



Extronics is a leading UK company specialising in the manufacture and supply of a diverse range of intrinsically safe and explosion protected electrical and electronic equipment. Extronics sources equipment from all over the world, so whatever your need, from standard products to specialised packages, engineered solutions, training or certification, let Extronics be your partner.

Specialist Products

Extronics is continually enhancing its product range for use in potentially explosive atmospheres in order to provide one of the most comprehensive portfolios of product for the UK and International market.

The product range embraces technology to meet with the requirements for applications within Process Automation, Monitoring and Control, Electrical Installation, Test, Calibration as well as the emerging and dynamic Communications arena providing the infrastructure for WLAN (Wireless Local Area Networks).

Extronics hosts two comprehensive websites where information on the product range is available as well as incorporating useful sections on Ex standards and related material.

Engineered Solutions, Bespoke Certification and Development

The ATEX Directive has increased the demand for bespoke solutions in many areas of industry including the Chemical, Pharmaceutical, Oil and Gas industries which have applications where standard products on the market are not always suitable in their own right for the user's requirements.

Extronics multidiscipline capability matched with a high level of expertise and ingenuity provides the diversity necessary to engineer solutions based upon the various concepts of protection for applications in the hazardous environment.

Whether the requirement is a simple Explosion proof enclosure or a complex package of equipment every application is augmented with a comprehensive documentation portfolio including all the appropriate certification.

Extronics has many years of experience of developing products for hazardous areas and offers a re-engineering service to OEM's to provide them with a fully certified version of their standard safe area product, which can include its contract manufacture if required.

Training and Certification Services

The ATEX directive introduced new legislation that is now embedded within the legal system which includes the need for the end user to have an Explosion Protection Document (EPD) for their hazardous areas or the training of personnel that work in these areas.

Extronics offers a range of services that can be tailored to meet specific requirements from complete EPDs, embracing risk assessment and area classification, to onsite courses covering the ATEX Use Directive and the Installation and Maintenance of Hazardous Area Equipment.

Engineers who have extensive experience of operating in hazardous areas, as well as having been employed in the capacity of certifying officers in some of the leading Control Notified bodies provide these services.

Wireless Networks for Extreme Environments



WiFi ● Zone 1, 2, 21 & 22 ● 802.11 b/g/a ● Redundant ● Mobile Computing ● Antennas ● VOIP ● Access Points
MESH Routers ● Client Bridges ● RFID ● Telemetry ● Asset Visibility ● Automatic Mustering & Personnel Location



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Introduction

In today's highly competitive world manufacturers and service companies in the Oil & Gas, Chemical and Pharmaceutical process industries must ensure optimum efficiency to remain competitive and achieve the expected return on investment.

Over the last decade or so the introduction of PC based control systems and software applications have enabled large cost savings and provided management with visibility over their operations. However the majority of these systems and solutions have been based on fixed workstations located in a control room or on plant meaning that workers can only interface with these systems in their locality.

The high cost of installing cabling to facilitate infrastructure such as system I/O in areas of plant deemed "non process critical" means that large amounts of plant data is effectively trapped on "data islands" as it has remained uneconomical to gather and transmit back to central control or management information systems.

With the latest modern wireless local area networks (WLAN) based on the worldwide 802.11 standard a whole new era is born. The next step change to process optimisation, efficiency gain and plant data visibility is now possible using Extronics wireless networks and wireless equipment. Applications once deemed impractical and too costly are now a commercial reality.

Extronics offers part or complete solutions to OEM's, System Integrators and End Users depending on the scope of the project. Whether it is hardware supply, network design, site surveying or commissioning Extronics has the solution for your hazardous area and extreme environment networking applications.

Welcome to our wireless world!



