

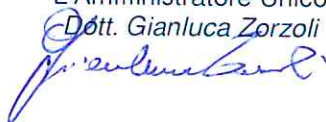
Servizi informatici / Reti telematiche.

FORNITURE HARDWARE/SOFTWARE PER IL POTENZIAMENTO DEL  
P.O.P DATA CENTER E FUNZIONALI ALL'ESPANSIONE DEI SERVIZI  
TECNOLOGICI EVOLUTI EROGATI NELL'AMBITO DEL PROGETTO  
VIGEVANO SMART CITY' \_Capitolato Tecnico Prestazionale

**FORNITURE HARDWARE / SOFTWARE PER IL POTENZIAMENTO DEL P.O.P DATA  
CENTER E FUNZIONALI ALL'ESPANSIONE DEI SERVIZI TECNOLOGICI EVOLUTI  
EROGATI NELL'AMBITO DEL PROGETTO VIGEVANO SMART CITY'\_**

**CAPITOLATO SPECIALE  
DESCRITTIVO E PRESTAZIONALE**

Vigevano, 26 settembre 2018

**asm vigevano e lomellina spa**  
Il Responsabile Unico del Procedimento  
L'Amministratore Unico  
Dott. Gianluca Zorzoli  


**asm vigevano e lomellina spa**  
Il Responsabile Servizi Informatici  
e Reti Telematiche  
Geom. Fabio Tonelli  




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**asm vigevano e lomellina s.p.a.**  
sede legale: Viale Petrarca 68 - 27029

Cod. Fisc. e Part. IVA 01471630184 – cap. soc. 22.925.170,00 i.v.  
Iscl. n. 200152 del Registro delle Imprese di Pavia  
Tel +39 0381 697211 – Fax +39 0381 82794  
comunicazioni@pec.asmvigevano.it  
www.asmvigevano.it – asmvig@asmvigevano.it

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- ROUTER
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## Parte I

### ART. 1 - OGGETTO DELL'APPALTO

Costituisce oggetto dell'appalto la fornitura di apparati e componentistica hardware /software per il potenziamento del centro stella delle reti telematiche cittadine in fibra ottica, P.O.P. Data Center, attraverso il quale Asm gestisce ed eroga servizi informatici tecnologicamente evoluti.

L'espansione di cui trattasi si rende necessaria per evadere le nuove richieste di espansione dei servizi gestiti a seguito di recenti Determinazioni dell'Amministrazione Comunale nell'ambito del progetto 'Vigevano Smart City'.

In sintesi, è richiesta la fornitura di

- SAN (Storage Area Network) ad elevate prestazioni
- NAS (Network Attached Storage) ad elevate prestazioni
- Integrazione licenze di virtualizzazione e backup
- Accessori a servizio della rete MAN (switch, access point wi-fi, ecc.)

Le forniture dovranno rispondere alle caratteristiche dettagliate nella Parte II del presente Capitolato (*Specifiche Tecniche*) ed avranno l'entità descritta nel Computo Metrico Estimativo allegato al presente documento, di cui ne è parte integrante.

### ART. 2 - IMPORTO DELL'APPALTO

L'ammontare complessivo per l'intera gara d'appalto è di € 120.286,00 oltre I.V.A. (22 %), come di seguito riepilogato:

|           |   | <i>Euro</i>       |
|-----------|---|-------------------|
| a)        | Importo forniture (base d'asta)               | 120.286,00        |
| b)        | Oneri per l'attuazione dei piani di sicurezza | 0,00              |
| <b>1)</b> | <b>Totale appalto</b>                         | <b>120.286,00</b> |
| a)        | I.V.A. 22% su totale appalto                  | 26.462,92         |
| <b>2)</b> | <b>Totale quadro economico</b>                | <b>146.748,92</b> |



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Il ribasso unico percentuale offerto dall'aggiudicatario in sede di gara si intende offerto e applicato a tutti i prezzi unitari di cui al Computo Metrico Estimativo in allegato, così ribassati, costituiscono i prezzi contrattuali da applicare alle singole quantità eseguite.

I prezzi contrattuali sono vincolanti anche per la definizione, valutazione e contabilizzazione di eventuali proroghe, varianti, addizioni o detrazioni in corso d'opera, qualora ammissibili ed ordinate o autorizzate.

L'offerta sarà selezionata con il criterio del minor prezzo ai sensi art. 95 comma 4 lettera b) del D.lgs. 50/2016 in quanto la fornitura presenta caratteristiche standardizzate.

Il corrispettivo offerto coprirà ogni altro costo collegato direttamente o indirettamente alla fornitura di cui al presente capitolato, ivi compreso il trasporto, imballaggio, carico e scarico fino al luogo di consegna presso Asm Vigevano e Lomellina s.p.a.

Il contratto è stipulato "a corpo".

### **ART. 3 – TEMPI CONSEGNA DELLA FORNITURA**

La fornitura dovrà avvenire entro 30 giorni naturali consecutivi dalla sottoscrizione del contratto.

### **ART. 4 - MODALITA' DI ESPLETAMENTO DELLA GARA**

Le modalità di espletamento della gara sono indicate nella lettera di invito.

### **ART. 5 - PRESENTAZIONE DELLE OFFERTE**

Le modalità di presentazione delle offerte sono quelle indicate nella lettera di invito.

### **ART. 6 – REQUISITI SPECIALI PER LA PARTECIPAZIONE ALLA GARA**

Nessun requisito di ordine speciale.



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## **ART. 7 - MODALITA' DI ESPLETAMENTO DELLA FORNITURA E CARATTERISTICHE DEI PRODOTTI FORNITI**

Tutte le forniture dovranno essere corredate da certificati di garanzia on site come dettagliato nelle singole voci del Computo allegato, comunque per un periodo non inferiore a 36 mesi.

Le consegne dovranno avvenire, a cura e spese del fornitore, presso il magazzino Ufficio Tecnico ubicato presso la sede aziendale di Viale Leopardi, 42 a Vigevano.

Sono ammesse proposte anche alternative di prodotti simili a quelli indicati come 'Tipo' nelle Specifiche Tecniche - Parte II, purchè con caratteristiche tecniche e prestazionali uguali o superiori, nonchè compatibili con le infrastrutture di rete esistenti e con gli standard di configurazione e management della Committenza, che si riserva l'insindacabile facoltà di accettazione.

In caso la miglior offerta non corrisponda anche in solo una delle voci di fornitura alle caratteristiche minime richieste, non potrà essere aggiudicata, a favore della successiva in ordine di graduatoria che ne abbia rispondenza.

I componenti forniti dovranno essere corredate da documentazione tecnica / manuali d'uso comprovanti le specifiche di fabbrica e le istruzioni di funzionamento, assemblaggio, configurazione e sicurezza.

## **ART. 8 - CORRISPETTIVO E MODALITA' DI PAGAMENTO**

Il corrispettivo sarà spettante all'operatore economico aggiudicatario sarà quello risultante dagli atti di gara e coprirà, anche a titolo forfettario, ogni altro costo collegato direttamente o indirettamente alla fornitura di cui al presente capitolato, ivi compreso il trasporto, imballaggio, carico e scarico fino al luogo di magazzino.

Il pagamento avverrà attraverso la liquidazione di regolare fattura, conseguentemente al completamento di tutte le forniture in elenco consegnate alla sede della stazione appaltante, previo verifica di rispondenza in contraddittorio e detrazione di eventuali penalità.

Il pagamento del corrispettivo avverrà a 60 giorni dal ricevimento della fattura fine mese.



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## ART. 9 – CAUZIONI

Per partecipare alla gara i concorrenti dovranno presentare a corredo dell'offerta una cauzione provvisoria pari al 2% del valore stimato complessivo del contratto di cui all'art. 2 del presente capitolato e ai sensi art. 93 del D.lgs. 50/2016.

Tale cauzione garantisce la mancata sottoscrizione del contratto per fatto dell'aggiudicatario e sarà svincolata al momento della sottoscrizione del contratto da parte dell'impresa aggiudicataria mentre sarà restituita, ad avvenuta aggiudicazione, agli altri soggetti partecipanti.

La cauzione definitiva, pari al 10% del valore stimato complessivo del contratto di cui all'art. 2 del presente capitolato, è da costituirsi ai sensi dell'art. 103 del D.Lgs. 50/2016.

## ART. 10 - STIPULAZIONE DEL CONTRATTO

L'aggiudicatario è obbligato alla stipulazione del relativo contratto. Qualora, senza giustificati motivi, esso non adempia a tale obbligo, nei termini che verranno prescritti, la Società potrà dichiarare la decadenza dell'aggiudicazione escutendo la cauzione provvisoria e fatto salvo l'eventuale maggior danno.

## ART. 11 - SPESE A CARICO DELL'AGGIUDICATARIO

Il prestatore del servizio aggiudicatario è tenuto al pagamento di tutte le spese contrattuali ove dovute secondo le leggi in vigore (imposta di bollo, diritti fissi di scritturazione, diritti di segreteria ed eventuali imposte di registro).

## ART. 12 - PENALITA'

La penale da applicarsi nel caso di ritardato o mancato adempimento degli obblighi contrattuali resta stabilita come segue:

- Ritardo nella consegna della merce rispetto ai termini previsti dall'art. 7 del presente capitolato : € 200,00 al giorno di ritardo per ogni singolo pezzo non consegnato in tempo;
- Fornitura di beni difformi rispetto alle caratteristiche previste nel capitolato tecnico per i singoli componenti: 20% del valore delle merci per difformità valutate come marginali dalla stazione appaltante; penale corrispondente al prezzo, come determinato all'esito dell'aggiudicazione, della merce consegnata in caso di difformità ritenute essenziali o comunque significative dalla stazione appaltante (il quale prezzo non verrà corrisposto al





fornitore). Tale ultimo importo verrà considerato una penale ai sensi e per gli effetti di quanto previsto al successivo comma;

L'ammontare complessivo delle penali maturate nel corso dell'esecuzione del contratto non può essere superiore al 10% del valore stimato complessivo del contratto di cui all'art. 2 del presente capitolato. Qualora la penale determini un importo superiore, si darà avvio alle procedure per la risoluzione del contratto per grave ritardo nei modi e nei termini di cui all'articolo 108 del D. Lgs. 50/2016.

Per ottenere il rimborso dei maggiori oneri sostenuti per l'affidamento ad altri fornitori, per la rifusione dei danni ed il pagamento delle penalità, la Società potrà rivalersi mediante trattenuta sui crediti dell'appaltatore.

#### **ART. 13- RISOLUZIONE DEL CONTRATTO**

La Committenza potrà procedere alla risoluzione del contratto con le modalità e nei casi previsti dalla legge, con particolare riferimento ai seguenti casi:

- In caso di frode o grave inadempimento, grave irregolarità o grave ritardo nell'adempimento degli obblighi contrattuali;
- Nel caso di cessione non autorizzata del contratto.

La risoluzione del contratto per i motivi predetti fa sorgere a favore della Committenza il diritto di affidare il contratto ad altri fornitori, con addebito alla parte inadempiente delle maggiori spese sostenute.

L'esecuzione in danno non esclude eventuali responsabilità civili o penali del fornitore, per il fatto che ha determinato la risoluzione.

#### **ART. 14 - CONTROLLI**

Il materiale consegnato presso la sede indicata della Stazione Appaltante, non potrà intendersi accettato se non prima verificato in contraddittorio per la rispondenza tecnico-quantitativa il giorno medesimo della consegna, che dovrà essere concertata con la stazione appaltante mediante preavviso di almeno n.2 giorni.

La suddetta verifica di rispondenza della merce consegnata, non presupporrà l'attestazione di corretto funzionamento delle apparecchiature, che potrà essere verificato dalla Stazione Appaltante solo in un secondo momento durante le installazioni.

Eventuali anomalie o malfunzionamenti di fabbrica saranno immediatamente segnalati dalla Stazione Appaltante per la richiesta di sostituzione immediata del pezzo, già in garanzia.





#### **ART. 15 - CESSIONE DEL CONTRATTO E CESSIONE DEI CREDITI**

E' vietata la cessione del contratto sotto qualsiasi forma; ogni atto contrario è nullo di diritto, ai sensi dell'art. 1260 comma 2 Codice Civile è esclusa qualsiasi forma di cessione del credito.

#### **ART. 16 - CONTROVERSIE**

Il foro competente a conoscere di qualsiasi controversia inerente l'interpretazione e l'esecuzione del contratto sarà quello di Pavia.

#### **ART. 17 – TRATTAMENTO DEI DATI E INFORMATIVA SUL TRATTAMENTO DATI PERSONALI AI SENSI DELL'ART. 13 DEL REG. UE 679/2016**

L'affidatario dichiara di aver compreso il contenuto dell'informativa TRATTAMENTO DATI PERSONALI resa ai sensi del Regolamento UE 679/2016 scaricabile dal sito [www.asmvigevano.it](http://www.asmvigevano.it) (sezione "Fornitori") e di aver informato del trattamento dei dati personali svolto da ASM Vigevano e Lomellina s.p.a, in relazione al rapporto contrattuale in essere, gli interessati appartenenti alla propria organizzazione o ad essa riconducibili, avendo altresì raccolto, ove necessario, il relativo consenso.

I dati personali saranno trattati in modo lecito, corretto e trasparente; saranno adeguati, pertinenti e limitati a quanto necessario per il corretto espletamento della procedura di affidamento, esatti e aggiornati; saranno trattati con la massima riservatezza, nel rispetto dei principi in materia di privacy vigenti e comunque in maniera tale da garantire una adeguata sicurezza, compresa la protezione, con misure tecniche e organizzative adeguate, da trattamenti non autorizzati o illeciti, nonché dalla perdita anche accidentale.

L'ente committente informa l'affidatario che titolare del trattamento dei dati è ASM Vigevano e Lomellina s.p.a. con sede a Vigevano (PV) in Viale Petrarca n. 68 e che, relativamente agli adempimenti inerenti al Contratto, responsabile del suddetto trattamento è il legale rappresentante.

#### **ART. 18 – RESPONSABILE DEL PROCEDIMENTO / ESECUZIONE CONTRATTO**

Il Responsabile Unico del Procedimento è l'Amministratore Unico di Asm Vigevano e Lomellina s.p.a., Dott. Gianluca Zorzoli.

