

Cisco Universal Small Cell 8738



The Cisco® Universal Small Cell 8738 (USC 8738) is part of the Cisco Universal Small Cell Solution, an end-to-end platform that integrates 3G, LTE and carrier-grade Wi-Fi with Self-Organizing Network (SON) and backhaul technologies for an efficient and highly secure heterogeneous network (HetNet). The USC Series provides the right solution for every indoor environment, from the home, to enterprises of every size, and up to large high-density environments such as airports, shopping malls, and campuses. The USC 8738 is designed to operate in conjunction with the Cisco USC 8088 Controller, providing transparent high-quality coverage in large enterprises, across campuses, and in large indoor public spaces where mobile voice and data are mission-critical.

Product Overview

As the demand for mobile broadband accelerates, so too grows the need to use both 3G and LTE technologies efficiently, without creating new network complexity. The Cisco USC 8738 addresses this need by integrating multi access technology into a single small cell to support concurrent 3G and LTE operation with SON capability.

The Cisco USC 8000 Series offers transparent and fully coordinated mobile coverage for environments where the mobile operator's macro network cannot. Using a single, high-density, multitechnology controller for management and autoconfiguration, a cost-effective in-building, cellular coverage enhancing system can be deployed. These indoor locations include event venues, hotels, retail establishments, government facilities, universities, a range of enterprises, and more.

The Cisco USC 8738 scales easily to provide concurrent 3G voice coverage relief as well as offloads high-capacity 4G demands to meet next-generation customer needs, such as voice over LTE and video.

The solution can support up to 100 small cells, providing coverage and capacity for more than 500,000 square feet (46,000 square meters) of building space. The USC 8738 can be installed easily on walls or ceilings, and its network connectivity and power are provided over Ethernet. The USC 8738 is convection-cooled with a built-in antenna (Figure 1), but is also available with external antennas.

Figure 1. Cisco Universal Small Cell 8738



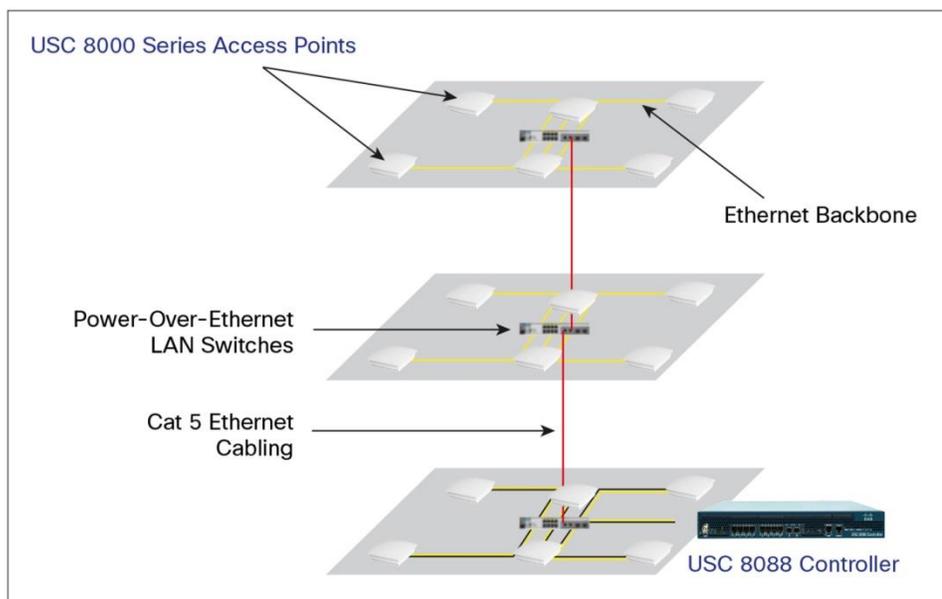
Cisco USC 8738 Features

The Cisco USC 8738 supports up to 32 simultaneous 3G voice and data channels, capable of a peak downlink rate of 21 Mbps and a peak uplink rate of 5 Mbps. Cisco MAC/PHY software implements diversity for superior uplink performance and provides the implementation of soft handover between small cells. The USC 8738 supports up to 64 active LTE users and 128 RRC connected users, a peak downlink rate of 100 Mbps, and a peak uplink rate of 50 Mbps when used with 20-MHz channel bandwidth.

