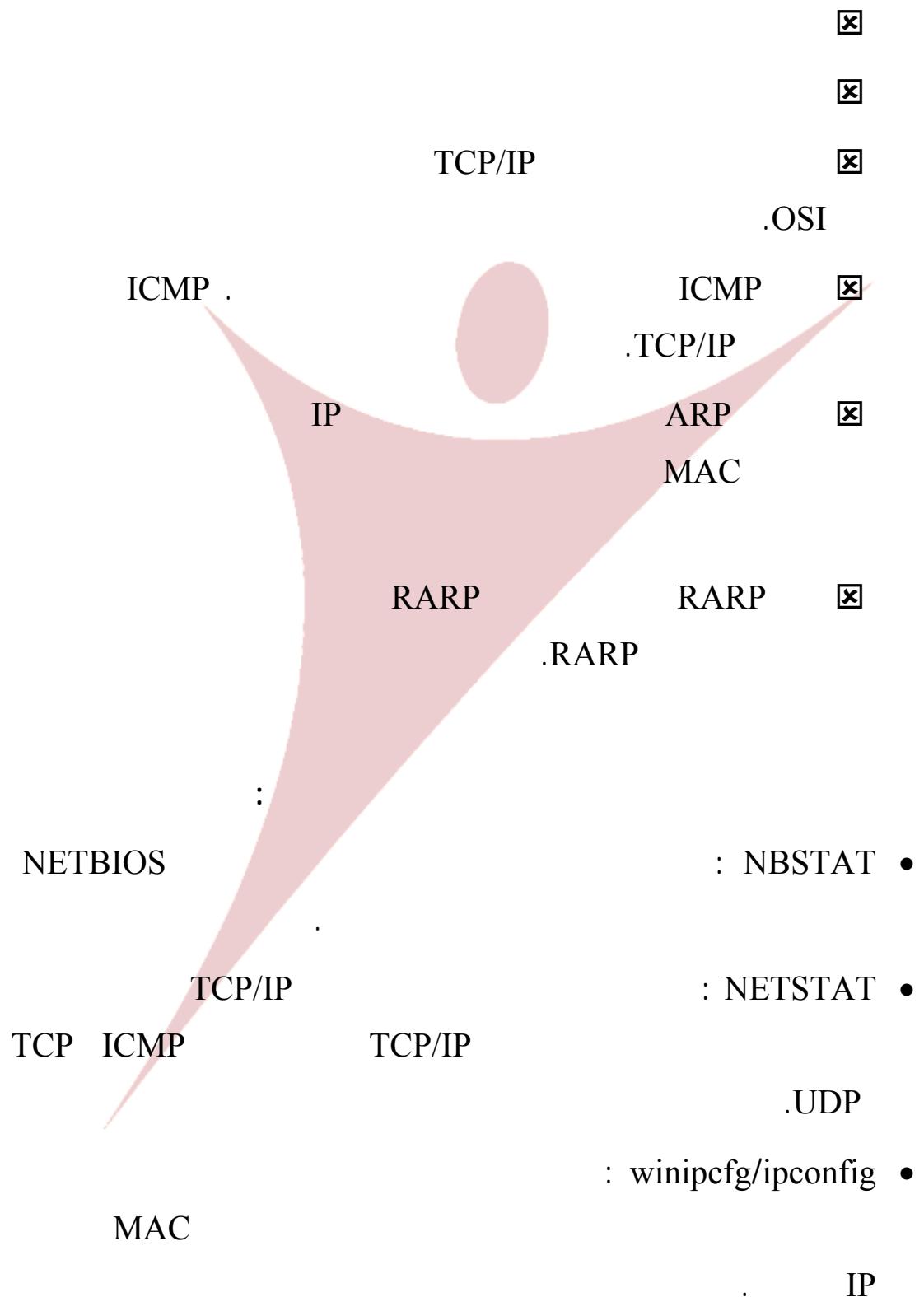
TFTP

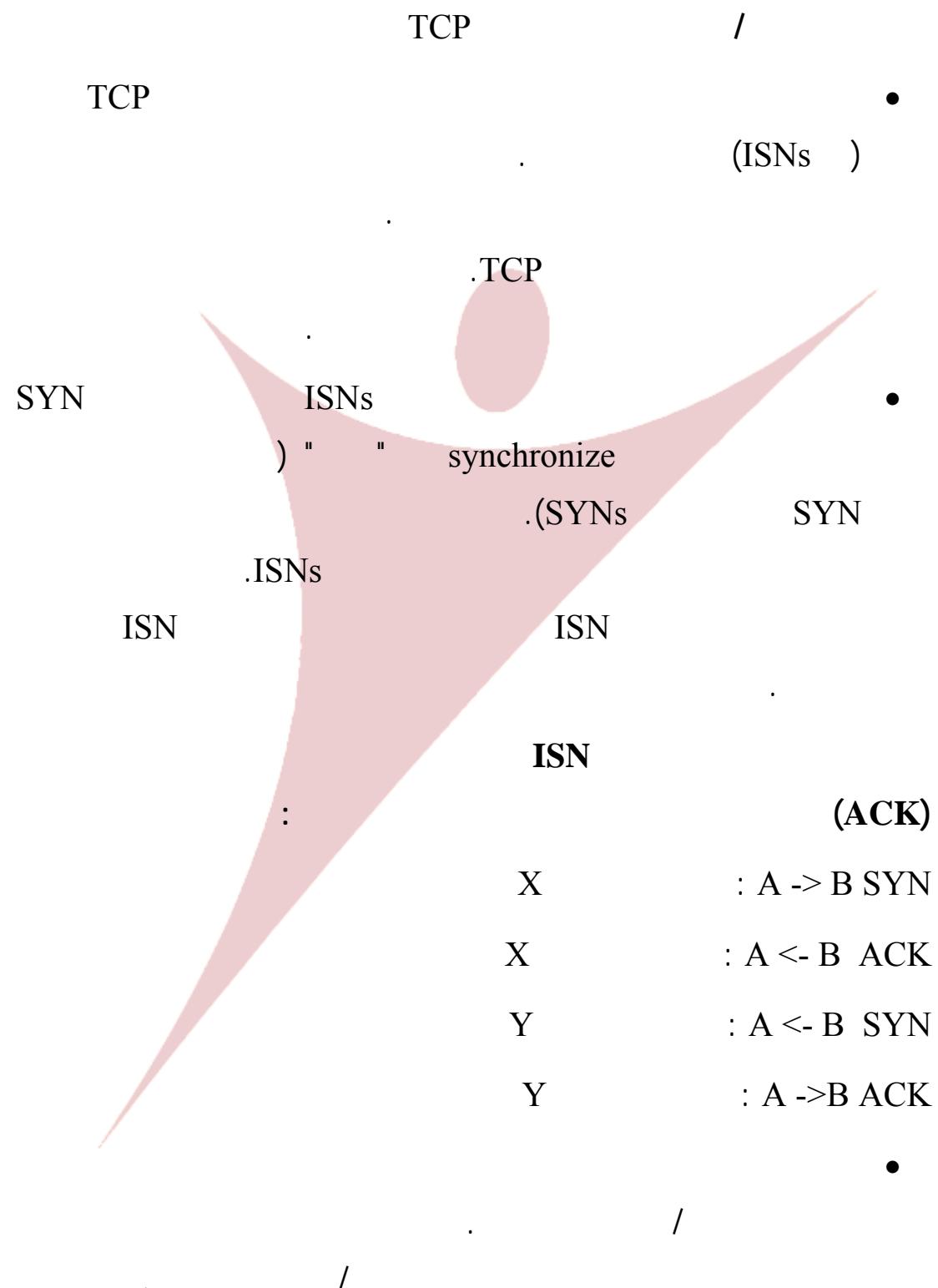
FTP

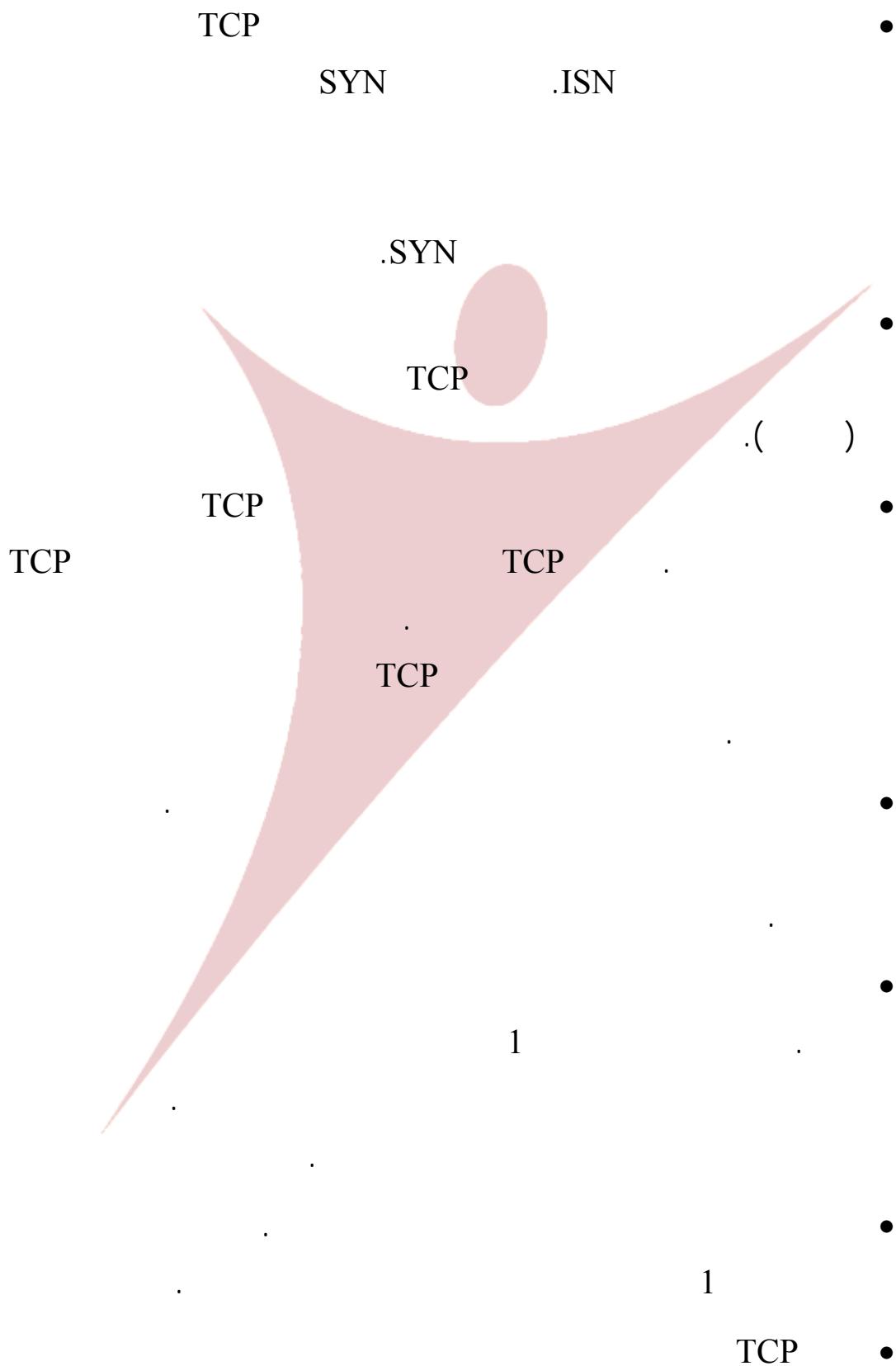
HyperText Transfer Protocol ) HTTP •

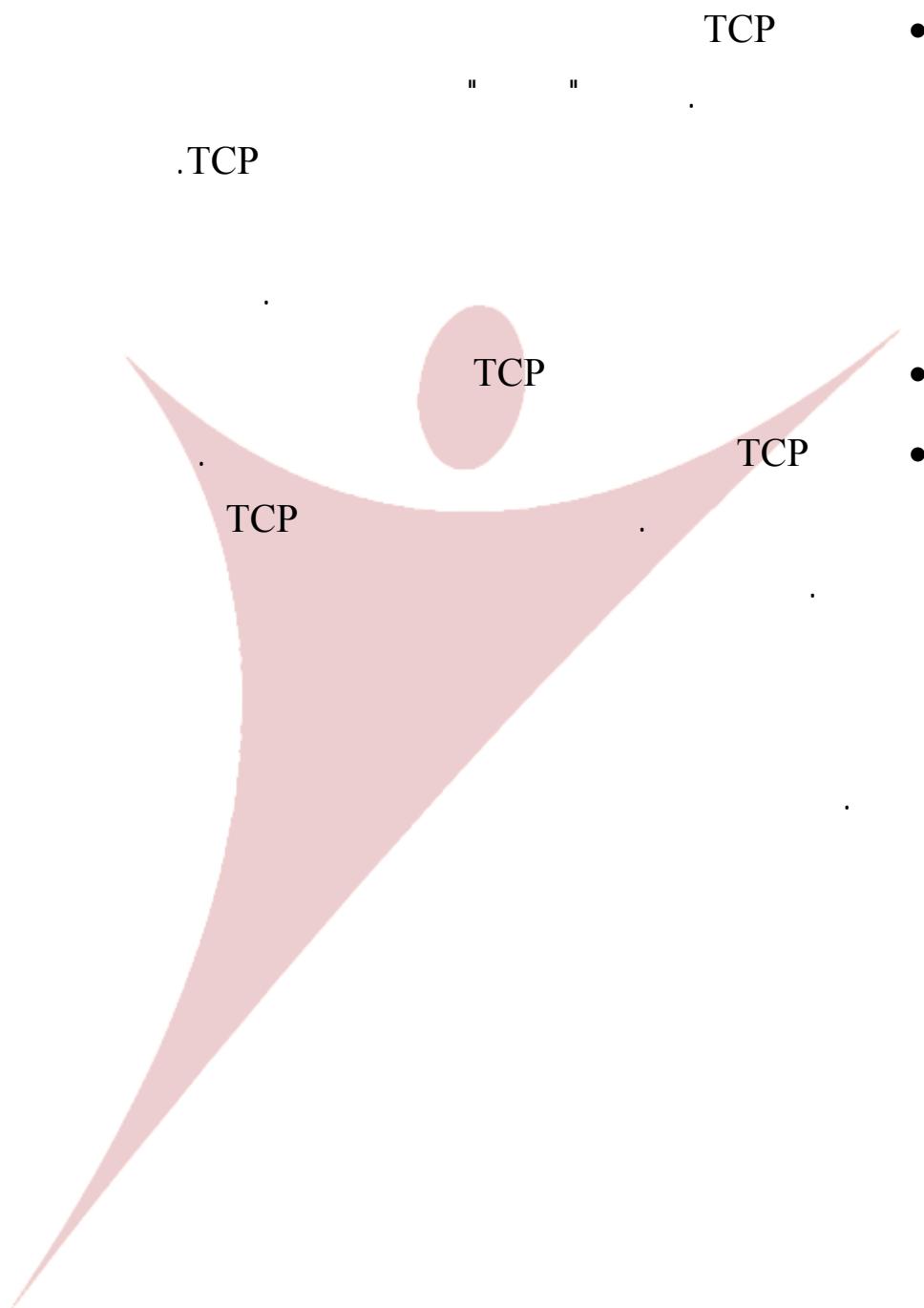
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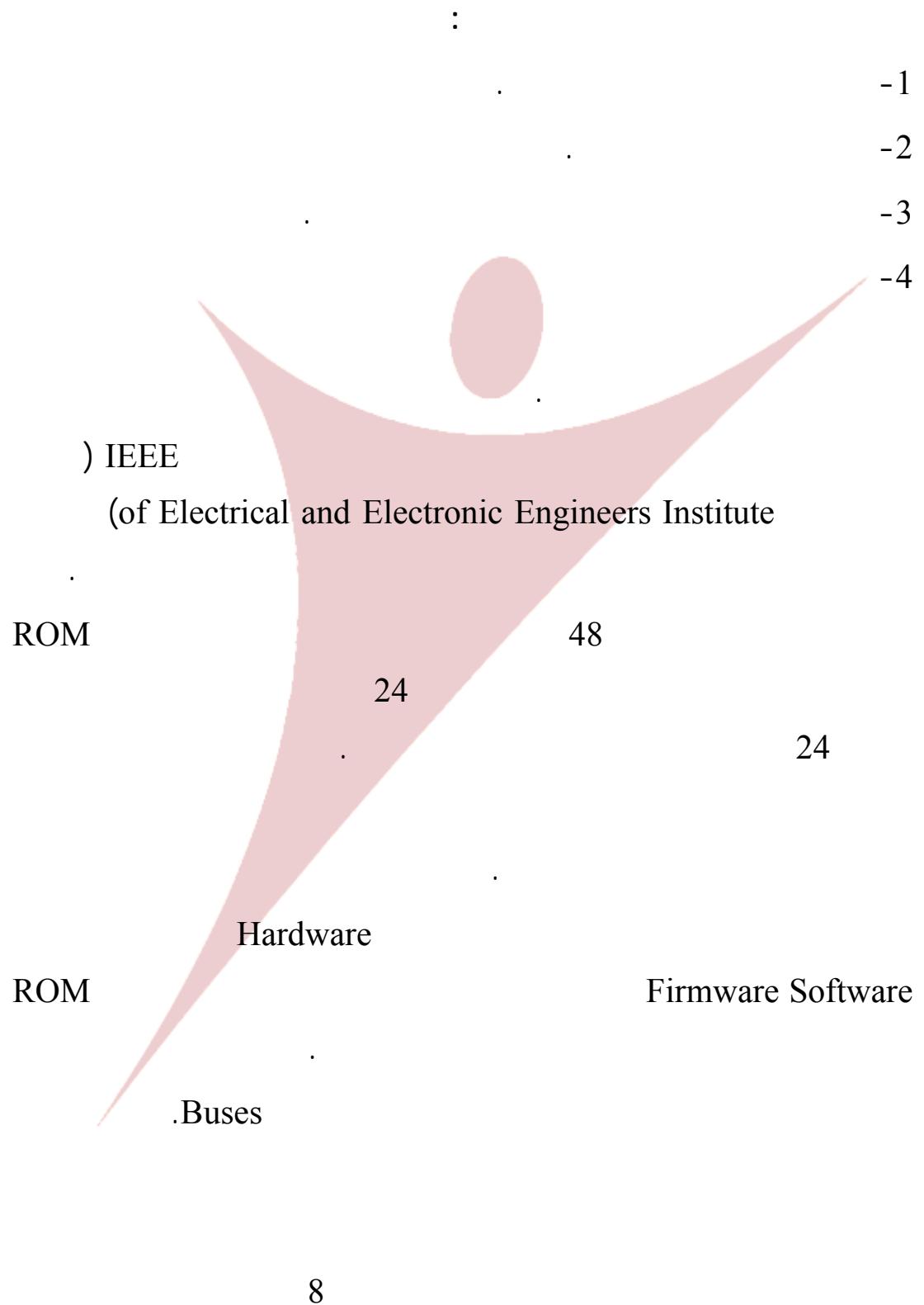
## القسم الثالث: مكونات الشبكة

