804Mesh Satellite

D E S C R I P T I O N

The Calix 804Mesh satellite complements the GigaCenter service delivery platform by extending Wi-Fi coverage and capacity within the subscribers' home. The 804Mesh flexible backhaul options allows for either wired or wireless deployment. When configured wirelessly, the satellite uses the 5 GHz 802.11ac 4x4 radio as backhaul to the parent GigaCenter. This configuration improves in-home Wi-Fi coverage and should eliminate most Wi-Fi dead-spots. It also allows service providers to eliminate costly truck rolls when troubleshooting the Wi-Fi coverage issue. The 804Mesh works seamlessly with Calix's GigaCenter solutions. The combined solution – GigaCenter, 804Mesh satellite and Calix Support Cloud/CC+, known as Mesh-Enhanced Carrier Class Wi-Fi, helps to reduce the time to additional revenue by automating and simplifying the deployment of complex multi-AP networks.

GIGABIT SUBSCRIBER EXPERIENCE: Subscribers want their Wi-Fi to work with any device in any location throughout their home. Over time, the numbers, types and locations of these devices has exploded. In response to the rapid adoption of Wi-Fi smart home devices – like IP cameras and thermostats – service providers must now provide ubiquitous Wi-Fi coverage. In addition, the demand for video content continues to grow and subscribers expect to watch anywhere on any device. GigaCenters enhance coverage and capacity with additional Wi-Fi radios, but are already transmitting at the maximum allowable regulatory limits. To improve in-home coverage and capacity, the Calix Mesh-Enhanced Carrier Class Wi-Fi solution has three components: GigaCenters, 804Mesh satellites, and the Calix Cloud. The 804Mesh satellites are optimized for interoperability with GigaCenters, featuring a matching 5 GHz 802.11ac 4x4 radio that allows for the delivery of symmetrical throughput rates up to 1 Gbps.

In addition to support for high-speed Internet (HSI) services, service providers need solutions that allow them to support a full complement of additional services, including IPTV and guest Wi-Fi. In response, the Calix solution supports differentiated quality of service (QoS) as well as isolation between the services. To ensure a seamless mobile streaming experience, the software used by the GigaCenter and 804Mesh has been enhanced to support both band steering, network-assisted node steering, and load balancing. Steering directs subscriber Wi-Fi devices to connect to the radio signal that results in the best user experience and avoids congestion.

Calix leverages the latest standards for roaming and steering, including 802.11k, 802.11r and 802.11v. The combination of GigaCenters and 804Mesh satellites enables subscribers to receive Gigabit broadband data, IP video, and voice over (VoIP). Using the latest 802.11ac 5 GHz technology – incorporating 4x4 multi-user multiple-input and multiple-output (MU-MIMO) with beamforming – the 804Mesh satellite allows service providers to extend the access network inside the home and establish a strategic location for the delivery and control of broadband services.

Calix engineered the 804Mesh for optimal whole-home coverage with simultaneous dual-band 2.4 GHz and 5 GHz operation and dynamic beamforming at 5 GHz. For maximum performance, the 804Mesh supports 2x2 MIMO spatial diversity at 2.4 GHz and 4x4 MU-MIMO at 5 GHz. The 804Mesh supports the entire 5 GHz band, including Dynamic Frequency Selection (DFS) channels, and can be provisioned to support 80 MHz channel bandwidth at 5 GHz. The 804Mesh dual Wireless Video Bridge easily upgrades home network and reach distance to support streaming of multimedia content over a wireless connection. The complete GigaFamily solution easily delivers high definition (HD) and Ultra HD (UHD) video and data throughout a subscriber's home without dead-spots.

Calix.

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The Calix solution is scalable, allowing service providers to initially deploy a GigaCenter and then add 804Mesh satellites to the end subscriber's home network as the need arises for additional coverage. One of the strengths of the Calix solution is that service providers can leverage the instrumentation provided by the GigaCenters and 804Mesh satellites to identify when the end subscriber can benefit from an additional 804Mesh. This allows them to be proactive and upsell additional services and assets.