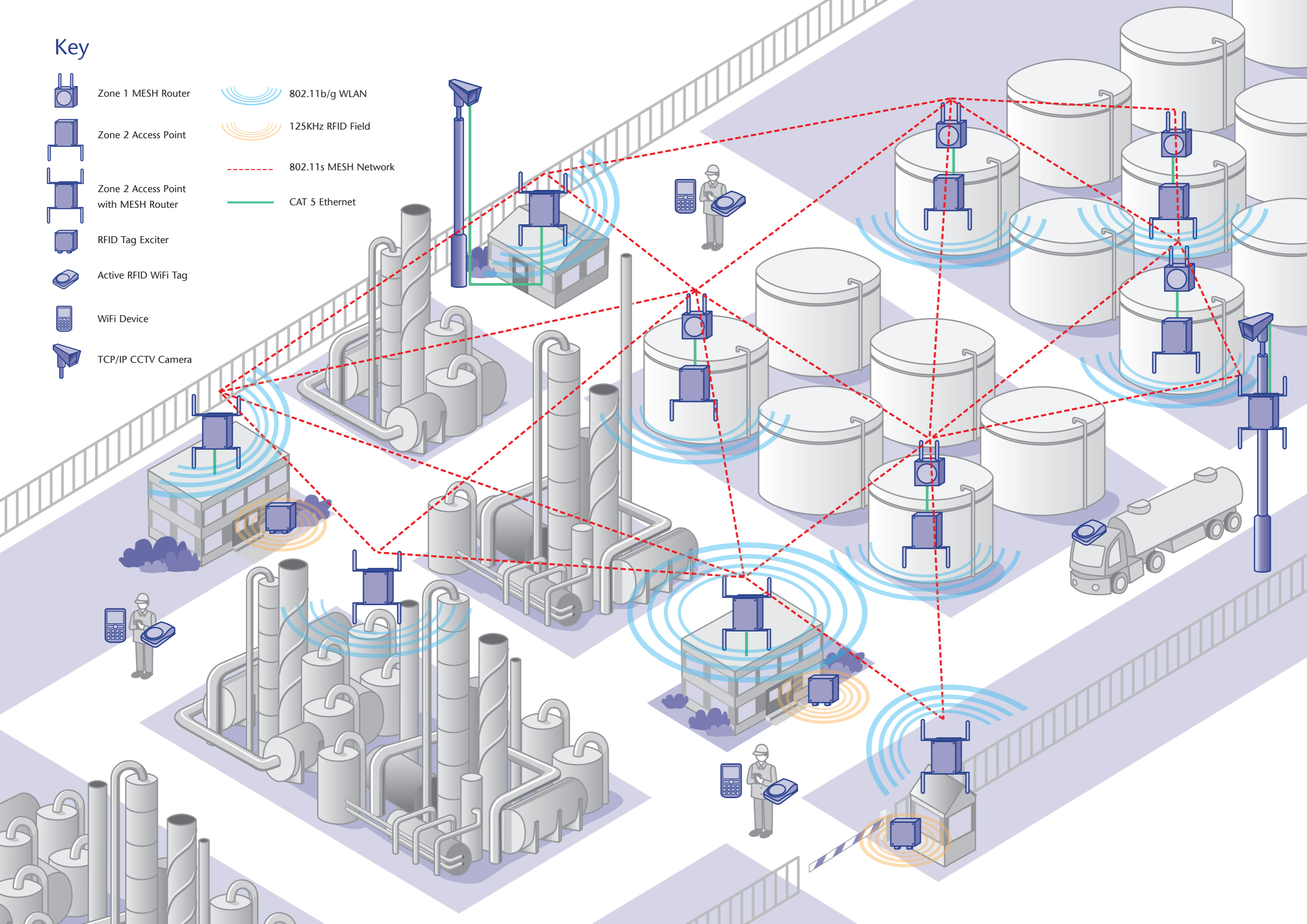
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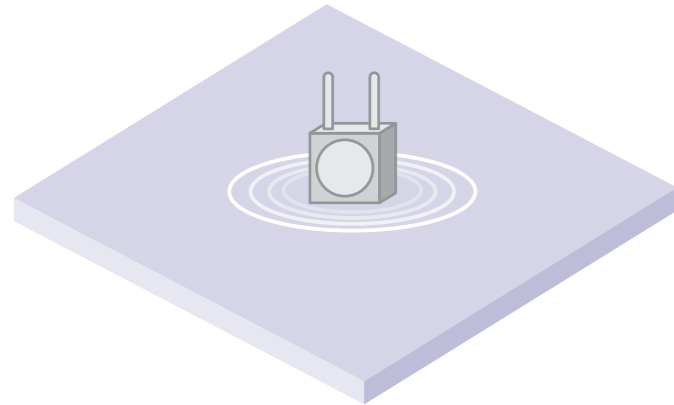
Key

- Zone 1 MESH Router
- Zone 2 Access Point
- Zone 2 Access Point with MESH Router
- RFID Tag Exciter
- Active RFID WiFi Tag
- WiFi Device
- TCP/IP CCTV Camera

- 802.11b/g WLAN
- 125KHz RFID Field
- 802.11s MESH Network
- CAT 5 Ethernet

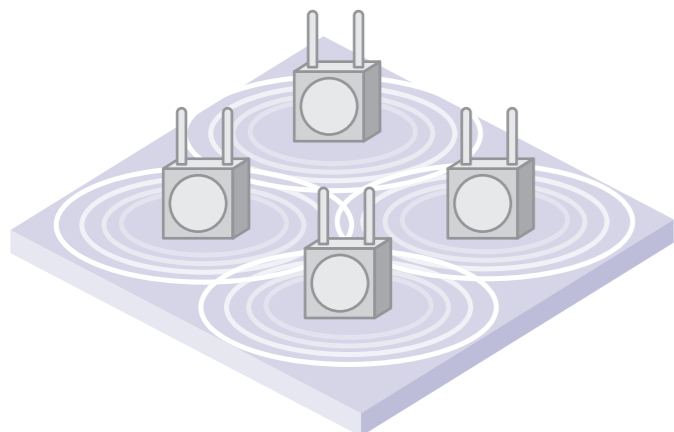


Applications



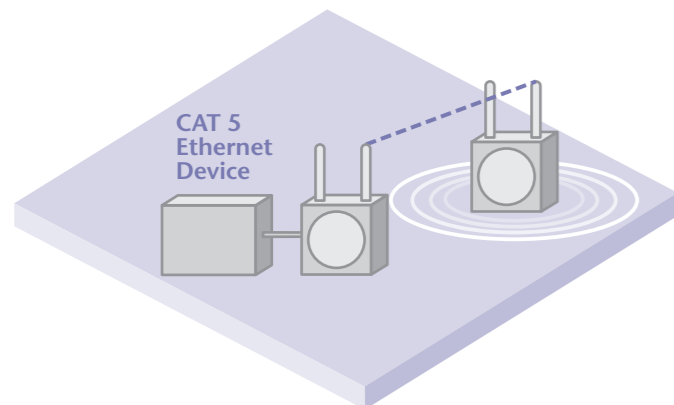
Hotspot WiFi Coverage

An isolated access point provides WLAN coverage in a defined area dependant upon the type of antenna used and the environment it is installed in. Useful to enable localities in a plant where WLAN access is possible.



