The NIO200 Product Line

A Novel, Affordable ISA100 Wireless Connectivity Solution

Nexcom

ISO 9001
UL Certified
Assembly Line
RMA/DOA
Logistic
China

ISO 9001
Assembly Line
RMA/DOA
Logistic
UK

ISO 9001
Assembly Line
RMA/DOA
Logistic

Europe

China

Japan

Taiwan

ISO 9001
Assembly Line
RMA/DOA
Logistic
USA

N. America

ISO 9001/ISO 14000
UL Certified
Assembly Line
RMA/DOA
Logistic
Taiwan

- **Founded 1992**
- **HQ Taipei, Taiwan**
- **2015 Revenue US$174M**
- **Employees 904**

1. NEXCOM H.Q. Taipei, Taiwan
2. NEXCOM Central Taiwan Office Taichung
3. NEXCOM UK Milton Keynes
4. NEXCOM Italy Milan
5. NEXCOM USA Fremont, CA
6. NEXCOM China Beijing
7. NEXCOM China Shanghai
8. NEXCOM United System Service Shanghai
9. NEXCOM Surveillance Technology Shenzhen
10. NEXCOM Japan Tokyo

Nexcom

IAS	IDS	MCS	IoT	ISP	NCS

IoT Automation Solutions	Intelligent Digital Security	Mobile Computing Solutions	Internet of Things	Interactive Signage Platform	Network & Communication Solutions
■ iAutomation ■ Industrial Wireless and Firewall Solutions ■ Intelligent System Services	■ IP Camera ■ NVR	■ Telematics Computers for Car, Heavy Duty Vehicle & Train	■ Solutions for Vertical IoT Applications ■ Solutions of Healthcare & Medical Informatics	■ Digital Signage ■ Interactive Kiosk	■ Network Security ■ Storage ■ Switch ■ SDN & NFV ■ Industrial Security

NIO200 Product Line Overview

◆ **Family of ISA100 Wireless compliant infrastructure products augmented with state-of-the-art EZ Mesh Wi-Fi backbone technology**

◆ **Comprehensive solution that provides**

- Scalable system and security management of ISA100 Wireless compliant field instruments
- Robust connectivity to applications residing on the plant network
- Cost effective, wide geographic coverage via EZ Mesh Wi-Fi backbone connectivity

The **NIO200** Product Family

NIO200IAG – All-in1-Gateway

- ISA100 Wireless compliant System/Security Manager, Gateway and Backbone Router
- Manages an ISA100 Wireless subnet composed of field instruments arranged in a multi-hop wireless mesh configuration
- EZ Mesh Wi-Fi Backbone infrastructure connectivity to the control room + perfect triple play infrastructure video surveillance

NIO210IDG – Distributed Gateway

- ISA100 Wireless compliant System/Security Manager, Gateway and Backbone Router
- Manages multiple ISA100 Wireless subnets federated by NIO200IWR Backbone Routers
- Allows for distributed network topologies that maximize geographic
- EZ Mesh Wi-Fi Backbone infrastructure connectivity + perfect triple play infrastructure video surveillance

NIO200IWR – Backbone Router

- ISA100 Wireless compliant, cost-effective Backbone Router
- Provides wireless and wired backbone connectivity to ISA100 Wireless compliant field instruments
- EZ Mesh Wi-Fi Backbone infrastructure connectivity + perfect triple play infrastructure video surveillance

Advantage of NEXCOM NIO200 Solution

Scalable Mesh infrastructure

- Distributed WSN topology
- Scalable Wi-Fi backbone infrastructure to reserve for future expansion
- Supports multiple subnets managed by the same Gateway
- Dual Radio Wi-Fi Mesh with better reliability

Robust & Secure

- High throughput backbone based on IEEE 802.11an
- High RF power in Wi-Fi Mesh connectivity
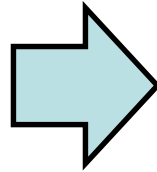- High immunity (IEC 61000-4-2,3,4,5 Level-4) to against Surge, ESD,..
- CID2, ATEX hazardous certificate