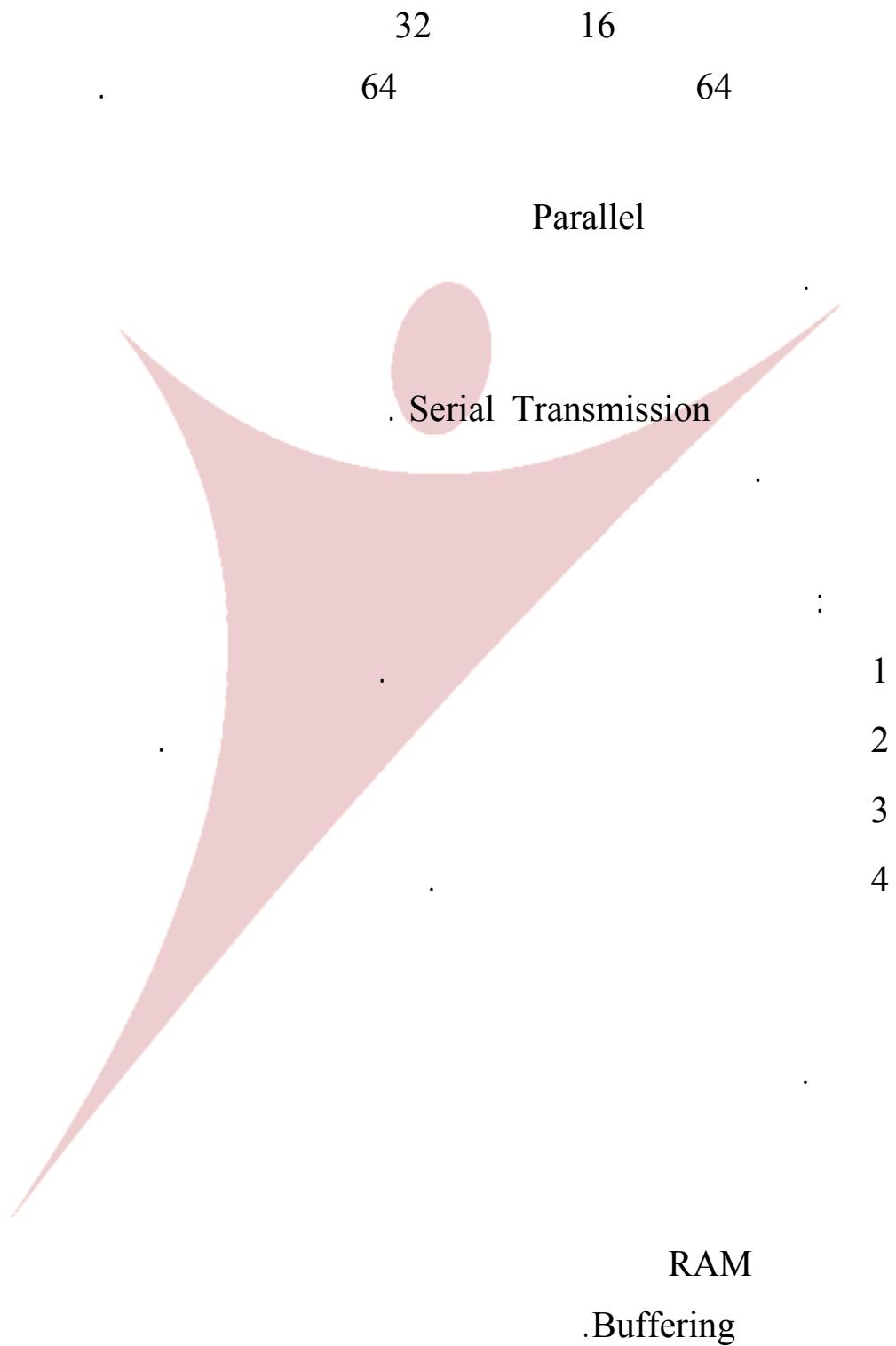
: ; REPEATER ; ROUTER ; HUB

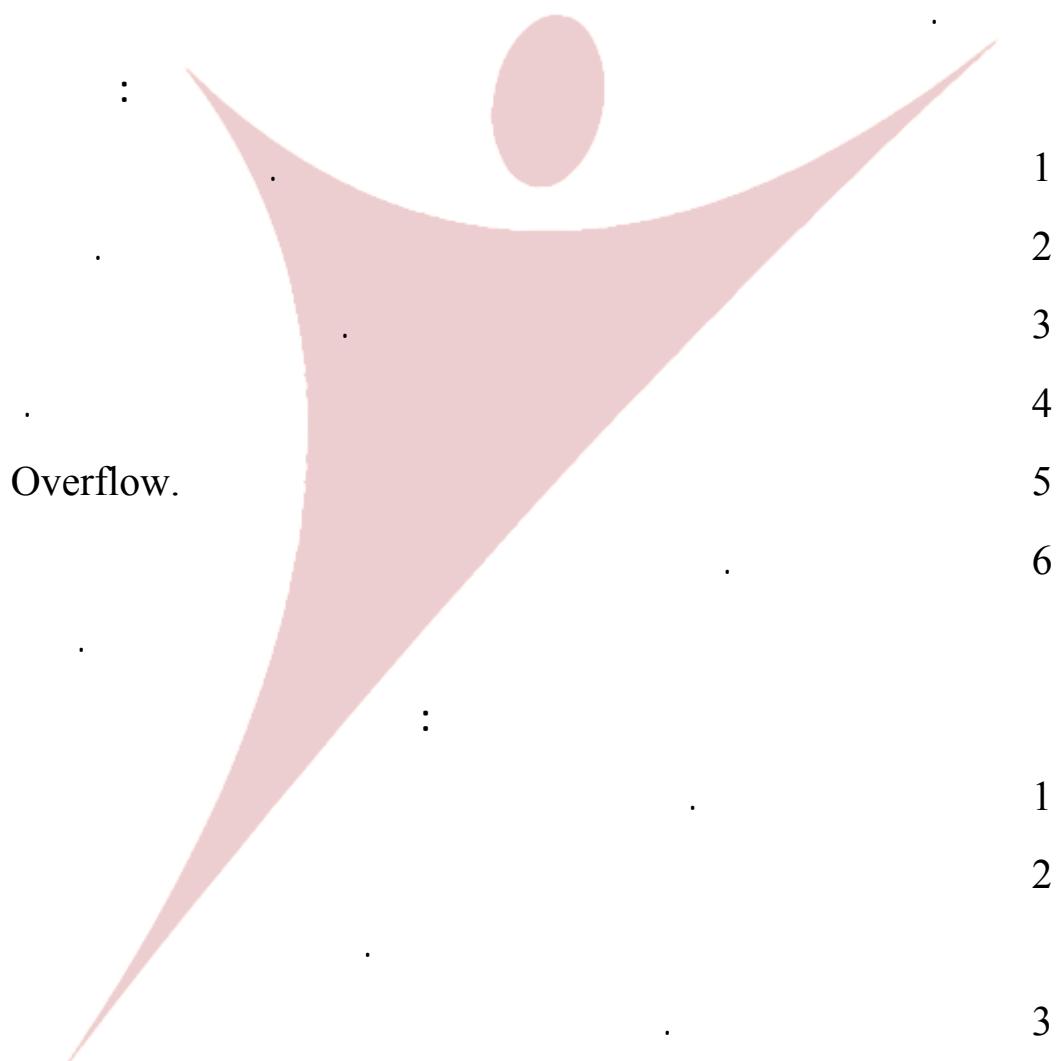
**NIC**



Expansion Slot







## Plug and Play

# Interrupt Request (IRQ) Lines Levels

EGA/VGA	9	2
COM1, COM3		4
Floppy Disk Controller		6
Parallel Port		7
Real -Time Clock		8
		12
Math Coprocessor		13
		14

