



Seemant Engineering Institute, Pithoragarh, NANHI PARI SEEMANT
ENGINEERING INSTITUTE PITHORAGARH (Erstwhile Seemant Institute of
Technology, Pithoragarh) GIC Campus, Link Road, Pithoragarh-262 502,
Uttarakhand

INVITATION LETTER

Package Code: TEQIP-III/2019/UK/seip/100

Current Date: 22-Jun-2019

Package Name: CSE IoT Lab setup

Method: Shopping Goods

To,

The **CONCERNED**

.....
.....

Sub: INVITATION LETTER FOR CSE IoT Lab setup

Dear Sir,

1. You are invited to submit your most competitive quotation for the following goods with item wise detailed specifications given at Annexure I,

Sr. No	Item Name	Quantity	Place of Delivery	Installation Requirement (if any)
1	IOT Laboratory Setup	1	NANHI PARI SEEMANT ENGINEERING INSTITUTE PITHORAGARH Pithoragarh-262 501, Uttarakhand	Yes
2	Accessories (High Quality)	1	NANHI PARI SEEMANT ENGINEERING INSTITUTE PITHORAGARH Pithoragarh-262 501, Uttarakhand	Yes

2. Government of India has received a credit from the International Development Association (IDA) towards the cost of the **Technical Education Quality Improvement Programme [TEQIP]-Phase III** Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.

3. **Quotation**

3.1 The contract shall be for the full quantity as described above.

3.2 Corrections, if any, shall be made by crossing out, initialling, dating and re writing.

- 3.3 All duties and other levies payable by the supplier under the contract shall be included in the unit Price.
- 3.4 Applicable taxes shall be quoted separately for all items.
- 3.5 The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- 3.6 The Prices should be quoted in Indian Rupees only.
4. Each bidder shall submit only one quotation.
5. Quotation shall remain valid for a period not less than **120** days after the last date of quotation submission.
6. Evaluation of Quotations: The Purchaser will evaluate and compare the quotations determined to be Substantially responsive i.e. which
 - 6.1 are properly signed; and
 - 6.2 Confirm to the terms and conditions, and specifications.
7. The Quotations would be evaluated for all items together.
8. Award of contract The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.
 - 8.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of Contract.
 - 8.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be Incorporated in the purchase order.
9. Payment shall be made in Indian Rupees as follows:

Satisfactory Delivery & Installation - 80% of total cost
Satisfactory Acceptance - 20% of total cost
10. Liquidated Damages will be applied as per the below:
Liquidated Damages Per Day Min % :N/A
Liquidated Damages Max % : N/A
11. All supplied items are under warranty of **36** months from the date of successful acceptance of items and AMC/Others is .
12. You are requested to provide your offer latest by **12:00** hours on **06-Jul-2019**.

13. Detailed specifications of the items are at Annexure I.
14. Training Clause (if any) **Yes Required**
15. Testing/Installation Clause (if any) **Yes Required**
16. Performance Security shall be applicable: **0%**
17. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.
18. Sealed quotation to be submitted/ delivered at the address mentioned below **through INDIAN SPEED/ REGISTERED POST ONLY** and mention **TEQIP-III/2019/UK/seip/100** on the top of the envelope:

**The Director/ TEQIP-III Coordinator
NANHI PARI SEEMANT ENGINEERING INSTITUTE PITHORAGARH
(Erstwhile Seemant Institute of Technology, Pithoragarh)
GIC Campus, Link Road, Pithoragarh-262 502, Uttarakhand**

19. We look forward to receiving your quotation and thank you for your interest in this project.

(Authorized Signatory)

Name & Designation

Additional Terms & Condition:

1. The manufacturer/authorized dealer should submit three purchase orders along with satisfactory work completion certificate of items supplied to other Engineering colleges/organizations.
2. All manufacturer/authorized dealer need to mention the make and model no for the item quoted and authorized dealer has to submit the recent valid authorization certificate from the original manufacturer.
3. The manufacturer/authorized dealer has to provide at least three years warranty and free service/maintenance required at the college site.
4. Training for a period of 3 days to be considered.
5. At the time of technical evaluation of products, the vendor may be called for the demonstration if required.
6. FREE installations and FREE Demonstration at College.
7. The manufacturer/authorized dealer should provide catalog/leaflet in support of the quoted product.
8. Vendors have to quote the full package and demonstrate all the experiments covered. Quotation will be evaluated for the whole package.
9. Statutory Documents like GST certificate, PAN Card, Manufacturing License etc to be provided.
10. Quotations will not be considered submitted through by hand in any case.

