

Accelerates Data Delivery with SkyLab Transport Accelerator (STA)

STA accelerates traffic by analyzing traffic & routing conditions in real time to find the fastest route between the data source and the destination even on 2G/3G/4G, satellite and many types of IoT radio networks. STA reduces network latency, increases throughput, optimizes transport layer performance and reduce overall network congestion problem.

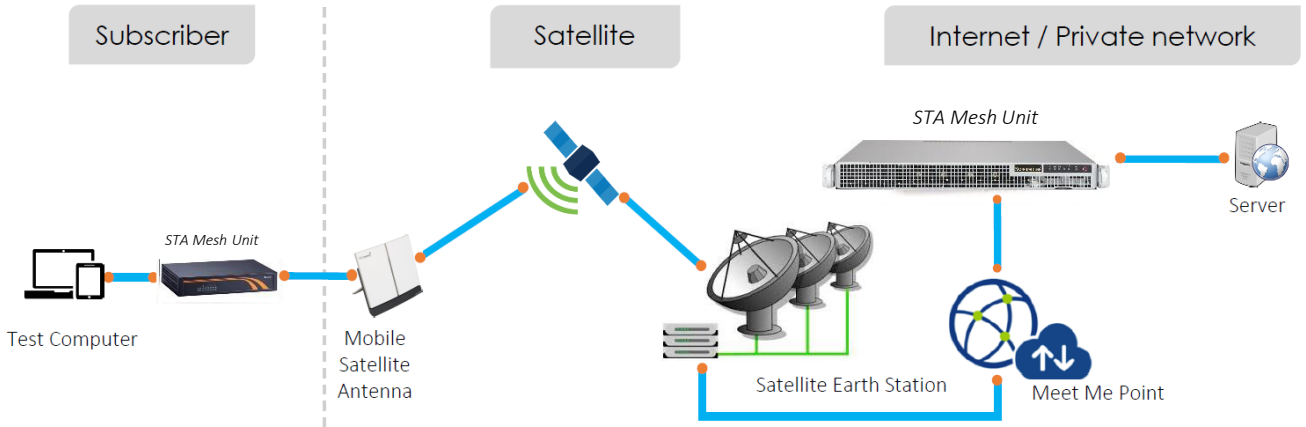


STA Mesh Unit (MU)









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Use Case Scenarios



Use Cases

- 
Leased Line Optimization
 In addition to wireless networks, STA can optimize fixed line connections as well. STA addresses a number of traditional protocol weaknesses to accelerate and solidify your service without upgrading bandwidth.
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Satellite Optimization
 While convenient, Satellite experience can often be frustrating due to high latency, high packet loss and limited bandwidth. STA can improve user experience by accelerating connectivity in a cost-effective way without increasing bandwidth capacity.
- 
3G/4G Optimization
 Wireless cellular networks are inherently unpredictable and service providers do not guarantee their quality. With STA, it is possible to give users a consistent experience by providing a more stable connection with predictable latency.
- 
High-Speed VPN
 Traditional VPNs over public internet are often unstable and unreliable. By integrating VPN technologies together with STA users can achieve service comparable to leased lines without the cost.
- 
Live Video Streaming Optimization
 Reduce traditional protocol pitfalls of live video streaming through STA's Adaptive Congestion Control and Automatic Optimization features. Bandwidth capacity is very likely not the problem or solution to your troubles.
- 
Application Acceleration
 Fast and predictable user experience is essential for successful applications. Not only will STA accelerate your application it will also provide users with the consistent experience they expect.

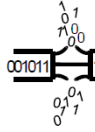
The world of "Things" are becoming more connected with the rise of the IoT Revolution. The fast adoption of IoT is made possible by the miniaturisation of wireless modules as well as cloud computing resources made available globally. However the high growth for IoT sensors and related aggregating agents will lead to new sets of challenges faced by large scale network operators. Delivery of data stream from large number of IoT data sources create large amount of system overheads such as multiple systems handshakes and acknowledgement packets. In addition, over-the-air wireless

communications operating in different conditions of spectrum availability, RF interference, changing bandwidth as well as a multi-path environment introduces more random walks of wireless propagation delays. Combining other factors such as legacy protocol not suitable for wireless transmission and non-optimised routing decisions within the cloud leads to repeated snow balling effect of intermittent event impairing overall service performances. The diagram below identifies some critical issues to be considered.