IRQ5    IRQ3

Input Output I/O Port Base

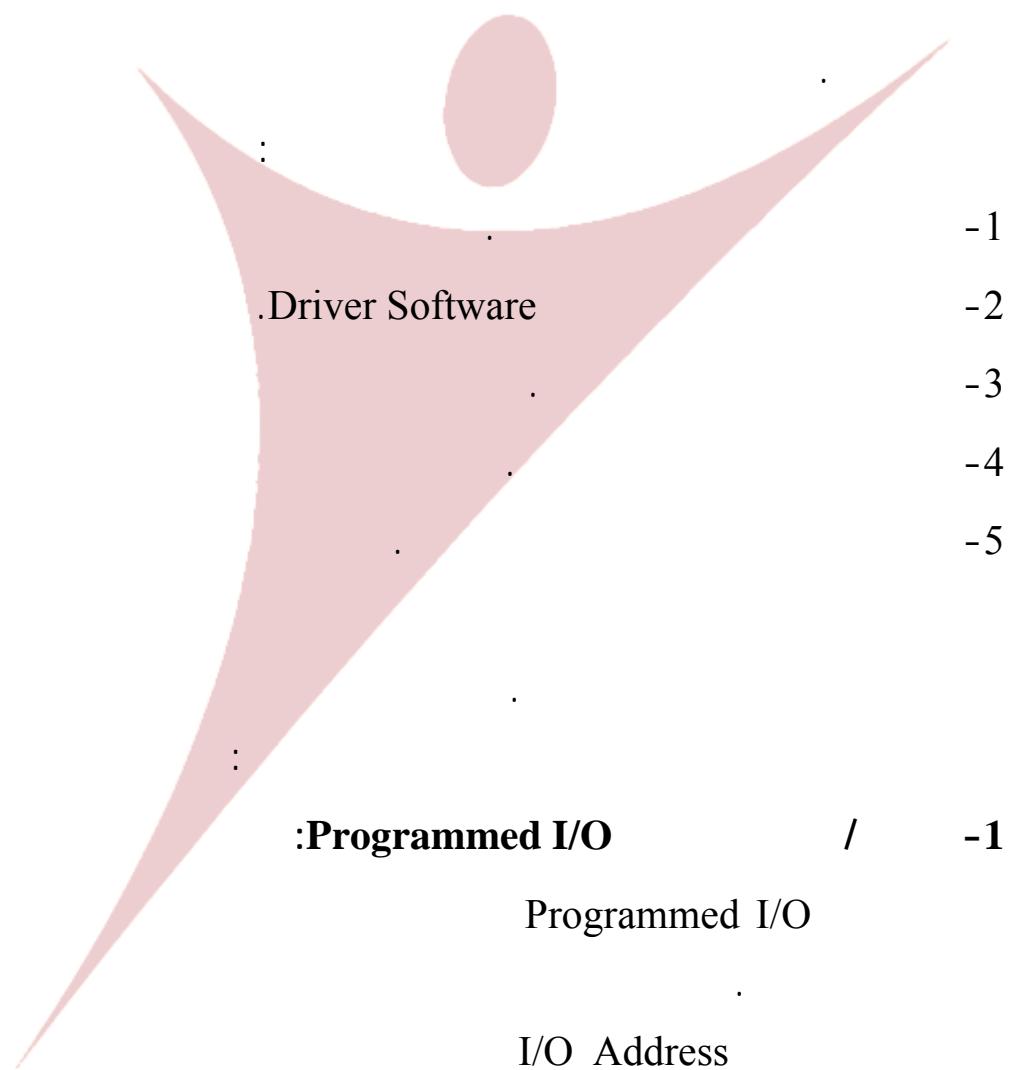
Base I/O

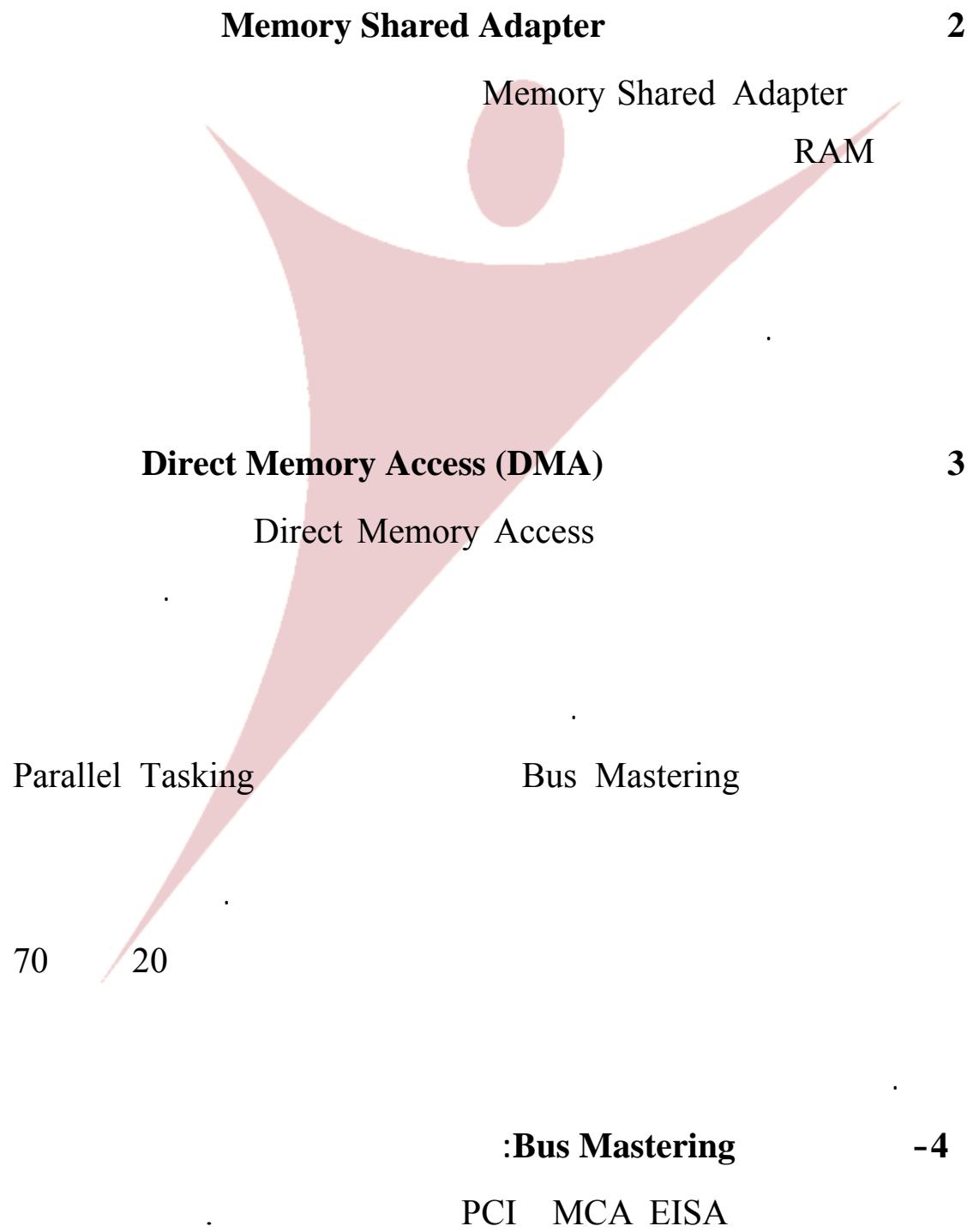
Port

Hexadecimal format

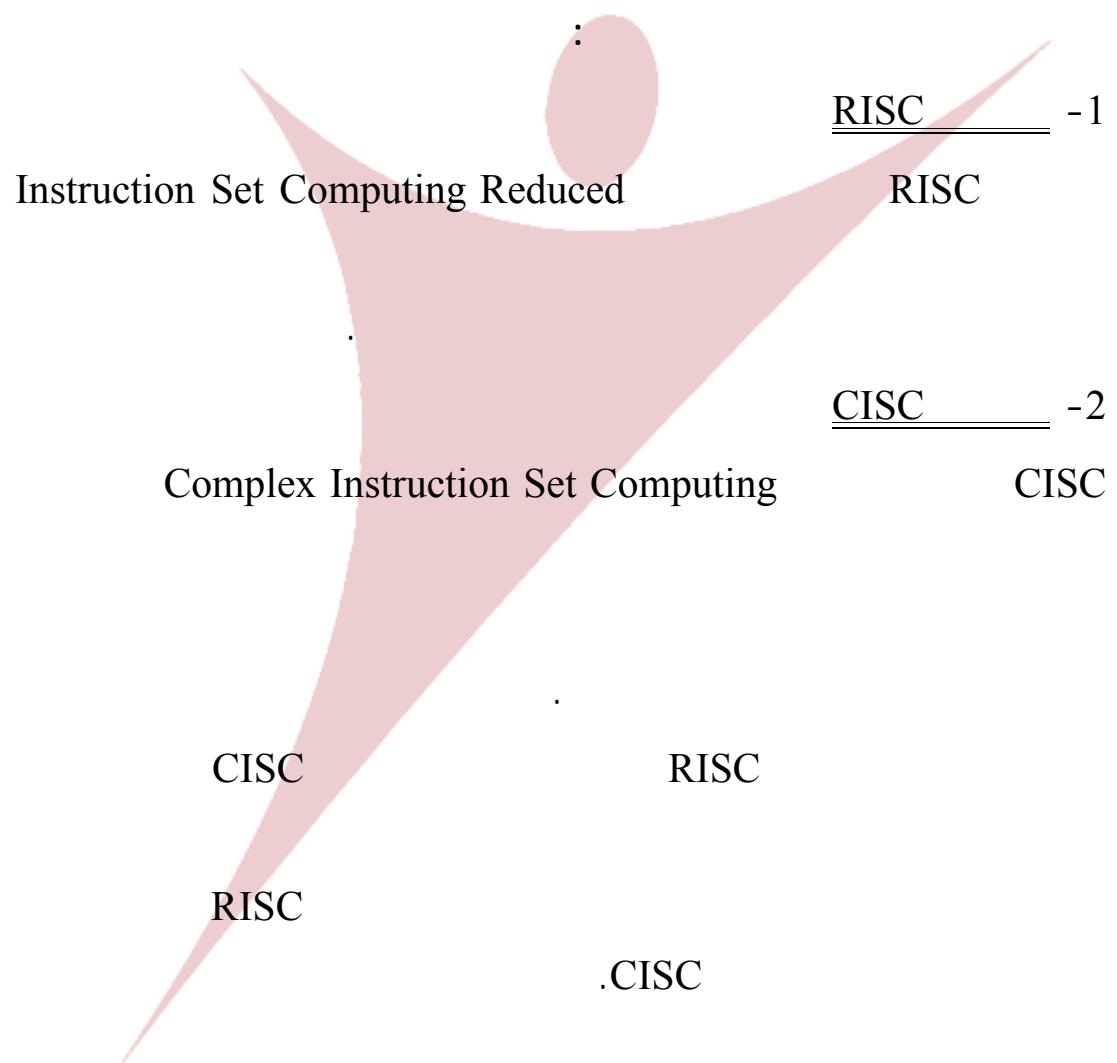
Port

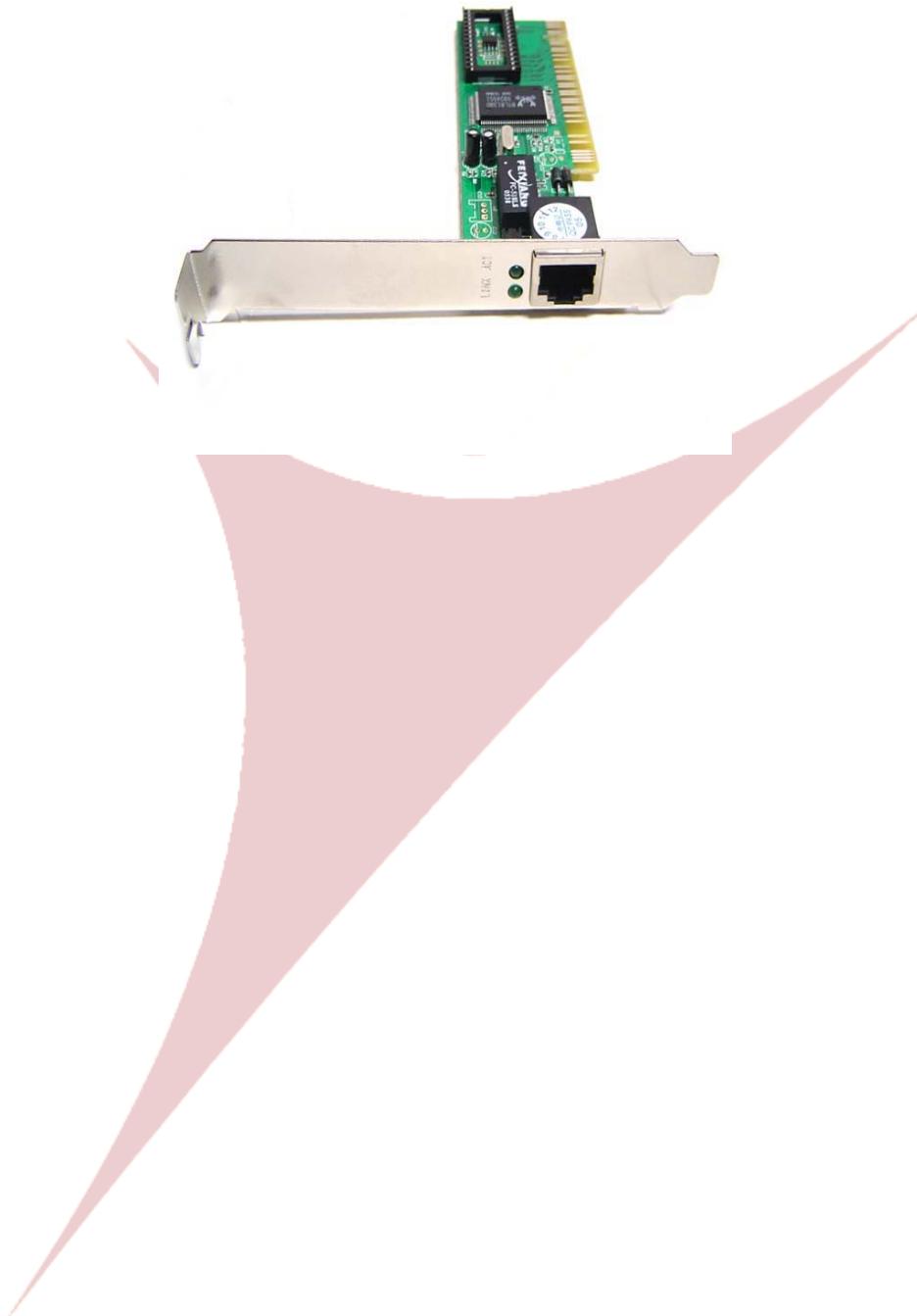
to 30F 300  
to 31F 310

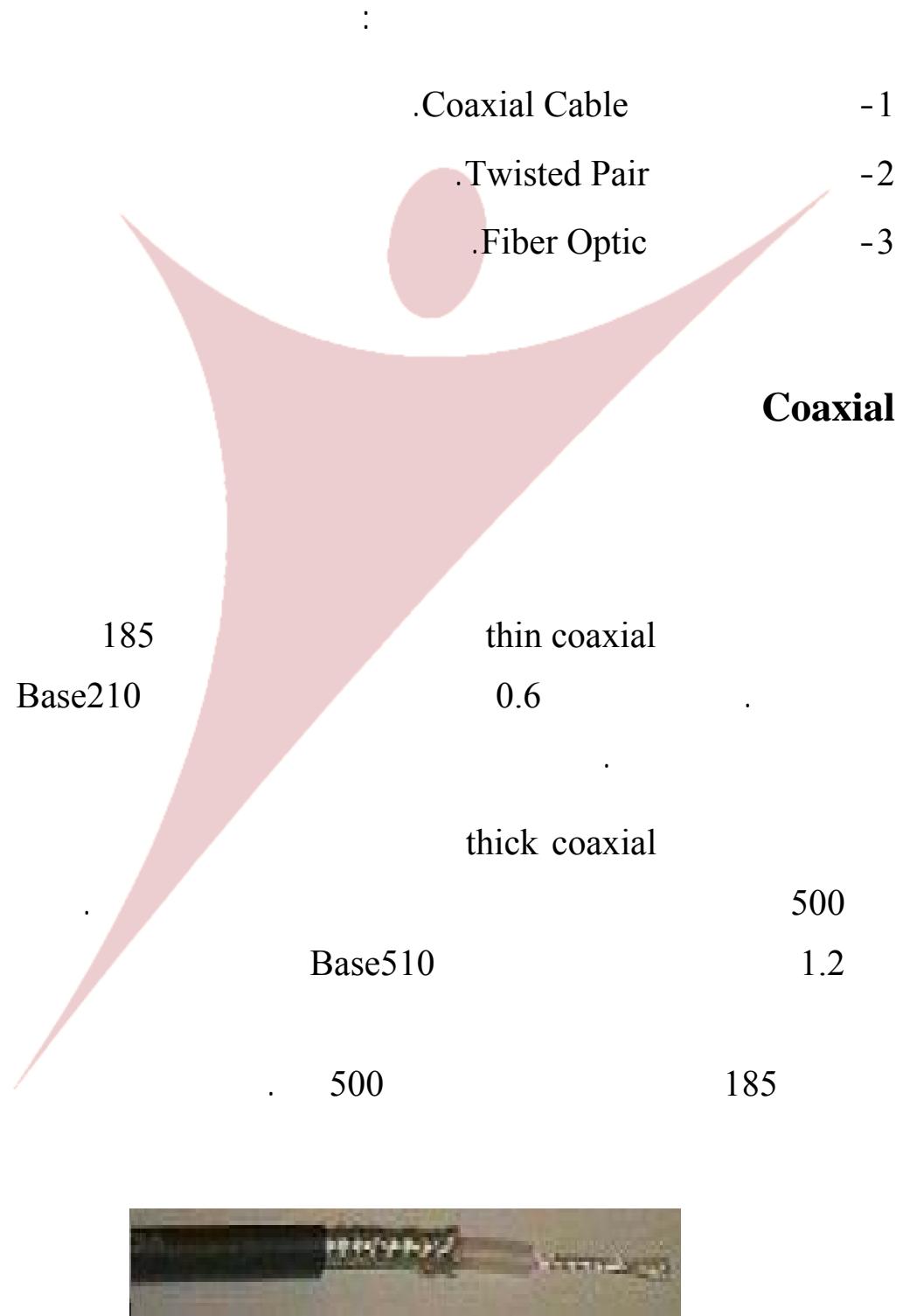




## Driver Network Card









BNC

RG-11 RG-8 (

50 -1

RG-58 50 -2

RG-59 75 -3

RG-62 93 -4

ARCnet.

BNC (British Naval Connectors)

BNC

BNC cable connector.

BNC T connector.

BNC barrel connector.

BNC terminator.

**Twisted pair**

STP

UTP

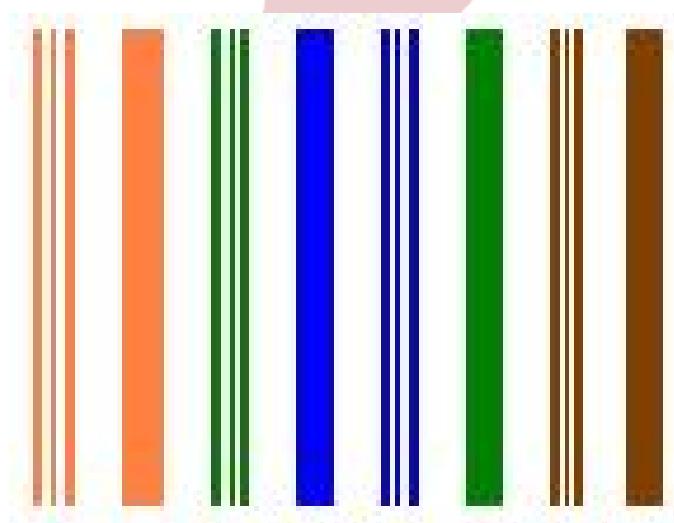


RJ-45

HUP

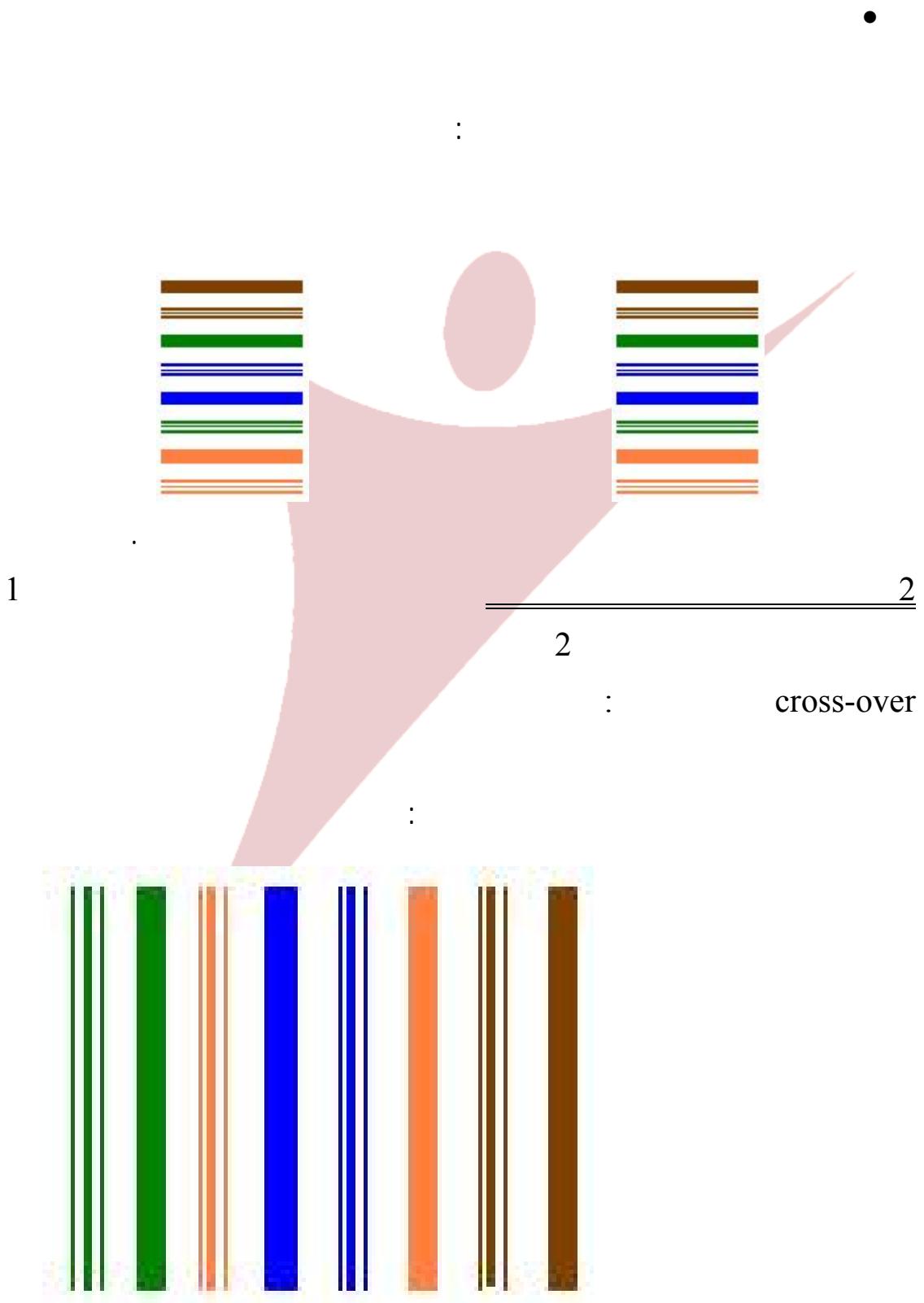
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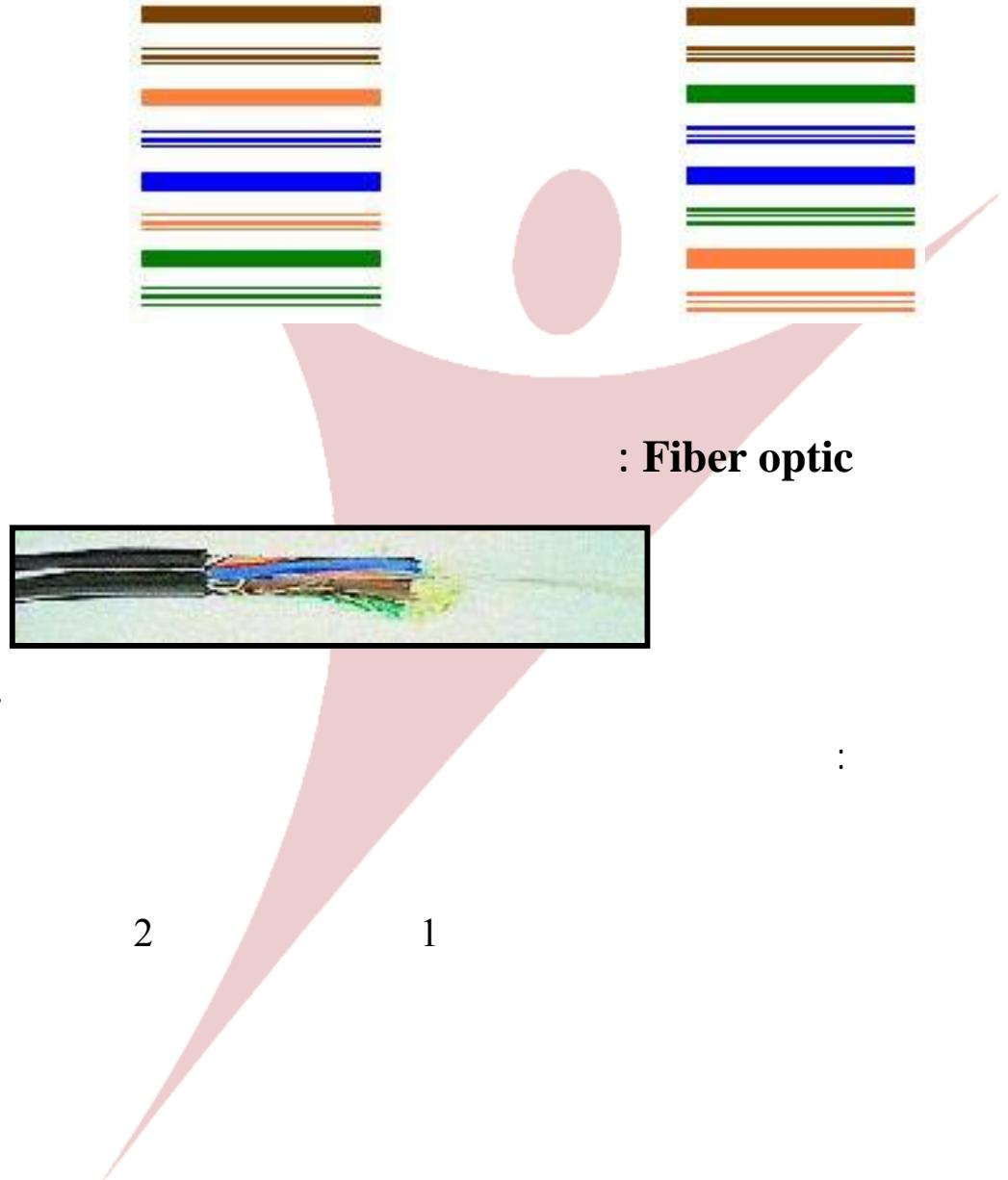
3



RJ-45

1

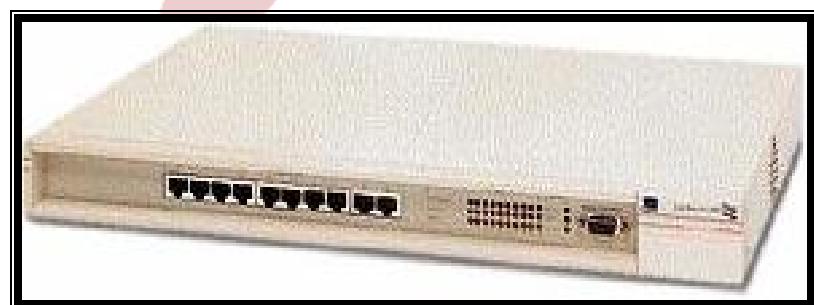




**: HUB**

**: Switch**

**HUB**



**: Repeaters**

**: Bridges**

**: Routers**

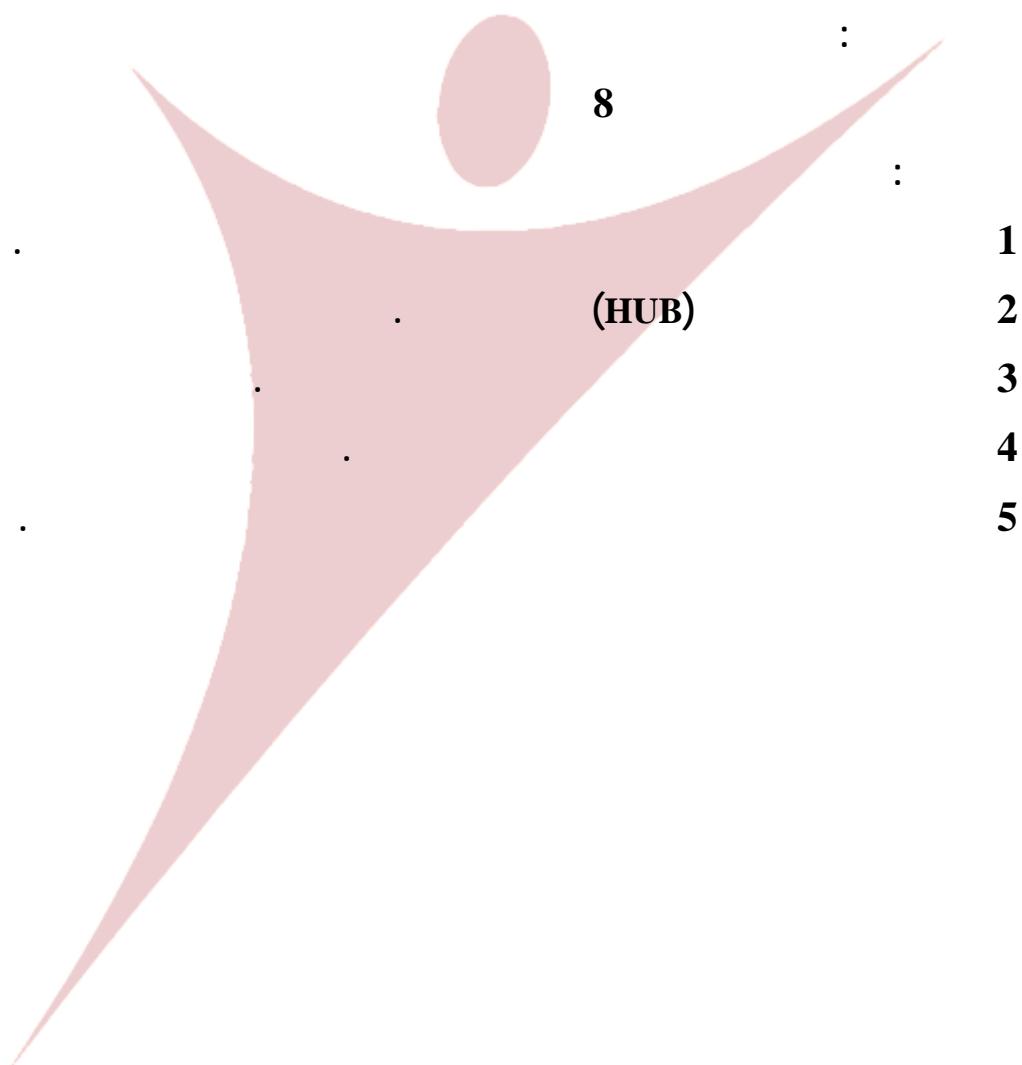
IP

<b>BNC</b>	<b>BNC</b>	
	<b>BNC</b>	
<b>BNC</b>		
	<b>Coaxial</b>	
.	<b>BNC</b>	
.	<b>RJ-45      BNC</b>	

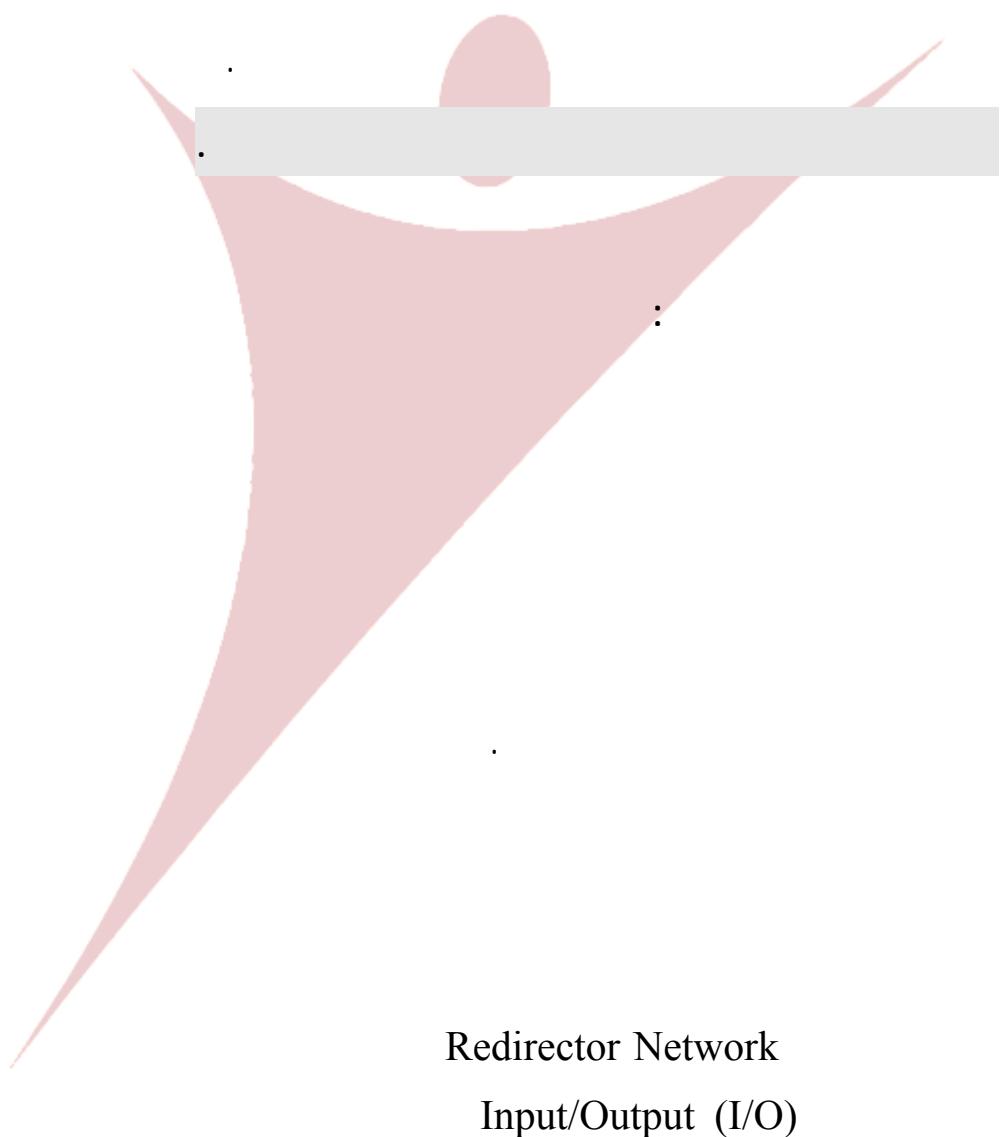
<b>RJ-45</b>	
<b>RJ-45</b>	
<b>RJ-45</b>	
( )	
<b>HUB</b>	



## مهمة دراسية:



## القسم الرابع: مشغل الشبكة Network Driver



Network Driver Interface

:

- ❖ Network Driver Interface Specification (NDIS) .
- ❖ Open Data-Link Interface (ODI).