High C/P value solution

- High scalability lowers CAPEX and ensures swift ROI
- Reduced TCO (Total Cost of Ownership)
  - Wired backbone (including Fiber deployment) is costly in cabling & limited in scale expansion
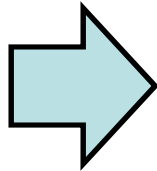 - Flexible Wi-Fi Mesh backbone reduces overall cost

Solution Highlights

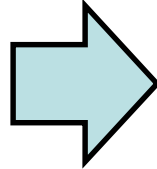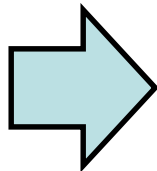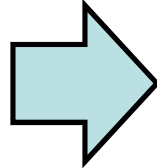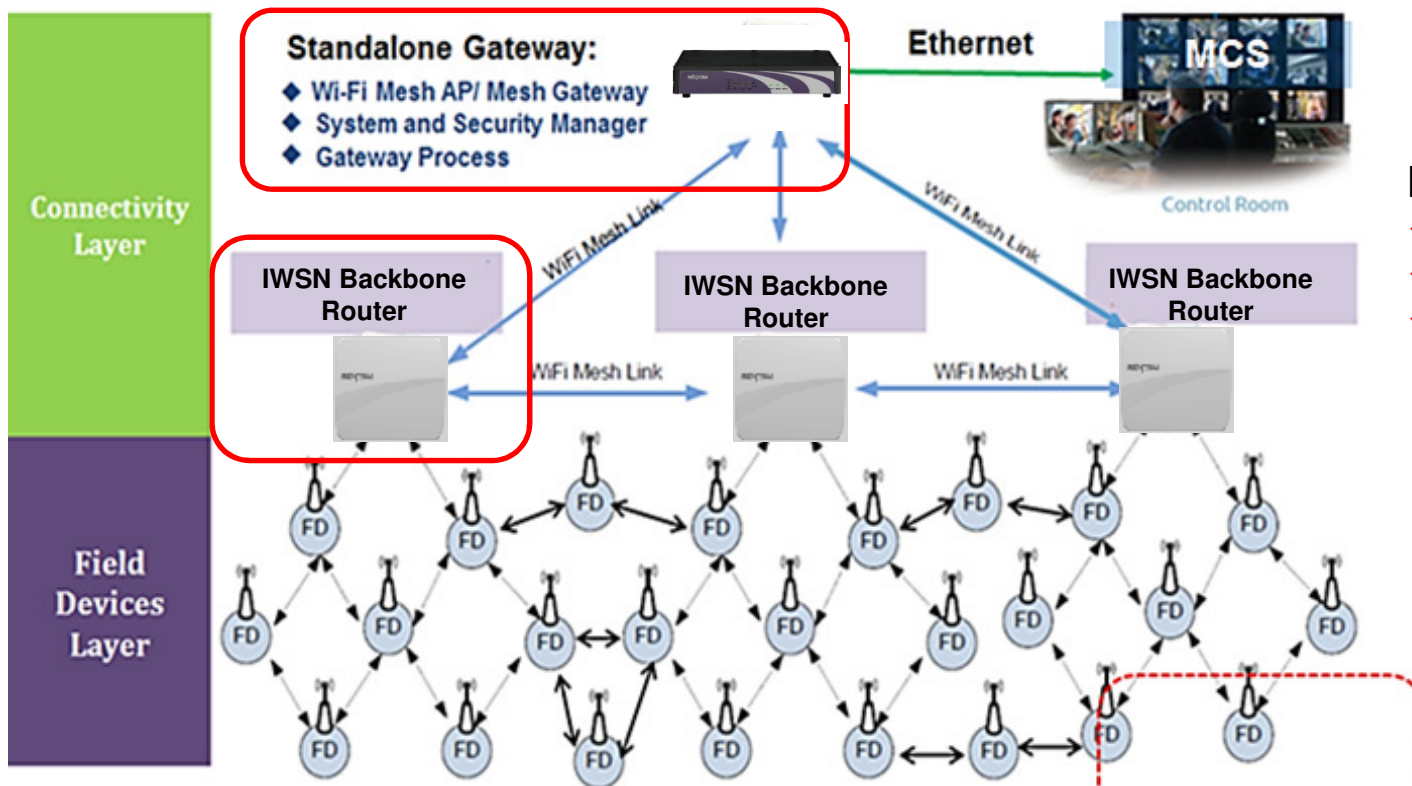|	
Supports distributed network topologies	➡ Cost-effective, extended geographic coverage
Supports multiple subnets managed by the same Gateway	➡ High scalability lowers CAPEX and ensures swift ROI
EZ Mesh Wi-Fi enabled backbone	➡ Reliable, robust wireless backbone infrastructure reduces installation and maintenance costs.
CID2, ATEX, EN61000-4-2,3,4,5 Certified	➡ Allows for installation in hazardous areas
Power redundancy (PoE/DC)	➡ Ease of installation

