



Sizing Cisco Spark Hybrid Services

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Sizing the components of the Preferred Architecture for Cisco Spark Hybrid Services is an important part of the overall solution design. As in the latest version of the [Preferred Architecture for Cisco Collaboration Enterprise On-Premises Deployments](#), this chapter contains simplified sizing recommendations based on a number of assumptions. It is important to note that the assumptions in this chapter change some of the simplified sizing assumptions for the on-premises deployment. Therefore it is important to be aware of these changes in order to size the on-premises deployment correctly.

For the products that are deployed with virtualization, sizing corresponds to the selection of the virtual machine hardware specification defined in the Open Virtual Archive (OVA) template and the number of virtual machines. For the products that are not deployed with virtualization, sizing corresponds to the type and number of appliances or blades.

Sizing can be a complex exercise because of numerous parameters to take into considerations. To simplify the sizing exercise, this chapter provides some sizing examples with corresponding assumptions. We will refer to these sizing examples as simplified sizing deployments. If the requirements of your particular deployment are within the limits of those assumptions, then you can use the simplified sizing deployments in this document as a reference. If not, then you will need to perform the normal sizing calculations as described in the *Sizing* chapter in the latest version of the *Cisco Collaboration System Solution Reference Network Design (SRND)* guide and related product documentation available at <https://www.cisco.com/go/srnd>.

As mentioned, sizing the components of the Preferred Architecture for Cisco Spark Hybrid Services is very similar to that for Cisco Collaboration Enterprise On-Premises Deployments. The main difference is that new components are added to this solution, namely the Cisco Spark Hybrid Services Connectors and Hybrid Media Nodes. The Cisco Expressway-C and Expressway-E pairs also have to handle additional traffic corresponding to the Cisco Spark Hybrid calls. The other main difference is that the average busy hour call attempts (BHCA) is assumed to be 3. The goal of this document is to provide sizing guidance for those components.

For a given deployment, the goal of the sizing process is to determine:

- The type of platform to use
- The specifications and number of instances to deploy for each Cisco Collaboration product

Cisco Unified CM Sizing

For the most part, the sizing of Cisco Unified Communications Manager (Unified CM) for Cisco Spark Hybrid Services does not change compared to the sizing of Unified CM in the Preferred Architecture for Cisco Collaboration Enterprise On-Premises Deployments. The main differences are:

- The Jabber clients are replaced with Cisco Spark applications.
- The sizing assumes that each user has 2 devices: one Cisco Spark application and one SIP endpoint.
- The average BHCA is 3.

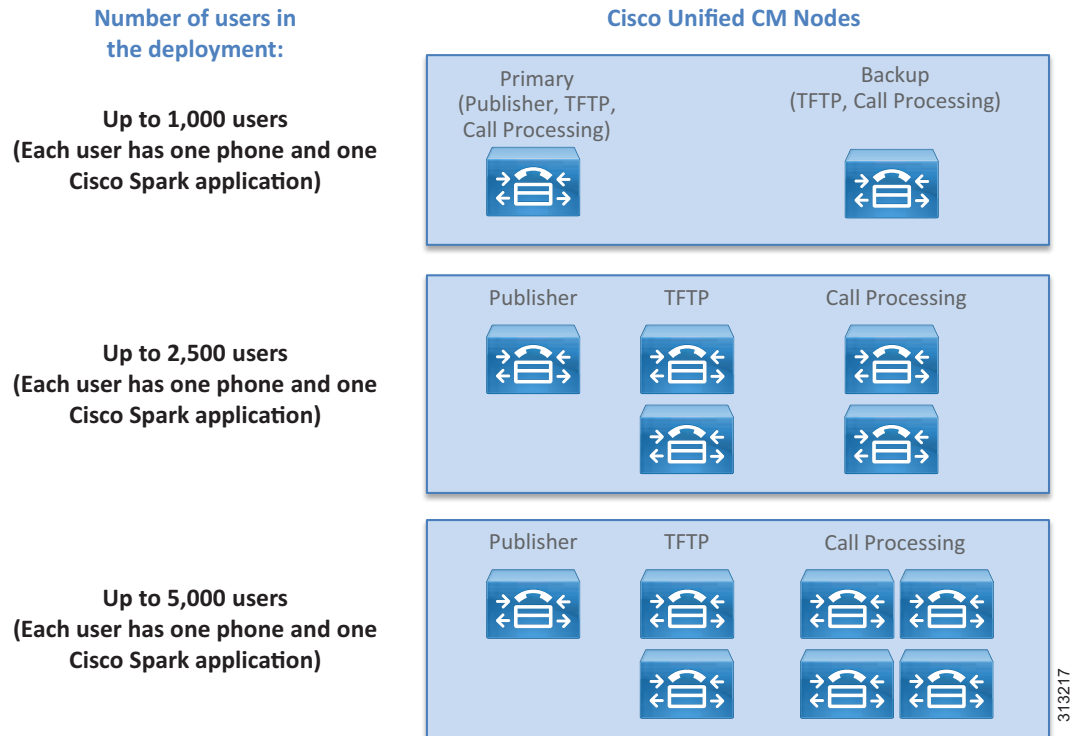
Other than the differences mentioned above, all other assumptions for the sizing of the on-premises deployment remain unchanged.