Each USC 8738 includes SON functions to enhance smooth coordination among cells inside its environment, as well as 2G and 3G outdoor macro cells in multiple frequency bands. In addition, each access point performs continuous self-optimization to help provide high-quality radio coverage and mobility.

All communication between the USC 8000 Series access points and the USC 8088 Controller occurs through an IP Security (IPsec) tunnel to provide exceptional network security to the enterprise (Figure 2). Encryption keys and device certificates are securely stored using on-chip Trusted Platform Module (TPM) functions, allowing support for a secure boot process, and certificate-based authentication. The USC has no management or console port, and physically, the unit can be locked to prevent theft or removal from premises.

Figure 2. Cisco Universal Small Cell 8000 Architecture Overview



In summary, the Cisco USC 8738 offers the following features:

- Multiple FDD band combinations
- Up to 32 UMTS channels, up to 64 active LTE users, 128 LTE RRC connected users
- Peak DL/UL UMTS throughput of 21 or 5 Mbps
- Peak DL/UL LTE throughput of 150 or 50 Mbps
- Ability to deploy over existing Ethernet switching infrastructure (VLAN)
- Power-over-Ethernet Plus (PoE+)
- Wall and ceiling mountable
- Certificate-based authentication with Cisco USC 8088 Controller

Cisco USC 8738 Benefits

The Cisco Universal Small Cell Solution is designed to address the challenge of poor indoor cellular service coverage while expanding network capacity. Cisco Universal Small Cell capabilities support new enterprise services such as integration with enterprise voice systems and access to local enterprise networks. In addition, the Cisco USC 8000 Series provides the following benefits:

- **Reduced operational costs:** By using existing infrastructure, structured cabling and in-built automatic coordinated SON, the USC 8738 integrates with the controller architecture, making location selection, cabling, and deployment simple and cost-effective.
- **Scalability:** Up to 100 USC 8738 small cells can be supported by a single controller to provide an enhanced user experience in large buildings.
- **Superior indoor signal strength and capacity:** The Cisco USC 8738 significantly increases signal strength throughout a building or site, resulting in excellent voice quality and call clarity, as well as consistent connectivity with high-capacity call handling.

Product Specifications

Table 1 gives specifications of the Cisco USC 8738, Table 2 gives Wideband Code Division Multiple Access (WCDMA) radio specifications, and Table 3 gives LTE radio specifications.

Table 1. Product Specification

Item	Specification
Enterprise installation	<ul style="list-style-type: none"> • Mounting hardware included • Padlock option • Ceiling or wall mount • PoE: 802.3at • Maximum power consumption: 23W
Physical and environment	<ul style="list-style-type: none"> • Dimensions: 9.4 x 8.1 x 2.1 in. (239 x 206 x 53 mm) • Weight: 3.0 lb (1.37 kg) • 1 x 100/1000 Mbps Ethernet (RJ-45) • Operating temperature: <ul style="list-style-type: none"> ◦ 32 to 122° F (0 to 50° C) (vertically mounted) ◦ 32 to 104° F (0 to 40° C) (horizontally mounted) • Storage temperature: 32 to 185° F (0 to 85° C) • Operating humidity: 0 to 90% noncondensing • Storage humidity: 0 to 90% noncondensing • Ingress protection rating: IP30

