

Select:

- networks
- products

Choosing a Network

The NetLinx™ Open Network Architecture is the Rockwell Automation solution that uses open networking technology for seamless, shop-floor to top-floor integration. The three networks that make up the NetLinx architecture-- DeviceNet, ControlNet, and EtherNet/IP-- share the same protocol, resulting in a common set of communication services. This protocol, known as the Common Industrial Protocol (CIP™), enables you to control, configure, and collect data over any of the NetLinx networks. The NetLinx architecture seamlessly integrates all the components in an automation system, from the simplest device to the Internet, helping you to improve flexibility, reduce installation costs, and increase productivity.

Selecting the Network That is Right For You

Your choice of network or networks for your application depends on many factors. Use the 5-step process in this section to choose your network:

1. What will you **do** on the network? See Table 1.1 and refer to About the NetLinx Networks on page 1-17 to determine how your network requirements correspond to our offerings.

IMPORTANT

In many applications, the best choice may be a combination of networks. The DeviceNet, ControlNet and EtherNet/IP networks share the same CIP protocol and can be easily used together. Each network is optimized for different performance, topologies, and functions to support different applications.

Table 1.1 Network Selection Requirements

Network requirements	DeviceNet	ControlNet	EtherNet/IP
control I/O	good (if low-density)	best	better
configure devices	best	best	best
collect data (in computers)	good	better	best
controller-to-controller (peer-to-peer) messaging	no	best	best
controller-to-controller (peer-to-peer) interlocking	no	best	better

- 2. Choose the devices** you will connect to the network:
 - determine if they connect directly or if you will need an I/O or communication interface
 - use the remainder of this document to choose Rockwell Automation devices

For information about	see section
DeviceNet products	2
ControlNet products	3
EtherNet/IP products	4

- for information on third-party devices, visit the following websites:

For information on this network	visit
DeviceNet	www.odva.org
ControlNet	www.controlnet.org
EtherNet/IP	www.odva.org

- 3. Determine whether the network capacity and topology support your network.**

For information about capacity and topology on this network	refer to	on page
DeviceNet	DeviceNet Capacity and Topology	1-6
ControlNet	ControlNet Capacity and Topology	1-9
EtherNet/IP	EtherNet/IP Capacity and Topology	1-14

- 4. Ensure that the system performance will be acceptable.** Performance estimates are not provided in this Selection Guide. Consult with your Rockwell Automation representative for help in estimating performance.

To estimate performance on this network	use
DeviceNet	the DeviceNet Performance Technical Note on the Rockwell Automation Technical Support Knowledgebase. To use the Knowledgebase to find the Technical Note, do the following: <ol style="list-style-type: none"> 1. Go to support.rockwellautomation.com. 2. In the left pane, click on Knowledgebase. 3. Scroll to the bottom of the page and click the Tech Note ID radio button. 4. Enter this Tech Note ID number: Q21284. 5. Click Find.
ControlNet	RSLogix 5000 and RSNetWorx for ControlNet built-in estimation tools
EtherNet/IP	the EtherNet/IP Performance and Application Guide, publication ENET-AP001

- 5. Consult with your Rockwell Automation representative to discuss your network choices.** Your representative can often save you time and money, while reducing the chance of having problems later.

About the NetLinx Networks

About the DeviceNet Network

The DeviceNet network, based on the proven Controller Area Network (CAN) technology, offers low installation cost, fast installation time, and increased access to data (i.e., diagnostics) to reduce or eliminate costly downtime.

DeviceNet is a cost-effective solution for low-level industrial device networking and an effective way to provide access to the intelligence present in those devices. A DeviceNet network allows you to connect devices directly to plant-floor controllers without hard-wiring each device into an I/O module. This direct connectivity reduces costly installation and time-consuming wiring.

The DeviceNet network is most often used in these types of configurations:

- applications in which nodes with a few points are spread out
- in a network of drives
- when you want to connect many devices directly to the DeviceNet network (many devices have built-in DeviceNet interfaces)
- when you require advanced diagnostic information

Rockwell Automation offers a complete line of DeviceNet products. Whatever you need-- controllers, I/O, sensors, operator interfaces, media, motor control, drives, motion control, or software-- we can supply it for your new DeviceNet application or an existing network.

About the ControlNet Network

ControlNet is a real-time control network that provides high-speed transport of both time-critical I/O and interlocking data and messaging data, including upload/download of programming and configuration data on a single physical media link. The ControlNet network's highly efficient data transfer capability significantly enhances I/O performance and peer-to-peer communication in any system or application where it is used.

ControlNet is highly deterministic and repeatable, and remains unaffected as devices are connected or disconnected from the network. This ensures dependable, synchronized, and coordinated real-time performance.

The ControlNet network is most often used in these types of configurations:

- as the default network for the ControlLogix platform
- as a substitute/replacement for the Remote I/O (RIO) network, because ControlNet handles large numbers of I/O points well
- as a backbone to multiple distributed DeviceNet networks
- as a peer interlocking network

Rockwell Automation offers a full array of ControlNet products, including controllers, I/O, operator interfaces, media, drives, motion control, and software. We have the products and know-how you need to set up a new ControlNet system, and the products and innovations you need to maintain and grow your existing applications.

About the EtherNet/IP Network

The EtherNet/IP network offers a full suite of control, configuration, and data collection services by layering the Common Industrial Protocol over the standard protocols used by the Internet (TCP/IP and UDP). EtherNet/IP uses TCP/IP for general messaging/information exchange services and UDP/IP for I/O messaging services for control applications. This combination of well-accepted standards provides the functionality required to support both information data exchange as well as control applications.

Another key feature of EtherNet/IP is that it uses commercial, off-the-shelf Ethernet components and physical media. This provides a cost-effective plant floor solution using a familiar and well-understood infrastructure.

The EtherNet/IP network is most often used in these types of configurations:

- as an economical solution for connecting many computers
- as the best choice when you want to connect many devices
- as the standard network for connectivity to enterprise systems
- as the least expensive HMI option when used with PanelView Plus
- in a star topology when nodes are grouped closely together

Rockwell Automation offers a full array of EtherNet/IP products, including controllers, I/O, operator interfaces, drives, and software. We have the products and know-how you need to set up a new EtherNet/IP system, and the products and innovations you need to maintain and grow your existing applications.

About Network Topology and Capacity

You will need to ensure your choice of network has enough capacity and supports a topology that is right for your application.