Direttore Esecuzione Contratto è il Responsabile Servizi Informatici e Reti Telematiche di Asm Vigevano e Lomellina s.p.a., Geom. Fabio Tonelli.



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## Parte II

### SPECIFICHE TECNICHE

Le forniture oggetto dell'appalto dovranno avere caratteristiche tecnico-prestazionali uguali o superiori a quelle di seguito elencate o negli Allegati sotto individuati, parte integrante del presente Capitolato.

Per le voci eventualmente non ricomprese nella presente sezione o negli Allegati, valgono le specifiche desumibili dal Computo Metrico Estimativo.

**N.A.S.**

**FORNITURA DI UNA NAS ASSEMBLATA CON CARATTERISTICHE UGUALI O SUPERIORI: NAS BACKUP RACK 2U 12 baie HD 3,5 hot-swap 12Gb/s, 16G ram, processore Intel Xeon E3-1220V6, nr 2 dischi NVMe PCIe SSD da 480GB, nr 4 porte gigabit, nr 2 porte 10GB SFP+, 12 dischi seagate 3,5 exos x10 12GB/s, supporto raid5,6), scheda di gestione remota (IPMI) nr 2 cavi DAS direct-access SFP+, 3 anni di supporto on site Next bussiness day. La NAS dovrà essere fornita pre-installata della componentistica dettagliata.**

| <u>codice produttore</u> | <u>descrizione componentistica</u>   | <u>q.ta</u> |
|--------------------------|--|-------------|
| RS21202M/550F/12E/FP     | IN WIN RS21202M 2U RACK-MOUNT MIDDLE DEPTH CHASSIS/<br>EXTERNAL HOT SWAP 3.5" x12 or 2.5" x12/ 12G EXPANDER<br>BACKPLANE/ USB3.0/ NMB 3115RL04WB66E53 80*80*38mm,<br>5500RPM x 3/ HOT SWAP FAN MODULE/ FSF022-7KAG CRPS<br>PDB/ACBEL R1CA2551B CRPS 550W MODULEx2PCS/EU POWER<br>CORD/ IRON SILVER FRONT PANEL (Versione BP con Expander)  | 1           |
| 3A68-660CPZZAH7          | IN WIN 26" ball-bearing slide [3RAMIS086302]   | 1           |
| 90SB0520-M0UAY0          | Scheda madre per server Asus P10S-E/4L - Intel Chipset - Socket H4<br>LGA-1151 - ATX - 1 x Processore supportato - 64 GB DDR4 SDRAM<br>RAM massima - 2,13 GHz Memory Speed Supported - UDIMM - 4 x<br>Memory Slots - Serial ATA/600 Supporto RAID Controllore - 10, 5, 1, 0<br>RAID Levels - Chipset scheda video - 2 x Porta USB 3.0 - ASPEED<br>AST2400 - Gigabit Ethernet - 2 x PCI Express x8 Slots - 1 x PCI Express<br>x16 Slots - 4 x USB Ports - VGA - 2 x M.2 Interfaces - 8 x SATA<br>Interfaces | 1           |



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|                 |   |    |
|-----------------|---|----|
| 90SC04G0-M0UAY0 | Asus ASMB8-IKVM IPMI w/KVM  | 1  |
| 90SC05E0-M0UAY0 | Controller SAS Asus PIKE II 3008-8i - 12Gb/s SAS - PCI Express 3.0 x8 - Plug-in Card - Supporto RAID - 0, 1, 1E, 10 Livello RAID - 8 Total SAS Port(s) - 8 SAS Port(s) Internal - Linux, PC | 1  |
| SKC1000/480G    | Unità stato solido Kingston 480 GB Interno - PCI Express - M.2 2280 - 2,64 GB/s Maximum Read Transfer Rate - 900 MB/s Maximum Write Transfer Rate   | 2  |
| BX80677E31220V6 | Intel Xeon E3-1220V6 3GHz 4 Core 5.0 GT/s Cache 8MB Socket H3 LGA1151 CUPMARK 6258, Support DDR4 1333/1600 ECC 2 Channels, w/ Heatsink & Fan  | 1  |
| KVR24E17S8/8    | KINGSTON 8GB DDR4 , 2400MHz , ECC , CL17 , 1.2V , Unbuffered , DIMM   | 2  |
| ST10000NM0096   | Disco rigido Seagate ST10000NM0096 10 TB 3.5" Interno - SAS - 7200giri/min - 256 MB Buffer  | 12 |
| 90SC06N0-M0UAY0 | ASUS PEI-10G/82599-2S - Adattatore di rete - PCI Express 2,0 x8 Low Profile   | 1  |
| SFP-10G-CU3M    | Huawei SFP-10G-CU3M 3m SFP+ SFP+ Black fiber optic cable - Fibre Optic Cables (3 m, SFP+, SFP+, Black)  | 2  |

## STORAGE

Fornitura di uno storage e 2 switch fiber chanel come da specifiche allegate 'tipo HITACHI VSP G350' o altro storage con caratteristiche equivalenti o superiori

### Item 1: VSP G Unified Platform

| Specification | Single Configuration Measures                 | Qty |
|---------------|---|-----|
| Capacity:     | 128GB Cache Memory (32GB Modules)             | 1   |
|               | 53.903 TB Raw Storage                         | 1   |
|               | 42.733TB Usable (Base 10)                     | 1   |
|               | 38.865TB Usable (Base2)                       | 1   |
| Raid Groups:  | 480GB SFF SSD RAID 5 3D+1P Array Group        | 1   |
|               | 1.418TB Usable (Base10) 1.29TB Usable (Base2) |     |



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Tel +39 0381 697211 – Fax +39 0381 82794  
comunicazioni@pec.asmvivevano.it  
www.asmvivevano.it – asmvig@asmvivevano.it



Servizi informatici / Reti telematiche.

FORNITURE HARDWARE/SOFTWARE PER IL POTENZIAMENTO DEL  
P.O.P DATA CENTER E FUNZIONALI ALL'ESPANSIONE DEI SERVIZI  
TECNOLOGICI EVOLUTI EROGATI NELL'AMBITO DEL PROGETTO  
VIGEVANO SMART CITY' \_Capitolato Tecnico Prestazionale

|                      |  |   |
|----------------------|--|---|
|                      | 1.9TB SFF SSD RAID 6 6D+2P Array Group           | 1 |
|                      | 11.343TB Usable (Base10) 10.316TB Usable (Base2) |   |
|                      | 2.4TB 10K SFF HDD RAID 6 6D+2P Array Group       | 1 |
|                      | 13.833TB Usable (Base10) 12.581TB Usable (Base2) |   |
|                      | 1.2TB SFF HDD RAID 5 7D+1P Array Group           | 2 |
|                      | 16.139TB Usable (Base10) 14.678TB Usable (Base2) |   |
| <b>Spare Drives:</b> | 1.2TB(10K) SFF Spare Drive (2.5")                | 1 |
|                      | 1.9TB SSD Spare (2.5")                           | 1 |
|                      | 480GB SSD Spare (2.5")                           | 1 |
|                      | 2.4TB(10K) SFF Spare Drive (2.5")                | 1 |
| <b>Chassis:</b>      | Drive Chassis - SFF (Supports 24 x 2.5" Drives)  | 1 |
| <b>Connectivity:</b> | VSP G/FXX0 Host I/O Module FC 16/32G 4port       | 2 |
|                      | Power Cable 250VAC 10A IEC320-C14                | 5 |

| Class | Product                                     | qty |
|-------|---|-----|
| HW    | VSP G350 Covered Product Unified (FC/iSCSI) | 1   |
|       | support Term: 36 Months                     |     |
|       | Level: Week Day Basic (WDB)                 |     |

#### Item 1: VSP G Unified Platform

##### Hardware

| VSP G350 Product Unified<br>(FC/iSCSI)         | Description                        | qty      |
|--|------------------------------------|----------|
| A34V-600-850-UNI.P                             | Universal rail kit                 | 2        |
| FD221577-001.P                                 | SVP Bezel ASM (including brackets) | 1        |
| WS-003-002.P                                   | J2F Power Cord                     | 5        |
| HDW2-F850-DBSC.P                               | VSP G/F XX0 Drive Box (SFF)        | 1        |
| HDW-F850-SCQ1.P                                | VSP G SAS Cable 1m                 | 2        |
| HDW2-F850-1PS16.P                              | VSP G SFP for 16Gbps Shortwave     | 8        |
| HDW2-F850-SVP.P                                | VSP G/FXX0 SVP - Service Processor | 1        |
| VSP G350 Covered Product<br>Unified (FC/iSCSI) | Description                        | Quantity |
| G350-F-BASE-S.P                                | VSP G350 Foundation Base Package   | 1        |
| GXX0-4X480GB.P                                 | VSP GXX0 Flash Pack 4 x 480GB SSD  | 1        |



Certificazione Settore Gas

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|                                 |  |                 |
|---------------------------------|--|-----------------|
| GXX0-4X1R9TB.P                  | VSP GXX0 Flash Pack 4 x 1.9TB SSD          | 2               |
| GXX0-4X1R2TB.P                  | VSP GXX0 HDD Pack 4 x 1.2TB 10K SAS HDD    | 4               |
| GXX0-4X2R4TB.P                  | VSP GXX0 HDD Pack 4 x 2.4TB 10K SAS HDD    | 2               |
| <b>VSP G350 Product Unified</b> |  |                 |
| <b>(FC/iSCSI)</b>               | <b>Description</b>                         | <b>Quantity</b> |
| DW2-F850-480MGM.P               | VSP GXX0 480GB SSD                         | 1               |
| DW2-F850-1R9MGM.P               | VSP GXX0 1.9TB SSD                         | 1               |
| DW2-F850-1R2JCM.P               | VSP GXX0 1.2TB SAS HDD                     | 1               |
| DW2-F850-2R4JGM.P               | VSP GXX0 2.4TB SAS HDD                     | 1               |
| HDW2-F850-4HF32R.P              | VSP G/FXX0 Host I/O Module FC 16/32G 4port | 2               |

## Item 2: Data Network Switches

| Specification                   | Single Configuration Measures  | Qty |
|---------------------------------|--|-----|
| <b>Model: brocade switch FC</b> | Brocade BR 6505,12P,16Gb SFPS,BR,AC,SINGLE PSU, rack mount kit<br>support Term: 36 Months<br>Level: Week Day Basic (WDB) | 2   |

N.B.\_ulteriori specifiche tecniche in Datasheet allegati.

F I N E documento

Allegati:

### -DATASHEET:

- Switch di MAN Managed Ethernet ['tipo di riferimento']
- Router- '['tipo di riferimento']
- Access Point Indoor/Outdoor ['tipo di riferimento']

### -COMPUTO METRICO ESTIMATIVO



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CENTER E FUNZIONALI ALL'ESPANSIONE DEI SERVIZI TECNOLOGICI EVOLUTI  
EROGATI NELL'AMBITO DEL PROGETTO VIGEVANO SMART CITY' \_**

**ALLEGATI**

**Datasheet dispositivi di riferimento**

- Switch di MAN Managed Ethernet
- Router
- Access Point indoor/outdoor

Vigevano, 26 settembre 2018

**asm vigevano e lomellina spa**  
Il Responsabile Servizi Informatici  
e Reti Telematiche  
Geom. Fabio Tonelli



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# DATASHEET



**EdgeMAX<sup>®</sup>**

Advanced Network Routers

Models: ERPro-8, ER-8, ERPoe-5, ERLite-3

Sophisticated Routing Features

Advanced Security, Monitoring, and Management

High-Performance Gigabit Ports

  
**UBIQUITI<sup>®</sup>**  
NETWORKS





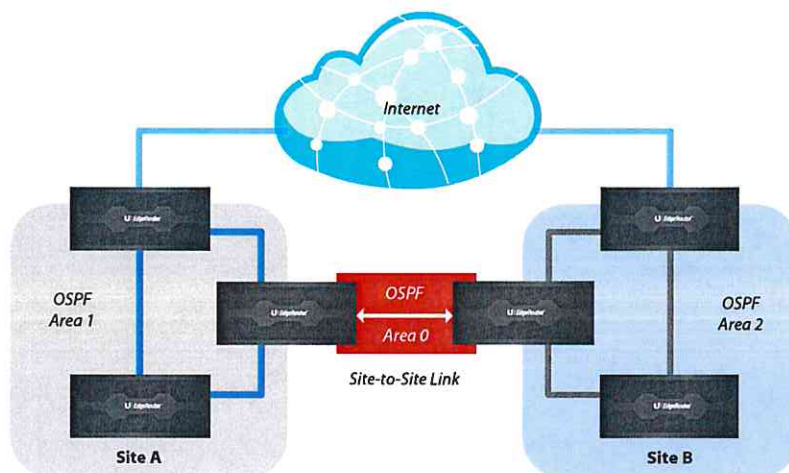
## Advanced Routing Technology for the Masses

Introducing the EdgeRouter™ from Ubiquiti Networks, part of the EdgeMAX® platform. EdgeRouters combine carrier-class reliability with enterprise-level features in a compact and affordable unit.

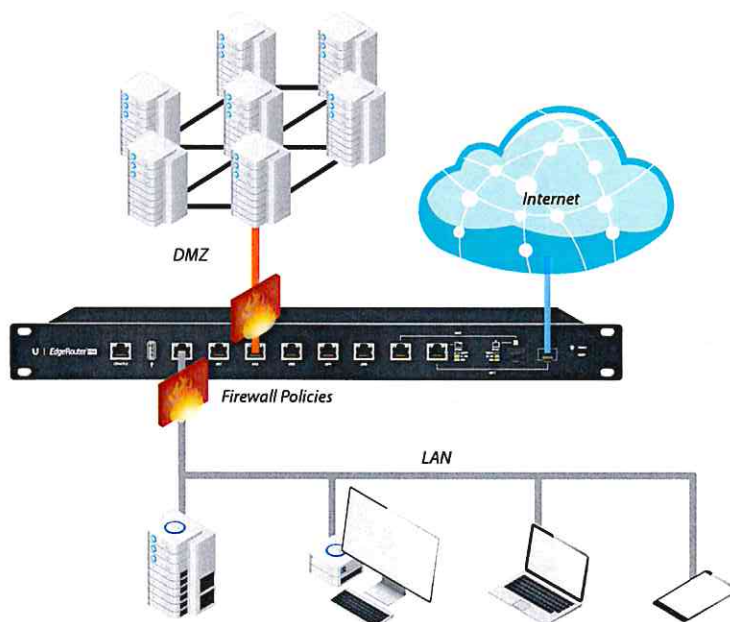
The EdgeRouter PoE and EdgeRouter Lite models are the world's first economical router capable of routing up to 1 million packets per second.

