

Ethernet

가

Gary A. Mintchell, CONTROL ENGINEERING

가

Dick Caro ARC Advisory Group
(, Dedham)

I/O

“Foxboro I/A
Nodebus 가 10base5
I/A Fieldbus
10baseT

IT

PC

RJ-45 가
General Motors RJ-45 가

Woodhead Connectivity
IP67 RJ-45

가

가? Synergetic(, Down -
ers Grove) Mike Justice

Hirschmann
Profibus

가

TCP

GE Fanuc Automation(,
Charlottesville)

Dave Hietanen “

Caro “10/100
baseT

가

collision domain

가

가

가

“ ”
“ ”(proprietary) . “ ”
“ ”

(가

“ ”
).

IP

IT

Automationdirect(,
Cumming) PLC
Paul Ruland 가

Caro "TCP/IP

가

National Instruments(, Austin
) FieldPoint
Martin Wojcik “ FieldPoint
TCP/IP

Modbus TCP 2

TCP/IP 가

Foundation Fieldbus HSE()

UDP 가

National Instruments
Garritt Foote

IEC 61158 Fieldbus “ ”

Type5 publisher/subscriber

I/O

가

“TCP/IP TCP UDP
IP
UDP
IP

가 IP

DeviceNet
 ControlNet CIP
 (Control and Information Protocol) Device-
 Net "EtherNet/IP"
 "IP"가
 "Industrial Protocol"
 DeviceNet
 ControlNet
 CIP 가
 TCP/IP peer to peer I/O
 Clifton Park) Steve Schoen-
 berg
 Mod
 -bus 가
 HMI Rockwell Automation(Milwaukee
) And-
 reas Somogyi
 CIP
 TCP/IP
 Automationdirect.com WinPLC
 Host Engineering(, Johnson City)
 Robert Oglesby UDP
 가 가
 Opto 22 (, Temecula)
 Tom Edwards "
 I/O
 I/O
 4
 가 I/O
 , Open DeviceNet Vendors Association I/O
 (ODVA, Coral Springs) / SNMP

“I/O”
HMS(Chicago Halmstad)
Staffon Dahlstrom “
RJ-45 9 D-shell
가
Profibus ModbusPlus
”

I/O
가
I/O
Hirschmann(, Pine Brook)
John McGilvrey
“ I/O
”

Siemens Energy & Automation (, TCP/IP)
Alpharetta)
Horst Kohlbert
“Standard Category 5
(, 10baseT)
”
(floating ground)

가
RJ-45 가
9 D-
”
“
가
”
가
”
”
”

Lantronix(, Irvine)
Mark Fondl “
가

?
I/O 2, 3

Week

가

Host Engineering Oglesby
I/O

Zoneworx(, Temecula)
legacy 가 TCP/IP

가 .”

Opto 22 1998

Steve Ewankowich
TCP/IP ModbusTCP 가

SNMP

SEMI E54.9-2000 (TCP
/IP Modbus/TCP /
)

National Instruments FieldPoint I/O
. Sixnet
I/O . Schneider Electric
(, North Andover) Mo-
mentum I/O

Jetter AG(Ludwigsburg
Broadview Heights) Jet Web

I/O

가 ” . ,
가 ” . ,

Optimation(, Huntsville)
I/O . Automa-
tiondirect.com Omron Electronics
(, Schaumburg)

. GE Fanuc
Automation National Manufacturing

TCP/IP	
" TCP/IP"	. ,
FUD(,) 가	. .
“ ”	. .
(UTP)	RJ-45 가 가
가 가	가

가

가

IP Internet Protocol IP

가

IP IP

IEEE 1394("Firewire"), ATM(Asynchronous Transfer Mode)

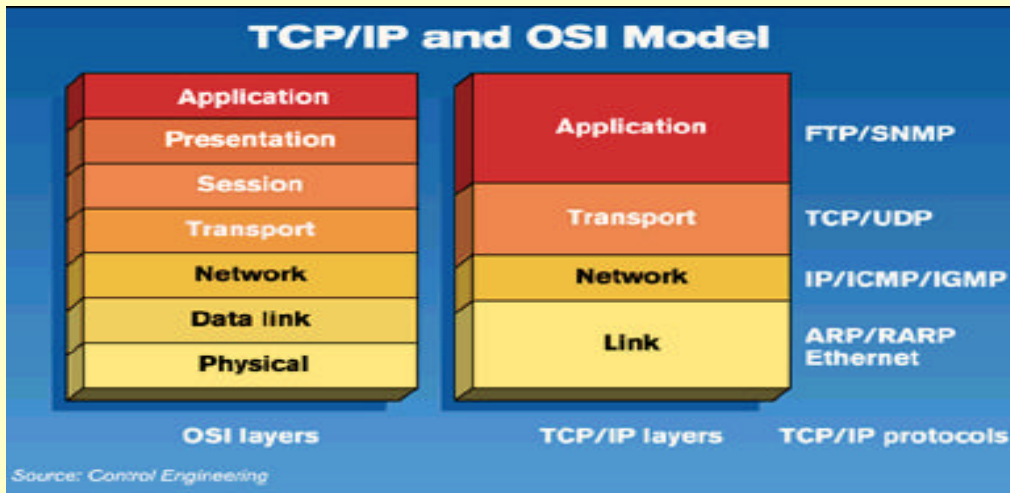
TCP(Transport Control Protocol) UDP(User Datagram Protocol)

IP " (TCP, UDP) FTP(File Transfer Protocol) SMTP (Simple Mail Transfer Protocol) " . IP

100%

가

" "



OSI TCP/IP

link layer

가

가

가

TCP

UDP

TCP

. TCP

end-to-end “ ”

“reliable pipe”

TCP

UDP

. UDP

IP

16

UDP

UDP

가

가

. DNS(domain network server)

Query

가

“ ”

“ ”

TCP

가

가

TCP 가

HMI

OPC