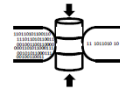
BANDWIDTH VARIATION

- Limited radio spectrum
- Limited base-station capability
- Constantly changing bandwidth
- Propagation delays



PACKET LOSS

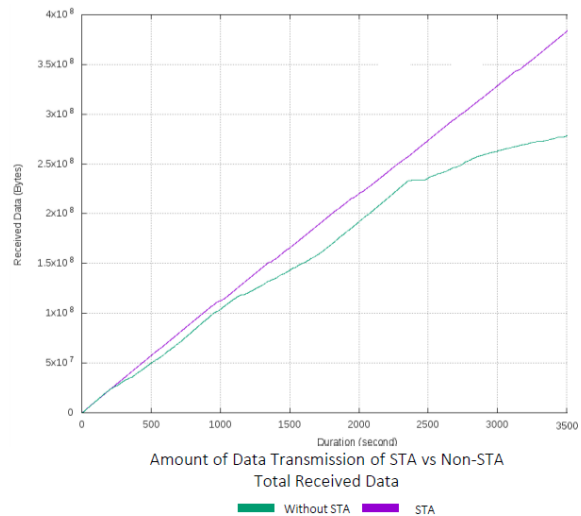
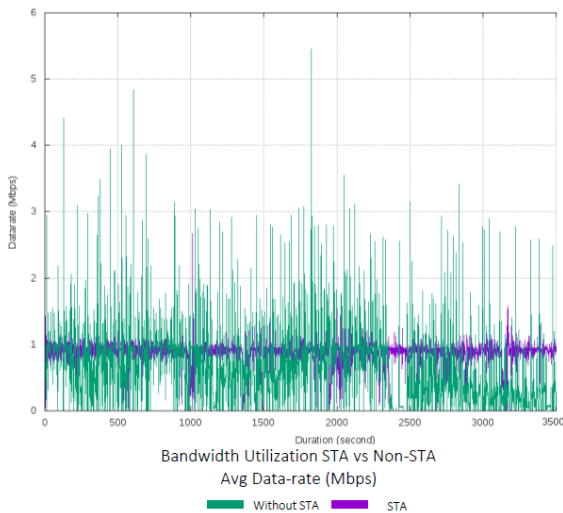
- Noise Interference by other devices
- Congestion
- Retransmission



CONGESTION

- Lack of protocol support for constantly changing situation
- Snow-ball effect by intermittent failure of the service
- End to End Latency

System Results Comparison between STA vs Non-STA Cellular based Network

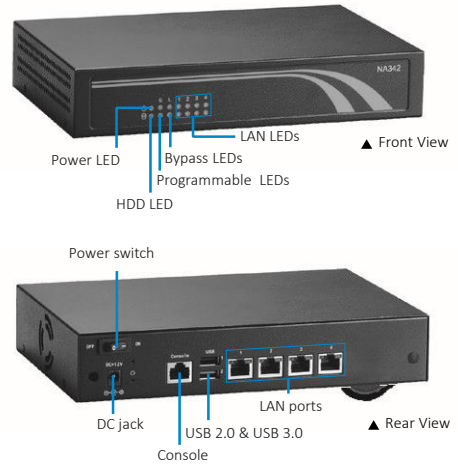


Key Benefits

- | | |
|---|--|
| Improved Network Performance | - Provides higher through-put and lower latency |
| Adaptive Congestion Control | - Optimized congestion control mechanism for radio / mobile networks that reduce the impact of packet loss and congestion problems. |
| Transport Layer Acceleration | - Optimizes transport layer performance to address traditional protocol three-way handshake, slow start and excessive retransmission due to packet loss and congestion, and packet coalescing and compression. |
| Transparent Turn Reduction | - Reduces the unnecessary number of back-and-forth transfer between both ends. |
| Multi-Path Delivery | - Communicating through 2 different types of networks (e.g. LTE and WiFi) |
| Network Change Detection & Automatic Optimization | - Detect changes in the type of network and optimize STAP variables accordingly |
| Secured End to End Encryption | - Protecting data integrity and confidentiality by authenticated encryption method using Diffie-Hellman and AES-128-GCM and AES-256-GCM cryptographic algorithms, ensures safe end-to-end secure data delivery |

Features

- **Virtual Inpath Interface** - Dealing with multiple customer network segments.
- **Virtual LAN** - Supports 802.1Q VLAN tagging to separate user traffic.
- **Service Acceleration** - Easy to accelerate a service based on port, source / destination network and VLAN scope.
- **SNMP** - SNMP Version 1, 2c & v3 are supported for monitoring.
- **WCCP Version 2** - Supports Web Cache Communication Protocol content-routing protocol that works with CISCO devices to provide a mechanism to redirect traffic flows in real-time without deploying STA MU inline the network.
- **Management** - Both the Web Interface & CLI are available for configuring the device.