Available in a rackmountable form factor with eight functional ports, the EdgeRouter Pro and 8-Port EdgeRouter models are even faster, capable of routing up to 2 million+ packets per second.

Powered by a proprietary and intuitive graphical interface, EdgeOS™, EdgeRouters can easily be configured for routing, security, and management features required to efficiently run your network. For advanced network professionals, an integrated CLI is available for quick and direct access using familiar commands.



Typical Service Provider Deployment



Example of Enterprise Deployment with SFP Connection to the Internet

### Manage Your Network

**DHCP Server** Set up multiple DHCP servers to assign IP ranges in different subnets on the different interfaces. Easily control dynamic and static IP addressing for your network devices.

**Monitoring Tools** Conveniently track network activity and devices from tools such as *Ping*, *Trace*, *Discover*, *Packet Capture*, and *Log Monitor*.

**User Accounts** Manage access to the EdgeRouter using unique administrator and operator accounts.

### Secure Your Network

**Firewall Policies** Organize the rules you apply in the order you specify.

**Firewall Groups** Apply the policies to groups filtered by IP address, network address, or port number.

**NAT Rules** The EdgeRouter changes packet addressing based on your customized source and destination NAT rules.

### Direct Traffic Flow

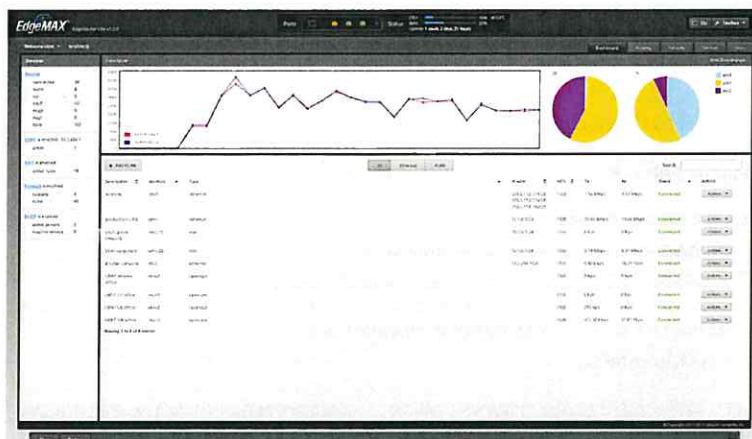
**Interfaces** Each Gigabit port functions as an independent interface. You can also configure Virtual Local Area Network (VLAN) interfaces for network segmentation.

**Routing** Configure static routes and dynamic routing protocols to effectively manage the routes used by the EdgeRouter.

With these capabilities and more, the EdgeRouter provides the centralized control you need to optimize the performance and reliability of your network.

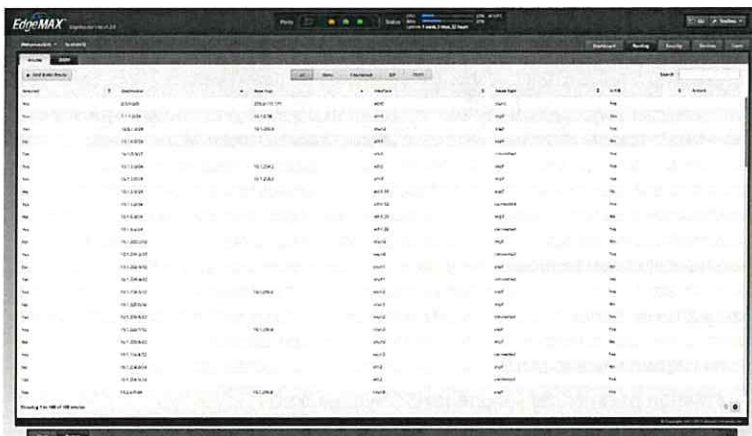


The EdgeRouter provides a graphical user interface designed for convenient setup and control. Accessed via a network port and web browser, the user-friendly interface provides intuitive management with a virtual view of the ports, displaying physical connectivity, speed, and status. The Dashboard displays detailed statistics: IP information, MTU, transmit and receive speeds, and status for each physical and virtual interface.



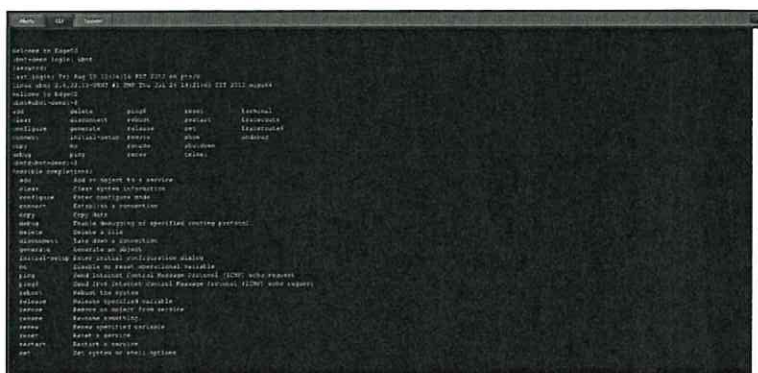
EdgeOS is a sophisticated operating system loaded with robust features, including:

- Static routes and support of routing protocols: OSPF, RIP, and BGP
- Firewall policies and NAT rules
- DHCP services
- Quality of Service (QoS)
- Network administration and monitoring tools
- Comprehensive IPv6 support
- Choice of configuration methods: the graphical user interface to visualize the workings of your network or the Command Line Interface (CLI) to use advanced, command-driven configuration



The CLI provides quick and flexible configuration by command line and features the following:

- For power users, configuration and monitoring of all advanced features
- Direct access to standard Linux tools and shell commands
- CLI access through the serial console port, SSH, Telnet, and the graphical user interface



# Models

## EdgeRouter PRO

Model: ERPro-8

- (6) Gigabit routing ports
- (2) Gigabit RJ45/SFP combination ports
- 2 million+ packets per second for 64-byte packets
- 8 Gbps for packets 512 bytes or larger in size
- Rackmountable



Front Panel



Back Panel

## 8-Port EdgeRouter

Model: ER-8

- (8) Gigabit routing ports
- 2 million packets per second for 64-byte packets
- 8 Gbps for packets 512 bytes or larger in size
- Rackmountable



Front Panel



Back Panel

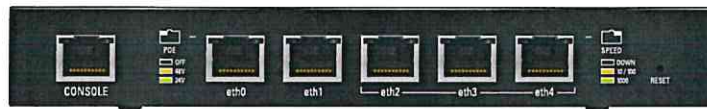


# Models

## EdgeRouter PoE

Model: ERPoe-5

- (5) Gigabit routing ports
- (5) PoE configurable ports
- Supports 24V or 48V PoE
- (3) ports configurable for switching
- 1 million packets per second for 64-byte packets



Front Panel



Back Panel

## EdgeRouter Lite

Model: ERLite-3

- (3) Gigabit routing ports
- 1 million packets per second for 64-byte packets
- Silent, fanless operation
- Compact, durable metal casing



Front Panel



Back Panel

**EdgeRouter™ PRO****Hardware Specifications**

| Model: ERPro-8                   |  |
|----------------------------------|--|
| Dimensions                       | 484 x 164 x 44 mm (19.06 x 6.46 x 1.73 in)                                     |
| Weight                           | 2.3 kg (5.07 lb)   |
| Max. Power Consumption           | 40 W   |
| Power                            | Internal AC/DC Power Adapter, 60 W (24V, 2.5A)                                 |
| Power Input                      | 110 - 240VAC   |
| Button                           | Reset  |
| LEDs Per Data Port               | Speed/Link/Activity  |
| Networking Interfaces            |  |
| Serial Console Port              | (1) RJ45 Serial Port   |
| Data Ports                       | (6) 10/100/1000 RJ45 Ports<br>(2) 10/100/1000 RJ45/SFP Combination Ports       |
| Layer 3 Forwarding Performance   |  |
| Packet Size: 64 Bytes            | 2,400,000 pps  |
| Packet Size: 512 Bytes or Larger | 8 Gbps (Line Rate)   |
| Processor                        | Dual-Core 1 GHz, MIPS64<br>with Hardware Acceleration<br>for Packet Processing |
| System Memory                    | 2 GB DDR3 RAM  |
| On-Board Flash Storage           | 4 GB   |
| Certifications                   | CE, FCC, IC  |
| Rack-Mount                       | Yes  |
| Operating Temperature            | -10 to 45° C (14 to 113° F)  |
| Operating Humidity               | 10 - 90% Noncondensing   |





# EdgeRouter™

## Hardware Specifications

| Model: ER-8                      |  |
|----------------------------------|--|
| Dimensions                       | 484 x 164 x 44 mm (19.06 x 6.46 x 1.73 in)                                       |
| Weight                           | 2.3 kg (5.07 lb)   |
| Max. Power Consumption           | 35 W   |
| Power                            | Internal AC/DC Power Adapter, 60 W (24V, 2.5A)                                   |
| Power Input                      | 110 - 240VAC   |
| Button                           | Reset  |
| LEDs Per Data Port               | Speed/Link/Activity  |
| Networking Interfaces            |  |
| Serial Console Port              | (1) RJ45 Serial Port   |
| Data Ports                       | (8) 10/100/1000 Ethernet Ports   |
| Layer 3 Forwarding Performance   |  |
| Packet Size: 64 Bytes            | 2,000,000 pps  |
| Packet Size: 512 Bytes or Larger | 8 Gbps (Line Rate)   |
| Processor                        | Dual-Core 800 MHz, MIPS64<br>with Hardware Acceleration<br>for Packet Processing |
| System Memory                    | 2 GB DDR3 RAM  |
| On-Board Flash Storage           | 4 GB   |
| Certifications                   | CE, FCC, IC  |
| Rack-Mount                       | Yes  |
| Operating Temperature            | -10 to 45° C (14 to 113° F)  |
| Operating Humidity               | 10 - 90% Noncondensing   |



# EdgeRouter™ PoE

## Hardware Specifications

| Model: ERPoe-5                   |   |
|----------------------------------|---|
| Dimensions                       | 200 x 90 x 30 mm (7.87 x 3.54 x 1.18 in)  |
| Weight                           | 360 g (12.7 oz)   |
| Max. Power Consumption           | 60 W  |
| Power                            | 48VDC, 1.25A Power Adapter (Included)   |
| Power Input                      | 48VDC Input (Supported Range: 38 to 54VDC)  |
| Power Connector Size             | DC Power Jack, 2.1 mm<br>2.1 mm ID, 5.5 mm OD   |
| Button                           | Reset   |
| LEDs Per Port                    |   |
| Serial Console Port              | Power   |
| Data Ports                       | PoE, Speed/Link/Activity  |
| PoE Configurable Per Port        |   |
| Serial Console Port              | N/A   |
| Data Ports                       | Off/24V/48V   |
| Networking Interfaces            |   |
| Serial Console Port              | (1) RJ45 Serial Port  |
| Data Ports                       | (2) 10/100/1000 Ethernet Router Ports<br>(3) 10/100/1000 Ethernet Router/Switch Ports |
| Layer 3 Forwarding Performance   |   |
| Packet Size: 64 Bytes            | 1,000,000 pps   |
| Packet Size: 512 Bytes or Larger | 3 Gbps (Line Rate)  |
| Processor                        | Dual-Core 500 MHz, MIPS64 with<br>Hardware Acceleration for Packet Processing         |
| System Memory                    | 512 MB DDR2 RAM   |
| On-Board Flash Storage           | 2 GB  |
| Certifications                   | CE, FCC, IC   |
| Wall-Mount                       | Yes   |
| Operating Temperature            | -10 to 45° C (14 to 113° F)   |
| Operating Humidity               | 10 - 90% Noncondensing  |

| PoE with 48VDC Power Adapter                   |                        |
|--|------------------------|
| PoE Out Voltage Range                          | 22-24VDC / 45-48VDC    |
| Max. PoE Wattage Per Data Port                 | 12 W (24V), 24 W (48V) |
| Max. PoE Wattage Combined for All 5 Data Ports | 50 W                   |
| PoE Method                                     | Passive                |





# EdgeRouter™ LITE

## Hardware Specifications

| Model: ERLite-3                  |  |
|----------------------------------|--|
| Dimensions                       | 200 x 90 x 30 mm (7.87 x 3.54 x 1.18 in)   |
| Weight                           | 345 g (12.17 oz)   |
| Max. Power Consumption           | 7 W  |
| Power                            | 12VDC, 1A Power Adapter (Included)   |
| Power Input                      | 9 to 24VDC Supported Voltage Range   |
| Button                           | Reset  |
| LEDs Per Port                    | Power<br>Speed/Link/Activity   |
| Serial Console Port              |  |
| Data Ports                       |  |
| Networking Interfaces            | (1) RJ45 Serial Port<br>(3) 10/100/1000 Ethernet Ports                           |
| Serial Console Port              |  |
| Data Ports                       |  |
| Layer 3 Forwarding Performance   | 1,000,000 pps<br>3 Gbps (Line Rate)  |
| Packet Size: 64 Bytes            |  |
| Packet Size: 512 Bytes or Larger |  |
| Processor                        | Dual-Core 500 MHz, MIPS64<br>with Hardware Acceleration<br>for Packet Processing |
| System Memory                    | 512 MB DDR2 RAM  |
| On-Board Flash Storage           | 2 GB   |
| Certifications                   | CE, FCC, IC  |
| Wall-Mount                       | Yes  |
| Operating Temperature            | -10 to 45° C (14 to 113° F)  |
| Operating Humidity               | 10 - 90% Noncondensing   |