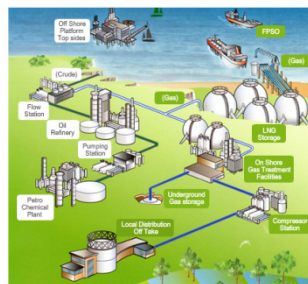# ISA100 Wireless – Native IPv6 Connectivity

- ◆ **ISA100 Wireless mandates that all entities support native IPv6 addressability and connectivity**

- ◆ **Internet backbones are transitioning to native IPv6 connectivity**

- ◆ **Infrastructure devices are IPv6 ready**

- ◆ **Support for standards based IPv4 encapsulation of IPv6 payloads**

NIO200 Deployment Topology

Standalone Gateway:
- Wi-Fi Mesh AP/ Mesh Gateway
- System and Security Manager
- Gateway Process

Ethernet

MCS

Control Room

Connectivity Layer

IWSN Backbone Router

IWSN Backbone Router

IWSN Backbone Router

WiFi Mesh Link

Field Devices Layer

FD

Process Measurement and Control

FD: Field Device, & IWSN Adapter

Plant controller & management

Industrial Wi-Fi Mesh
- ✓ IWSN to Wi-Fi Gateway
- ✓ Outdoor IP67
- ✓ C1D2 & ATEX certified

a b g WiFi n ac

Industrial WSN Mesh
ISA100 Wireless

ISA100 Wireless Adaptor

24 V DC

HOST
AMS
DCS
PLC

4...20 mA + HART

HART device
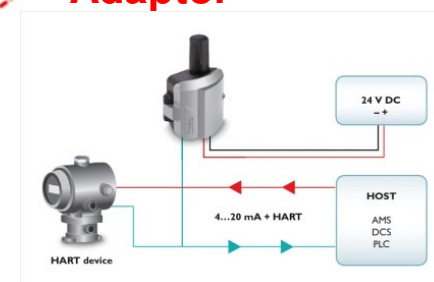
Traditional Process Monitoring Field Instruments

- Data model primarily based on periodically published low volume data with high frequency reporting rates
- Low latency guaranteed data traffic flows
- Alerting data models supported
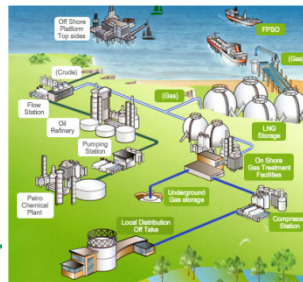- ISA100 Wireless compliant – WCI certified instruments

Pressure

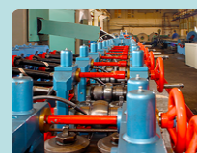Temperature

Flow

More Novel Monitoring Field Instruments

- Higher data volumes – published periodically with lower frequency rates
- Alerting data models supported
- Gracefully co-exist with traditional monitoring instruments
- ISA100 Wireless compliant – WCI certified instruments

Steam trap monitoring

Corrosion

Condition Monitoring

Safety

EZ Mesh
Trusted Wi-Fi Backbone
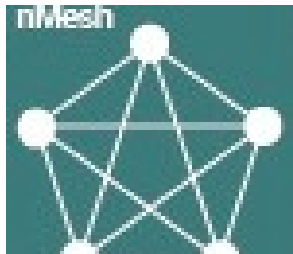
- ◆ Multi-Path Bridge
- ◆ Self-forming
- ◆ Self-healing
- ◆ Flexible Installation
- ◆ Con-Current Dual Link

Main Feature of EZ Mesh Wi-Fi

Lossless Mesh bridge

- ☐ Best path connection
- ☐ Lossless bridge for ISA100 Wireless, Modbus protocol, management data and video streaming.