EASY TO INSTALL, ACTIVATE, AND MAINTAIN: The 804Mesh provides a user-friendly installation and activation process. The subscriber can pair the 804Mesh to the GigaCenter (or GigaHub*) by pressing the WPS button first on the GigaCenter then, within 120 seconds, on the 804Mesh. The GigaCenter (or GigaHub*) and 804Mesh will start pairing. Once the pairing is complete, the same discovery, configuration and harmonization steps occur automatically. The 804Mesh can also be connected to the GigaCenter using the Ethernet ports. When deployed with a wired backhaul it's as simple as plugging a Cat5/6 cable in between the 804Mesh RJ-45 port and the parent GigaCenter. The subscriber's account and provisioned/harmonized services from the GigaCenter (or GigaHub*) are matched automatically to the 804Mesh. The Calix Support Cloud/CC+ extensive troubleshooting capabilities, remote software downloads, and easy-to-use service activation features ensure that services are delivered and maintained without needless truck rolls and hardware upgrades. Employing GigaCenters and 804Meshs allows service providers to reduce their operational expenses while effectively delivering the Gigabit experience to their subscribers.

The 804Mesh has an innovative signal strength bar indicator, making it simple for subscribers to identify the best placement location. To utilize the 804Mesh Wi-Fi extension function, customers should not place the 804Mesh too close to the GigaCenter. If the signal strength has 3 Green bars with 1 Red bar, it means the 804Mesh is too close to the GigaCenter. The reasonable distance for the 804Mesh from the GigaCenter is a two-or-three signal bar. Lastly, if only the first signal bar flashes, it indicates the 804Mesh is too far from the GigaCenter and the performance will not be optimal.

Calix GigaCenter and 804Mesh Solution Overview
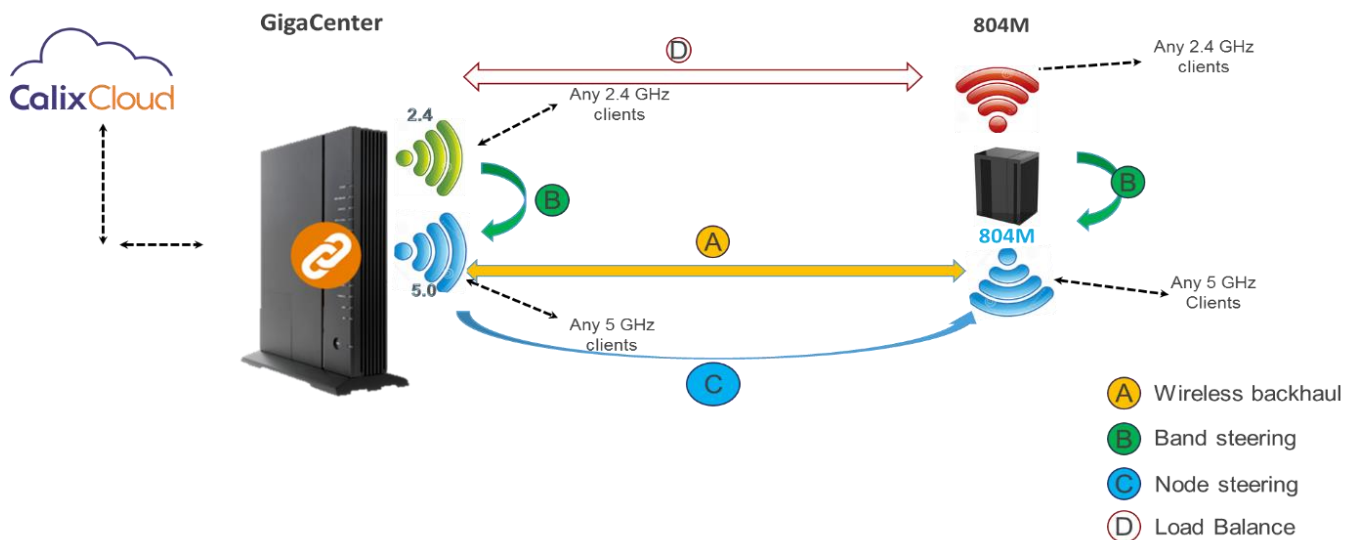
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- Whole Home Coverage Wi-Fi Extender:
  - Layer 2 bridge for High Speed Internet (HSI) data and IPTV video services
  - Self Organizing Network (SON)
    - o Auto Configuration
    - o Band Steering and Client Roaming
    - o Channel Steering
  - Increased Network Capacity
  - IQStream for End-to-End Service Prioritization
    - o Multiple BSS
    - o IPTV STB
  - Bridge port assignment and data traffic mappings
  - MAC filtering
- Wireless:
  - 2.4 GHz and 5 GHz Dual-band simultaneous
  - 2.4 GHz 802.11n certified, 802.11b/g compatible
  - 5 GHz 802.11ac certified, 802.11n compatible
  - Support 802.11k/r/v
    - o 11k: Radio Resource Management
    - o 11r: Fast Roaming
    - o 11v: Wireless Network Management
  - Support 4-address WDS mode
  - WPS push-button
  - WPA/WPA2 Personal
  - Support eight SSIDs Replication
  - 1.7Gbps Radio Backhaul with GigaCenter
  - Channel Optimization SuperDFS & SCS