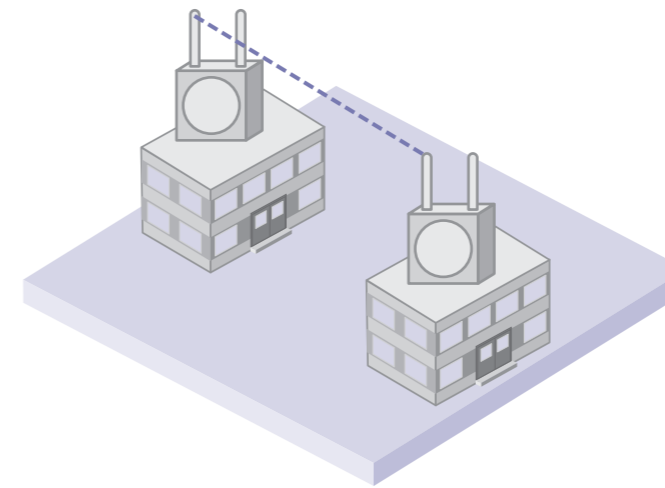
Cellular WiFi Coverage

Similar to example one in that it involves installing several access points with each one's coverage area overlapping the other slightly. Complete sites can be covered with WLAN access allowing users to roam from one cell to the next automatically.



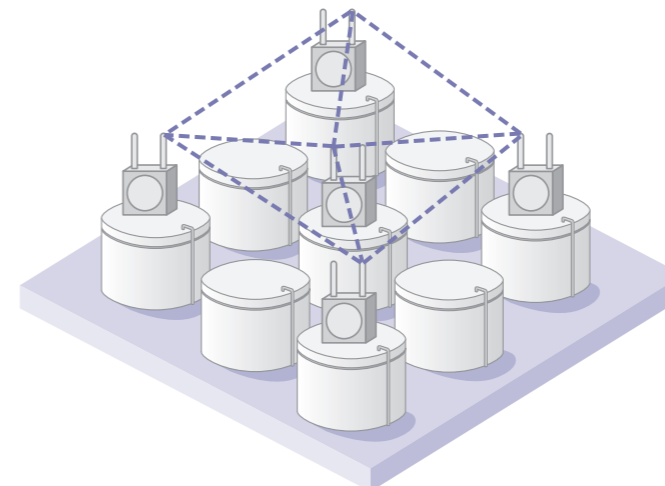
Client Bridge

Many electronic automation and control devices have an ethernet or RS232 port but no wireless connectivity. Simply adding a client bridge enables these devices to be connected to the WLAN.



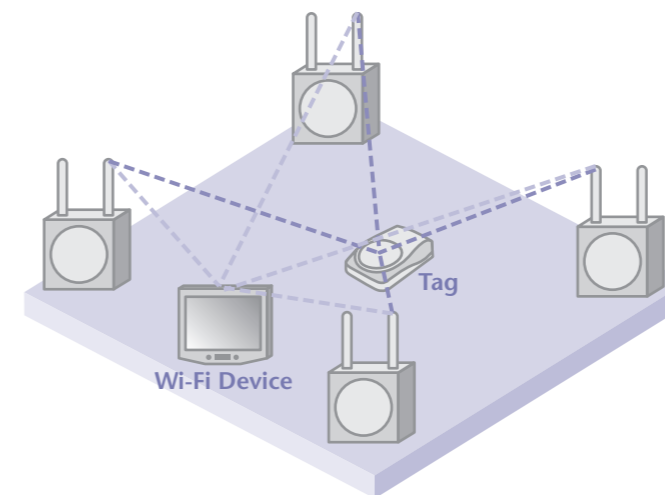
Network Bridge

Buildings on a plant will often have fixed LANs just for connectivity between devices in that location. A wireless bridge offers an economical solution to connect together two areas of LAN by means of a wireless link avoiding expensive trenching and cabling or fibre costs.



MESH Network

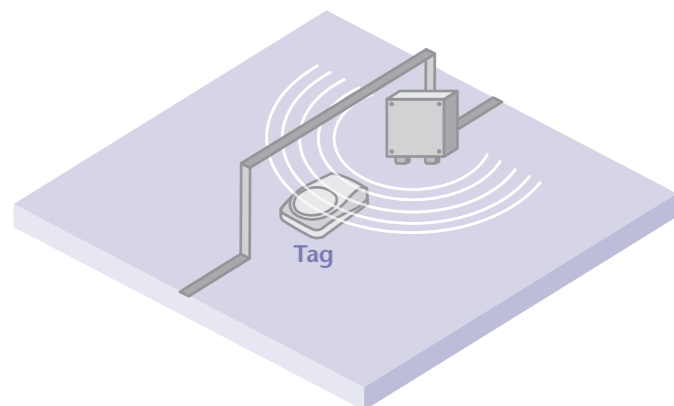
A wired Ethernet backbone is expensive to install due to trenching and cabling or fibre costs over long distances. A wireless MESH network provides an Ethernet back haul for WLAN access points or other Ethernet enabled devices such as CCTV cameras.