Annexure I

Sr. No	Item Name	Specifications		
1	IoT Lab Setup	Sr. No.	Item	Qty.
		1.	IOT Development Tool <ul style="list-style-type: none"> ● WSN Based IOT Gateway (2) ● Re programmable Sensor Node (10) ● Re configurable Sensor Node (10) ● Wi-Fi Nodes (10) with gateway(1) ● Sensors (Mentioned below) 	1
		2.	IOT & WSN Scratch kit <ul style="list-style-type: none"> ● Mother Board with ARM7 ● Arduino (5) ● Zigbee Interface Module (15) ● Wi-Fi Interface Module (5) ● Raspberry Pi 3 (5) ● Bluetooth Interface (5) ● Arduino YUN (5) ● GSM Interface(5) ● GPS Interface (5) ● RFID Interface (5) ● Mesh Wi-Fi Bundle(5) ● Boron 2G/3G Kit(2) ● Electron 3G Kit(2) ● Asset Tracker Kit v2(2) ● TIVA TM4C123G Launchpad Bundle(3) ● CC3220SF-LAUNCHXL(3) ● LAUNCHXL-CC1310(3) ● Sensors(2) ● Grove starter kit(2) 	1
		3.	IOT Biomedical Kit with Sensors	1
		4.	Real Time IOT based Whether Monitoring Experimental Setup	1

Specifications

1.) IOT Development Tool

Re Programmable Gateway with on board WIFI,SD card Based Data logging

1. ZigBee Coordinator & Gateway the coordinators must be designed around advance processors and must act as gateway with other wireless connectivity.
 - Zigbee 2.4 GHz Coordinator based on ARM 7 LPC2148 or compatible.
 - Supporting various Network Topology with RF datarate 250kbps/80kbps.
 - On boards 20X4 LCD display for display for end device status.
 - Data entry using 4X4 Hex Keypad digital Input.
 - On boards facility for WI-FI (To share data on Cloud) & Bluetooth for data transfer.
 - On Board Power supply(5V,3.3V)with rechargeable battery backup.
 - Configurable device software, for GUI based, along with testing utility, RF data rate 250 KBPS with software selectable Data rate, with input / output range 100Ft /300Ft. for support of 2.4.With power supply2.8V.
 - Power supply indication on switch itself. And Bluetooth led's should be easily visible.
 - A Switch Must be provided to select the interface of RF module with controller and with the USB section

Cloud

Flexibility to store data in any third party cloud.

Re Programmable Sensor Nodes /Router

- The end devices for field applications,
- Field deployable,
- Zigbee 2.4 GHz with antenna,
- RF data rate 250kbps /80kbps,
- Onboard 20X4 LCD display.
- On Board Power supply (5V,3.3V)
- Can Connect with any digital Sensor*0-5Vor with analog sensor

Re configurable Sensor node

- **Zigbee 2.4 GHz** with antenna.
- On Board Configuration facility with USB
- End Devices to connect with sensor in range 0 to 3.3V analog or digital.
- On Board Power supply (5V,3.3V),
- Field deployable ready to use,
- USB Powered/ Battery for Zigbee,
- In Build features of Zigbee for 2.4GHz,
- With software selectable Data rate, with input/outputrange10-100*meter

Re Programmable Wi-Fi Based Sensor Node

- Integrated ADC
- Analog Input Pins, ,Digital O/p Pins .
- Wi-Fi 2.4 GHz, support WPA/WPA2
- Support Smart Link Function for both Android and iOS devices
- A-MPDU & A-MSDU aggregation & 0.4sguard interval
- AVR/ARM family based processor

Separate Gateway For WI- FI Nodes to display data on the screen with a graphical user interface Supporting OS platform based on Android supporting WIFI.

