WM-120

Serial to Ethernet Module

User Manual

Version 1.0

Infosystem Technology Corporation, Ltd.

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Product Information

A. Introduction

WM is module-based product and it can provide an ideal solution to customized embedded systems. By embedding WM Products into customized systems, you can easily implement Serial to Ethernet Converting affairs.

WM-120 uses SOC for implementing RS232 to Ethernet functions. It uses the state machine to handle TCP/IP stack and brings the user a lower cost TCP/IP stack with limited functions because of the limited resources.

WM-120 is a small size and low cost module solution. It is easy to implement applications in IA, Factory Automation, Security or any other low data rate data transmission by using it as the coprocessor. It supports ARP, ICMP, TCP, UDP, IP, DHCP-Client and even HTTP protocols. It supports 10/100M speed at Ethernet port and 115.2Kbps on Serial Port. You may use any browsers to set the parameters, or just use the commands in console mode with setup tools. With no doubt, WM-120 will bring you the easiest managements in your applications.

B. Features

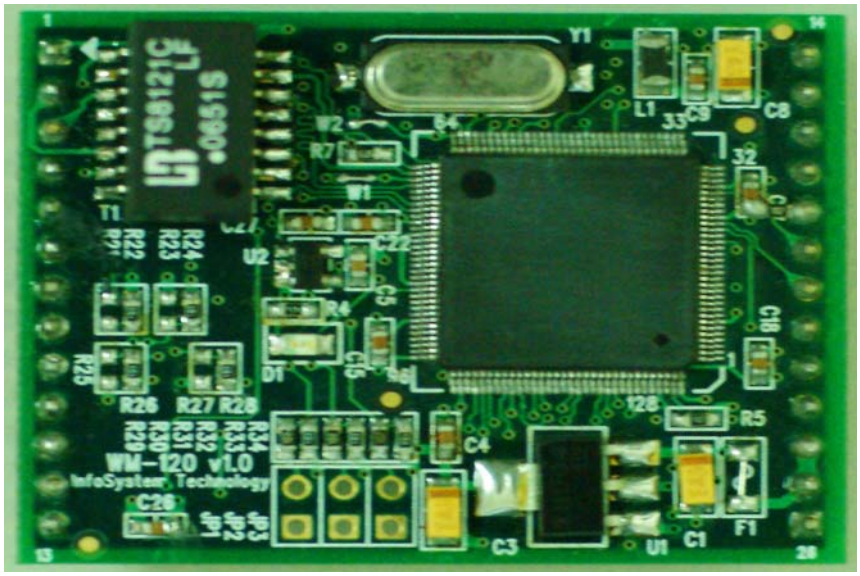
- Easy Configuration Setting
  - ✓ *Software Setup Tool for Configuration Setting*
  - ✓ *Use HTTP, IE/Netscape Browser for Setting*
- Good Security Concerned
  - ✓ *Setup Login in Password Protect*
  - ✓ *Access Password Protect*
  - ✓ *Support New Version Firmware Upgradeable*
- Low cost and High Reliability
  - ✓ *Cheap and stable*
  - ✓ *Working 24Hours per day*
- Low Power Consumption
  - ✓ *Less than 1W Power Consumption*
- Support Necessary Network Protocols
  - ✓ *ARP, ICMP, TCP, UDP, IP, DHCP Client, HTTP*
- Support Various Interfaces (Universal Set)
  - ✓ *RJ-45 x 1, 10/100M, Auto MDI/MDIX*
  - ✓ *Serial Port x 1, 115.2Kbps, RTS/CTS H/W flow control*
  - ✓ *RS-232/RS-485/RS-422 Software Configurable*
    - ✧ *Half Duplex for RS485*
    - ✧ *Full Duplex for RS-422*
    - ✧ *5 bits Digital I/O (Modbus/TCP, Port 502)*
- Three Independent Sockets
  - ✓ *Support multi sockets for serial port and Digital I/O port*
  - ✓ *All protocol working independent and concurrently*

C. Applications

- Data collection
- Security Terminals
- Access Control Terminals
- Security Devices
- Time Recorders
- Warehouse Terminals
- Shop floor automation Terminals
- Remote Sensors and Various Meters
- Power monitors
- Power meters
- Environmental monitors
- Temperature monitors
- Data loggers
- Data Acquisitions
- Auto-ID Scanners
- Barcode Scanners
- Magnetic Card Readers

Exterior

A. Top View



B. PIN Assignment

Exterior

C. PIN Descriptions

PIN	Name	Type	Description
1	ETx+	O	This is AUI transmit output pair contains the differential line drivers which send Manchester encoded data to the MAU.
2	ETx-	O	Same as Pin 1, it is the Positive differentials transmit out.
3	ERx+	I	The AUI receive input pairs carries the differential receives input signal from the MAU.
4	ERx-	I	Same as the Pin 3, it is a positive differential input of the AUI.
5	LED 10M	O	10M SPEED
6	TxD0	O	UART Tx0 data in
7	RxD0	I	UART Rx0 data in.
8	RTS0	O	RS232 /RTS
9	CTS0	I	RS232 /CTS
10	Reset	I	Reset Pin
11	GND	P	The shield GND.
12	GND	P	The shield GND.
13	TxD1	O	UART Tx1 data in
14	PIO0	I/O	Digital I/O
15	PIO1	I/O	Digital I/O
16	PIO2	I/O	Digital I/O
17	PIO3	I/O	Digital I/O
18	LED 100M	O	100M SPEED
19	DCD0	I	RS232 /DCD
20	DSR0	I	RS232 /DSR
21	DTR0	O	RS232 /DTR
22	GND	P	The shield GND.
23	Ready LED	O	Ready LED Indicator
24	+5V	P	+5V DC Power
25	+5V	P	+5V DC Power
26	RxD1	I	UART Rx1 data in

Software Installation

A. Installation

Step 1: Insert the CD and click the button

The Software Installation CD that came with EIO-A-200 will automatically be run after inserting it into the CD-ROM drive. Click the “Ethernet converter Setup Utilities” button will bring the installation page out,

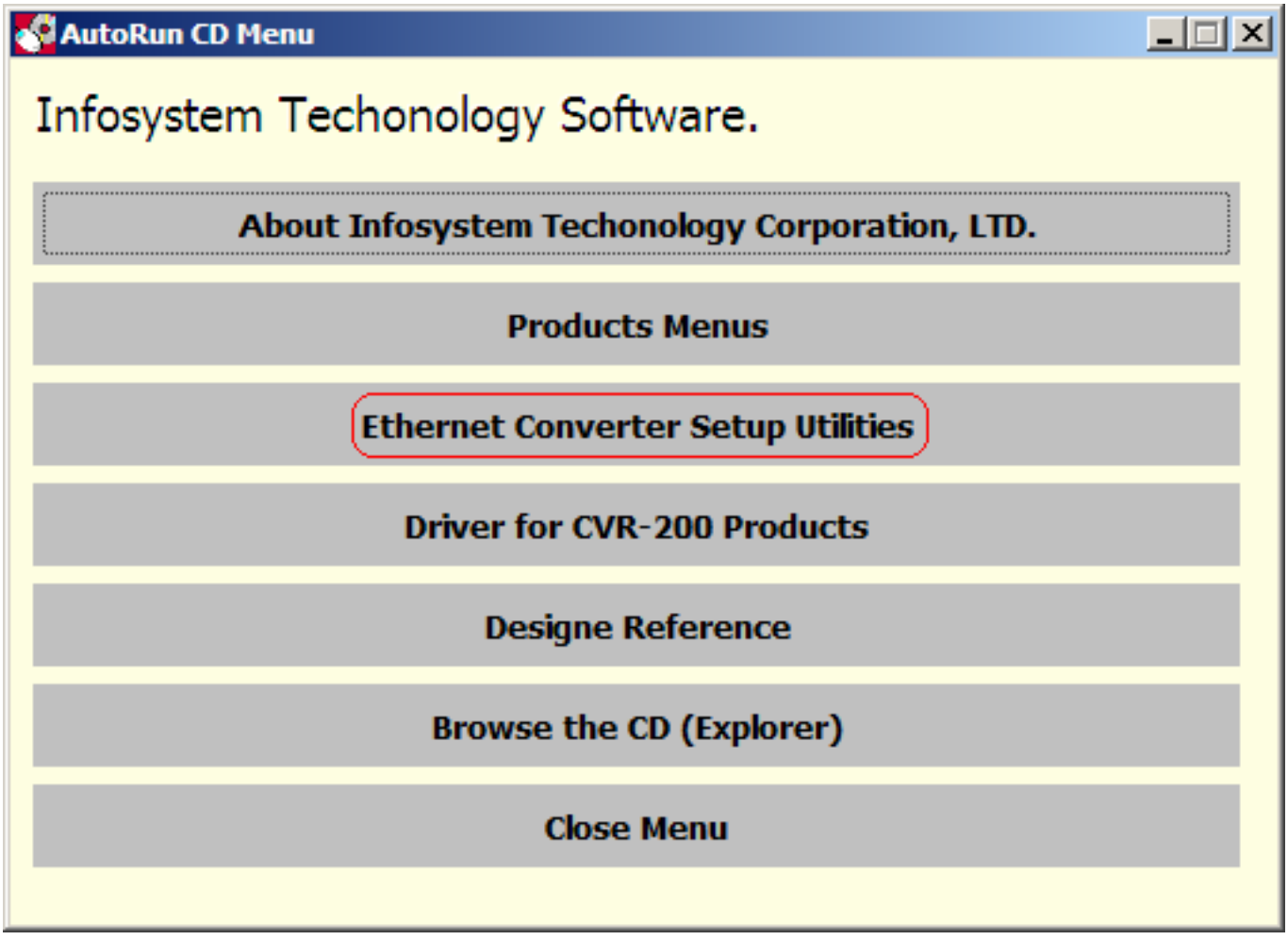


Figure1. Software Install CD Auto-Run Screen Shot

Software Installation

A. Installation

Step 2: Click the Link of the Page

Click the Link of the Page to run the Ethernet Converter Setup Tools Installation Software.