**NDIS**

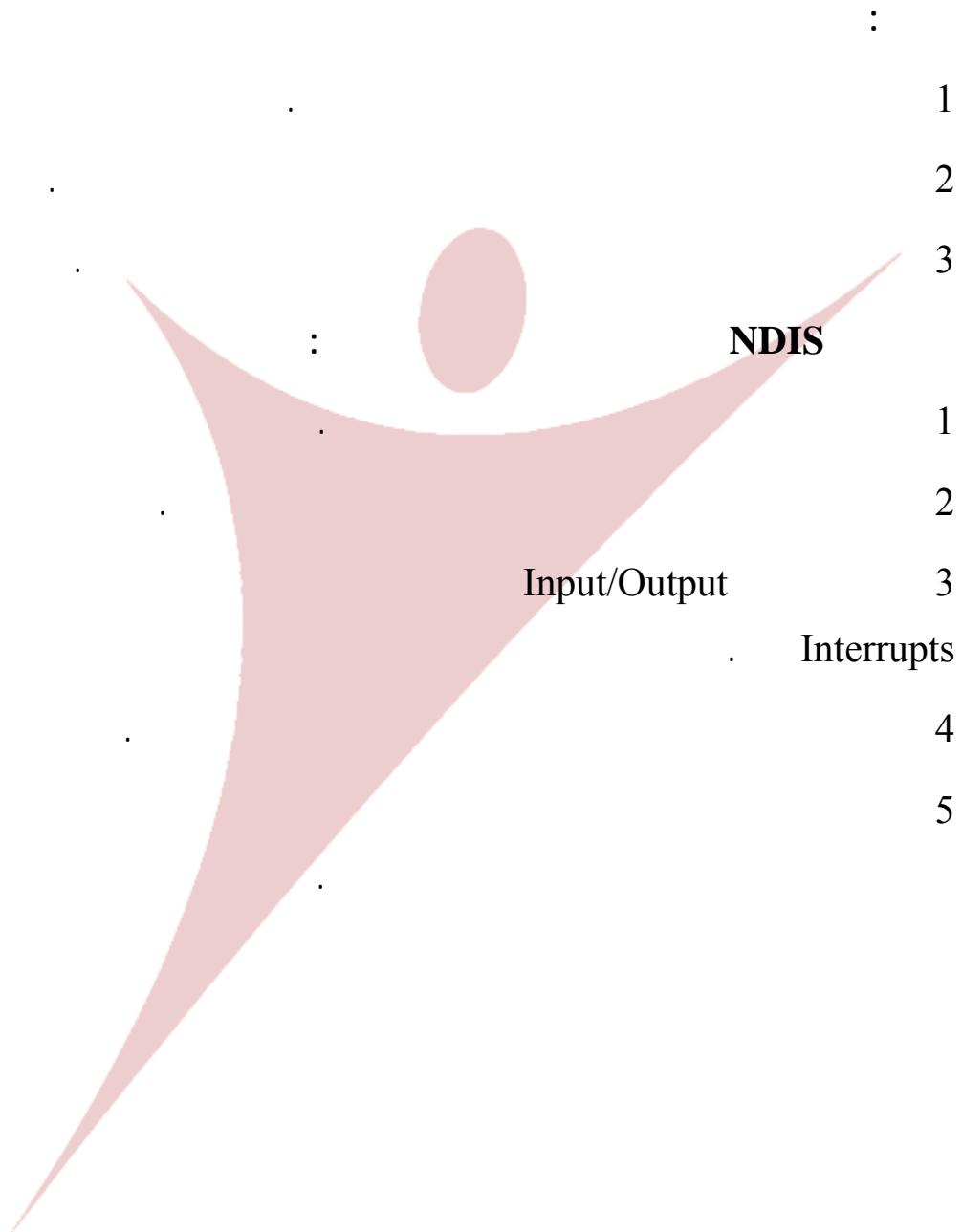
**ODI**

**Novell NetWare**

NDIS

ODI

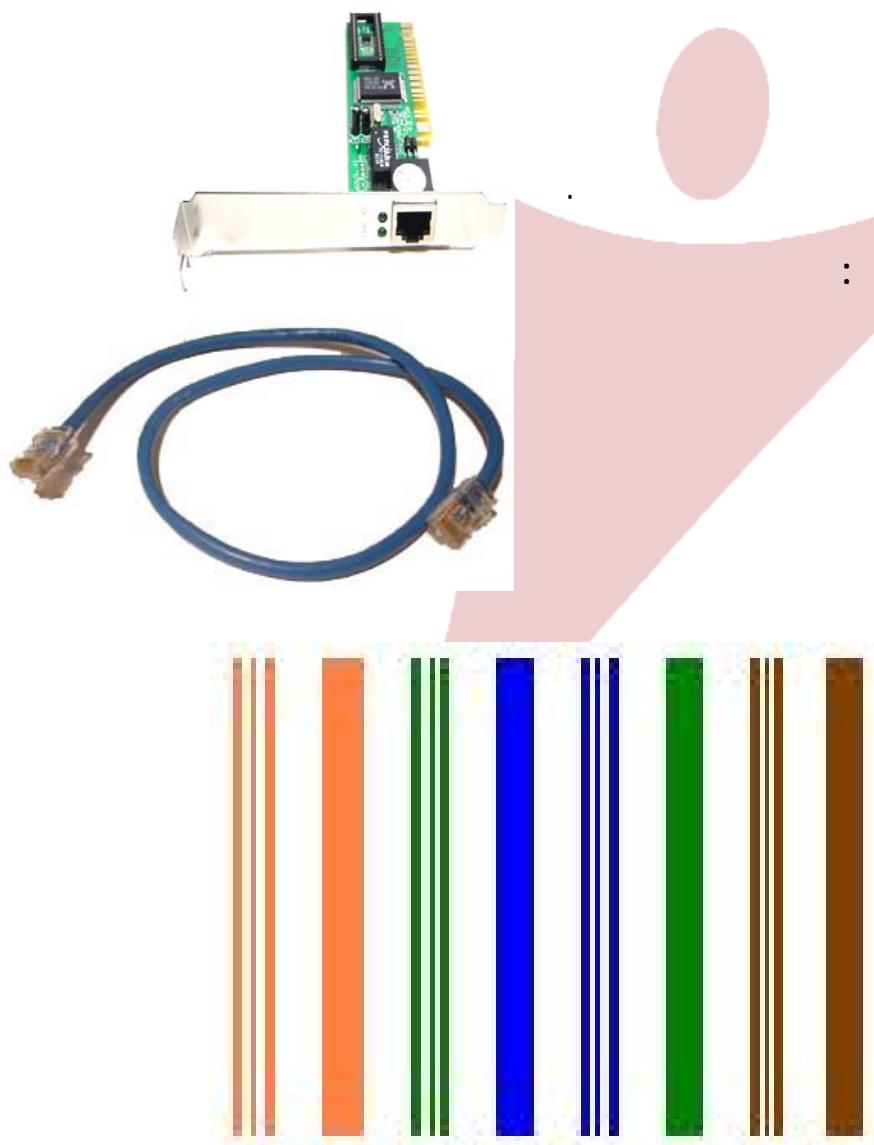
## NDIS

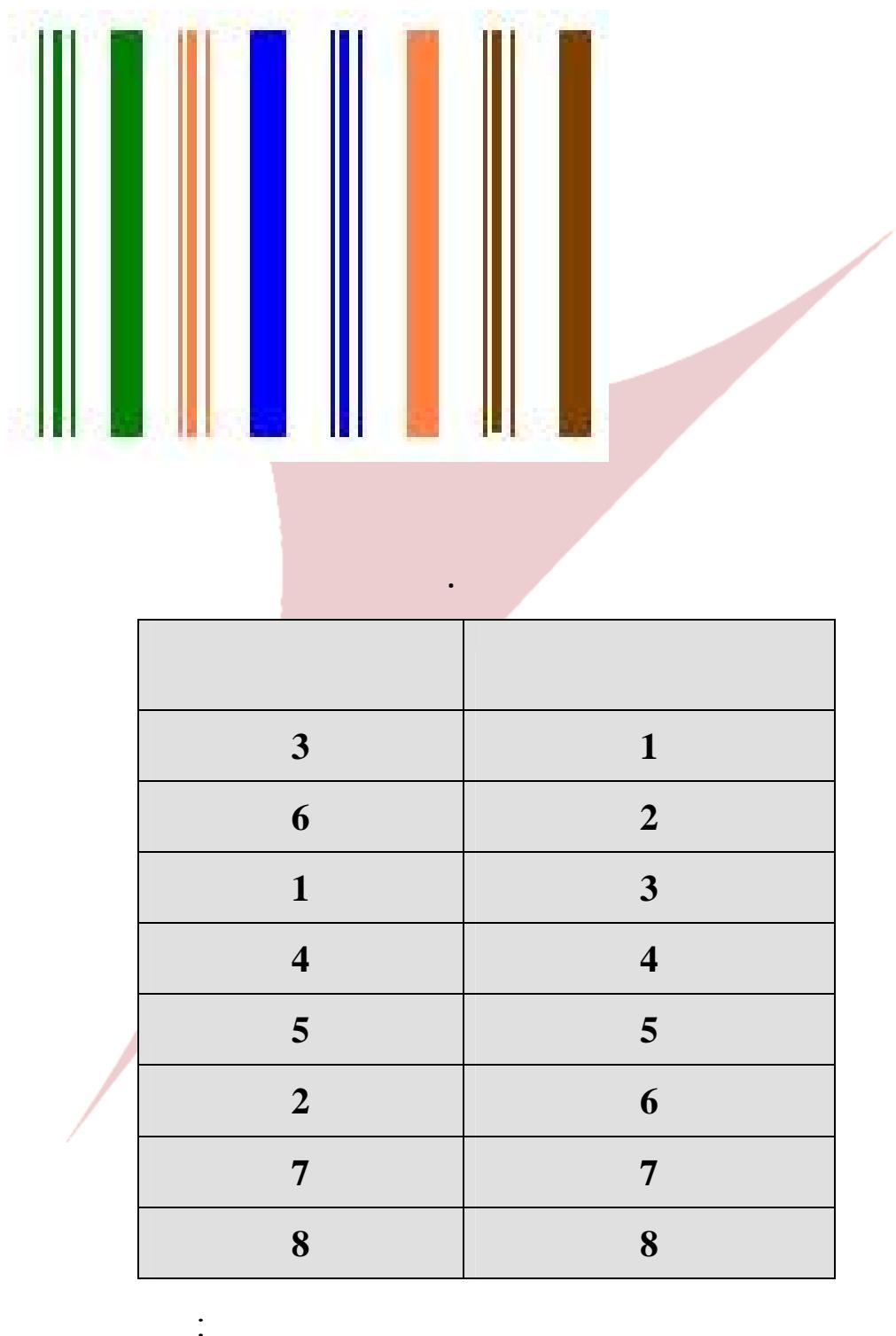


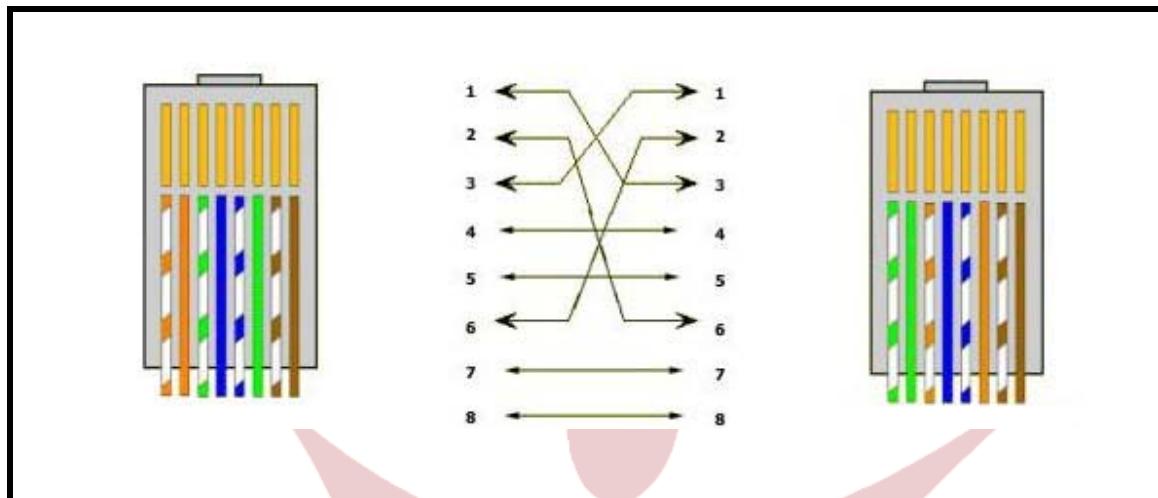
## القسم الخامس: إعداد شبكة بين جهازين في Windows Xp

XP

Cable







:

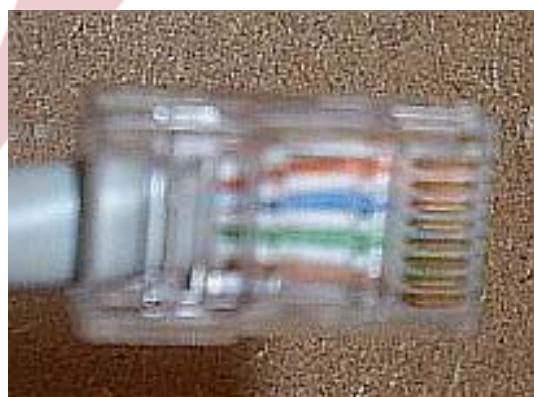
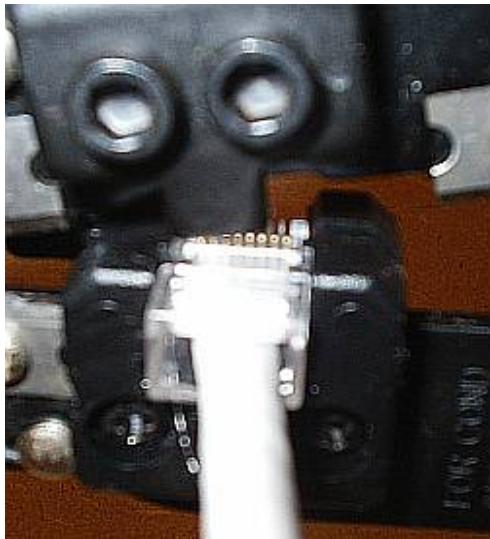
**: RJ**