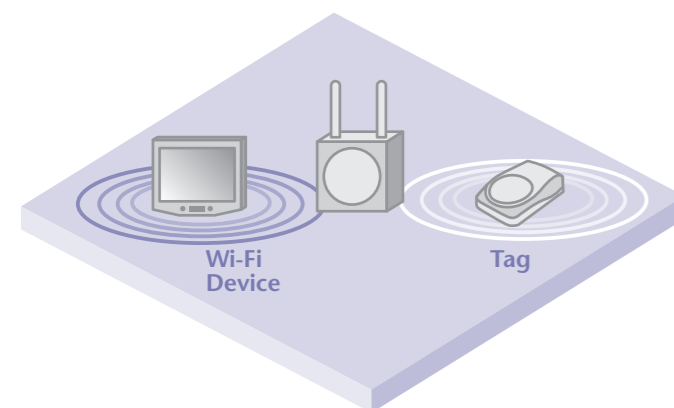
Location Tracking – Position by Triangulation

At least three access points or location receivers determine the position of a tag using either the tag's RSSI (received signal strength indicator) or TDOA (time difference of arrival) of the tag's radio signal allowing calculation of the location to between 3 to 10 metre accuracy.

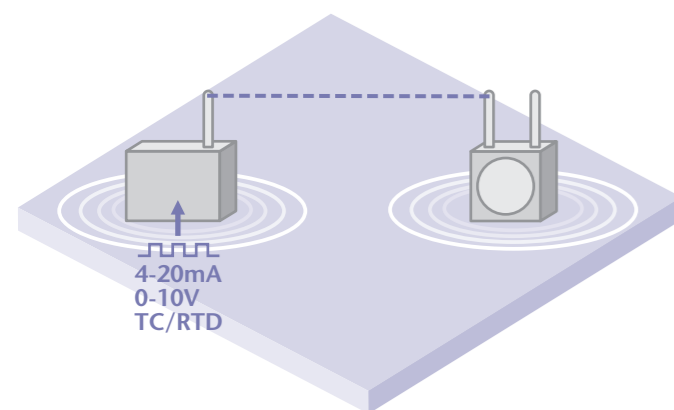
Applications



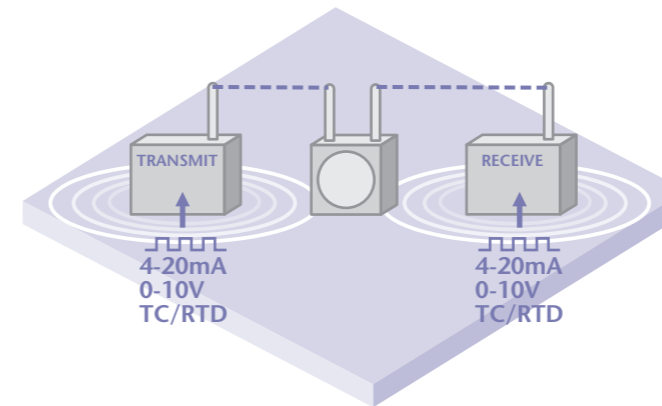
Location Tracking – Choke Point Detection
 In locations such as entries and exits Extronics Tag Exciter causes the tag to transmit and its location is then known to be within the field of the Exciter. Direction of movement can be measured using two Exciters and large gates or areas can be covered with chained Exciters.



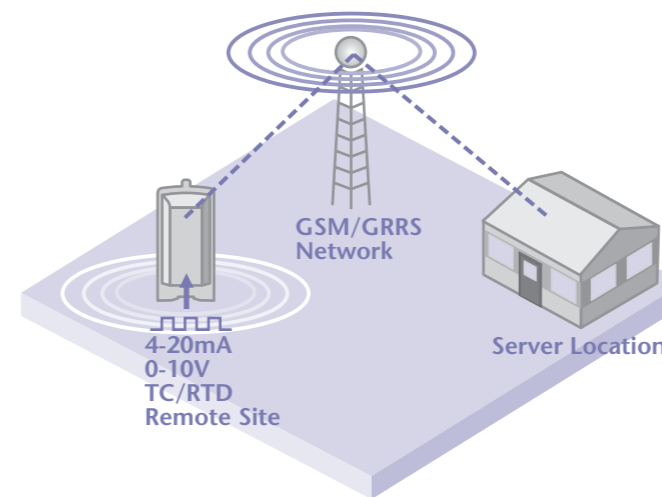
Location Tracking – Presence Detection
 This method of location of an Extronics WiFi tag or WiFi device is zone based, hence only to the vicinity of a particular access point or location receiver.



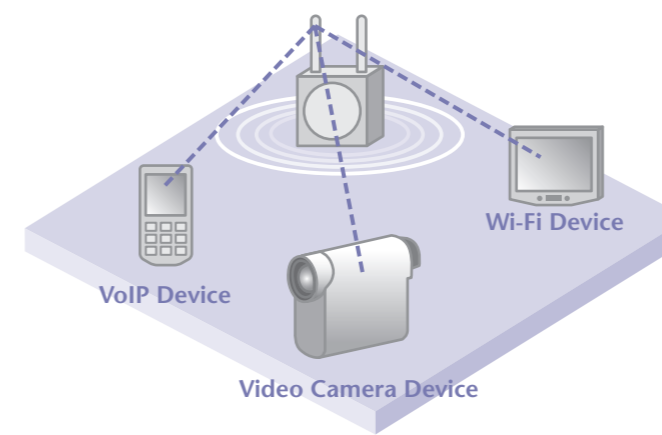
Telemetry – WiFi or MESH Network
 On a large Process Plant there are many variables that may need to be measured that were not originally considered when the plant was first built. To add the extra infrastructure would be too costly but utilising Extronics WLAN remote I/O it is possible to transmit signals such as 4-20mA, 0-10V, TC/RTD and pulses back to the main servers over the wireless network.