Sensors For Above Nodes

SENSORS FOR SMART ENVIROMENT & AIR QUALITY APPLICATION (1qty Each)

ALL SHOULD BE COMPATIBLE WITH IOT NODES MENTIONED ABOVE

1. CO SENSOR PPM
- 2.AIR TEMPERATURE & HUMIDITY ,
- 3.ATMOSPHERIC PRESSURE
- 4 .PM2.5 AND PM10 (UART AND PWM OUTPUT),
- 5.SOLAR RADIATION
- 6.RAIN DROP SENSOR

SENSORS FOR SMART PARKING (2qty Each)

ALL SHOULD BE COMPATIBLE WITH IOT NODES MENTIONED ABOVE

- 1.MOTION SENSOR,
- 2.MAGNETIC SENSOR,
- 3.HALL SENSOR,
- 4.ULTRASONIC SENSOR
- 5.ACCELEROMETER SENSOR
- 6.LIGHT SENSOR
- 7.SMOKE SENSOR
- 8.PROXIMITY SENSOR
- 9.TOUCH SENSOR
- 10.PRESSURE SENSOR
- 11.GAS Sensor
- 12.IR SENSOR
- 13.COLOR SENSOR
14. SOUND SENSOR

SENSORS FOR SMART WATER & WASTE WATER (1QTY EACH)

ALL SHOULD BE COMPATIBLE WITH IOT NODES MENTIONED ABOVE

- 1.WATER PH SENSOR
2. WATER TEMPERATURE
3. WATER TDS SENSOR

2.) IOT &WSN Scratch Modules

Modules must be detachable and multiple IOT application must be able to develop on this kits in the form of different projects.

And all the interfacing modules must be able to support the universal board must be connected through 10 pin Cable of FRC connector with facility of Power and ground in each sockets

Universal IOT Development Board with ARM 7 Daughter Board

Excellent training development platform for applications 8 bit/ 32 bit microcontroller family 8051, PIC, AVR, ARM7, Arduino etc. USB Connector for programming. Microcontrollers all I/O open for interfacing using 10 pin box headers on every section.
I2C - 24C04 EPROM Programmable memory,
RTC DS1307 with 32 KHz Crystal,
CR2032- 3V Lithium battery back-up,
Single 6V relay with isolated O/P and driver on 3 pin connectors,
One 12V stepper motor and 6v DC motor connector with driving circuit.,
One buzzer indicator with signal I/P header,
All interrupts available on header,
16 x 2 LCD display,
8 digital I/Ps from DIP switches
,8 digital O/Ps available on LEDs,
4 multiplexed 7-segment displays,
4x4 matrix keypad with connector output,
232 Communications using DB9 connector.

Aurdino Microcotroller Board

, Arm Microcontroller Board,

Zigbee Interface Module

, Wi-Fi Module

, GSM Interface

, GPS Inerface

, Bluetooth Module

, Arduino YUN

, Raspberry Pi 3 module with HDMI converter, SD card 8 GB, Power adapter

Mesh Wi-Fi Bundle:: This bundle system consists of the various kit package. Argon/Wifi-boards::(Dev board, Mini breadboard,2.4GHz flex antenna, USB cable, Starter project includes two resistors (220 ohm), one red LED, and one photodiode Specs:Espressif ESP32-D0WD 2.4G Wi-Fi coprocessor ,On-board 4MB flash for ESP32 ,802.11 b/g/n support ,802.11 n (2.4 GHz), up to 150 Mbps, Nordic Semiconductor nRF52840 SoC, ARM Cortex-M4F 32-bit processor @ 64MHz , 1MB flash, 256KB RAM , IEEE 802.15.4-2006: 250 Kbps ,Bluetooth 5: 2 Mbps, 1 Mbps, 500 Kbps, 125 Kbps ,Supports DSP instructions, HW accelerated Floating Point Unit (FPU) calculations ,ARM TrustZone CryptoCell-310 Cryptographic and security module ,Up to +8 dBm TX power (down to -20 dBm in 4 dB steps) NFC-A tag On-board additional 2MB SPI flash,20 mixed signal GPIO (6 x Analog, 8 x PWM), UART, I2C, SPI, Micro USB 2.0 full speed (12 Mbps),Integrated Li-Po charging and battery connector, JTAG (SWD) Connector, RGB status LED,Reset and Mode buttons, On-board 2.4GHz PCB antenna for Thread/BLE (does not support Wi-Fi),Two U.FL connectors for external antennas (one for Thread/BLE, another for Wi-Fi),Meets the Feather specification in dimensions and pinout, FCC, CE, and IC certified, RoHS compliant (lead-free).Xenon Boards::(Xenon dev board, Mini breadboard, USB cable. Specs: Nordic Semiconductor nRF52840 SoC ,ARM Cortex-M4F 32-bit processor @ 64MHz ,1MB flash, 256KB RAM ,IEEE 802.15.4-2006: 250 Kbps ,Bluetooth 5: 2 Mbps, 1 Mbps, 500