**: RJ-45**



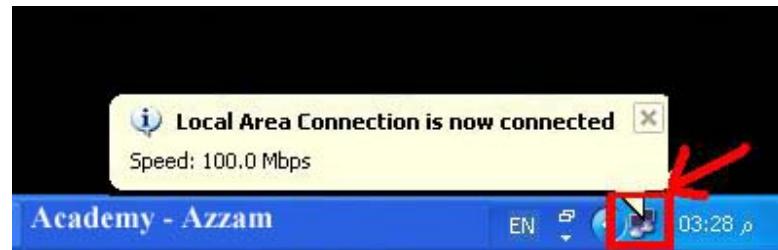
## RJ-45



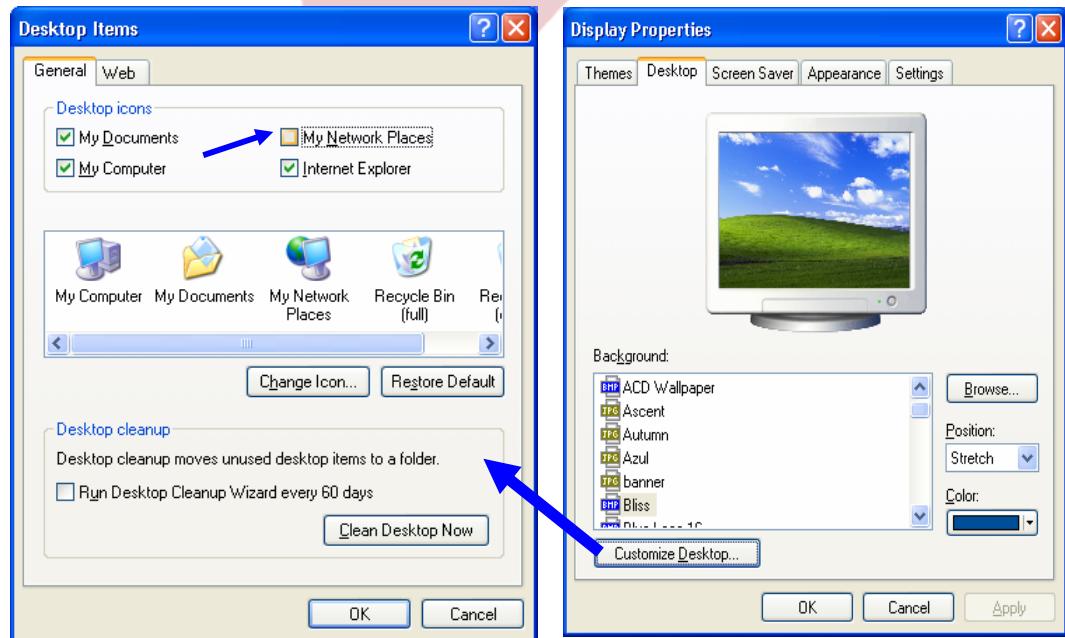
: PCI



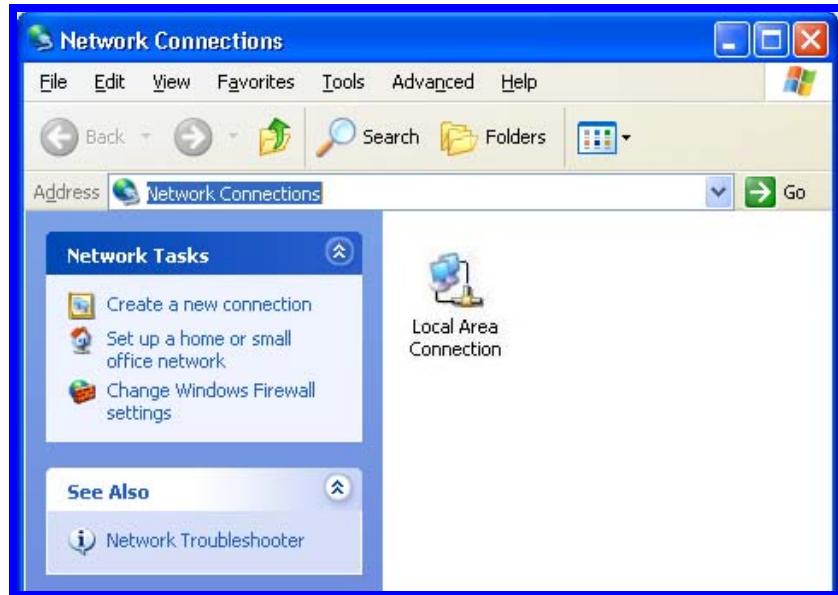
Cable



## My Network Places



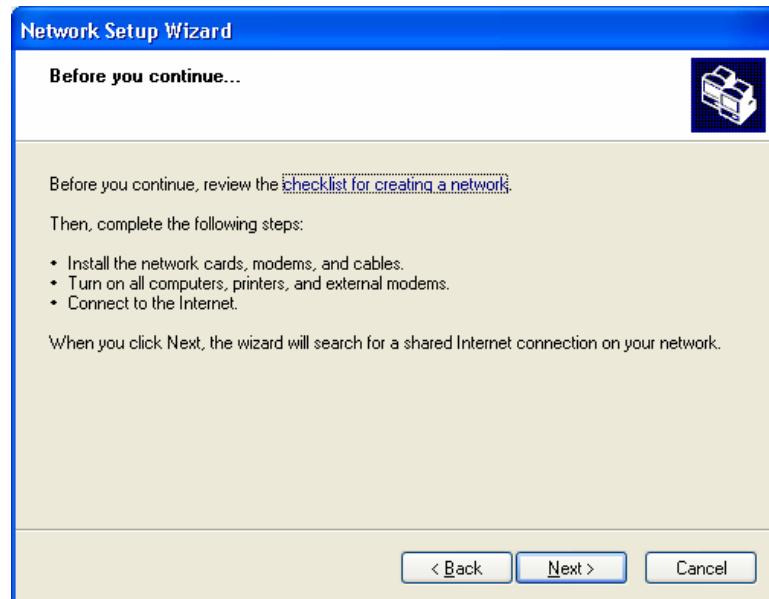
## My Network Places



.Set Up a home or small office network

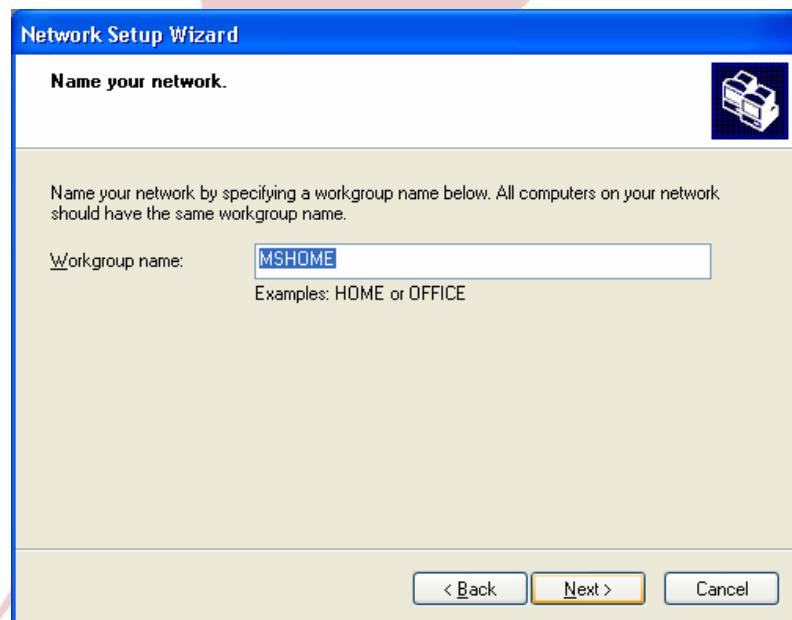
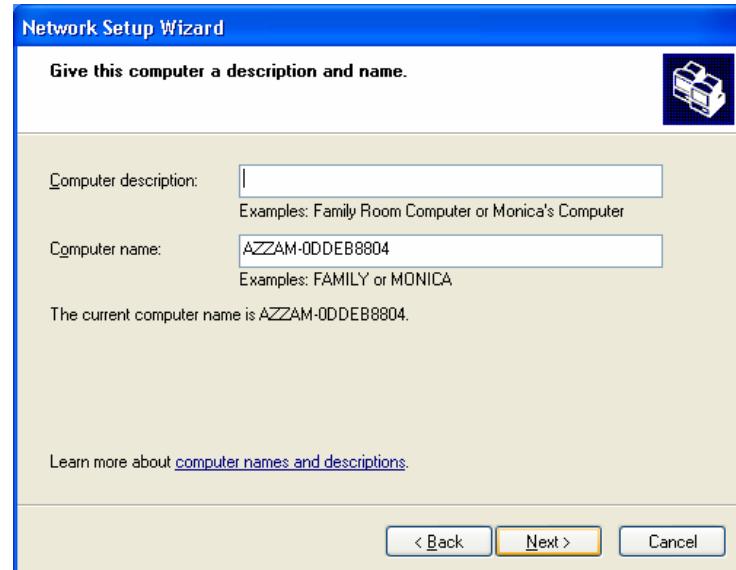


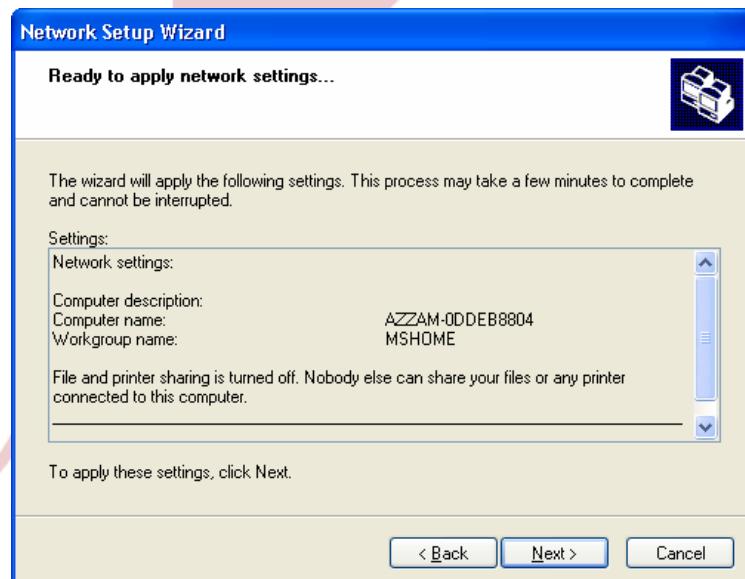
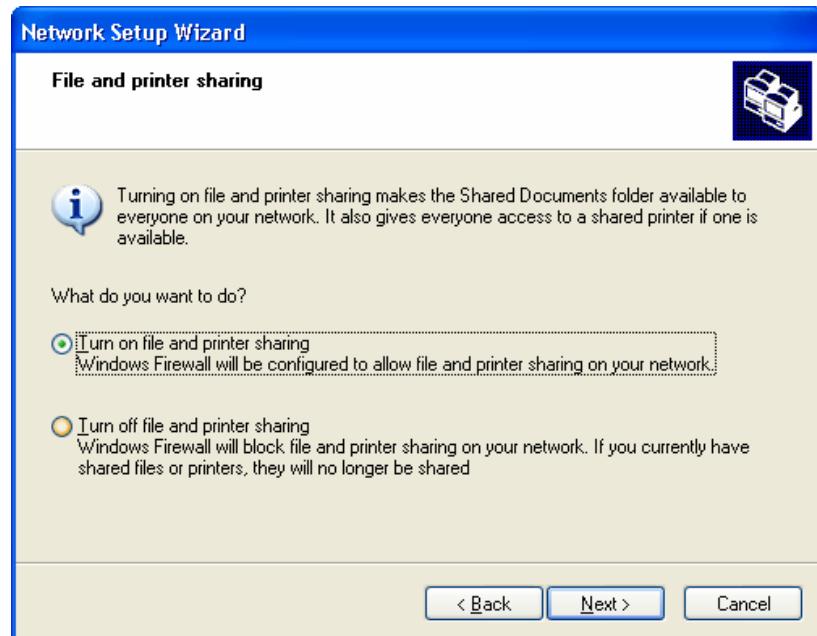
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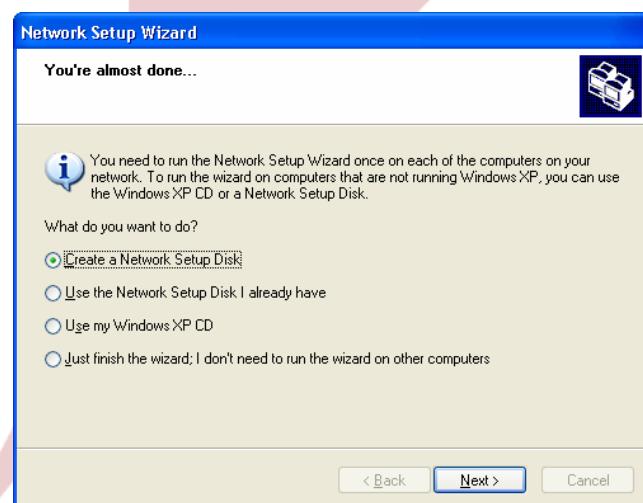
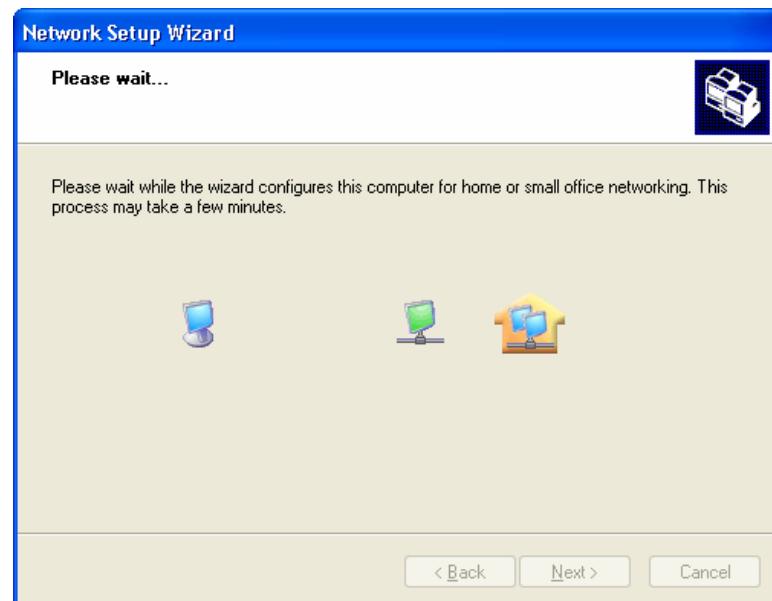


.Next







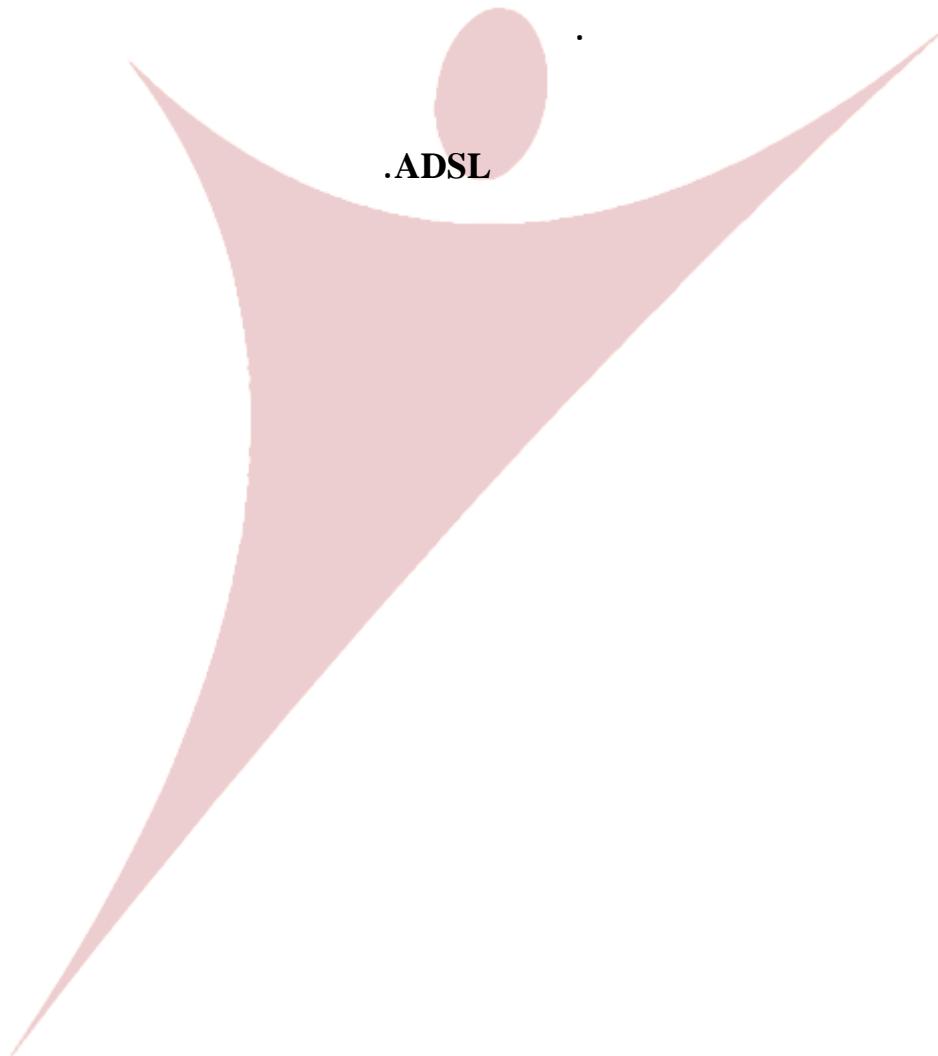




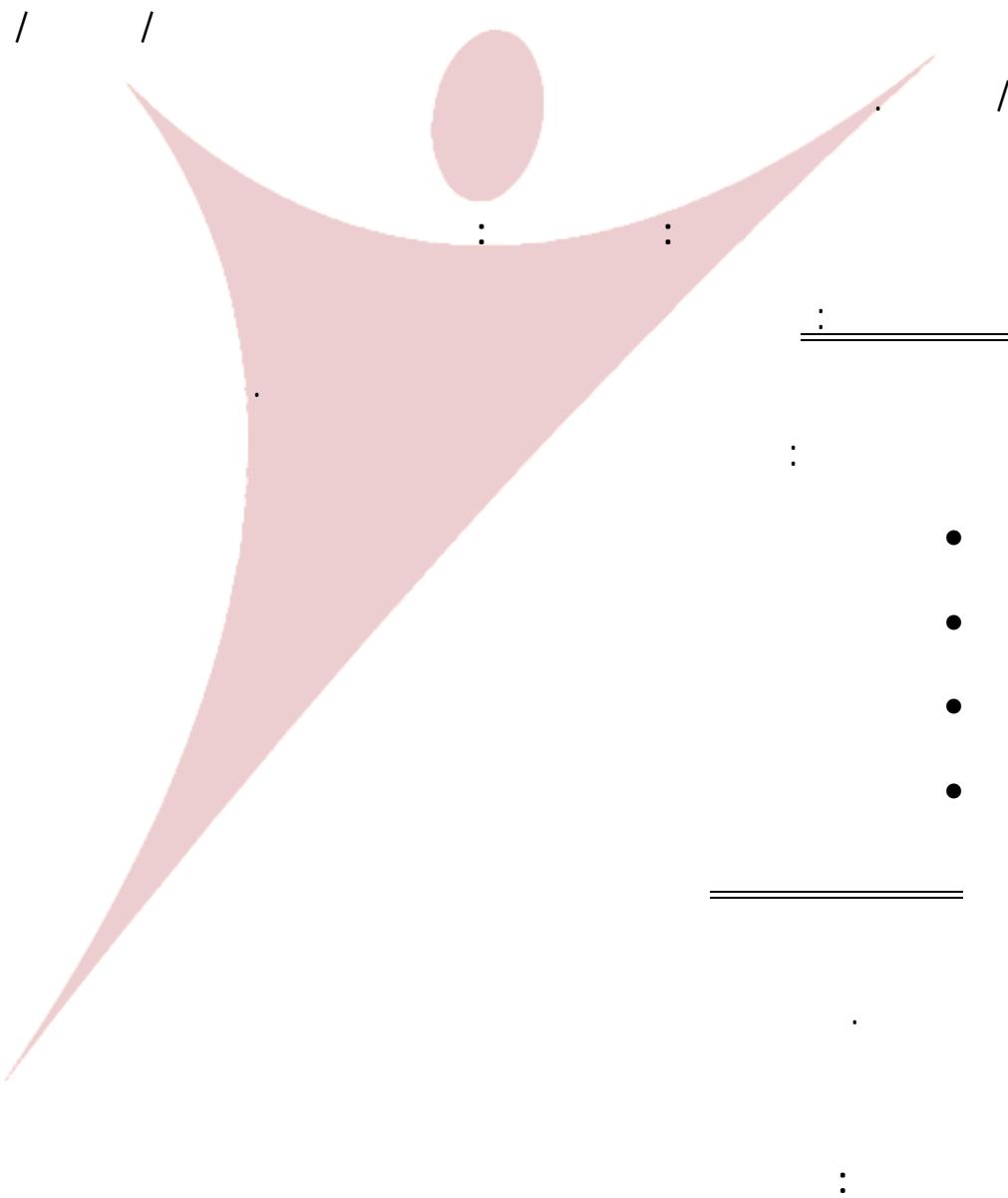
.netsetup

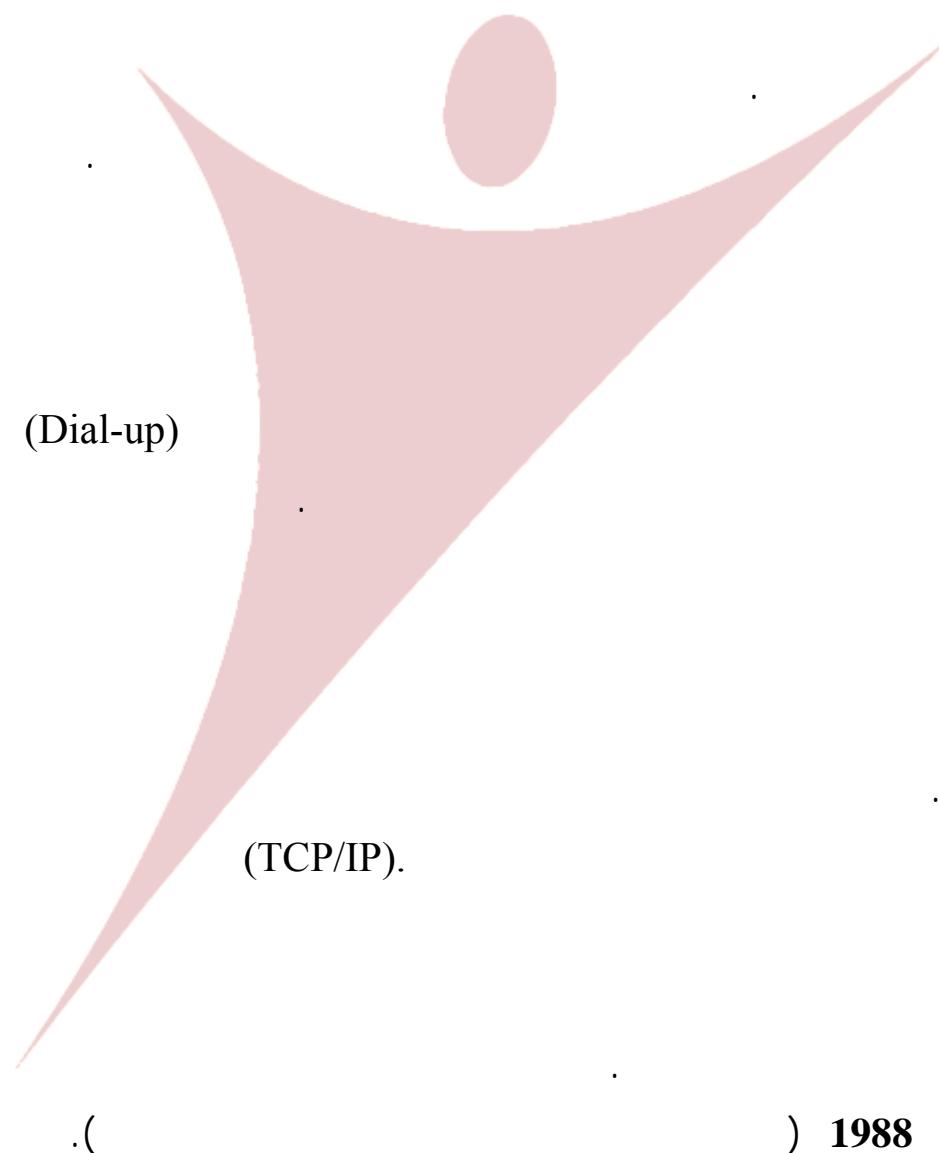
## مهمة دراسية:

: **Windows Xp**



## القسم السادس: أمن الشبكات





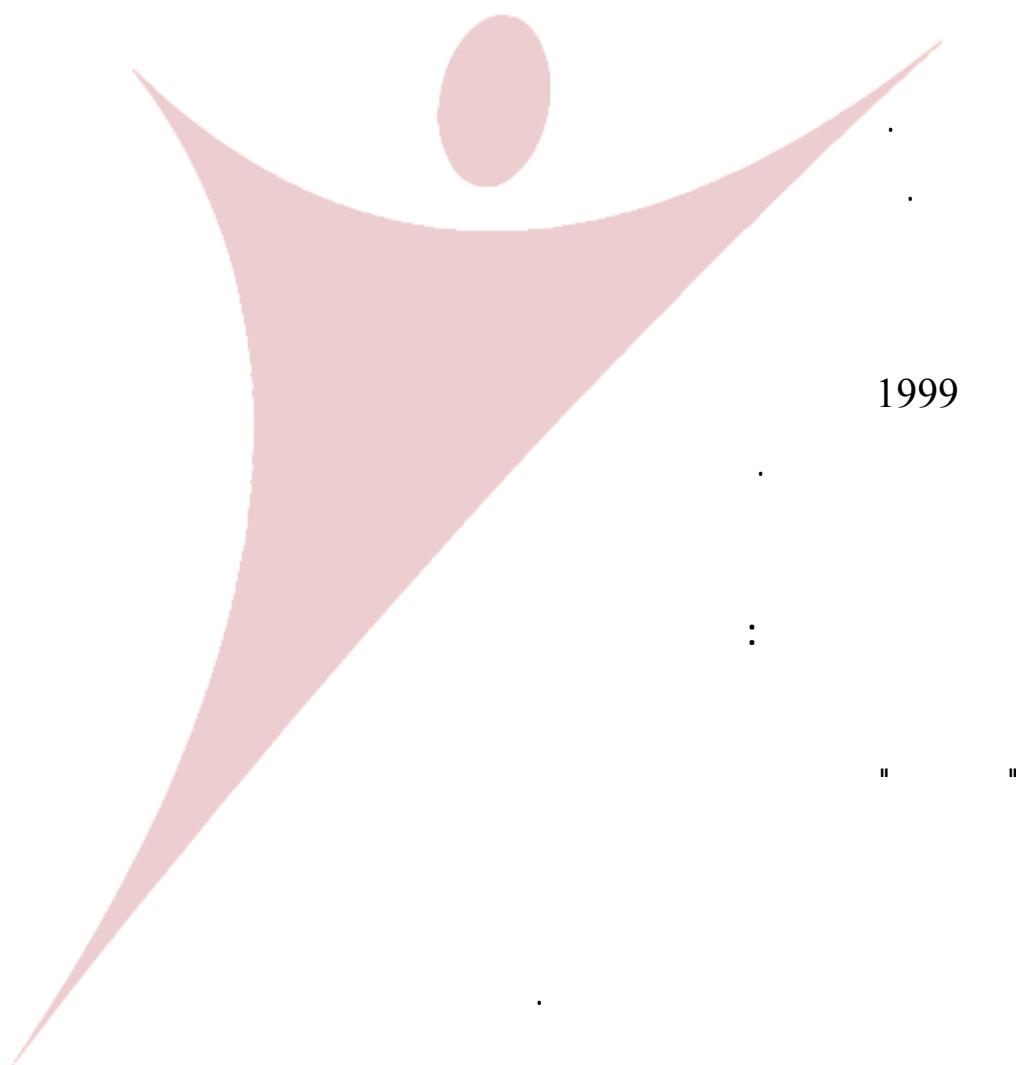
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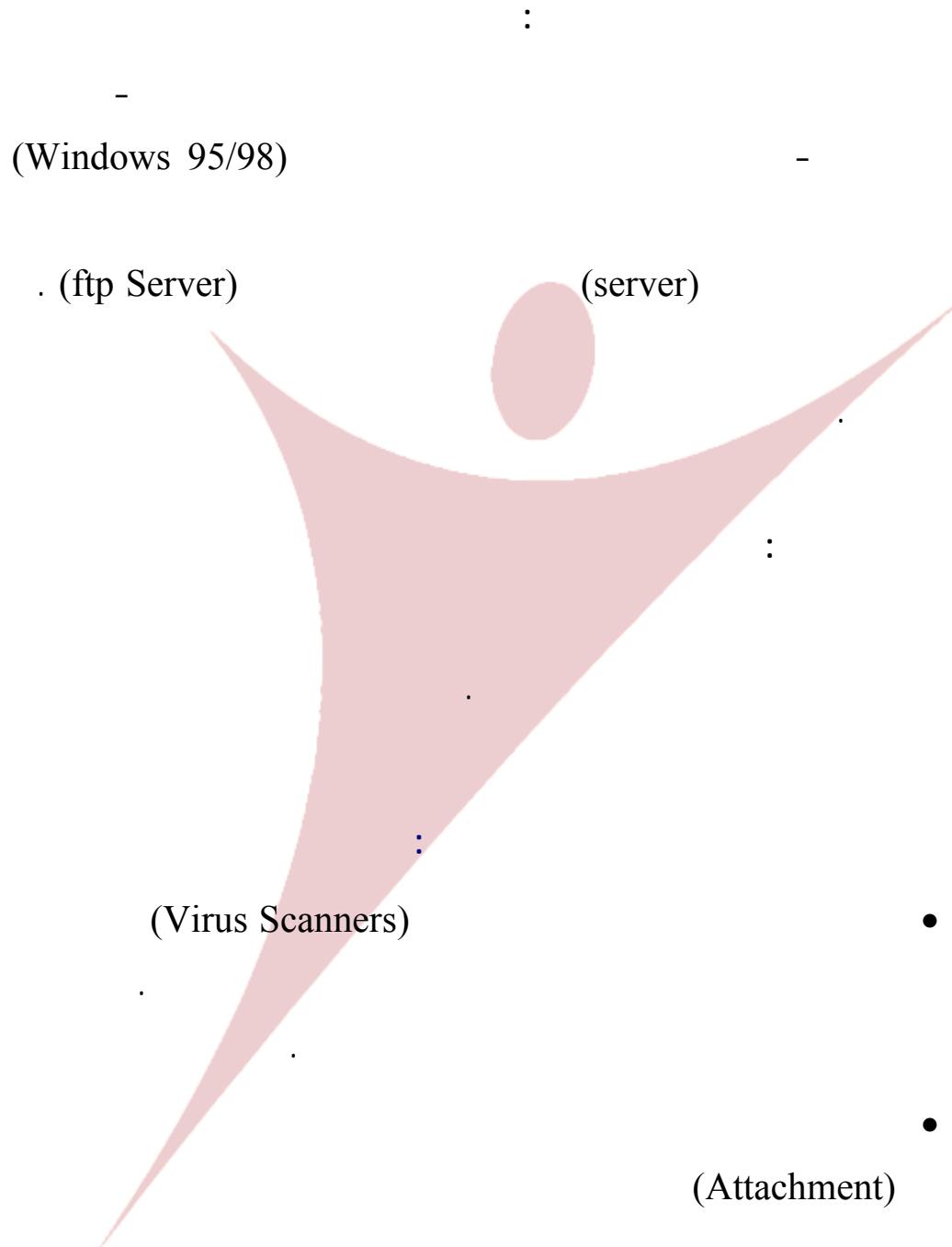
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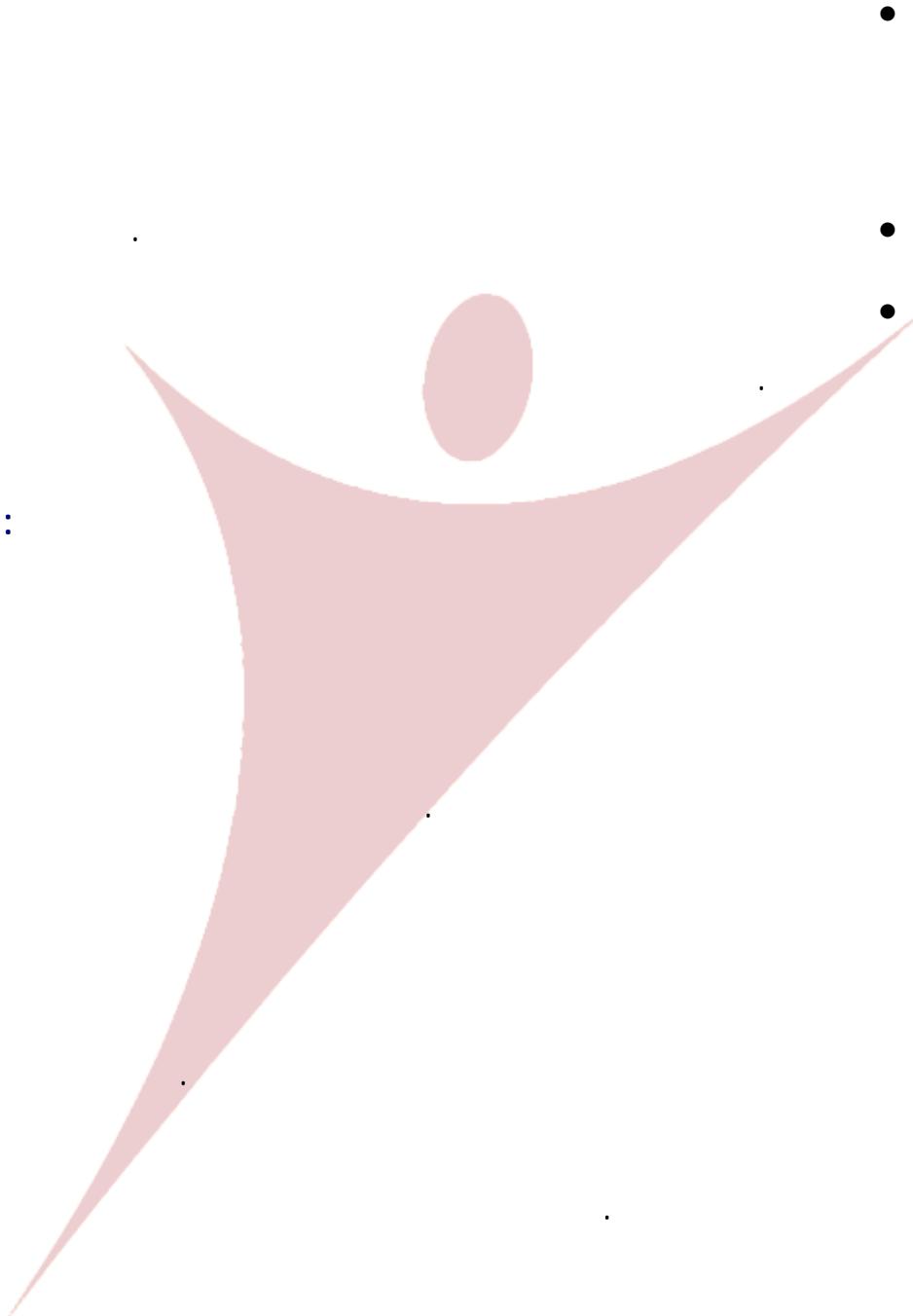


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[www.abuhe.co.uk](http://www.abuhe.co.uk)