Table 7-1 and Figure 7-1 describe the simplified sizing deployments. For more details, refer to the latest version of the *Preferred Architecture for Cisco Collaboration Enterprise On-Premises Deployments, CVD*, available at <https://www.cisco.com/go/pa>.

Table 7-1 Cisco Unified CM Simplified Sizing Deployments

Deployment Size	Cisco Unified CM Nodes to be Deployed
Up to 1,000 users (2,000 devices)	2 nodes (1k-user OVA on Cisco Business Edition 6000H): <ul style="list-style-type: none"> • 1 primary node (publisher, TFTP, and call processing node) • 1 backup node (TFTP and call processing node)
Up to 2,500 users (5,000 devices)	5 nodes (7.5k-user OVA): <ul style="list-style-type: none"> • 1 publisher • 2 TFTP • 1 call processing pair (2 call processing subscribers)
Up to 5,000 users (up to 10,000 devices)	7 nodes (7.5k-user OVA): <ul style="list-style-type: none"> • 1 publisher • 2 TFTP • 2 call processing pairs (4 call processing subscribers)

Figure 7-1 Cisco Unified CM Simplified Sizing Deployments



Cisco Spark Hybrid Services Connectors and Expressway Sizing

The Calendar and Call Connectors for Cisco Spark Hybrid Services are installed on Cisco Expressway-C nodes.

For deployments of 2,000 or fewer users, the Calendar and Call Connectors can be deployed on the same Expressway-C pair (two Expressway-C virtual machines for redundancy). For larger deployments with up to 5,000 users, the Calendar and Call Connectors must be deployed on separate dedicated Expressway-C pairs. Sizing Cisco Spark Hybrid deployments with more than 5,000 users is outside the scope of this chapter.

Table 7-2 and Figure 7-2 provide sizing guidance for the Calendar and Call Connectors that are recommended for this Preferred Architecture, assuming mobile and remote access (MRA) is not deployed. Table 7-2 does not include the sizing of the Expressway-C and Expressway-E pairs for deployments larger than 2,000 users; for those deployments refer to next section on [Cisco Expressway-C and Expressway-E Sizing](#). There are additional sizing options available outside of this document, which you can find in the latest versions of the product documentation and the [Cisco Collaboration System Solution Reference Network Design \(SRND\)](#) guide. For additional Connector sizing, refer to the *Prepare Your Environment* section in the latest version of the *Deployment Guide for Cisco Spark Hybrid Call Services*, available at:

<https://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-installation-and-configuration-guides-list.html>

Table 7-2 Sizing for the Cisco Spark Hybrid Services Connectors and Cisco Expressway