Telemetry – Signal Mirrors – WiFi or MESH Network
 This application is similar to the previous but the difference is that instead of having a host software application to receive the transmitted signals and display them by software, the signals are mirrored and repeated in another location for use by conventional instrumentation.



Telemetry – GSM/GPRS Network
 In some locations a WLAN or MESH based network cannot provide a solution due to the remoteness of the location or the lack of installed WiFi infrastructure. In this instance our GSM/GPRS solution utilises the mobile telephone networks which offer coverage in almost all areas of the world. The data is measured and stored locally by the battery powered RTU and offloaded on a regular basis using the GSM/GPRS network to a central server.



Communications – WLAN Data, Voice and Video
 Industry standard WLANs can be used for many communication applications such as mobile PCs for data collection, voice calling using the VoIP protocol with “push to talk” functions to replace conventional radios. Visual communication by the use of wireless CCTV cameras offers complete visibility of plant for maintenance, inspection and security.

Wireless Access Points

Universal Multi Vendor Wireless Network Solutions

Extronics offers custom designed explosion proof enclosure systems for a wide range of wireless networking hardware for leading vendors Access Points and MESH Routers making it possible to install the wireless hardware that is being utilised in your safe areas into zone 1/21 and zone 2/22 hazardous areas.

Our solutions are designed and then certified by a Notified Body to incorporate specific vendor's wireless hardware such as that from Aeroscout, Aruba, Cisco, Firetide, Meru, Motorola and Trapeze. Each iWAP Enclosure is supplied with all the required internal power supplies, cable routing, fixtures and fittings to suit the specific vendors Access Point or other wireless hardware. Other optional features include surge arrestors for lightning protection, fibre ethernet, POE and serial ports and low temperature/ anti-condensation heaters.

Your wireless infrastructure investment is safe with an Extronics hazardous area solution. One of the most costly parts of a WLAN deployment is the installation and cabling costs. This only needs to be carried out once as the enclosure systems will continuously be recertified to allow the latest generation wireless hardware to be installed in them, allowing upgrading of the internal wireless hardware without needing new enclosure installation.

If there is a particular device that is not included in our list of approved designs we can assess if it is possible to install by checking they meet certain physical criteria.

iWAP MOBILE

Zone 1 Portable WLAN System

- Zone 1 certified
- 2 II GD or 3 II GD (depends on the internal hardware used)
- IP66
- Leading WLAN hardware vendors such as Aeroscout, Meru, Symbol, Cisco, Firetide, Aruba and many more



iWAP103

Universal Zone 1 Access Point Enclosure

- Zone 1 & 21 certified (Class I Div 1 pending)
- II 2G EEx d IIC T5 Ta 55°C Max T6/Ta 40°C Max Ex tD A21 IP66 T100°C@Ta55°C Max, T85°C Max
- IP66 Marine grade epoxy painted aluminium enclosure
- Leading WLAN hardware vendors such as Aeroscout, Meru, Symbol, Cisco, Firetide, Aruba and many more
- Options on power supply, surge suppression and heaters
- Custom versions for bespoke hardware possible
- For use with increased safety antennas



iWAP300

Universal Industrial Wireless Access Point Enclosure System

- IP66 316 Stainless Steel enclosure
- Leading WLAN hardware vendors can be installed: Cisco, Motorola, Meru, Aruba, Trapeze etc
- Backhaul in Fibre or CAT5
- Options on power supply, surge suppression and heaters
- Custom versions for bespoke hardware possible



Wireless Access Points

Extronics Wireless Network Solutions

Extronics has developed its own hazardous area and extreme environment wireless network infrastructure based on class leading wireless networking hardware. Extronics strategy is to partner companies who are market leaders in a particular technology, for instance WLAN, MESH Routing, Real Time Location, VoIP and Telemetry. We leverage these companies expertise in their relevant fields and re-engineer their products to be suitable for hazardous areas bringing you the most advanced and feature rich hazardous area network available.

The Process Industry's extreme environments pose more than a few problems for wireless network functionality as well as installation issues. The heavy metal environment due to vessels and pipes causes RF multi-path where the signals bounce off different surfaces and arrive at the receiver at different times, which in some cases can render a network totally inoperable, but certainly with very poor bandwidth or connectivity. Our Meru based networks use a single cell structure with special algorithms and techniques to overcome this problem. Certain areas in a process plant such as tank farms, jetties and outbuildings are expensive to install a traditional WLAN due to the fact there is no installed Ethernet backbone. Trenching and cabling/fibre costs often means the network is not cost effective to install. However our Firetide MESH Ethernet routers are the perfect solution as the backhaul to the main servers is wireless and can cover hundreds of metres between each node. With fully redundant and automatic routing if a node fails this solution allows networks to be installed in the most remote of plant locations.

