Configuration Limits and Feature Availability for Reference Designs

- Reference Design Configuration Limits, on page 1
- Feature Availability for Reference Designs, on page 15

Reference Design Configuration Limits

Note The first four chapters of this book are for anyone who wants to get familiar with the three contact center enterprise solutions:

- Packaged Contact Center Enterprise
- Cisco Hosted Collaboration Solution for Contact Center
- Unified Contact Center Enterprise

For information about design considerations and guidelines specific to Packaged CCE, see the remaining chapters.

The following tables list key configuration limits for Contact Center Enterprise Reference Designs solutions.

Some of these limits are interdependent and dynamically change depending on the elements in your solution. For example, the number of skills per agent affects the maximum number of agents.

Limits that are listed as "per PG" always refer to a redundant pair of PGs.

Important Your contact center enterprise solution can only use the new higher configuration limits with the standard three coresident PG layout.

Related Topics

Sizing and Operating Conditions for Reference Designs

Agent Limits

Note The figures in the Contact Director column refer to what are configured on the Contact Director. The figures do not include what is configured on the target systems to which the Contact Director connects.

Table 1: Agent Limits

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Active Agents[1]	2000	4000	12,000	24,000	24,000 (cumulative on 3 target systems)
Active Agents on each Unified CM cluster	2000	4000	8000	8000	NA
Configured Agents	12,000	24,000	72,000	72,000	NA
Configured Agents per PG	12000	12000	12000	12000	NA
Agents with TraceON enabled	100	100	400	400	NA
Agent Desk Settings	2000	4000	12,000	12,000	NA
Active Mobile Agents per Agent PG[2] [3]	2000 with nailed-up connections Or 1500 with call-by-call connections	2000 with nailed-up connections Or 1500 with call-by-call connections	2000 with nailed-up connections Or 1500 with call-by-call connections	2000 with nailed-up connections Or 1500 with call-by-call connections	NA
Active ECE Multimedia Agents	1500[4]	4000[5]	12,000[6]	24,000[7]	NA
Agents per team	50	50	50	50	NA
Teams to which an agent can belong	1	1	1	1	NA
Skills per agent	15 Refer to the section on dynamic sizing for details.	15 Refer to the section on dynamic sizing for details.	15 Refer to the section on dynamic sizing for details.	10 Refer to the section on dynamic sizing for details.	NA
Number of agents in a skill group	12,000	24,000	72,000	72,000	NA

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Attributes per agent	50	50	50	50	NA

[1] This includes Outbound and Multichannel agents. However, the number of agents that you can keep occupied is based on the Outbound Option dialer and SocialMinerlimits.
[2] 1500 with nailed-up connections if average handle time is less than 3 minutes, or if Agent greeting or Whisper Announcement features are used in conjunction with Mobile Agent.
[3] The Large PG OVA supports 2000 agents with call-by-call connections. The Packaged CCE 2000 agent deployment does not support large PGs.
[4] When ECE is colocated, the limit is 400 agents. The limit of 1500 applies when ECE is on a separate server.
[5] This limit requires multiple ECE clusters. Each Agent PG can support either a 400 agent colocated cluster or a 1500 agent cluster on a separate server.
[6] This limit requires multiple ECE clusters. Each Agent PG can support either a 400 agent colocated cluster or a 1500 agent cluster on a separate server.
[7] This limit requires multiple ECE clusters. Each Agent PG can support either a 400 agent colocated cluster or a 1500 agent cluster on a separate server.

Supervisor and Reporting User Limits

Table 2: Supervisor and Reporting User Limits

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	Unified CCE 24000 Agent Reference Design Model	Contact Director Reference Design Model
Active Supervisors[8]	200	400	1200	2400[9]	NA
Configured Supervisors	1200	2400	7200	7200	NA
Active teams	200	400	1200	2400	NA
Configured teams	1200	2400	7200	7200	NA
Supervisors per Team	20	20	20	20	NA
Teams per supervisor	20	20	20	20	NA
Agents per supervisor	1000	1000	1000	1000	NA
Active Cisco Unified Intelligence Center Reporting users	200	400	1200[10]	1200[11]	NA

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	Unified CCE 24000 Agent Reference Design Model	Contact Director Reference Design Model
Configured Cisco Unified Intelligence Center Reporting users	1200	2400	7200	7200	NA
Reporting users per CUIC node	100	200	200	200	NA

[8] Supervisors count against the agent limits. Ten percent of your active agents can be supervisors.
[9] Because there can only be 1200 Active Reporting users, all Active Supervisors cannot concurrently use Cisco Unified Intelligence Center reports.
[10] During a Central Controller failover, this limit drops to 600 until both sides are active again.
[11] During a Central Controller failover, this limit drops to 600 until both sides are active again.