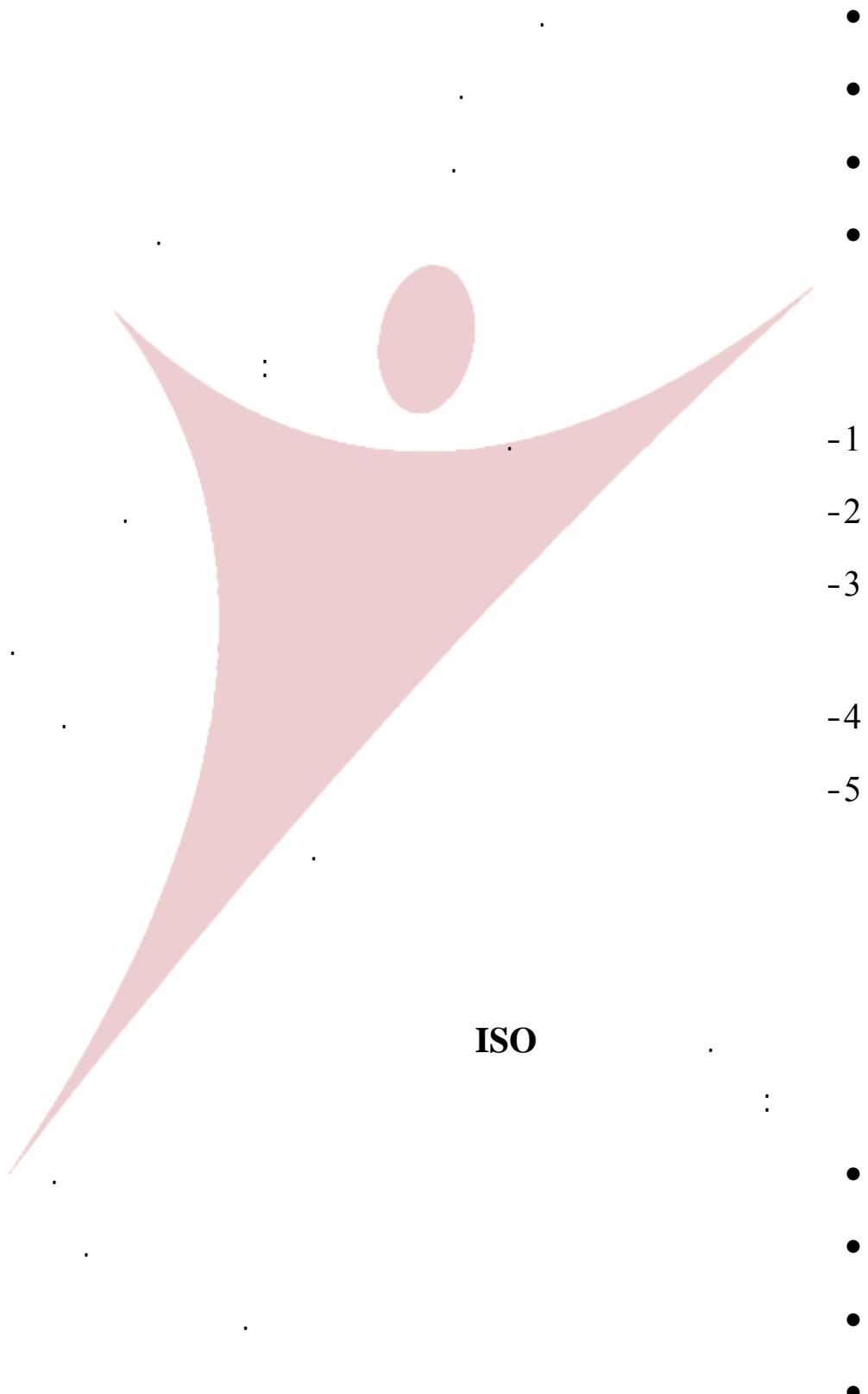




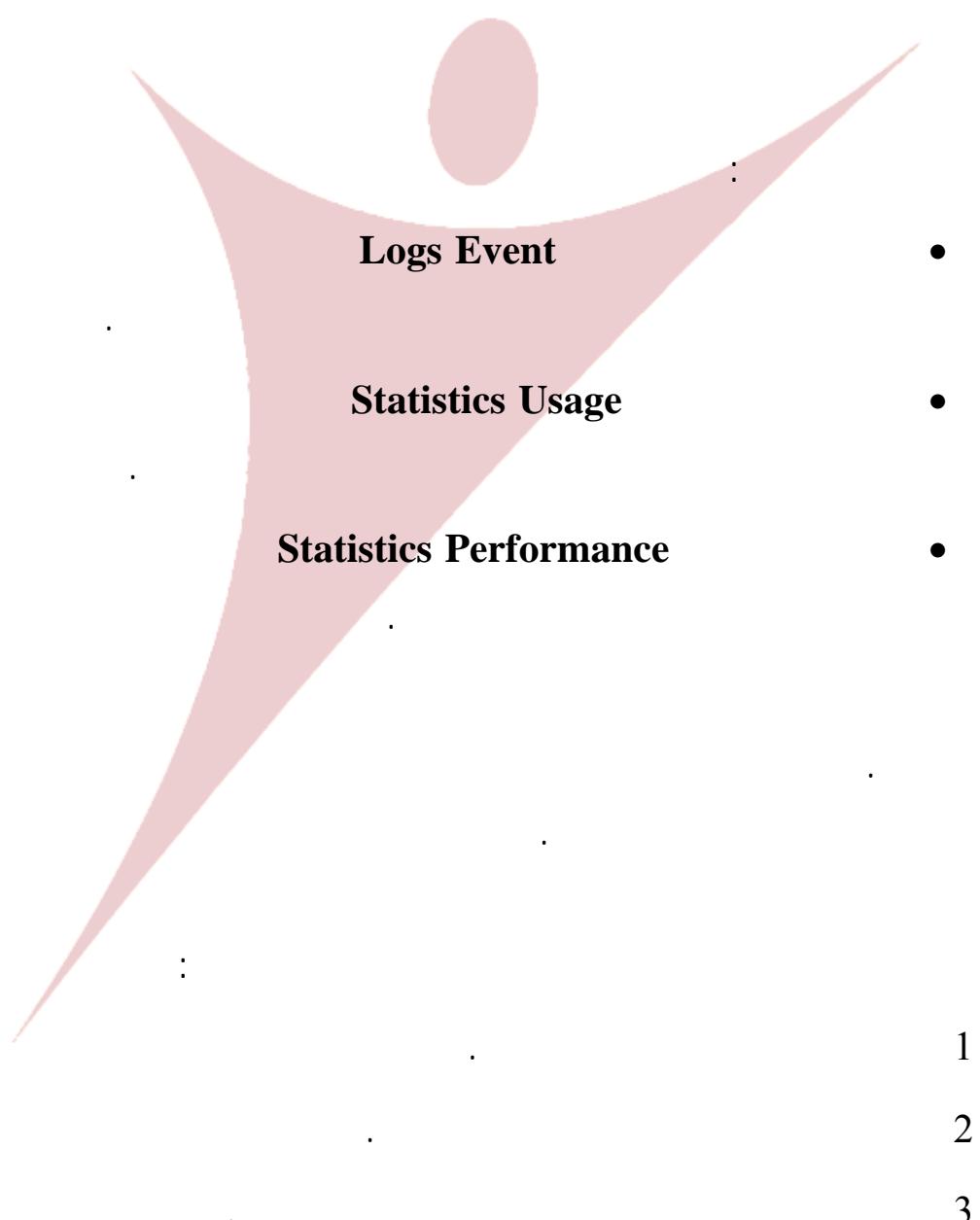


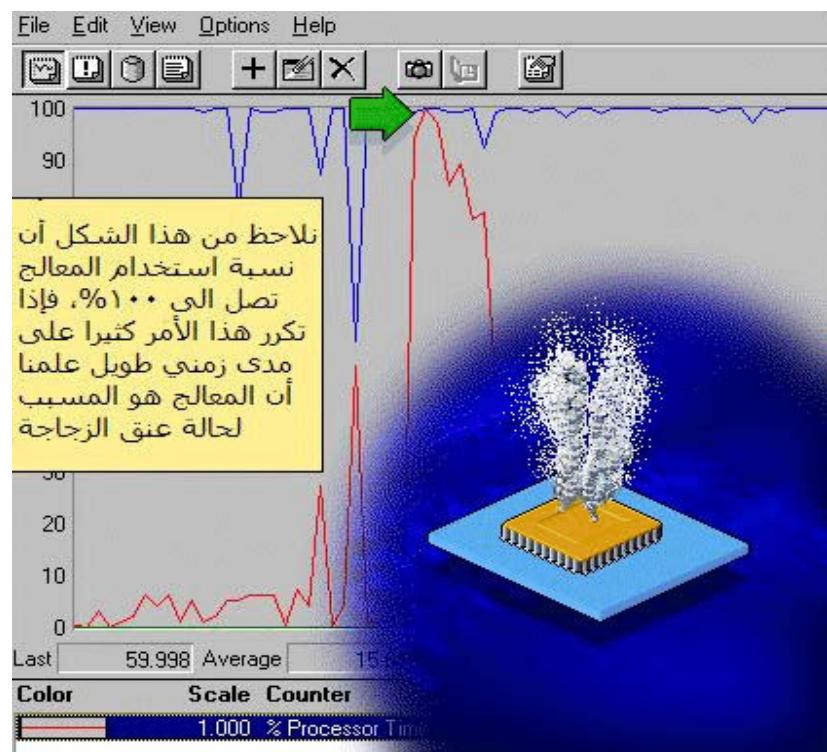
## القسم السابع: مشاكل الشبكات





**ISO**





• sit Netview IBM's •

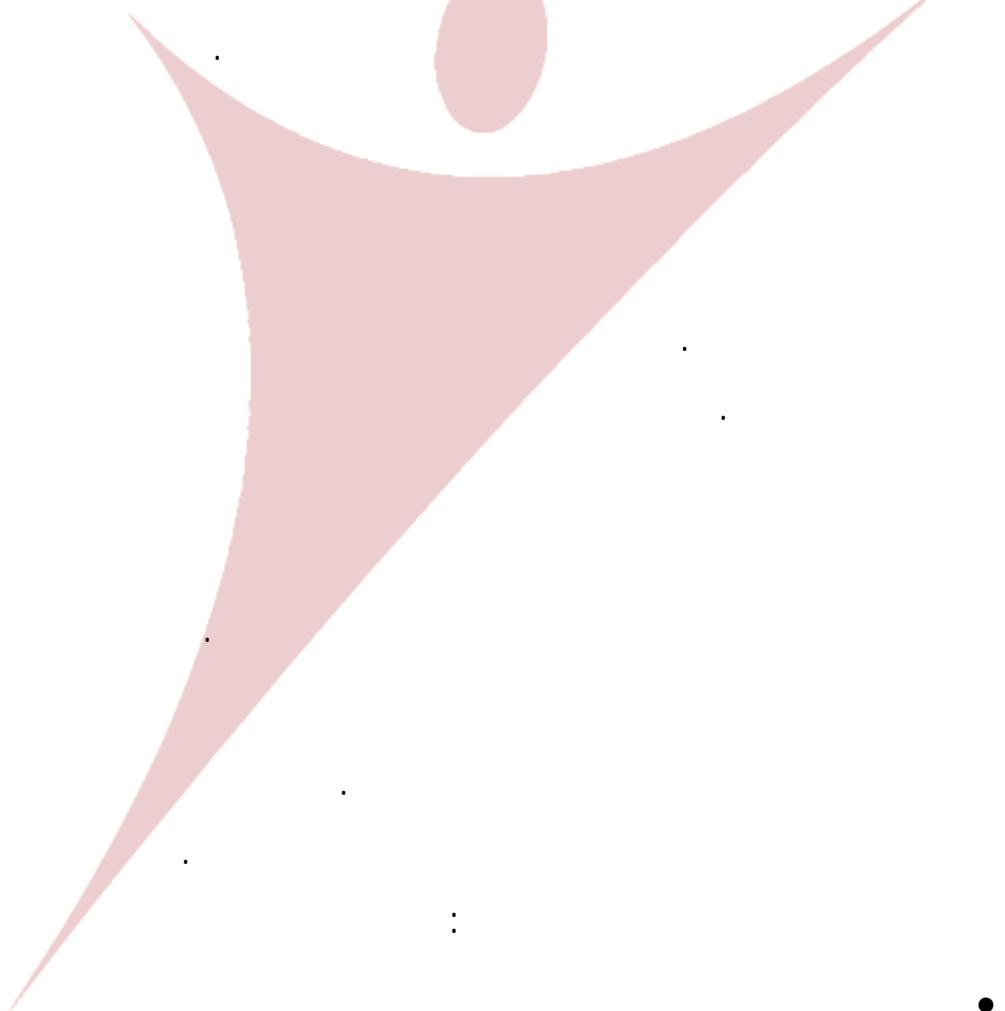
• Manager SunNet •

Manager Enterprise Spectrum •

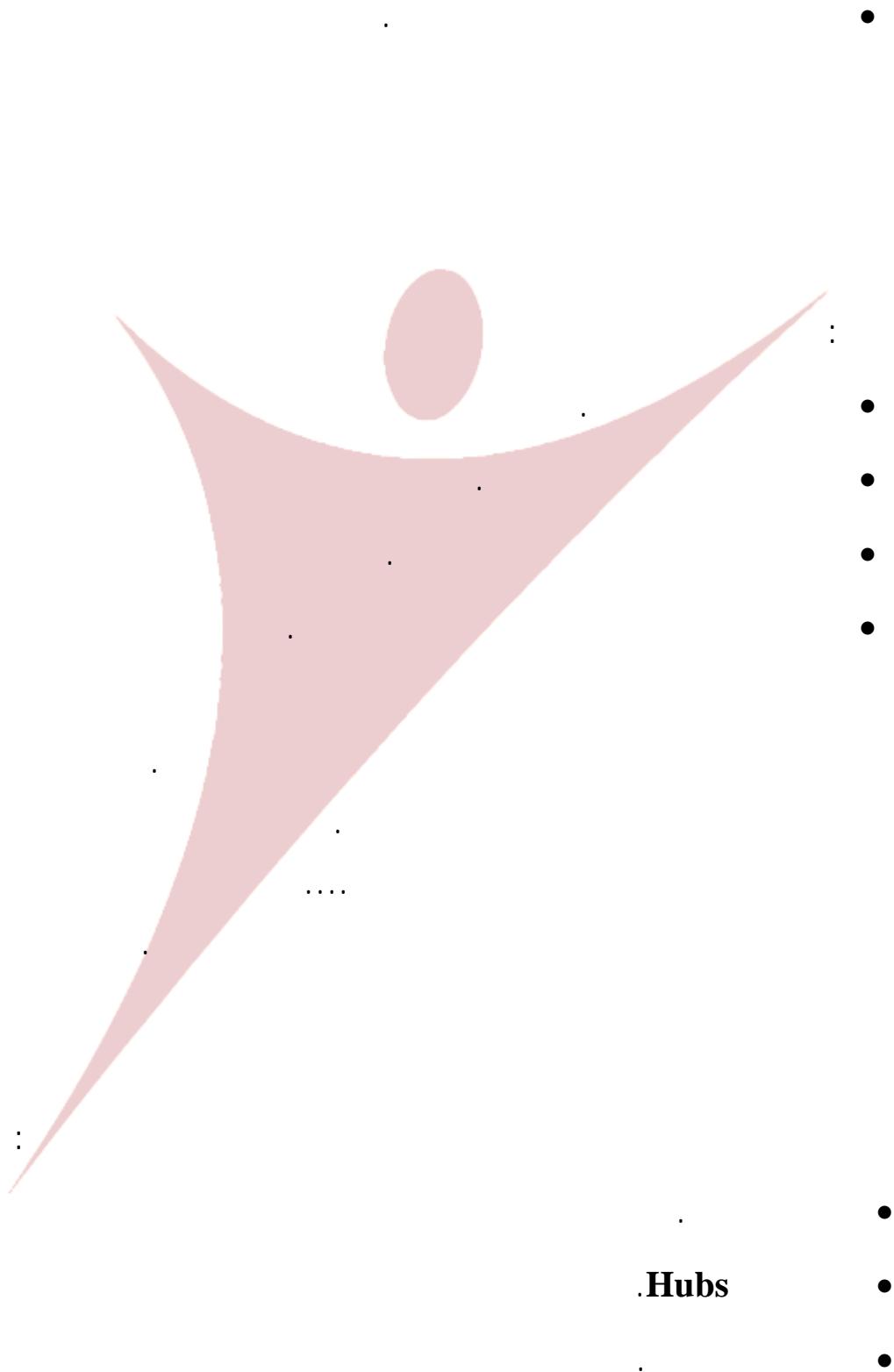
CiscoWorks •

**Network Simple**

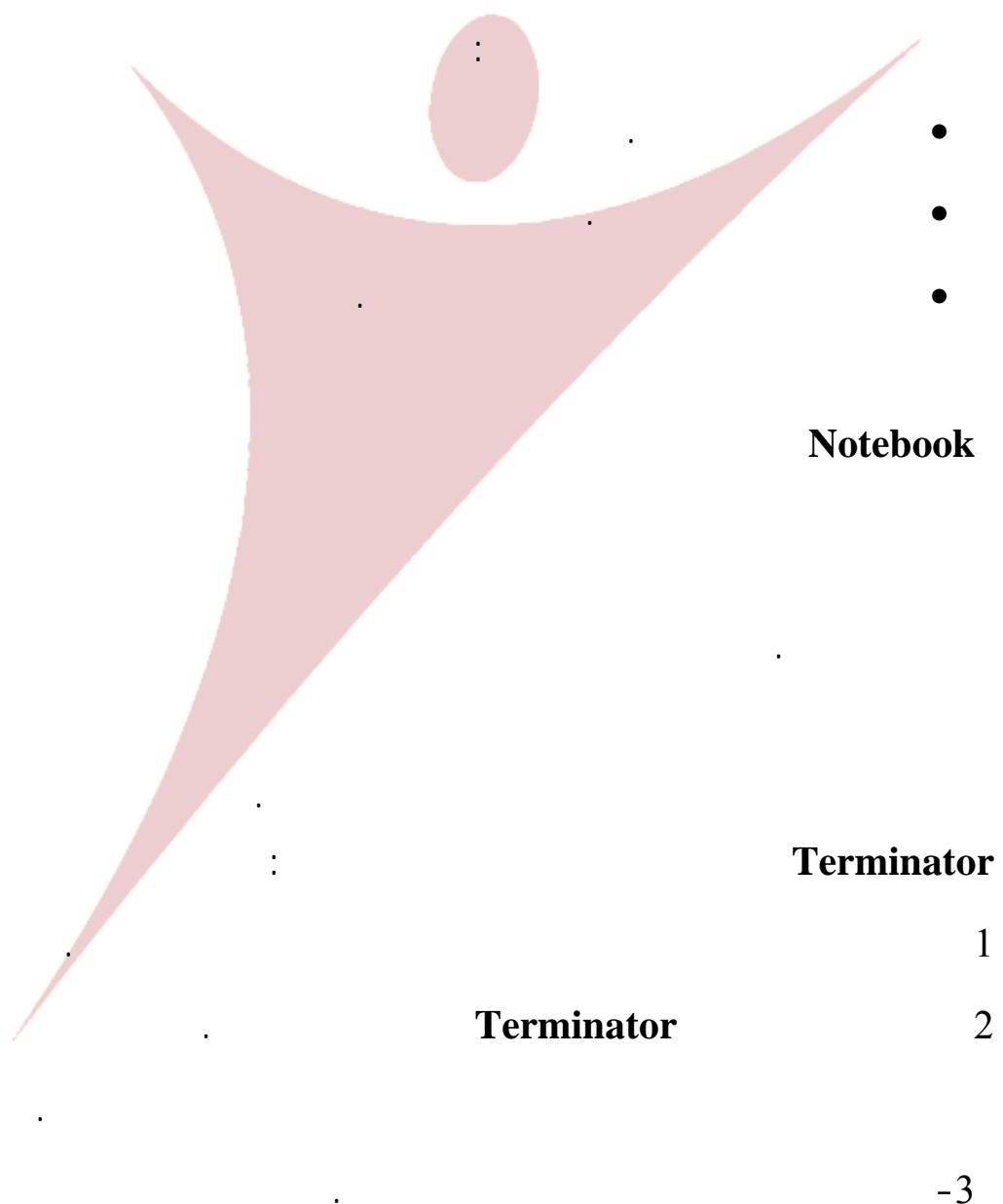
**(SNMP) Protocol Management**



•  
•  
•  
•



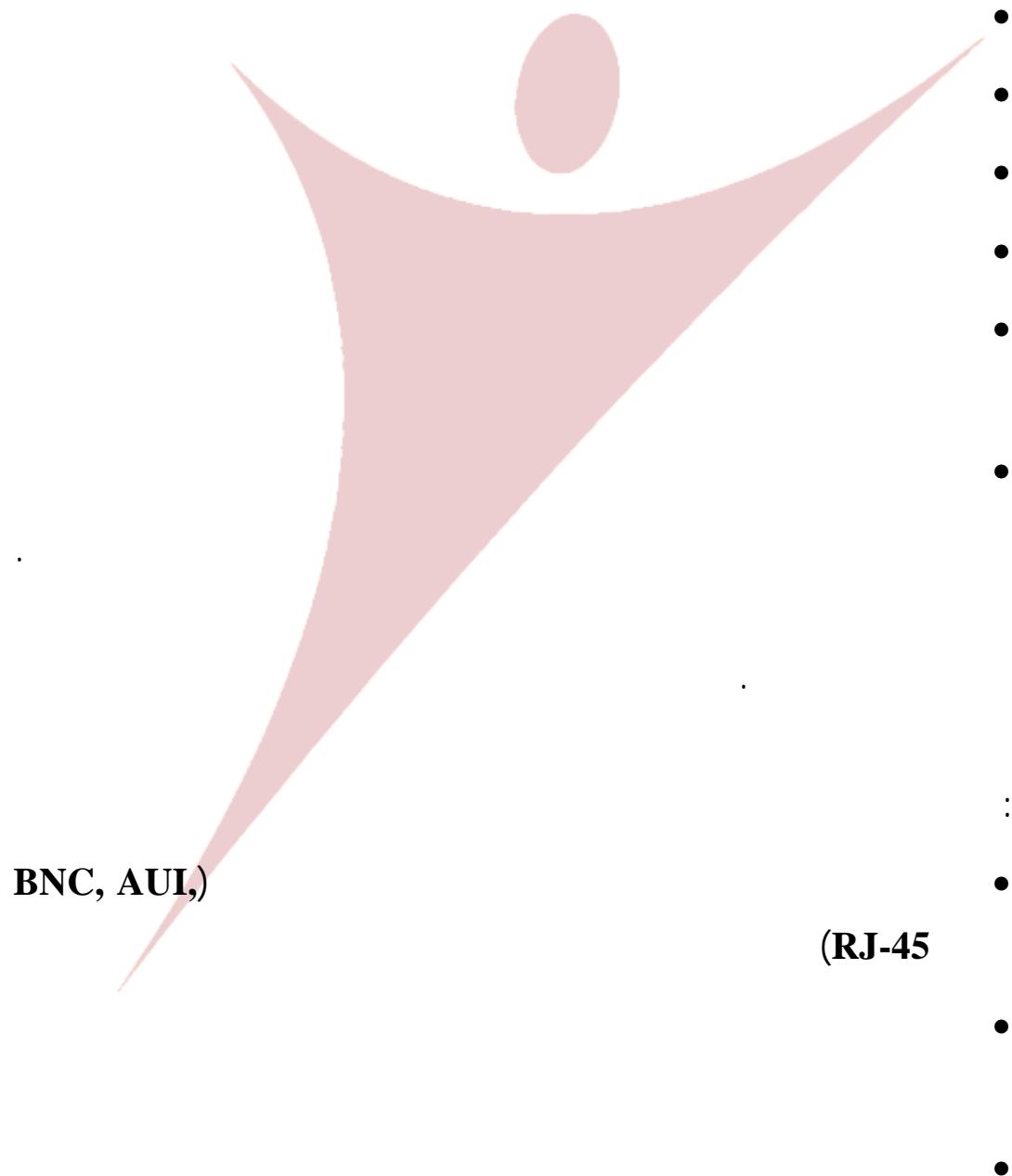


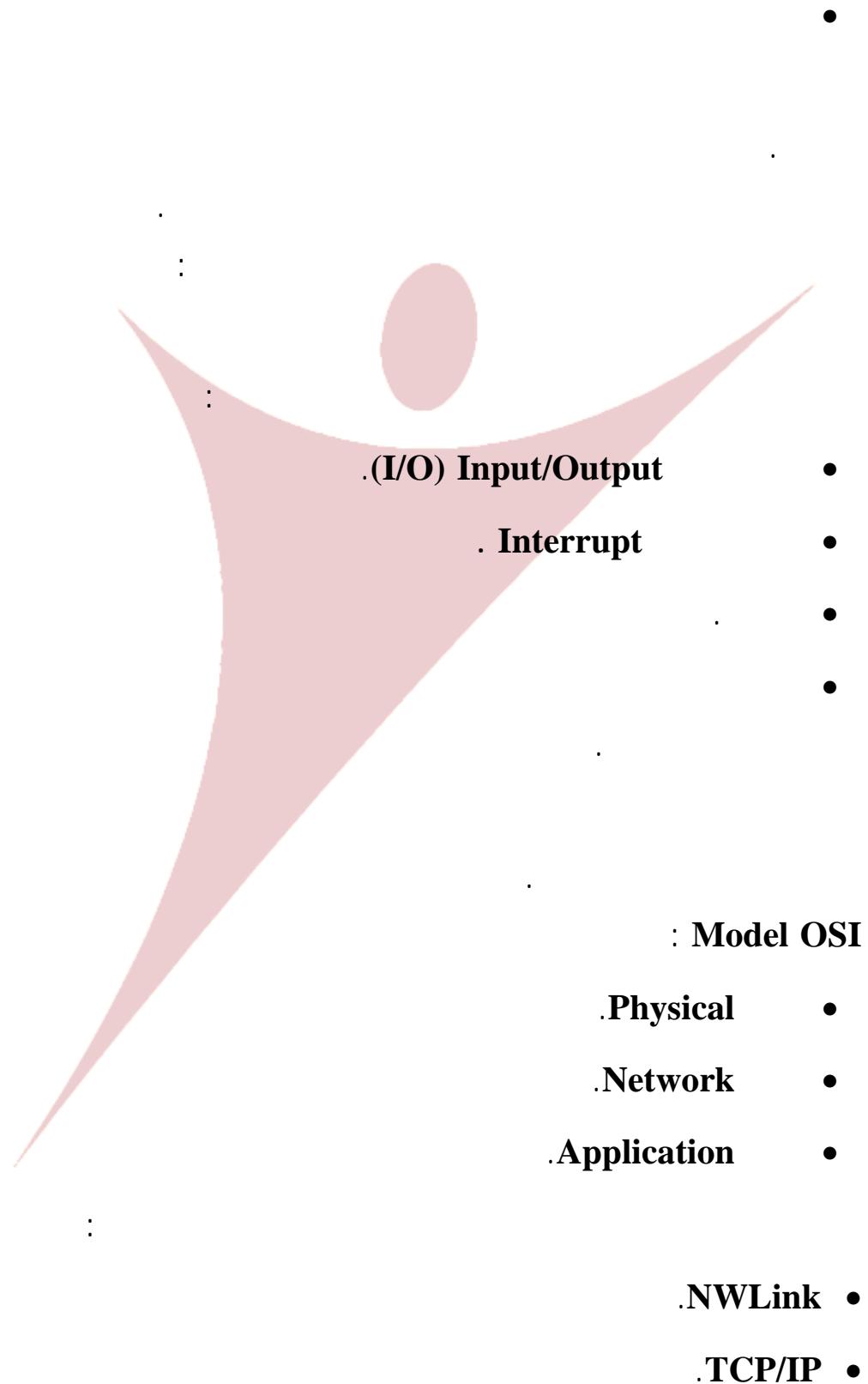


## Domain Time

**Analyzer Protocol**

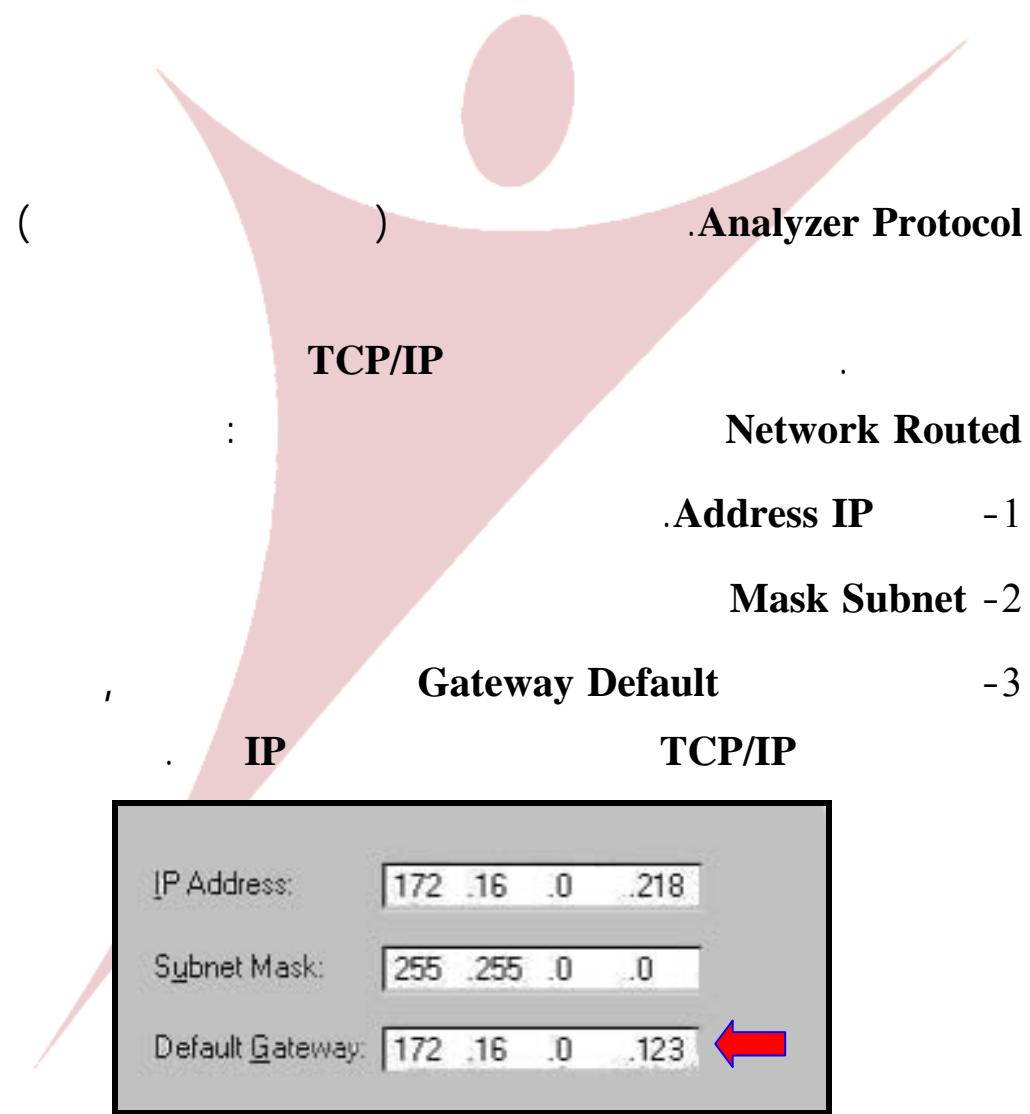
**(TDR) Reflectometer**

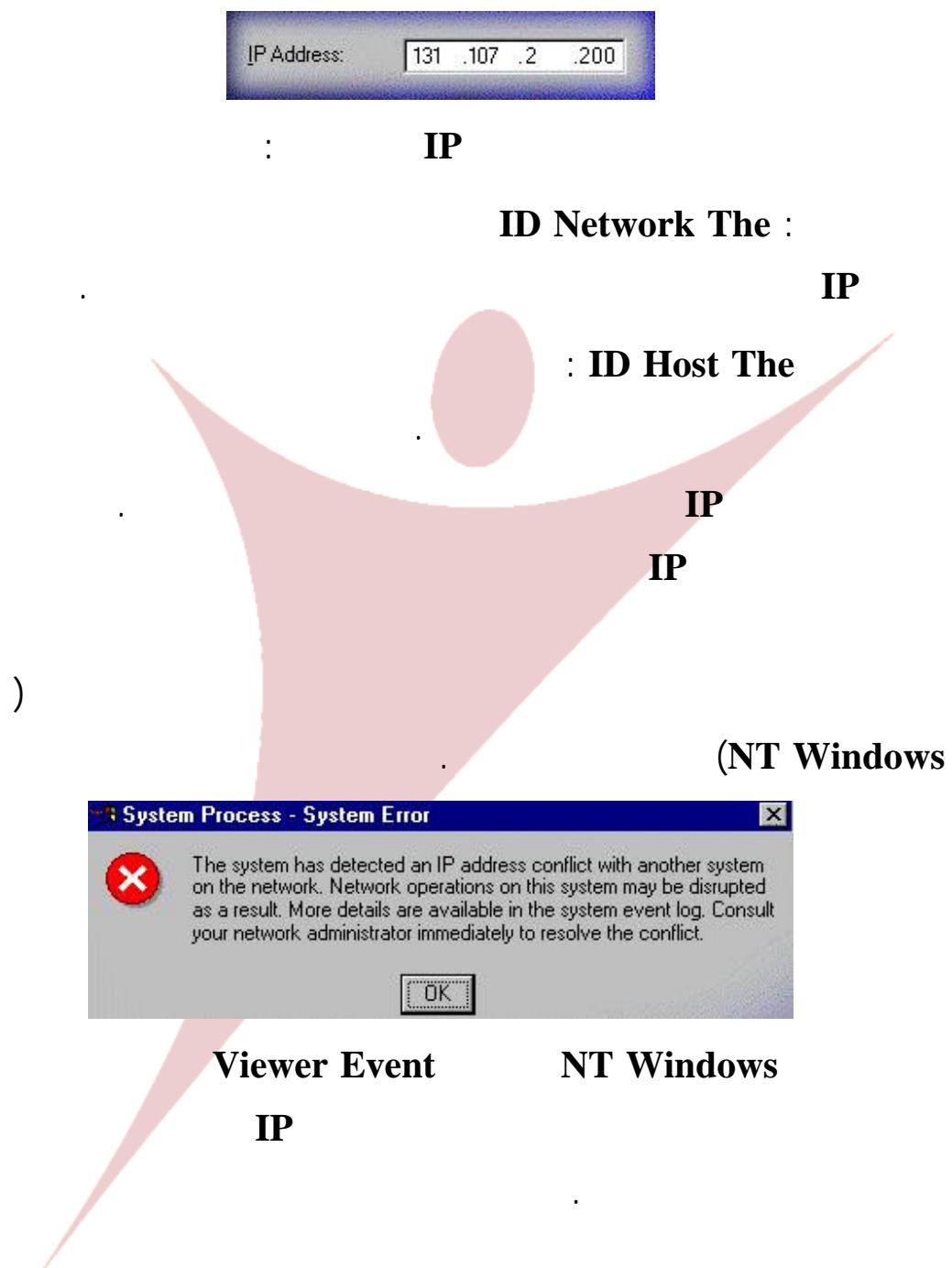