Your wireless infrastructure investment is safe with an Extronics hazardous area solution. One of the most costly parts of a WLAN deployment is the installation and cabling costs. This only needs to be carried out once as the enclosure systems will continuously be recertified to allow the latest generation wireless hardware to be installed in them allowing upgrading of the internal wireless hardware without needing new enclosure installation.

iWAP400

Explosion Proof USB WiFi Adapter

- Zone 1 certified
- II 2 (1) G Ex e mb [ia] IIC T4/T5
- IP66 Marine grade epoxy painted aluminium enclosure
- 802.11 b/g WiFi
- Connects directly to PC USB port
- For use with Extronics iANT200 intrinsically safe antennas



iWAP102A and iWAP102M

Explosion Proof Wireless Access Points and MESH Routers

- Zone 1 & 21 certified (Class I Div 1 pending)
- II 2 (1) G Ex d [ia] IIC T4/T5 Ex tD A21 IP66
- IP66 Marine grade epoxy painted aluminium enclosure
- Backhaul in Fibre or CAT5
- Options on power supply, surge suppression and heaters
- Custom versions for bespoke hardware possible
- For use with Extronics iANT200 intrinsically safe antennas



iWAP200A and iWAP200M

Non Incendive Wireless Access Points and MESH Routers

- Zone 2 & 21 certified (Class I Div 2 pending)
- II 3 G Ex nA nL IIC T3/T4 Ex tD A21 IP66 T80
- IP66 316L Stainless Steel enclosure
- Backhaul in Fibre or CAT5
- Options on power supply, surge suppression and heaters
- Custom versions for bespoke hardware possible
- For use with standard antennas or Extronics iANT200 intrinsically safe antennas



iWAP300A and iWAP300M

Industrial Wireless Access Points and MESH Routers

- IP66 316L Stainless Steel enclosure
- Leading WLAN hardware vendors can be installed: Cisco, Motorola, Meru, Aruba, Trapeze etc
- Backhaul in Fibre or CAT5
- Options on power supply, surge suppression and heaters
- Custom versions for bespoke hardware possible



Antennas

Extronics has developed a wide range of antennas to suit various application requirements whether it be the pattern and gain of the antenna or the hazardous area certification.

For our Universal Access Point and MESH Router Enclosure Systems or where the wireless network hardware is installed in a safe area there is the iANT100 series of omni directional increased safety antennas. These extremely rugged antennas may be connected to any wireless transmitter without requiring knowledge of the internal electrics or needing to make a fault analysis of the device.

In order to provide the best possible coverage and network performance Extronics has developed the iANT200 series of antennas certified as intrinsically safe "simple apparatus". These may only be connected to suitably certified intrinsically safe circuits such as those of the Extronics iWAP102 and iWAP200 series Access Points and MESH Routers. A wide variety of antennas such as omni directional, sector or directional is available to provide optimum coverage, bandwidth and distance for the wireless network.

iANT100 & iANT101

Increased Safety Omni Directional Antenna

- Zone 1 & 21 Certified
- II 2GD EEx e II T6
- IP66
- 5 dBi gain @ 2.4 GHz or 8 dBi gain @ 5.8 GHz
- Frequency range 2.3 – 2.5 GHz or 5.15 – 5.875 GHz



iANT207

Intrinsically Safe Omni Directional Antenna

- Zone 0
- II 1G Ex ia IIC T5/T6
- IP66
- 4 dBi gain
- Frequency range 2.4 – 2.5 GHz



iANT200

Intrinsically Safe Omni Directional Antenna

- Zone 0
- II 1G Ex ia IIC T5/T6
- IP66
- 5 dBi gain @ 2.4 GHz or 8 dBi gain @ 5.8 GHz
- Frequency range 2.3 – 2.5 GHz or 5.15 – 5.875 GHz



iANT208

Intrinsically Safe Wide Angle Directional Antenna

- Zone 0
- II 1G Ex ia IIC T5/T6
- IP54
- 5 dBi gain
- Frequency range 2.4 – 2.5 GHz



iANT201

Intrinsically Safe Omni Directional Antenna

- Zone 0
- II 1G Ex ia IIC T4
- IP66
- 6 dBi gain @ 2.4 GHz or 10 dBi gain @ 5.8 GHz
- Frequency range 2.3 – 2.5 GHz or 5.15 – 5.875 GHz



iANT209

Intrinsically Safe Directional Panel Antenna

- Zone 0
- II 1 G Ex ia IIC T5/T6
- 14 dBi gain or 19 dBi gain
- Frequency range 2.4 - 2.5 or 5.1 - 5.9 GHz



iANT202

Intrinsically Safe Directional Dual Planar Antenna

- Zone 0
- II 1G Ex ia IIC T5/T6
- IP54
- 8.5 dBi gain with 80° beamwidth
- Frequency range 2.3 – 2.5 GHz



iANT210

Intrinsically Safe Directional Sector Antenna

- Zone 0
- II 1 G Ex ia IIC T5/T6
- 12 dBi, 13.5 dBi, 14 dBi or 15.5 dBi gain
- Frequency range 2.4 - 2.485 or 5.75 - 5.85 GHz



RFID Solutions

The need to manage assets in industry is becoming increasingly important in order to improve efficiency and workflow accuracy. Passive RFID technology has matured over recent years to the extent where it is well proven and accepted in all areas of industry and is now available for use in hazardous areas.