Access Control Limits

Table 3: Access Control Limits

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Active Administrators per distributor[12]	50	50	50	50	50
Configured Web Administrators	100	100	100	100	NA
Roles—Packaged CCE only	30	30	30	NA	NA
Departments—Packaged CCE only	200	200[13]	200	NA	NA
Department per Administrator—Packaged CCE only	10	10	10	NA	NA
Machines in inventory	1000	1000	1000	1000	NA

[12] Because Packaged CCE, CCMP, and CCDM use web administration, this limit does not apply with them.
[13] Departments limit also applies to Cisco HCS for Contact Center Small Contact Center solutions.

Outbound Campaign Limits

Table 4: Outbound Campaign Limits

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Outbound dialer per system	1 per Agent PG	1 per Agent PG	1 per Agent PG	1 per Agent PG	NA
Outbound dialer maximum calls per second	20	40	120	120	NA
Outbound dialer maximum calls per second per dialer[14]	20	30	30	30	NA
Outbound dialer maximum ports on each SIP dialer	1500	1500	1500	1500	NA
Outbound dialer maximum ports on each system (total)	1500	3000	6000	6000	NA
Number of Preview Campaigns per System	1500 campaigns Preview and direct preview modes support up to 750 campaign skill groups in a medium or large PG VM, provided the number of configured dialer ports are twice the number of maximum active campaigns per dialer.	1500 campaigns Preview and direct preview modes support up to 750 campaign skill groups in a medium or large PG VM, provided the number of configured dialer ports are twice the number of maximum active campaigns per dialer.	1500 campaigns Preview and direct preview modes support up to 750 campaign skill groups in a medium or large PG VM, provided the number of configured dialer ports are twice the number of maximum active campaigns per dialer.	1500 campaigns Preview and direct preview modes support up to 750 campaign skill groups in a medium or large PG VM, provided the number of configured dialer ports are twice the number of maximum active campaigns per dialer.	NA
Number of Predictive Campaigns per system (Agent or VRU based)	150	300	600	600	
Campaign skill groups per Campaign	20	20	20	20	NA

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Predictive Campaign Skill Groups per Peripheral	150	150	150	150	NA
Maximum Outbound Skills per Agent	5	5	5	5	NA
Do Not Call Records per Import	1,000,000	20,000,000	60,000,000	60,000,000	NA

[14] This figure assumes a 30% transfer rate to a VRU or an agent.

Precision Queue and Skill Groups Limits

Note Each Precision Queue has an associated Skill Group. Each Precision Queue effectively has a weight of two Skill Groups.

Table 5: Precision Queue and Skill Group Limits

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Skill Groups per System	16,000 [15]	16,000	27,000	48,000	54,000
Enterprise Skill Groups	4000	4000	4000	4000	4000
Maximum combined configured Skill Groups and Precision Queues per peripheral	4000	4000	4000	4000	NA
Configured Precision Queues per system	4000 [16]	4000 [17]	The smaller of: 4000 Or 27,000 divided by the number of agent peripherals	The smaller of: 4000 Or 48,000 divided by the number of agent peripherals	8000 of the maximum 54,000 queues

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Precision Queue steps	10,000	10,000	10,000	10,000	NA
Precision Queue term per Precision Queue	10	10	10	10	NA
Precision steps per Precision Queue	10	10	10	10	NA
Unique attributes per Precision Queue	10	10	10	10	NA
Max Unique Skills per Team	50	50	50	50	NA
Configured labels	100,000	100,000	160,000	160,000	160,000
Precision Routing Attributes on each system	10,000	10,000	10,000	10,000	NA
Precision Routing Attributes for each Agent	50	50	50	50	NA
Skill Group statistics refresh rate	10 seconds (default)	10 seconds (default)	10 seconds (default)	10 seconds (default)	NA
Skill Groups per PG	4000	4000	4000	4000	NA
Queues[18] per Contact Sharing Group	NA	NA	NA	NA	100
Contact Sharing Rules	NA	NA	NA	NA	100
Contact Sharing Groups	NA	NA	NA	NA	1000

15 In most Packaged CCE 2000 Agent topologies, you can only have 4000 Skill Groups because there is only 1 Agent PG. In the Global topology, using remote sites, Packaged CCE supports 16,000 skill groups, system wide. Each remote site with an Agent PG adds 4000 skill groups. The 16,000 maximum requires 3 remote sites.