- One Gigabit Ethernet (GE) interface:
  - Symmetrical 1 Gbps bandwidth for residential IPTV and data services
  - Multi-rate 10/100/1000Base-T Ethernet, auto-negotiating
  - If 5 GHz acts as backhaul, then the Ethernet port will act as LAN port.
  - Disables 5 GHz as default backhaul, can use Ethernet as wired backhaul
- Supports multiple data service profiles
- IPTV, IGMPv2 and IGMPv3:
  - IGMP Snooping
  - IGMP Fast Leaves
- Wireless Network Management:
  - TR-069
  - Local Home Gateway GUI, access provisionable
  - Remote WAN side GUI access
  - Default username/password
  - CC+
- Wireless Backhaul Signal Strength associated with RSSI
  - RSSI > -50 dBM
  - -50 dBM >= RSSI >= -60 dBM
  - -60 dBM > RSSI >= -70 dBM
  - -70 dBM > RSSI >= -80 dBM
  - RSSI < -80 dBM

SPECIFICATIONS

804Mesh Satellite

DIMENSIONS

Width: 3.0 in (7.6 cm)
Depth: 4.0 in (10.2 cm)
Height: 5.4 in (13.7 cm)
Weight: 8 oz. (0.2 kg)

WAN INTERFACE

Wired: 10/100/1000 BASE-TX Ethernet
    Port, RJ-45 connector
Wireless: 2.4 GHz and 5 GHz 4x4 internal
    antennas

INTERFACES

Wireless: 2.4 GHz 2x2 and 5 GHz 4x4
    internal antennas
1 -10/100/1000Base-T Ethernet ports,
    RJ-45 connectors (available when
    configured with wireless WAN)
Power: 2-pin connector
WPS Switch: Push-button actuator

DATA

Drop length: 328 feet (100 m) maximum
    using CAT5 cable
Auto MDI/MDIX crossover for 1000BASE-
    TX, 100BASE-TX,
    and 10BASE-T ports

WIRELESS

2.4 GHz 802.11 b/g/n
    2x2 MIMO
5 GHz 802.11 a/n/ac
    4x4 MU-MIMO, dynamic
    beamforming
2.4 GHz and 5 GHz simultaneous
8 SSIDs per band (2 SSID subscriber
    default)
Auto channel selecting and interference
    detection
WPS, WPS push button
Wireless Security: Wi-Fi protected access
    (WPA/WPA2) WEP,
    MAC address filtering
Wi-Fi multimedia (WMM)
802.11k,802.11v,802.11r

INTEROPERABILITY

GigaCenter (844G, 844GE, 844E, &
    854G) and GigaHub (814G & 814F)

MANAGEMENT INTERFACES

LEDS
TR-069 remote management
TR-098 Internet Gateway Device Data
    Model

ENVIRONMENTAL

Operating temperature: Indoor ambient
    temperature, 0° to 40°C
    (32° to 104° F)
Operating/storage relative humidity:
    8 to 95 % non-condensing
Altitude: −200 to 10,000 feet
    (−61 to 3,048 m) above sea level

CERTIFICATION AND COMPLIANCE

Emissions:
    FCC Part 15 Class B
CE
    IC ICES-003 Class B
    CISPR-22
Safety:
    UL 60950 and UL 1697 approved
IEEE: 802.3, 802.3AB, 802.3U, 802.11p,
    802.11Q
Wi-Fi Alliance Certified
    802.11ac and 802.11n

POWERING

2-pin connector
Input voltage: 12 VDC (nominal),
    10 VDC (min.), 11 VDC (max)
External Power Adapter: 12 VDC, 1A

ORDERING INFORMATION

804Mesh

Calix 804Mesh

100-05030.........................804Mesh Dualband Wi-Fi MESH Extender -AM Type A Power Adapter
100-05045.........................804Mesh Dualband Wi-Fi MESH Extender -EU Type C Power Adapter

Calix 804Mesh Mounting Bracket

100-05073.........................804Mesh Mounting Bracket - Quantity 20