Applications for this technology are very diverse but include controlling and managing maintenance of equipment on plant as part of service and hazardous area inspection regimes to automatically identify the asset. In warehouse and manufacturing areas they can be used for logistics and production tracking so the location or when an item was used is known. If used in a plant where there is a WLAN, tagged assets can be scanned by a handheld PDA or Tablet PC and the relevant documentation about that piece of equipment is automatically made available to the engineer, saving valuable time and therefore increasing efficiency.

Extronics offers a wide range of intrinsically safe RFID tags in different form factors and levels of ruggedness for attachment to all types of asset such as cables, valves, instruments, enclosures, machinery, pallets, bags and drums etc.

PDA's – iROC & MC9090Ex Series

Intrinsically Safe Mobile PC RFID Readers

- Zone 1 & 21 certified (Class 1 Div 1 available)
- Intel XScale™ PXA270 processor (iROC 624 MHz & MC9090Ex 520MHz)
- WLAN radio standard IEEE 802.11 a/b/g WiFi (iROC 802.11 b only)
- Windows mobile operating system
- Optional RFID write/read and barcode scanner modules available



TPF-35-Ex

Explosion Proof Stationary RFID Reader

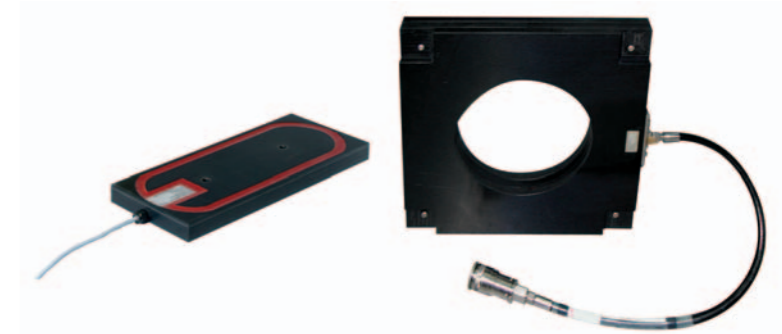
- Zone 1 certified
- II 2G Ex de IIB T4 I M2 Ex de I
- IP65 painted stainless steel enclosure
- RS485/RS232 interface



TPA Series

Explosion Proof RFID Antennas

- Zone 1 certified
- II 2G Ex m II T4 I M2 Ex m I
- IP67 plastic enclosure
- Range up to 700mm



PU Series

Intrinsically Safe Passive RFID Tags and Cards

- Zone 1 & 21 certified
- II 2G EEx ia IIC T4 I M2 Ex ia I II 2D Ex iaD 21 T70°C
- IP67 polyurethane, epoxy resin or glass
- Screw on, stick on and cable tie versions
- Proximity and swipe cards



EPC Class 1 Gen 2 TID Series

Intrinsically Safe Configurable Passive UHF Tags

- Zone 1 & 21 certified
- II 2G EEx ia IIC T4 I M2 EEx ia I II 2 D Ex iaD 21 T70°C
- IP67
- 868MHz
- Available with 96 bit read-only memory or 512 bit read-write memory



Real Time Location Systems

Extronics enterprise visibility solutions use standard WLANs to accurately locate and manage assets and people in multiple environments. The system includes indoor and outdoor real-time asset location (RTLs), long range Active RFID, choke-point visibility and telemetry, enabling customers in numerous industries to drive revenues and cut costs.

The possible applications include the tracking of people on plant for health and safety reasons so that in the event of an emergency all personnel can be accounted for. For instance, for automatic mustering points such as on lifeboats on an Offshore Platform. Valuable assets such as expensive drilling tools and machinery can be tracked and located, saving time or batches of chemicals as they pass through the production process can be monitored to later optimise the process. Real world process data may also be transmitted via the telemetry function of the Tag and Mobileview software back to central control systems.

Whether it is for safety, security, or process or asset optimisation, Extronics has a Real Time Location System to suit.

iTAG100

Intrinsically Safe Active WiFi & RFID Tag

- Zone 0 certified
- ATEX II 1 G Ex ia IIB/IIC T4/T5/T6 I M1 Ex ia I
- FM Intrinsically Safe Class I, II, III Division 1, Groups A, B, C, D, E, F, G
- US Mine Safety and Health Administration: Approval No. 23-A08006-0
- Works with all leading WLANs
- Robust, compact and IP67
- Four plus years battery life
- Motion sensor
- Call button and temperature sensor option



iWAP102LR

Explosion Proof Location Receiver

- Zone 1 & 21 certified (Class I Div 1 pending)
- II 2 (1) G Ex d [ia] IIC T4/T5
- Time Difference Of Arrival (TDOA) measurement
- Received Signal Strength Indicator (RSSI) measurement
- IP66 Marine grade epoxy painted aluminium enclosure
- Backhaul in Fibre or CAT5
- Options on power supply, surge suppression and heaters
- Custom versions for bespoke hardware possible
- For use with Extronics iANT200 intrinsically safe antennas



iCITE100

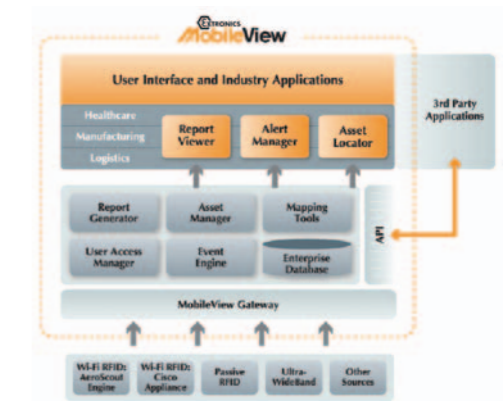
Explosion Proof Tag Exciter

- ATEX II 2 G Ex e mb II T4
- FM Class I, Zone 1 AEx em IIC T4 Ta 60°C Class I, Division 2, Groups A, B, C, D T4 Ta 40°C
- Robust, compact and IP66
- 125KHz RFID field excites iTAG100 to change behaviour or blink
- Adjustable field strength up to 6 metres
- Chain Exciters together to cover large areas or gates