Flexible installation

- ☐ Self-forming & self-healing for optimized Wi-Fi backbone infrastructure
- ☐ 4+ hop @ 30Mbps Mesh network

Rugged design

- ☐ Extended operating temperature: -40 ~ +65° C
- ☐ Anti-explosive: CID2, ATEX
- ☐ Power redundancy (PoE/DC input)
- ☐ High RF power, long distance

Management

- ☐ Web management & SNMP
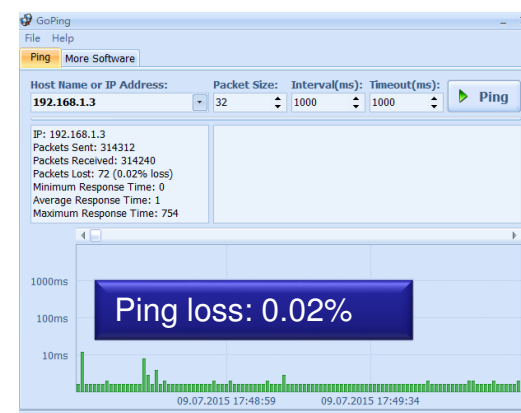- ☐ Central Managed by nCare
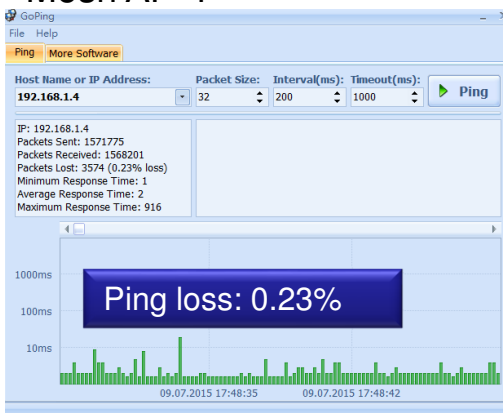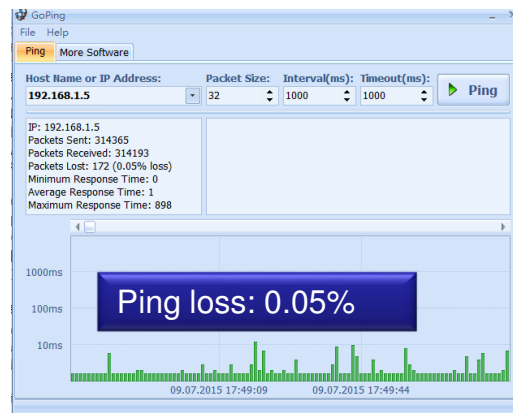
Stability - Ping: Over 96hrs

Mesh AP-1
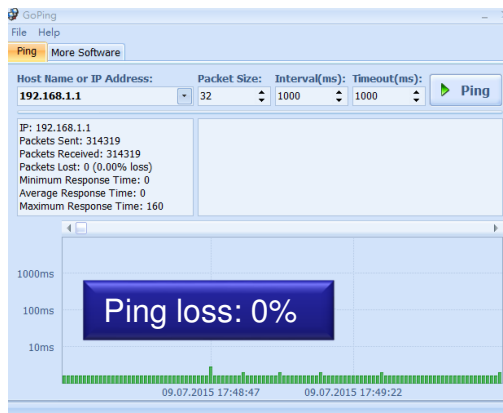
Mesh AP-2
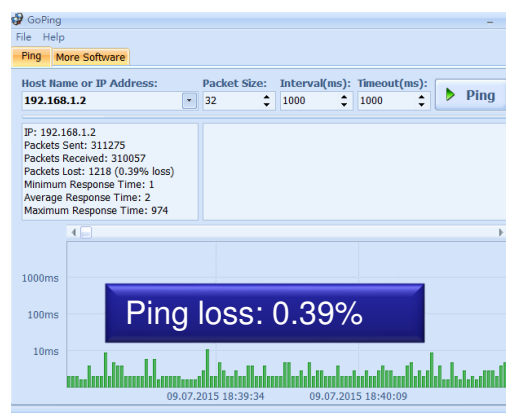
Mesh AP-3