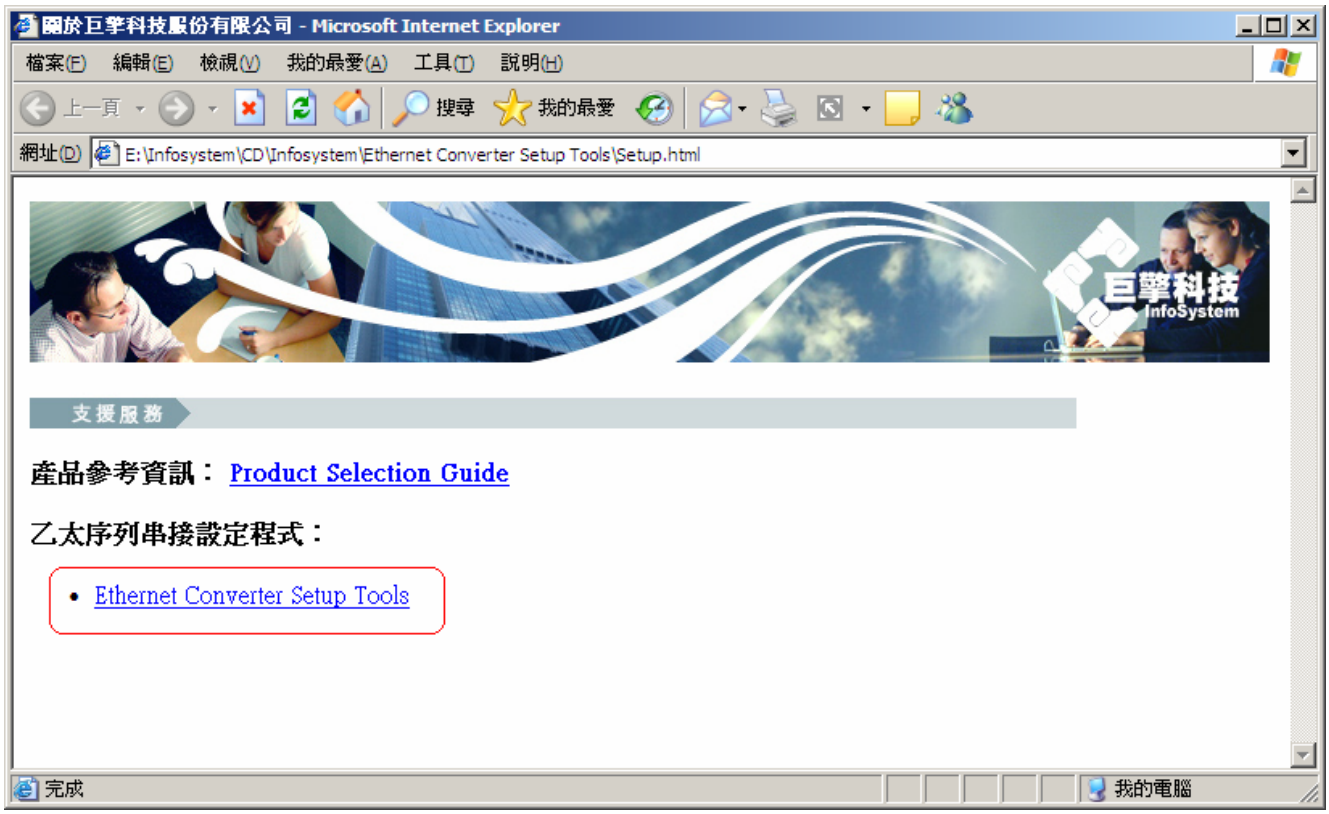


Figure2. Ethernet Converter Setup Tools Page

Software Installation

A. Installation

Step 3: Press Next to Continue

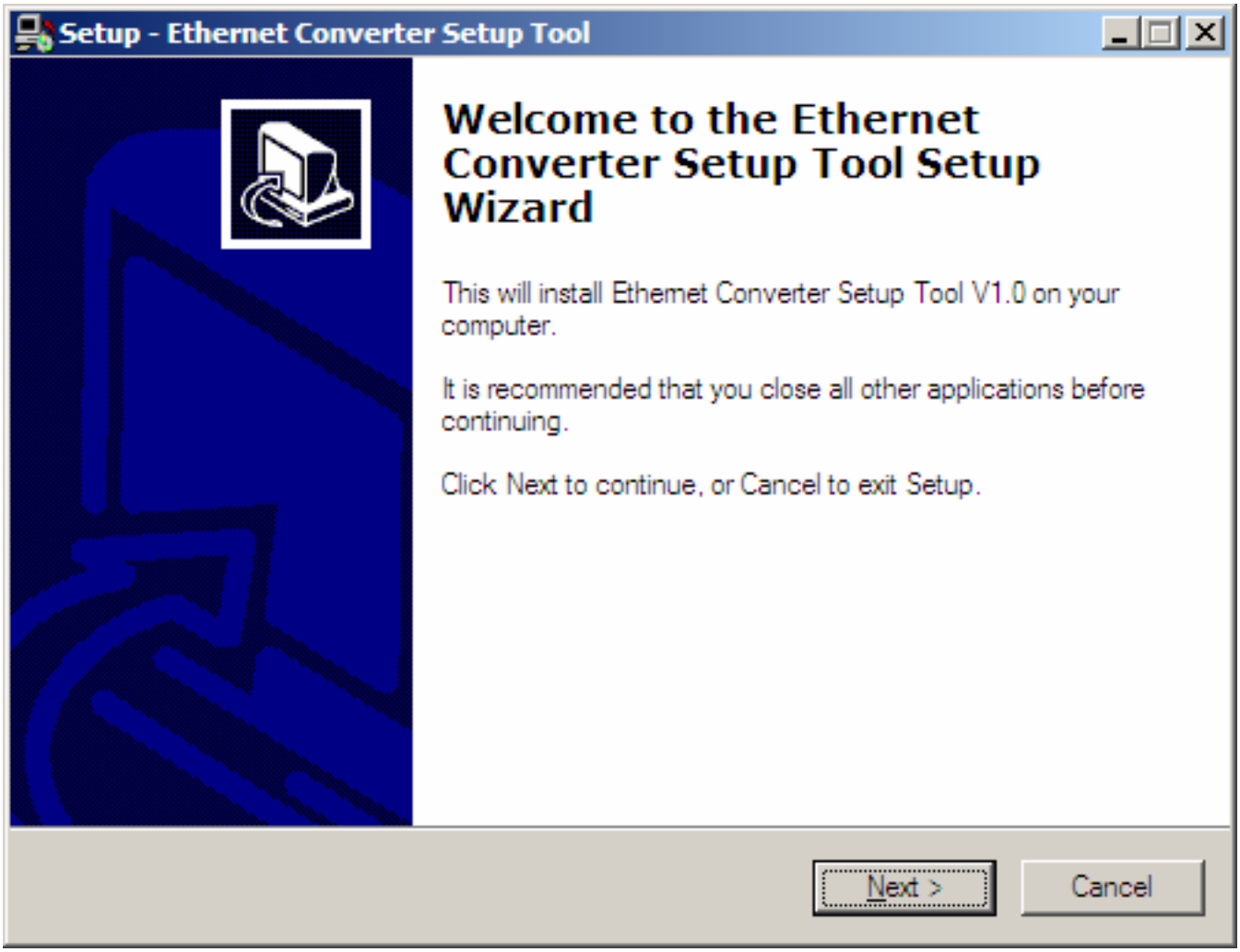


Figure3. Installation Welcome Message

Software Installation

A. Installation

Step 4: Decide the Application Directory

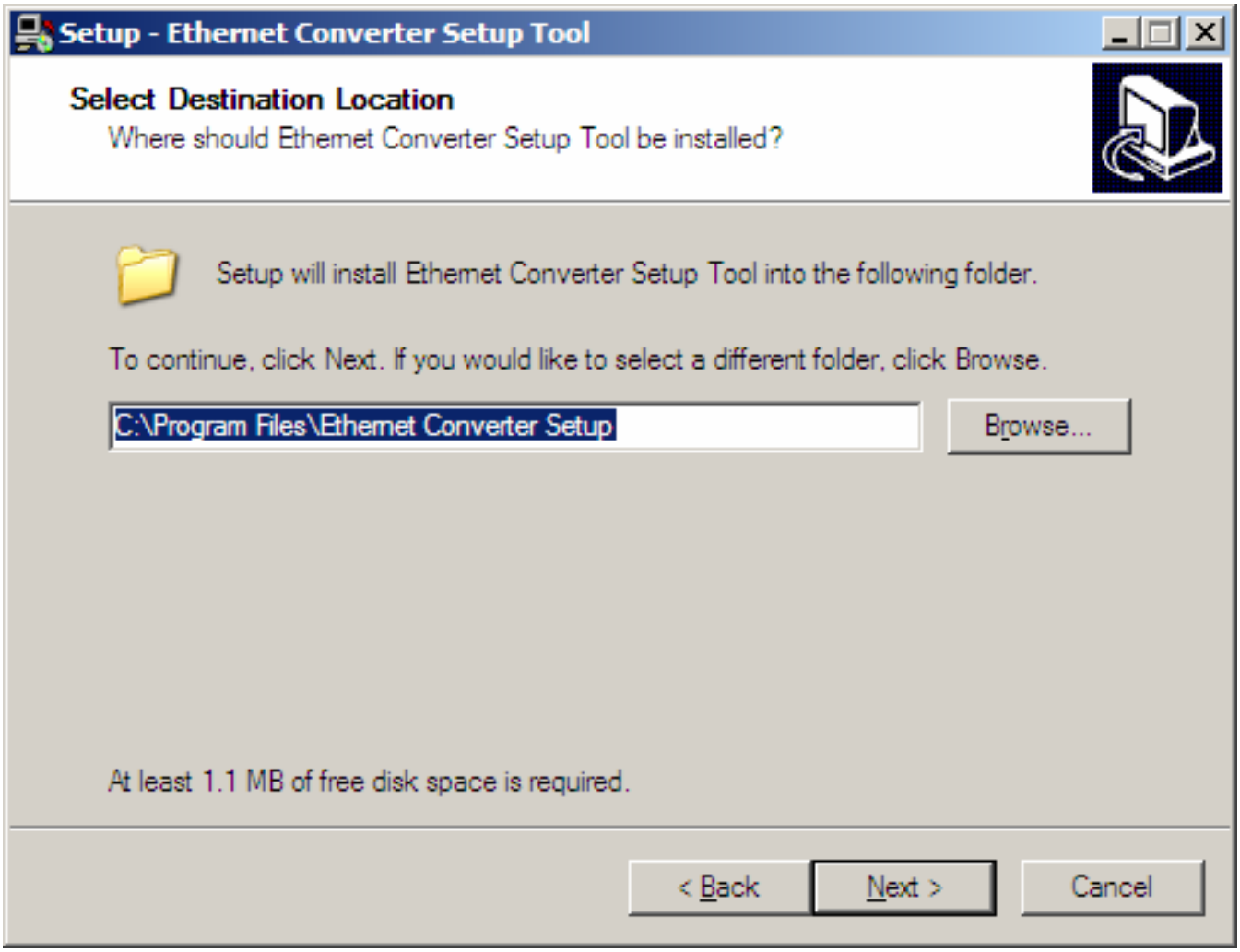


Figure4. Decide the Application Directory

Software Installation

A. Installation

Step 5: Create the Directory if not existent

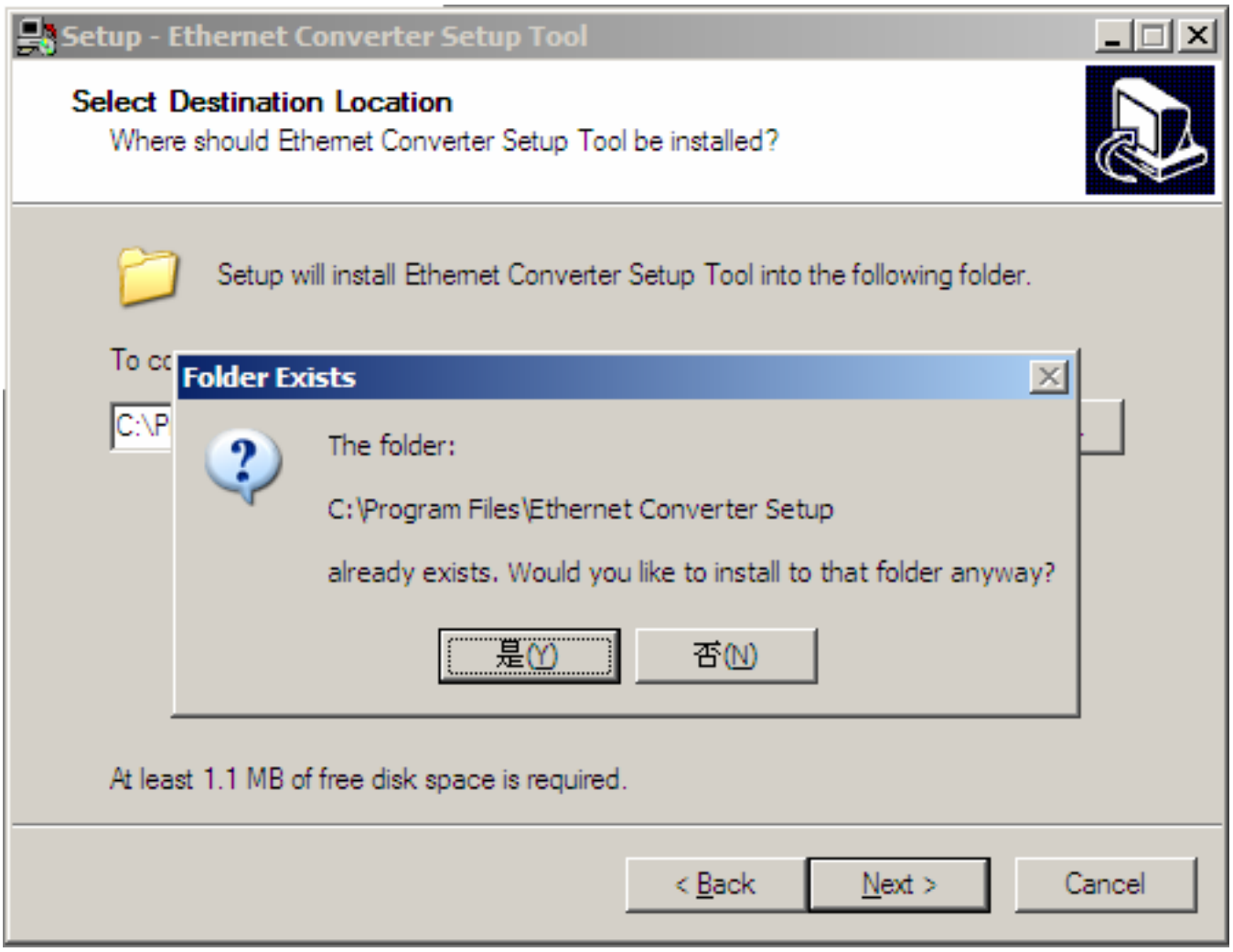


Figure5. Create Application Directory

Software Installation

A. Installation

Step 6: Create Program's Shortcut

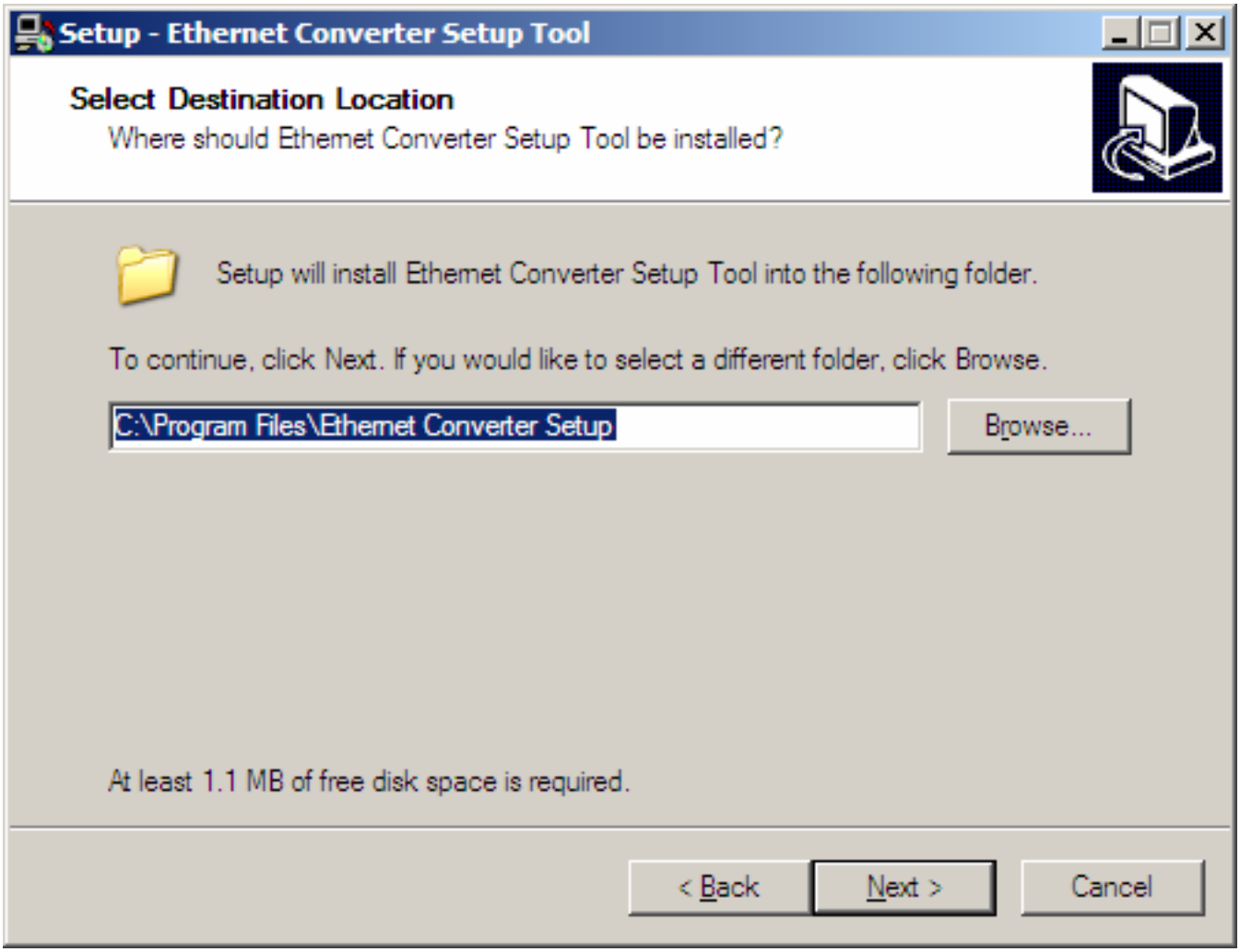


Figure6. Shortcut Creation

Software Installation

A. Installation

Step 7: Decide if Desktop icon needed