## Software Specifications

| EdgeOS                  |   |
|-------------------------|---|
| Interface/Encapsulation | Ethernet<br>802.1q VLAN<br>PPPoE<br>GRE<br>IP in IP<br>Bridging<br>Bonding (802.3ad)  |
| Addressing              | Static IPv4/IPv6 Addressing<br>DHCP/DHCPv6  |
| Routing                 | Static Routes<br>OSPF/OSPFv3<br>RIP/RIPng<br>BGP (with IPv6 Support)<br>IGMP Proxy  |
| Security                | ACL-Based Firewall<br>Zone-Based Firewall<br>NAT  |
| VPN                     | IPSec Site-to-Site and Remote Access<br>OpenVPN Site-to-Site and Remote Access<br>PPTP Remote Access<br>L2TP Remote Access<br>PPTP Client                     |
| Services                | DHCP/DHCPv6 Server<br>DHCP/DHCPv6 Relay<br>Dynamic DNS<br>DNS Forwarding<br>VRRP<br>RADIUS Client<br>Web Caching<br>PPPoE Server                              |
| QoS                     | FIFO<br>Stochastic Fairness Queueing<br>Random Early Detection<br>Token Bucket Filter<br>Deficit Round Robin<br>Hierarchical Token Bucket<br>Ingress Policing |
| Management              | Web UI<br>CLI (Console, SSH, Telnet)<br>SNMP<br>NetFlow<br>LLDP<br>NTP<br>UBNT Discovery Protocol<br>Logging  |



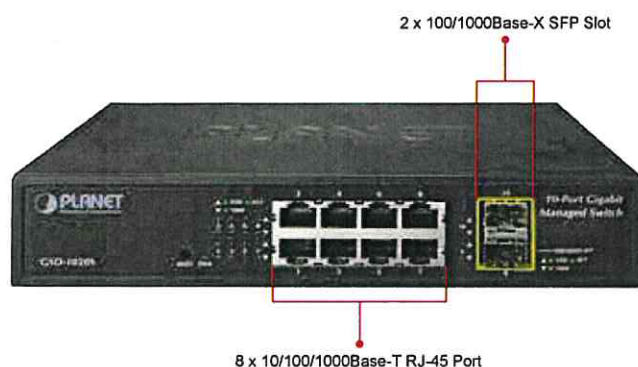


# 8-Port 10/100/1000Mbps + 2-Port 100/1000X SFP Managed Ethernet Switch



PLANET GSD-1020S is an 8-Port Gigabit Managed Ethernet Switch with SFP interfaces specially designed to build a full Gigabit backbone to reliably transmit and forward data to remote network through fiber optic. It provides 8-Port 10/100/1000Base-T copper and 2 extra 100/1000Base-X SFP fiber optic interfaces with built-in power system. Besides support for 20Gbps switch fabric to handle extremely large amounts of video, voice and important data in a secure topology, the GSD-1020S provides user-friendly but advanced IPv6 / IPv4 management interfaces and abundant L2 / L4 switching functions. It is the best investment for businesses and SOHOs expanding or upgrading their network infrastructure. The features of enhanced management are shown below:

- 802.1X Authentication / RADIUS / TACACS+
- 802.1Q VLAN
- SNMP Monitor and SNMP Trap
- IGMP/MLD Snooping
- Rapid Spanning Tree



## Physical Ports

- 8 10/100/1000Mbps Gigabit Ethernet ports with auto-MDI/MDI-X supported
- 2 100/1000Base-X mini-GBIC/SFP slots

## Layer 2 Features

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)
- High performance Store and Forward architecture, broadcast storm control, runt/CRC filtering eliminates erroneous packets to optimize the network bandwidth
- Supports VLAN
  - IEEE 802.1Q tagged VLAN
  - Provider Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Protocol VLAN
  - Voice VLAN
  - Private VLAN
  - Management VLAN
  - GVRP
- Supports Spanning Tree Protocol
  - STP (Spanning Tree Protocol)
  - RSTP (Rapid Spanning Tree Protocol)
  - MSTP (Multiple Spanning Tree Protocol)
  - STP BPDU Guard, BPDU Filtering and BPDU Forwarding
- Supports Link Aggregation
  - IEEE 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (Static Trunk)
  - Maximum 8 trunk groups, up to 8 ports per trunk group
- Provides Port Mirror (many-to-1)
- Loop protection to avoid broadcast loops

## Quality of Service

- Ingress / Egress Rate Limit per port bandwidth control
- Storm Control support
  - Broadcast / Unknown-Unicast / Unknown-Multicast
- Traffic classification:
  - IEEE 802.1p CoS
  - TOS / DSCP / IP Precedence of IPv4/IPv6 packets
- Strict priority and Weighted Round Robin (WRR) CoS policies

### *IPv6 / IPv4 Full-functioned Secure Switch*

The GSD-1020S is the ideal solution to fulfilling the demand of IPv6 network implementation. It supports both IPv4 and IPv6 management functions and can work with original network structure. It provides advanced Layer 2 to Layer 4 data switching and Quality of Service traffic control, Access Control List, network access control and authentication, and Secure Management features to safeguard the building of automation network connectivity with reliable switching recovery capability that is suitable for implementing fault tolerant and mesh network architectures. Therefore, the GSD-1020S Managed Ethernet Switch is also ideal for applications in the factory data centers and distributions.

### *Powerful Security*

The GSD-1020S offers comprehensive Layer 2 to Layer 4 Access Control List (ACL) for enforcing security to the edge. It can be used to restrict network access by denying packets based on source and destination IP address, TCP/UDP ports or defined typical network applications. Its protection mechanism also comprises 802.1X port-based authentication, which can be deployed with RADIUS to ensure the port level security and block illegal users. With the Protected Port function, communication between edge ports can be prevented to guarantee user privacy. Port Security allows to limit the number of users on a given port. The network administrators can now construct highly secured corporate networks with considerably less time and effort than before.

### *Spanning Tree Protocol for Effective Network System*

The GSD-1020S features strong rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates Spanning Tree Protocol (802.1s MSTP) into customer's automation network to enhance system reliability and uptime.

### *Cost-effective Desktop Size / High-speed for FTTD Solution*

The GSD-1020S provides high-performance edge service and plug-and-play design for FTTD (Fiber to the desktop) solutions. FTTD service is fiber optic cabling with reliable, expandable and low-cost wiring architectures, and long-distance capability. It supports dual-speed, 100Base-FX and 1000Base-SX/LX SFP (small form-factor pluggable) fiber-optic modules to connect fiber access point. It utilizes a compact form factor which can be mounted in a 19-inch rack with optional rack-mounting kits and placed on desktop, with the flexibility to install in the communication closet or major computer room for SMBs. The GSD-1020S supports SFP-DDM (Digital Diagnostic Monitor) function that can easily monitor real-time parameters of the SFP for network administrator, such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

### **Multicast**

- Supports IGMP Snooping v2 and v3
- Supports MLD Snooping v1, v2
- IGMP Querier mode support
- IGMP Snooping port filtering
- MLD Snooping port filtering

### **Security**

- Authentication
  - IEEE 802.1X Port-based network access authentication
  - Built-in RADIUS client to co-operate with the RADIUS servers
  - RADIUS / TACACS+ login user access authentication
- Access Control List
  - IPv4 / IPv6 IP-based ACL
  - MAC-based ACL
- MAC Security
  - Static MAC
  - MAC Filtering
- Port Security for Source MAC address entries filtering
- DHCP Snooping to filter distrusted DHCP messages
- Dynamic ARP Inspection discards ARP packets with invalid MAC address to IP address binding
- IP Source Guard prevents IP spoofing attacks
- DoS Attack Prevention
- SSH/SSL

### **Management**

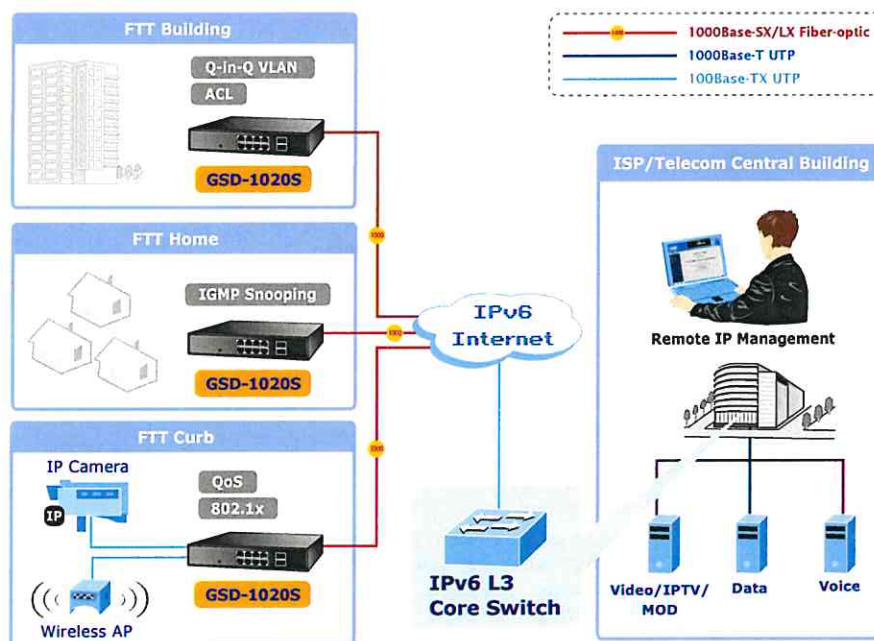
- IPv4 and IPv6 dual stack management
- Switch Management Interface
  - Web switch management
  - Telnet Command Line Interface
  - SNMP v1, v2c and v3
  - SSH / SSL secure access
- User Privilege Levels Control
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- System Maintenance
  - Firmware upload / download via HTTP / TFTP
  - Configuration upload / download through Web interface
  - Dual Images
  - Hardware reset button for system reboot or reset to factory default
- SNTP Network Time Protocol
- Cable Diagnostics
- Link Layer Discovery Protocol (LLDP) Protocol and LLDP-MED
- SNMP trap for interface Link Up and Link Down notification
- Event message logging to remote Syslog server
- Four RMON groups (history, statistics, alarms, and events)
- PLANET Smart Discovery Utility



## Applications

### FTTX / MAN Application Switch

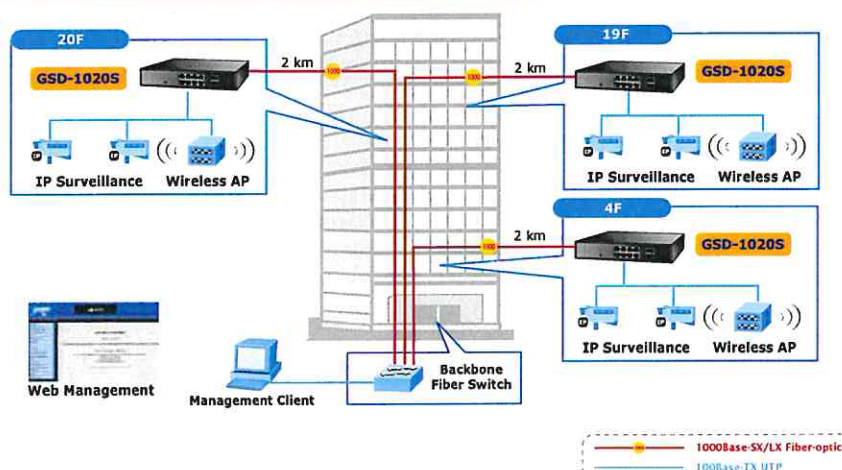
The GSD-1020S applies the double tag VLAN (Q-in-Q) technology to providing low cost and easy operation for service providers carrying traffic for multiple customers across their networks. It features SNMPv3 and RMON Groups security functions. The SNMPv3 security structure consists of security models and helps to isolate each model with its own security levels to enhance the security protections in the FTTX and MAN Network. With its two built-in dual-speed SFP slots, the deployment distance of the GSD-1020S can be extended from 550 meters (multi-mode fiber) to above 10/50/70/120 kilometers (single-mode fiber), thus providing a high-performance edge service for FTTx solutions. To build a network solution of FTTH (Fiber to the Home) or FTTC (Fiber to the Curb) for ISPs, and FTTB (Fiber to the Building) for enterprises, the various distances of SFP (small-form factor) and Bidi (WDM) transceivers are optional for customers' choices. For security and various applications, the SFP ports of the GSD-1020S can be configured with VLAN settings and connected to different units, offices, floors, houses and departments.



### MTU Switch

In an MTU/MDU application, the advanced functionality of the GSD-1020S eliminates traditional issues associated with the use of Ethernet. Users can be separated with advanced VLAN functionality to enhance security. The flexible mini-GBIC 1000Base-SX/LX module options make the GSD-1020S one of the best and most cost-effective Switch solutions for multi-tenant service providers.