Mesh AP-4

Mesh AP-5

Server PC
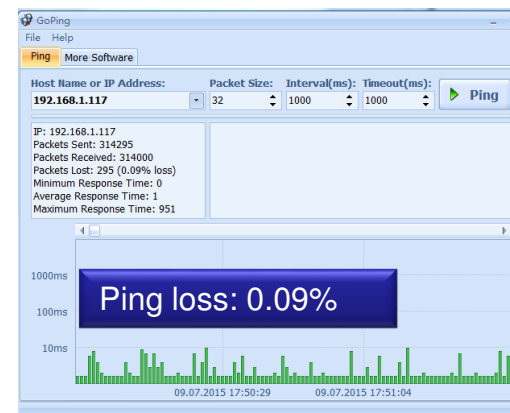
Stability over 4-Day endurance verification

Self-healing Performance

Self-Healing time: 1.1 sec
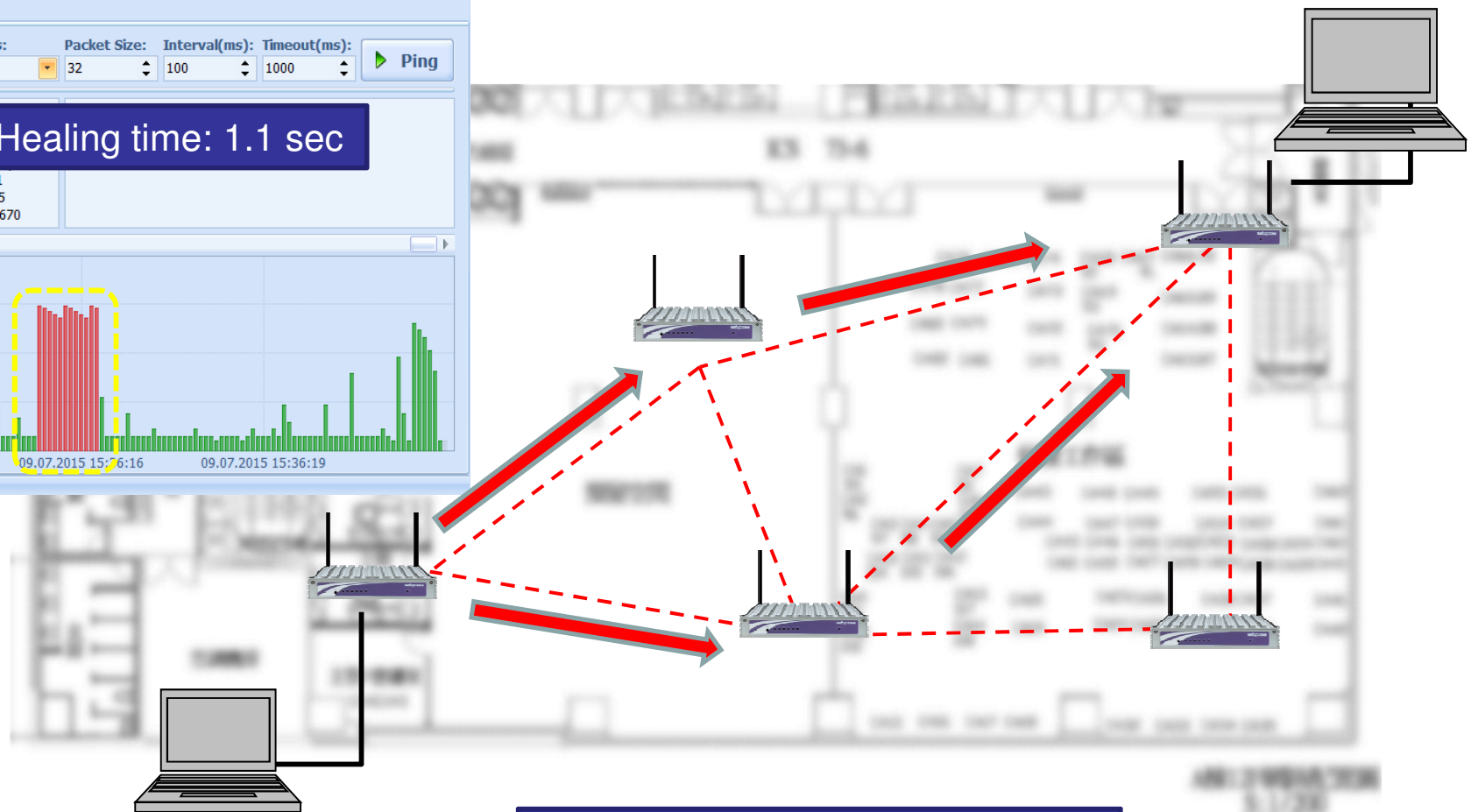
Best path Mesh connection

