



## Understanding Port Hopping

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Cisco BBSM includes a feature known as *port hopping*, which allows the end user to seamlessly move from one wireless access point to another without having to re-authenticate.

### Overview

The port hopping feature was designed to allow a user to move between network hardware such as switch ports, cable modems, or wireless access points in a BBSM network and maintain an active session in the BBSM server. This feature can be used in either a wireless or wired network layout. When using wireless network architecture, port hopping improves the user's experience by allowing mobility between wireless access points with uninterrupted service.



**Note**

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Port hopping from a wireless access point to a wired switch (or vice versa) is not supported. Also, mobility across subnets or cells operated by different service providers, is not supported.

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If port hopping is enabled, BBSM keeps the session active when the user moves to another port or disassociates temporarily. For example, disassociation might occur when the signal is weak or an object comes between the wireless access point and the user, causing the user to suddenly associate with a secondary access point that might be configured to another aggregation switch port. BBSM continues to search for the user. If the user reappears back on the network within a configurable period of time, the session continues without interruption. If the user does not reappear on the network within the period, BBSM deactivates the session, and the user must re-authenticate to regain Internet access.

The BBSM Port Hopping feature is disabled by default. The Port Hopping feature is enabled and configured through BBSM WEBconfig by an administrator. Configuration of this feature can also be done through the Port Control and Subscription Port Control submenus of the BBSM Dashboard under Operations.

### Functional Description

This section provides details on how BBSM Port Hopping interacts with the BBSM system. Additionally, any limitations or restrictions of using this feature are discussed. Transactions that occur while using this feature are logged into the BBSM Transaction History report. These specific port hop transactions are found in the [“Transaction History Reporting for Port Hopping”](#) section on page E-3.

## Port Hopping Not Allowed Between BBSM Sites

The BBSM Port Hopping feature is configured per site and is *not* allowed across multiple BBSM sites. A user is limited to moving to and from ports within a specific BBSM site. If a user attempts an inter-site port hop, the user's session is deactivated and the user must re-authenticate to regain Internet access to the new BBSM site. If a user disappears from the network for a period of time less than the Port Hop Delay, the session remains active until the system finds the user again on a port on the same BBSM site. If BBSM finds the user on a port within a different BBSM site from where their active session originated, the session is deactivated.

**Note**

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The possibility exists that a user can move from the original site, authenticate to another site, and then move back to the original site within the duration of the Port Hop Delay parameter. In this case, BBSM deactivates the original active session even though the user eventually moved back to the original site. You should deploy your network to prevent overlap between cells on different sites.

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## Searching Network Elements for Port Hopping Users

When BBSM port hopping is enabled and a user disappears from the network, the BBSM system searches for the user. The BBSM software searches the configured network elements (Ethernet switches, access points, etc.) to locate the user. You configure the list of network elements using the BBSM WEBconfig Switches web page. BBSM system searches the last known network element that the user was connected to or associated with first. If the user is still not found, the system will begin to search all of the other configured network elements. BBSM performs this search every minute until the user is found or the BBSM Port Hop Delay time parameter expires.

**Note**

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While the system is searching for a user, the active session for the user remains active and appears in the Active Ports report.

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## BBSM Port Policy for Port Hopping Users

As the user hops from port to port, the port policy that BBSM associates with the user session follows the user to each new port.

The BBSM system applies the bandwidth limit (in kilobits per second) specified at session activation to the active session as the user moves from port to port. If a user has selected a dynamic bandwidth boost from a BBSM web page, when the user moves to another port, the bandwidth boost settings follow the session to the new destination port.

## Port Hopping to a Restricted Port

The BBSM Port Hopping feature is enabled by applying a value of true or false to a configured port. If the user starts on or moves to a port where the Port Hopping value was configured as "false" (meaning port hopping is not allowed or enabled on this BBSM port), then BBSM ends the user session if the user attempts to move to a different port.

## Session Duration for BBSM Port Hopping

The values for the duration of an active session reported in the system vary depending on how the session terminates. The BBSM system will report the time that it searched for the user in the session duration if the search succeeds. If the system searches for the user and fails to find the user before the port hop delay time expires, the BBSM system will not include the time spent searching in the reported length of time for that active session. In this way the user that terminates a session by turning off the computer is not charged for any system time that was spent looking for the user on other ports.

## Hotel Billing Policy and BBSM Port Hopping

The BBSM Port Hopping feature works with any of the BBSM Page Set templates used to define an access service. However, when using this feature in a wireless network, some of the BBSM templates may not be applicable. For example, the page set templates that use the BBSM Port ID and Room Number for billing purposes, such as the DailyHotel policy, will not have meaning. A wireless network does not recognize the concept of a *room* because wireless access points can extend through walls. Most wireless access points (e.g. Cisco Aironet) map all users to the same port number and the concept of a room number which identifies the access point may not apply at all. Use of the Hotel Accounting Policy in this scenario would not provide useful billing information for a property management system to accurately charge users.

Alternatively, if the application uses a wired network, the port numbers and room numbers are much more meaningful to a hotel situation. The BBSM Port Hopping feature keeps track of the original port and original room numbers to ensure that the charges incurred during the session are billed correctly to the user. As a user moves from port to port, the system reports each new port and room, but the system bills only the original port and original room.

## Transaction History Reporting for Port Hopping

The BBSM Port Hopping feature uses the existing Transaction History report to record transactions that occur while using the feature. Each time a port hop event occurs on the BBSM system, the system makes an entry into the Transaction History report to record the event. These transactions can be viewed in the BBSM Transaction History report, which is accessed through the Reporting Pages link on the BBSM Dashboard.

Entries are displayed in the Transaction History report when:

- A user starts a port hop by disappearing from the network.
- A user successfully moves from one port to another.
- A user moves to another port, but the port hop time expires before being located on the next port.
- A user moves to a port in another BBSM site, which terminates the active session. The transaction is recorded on both sites.

The following table provides a description of each column in the BBSM Transaction History report:

**Table E-1 BBSM Transaction History Report Columns**

Attribute	Description
Date / Time	The date and time when the port hop event occurred.
Type	The type of port hopping transactions that occurred. The possible types are: <ul style="list-style-type: none"> <li>• Port Hop Started</li> <li>• Port Hop Completed</li> <li>• Port Hop Failed, attempt to hop to another site</li> <li>• Port Hop Time Expired, deactivating session</li> </ul>
IP	The IP address of the user who moved ports.
Previous State	The value “Active” is used for port hop events.
New State	The value “Active” is used for port hop events.
Amount	Because BBSM did not bill for the port hop, the amount column has the value zero.
PortID	The PortID column displays the port to where the user moved.
MAC	The MAC column displays the MAC address of the user who moved ports.
Room	This column displays the room number or geographic location associated with the port to where the user moved.
Duration	This is zero for port hop events.
Bandwidth Kbps	This column displays the bandwidth limit (in kilobits per second) applied to the session.