### IP Surveillance/Wireless Access Point Deployment



## Product Specifications

|                                 |  |
|---------------------------------|--|
| Product                         | GSD-1020S  |
| <b>Hardware Specifications</b>  |  |
| Copper Ports                    | 8 x 10/100/1000Base-T RJ45 Auto-MDI/MDI-X ports  |
| SFP/mini-GBIC Slots             | 2 100/1000Base-X SFP interfaces<br>Supports 100/1000Mbps dual mode and DDM             |
| Switch Architecture             | Store-and-Forward  |
| Switch Fabric                   | 20Gbps / non-blocking  |
| Switch Throughput@64Bytes       | 14.8Mpps   |
| Address Table                   | 8K entries   |
| Shared Data Buffer              | 512K Bytes   |
| Flow Control                    | IEEE 802.3x pause frame for full-duplex<br>Back pressure for half-duplex               |
| Jumbo Frame                     | 10K bytes  |
| Reset Button                    | < 5 sec: System reboot<br>> 5 sec: Factory default                                     |
| LED                             | System:  |
|                                 | Power (Green)  |
|                                 | 10/100/1000T RJ45 Interfaces (Port 1 to Port 8):<br>1000Mbps (Orange), LNK/ACT (Green) |
|                                 | 100/1000Mbps SFP Interfaces (Port 9 to Port 10):<br>1000Mbps (Orange), LNK/ACT (Green) |
| Power Requirements              | 100V ~ 240V AC, 50/60Hz  |
| ESD Protection                  | 6KV DC   |
| Power Consumption / Dissipation | 8.2 watts / 30 BTU/hr  |
| Dimensions (W x D x H)          | 217 x 135 x 43.5 mm  |
| Weight                          | 853g   |
| Enclosure                       | Metal  |
| <b>Layer 2 Functions</b>        |  |
| Port Mirroring                  | TX / RX / Both   |
|                                 | Many-to-1 monitor  |
|                                 | 802.1Q Tagged-based VLAN   |
|                                 | Up to 256 VLAN groups, out of 4094 VLAN IDs  |
| VLAN                            | 802.1ad Q-in-Q tunneling   |
|                                 | Voice VLAN   |
|                                 | Protocol VLAN  |
|                                 | Private VLAN (Protected port)<br>GVRP  |
| Link Aggregation                | IEEE 802.3ad LACP and static trunk<br>Supports 8 groups of 8-port trunk                |
| Spanning Tree Protocol          | STP / RSTP / MSTP  |
| IGMP Snooping                   | IGMP (v2/v3) Snooping  |
|                                 | IGMP Querier<br>Up to 256 multicast groups   |
| MLD Snooping                    | MLD (v1/v2) Snooping, up to 256 multicast groups                                       |
| Access Control List             | IPv4/IPv6 IP-based ACL / MAC-based ACL   |
|                                 | 8 mapping ID to 8 level priority queues  |
|                                 | - Port Number  |
|                                 | - 802.1p priority  |
| QoS                             | - 802.1Q VLAN tag  |
|                                 | - DSCP field in IP Packet  |
|                                 | Traffic classification based, Strict priority and WRR                                  |
|                                 | IEEE 802.1X – Port-based authentication  |
| Security                        | Built-in RADIUS client to co-operate with RADIUS server                                |
|                                 | RADIUS / TACACS+ user access authentication  |
|                                 | IP-MAC port binding  |
|                                 | MAC Filter   |
|                                 | Static MAC Address   |
|                                 | DHCP Snooping and DHCP Option82  |
|                                 | STP BPDU Guard, BPDU Filtering and BPDU Forwarding                                     |
|                                 | DoS Attack Prevention  |
|                                 | ARP Inspection   |
|                                 | IP Source Guard  |



## Management Functions

|                              |   |
|------------------------------|---|
|                              | Web browser / Telnet / SNMP v1, v2c                               |
|                              | Firmware upgrade by HTTP / TFTP protocol through Ethernet network |
| Basic Management Interfaces  | Remote / Local Syslog   |
|                              | System log  |
|                              | LLDP protocol   |
|                              | SNTP  |
| Secure Management Interfaces | SSH, SSL, SNMP v3   |
|                              | RFC 3635 Ethernet-like MIB  |
| SNMP MIBs                    | RFC 2863 Interface Group MIB                                      |
|                              | RFC 2819 RMON (1, 2, 3, 9)  |
|                              | RFC 1493 Bridge MIB   |

## Standards Conformance

|                       |   |
|-----------------------|---|
| Regulation Compliance | FCC Part 15 Class A, CE                         |
|                       | IEEE 802.3 10Base-T                             |
|                       | IEEE 802.3u 100Base-TX/100Base-FX               |
|                       | IEEE 802.3z Gigabit SX/LX                       |
|                       | IEEE 802.3ab Gigabit 1000T                      |
|                       | IEEE 802.3x Flow Control and Back Pressure      |
|                       | IEEE 802.3ad Port Trunk with LACP               |
|                       | IEEE 802.1D Spanning Tree protocol              |
|                       | IEEE 802.1w Rapid Spanning Tree protocol        |
|                       | IEEE 802.1s Multiple Spanning Tree protocol     |
|                       | IEEE 802.1p Class of Service                    |
|                       | IEEE 802.1Q VLAN Tagging                        |
| Standards Compliance  | IEEE 802.1x Port Authentication Network Control |
|                       | IEEE 802.1ab LLDP                               |
|                       | RFC 768 UDP                                     |
|                       | RFC 793 TFTP                                    |
|                       | RFC 791 IP                                      |
|                       | RFC 792 ICMP                                    |
|                       | RFC 2068 HTTP                                   |
|                       | RFC 1112 IGMP version 1                         |
|                       | RFC 2236 IGMP version 2                         |
|                       | RFC 3376 IGMP version 3                         |
|                       | RFC 2710 MLD version 1                          |
|                       | RFC 3810 MLD version 2                          |

## Environment

|           |   |
|-----------|---|
| Operating | Temperature: 0 ~ 50 degrees C               |
|           | Relative Humidity: 5 ~ 95% (non-condensing) |
| Storage   | Temperature: -20 ~ 70 degrees C             |
|           | Relative Humidity: 5 ~ 95% (non-condensing) |

## Ordering Information

|           |  |
|-----------|--|
| GSD-1020S | 8-Port 10/100/1000Mbps + 2-Port 100/1000X SFP Managed Desktop Switch |
|-----------|--|

## Accessories

|         |                                 |
|---------|---------------------------------|
| RKE-10A | Rack Mount Kits for 10" cabinet |
| RKE-10B | Rack Mount Kits for 19" cabinet |

## Available 1000Base-X Module for GSD-1020S

|          |   |
|----------|---|
| MGB-GT   | SFP-Port 1000Base-T Module                                      |
| MGB-SX   | SFP-Port 1000Base-SX mini-GBIC module                           |
| MGB-LX   | SFP-Port 1000Base-LX mini-GBIC module                           |
| MGB-L30  | SFP-Port 1000Base-LX mini-GBIC module-30km                      |
| MGB-L50  | SFP-Port 1000Base-LX mini-GBIC module-50km                      |
| MGB-L70  | SFP-Port 1000Base-LX mini-GBIC module-70km                      |
| MGB-L120 | SFP-Port 1000Base-LX mini-GBIC module-120km                     |
| MGB-LA10 | SFP-Port 1000Base-LX (WDM,TX:1310nm) mini-GBIC module-10km      |
| MGB-LB10 | SFP-Port 1000Base-LX (WDM,TX:1550nm) mini-GBIC module-10km      |
| MGB-LA20 | SFP-Port 1000Base-LX (WDM,TX:1310nm) mini-GBIC module-20km      |
| MGB-LB20 | SFP-Port 1000Base-LX (WDM,TX:1550nm) mini-GBIC module-20km      |
| MGB-LA40 | SFP-Port 1000Base-LX (WDM,TX:1310nm) mini-GBIC module-40km      |
| MGB-LB40 | SFP-Port 1000Base-LX (WDM,TX:1550nm) mini-GBIC module-40km      |
| MGB-TSX  | SFP-Port 1000Base-SX mini-GBIC module - 550m (-40~75 degrees C) |
| MGB-TLX  | SFP-Port 1000Base-LX mini-GBIC module - 10km (-40~75 degrees C) |
| MGB-TL30 | SFP-Port 1000Base-LX mini-GBIC module - 30km (-40~75 degrees C) |
| MGB-TL70 | SFP-Port 1000Base-LX mini-GBIC module - 70km (-40~75 degrees C) |

## Available 100Base-FX Module for GSD-1020S

|          |  |
|----------|--|
| MFB-FX   | SFP-Port 100Base-FX Transceiver (1310nm)-2km         |
| MFB-F20  | SFP-Port 100Base-FX Transceiver (1310nm)-20km        |
| MFB-F40  | SFP-Port 100Base-FX Transceiver (1310nm)-40km        |
| MFB-F60  | SFP-Port 100Base-FX Transceiver (1310nm)-60km        |
| MFB-FA20 | SFP-Port 100Base-BX Transceiver (WDM,TX:1310nm)-20km |
| MFB-FB20 | SFP-Port 100Base-BX Transceiver (WDM,TX:1550nm)-20km |



**STORAGE**

Fornitura di uno storage e 2 switch fiber chanel come da specifiche allegate  
tipo HITACHI VSP G350 o altro storage con caratteristiche equivalenti o  
superiori (vedere descrizione estesa)

**Item 1: VSP G Unified Platform**

| Specification        | Single Configuration Measures                    | Qty |
|----------------------|--|-----|
| <b>Capacity:</b>     | 128GB Cache Memory (32GB Modules)                | 1   |
|                      | 53.903 TB Raw Storage                            | 1   |
|                      | 42.733TB Usable (Base 10)                        | 1   |
|                      | 38.865TB Usable (Base2)                          | 1   |
| <b>Raid Groups:</b>  | 480GB SFF SSD RAID 5 3D+1P Array Group           | 1   |
|                      | 1.418TB Usable (Base10) 1.29TB Usable (Base2)    |     |
|                      | 1.9TB SFF SSD RAID 6 6D+2P Array Group           | 1   |
|                      | 11.343TB Usable (Base10) 10.316TB Usable (Base2) |     |
|                      | 2.4TB 10K SFF HDD RAID 6 6D+2P Array Group       | 1   |
|                      | 13.833TB Usable (Base10) 12.581TB Usable (Base2) |     |
|                      | 1.2TB SFF HDD RAID 5 7D+1P Array Group           | 2   |
|                      | 16.139TB Usable (Base10) 14.678TB Usable (Base2) |     |
| <b>Spare Drives:</b> | 1.2TB(10K) SFF Spare Drive (2.5")                | 1   |
|                      | 1.9TB SSD Spare (2.5")                           | 1   |
|                      | 480GB SSD Spare (2.5")                           | 1   |
|                      | 2.4TB(10K) SFF Spare Drive (2.5")                | 1   |
| <b>Chassis:</b>      | Drive Chassis - SFF (Supports 24 x 2.5" Drives)  | 1   |
| <b>Connectivity:</b> | VSP G/FXX0 Host I/O Module FC 16/32G 4port       | 2   |
|                      | Power Cable 250VAC 10A IEC320-C14                | 5   |

| Class | Product  | qty |
|-------|--|-----|
| HW    | <b>VSP G350 Covered Product Unified (FC/iSCSI)</b> | 1   |
|       | support Term: 36 Months                            |     |
|       | Level: Week Day Basic (WDB)                        |     |

**Item 1: VSP G Unified Platform****Hardware**

| VSP G350 Product Unified (FC/iSCSI) | Description                        | qty |
|-------------------------------------|------------------------------------|-----|
| A34V-600-850-UNI.P                  | Universal rail kit                 | 2   |
| FD221577-001.P                      | SVP Bezel ASM (including brackets) | 1   |
| WS-003-002.P                        | J2F Power Cord                     | 5   |
| HDW2-F850-DBSC.P                    | VSP G/F XX0 Drive Box (SFF)        | 1   |
| HDW-F850-SCQ1.P                     | VSP G SAS Cable 1m                 | 2   |
| HDW2-F850-1PS16.P                   | VSP G SFP for 16Gbps Shortwave     | 8   |
| HDW2-F850-SVP.P                     | VSP G/FXX0 SVP - Service Processor | 1   |

| VSP G350 Covered Product Unified (FC/iSCSI) | Description                             | Quantity |
|---|---|----------|
| G350-F-BASE-S.P                             | VSP G350 Foundation Base Package        | 1        |
| GXX0-4X480GB.P                              | VSP GXX0 Flash Pack 4 x 480GB SSD       | 1        |
| GXX0-4X1R9TB.P                              | VSP GXX0 Flash Pack 4 x 1.9TB SSD       | 2        |
| GXX0-4X1R2TB.P                              | VSP GXX0 HDD Pack 4 x 1.2TB 10K SAS HDD | 4        |
| GXX0-4X2R4TB.P                              | VSP GXX0 HDD Pack 4 x 2.4TB 10K SAS HDD | 2        |

| VSP G350 Product Unified (FC/iSCSI) | Description        | Quantity |
|-------------------------------------|--------------------|----------|
| DW2-F850-480MGM.P                   | VSP GXX0 480GB SSD | 1        |

|                    |  |   |
|--------------------|--|---|
| DW2-F850-1R9MGM.P  | VSP GXX0 1.9TB SSD                         | 1 |
| DW2-F850-1R2JCM.P  | VSP GXX0 1.2TB SAS HDD                     | 1 |
| DW2-F850-2R4JGM.P  | VSP GXX0 2.4TB SAS HDD                     | 1 |
| HDW2-F850-4HF32R.P | VSP G/FXX0 Host I/O Module FC 16/32G 4port | 2 |

Item 2: Data Network Switches

| Specification            | Single Configuration Measures                                  | Qty |
|--------------------------|--|-----|
| Model: brocade switch FC | Brocade BR 6505,12P,16Gb SFPS,BR,AC,SINGLE PSU, rack mount kit | 2   |
|                          | support Term: 36 Months  |     |
|                          | Level: Week Day Basic (WDB)                                    |     |





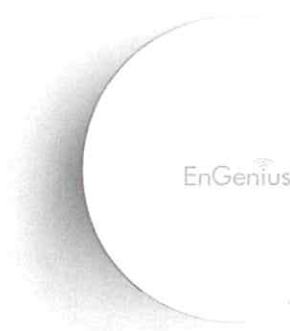
## Dual Band AC1300

# Managed Indoor Access Point

**A high performance 802.11AC Wave 2 Access Point with MU-MIMO technology for high density environments .**

EnGenius Wireless Management Access Point solutions are designed for deploying in a versatile indoor application. To meet today's requirement on various networking environments EnGenius provides reliable and fast wireless connections with the latest wireless standards.

The state-of-the-art 802.11ac wave 2 and MU-MIMO technology brings revolutionary connection speeds and higher bandwidth for multimedia and high density applications. EWS330AP is equipped with two powerful RF interfaces that support up to 867 Mbps on the 5 GHz frequency band and 400 Mbps on the 2.4 GHz frequency band (with 4ss/VHT40 clients).



## Features

- > Built-in Turbo Engine  
the Turbo Engine has a quad-core chipset to process multiple tasks simultaneously to enhance performance.
- > Dual radio 2x2 802.11 ac/a/b/g/n Access Point with multi-user MIMO (MU-MIMO)
- > Support up to 867 Mbps on 5 GHz and up to 400 Mbps on the 2.4GHz frequency band (with 2ss/VHT40 clients) .
- > High sensitive amplifiers to improve the wireless coverage it also uses a special radio frequency pattern to increase the receiver sensitivity for improved performance.
- > Support 802.11ac Wave 2 technology to enhance overall bandwidth and speed to wireless client devices.
- > Systemic and distributed management over EnGenius ezMaster and EWS Management switch without licensing or subscription fee.
- > 360° omni-directional antennas to achieve better wireless coverage for network client devices under a pervasive environment.
- > Compliance with 802.3af & 48V PoE Input for flexible installation over 100 meters (328 feet).
- > Perform one-click update to deliver a configuration over multi-segments for managed Access Points.
- > Choose a operating mode to meet your management and deployment requirement.

