Expressway Capacity and Sizing X142

Overview

The maximum supported capacities / sizing for Cisco Expressway Series (not Cisco VCS) are listed in the tables below. These figures are guidelines only and are NOT guaranteed, because many factors affect performance in real-life deployments. Expressway supports so many different use cases that it is not possible to provide capacity limits for individual, specific deployments.

Expressway sizing / capacity information is categorized on the basis of the number of supported concurrent registrations and/or calls.

Important Caveats

- The figures provided here assume all necessary software licenses are applied.
- The figures are tested for specific, dedicated Expressway scenarios. Based on an Expressway or cluster being used for a single service or scenario, such as just for MRA or just for B2B calling. It's not possible to provide tested capacity guidelines for multi-service deployments.
- Up to six Expressway systems can be clustered, but this only increases capacity **by a maximum factor of four** (except for Small VMs, which have no gain).
- From the X14.2 release, in the 4+1 redundancy model, up to 4 Expressway systems can be clustered (1 redundancy server), but this only increases capacity **by a maximum factor of four** (except for Small VMs, which have no gain).

- From the X14.2 release, in the 5+1 redundancy model, up to 5 Expressway systems can be clustered (1 redundancy server), but this only increases capacity **by a maximum factor of five** (except for Small VMs, which have no gain).
- For Small VMs, clustering is only for redundancy and not for scale and **there is no capacity gain from clustering**.
- The figures provided for video calls and audio-only calls are alternatives - the stated capacity is available either for video or for audio, not for both.

Dependencies

The figures for calls refer to concurrent calls.

Concurrent calls and Rich Media Session (RMS) licenses do not have a one-to-one relationship. Various factors determine RMS license usage, which means that some calls may be “free” and others may use multiple licenses.

To support 6000 TURN relays on a large system (Large VM or CE1200) you need to enable “TURN Port Multiplexing on Large Expressway” (**Configuration** > **Traversal** > **TURN**).

Small VMs are supported on the Cisco Business Edition 6000 platform, or on general purpose hardware / ESXi which matches the Cisco Business Edition 6000 specification. The figures for Small VMs are for M5-based BE6000 appliances.

Capacity Guidelines for Standalone Systems

The table lists the base capacity for a standalone Expressway.

Table 1: Standalone Capacity Guidelines - Single Expressway

Platform	Registrations (room/desktop)	Calls (video or audio-only)	RMS Licenses	MRA Registrations (proxied)	TURN Relays
CE1200	5000	500 video or 1000 audio	500	7000	6000
Large VM	5000	500 video or 1000 audio	500	3500	6000
Medium VM	2500	100 video or 200 audio	100	3000	1800
Small VM	2000	40 non-MRA video, or 20 MRA video or 40 audio	75	200	1800

Capacity Guidelines for Clustered Systems

This table illustrates the increased capacity for a clustered system with four Expressways (the maximum cluster size for scale gain).

To determine the capacity for clusters with two or three nodes, apply a factor of 2 or 3 respectively to the standalone figures. Except for Small VMs, where the figures for clustered systems and for standalone systems are always the same (because there's no capacity gain from clustering Small VMs).

The table lists the increased capacity for a clustered system with six Expressways (the maximum cluster size for scale gain). *Each cluster can have up to six Expressway nodes and a maximum of N+2 physical redundancy. All nodes are active in the cluster.*

Table 2: Clustered Capacity Guidelines - Example for Cluster with 4 Expressway Peers

Platform	Registrations (room/desktop)	Calls (video or audio-only)	RMS Licenses	MRA Registrations (proxied)	TURN Relays
CE1200	20,000	2000 video or 4000 audio	2000	20,000	24,000
Large VM	20,000	2000 video or 4000 audio	2000	10,000	24,000
Medium VM	10,000	400 video or 800 audio	400	10,000	7200
Small VM	2000	40 non-MRA video, or 20 MRA video or 40 audio	75	200	1800

Fast Path Registration for MRA (Caching Optimization for Registrations)

From X12.7, Expressway supports Fast Path Registration for MRA-based devices. This optimizes routing processes, reducing the server workload, so leading to increased capacities. Expressway caches the initial routing calculation and then uses a Pre-Routed Route Header to forward subsequent packets to the destination using the cached routing result. This has the following benefits:

- Reduces the routing workload.
- Increases registration capacity.
- Ensures that each media packet follows the same route path.

Important This feature only applies to MRA deployments. The increased capacity and other benefits do not apply to non-MRA Expressway deployments.

Fast Path Registration is supported for the following SIP methods: REGISTER. Configuration is through the command line interface, and detailed instructions are provided in the latest *Expressway MRA Deployment Guide*.

The tested results for a standalone Expressway MRA deployment (Expressway-C + Expressway-E) when this feature is configured are:

Platform	MRA Registrations	MRA Video Calls	MRA Audio Calls
CE 1200	7000	500	1000
Large OVA	3500	500	1000
Medium OVA	3000	150	300
Small OVA	2500	100	200
Small OVA BE6K	2500	100	200

Example Deployment

Say you want to deploy a resilient cluster that can handle up to 750 concurrent desktop registrations and 250 Rich Media Sessions. In this case you could configure 4 peers as follows:

	Peer 1	Peer 2	Peer 3	Peer 4	Total cluster capacity
Desktop registration licenses	250	250	250	0	750
Rich Media Sessions	100	100	50	0	250

In this example it doesn't matter which peer an endpoint registers to, as the licenses are shared across all of the peers. If any one peer is temporarily taken out of service the full set of call licenses remain available to the entire cluster.

Intracluster Calls

License usage when endpoints are registered to different peers in the same cluster, depends on call media traversal across the cluster:

- If call media does not traverse the cluster peers, a call between the endpoints does not use any RMS licenses (it's a “Registered” call).

    - If any of the endpoint is not registered to Cisco infrastructure then calls will use RMS license.

- If call media does traverse the cluster peers, a call between the endpoints uses an RMS license on the Expressway where the B2BUA is engaged.
    - If both the endpoints are registered to Cisco infrastructure then call will not use RMS license.

More information about how licenses are used in clustered systems is provided in the licensing section of this guide.