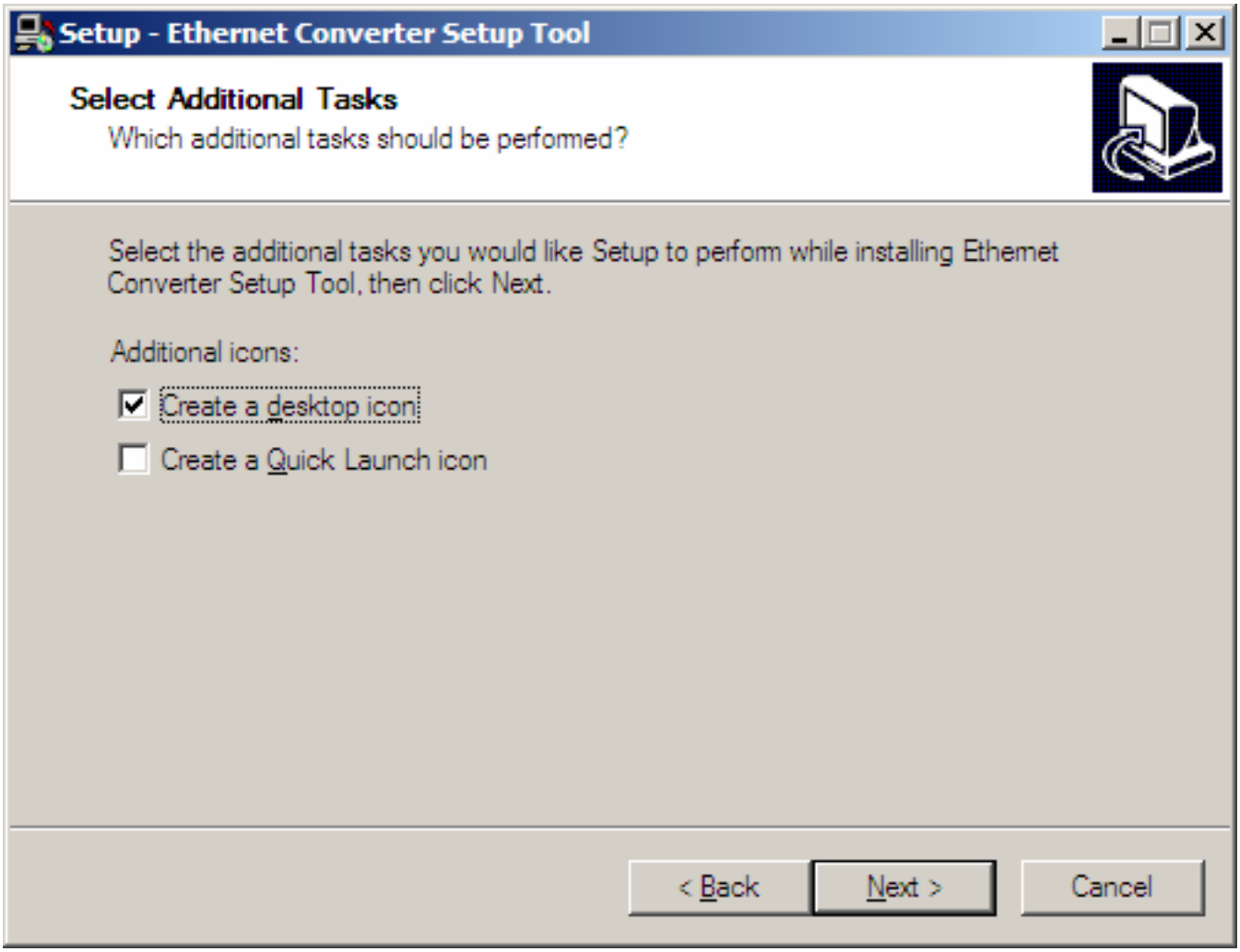


Figure7. Desktop Icon Creation

Software Installation

A. Installation

Step 8: Press Install to start installation

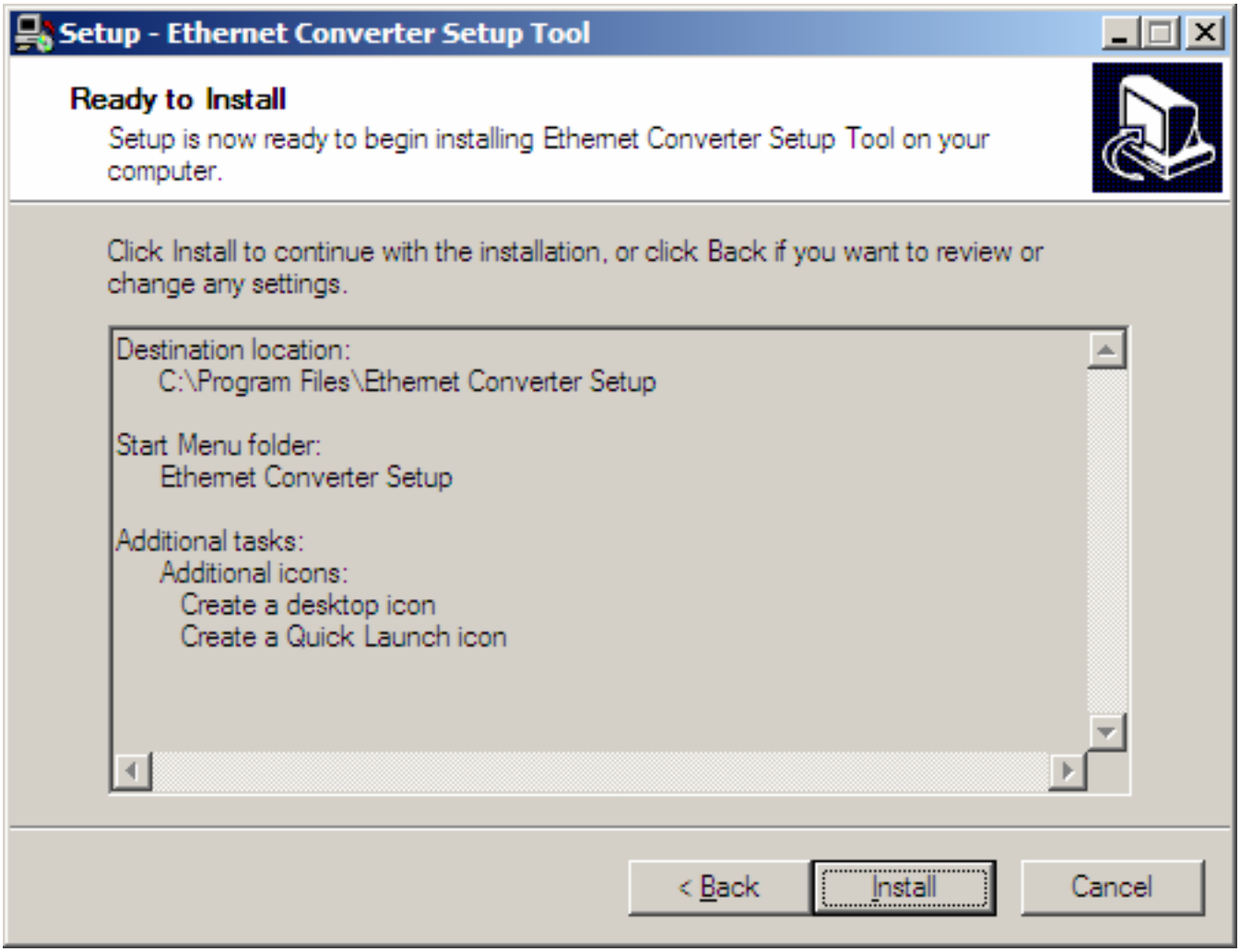


Figure8. Review the Installation Settings

Software Installation

A. Installation

Step 9: Process Installations

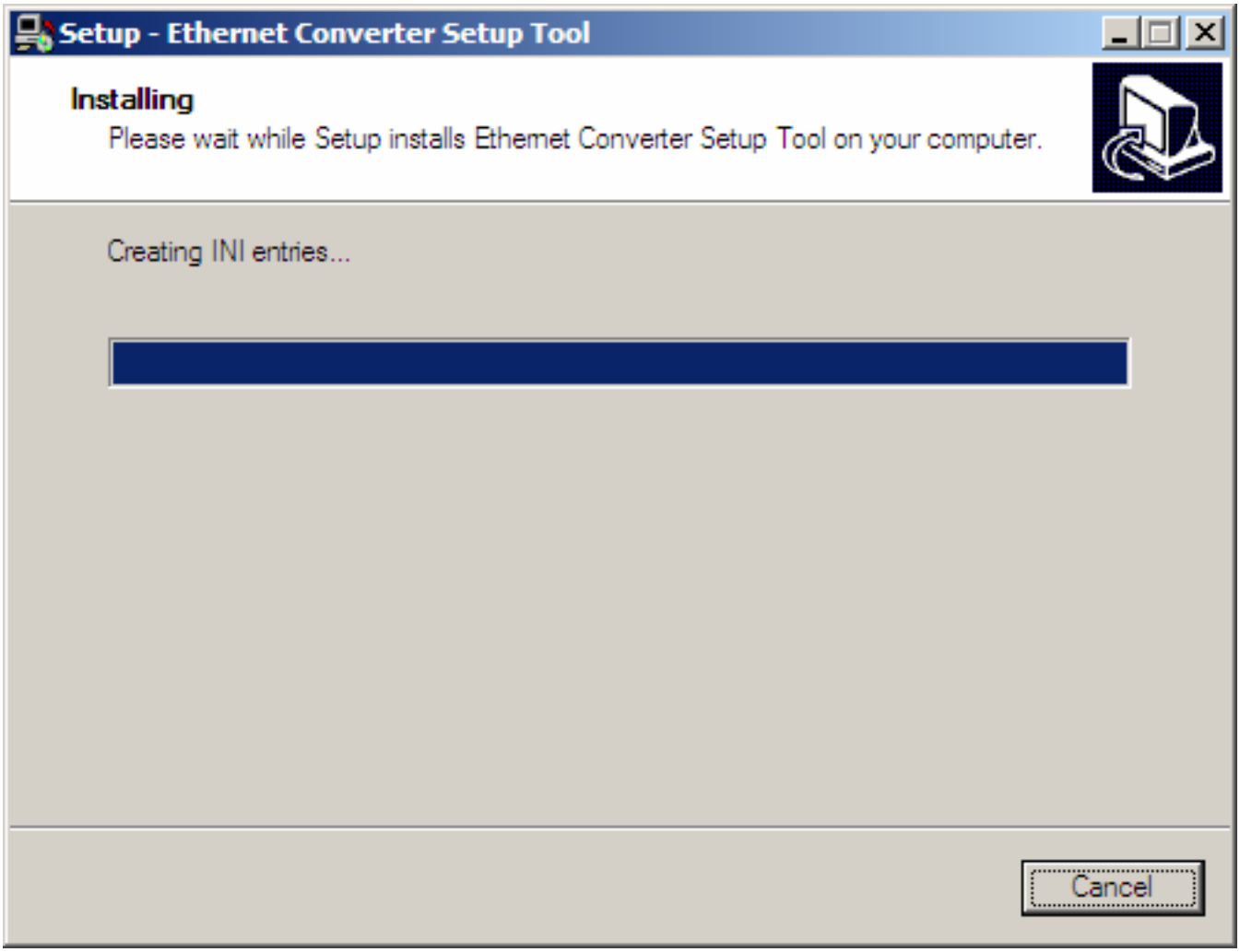


Figure9. Installing

Software Installation

A. Installation

Step 10: Finish Installation

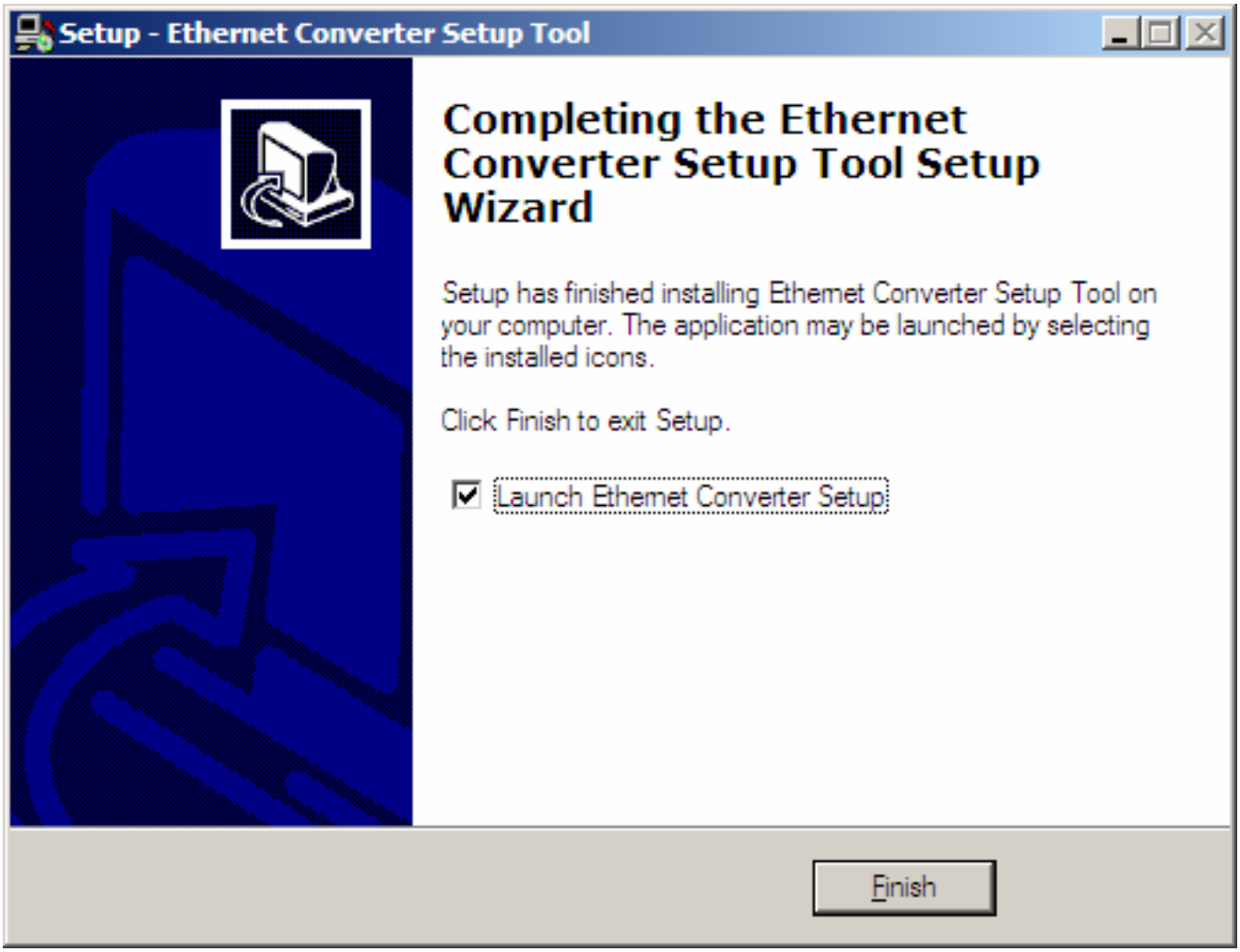


Figure10. Installation Finished

Software Installation

B. Uninstall

Step 1: Execute Uninstall Program

Uninstall Program is located at the application directory named “Uninstall Ethernet Converter Setup”. Execution of it could let the Ethernet Converter Setup Tools clearly be removed.