Kbps,125Kbps Supports DSP instructions, HW accelerated Floating Point Unit (FPU) calculations
 ARM Trust Zone CryptoCell-310 Cryptographic and security module , Up to +8 dBm TX power (down to -20 dBm in 4 dB steps) , NFC-A tag, On-board additional 2MB SPI flash, 20 mixed signal GPIO (6 x Analog, 8 x PWM), UART, I2C, SPI, Micro USB 2.0 full speed (12 Mbps),Integrated Li-Po charging and battery connector, JTAG (SWD) Connector ,RGB status LED, Reset and Mode buttons, On-board PCB antenna, U.FL connector for external antenna, Meets the Feather specification in dimensions and pinout, FCC, CE and IC certified RoHS compliant (lead-free)1 Particle FeatherWing Tripler1 Particle Debugger,Li-Po Battery.

Boron 2G/3G Kit(Qty.-2)::u-blox SARA U201 2G/3G modem ,HSPA/GSMqq with global hardware and SIM support ,3GPP Release 7 ,Bands 800/850/900/1900/2100 MHz,Nordic Semiconductor nRF52840 SoC ,ARM Cortex-M4F 32-bit processor @ 64MHz , 1MB flash, 256KB RAM ,IEEE 802.15.4-2006: 250 Kbps ,Bluetooth 5: 2 Mbps, 1 Mbps, 500 Kbps, 125 Kbps ,Supports DSP instructions, HW accelerated Floating Point Unit (FPU) calculations ,ARM Trust Zone CryptoCell-310 Cryptographic and security module, Up to +8 dBm TX power (down to -20 dBm in 4 dB steps) ,NFC-A tagOn-board additional 2MB SPI flash ,20 mixed signal GPIO (6 x Analog, 8 x PWM), UART, I2C, SPI, Micro USB 2.0 full speed (12 Mbps),Integrated Li-Po charging and battery connector, JTAG (SWD) Connector, RGB status LED, Reset and Mode buttons, Dual SIM support: Nano 4FF and MFF2,U.FL connector for external antenna, Meets the Feather specification in dimensions and pinout, FCC and PTCRB certified, RoHS compliant (lead-free).

Electron 3G Kit(Qty.-2) ::3MB of cellular data per device/mo, First 3 months of Device Cloud **FREE** ,Device Cloud Features: Device Management, Over the Air Firmware Updates, Fully Managed Connectivity Developer Tools Integrations,SPECS:STM32F205 ARM Cortex M3 microcontroller, 1MB Flash, 128K RAM Cellular modem: u-blox SARA U-series (3G),36 pins total: 28 GPIOs (D0-D13, A0-A13), plus TX/RX, 2 GNDs, VIN, VBAT, WKP, 3V3, RST,Board dimensions: 2.0" x 0.8" x 0.3" (0.5" including headers).

Asset Tracker Kit v2(Qty.-2)::ACCESS TO THE DEVICE CLOUD INCLUDES:,3MB of cellular data per device/mo, First 3 months of Device Cloud **FREE** Device Cloud Features: Device Management ,Over the Air Firmware Updates Fully Managed Connectivity Developer Tools Integrations, SPECS: STM32F205 ARM Cortex M3 microcontroller,1MB Flash, 128K RAM, Cellular modem: u-blox SARA U-series (3G) or G-series (2G),36 pins total: 28 GPIOs (D0-D13, A0-A13), plus TX/RX, 2 GNDs, VIN, VBAT, WKP, 3V3, RST,Based on 72-channel u-blox M8 engineGPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1I, Galileo E1B/C, SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN, Update rates: Single GNSS: up to 18 Hz, 2 Concurrent GNSS: up to 10 Hz, Position accuracy of 2.5 meters>,Sensitivity of -167dBm,Acquisition times: Cold starts: 26s, Aided starts: 2s, Reacquisition: 1s,Operating temperature of -40° C to 85° C, On board ROM, Anti spoofing and anti jamming technologies, Two quick connect grove sensor ports, Built-in 3 axis IMU, On board ceramic GPS antenna with LNA and bandpass filter, Ability to switch between on board antenna or external active antenna, Board dimensions: 4.6" x 1.42" x 0.3" (0.5" including headers).