## Wireless Management solution is ideal for deployment in these venues:

- |                        |                     |                          |
|------------------------|---------------------|--------------------------|
| > Airport Terminals    | > Rail Station      | > Stadiums & Arena       |
| > Warehouse Operations | > Shopping Malls    | > Medical Centers        |
| > College Campuses     | > Resort Properties | > Luxury Homes & Estates |
| > Corporate Campuses   |                     |                          |

## Provide Consistent Performance

The access point is designed with powerful RF interfaces to assure the reliability and strength of signal and sensitivity in a pervasive environment. The interfaces provide even coverage to help users reduce dead spots in their wireless configuration and boost received signal quality to deliver up to 1.26 Gbps throughput to wireless client devices.

## Carry multimedia content using MU-MIMO and Beamforming technology.

Being a AC1300 solution, the EWS330AP is not only built with powerful RF interfaces, but it also features MU-MIMO (Multi-Users Multiple input Multiple output). It also supports Transmit Beamforming (TxBF) technology.

The significant improvement on 802.11ac wave 2 is MU-MIMO technology, which enhances the performance and transmission to wireless client devices. MU-MIMO allows multiple spatial streams to be used to different clients simultaneously, which reduces latency, increases throughput, capacity and spectral efficiency of the wireless network.

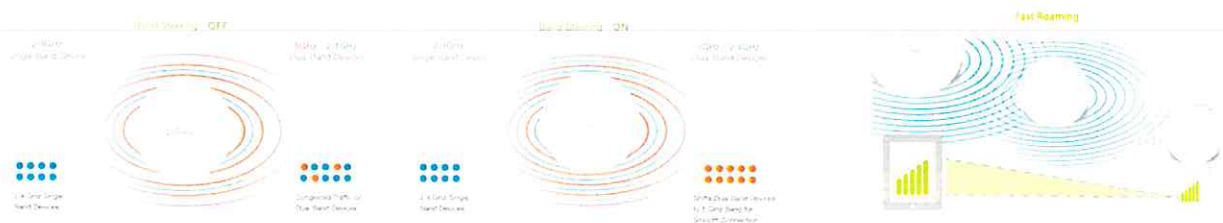
Transmit Beamforming (TxBF) is a standard in the 802.11ac wave 2 specification that allows access points to focus the energy of multiple antennas to transmit to a particular client device in the direction of that client. The innovative technology significantly enhances signal-to-noise ratio and creates a higher throughput to clients.

With MU-MIMO and Beamforming technology, the EWS330AP indoor access points can bring more traffic to wireless client devices simultaneous over a longer distance and save time for serving other wireless client devices.



## Exquisite RF Management to Achieve Optimal Wireless Performance

EnGenius intelligent RF detecting mechanism **Background Scanning**, continues to monitor RF movement of an environment and initialize the control of **Transmit Power** and **channel assignment** assuring an even RF coverage and consistent wireless performance. Background Scanning assist client devices to get the optimal performance under a pervasive environment. **Band Steering** automatically steers dual-band capable client devices to the appropriate channel, while prefer 5GHz or band balancing works to maintain a balanced number of clients per Access Point. When configuring multiple access points to serve your own devices (BYOD) in enterprise class wireless LAN environment, **Fast Roaming** can be enabled to reduce roaming delay time and to secure seamless connection especially for VoIP services when mobile devices move between access points.





## Restrain Wireless Traffic under a Pervasive Environment

To effectively manage the usage of each client device, **Traffic Shaping** controls the bandwidth for an individual SSID or individual clients per access point. This limitation offers constant bandwidth to perform specific applications like VoIP and video streaming fluently and smoothly without air congestion on client devices.

## Comprehensive Network Protection

With EWS access points, your network is protected from attacks at multiple levels through advanced wireless encryption standards such as Wi-Fi Protected Access (WPA and WPA2), which uses a temporal key integrity protocol (TKIP) and a authentication database, IEEE 802.1X with Radius server. EnGenius also offers the advanced encryption standard (AES) to encrypt traffic between Access Points and client devices.

EnGenius wireless management system offers a advanced mechanism to detect and to prohibit threats over **Rogue AP detection**. Once threats or events are detected, a built-in **E-mail Alerts** system will automatically send a e-mail notification for administrators to take immediate actions on these networks threats.

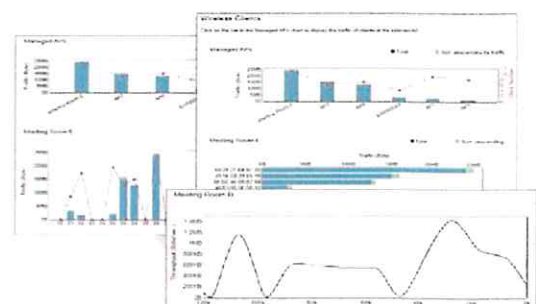
## Simplified Management and Configuration over ezMaster or EWS Management Switch

EWS-series managed Access Points are designed to work with EWS-series Wireless Management Switches and ezMaster management platform for scalable and flexible wireless management applications.

Whether you want to manage a few or up to 1000 Access Points and switches, on network in different locations, with different segments or 10 to 10,000 users, the EnGenius ezMaster platform makes these management and configurations simplified for centralizing bulk configuration, provision and monitoring which means lower operating and maintenance cost from a local or remote server or in the cloud.

With a small scope or maximum of 50 clients a managed system is a requirement, the EWS management switchs can perform auto discovery to search EWS managed Access Points. the administrator can easily use individual or cluster settings to fast deploy numbers of Acces Points with desired settings, saving repetitive configuration tasks.

if the connecton to your ezMaster platform is lost SmartSync Redundancy will automatically store syslog and statistics from the APs. When the connection is re-established, all information will be re-synchronized and sent to ezMaster Management platform. Administrators will not miss any statistics and reports.



## Technical Specifications Wireless Indoor Access Point

### Wireless Radio Specification

#### Access Point Type:

Indoor, dual radios concurrent, 5GHz 802.11 ac 2x2 MIMO is backwards compatible with 802.11 a/n mode, 2.4GHz 802.11 n 2x2 MIMO is backwards compatible with 802.11 b/g.

#### SU-MIMO:

Two(1) spatial stream SU-MIMO for up to 1,267 Mbps wireless data rate to a single wireless client device under the both 2.4GHz and 5GHz radio.

#### MU-MIMO

Two(2) spatial stream Multiple (MU)-MIMO for up to 867 Mbps wireless data rate to transmit to one(1) two streams MU-MIMO capable wireless client devices simultaneously.

#### Frequency Radio

2.4GHz: 2400MHz ~ 2484MHz,  
5GHz: 5150MHz~5250MHz, 5250MHz~5350MHz, 5470~5725MHz,  
5725MHz~5850MHz

Support radios and channels will be varied on the configured regulatory domain.

#### Supported Radio Technology

802.11b: Direct-sequence spread-spectrum (DSSS)  
802.11ac/a/g/n: Orthogonal frequency-division multiplexing (OFDM)  
802.11n/ac: 2x2 MIMO with 4 streams  
802.11ac supports very high throughput (VHT) — VHT 20/40/80 MHz  
802.11n supports high throughput (HT) — HT 20/40 MHz  
802.11n supports very high throughput under the 2.4GHz radio —VHT40 MHz (256-QAM)  
802.11n/ac packet aggregation: A-MPDU, A-SPDU

#### Supported Modulation Type

802.11b: BPSK, QPSK, CCK  
802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM  
802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM

#### Transmit Power (Maximum Value)

2.4GHz: 26dBm  
5GHz: 26dBm

Maximum power is limited by regulatory domain

#### Tx Beamforming (TxBF)

Increasing signal reliability and transmitting distance.

#### Supported data rates (Mbps)

802.11b: 1, 2, 5.5, 11  
802.11a/g: 6, 9, 12, 18, 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)

### Power

#### Maximum Power Consumption

TBC

#### Power Source

Direct DC Input: 12V/1A  
Power Over Ethernet: 802.3af Input

### Antenna

2.4GHz: 5.0 dBi  
5GHz: 5.0 dBi

### Interfaces

#### Networking Interface

One (1) 10/100/1000 BASE-T RJ-45 Ethernet Ports

#### DC Powering Interface

One (1) DC Jack interface

#### LED Indicators

Display system and wireless transmission status

#### Reset Button

bring Access Point to the Factory default or the Users Default

### Mounting

#### Ceiling Mounting

mounting bracket for ceiling mounting

### Mechanical & Environment

#### Dimensions (Ø x H)

132.4 x 22.4mm

#### Weight

TBC

#### Operating:

Temperature: 0°C~40°C (32°F~104°F)  
Humidity: 0% ~ 90% typical

#### Storage:

Temperature: -40°C~80°C (-40°F~176°F)  
Humidity: 0% ~ 90% typical

### Compliance Regulatory

#### FCC

Subpart15 B  
Subpart C 15.247  
Subpart E 15.407

#### CE

EN 300 328  
EN 301 893  
EN 50385  
EN 60601-1-1  
EN 60601-1-2  
EN 55032  
EN 55024

#### RED 2014/53/EU

#### Low Voltage Directive 2014/30/EU



## Technical Specifications Wireless Indoor Access Point

### Operating Mode

#### Mesh/AP Mode

Two configuration options broaden the devices' adaptability to your network needs.

### Exquisite RF Management

#### Background Scanning

Regular scanning signal level of an environment to provide parameters for performing Auto Transmit power and auto channel.

#### Auto Transmit Power

Automatically adjust power level when EWS access points work at an environment.

#### Auto Channel

Automatically assign a clearly channel to perform RF transmission under a pervasive environment.

#### Fast Roaming (802.11k)

Collect the parameters of neighborhood Access Points to find the optimal AP.

#### Band Steering

Steer client devices to a proper frequency band for getting more bandwidth and speed under an Access Point.

#### RSSI Threshold

Kick the client which the signal (RSSI) is above the set value from the AP for reducing the interference and optimize the connecting quality.

### Optimize Performance

#### Quality of Service

Compliance with IEEE 802.11e standard  
Prioritizes voice over data for both tagged and untagged traffic  
Transmit video, voice and data at the same SSID

#### Power Save Mode

Support U-APSD

#### Pre-Authentication

Compliance with 802.11i & 11x

#### PMK Caching

Compliance with 802.11i  
If wireless client devices has authenticated to an access point, it does not perform a full authentication exchange when client devices roaming between access points.

#### Fast Roaming (802.11r)

Use a Fast Transition key to handover between Access Points

#### Multicast to Unicast Conversion

Using the IGMP protocol, an access point delivers high definition content to a large number of clients simultaneously.

### Easy to Management

#### Multiple SSIDs

BSSID support  
Support 8 SSIDs on both 2.4GHz and 5GHz bands

#### Captive Portal

Differentiate the authority of users on using Internet access

#### Guest Network

Isolate each client for avoiding an unnecessary touch, leaking sensitive data, and enhancing Internet security and reliability.

#### VLAN Tag

Independent VLAN setting can be enable or disable. Any packet that enters the Device without a VLAN tag will have a VLAN tag inserted with a PVID (Ethernet Port VID)

#### VLAN Per SSID

Integrate VLAN ID with a SSID interface to forward packets over the defined path.

#### Management VLAN

Feature is enabled with specified VLAN ID, the device will only allow management access with the same specified VLAN ID from remotely location by using protocols such as telnet, SSH, snmp, syslog etc.

#### Traffic Shaping

Controls the bottle of bandwidth to offer the limited bandwidth for an individual SSID or each client per Access Point.

#### MAC Address Filtering

Filter up to 32 sets MAC addresses per SSID

#### E-Mail Alert

Provides a network monitoring tool for administrators to stay informed the configuration change.

#### Finger Printing

The value added solution collect information of client devices including name of devices, IP address, MAC address, Operating system version, transmitting and receiving data, and signal level.

#### Save Configuration as Users Default

Save the customized configuration as default value for different customer demands.

#### Wi-Fi Scheduler

Perform a regular reboot on access point at assigned schedule  
Perform it to enable or disable 2.4GHz or 5GHz interface from a period time.

#### SNMP & MIB

v1/v2c/v3 support  
MIB I/II, Private MIB  
CLI supported

#### RADIUS Accounting

Help operators to offload 3G to Wi-Fi seamlessly

#### Wireless Clients list

Provide the list to display real status of wireless client devices on this Access Point.

### Comprehensive Protection

#### Wireless Encryption Standard

WEP Encryption—64/128/152 bit  
WPA/WPA2 Enterprise (WPA-EAP using TKIP or AES)

#### Hide SSID in beacons

#### Rogue AP Detection

Enable the function to detect the fake access points in the environment.

#### L2 Isolation

Block the communication between the associated clients to communicate with other clients from all hosts on the same subnet.

#### Client Isolation

Block/Isolate the communication between the associated clients under the same WLAN.

#### HTTPS

A secure communication protocol can be enabled to allow secure management web access over a computer network.

#### SSH Tunnel

A secure communication protocol can be enabled to allow secure remote shell access or command execution.