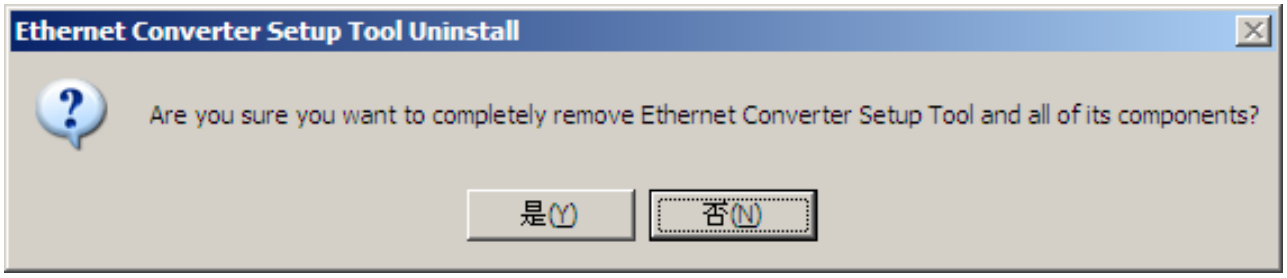


Figure11. Decide the Application Directory

Software Installation

B. Uninstall

Step 2: Click “Yes” to process

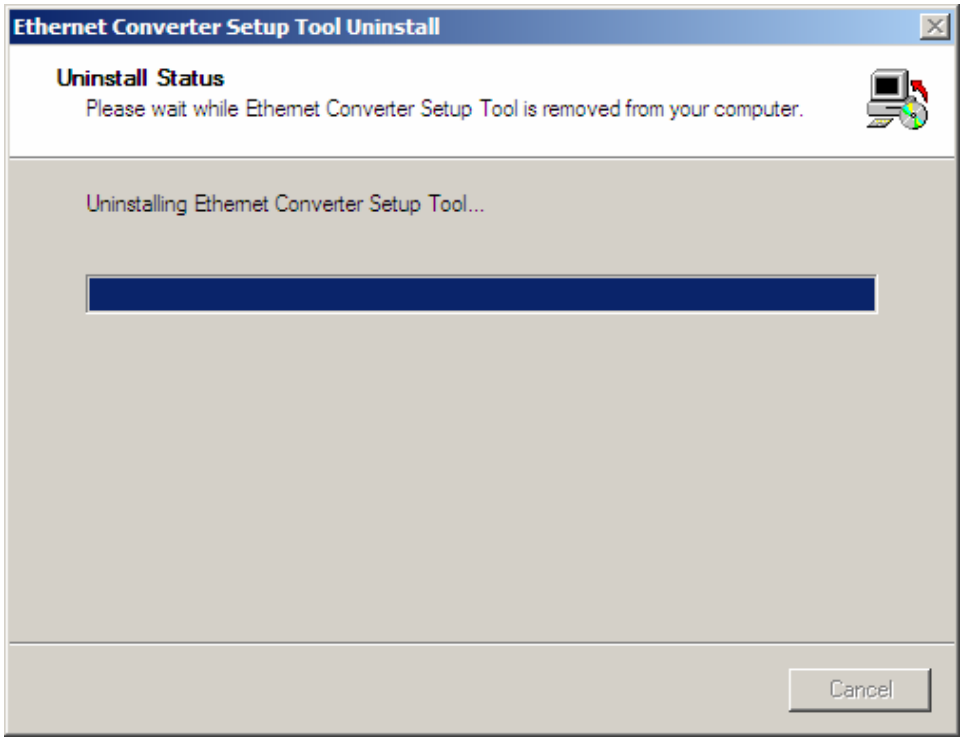


Figure12. Process Uninstall

Step 3: Finished

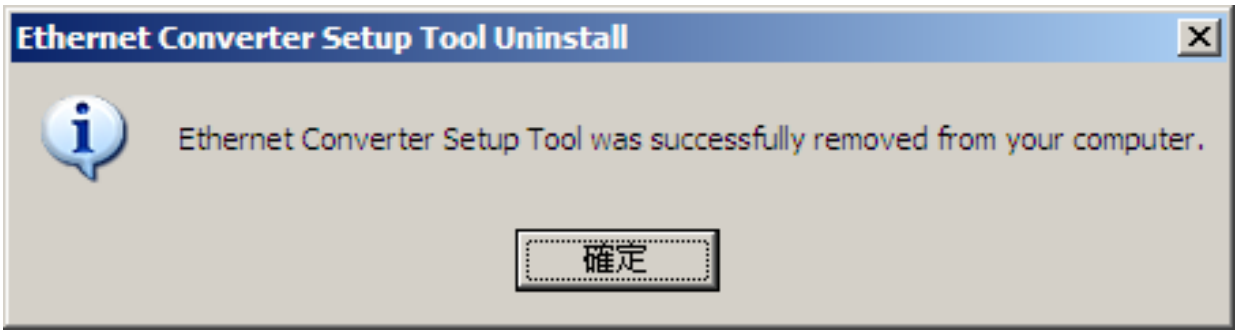


Figure12. Process Uninstall

Software Installation

B. Installation

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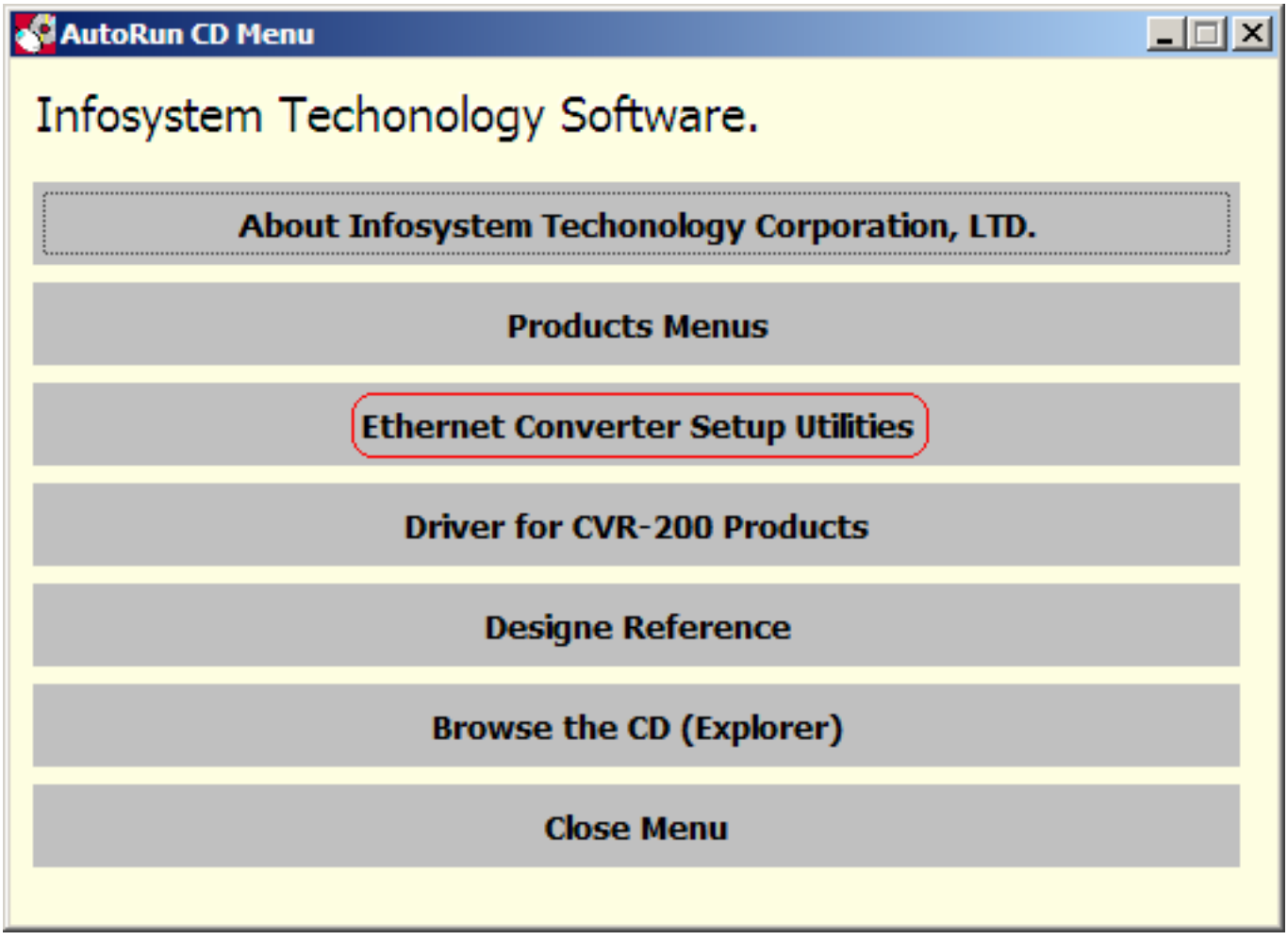

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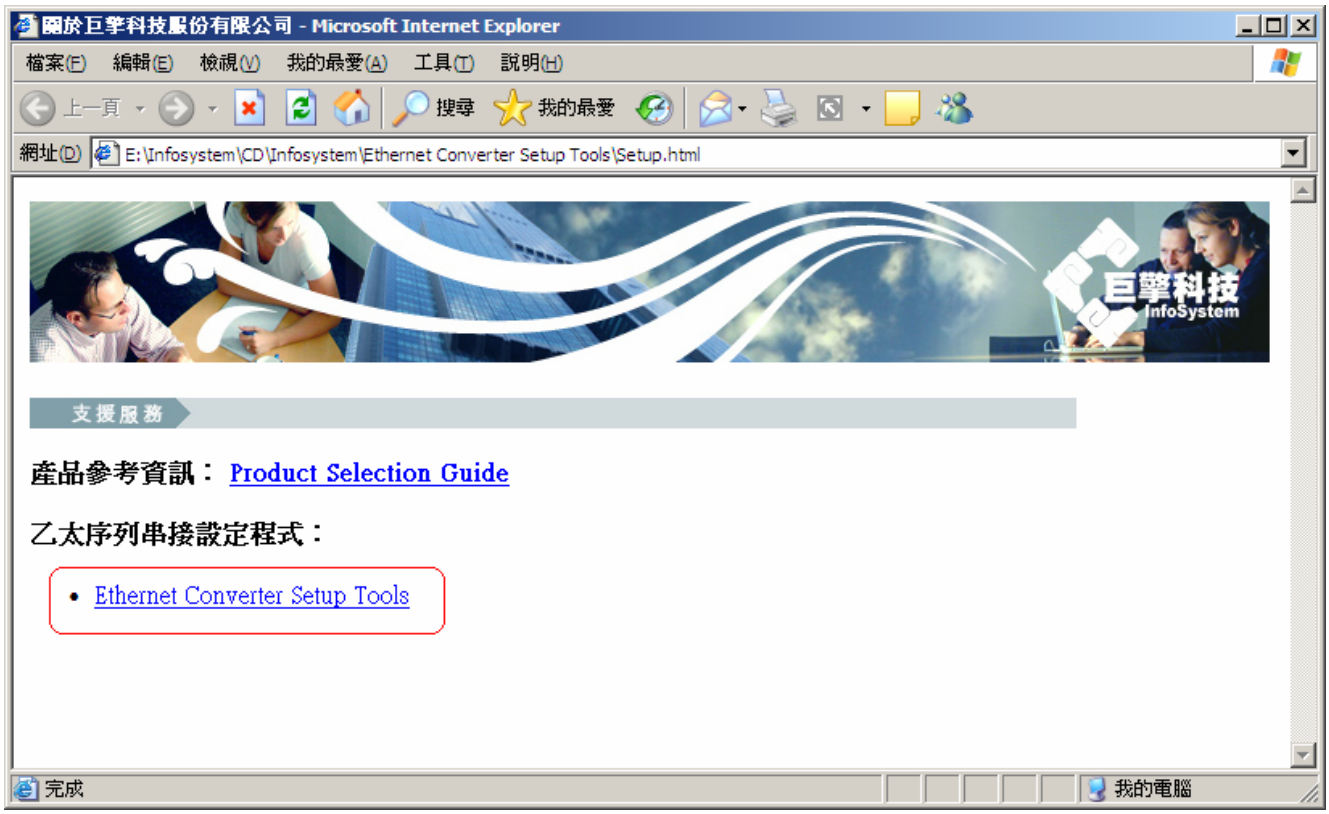