Item	Specification
Security	<ul style="list-style-type: none"> Secure boot and secure key storage using Trusted Platform Module (TPM) functions IPsec tunneling to USC 8088 Controller X.509 certificate-based authentication
Timing and synchronization	<ul style="list-style-type: none"> IEEE 1588-based Precision Time Protocol Real-time synchronization to USC 8088 Controller
Regulatory compliance and certification	<ul style="list-style-type: none"> Safety EN 60950, CB certification (IEC 60950) (IEC 60950, UL 60950-1, and CAN/CSA-C22.2 No.60950-1) R&TTE Directive 1999/5/EC: <ul style="list-style-type: none"> EN 50385 and EN 62311 (SAR) EN 301 489-1 and 301 489-23 EN 301 908-1, 301 908-3, and 301 908-14 FCC Part 15, Class A Industry Canada: ICES-003 (Class A) Materials: Directive 2002/95/EC on RoHS General: CE and NRTL marking FCC Part 24 (UMTS band 2) FCC Part 27 (UMTS band 4) Industry Canada: RSS-133 and RSS-139 Ifetel Mexico Anatel Brazil

Table 2. WCDMA Radio Specifications

Item	Specification
Performance	<ul style="list-style-type: none"> Up to 32 simultaneous voice and data channels Peak rates: 21-Mbps DL and 5-Mbps UL
Radio and antenna	<ul style="list-style-type: none"> Peak Transmit power: 1x 250 mW (24 dBm) Receive diversity Two internal antennas Antenna gain: 2 dBi (nominal)
RF management	<ul style="list-style-type: none"> UMTS network monitor Inter- and intrafrequency neighbor-cell detection Global System for Mobile Communications (GSM) network monitor Autodetection of primary scrambling codes
Mobility management	<ul style="list-style-type: none"> Inter-small-cell soft handover Handover from small-cell to/from macro (inter-RAT; interfrequency)
Supported RAB	<ul style="list-style-type: none"> CS: 12.2-kbps AMR and WB-AMR R99 PS: 64 kbps and 384 kbps High-speed packet access plus (HSPA+): Release 7, all categories Multi-RAB: 1 x CS, up to 3 x PS
Ciphering	<ul style="list-style-type: none"> 3G Kasumi

Table 3. LTE Radio Product Specifications

Item	Specification
Performance	<ul style="list-style-type: none"> Peak rates: 150-Mbps DL/50-Mbps UL (20 MHz) 300-Mbps DL/50-Mbps with optional CA (2 x 20MHz) 32 standard users (up to 64 active users with capacity upgrade license) 128 RRC connected users
Channel bandwidth	<ul style="list-style-type: none"> 5 MHz 10 MHz 15 MHz 20 MHz

Item	Specification
Radio and antenna	<ul style="list-style-type: none"> • 2 x 2 MIMO • Maximum transmit power: 2x125 mW (24 dBm) • Two internal antennas • Antenna gain: 2 dBi (nominal) • Option for four antenna connectors (SMA straight) for use with external antennas. Orderable as separate PID (UMTS-1TX/RX, 1Network Listen. LTE - 1TX/RX, 1Network Listen)
Mobility	<ul style="list-style-type: none"> • Inter Cisco USC 8000 Series small cell handover anchored at USC 8088 Controller • Handover to/from macro (inter- and intrafrequency) • Inter-RAT handover to UMTS
RF management	<ul style="list-style-type: none"> • LTE and UMTS network monitor • Inter and intrafrequency neighbor-cell detection • Autodetection of Physical Cell Identities (PCI) • Automatic Neighbor Relation (ANR) management
Voice services	<ul style="list-style-type: none"> • Voice over LTE (VoLTE) • Circuit-switched fall back
Quality-of-service (QoS) features	<ul style="list-style-type: none"> • Support for LTE QCI • Multiple Data Radio Bearers (DRB) per UE • Guaranteed bit rate (GBR) • Maximum bit rate (MBR) • Aggregate maximum bit rate (AMBR)
Ciphering	<ul style="list-style-type: none"> • SNOW 3G and Advanced Encryption Standard (AES) air-interface encryption

Ordering Information

The Cisco USC 8738 is available for sale in the 3G bands 1 or 2 and LTE bands 3, 4, and 7. For detailed ordering information, refer to the product ordering guide (Tables 4 and 5).