TIVATM4C123GLaunchpadBundle::(Hardware(Qty.-3)::High Performance TM4C123GH6PM MCU,80MHz32-bit ARMCortex-M4-basedmicrocontrollers CPU,256KB Flash, 32KB SRAM, 2KB EEPROM, Two Controller Area Network (CAN) modules, USB 2.0 Host/Device/OTG + PHY, Dual 12-bit 2MSPS ADCs, motion control PWMs,8 UART, 6 I2C, 4 SPI, On-board In-Circuit Debug Interface (ICDI), USB Micro-B plug to USB-A plug cable, Preloaded RGB quick-start application.Software(License-1 user)::CrossWorks for ARM is a complete C/C++ and assembly language development system for Cortex-M, Cortex-A, Cortex-

R, ARM7, ARM9, ARM11, and X Scale microcontrollers. And when we say complete we mean complete — Cross Works for ARM is packed full of features such as: Cross Studio Integrated Development Environment. This is our own, natively built, IDE which takes care of edit, build, download, and debugging over SWD/JTAG. GNU GCC and Clang/LLVM C/C++ tool chains. The Cross Works Debugger. Our multi-core debugger able to seamlessly debug applications built from within the IDE or applications built with external tool chains. The CrossWorks C Library. This is our own non-GPL and non-LGPL C runtime library is designed from the ground up for embedded processor applications. The CrossWorks Tasking Library, known as CTL. CTL is a royalty-free tasking library that provides a multi-priority, pre-emptive, task switching and synchronization facility)

LAUNCHXL-CC1310 LaunchPad with Sub-1GHz radio for wireless applications with integrated PCB trace antenna, Broad band antenna supports both 868 MHz ISM band for Europe and 915 MHz ISM band for US with a single board, On-board emulator gets you started with instant code development in CCS Cloud, Can be used with both LaunchPad kit and SmartRF™ Studio applications, Access all I/O signals with the Booster Pack plug-in module connectors, Compatible with LCD BoosterPack

CC3220SF-LAUNCHXL Supports various IDE: CCS, IAR Embedded Workbench for ARM Cortex-M4, Standalone development platform featuring sensors, LEDs and push-buttons, On-board chip antenna with option for U.FL-based testing, 2x20-pin stackable connectors (Booster Pack headers) to connect to TI Launch Pads and other Booster Packs, Back-channel universal asynchronous receiver/transmitter (UART) through USB to PC, XDS110-based JTAG emulation with serial port for flash programming

Grove Starter Kit(Qty.-) 1x Grove Shield for Particle Mesh; 1x Button; 1x Rotary Angle Sensor; 1x Ultrasonic Ranger; 1x Temp & Humi Sensor; 1x Light Sensor v1.2; 1x Chainable RGB LED; 1x Buzzer; 1x 4-Digit Display.\

3. IOT Bimedical Kit with Sensors

Microcontroller ATmega 2560 (ARDUINO PLATEFORM) Operating Voltage 5v, Digital I/O Pins 54 (of which 6 provide PWM output) PWM Digital I/O Pins 15 Analog Input Pins 16 Flash M

Reprogramming facility through USB and on board facility for sending msg through Bluetooth. Computer interface/software interface: MATLAB, LAB VIEW, any software which has serial interface

ADC resolution: 10 bit resolution.

- Patient Position Sensor
- Pulse and Oxygen in Blood Sensor (SPO2)
- Pulse Rate Blood Pressure measurement ,
- ECG, EMG,
- Body Temperature ,
- Power & Battery

Wifi connectivity for the cloud and android interface based application to monitor data

4. Indoor Experimental Setup of Automatic Weather Station

- Monitors following parameters::
- Wind speed, wind direction,
- Temperature, Relative humidity,
- Rainfall, Solar radiation, Barometric pressure,
- With solar powered module along with solar Panel, 12 volt batteries.
- Micro controller based system. 16 characters X 2 lines display. Automatic GPRS based data transfer system to office from site.
- Data logging through data shuttle also included.
- Weather proof enclosure, Tripod tower 6 feet,
- Real time clock provided. Logging interval 1 minute to 24 hour.
- Sensors for these

