



Cisco Ethernet Switches in the Manufacturing Environment






Operational Excellence

Business Challenges	Switching Benefits	Product Functionalities
<p>Securely integrate automation and business systems. Increase productivity and asset utilization across multiple plant systems, factory floor, and the enterprise.</p>	<p>Ethernet to the Factory</p> <ul style="list-style-type: none"> ▪ Design for industrial environments: provide rugged, easy-to-use, secure infrastructure for industrial environments, which includes operation in extended temperatures, certification for elevated shock and vibration, and elevated surge protection. ▪ Converge IT and control: Prioritize, secure, and control traffic and critical production systems while allowing authorized access to manufacturing personnel, remote employees, and suppliers. ▪ Scale network architecture: Use network platform to increase worker productivity by enabling workers to be mobile, tracking valuable assets and resources wirelessly, and integrating automation systems with business applications for real-time access to plant performance information. ▪ Simplify operation management: Normalize and collapse disparate IT and facility management applications, allowing multiple systems to use data collected from each other. Enables operations policies to be intelligently set, resulting in lower total cost of ownership and reduced energy consumption and carbon emissions. 	<p>Design for industrial environments: Software configurations for industrial applications applied at the touch of a button. Compliance to a wide range of Industrial Ethernet specifications. Power input options, modular design for easy switch setup and replacement.</p> <p>Converge IT and control: Network virtualization to segment plant automation, facilities, voice and administrative traffic.</p> <p>Scale network architecture: Integrated wireless LAN controllers and enhanced Power over Ethernet (PoE) for 802.11n access points, enabling mobility and quality of service (QoS) for high-bandwidth applications, IP-based security systems, and factory automation.</p> <p>Simplify operation management: Network management tools and EnergyWise to monitor and regulate energy usage in facility and IT infrastructure.</p>
<p>Control manufacturing data and delivery to mobile workers. Improve plant flexibility and productivity, while maintaining a high level of data security.</p>	<p>Secure Wireless Plant</p> <ul style="list-style-type: none"> ▪ Secure manufacturing data: Securely transport sensor data throughout the plant to enable managers to gain greater insight into complex manufacturing processes, improving safety, compliance, and asset reliability while assuring confidentiality. ▪ Simplify operations and efficiency: Unite process-monitoring capabilities with an array of business capabilities, gaining more cost-effective, reliable, and simplified information-gathering processes. ▪ Maintain application availability: Provide ubiquitous wireless coverage in the harshest environments and a secure reliable backhaul for data from floor devices. 	<p>Secure manufacturing data and enable new automation tools: Identification and authentication of users and devices with network segmentation and virtualization to converge IT in secure manufacturing data.</p> <p>Simplify operations and efficiency: Diagnosis and response to events, wireless LAN connectivity, and PoE to support factory automation.</p> <p>Maintain application availability: High availability to minimize downtime and automate recovery.</p>
<p>Track and find assets and people to help solve manufacturing issues. Generate management efficiencies through improved resource allocation and reduced loss of assets.</p>	<p>Context-Aware Solutions</p> <ul style="list-style-type: none"> ▪ Simplify inventory management: Instantly identify current and missing equipments through real-time inventory and tracking systems and prevent the loss of high-valued equipment. Enable the adoption of preventive safety measures and the implementation of an active alert system, monitoring safety concerns. ▪ Support continuous-improvement applications: Use diagnostic operational processes and actual practices by tracking the location and movement of primary assets, hence increasing asset utilization throughout the supply chain. 	<p>Simplify inventory management: Wireless LAN connectivity and PoE to support location-based services.</p> <p>Support continuous-improvement applications: Diagnostics and control tools use integrated wireless LAN, PoE, and EnergyWise functionalities to generate continuous improvements.</p>