MobileView Software

- Flexible, web-based tool for locating and viewing asset visibility in real-time
- Capability to track tens of thousands of mobile assets
- Easily integrated with third party applications



Telemetry

Data acquisition in remote hazardous locations where there is no power or physical network infrastructure has meant large amounts of useful data remains unavailable due to the physical impracticality of cabling and the huge associated costs.

Wireless data acquisition is a key long term development strategy of Extronics to allow customers to unlock islands of data by making it possible to acquire economically in hard to reach remote locations via various wireless technologies. Our first solution utilises the standard GSM/GPRS mobile phone network meaning in most parts of the world data can be acquired in almost any location.

Future telemetry products will offer solutions based on 802.11 WLAN so that customers can then leverage further applications over their installed WiFi network. As other new standards such as MESH sensor technology emerges, Extronics will continue to develop and innovate new harsh environment wireless telemetry products and solutions.

iLOG100

- Zone 1 certified
- II (1) 2 G Ex [ia] ib IIC T3/T4
- Robust, compact and IP68
- Up to 5 years battery life
- Powers sensors including two wire transmitters
- 2 analogue and 3 digital inputs (1 x 1KHz pulse)
- Local data storage
- GSM/GPRS dual band 900/1800 modem
- Various antenna options to suit application
- Web or Server based software for handling thousands of loggers



Professional Services

If you have an RF networking application and require a complete solution including surveys, installation and commissioning we can help as we offer a range of services to suit your needs. Whether you are an end user who requires an “end to end” solution or an OEM/system integrator who only requires hardware and commissioning support, let Extronics be your partner.

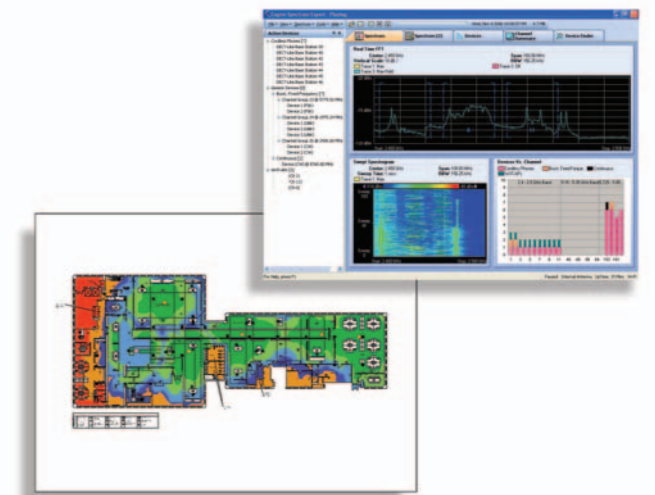
It is far from trivial developing high integrity wireless systems for industrial use. The need to ensure communication integrity, resilience to interference, latency and security must be addressed. Further, knowledge of the industrial design process and regulatory route are essential to ensure that all relevant regulations are met.

Extronics work with selected specialist professional services partners who offer site surveys, network design, installation, commissioning and network performance monitoring. These companies have been carefully selected for their quality of work and wealth of experience in a particular field of technology.

Together with our partners we provide class leading wireless networks tailored to your individual requirements bundled with service level agreements to ensure high availability and reliability for your mission critical applications.

Site Surveys

We provide the most concise and professional site survey available today. Our expertise in RF, IP, application and the harsh environments encountered in industries like Petrochemical, Ports, Logistics, Manufacturing as well as densely populated enterprise locations make us one of the most experienced companies in the market. We take into account the application resource requirements to ensure the wireless system can deliver the range of applications desired today and in the future. Our system designs can fully support voice, video, data, RFID, metering and monitoring.



Full Lifecycle Design Services

We can provide full life cycle design services. These services are available for network LAN & WAN as well as full wireless and mobility networks incorporating the use of GSM/3G services. We provide the design and technology to allow local resource to install and follow up with configuration and commissioning services.

Requirements	Design	Pre-stage	Implement	Certify	Miscellaneous
Business requirement definition	Site survey	Pre-configure equipment	Manage	Certify installation	Documentation
Application process profiling	Technology selection	Application testing (LAB) & reporting	Use of local or preferred company	Final test & handover	Training
Technology resource suitability	Architectural & resource design Diagramming	Physical location planning	Approve pilot area and test Configure & commission		Manuals & Guides

Performance Monitoring

We can identify performance bottlenecks or issues quickly and efficiently meaning the root cause of the problem can be correctly identified.

Performance Analysis of Applications

Including multi-tier such as SAP, Web Based, Voice, etc.

Server Performance

Identify and understand the issues and impact on user experience.

Performance Analysis of the Network at a TCP or IP level

For example why are there so many TCP retries in the network. Detailed and valuable information often missed with normal network performance toolsets.