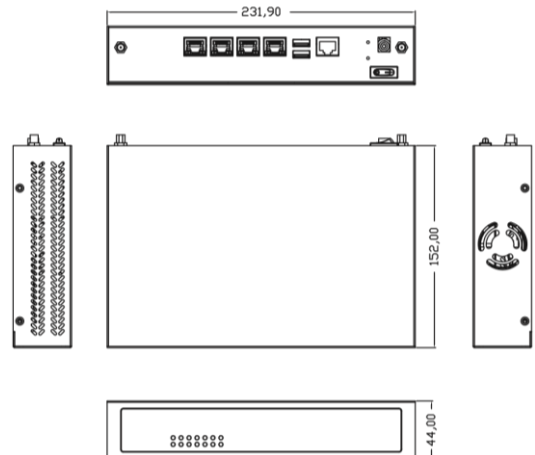
Specifications - System

CPU	Intel® Celeron® processor J1900
Chipset	SoC Integrated
STAP Network Capacity	40Mbps
Memory	1 x DDR3L-1333 SO-DIMM, up to 8GB non-ECC memory
BIOS	AMI SPI Flash BIOS
Storage	1 x 16GB CompactFlash™ type-III
Network Interface	4 x 10/100/1000 Mbps Ethernet (Intel® i211, optional) 6 ports by request)
I/O Interface	1 x RS-232 (RJ-type) 1 x USB 2.0 1 x USB 3.0 4 x RJ-45
Other Features	LAN Bypass function through latch relay (two pairs) for optional
Expansion Slot	1 x PCI Express Mini Card (USB interface)
Watchdog Timer	255 stepping for system reset 8 stepping for LAN Bypass
Power Supply	1 x 12V, 5A power adapter

Specifications – Mechanical/Environment

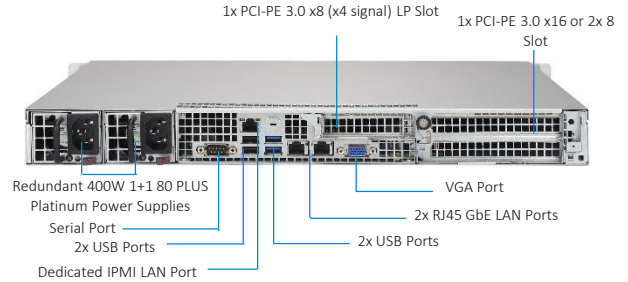
Form Factor	1U desktop
LED	Power, HDD, GPIO programmable, LAN Bypass, Link/Act with transfer rate
Operating Temp.	0°C ~ +40°C (+32°F ~ +104°F)
Humidity	10% ~ 95% RH, non-condensing
Chassis Material	Steel
Dimensions	44 mm (1.73") (H) x 231.9 mm (9.00") (W) x 152 mm (5.98") (D)
Weight (net/gross)	2.5 kg (5.51 lb)/2.9 kg (6.39 lb)
Certificates	FCC class B/CE class B

Dimensions





▲ Front View



▲ Rear View

Specifications - System

CPU 1 x Intel® Xeon® E3-1240v6 (4C/8T, 3.7GHz, 8MB Cache)

Chipset Intel® C236 chipset

STAP Network Capacity 1Gbps

Memory 32GB (2 x 16GB) DDR4 ECC UDIMM

BIOS 8MB SPI Flash EEPROM with AMI BIOS

Storage 1 x 240GB 2.5" Enterprise SATA SSD

Network Interface 4 x 10/100/1000 Mbps Ethernet (Intel® i211, optional
6 ports by request)

I/O Interface 6 SATA3 (6Gbps) ports
2 RJ45 Gigabit Ethernet LAN ports
1 RJ45 dedicated IPMI LAN port
2 USB 3.0 ports (rear)
2 USB 2.0 ports (rear)
1 VGA port
1 COM port (1 rear)
2 SuperDOM (Disk on Module) ports with built-in power

Other Features Chassis intrusion detection
Chassis intrusion header
Chipkill support
RoHS, Halogen Free

Expansion Slot Left riser slot: 1 PCI-E 3.0 x16 or 2 PCI-E 3.0 x8
1 PCI-E 3.0 x4 (in x8 slot)
1 M.2 PCI-E 3.0 x4

Specifications – Mechanical/Environment

Form Factor 1U Rackmount

LED Chassis intrusion detection
Chassis intrusion header
Chipkill support
RoHS, Halogen Free

Operating Temp. 10°C to 35°C (50°F to 95°F)

Humidity 8% to 90% (non-condensing)

Chassis Material Steel

Dimensions 1.7" (43mm) (H) X17.2" (437mm) (W) X16.9" (429mm) (D)

Weight (net/gross) 15.5 lbs (7.03 kg)/27 lbs (12.25 kg)

Certificates UL/cUL/CB/CE/BSMI/CCC
Platinum Level Certified

ABOUT SKYLAB

SKYLAB'S INDUSTRIAL IOT SOLUTION enables secured and efficient data harvesting over a large scale network. Empowering our customers' complex Industrial IoT deployment seamlessly and securely, SkyLab's Data Logistics Cloud™ is a network agnostic solution that comprises of the following features; multiprotocol data harvesting middleware, Industrial IoT security solutions, real-time integrated dashboard, advanced data transport acceleration and Industrial IoT inventory management system. Our uniquely designed solution aims to address mission critical topics such as "SECURITY, LATENCY AND SCALABILITY" for the Utilities, Mobility, Manufacturing and Government segments' complex Industrial IoT operations.

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