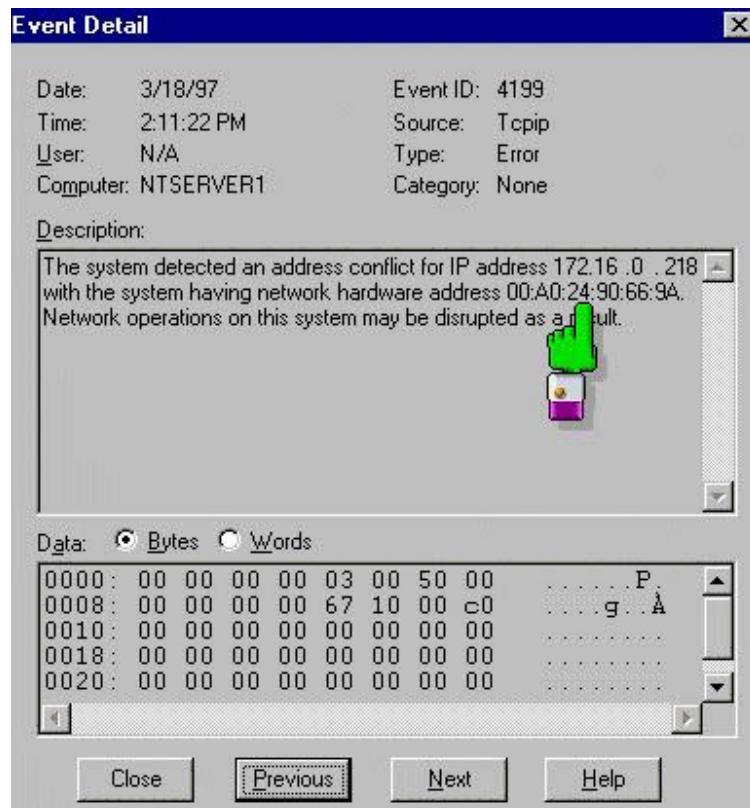


.AppleTalk    DECnet    IPX/SPX  
                    )           NWLink  
SAP - Protocol Advertising Service (

8







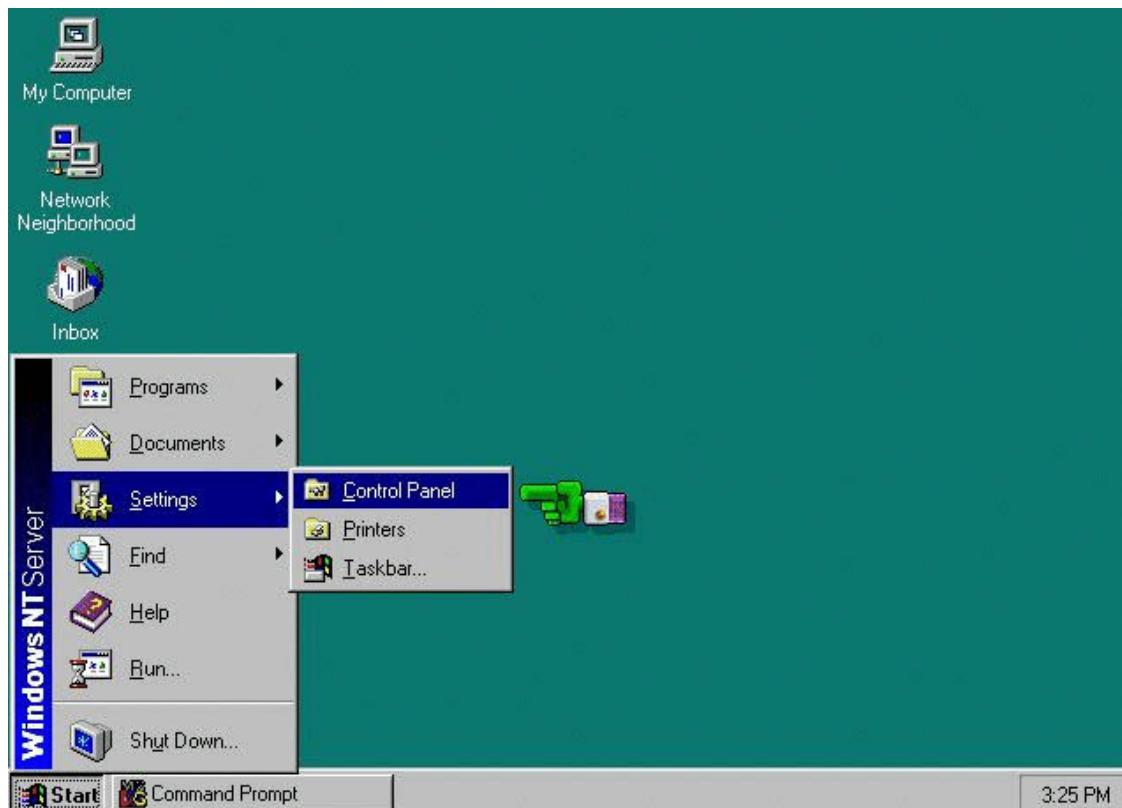
IP

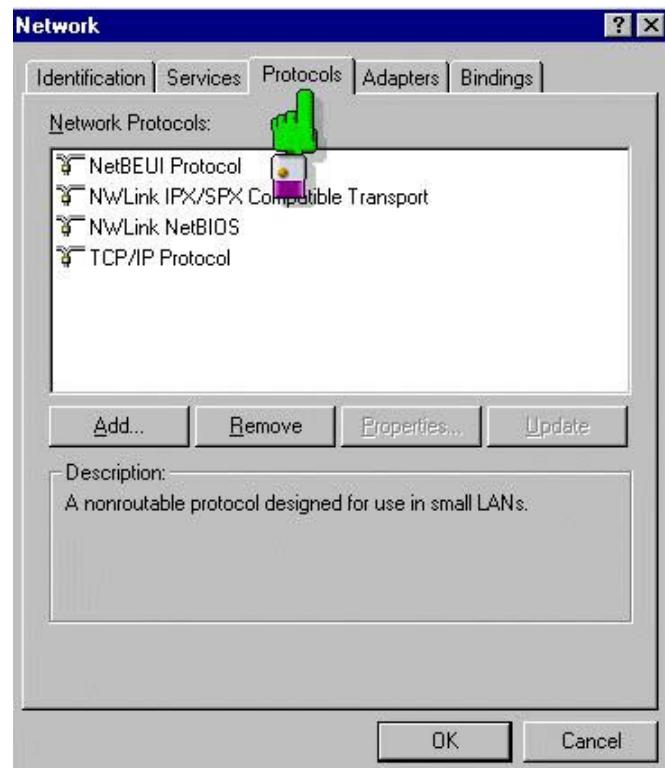
Panel Control

Settings

Start

- 1

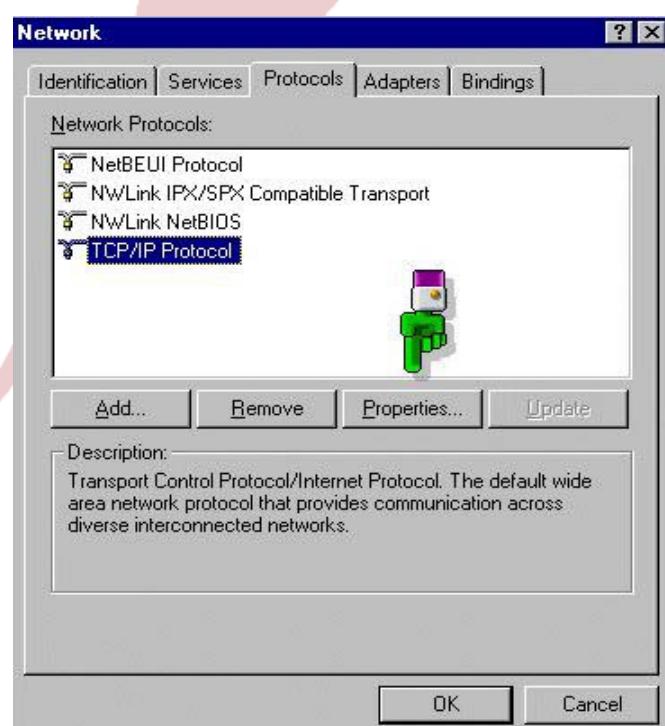
**Panel Control****Networks****-2****Protocols****Networks****-3**



Properties

TCP/IP

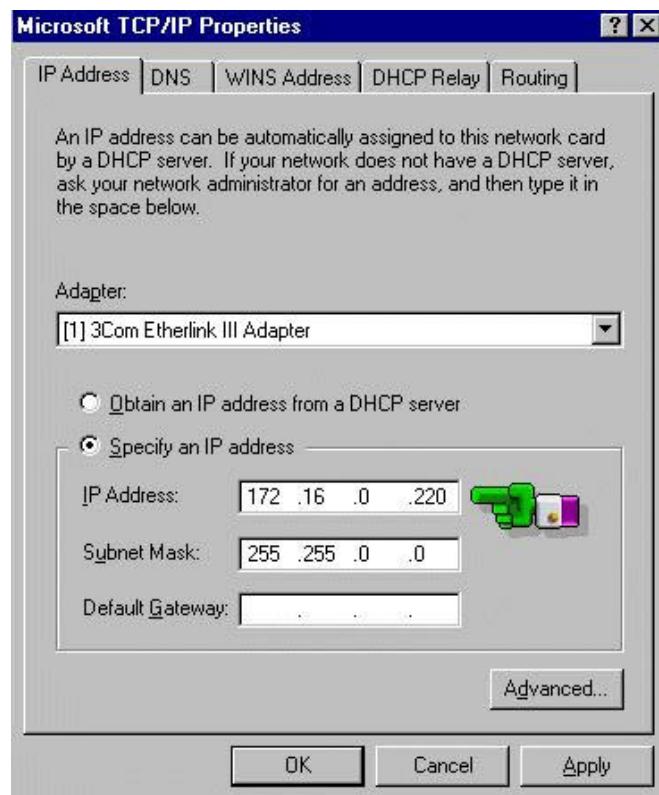
-4



OK

IP

-5



## Subnets

ID Network

Subnets

Masking Subnet

Mask Subnet

Subnets

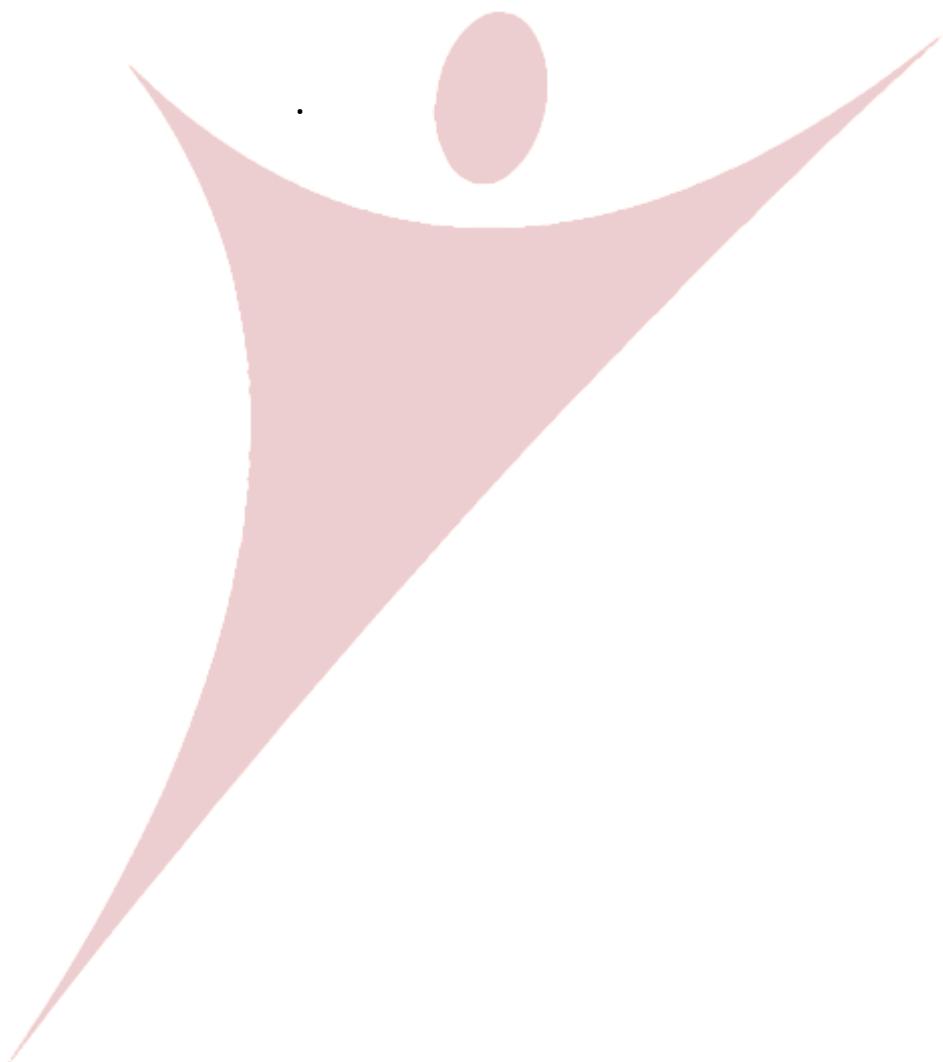
Address IP

Addresses IP

32



## مهمة دراسية:



مَعَ تَمْبَلَنْدَ لَكَمْ يَلْتَوْفِيقْ وَالنَّجْاحَ الْكَائِنَةَ