## RF Performance Specification Wireless Indoor Access Point

| Channel              | Data Rate  | Transmit Power<br>(Aggregated, dBm) | Receive Sensitivity<br>(Aggregated, dBm) |
|----------------------|------------|-------------------------------------|--|
| 802.11b 2.4 GHz      | 1 Mbps     | 26                                  | -90                                      |
|                      | 2 Mbps     | 26                                  | -90                                      |
|                      | 5.5 Mbps   | 26                                  | -90                                      |
|                      | 11 Mbps    | 26                                  | -82                                      |
| 802.11g 2.4 GHz      | 6 Mbps     | 26                                  | -82                                      |
|                      | 54 Mbps    | 24                                  | -65                                      |
| 802.11a 5 GHz        | 6 Mbps     | 26                                  | -82                                      |
|                      | 54 Mbps    | 24                                  | -65                                      |
| 802.11n HT20 2.4 GHz | MCS 0 / 8  | 26                                  | -82                                      |
|                      | MCS 7 / 15 | 26                                  | -64                                      |
| 802.11n HT40 2.4 GHz | MCS 0 / 8  | 25                                  | -79                                      |
|                      | MCS 7 / 15 | 23                                  | -61                                      |
| 802.11n HT20 5GHz    | MCS 0 / 8  | 25                                  | -82                                      |
|                      | MCS 7 / 15 | 22                                  | -64                                      |
| 802.11n HT40 5GHz    | MCS 0 / 8  | 25                                  | -79                                      |
|                      | MCS 7 / 15 | 23                                  | -61                                      |
| 802.11ac VHT20 5GHz  | MCS0       | 25                                  | -82                                      |
|                      | MCS9       | 23                                  | -59                                      |
| 802.11ac VHT40 5GHz  | MCS0       | 24                                  | -79                                      |
|                      | MCS9       | 22                                  | -54                                      |
| 802.11ac VHT80 5GHz  | MCS0       | 24                                  | -76                                      |
|                      | MCS9       | 22                                  | -51                                      |

\*Maximum RF performance of the hardware provided. Maximum transmit power is limited by local regulatory.

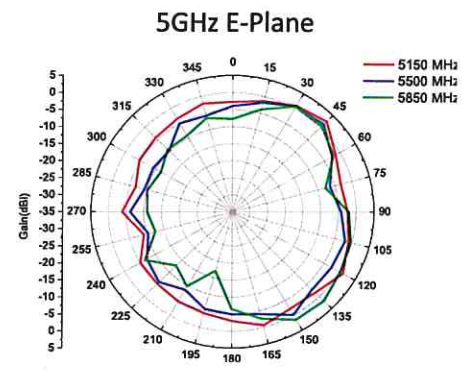
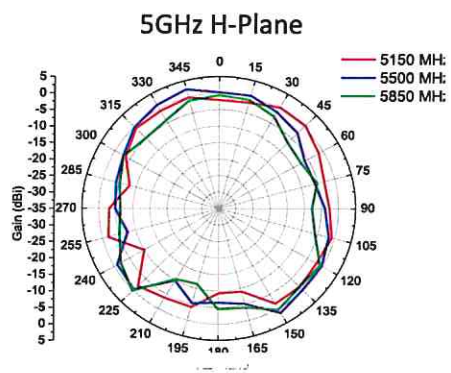
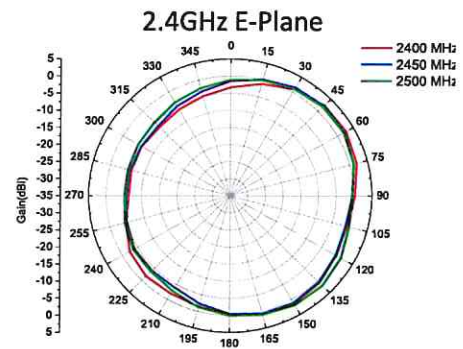
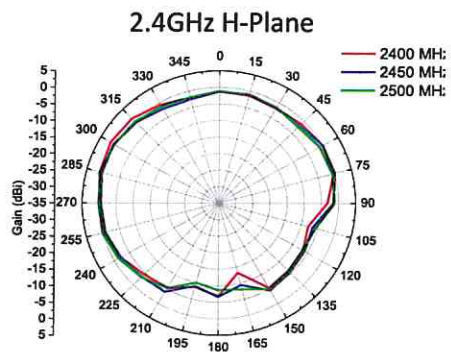
\*The supported frequency bands are restricted by local regulatory requirements.

\*Transmit power is configured in 1.0dBm increments.

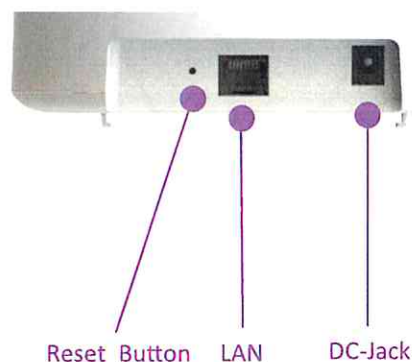
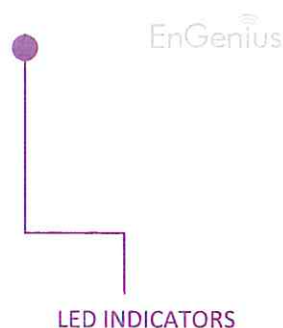



## Antennas Patterns Wireless Indoor Access Point

### EWS330AP



## Physical Interfaces



|                             |  |
|-----------------------------|--|
|                             |  |
| <b>Standards</b>            | 802.11ac/a/b/g/n   |
| <b>Frequency</b>            | 2.4GHz+5GHz  |
| <b>Data Rates</b>           | 400Mbps + 867 Mbps   |
| <b>Antennas</b>             | 2.4GHz: 5.0dBi; 5GHz: 5.0dBi   |
| <b>Physical Interface</b>   | 1 x Gigabit LAN; 1x DC Jack  |
| <b>Radio Chains/Streams</b> | 2x2: 2   |

**HQ , Taiwan**  
[www.engeniusnetworks.com](http://www.engeniusnetworks.com)

**Costa Mesa, California, USA** | (+1) 714 432 8668  
[www.engenius-tech.com](http://www.engenius-tech.com)

**Dubai, UAE** | (+971) 4 357 5599

**Singapore** | (+65) 6227 1088  
[www.engenius-tech.com.sg](http://www.engenius-tech.com.sg)

**Miami, USA** | (+1) 305 887 7378  
[pg.engenius-tech.com](http://pg.engenius-tech.com) [es.engenius-tech.com](http://es.engenius-tech.com)

**Eindhoven, Netherlands** | (+31) 40 8200 888  
[www.engeniusnetworks.eu](http://www.engeniusnetworks.eu)

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Version 0.9— 09/14/17



# 11ac Wave 2 Outdoor Dual-Band Wireless Access Point

Extend your high-speed wireless coverage to the outdoors with the high-powered **ENS620EXT**, an 11ac Wave 2, MU-MIMO, Dual-Band Wireless AC1300 Outdoor Access Point. Reaching speeds to 867 Mbps on the 5 GHz and 400 Mbps on the 2.4 GHz frequency band, this feature-rich AP leverages advanced Wi-Fi and Beamforming antenna technology, maximizing performance and increasing outdoor or indoor network capacities. The AP is designed to operate in harsh environmental conditions and includes an IP55-rated weatherproof housing.

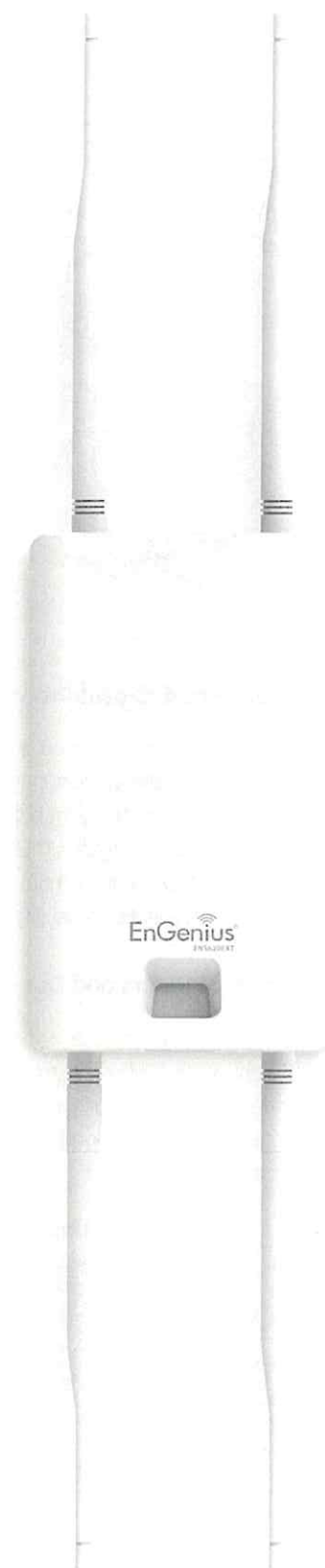
The ENS620EXT is easy to install in virtually any location with its included Power-over-Ethernet (PoE) injector for quick deployment regardless of its proximity to power outlets. The AP is an ideal wireless solution for indoor and outdoor residential and commercial applications.

## Features

- Wave 2 MU-MIMO Improves Performance & Expands User Capacities
- IP55-Rated Waterproof & Dustproof Housing Withstands Harsh Environments
- 11ac Dual-Radio Speeds to 867 Mbps on 5 GHz; to 400 Mbps on 2.4 GHz
- Beamforming Optimizes Antenna Signal, Reception & Reliability
- GigE PoE-Compatible Port for Easy Placement Where Power Outlets are Scarce
- Four (4) External 5dbi High-Gain, 360° SMA-Type Antennas
- Combine GigE Ports via Link Aggregation for Maximum AP Bandwidth Capacity
- Band Steering Optimizes Network Traffic Flow ; Fast Roaming Secures Seamless Connections
- Flexible Operation Modes: AP, Client Bridge or WDS
- Quickly View, Monitor & Reconfigure APs Locally or Remotely with EZ Controller™ Software

## Ideal for:

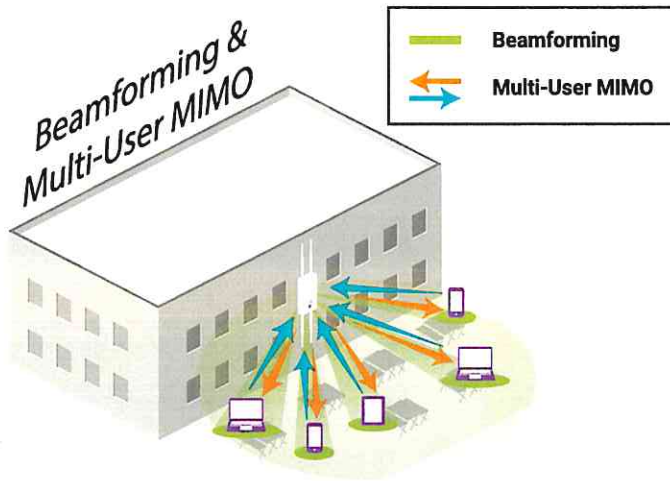
- |                          |                                     |
|--------------------------|-------------------------------------|
| • Restaurants & Cafes    | • Marinas & Docks                   |
| • Outdoor Living Areas   | • Trucking & Transportation Centers |
| • Retail Complexes       | • Golf Courses & Regional Parks     |
| • Resort Properties      | • Ranches & Farms                   |
| • Campgrounds & RV Parks | • Warehouse Facilities              |





## Higher Speeds for Multi-User Support

The ENS620EXT offers the next generation of 11ac Wave 2 speed and performance for wireless access points by increasing speeds and capacities. Support the newest 11ac Wave 2 Multi-User MIMO (MU-MIMO) smartphones, laptops, and other mobile devices with AC1300 network speeds for bandwidth-heavy applications. Multi-MIMO sends multiple streams to several devices simultaneously expanding the total bandwidth and capacity of the network.

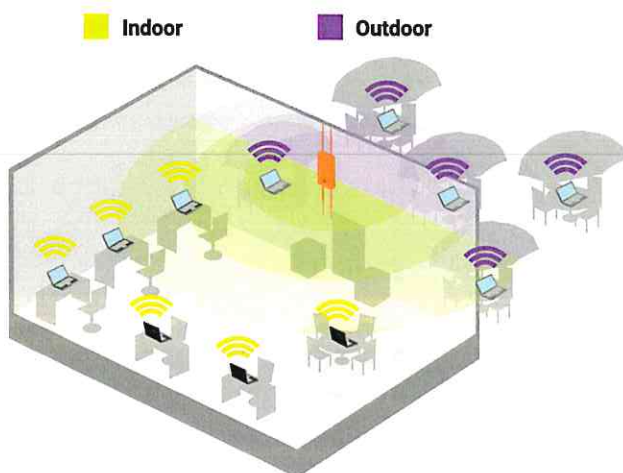


## 11ac Wave 2: Future Proof, Crowd Proof Networks

The ENS620EXT allows administrators to utilize the most advanced Wi-Fi technology standard available while supporting the future of mobile technology for their users. The AP handles crowded outdoor client environments through its two spatial, MU-MIMO streams and Beamforming technology, which targets signals directly to devices, providing optimal signal and reception reliability for users.

## Powerful Connectivity Indoors and Out

The ENS620EXT is powerful enough to provide Wi-Fi connectivity approximately 3,000 square feet while its small footprint makes it flexible for both indoor and outdoor use. Place the AP near an exterior wall indoors and blanket both indoor and outdoor living areas with its wireless signal.



## Exceptional Performance in Harsh Outdoor Climates

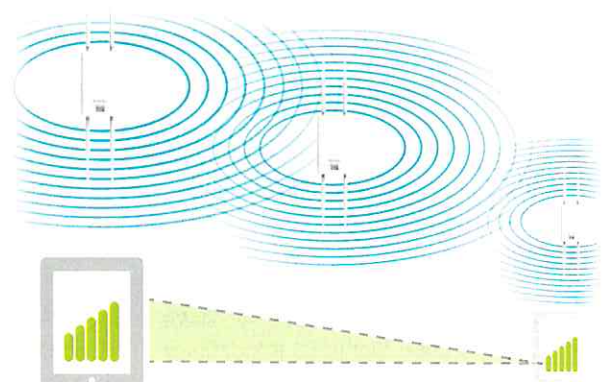
Designed for peak performance in harsh climates, the ENS620EXT features an IP55-rated weatherproof and dustproof enclosure ensuring it can withstand harsh outdoor and indoor environments where the temperature is a factor.



## Fast Roaming & Secure Guest Network Features Improve the Customer Experience

Configure multiple APs for Fast Roaming (802.11r & 802.11k); ensuring client authentication occurs seamlessly before client devices move to the next AP, providing continuous connectivity for devices in motion with fast, secure roaming.