Figure2. Ethernet Converter Setup Tools Page

Software Installation

A. Installation

Step 3: Press Next to Continue

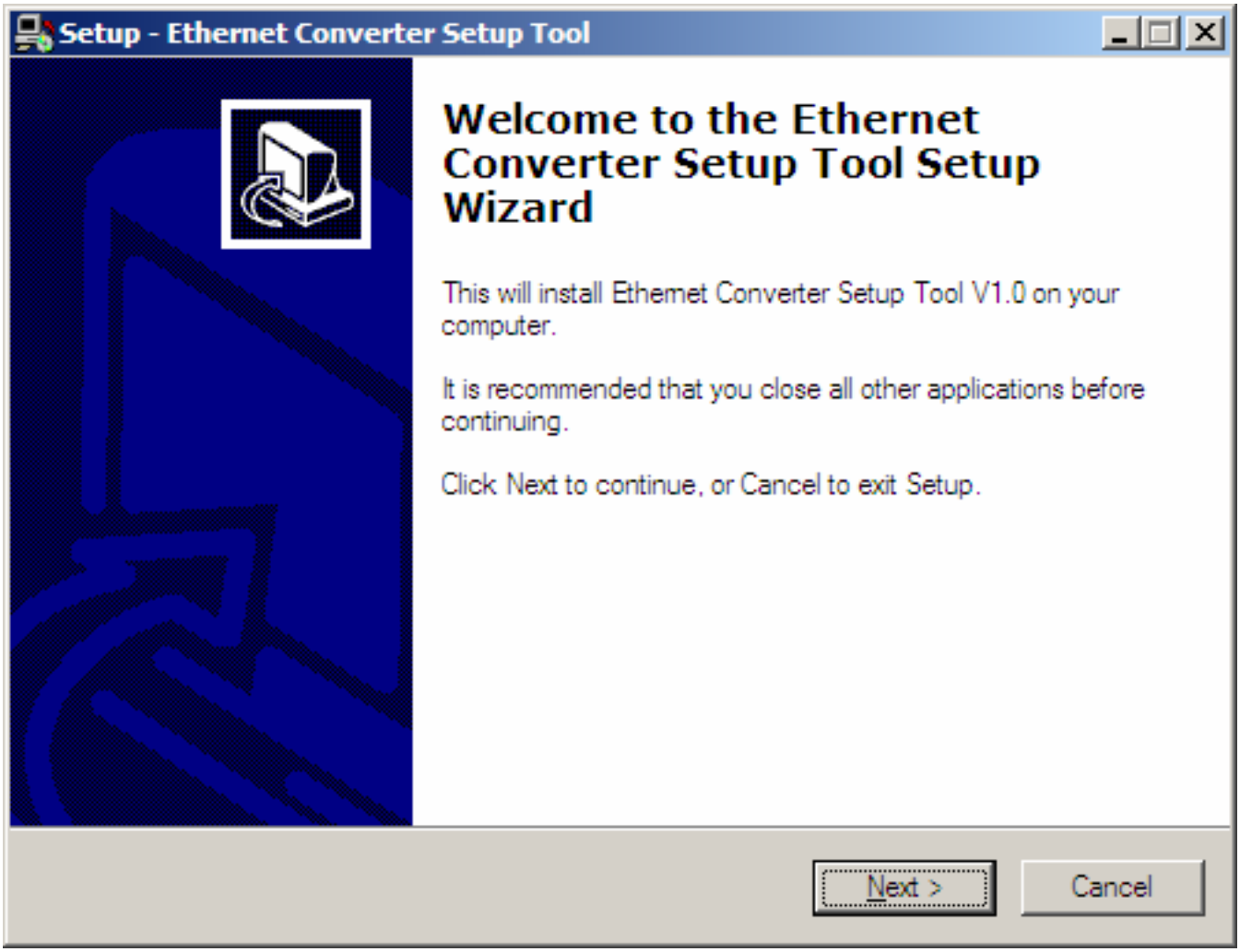
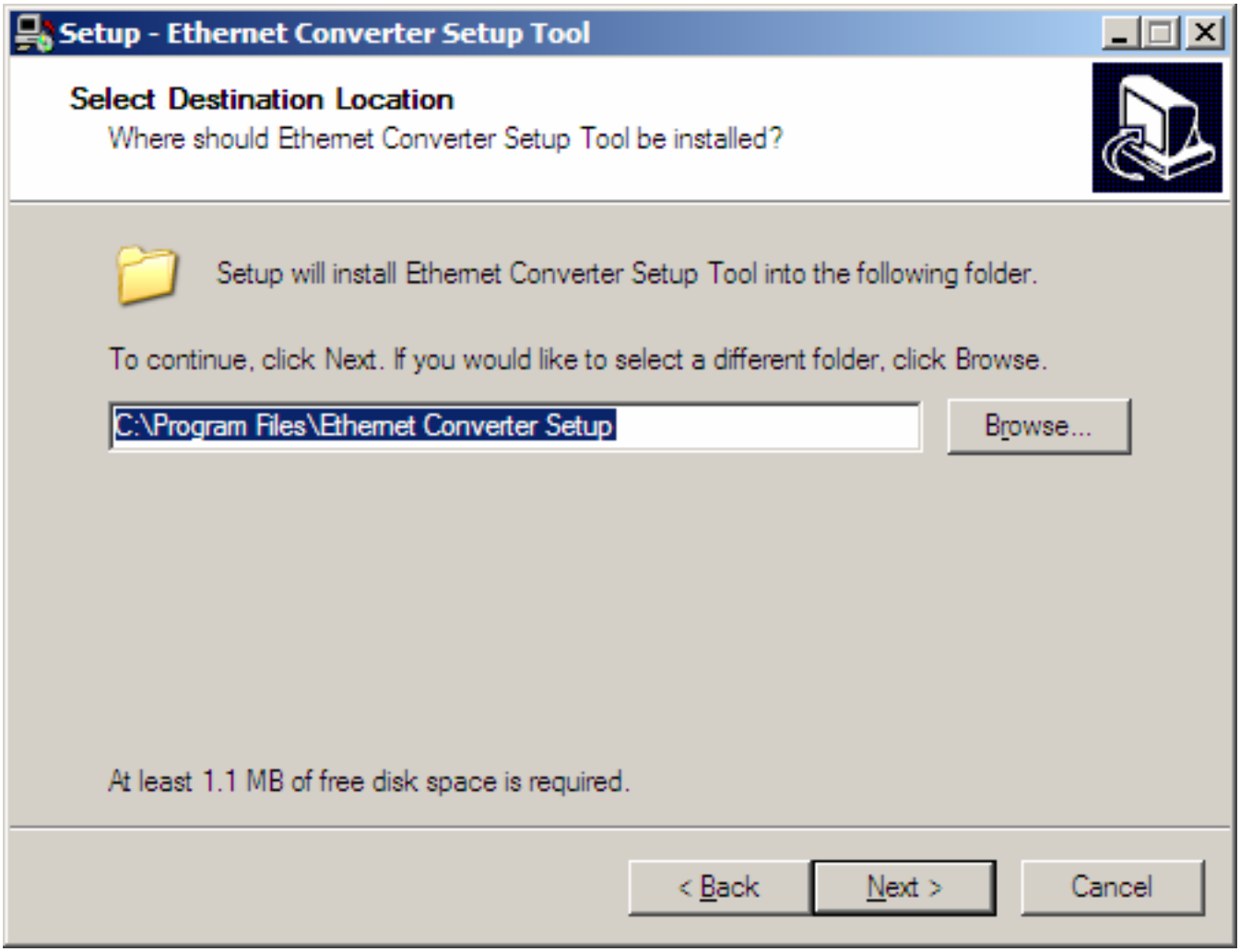


Figure3. Installation Welcome Message

Software Installation

A. Installation

Step 4: Decide the Application Directory



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Software Installation

A. Installation

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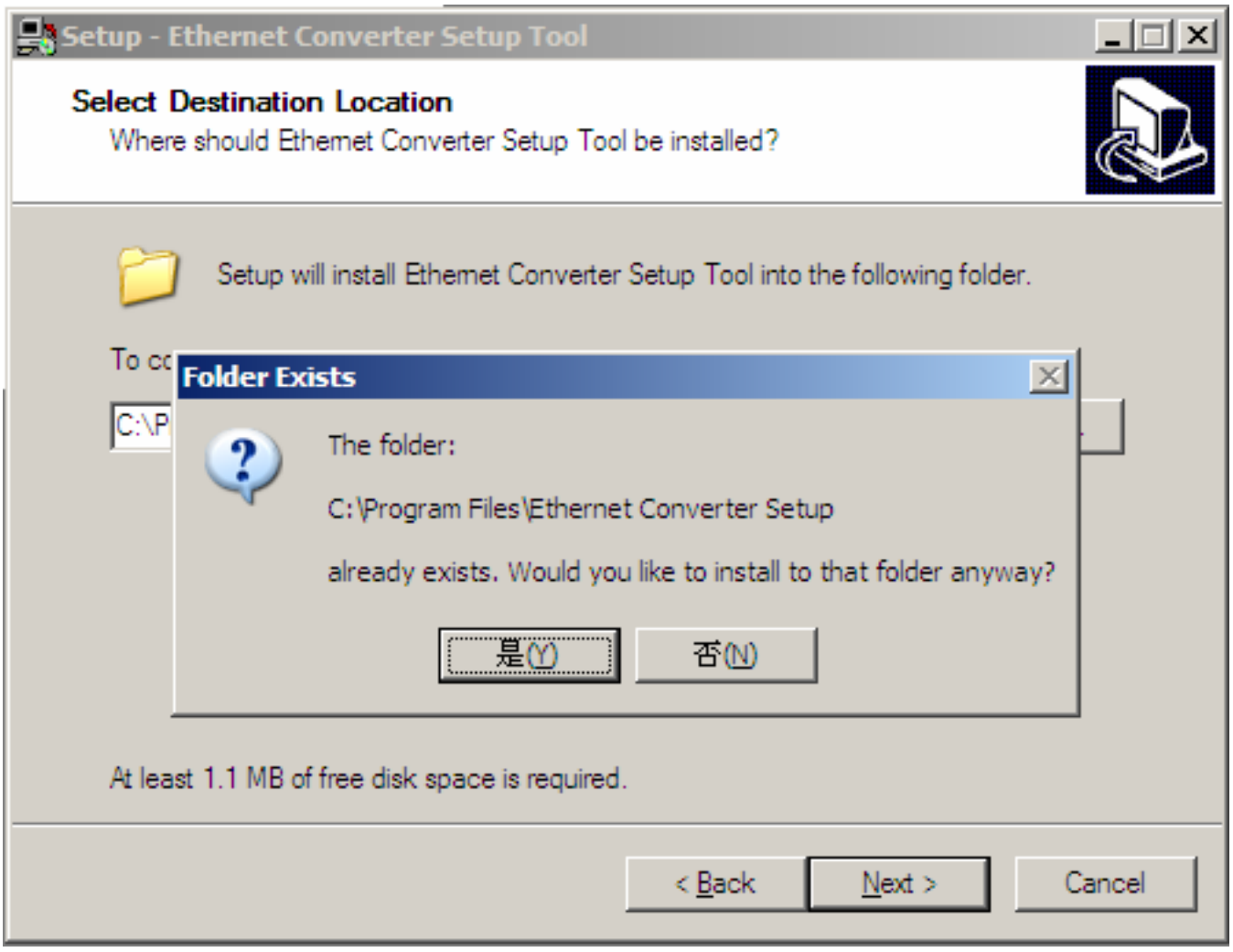