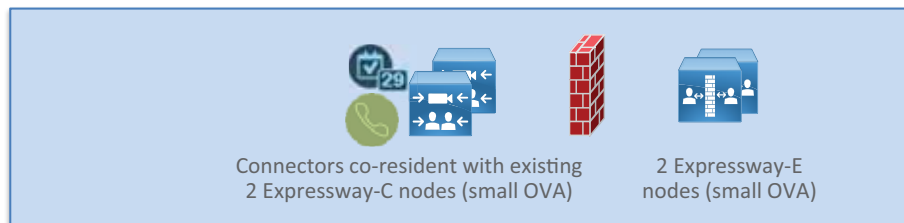
Number of Users	Expressway-C and Expressway-E Pairs	Expressway-C Connector Host for Calendar and Call Connectors	Notes
Up to 500	2 pairs (includes redundancy) for Calendar Connector, Call Connector, SIP signaling and media for Hybrid Call Connect Services, and business-to-business	No additional server for Connectors	Requires Expressway small OVA and Cisco BE6000
Up to 2,000	2 pairs (includes redundancy) for Calendar Connector, Call Connector, and SIP signaling and media for Hybrid Call Connect Services	No additional server for Connectors	Requires medium OVA and Cisco BE7000
Up to 5,000	Separate pairs for SIP signaling and media for Hybrid Call Connect Services and business-to-business (For sizing information, see the section on Cisco Expressway-C and Expressway-E Sizing .)	Deploy 2 dedicated Expressway-C nodes just for the Calendar and Call Connectors (includes one for redundancy).	Expressway medium OVA (for Cisco BE7000)

Figure 7-2 Sizing for the Cisco Spark Hybrid Services Connectors and Cisco Expressway

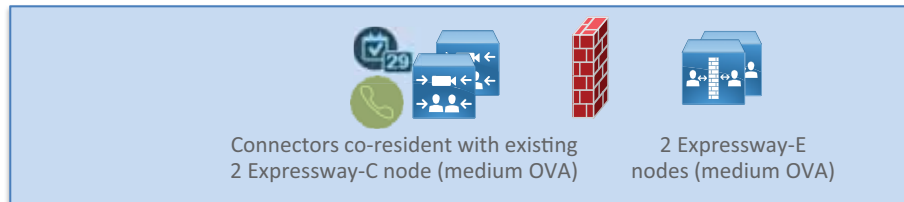
Number of users in the deployment:

Cisco Expressway Nodes

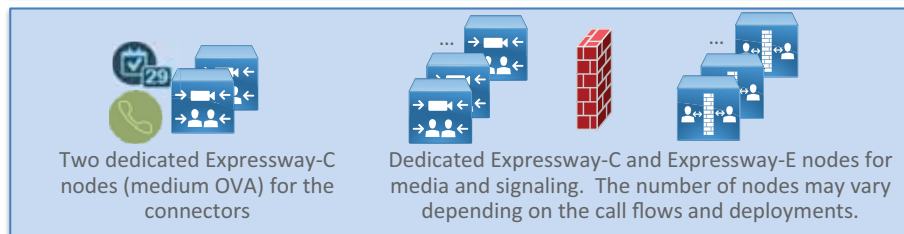
Up to 500 users



Up to 2,000 users



Up to 5,000 users



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Cisco Expressway-C and Expressway-E Sizing

For deployments with fewer than 2,000 users, assuming the Expressway-C and Expressway-E pairs are handling traffic for the Cisco Spark Hybrid Services calls only (no business-to-business calls and no mobile and remote access), the sizing is very simple, as shown in [Table 7-2](#) and [Figure 7-2](#).

For deployment with more than 2,000 users, the sizing of the Expressway-C and Expressway-E nodes is not as simple. It depends on the call flows and deployments. [Table 7-3](#) shows an example of a deployment with 5,000 users, with some specific assumptions that are listed below the table.