2	Accessories (High Quality)	Sr. No.	Item	Qty.
		1	Internet Firewall	1
		2	Hi End Laptop	1
		3	WIFI Stations	5

**Specification
Internet Firewall**

- » Firewall throughput: 16 GBPS
- » VPN throughput: 1.45 GBPS
- » NGFW Throughput: 2.2 GBPS
- » IPS Throughput: 2.7 GBPS
- » Ethernet interfaces: 6x GBE copper, 2x GBE SFP

Technical Information

VPN Max Throughput (Mbps)	1.45 Gbps
VPN Throughput	1 Gbps - 2 Gbps
UTM Throughput	2 Gbps - 5 Gbps
Form Factor	Rackmount
Max Throughput	16 Gbps
Max Concurrent Connections	8,200,000
New Connections / Sec	135,000
Ports Qty	7
Software Included	No
Protection Level	UTM Optional
Firewall Type	Wired Firewall
Network Interface Speed	1 Gigabit

Firewall throughput	16 Gbps
NGFW throughput	2.2 Gbps
VPN throughput	1.45 Gbps
IPS throughput	2.7 Gbps
Antivirus throughput (proxy)	2.3 Gbps
Ethernet interfaces	6x GbE copper 2x GbE SFP
FleXi port slots	1
FleXi port modules (optional)	8 port GE copper

8 port GE SFP
 2 port 10 GE SFP+
 4 port 10 GE SFP+
 2 port 40 GE QSFP+
 4 port GE copper LAN bypass
 4 port GE PoE
 8 port GE PoE

**Specification
 Hi End Laptop**

General

Utility-Everyday Use, Performance
 Device Type- Netbook
 OS- Windows 10 pro (64-bit)
 Dimensions- 206 x 305 x 15 mm
 Weight- 1.18 kg
 Warranty- 3 years Onsite Warranty

Display

Size- 12.5 inches
 Resolution- 1366 x 766 pixels
 PPI- ~ 125

Connectivity

Ethernet- Yes
 WiFi- Yes
 Bluetooth- v4.1
 USB Ports- 1 x USB Type-C, 2 x USB 3.0
 HDMI- 1 x HDMI Port
 Card Reader- Smart Card reader
 Microphone In- Yes
 Headphone Jack- Yes
 Security Lock Port- Noble Wedge Lock Slot

Input

Camera- Yes
 Keyboard Backlit- Yes
 Touchpad- Yes
 Inbuilt Microphone- Yes

Processor

Processor- Intel Core i7-8650U
 Speed- 1.9 GHz, Quad Core Turbo Boost Upto 4.2 GHz
 Cache- 6 MB
 Brand- Intel
 Series- Core i7
 Model- 8650U
 Generation- 8th Gen

Graphics

GPU- Intel Integrated
 Brand -Intel

Memory

RAM- 8 GB DDR4
 RAM Bus Speed-2666 MHz
 Maximum RAM Supported- Upto 32 GB
 Solid State Drive- 512 GB
 Hard Disk Interface- Solid State Drive

Extra

Sales Package- Laptop, Adaptor

Specification
WIFI Stations

Aruba 303 Series Wave2 AP with Aruba Mounting Kit
Unified AP – Controller-based (Aruba OS) or controller-less (Instant OS)
Dual Radio 2x2 802.11ac access point with Multi-User MIMO
Supports up to 867Mbps in the 5GHz band and up to 300Mbps in the 2.4GHz band
Unified AP – deploy with or without controller
The 303 Series access points can be deployed in either controller-based (ArubaOS) or controller-less (InstantOS) deployment mode
Dual Radio 2x2 802.11ac access point with Multi-User MIMO (wave 2)
Supports up to 867Mbps in the 5GHz band (with 2SS/VHT80 client devices) and up to 300Mbps in the 2.4GHz band (with 2SS/HT40 clients)
Backwards compatible with 100/1000Base-T
Built-in Bluetooth Low-Energy (BLE) radio
Enables location based services with BLE-enabled mobile devices receiving signals from multiple Aruba Beacons at the same time
Enables asset tracking when used with Aruba Asset Tags
Advanced Cellular Coexistence (ACC)
Minimizes interference from 3G/4G cellular networks, distributed antenna systems and commercial small cell/femtocell equipment
Quality of service for unified communications applications
Supports priority handling and policy enforcement for unified communication apps, including Skype for Business with encrypted videoconferencing, voice, chat and desktop sharing
Aruba AppRF technology leverages deep packet inspection to classify and block, prioritize or limit bandwidth for over 1,500 enterprise apps or groups of apps
RF Management
Adaptive Radio Management (ARM) technology automatically assigns channel and power settings, provides airtime fairness and ensures that APs stay clear of all sources of RF interference to deliver reliable, high-performance WLANs
The Aruba 303 Series Access Points can be configured to provide part-time or dedicated air monitoring for spectrum analysis and wireless intrusion protection, VPN tunnels to extend remote locations to corporate resources, and wireless mesh connections where Ethernet drops are not available
Spectrum analysis
Capable of part-time or dedicated air monitoring, the spectrum analyzer remotely scans the 2.4GHz and 5GHz radio bands to identify sources of RF interference from HT20 through VHT80 operation
Security
Integrated wireless intrusion protection offers threat protection and mitigation, and eliminates the need for separate RF sensors and security appliances
IP reputation and security services identify, classify, and block malicious files, URLs and IPs, providing comprehensive protection against advanced online threats
Integrated Trusted Platform Module (TPM) for secure storage of credentials and keys