Figure5. Create Application Directory

Software Installation

A. Installation

Step 6: Create Program's Shortcut

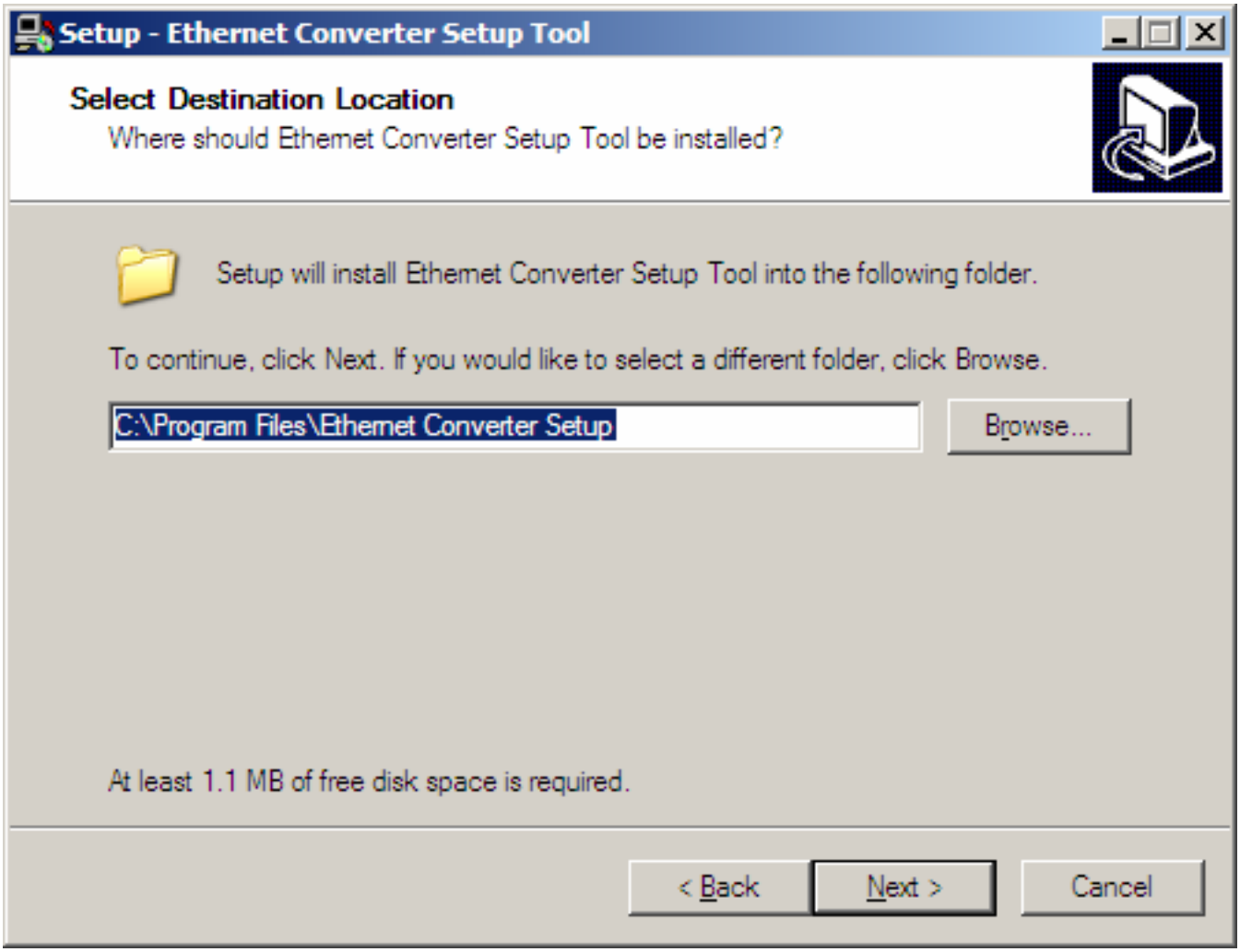


Figure6. Shortcut Creation

Software Installation

A. Installation

Step 7: Decide if Desktop icon needed

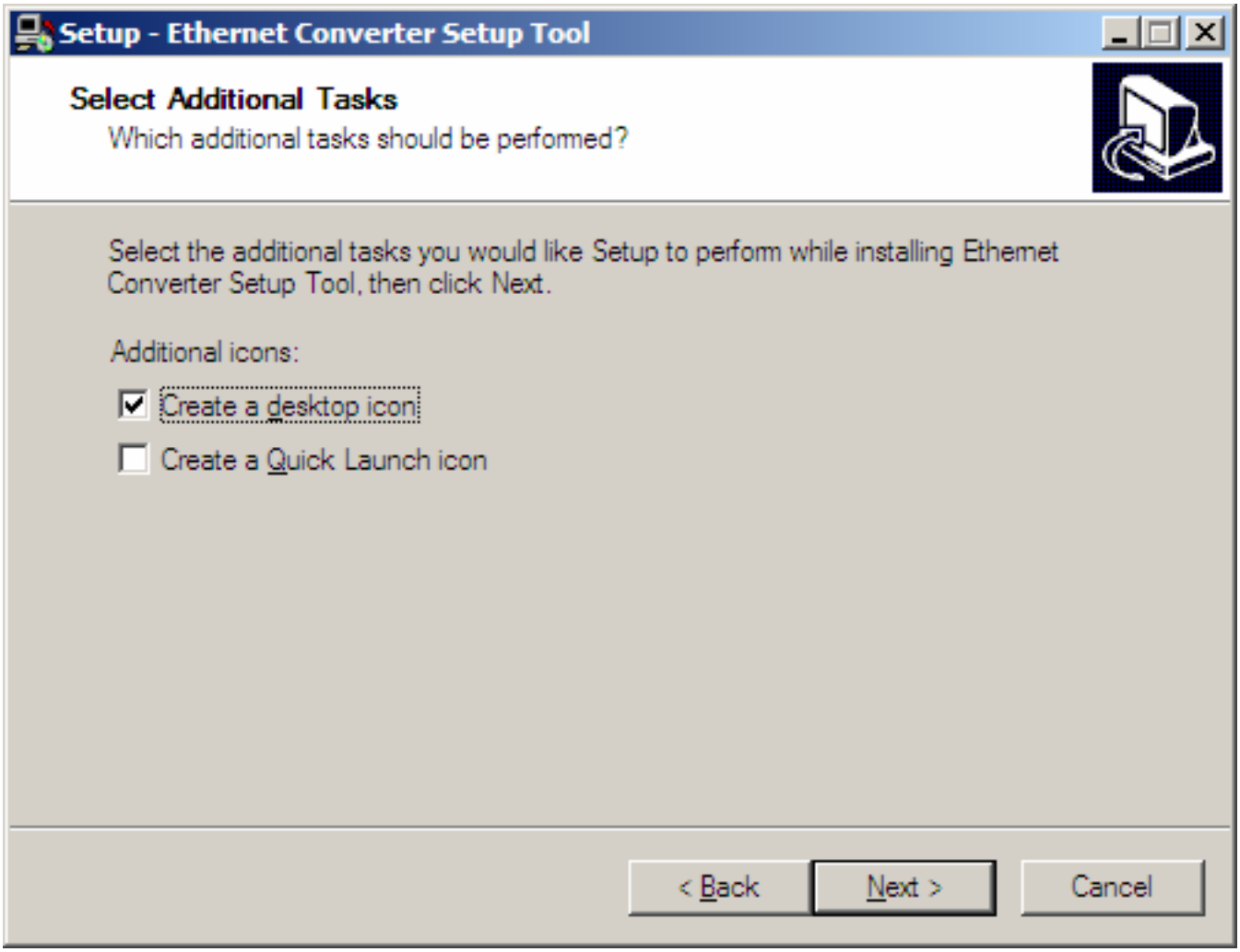


Figure7. Desktop Icon Creation

Software Installation

A. Installation

Step 8: Press Install to start installation

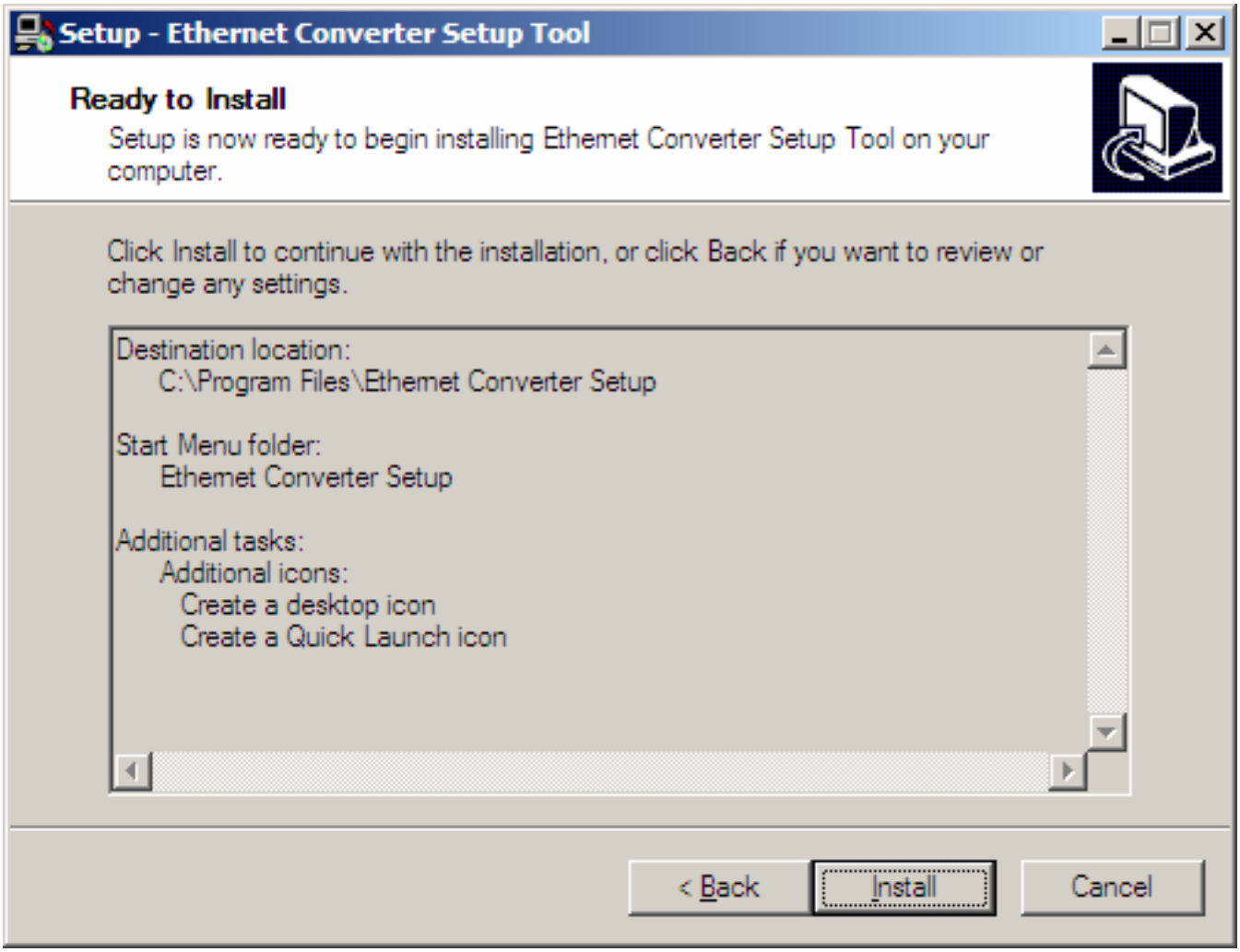


Figure8. Review the Installation Settings

Software Installation

A. Installation

Step 9: Process Installations

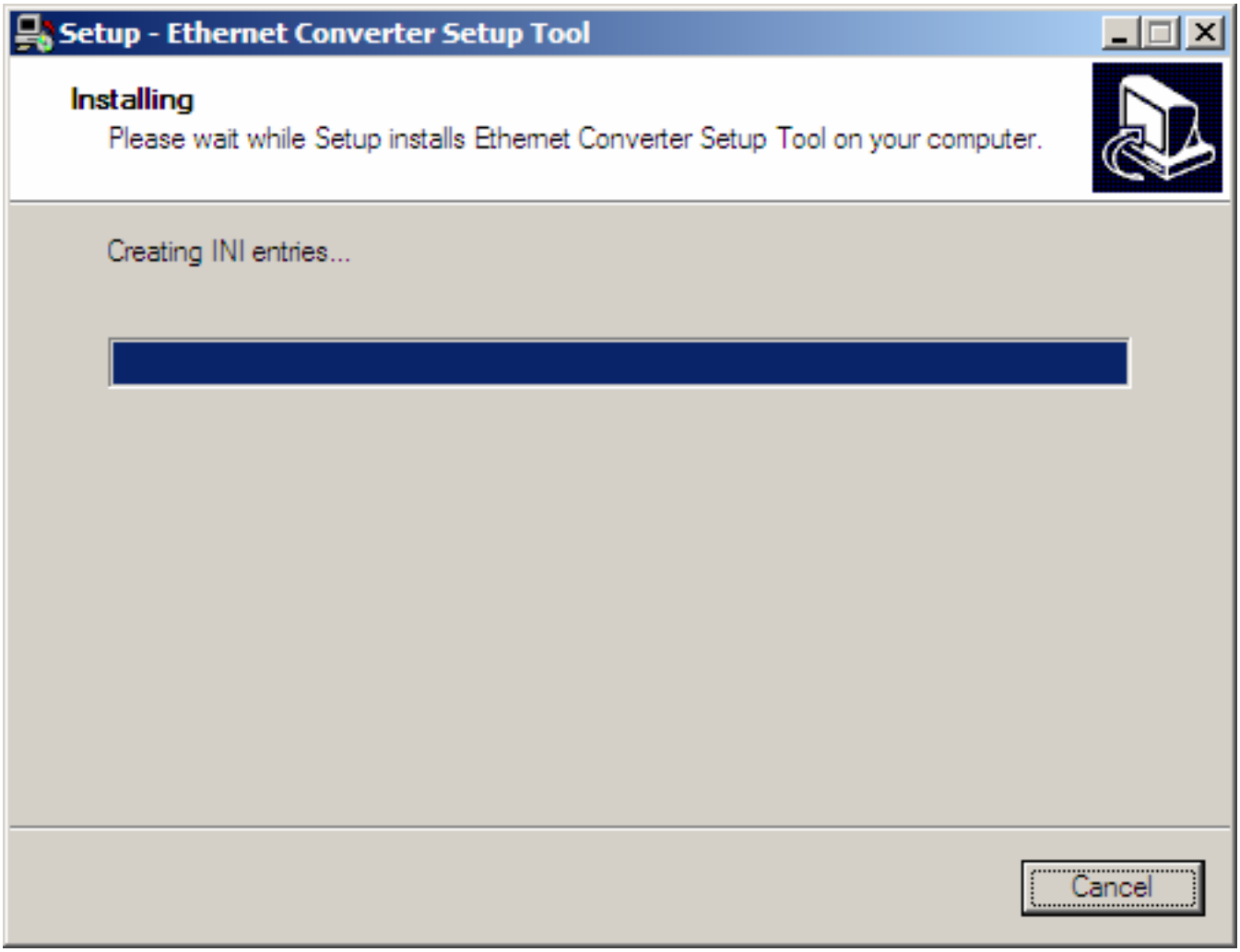


Figure9. Installing

Software Installation

A. Installation

Step 10: Finish Installation

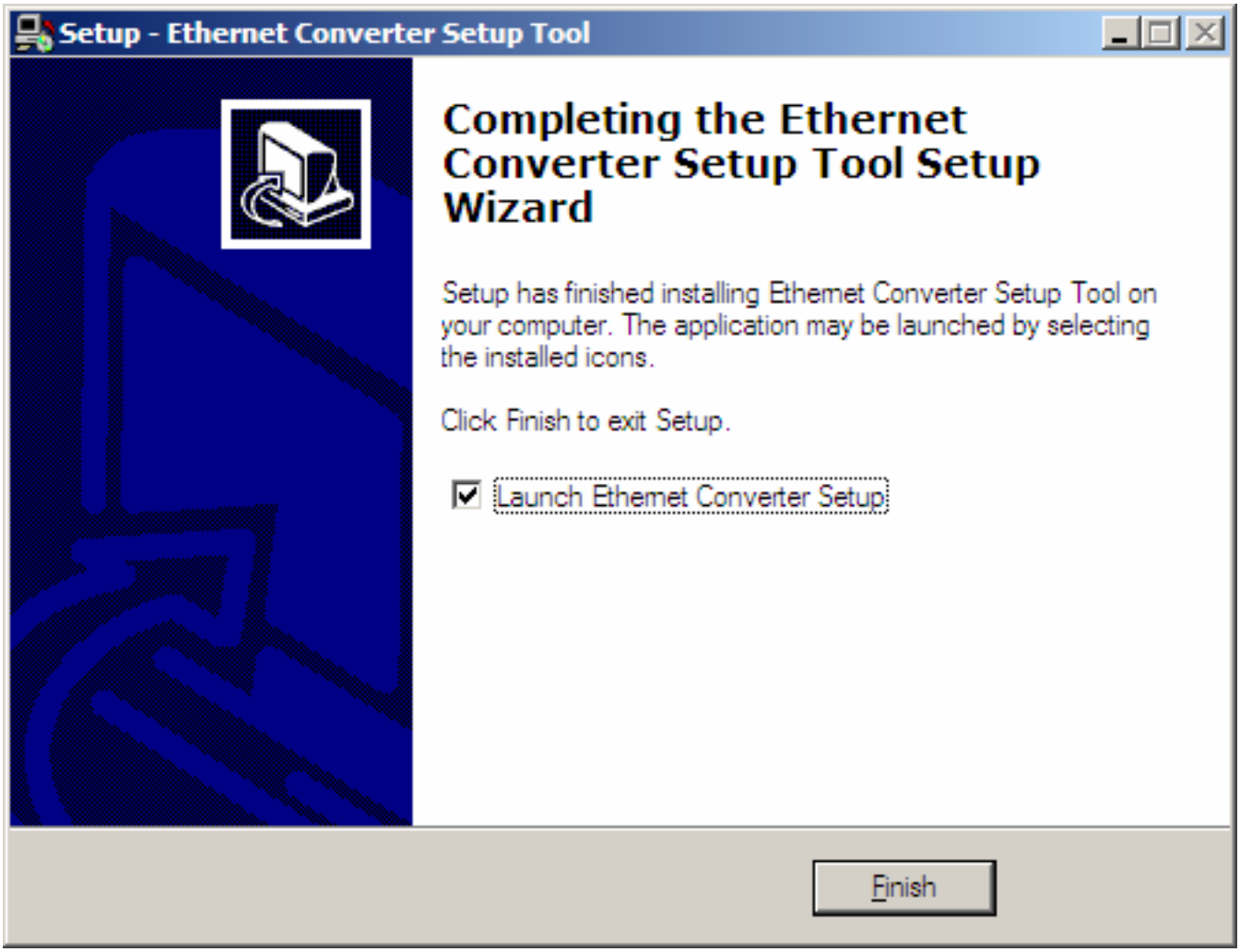


Figure10. Installation Finished

Software Installation

B. Uninstall

Step 1: Execute Uninstall Program

Uninstall Program is located at the application directory named “Uninstall Ethernet Converter Setup”. Execution of it could let the Ethernet Converter Setup Tools clearly be removed.