Table 7-3 Cisco Expressway-C and Expressway-E Sizing

Number of Users	Expressway-C and Expressway-E Pairs	Expressway-C Connector Host for Calendar and Call Connectors	Notes
5,000	3 separate pairs for SIP signaling and media for Cisco Spark Hybrid Call Connect services and business-to-business calls	Deploy 2 dedicated Expressway-C nodes just for the Calendar and Call Connectors (includes one for redundancy)	Expressway medium OVA (for Cisco BE7000)

For the example in [Table 7-3](#), the assumptions are:

- Mobile and remote access (MRA) is not deployed.
- Each user has 2 devices: one desk phone registered to Cisco Unified CM and one Cisco Spark application.
- Each user makes an average of 3 busy hour call attempts (BHCA), with an average call hold time of 3 minutes.
- Up to 4% of users on a call are participating in a conference call.
- Up to 30% of calls are video calls.
- 50% of calls are on-network, 25% of calls are outgoing to the PSTN, and 25% of calls are incoming from the PSTN.
- The Expressway medium OVA is deployed. With the large OVA, a lower number of Expressway nodes would be required; however, the large OVA is not supported on the Cisco Business Edition 7000 (BE7000).

This example can be considered as a good starting point, but the sizing for the Expressway-C and Expressway-E nodes may vary with different assumptions. For instance, with the same deployment of 5,000 users but with an average of 4 BHCA per user, 7% of calls as conference calls, and 70% of calls as video calls, 6 Expressway-C and Expressway-E pairs would be needed (which includes 2 pairs for redundancy).

Directory Connector

The Directory Connector is installed on a dedicated Windows Server and requires 8 GB of RAM. One CPU or vCPU is sufficient. For redundancy purposes, we recommend deploying two servers.

For more details, refer to the latest version of the *Deployment Guide for Cisco Directory Connector*, available at

<https://www.cisco.com/c/en/us/support/unified-communications/spark/products-installation-guides-list.html>

Hybrid Media Service

The sizing of the Cisco Spark Hybrid Media Node depends on the number of calls going through the Hybrid Media Node. The Hybrid Media Nodes are typically installed on a dedicated server such as the Cisco Meeting Server 1000 (CMS 1000). When deployed on the CMS 1000, the Hybrid Media Node can support a maximum of 50 simultaneous high definition (HD) calls per server.

To increase the call capacity, add Hybrid Media Nodes to the Cisco Spark Hybrid Media Node cluster. Adding nodes to a cluster not only increases the capacity but also provides redundancy in case a single node become unavailable for any reason. There is no maximum limit to the number of nodes in a Hybrid Media Node cluster.

For more details, refer to the latest version of the *Deployment Guide for Cisco Spark Hybrid Media Service*, available at

<https://www.cisco.com/c/en/us/support/unified-communications/spark/products-installation-guides-list.html>

Virtual Machine Placement and Platforms

The virtual machine placement for this solution is similar to the one for the Preferred Architecture for Cisco Collaboration Enterprise On-Premises Deployments. The main differences are:

- Deployment of Windows Servers for Cisco Directory Connector, and Expressway-C Connector Hosts for Cisco Calendar and Call Connector nodes
- Deployment of Expressway-C and Expressway-E nodes that handle Cisco Spark Hybrid Services calls
- Deployment of Cisco Spark Hybrid Media Nodes on Cisco Meeting Server 1000

The virtual machine placement process is performed with the Collaboration Virtual Machine Placement Tool (VMPT), which requires a cisco.com login and which is available at <https://www.cisco.com/go/vmpt>.

Figure 7-3 shows an example of using the VMPT for a deployment with 5,000 users and 10,000 endpoints (including 5,000 hardware endpoints and 5,000 Cisco Spark applications). This example assumes that Cisco Business Edition 7000M is deployed. It does not show the Cisco Hybrid Media Nodes, which would be deployed on the Cisco Meeting Server 1000 platform for this example.

Figure 7-3 Virtual Machine Placement Example using VMPT



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