Table 4. Hardware Ordering Guide

Product Name	Description	Order Code
Universal Small Cell 8738 Band 2/4	Dual-mode UMTS and LTE FDD small cell. Supports 32 3G/HSPA channels, up to 64 active LTE users, 250 mw peak transmit per band class, 2x2 MIMO for LTE, Rx Diversity for UMTS. Band 2/4	USC8738-E24-K9
Universal Small Cell 8738 Band 1/7	Dual-mode UMTS and LTE FDD small cell. Supports 32 3G/HSPA channels, up to 64 active LTE users, 250 mw peak transmit per band class, 2x2 MIMO for LTE, Rx Diversity for UMTS. Band 1/7	USC8738-E17-K9
Universal Small Cell 8738 Band 1/3	Dual-mode UMTS and LTE FDD small cell. Supports 32 3G/HSPA channels, up to 64 active LTE users, 250 mw peak transmit per band class, 2x2 MIMO for LTE, Rx Diversity for UMTS. Band 1/3	USC8738-E13-K9
Universal Small Cell 8088 Controller	Controller hardware capable of support 50 dual-band (UMTS + LTE or dual-LTE) small cells	USC8088-LC-K9
Universal Small Cell 8088 Controller (High Capacity)	Controller Hardware capable of support 100 dual-band (UMTS + LTE or dual-LTE) small cells	USC8088-HC-K9

Table 5. Software Ordering Guide

Product Name	Description	Order Code
Small Cell Activation Software	Controller capacity expansion software license for each small cell	USC8738-ASW-K9
Small Cell Activation Software	Activation software for a 8838 where only a single LTE Band is to be activated	USC8738-4G-ASW-K9
Controller Software License	Controller capacity expansion software license for each small cell	USC8088-CSW-K9
Enterprise Management System License	Enterprise management platform license. Licensed per server instance. Two platform licenses needed for redundant deployment.	USC8050-MSW-K9
Controller Activation Software	Activation software for controller	USC8088-LC-ASW-K9

Product Name	Description	Order Code
High Capacity Controller Activation Software	Activation software for high capacity controller	USC8088-HC-ASW-K9
LTE Dual Band High-Capacity Upgrade License (optional)	License to increase the number of active LTE users from 32 users to 64 users on a single LTE band	L-8k-LTE-CUx1-K9

Warranty

The Cisco USC 8738 includes 1-year limited hardware warranty with a 30-day return for repair. More detailed warranty information is available on Cisco.com at the [Product Warranties](#) page.

Cisco Small Cell Services

The Cisco Universal Small Cell Solution can be delivered by Cisco Services, an organization with unparalleled experience and expertise implementing large commercial small-cell deployments, and providing world-class systems service integration. With specialized tools, knowledge, methodologies, best practices, and a collaborative delivery model that combines Cisco's expertise with our partners' and customers' capabilities, Cisco Services achieves superior results. We help service providers mitigate risk, accelerate time to market for new revenue-generating services, lower total cost of ownership, maximize the value of investments, and improve the customer experience through service assurance.

The Cisco Services team delivers comprehensive support. Through a lifecycle approach to services, Cisco has developed consistent and proven methodologies to successfully design and deliver new service offerings. These services are customized and delivered through an extensive global support infrastructure, which includes the award-winning Cisco Technical Assistance Center (TAC), Cisco Services resources, Centers of Excellence, small cell interoperability testing (IOT) and system verification (SVT) labs, and ecosystem partners.

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For More Information

For more information about the Cisco USC 8738, visit <http://www.cisco.com/go/smallcell> or contact your local Cisco account representative.



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