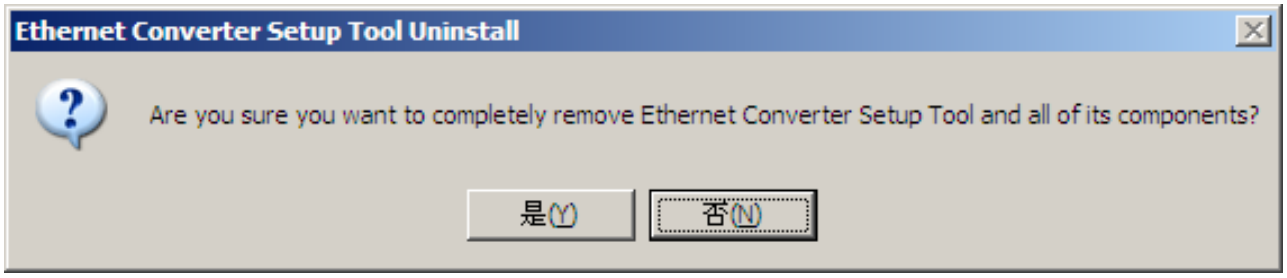


Figure11. Decide the Application Directory

Software Installation

B. Uninstall

Step 2: Click “Yes” to process

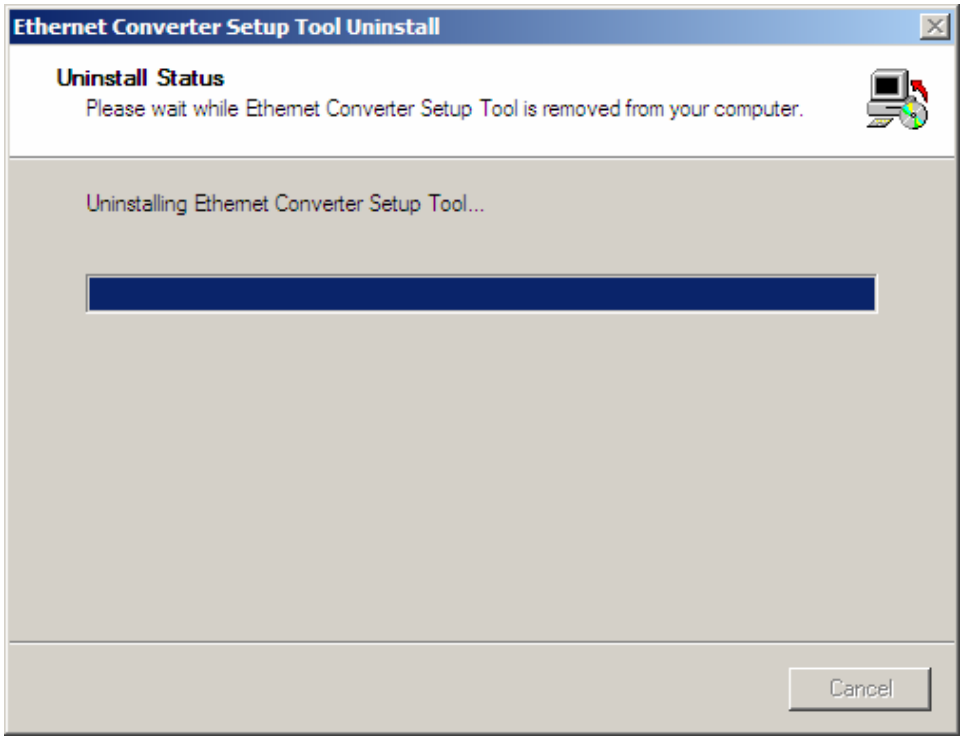


Figure12. Process Uninstall

Step 3: Finished

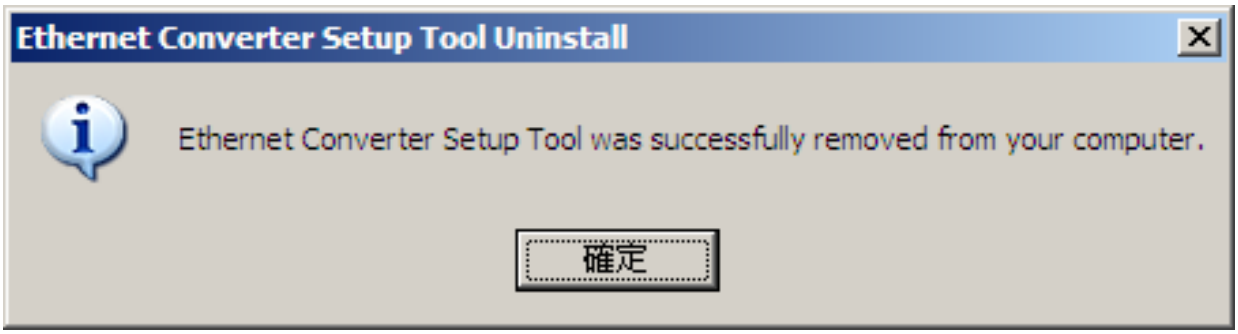


Figure12. Process Uninstall

Parameter Description

Parameter	Description
Local IP	The IP address of the WM-120 converter on the TCP/IP network. The default Local IP address is 192.168.1.250. This address should be unique. Ask your network administrator for assistance, if in doubt.
Subnet Mask	Identifying the network class which the WM-120 converter belongs to. The default Subnet mask is: 255.255.255.0 for Class C IP. Ask your network administrator for assistance, if in doubt.
Gateway IP	The IP address of the router. The default Gateway IP address is: 192.168.1.254, Ask your network administrator for assistance, if in doubt.
DHCP Client	If this option is enabled, that means the IP address, Subnet mask and Gateway IP address of the WM-120 converter are set dynamically by the DHCP Server. If the setting cannot be got from the DHCP server successfully, the WM-120 converter will use the last setup parameters for its configuration. The possible reason of this case is that the DHCP server is shutdown or not available. Ask your network administrator for assistance, if in doubt.

Parameter Description

Parameter	Description
SIO Port, Type Socket port of serial I/O, Type	➢ The local port number of the WM-120 converter to be contacted by other devices. The default value is 9925. And users need to choose one communication mode for the WS-100 converter. There are four different communication modes can be selected. They are TCP Server, TCP Client, UDP Server and UDP Client. ➢ TCP Server – The WM-120 converter will operate at the Passive or the TCP listen mode to receive TCP connection requests from the remote client device. ➢ TCP Client – The WM-120 converter will operate at the Active or the TCP Active mode to request establishing a TCP connection with the remote server device. ➢ UDP Server – The WM-120 converter will operate at the UDP Server mode to send and receive UDP datagram to/from the remote device. ➢ UDP Client – The WM-120 converter will operate at the UDP Client mode to send and receive UDP datagram to/from the remote device specified in Remote Host IP address and Remote Host Port. ➢ NOTE: SIO port number 502 is reserved for the Modbus/TCP protocol. When user connects the serial Modbus device running in Modbus/RTU Slave mode, the WM-120 converter can receive connection requests from Modbus/TCP Master device. Also when user connects the serial Modbus device running in Modbus/RTU Master mode, the WM-120 converter can connect to Modbus/TCP Slave device.

Parameter Description

Parameter	Description
DIO Port, Type	Reserved
SIO Baud Rate	The serial parameter settings: ➢ Baud Rate: 300 bps to 115200 ➢ Parity: None, Even, or odd ➢ Data Bits: 7, or 8 ➢ Stop Bit: 1, or 2
Socket I/O settings(baud rate, parity, data bits, stop bits)	
SIO Type	The serial interface types: ➢ RS232 ➢ RS232 with RTS/CTS control ➢ RS232 with RTS/CTS/DSR/DTR control ➢ RS485 half duplex mode ➢ RS422 full duplex mode
Type of serial I/O	
SIO Packets Gap	In some cases, for example, if the Modbus/RTU serial protocol is used, the completion of the message packet in the input buffer is determined by a character-to-character timeout. The SIO Packets Gap of WM-120 defines this timeout period.
SIO Inter-Character Gap	

Parameter Description

Parameter	Description
Remote Host IP	If the WM-120 converter is used in TCP client mode or UDP client mode, the Remote Host IP address must be specified to establish the connection with the designated HOST (server) only.
Remote Host Port	If the WM-120 converter is used in TCP client mode or UDP client mode, the Host Port No. must be specified. This is the port which the Remote Host IP listens for incoming data.
Slave Response Time Out	Expected Time Out for the response of slave machines
Device ID	Just Device ID for WM-120 devices

Parameter Description

Parameter	Description
TCP Link Time Out	When this option is enabled, the TCP communication will be disconnected by the WM-120 converter if there is no further TCP activity within the given timeout value.
Command Port	The WM-120 converter supports the command mode, which user can use to setup the parameters or get the information of the converter with UDP protocol from the remote host. The default Command Port number is 65535. The command port of the WM-120 converter should be set correctly while using the command mode. Please refer to appendix 1 for further

Parameter Description

Parameter	Description
Setup password	This password protects the Setup window of the WM-120 converter from unauthorized entry. To erase an existing password, just leave the Setup password text box blank.
Access password	If this password is configured, the remote host needs to send this access password one second periodically to the Check Status Port of the WM-120 converter; otherwise the data transfer request will not be accepted by the WM-120 converter. To erase an existing password, just leave the Access password text box blank.
Multi Sockets Arbitration Time Period	Arbitration Time period between multi sockets. Default is 0ms for single socket. And 20 ms is suggested when using multi sockets.

Application Notes

A. Description:

Firewall will make the program off normal, so one might choose the following solutions to Firewall program, "Disable" or "Exception".

B. Disable Firewall of Windows XP SP2.

Step 1: Execute "Windows Firewall"

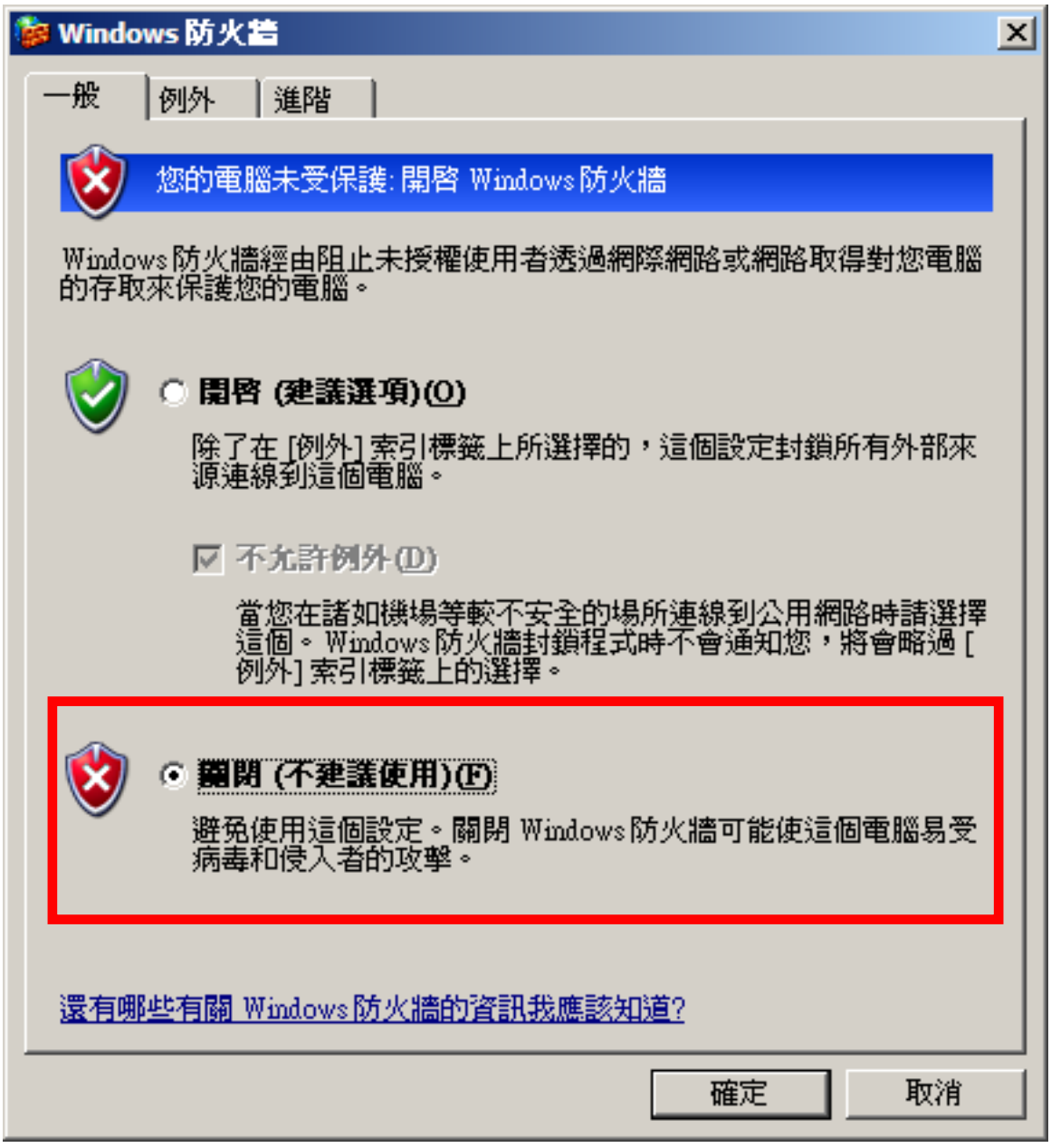
Execute "Windows Firewall" in Control Panel.

Application Notes

B. Disable Firewall of Windows XP SP2.

Step 2: Close the Firewall

Choose “Close” to close firewall.