Mesh coverage and performance

Hops	Throughput
1 hops-Throughput	125.495Mbps
2 hops-Throughput	48.52Mbps
3 hops-Throughput	44.86Mbps
4 hops-Throughput	33.2Mbps

EZ Mesh Hopping Performance

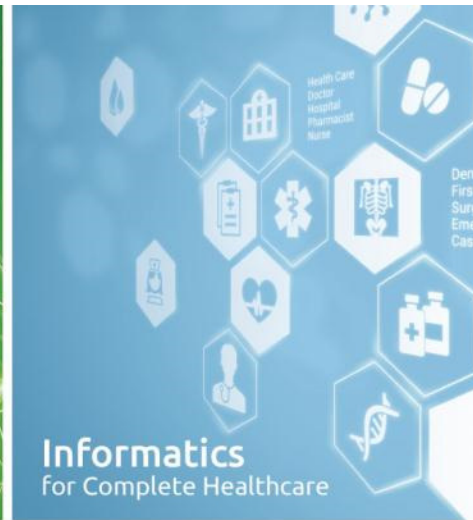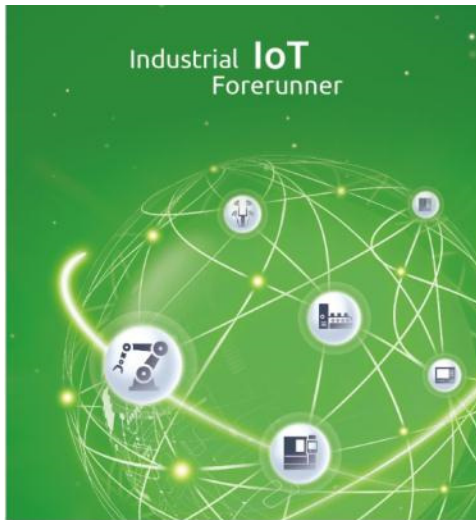|	1 hops-Throughput	2 