WI-FI RADIO SPECIFICATIONS

AP type: Indoor, dual radio, 5GHz 802.11ac 2x2 MIMO and 2.4GHz 802.11n 2x2 MIMO
5GHz (radio 0):
Two spatial stream Single User (SU) MIMO for up to 867Mbps wireless data rate to individual 2SS VHT80 client devices
Two spatial stream Multi User (MU) MIMO for up to 867Mbps wireless data rate to two 1SS MU-MIMO capable client devices simultaneously
2.4GHz (radio 1):
Two spatial stream Single User (SU) MIMO for up to 300Mbps wireless data rate to individual 2SS HT40 client devices
Support for up to 256 associated client devices per radio, and up to 16 BSSIDs per radio
Supported frequency bands (country-specific restrictions apply):
2.400 to 2.4835GHz
5.150 to 5.250GHz
5.250 to 5.350GHz

5.470 to 5.725GHz
5.725 to 5.850GHz
Available channels: Dependent on configured regulatory domain
Dynamic frequency selection (DFS) optimizes the use of available RF spectrum
Supported radio technologies:
802.11b: Direct-sequence spread-spectrum (DSSS)
802.11a/g/n/ac: Orthogonal frequency-division multiplexing (OFDM)
Supported modulation types:
802.11b: BPSK, QPSK, CCK
802.11a/g/n/ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Transmit power:
Configurable in increments of 0.5dBm
Maximum (aggregate, conducted total) transmit power (limited by local regulatory requirements):
2.4GHz band: +21dBm (18dBm per chain)
5GHz band: +21dBm (18dBm per chain)
Note: conducted transmit power levels exclude antenna gain. For total (EIRP) transmit power, add antenna gain
Advanced Cellular Coexistence (ACC) minimizes the impact of interference from cellular networks
Maximum ratio combining (MRC) for improved receiver performance
Cyclic delay/shift diversity (CDD/CSD) for improved downlink RF performance
Short guard interval for 20MHz, 40MHz and 80MHz channels
Space-time block coding (STBC) for increased range and improved reception
Low-density parity check (LDPC) for high-efficiency error correction and increased throughput
Transmit beam-forming (TxBF) for increased signal reliability and range
Supported data rates (Mbps):
802.11b: 1, 2, 5.5, 11
802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54
802.11n: 6.5 to 300 (MCS0 to MCS15)
802.11ac: 6.5 to 867 (MCS0 to MCS9, NSS = 1 to 2)
802.11n high-throughput (HT) support: HT20/40
802.11ac very high throughput (VHT) support: VHT20/40/80
802.11n/ac packet aggregation: A-MPDU, A-MSDU
WI-FI ANTENNAS
AP-303: Internal antenna models.
Two vertically polarized dual-band downtilt omni-directional antennas for 2x2 MIMO with peak antenna gain of 3.3dBi (2.4GHz) and 5.9dBi (5GHz) per antenna.
The antennas are optimized for horizontal ceiling mounted orientation of the AP. The downtilt angle for maximum gain is roughly 30 degrees.
Combining the patterns of both antennas per radio, the peak gain of the average (effective) pattern is 2.1dBi in 2.4GHz and 4.6dBi in 5GHz.
OTHER INTERFACES
E0: One 10/100/1000BASE-T Ethernet network interface (RJ-45)
Auto-sensing link speed and MDI/MDX
POE-PD: 48Vdc (nominal) 802.3af POE
E1 (AP-303P models only): One 10/100/1000BASE-T
Radio status - Zigbee 802.15.4 radio (AP-303P models only)
DC power interface, accepts 2.1/5.5-mm center-positive circular plug with 9.5-mm length
Bluetooth Low Energy (BLE) radio
Up to 3dBm transmit power (class 2) and -93dBm receive sensitivity
Integrated vertically polarized omnidirectional antenna with roughly 30 degrees downtilt and peak gain of 4.5dBi
Visual indicators (tri-color LEDs): for System and Radio status
Reset button: factory reset (during device power-up), LED mode control (normal/off)
Serial console interface (proprietary, µUSB physical jack)
Kensington security slot
POWER SOURCES AND CONSUMPTION