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Switching Features					
Product Functionalities	 Cisco Catalyst 2960	 Industrial Ethernet 3000	 Cisco Catalyst 3750-E	 Cisco Catalyst 4500	 Cisco Catalyst 6500
Converge IT and Control	<ul style="list-style-type: none"> QoS to prioritize specific applications and traffic types Virtual LAN (VLAN) Express setup using configuration wizard EnergyWise 	<ul style="list-style-type: none"> QoS to prioritize specific applications and traffic types Layer 2 switching feature sets, ease of use in configuration, management and replacement LAN management solution tools with Cisco® Network Assistant, CiscoWorks, and factory management tools 	<ul style="list-style-type: none"> QoS to prioritize specific applications and traffic types VLAN EnergyWise 	<ul style="list-style-type: none"> QoS to prioritize specific applications and traffic types VLAN EnergyWise 	<ul style="list-style-type: none"> QoS to prioritize specific applications and traffic types VLAN Integration with LAN management solution (LMS) and other network-level management systems EnergyWise*
Scale Network Architecture	<ul style="list-style-type: none"> PoE 	<ul style="list-style-type: none"> Easy switch replacement with Cisco IE Swap drive Integration with factory management tools (CIP, Profinet) 	<ul style="list-style-type: none"> Enhanced Power over Ethernet (ePoE) 	<ul style="list-style-type: none"> ePoE Power over Ethernet plus (PoE+) 	<ul style="list-style-type: none"> ePoE Integrated wireless LAN controller
Secure Manufacturing Data and Enable New Automation Tools	<ul style="list-style-type: none"> Virtual LAN (VLAN) Port- and identity-based security framework 	<ul style="list-style-type: none"> VLAN Port- and identity-based security framework 	<ul style="list-style-type: none"> VLAN Network Admission Control (NAC) security framework, port- and identity-based security 	<ul style="list-style-type: none"> VLAN NAC security framework, port- and identity based security 	<ul style="list-style-type: none"> VLAN NAC security framework, port- and identity based security, VPN SPA IPsec service modules Firewall service modules
Simplify Operations and Improve Response Time	<ul style="list-style-type: none"> Auto SmartPorts to automatically detect and configure attached devices IP Service Level Agreements (IP SLAs) performance management Simple Network Management Protocol (SNMP) and Management Information Bases (MIBs) 	<ul style="list-style-type: none"> SmartPorts to automatically configure attached devices IE Swap drive with easy switch replacement Integration of factory management tools with Channel Interface Processor (CIP) and Profinet, Device Manager 	<ul style="list-style-type: none"> Auto SmartPorts to automatically detect and configure attached devices IP SLAs performance management SNMP and MIBs 	<ul style="list-style-type: none"> SmartPorts to automatically configure attached devices Diagnosis applications: Smart Call Home, Generic Online Diagnostics (GOLD). IP SLA performance management SNMP and MIBs 	<ul style="list-style-type: none"> SmartPorts to automatically configure attached devices Diagnosis applications: Smart Call Home, GOLD IP SLA performance management SNMP and MIBs Embedded Event Manager allows for optimized event response
Maintain Application Availability	<ul style="list-style-type: none"> Redundant Power System (2300W) Flexlink for link redundancy with <100ms convergence time 	<ul style="list-style-type: none"> Redundant Power System Fast ring convergence with Cisco Resilient Ethernet Protocol (REP) 	<ul style="list-style-type: none"> Redundant Power System (2300W) Cisco StackWise® Plus for network availability with cross stack EtherChannel and Layer 3 NSF Flexlink for link redundancy with <100ms convergence time 	<ul style="list-style-type: none"> Dual power supply (4200W) Redundant supervisors In-Service Software Upgrade (ISSU) Reduced downtime with Nonstop Forwarding (NSF) and Stateful Switchover (SSO) Flexlink for link redundancy with <100ms convergence time 	<ul style="list-style-type: none"> Dual power supply (8700W) Redundant supervisors Reduced downtime with NSF and SSO Virtual Switching System (VSS)

* EnergyWise will be available on the Cisco Catalyst 6500 in 2010