hops-Throughput	3 hops-Throughput	4 hops-Throughput
Throughput	125.495	48.52	44.86	33.2
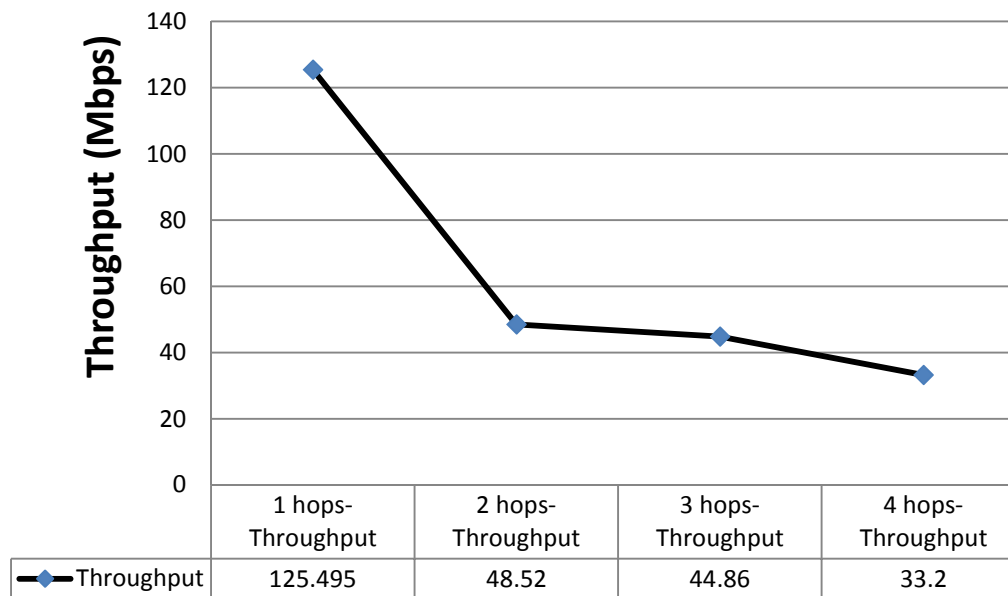
Mobile Mesh for larger scale IP camera surveillance
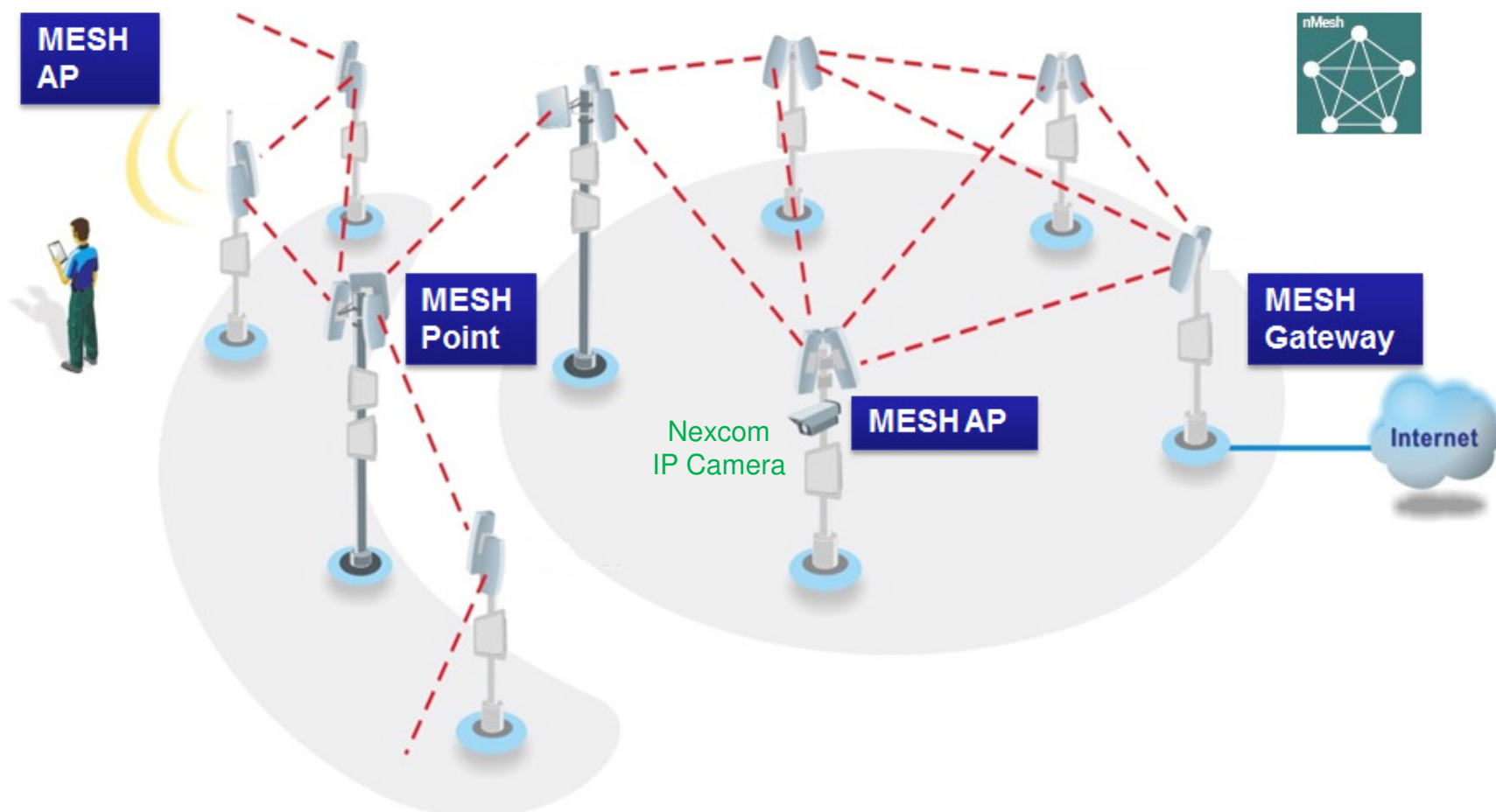
Robust, Secure & Cost-effective Remote Field Surveillance Solution

Thank You!