The AP supports direct DC power and Power over Ethernet (PoE)
When both power sources are available, DC power takes priority over PoE
Power sources are sold separately
AP-303 models:
Direct DC source: 12Vdc nominal, +/- 5%
DC power interface accepts 2.1/5.5-mm center-positive circular plug with 9.5-mm length
Power over Ethernet (PoE): 48Vdc (nominal) 802.3af compliant source
Maximum (worst-case) power consumption: 10.1W (PoE) or 8.8W (DC)
Maximum (worst-case) power consumption in idle mode: 4.2W (PoE) or 4.0W (DC)
AP-303P models:
Direct DC source: 48Vdc nominal, +/- 5%
DC power interface accepts 1.35/3.5-mm center-positive circular plug with 9.5-mm length
Power over Ethernet (PoE-PD) on E0: 48Vdc (nominal) 802.3af/at/bt compliant source
PoE-PSE function on E1 disabled when powered by 802.3af PoE
Maximum (worst-case) power consumption: 11.3 (PoE) or 11.5 (DC)
Maximum (worst-case) power consumption in idle mode: 6.8 (PoE) or 7.0 (DC)
Power consumption numbers exclude power to support PoE-PSE function on E1

MOUNTING
The AP ships with a (black) mount clips to attach to a 9/16-inch or 15/16-inch flat T-bar drop-tile ceiling.
Several optional mount kits are available to attach the AP to a variety of surfaces; see the Ordering Information section below for details.

MECHANICAL
Dimensions and weight (unit, excluding mount accessories):
150mm (W) x 150mm (D) x 35mm (H) or 5.9" (W) x 5.9" (D) x 1.4" (H)
260g or 9.2oz
Dimensions and weight (shipping):
190mm (W) x 180mm (D) x 60mm (H) or 7.4" (W) x 7.0" (D) x 2.4" (H)
410g or 14.5oz

ENVIRONMENTAL
Operating:
Temperature: 0° C to +40° C (+32° F to +104° F)
Humidity: 5% to 93% non-condensing
Storage and transportation:
Temperature: -40° C to +70° C (-40° F to +158° F)

RELIABILITY
MTBF: 795khrs (91yrs) at +25C operating temperature

CERTIFICATIONS
CB Scheme Safety, cTUVus
UL2043 plenum rating
Wi-Fi Alliance (WFA) certified 802.11a/b/g/n/ac
Passpoint® (Release 2) with ArubaOS and Instant 8.3+

MINIMUM SOFTWARE VERSIONS
AP-303 models: ArubaOS& Aruba InstantOS 8.3.0.0
AP-303P models: ArubaOS& Aruba InstantOS 8.4.0.0

FORMAT FOR QUOTATION SUBMISSION
(In letterhead of the supplier with seal)

Date: _____

To: _____

Sl. No.	Description of goods \ (with full Specifications)	Qty.	Unit	Quoted Unit rate in Rs. (Including Ex-Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments)	Total Price (A)	Sales tax and other taxes payable	
						In %	In figures (B)
Total Cost							

Gross Total Cost (A+B): Rs. _____

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. _____ (Amount in figures) (Rupees _____ amount in words) within the period specified in the Invitation for Quotations.

We confirm that the normal commercial warranty/ guarantee of _____ months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier

Name: _____

Address: _____

Contact No. _____