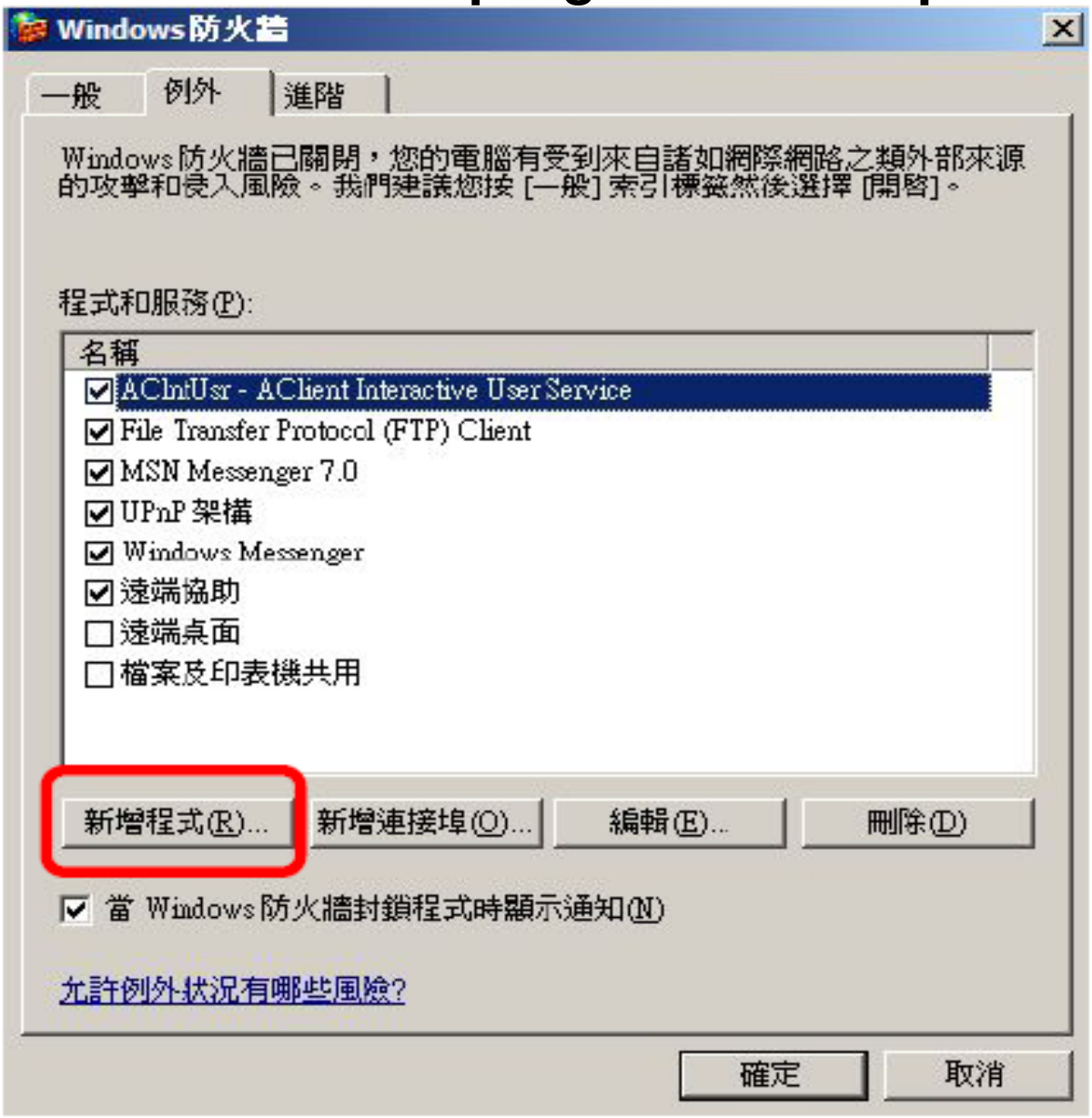


Application Notes

C. Make Program exception for Firewall

Step 1: Choose "Exception"

Choose “Exception” in Firewall Program.
And add on new program of Setup Tools.



Application Notes

C. Make Program exception for Firewall

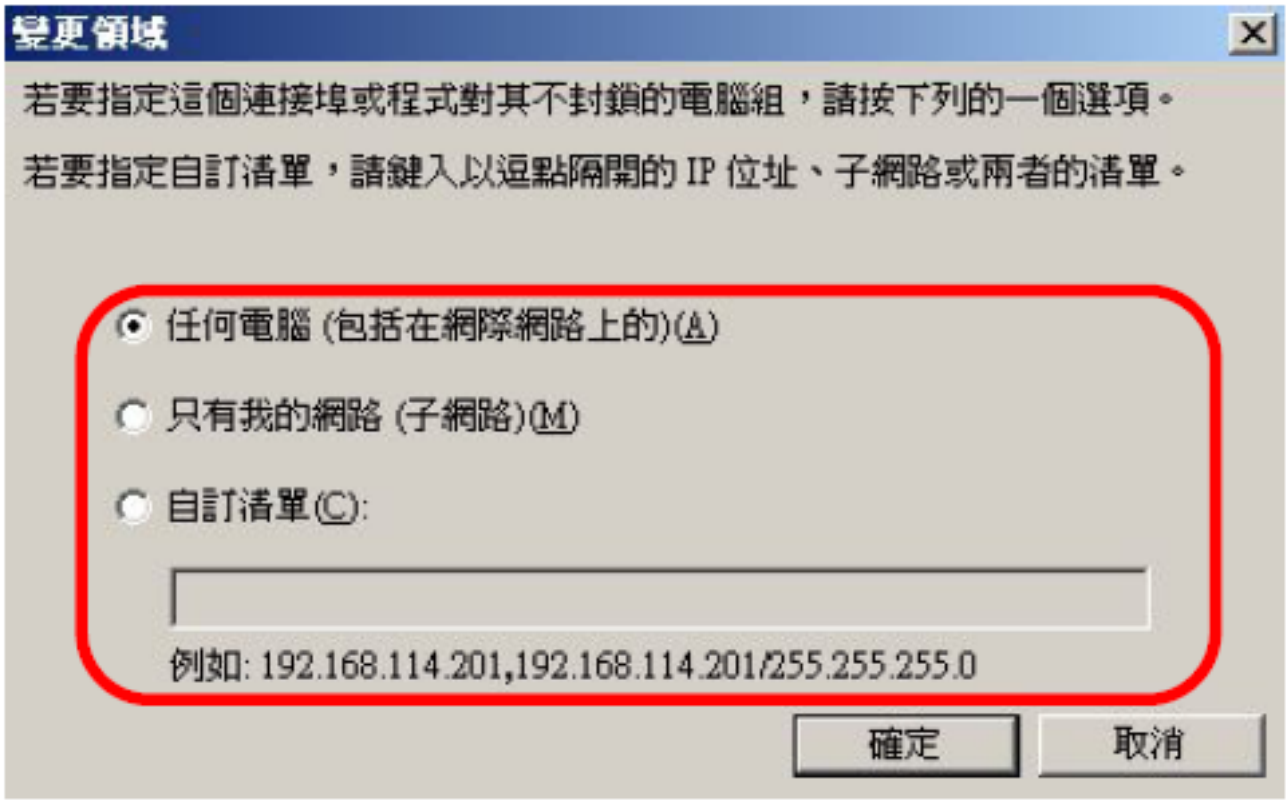
Step 2: Add on New Program and Selection Choose “Setup Tools” to make it as an exception.

Application Notes

C. Make Program exception for Firewall

Step 3: Allow "Accept Any Computer"

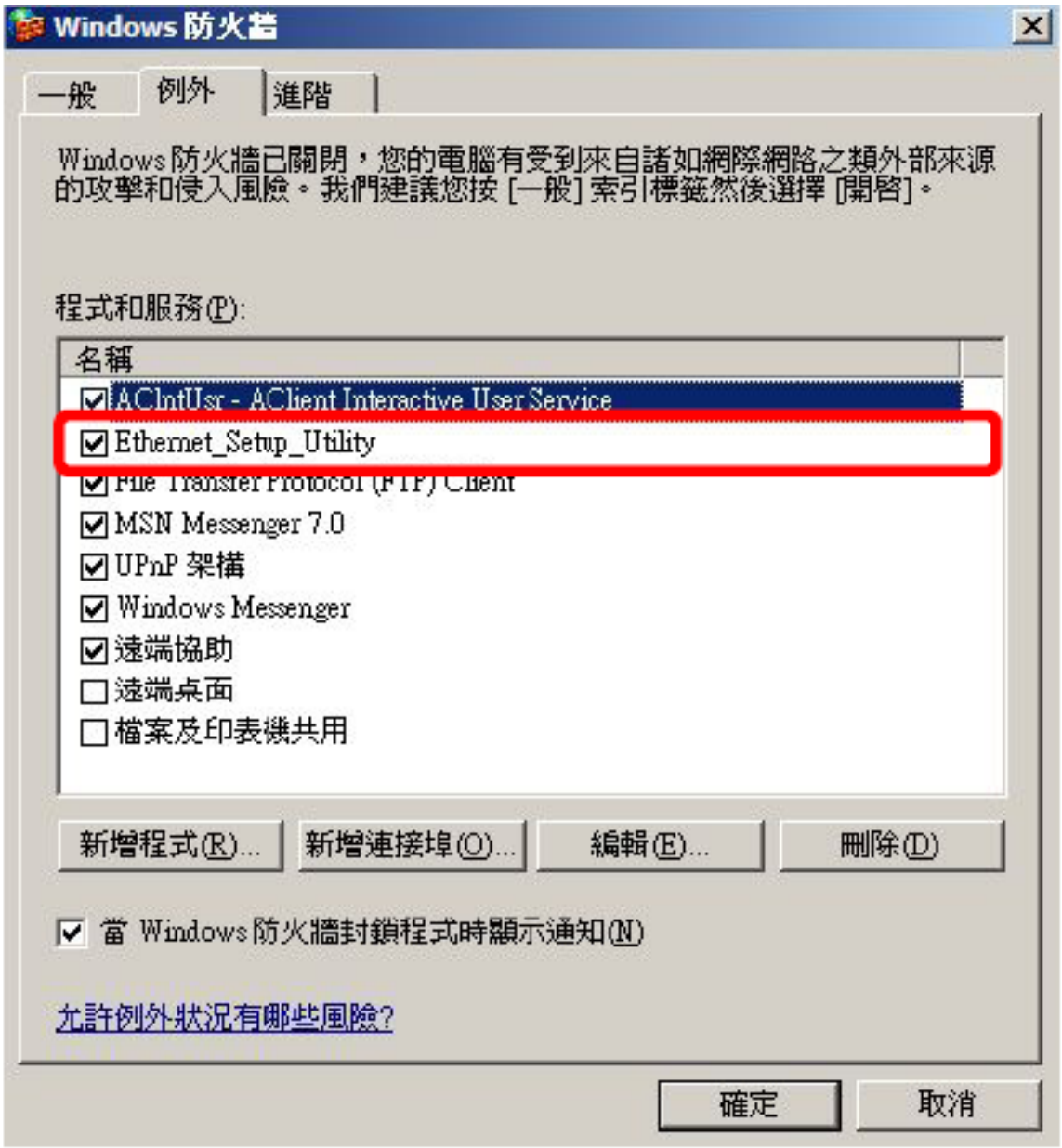
Allow “Accept Any Computer” to finish exception.



Application Notes

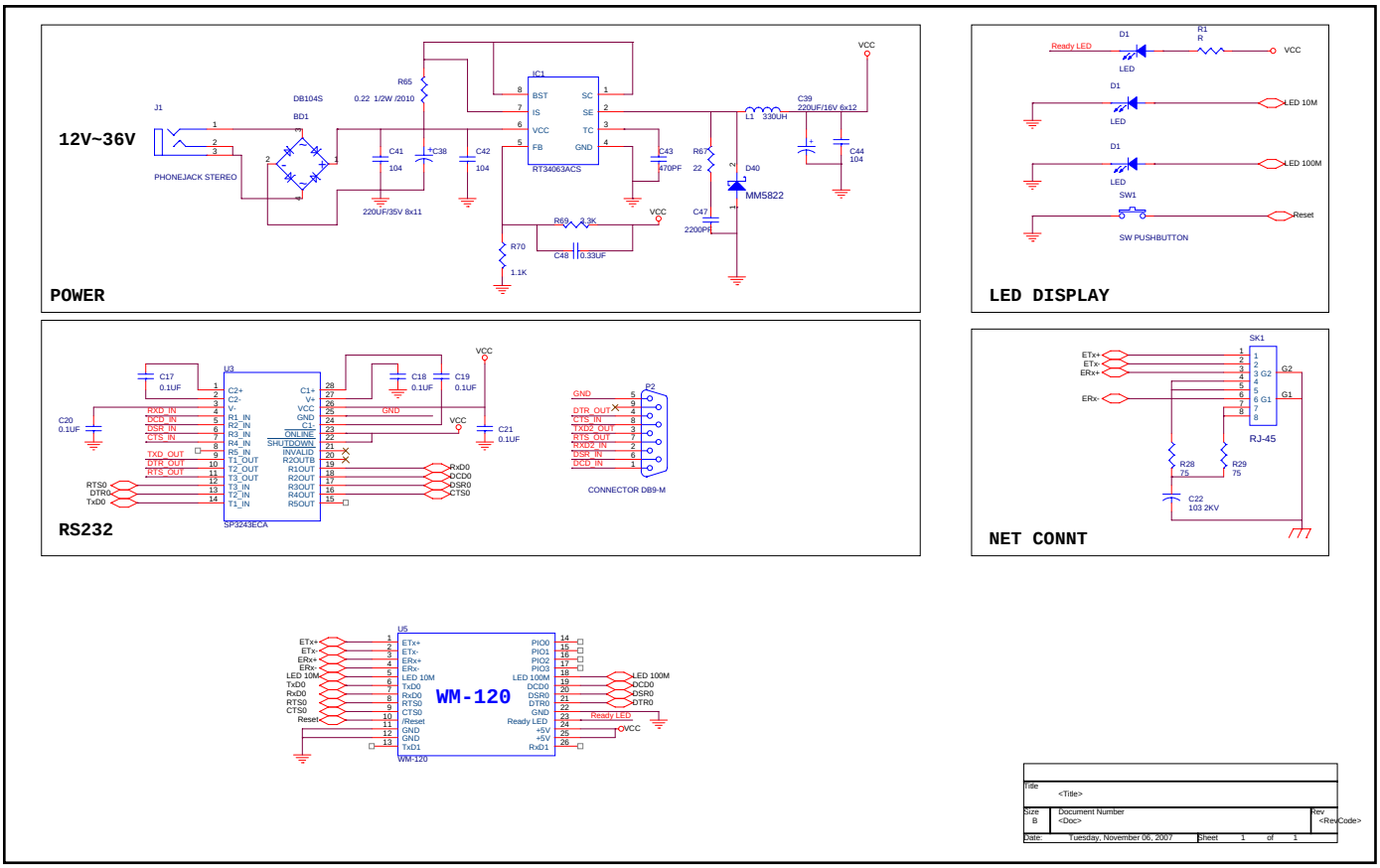
C. Make Program exception for Firewall

Step 4: Finished
Finish Exception.



Appendix

A. Application Circuit



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