Establish Guest Networks to limit Internet resources for visitors while securing the network from sophisticated Trojans and malware that can use guest's mobile devices to attack the network.



## Product Specifications

### Technical Specifications

#### Standards

IEEE 802.11b/g/n on 2.4 GHz  
IEEE802.11a/n/ac on 5 GHz

#### Antenna

Four (4) External 5 dBi Dual-Concurrent Omni-Directional Antennas

SMA-Type

#### Physical Interface

2 x 10/100/1000 Gigabit Ethernet Ports (Link Aggregation achieves 2 Gbps Throughput)

1 x Reset Button

#### LED Indicators

1 x Power

1 x LAN 1

1 x LAN 2

1 x 2.4 GHz

1 x 5 GHz

#### Power Source

Power-over-Ethernet: Proprietary 24V PoE

IEEE 802.11e Compliant Source

Active Ethernet (PoE)

#### Maximum Power Consumption

15W

#### Surge Protection

2KV

#### ESD Protection

Contact: 4KV

Air: 8 KV

### Wireless & Radio Specifications

Operating Frequency

Dual-Radio Concurrent 2.4 GHz & 5 GHz

#### Operation Modes

Access Point Mode (AP mode)

Client Bridge Mode (CB Mode)

WDS: WDS AP, WDS Bridge, WDS Station

#### Frequency Radio

2.4 GHz: 2400 MHz ~ 2835 MHz

5 GHz: 5150 MHz ~ 5250 MHz, 5250 MHz ~ 5350 MHz, 5470 MHz ~ 5725 MHz, 5725 MHz ~ 5850 MHz

#### Transmit Power

2.4 GHz: 27 dBm

5 GHz: 27 dBm

### Tx Beamforming (TxBF)

#### Radio Chains/Spatial Stream

2x2:2

#### SU-MIMO

Two (2) Spatial Stream SU-MIMO up to 1267 Mbps to a single client

#### MU-MIMO

Two (2) Spatial Stream MU-MIMO up to 1267 Mbps to two (2) MU-MIMO capable wireless devices simultaneously

#### Supported Data Rates (Mbps):

2.4 GHz: Max 400

5 GHz: Max 867

802.11b: 1, 2, 5.5, 11

802.11a/g: 6, 9, 12, 18, 36, 48, 54

802.11n: 6.5 to 400 Mbps (MCS0 to MCS15)

802.11ac: 6.5 to 867 Mbps (MCS0 to MCS9, NSS = 1 to 2)

#### Supported Radio Technologies

802.11b: Direct-Sequence Spread Spectrum (DSSS)

802.11a/g/n/ac: Orthogonal Frequency-Division Multiplexing (OFDM)

802.11n/ac: 2x2 MIMO with 2 Streams

#### Channelization

802.11ac supports very high throughput (VHT)—VHT 20/40/80 MHz

802.11n supports high throughput (HT)—HT 20/40 MHz

802.11n supports very high throughput (VHT) under the 2.4 GHz radio—VHT (256-QAM)

802.11n/ac packet aggregation: AMPDU, ASPDU

#### Supported Modulation

802.11b: BPSK, QPSK, CCK

802.11a/g/n: BPSK, QPSK, 16-QAM, 64-QAM

802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM

#### Management

Multiple BSSID

Supports 16 SSIDs (8 SSIDs per band)

#### VLAN Tagging

Supports 802.1q SSID-to-VLAN Tagging

Cross-Band VLAN Pass-Through

Management VLAN

#### QoS (Quality of Service)

Complaint with IEEE 802.11e Standard

Band Steering

RSSI Threshold

Traffic Shaping

Save Configuration as Default

Auto-Transmit Power

Auto-Channel Selection

Site Survey

PMK Caching

PMK Caching

#### Distance Control (ACK Timeout)

Multicast Supported

Fast Roaming (802.11k & 802.11r)

Email Alerts

Wi-Fi Scheduler

Client Traffic Status

Guest Network

RADIUS Accounting (802.1x)

Power Save Mode (U-APSD Support)

CLI Support

#### SNMP

v1, v2c, v3

#### MIB

I/II, Private MIB

#### Wireless Security

WEP Encryption 64/128/152 bit

WPA/WPA2 Enterprise (WPA-EAP using TKIP or AES)

Hide SSID in Beacons

MAC Address Filtering, Up to 64 MACs per SSID

Wireless STA (Client) Connected List

Https

SSH

Client Isolation

#### Environment & Physical

Temperature Range

Operating: -4°~140°F/-20°C~60°C

Storage: -22°F~-176°F/-30°C~80°C

#### Humidity (non-condensing)

Operating: 90% or less

Storage: 90% or less

#### Weatherproof

IP55-Rated Enclosure

#### Dimensions & Weights

ENS620EXT Device

Weight: 1.11 lbs (504 g)

Width: 7.54" (191.6 mm)

Length: 4.49" (114.3 mm)

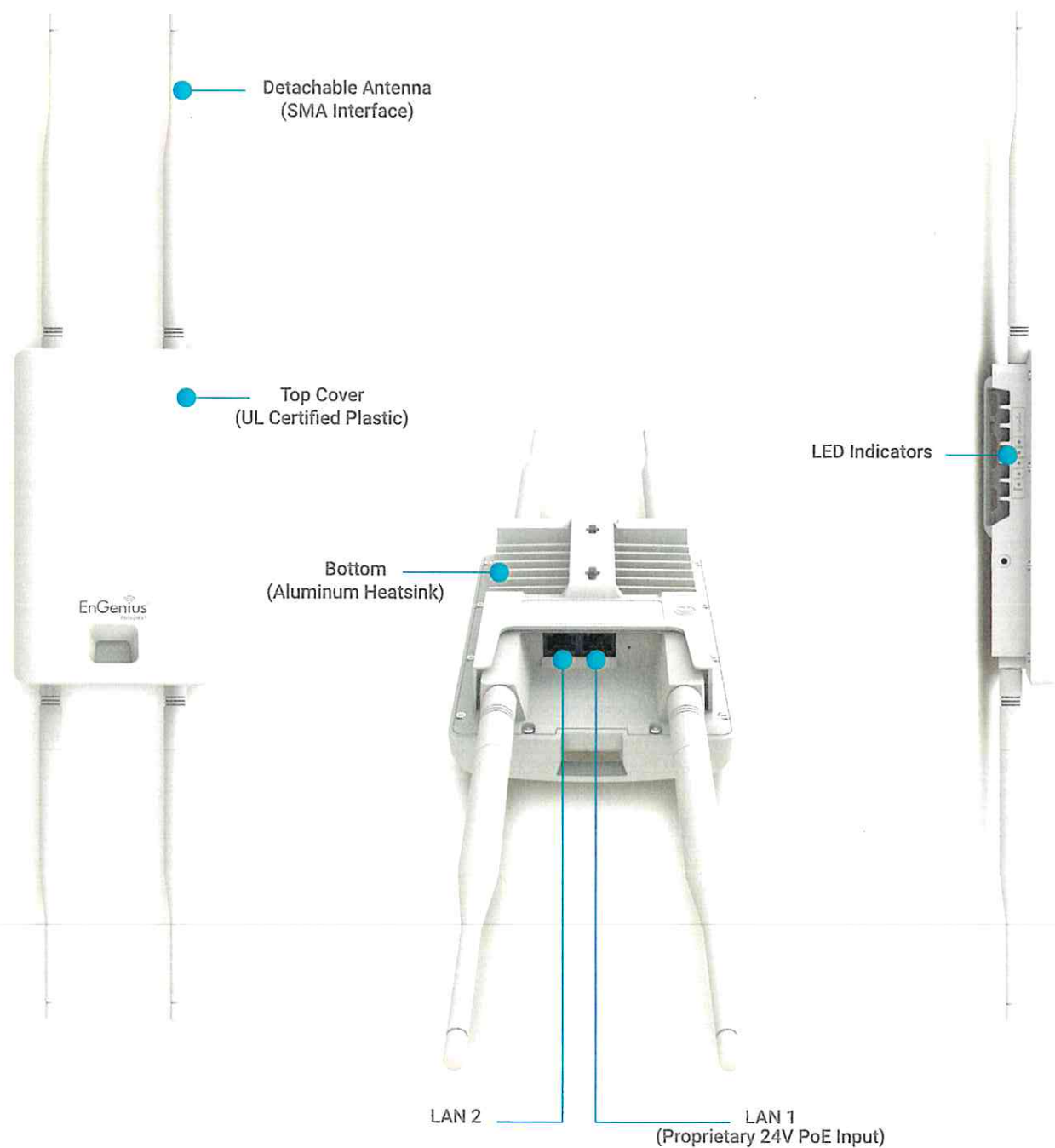
Height\* 1.88" (47.7 mm)

Product Specifications continued

|                                |
|--------------------------------|
| <b>Package Contents</b>        |
| ENS620EXT Outdoor Access Point |
| PoE Adapter (EPA2410GP)        |
| Pole Mounting Brackets         |
| Wall-Mount Screw Set           |
| RJ-45 Ethernet Cable           |
| Quick Installation Guide       |

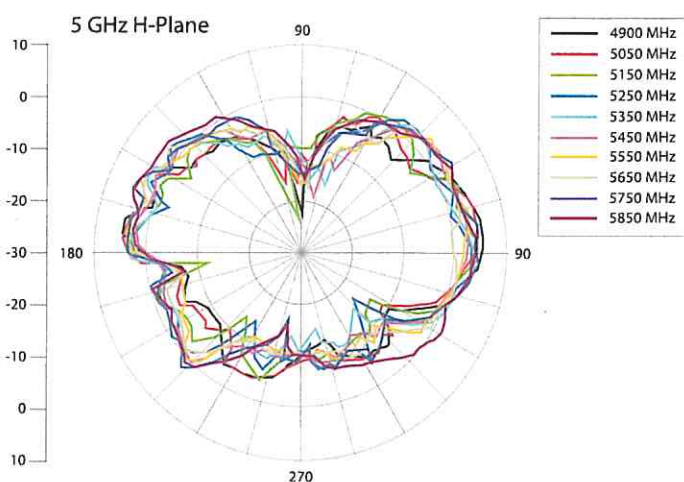
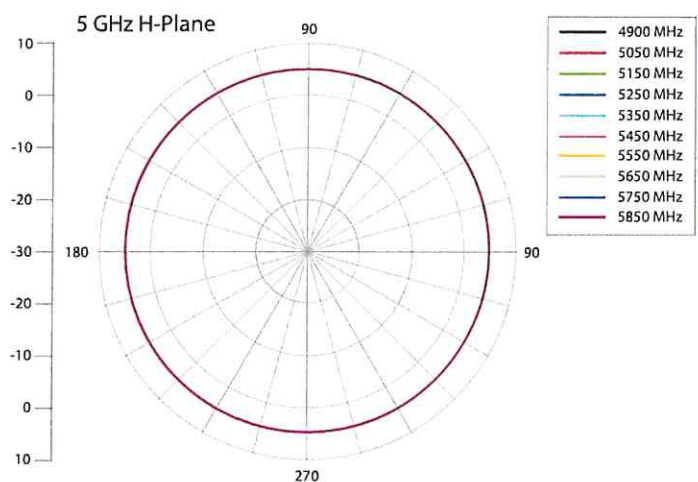
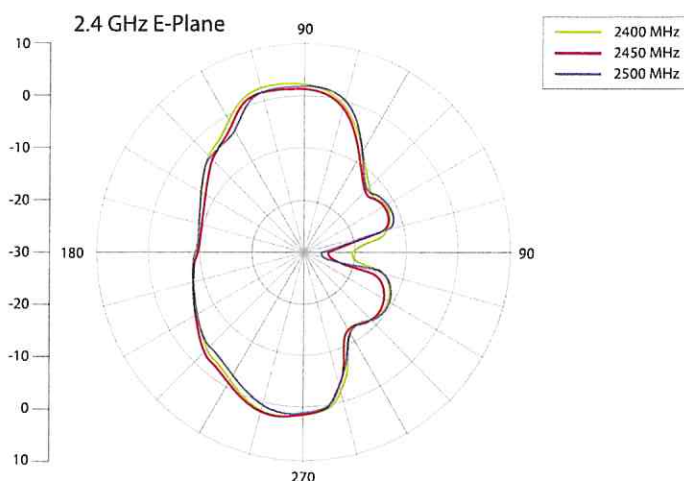
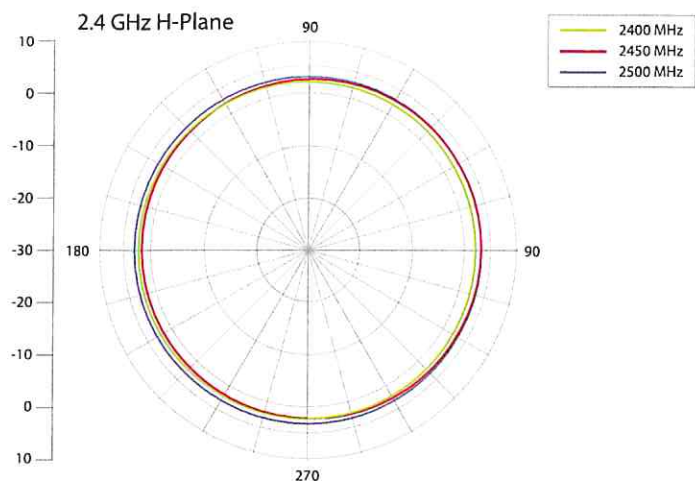
|                       |
|-----------------------|
| <b>Certifications</b> |
| FCC, CE               |
| <b>Warranty:</b>      |
| 1 Year                |

ENS620EXT Outdoor Access Point





## Antenna Radiation Patterns



Maximum data rates are based on IEEE 802.11 standards. Actual throughput and range may vary depending on distance between devices or traffic and bandwidth load in the network. Features and specifications subject to change without notice. Trademarks and registered trademarks are the property of their respective owners. For United States of America: Copyright ©2016 EnGenius Technologies, Inc. All rights reserved.

**EnGenius Technologies | 1580 Scenic Ave. Costa Mesa, CA 92626**

Email: [partners@engeniustech.com](mailto:partners@engeniustech.com) | Phone: 888-735-7888 | Website: [engeniustech.com](http://engeniustech.com)

Version 1.2 03/08/2017

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