16 In a Non-Reference Design deployment (when you use more agent PGs than what is supported by your CCE reference design), use this formula to calculate the maximum number of Precision Queues per system: lesser of 4000 or 27000 / total number of Agent PGs.

17 In a Non-Reference Design deployment (when you use more agent PGs than what is supported by your CCE reference design), use this formula to calculate the maximum number of Precision Queues per system: lesser of 4000 or 27000 / total number of Agent PGs.

[18] This term includes both Skill Groups and Precision Queues.

Task Routing Limits

Table 6: Task Routing Limits

Resource	2000 Agent Reference Design	4000 Agent Reference Design	12000 Agent Reference Design	24000 Agent Reference Design	Contact Director Reference Design
Maximum active agents assigned to tasks per system	2000	2000	2000	2000	NA
Maximum reserved and active tasks per agent[19]	15	15	15	15	NA
Maximum incoming tasks/sec across all MRDs[20]	5	5	5	5	NA
Task Routing API request/hr through SocialMiner	15,000	15,000	15,000	15,000	NA

[19] This figure includes paused and interrupted tasks. Tasks that are still in queue or are transferred out by an agent do not count towards this limit.

[20] SocialMiner throttles the task submission rate to Unified CCE to 5 tasks per second. SocialMiner holds a maximum of 10,000 tasks in the queue for submission. If the queue exceeds 10,000 tasks, then SocialMiner discards the additional tasks with the disposition code NOTIFICATION_RATE_LIMITED. Once the queue is ready again, additional tasks are added to the queue.

Dialed Number Limits

Note In the Global topology, each remote site can support the full limit of Dialed Numbers as mentioned in the table.

Table 7: Dialed Number Limits

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Dialed Numbers on each CVP peripheral (External Voice and Post Call Survey) [21]	2000[22]	4000	12,000	12,000	12,000

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Dialed Number on each Unified CM peripheral (Internal Voice)	2000	2000	2000	2000	NA
Dialed Number on each MR peripheral (Multichannel)	1000	1000	1000	1000	NA
Dialed Number on each Unified CM peripheral (Outbound Voice)	1000	1000	1000	1000	NA

[21] You cannot exceed the system maximum total of 240,000 DN records across all routing client types.
[22] 2000 agent reference model supports a total of 2000 external dialed numbers, of which 500 is for Post Call Survery and the remainder is for other CVP dialed numbers.

System Load Limits

Table 8: System Load Limits

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
VRU Ports in a Reference Layout[23][24]	3000	6000	18,000	36,000	36,000
Maximum VRU Ports with Added PGs[25]	6000	12,000	36,000	48,000	72,000
Maximum Inbound Calls per Second (CPS)	15	30	90	90	300, of which Contact Sharing can handle 120 and the remainder is for self-service and line-of-business direct routing.
Congestion Control CPS[26]	18	35	105	105	300
Maximum Inbound CPS per VRU PG[27]	15	15	15	15	NA

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Maximum VRU PIM per VRU PG	2	2	2	2	NA
Dynamic Reskilling (operations/hr.)	7200	7200	7200	7200	NA
Maximum Queued Calls and Tasks	15,000	15,000	15,000	15,000 [28]	15,000
Media Routing Domains per system	20	20	20	20	NA
Agent Callback requests through SocialMiner(requests/hr.)	1000	1000	1000	1000	NA
ECE Email or Chat requests per hour for 400 agent deployment	6 per agent	6 per agent	6 per agent	6 per agent	NA
ECE Email or Chat requests per hour for 1500 agent deployment[29]	6 per agent	6 per agent	6 per agent	6 per agent	NA
Incoming Messages per Second for CVP Reporting Server	420	420	420	420	420
Reports per user For more details, see Resource Requirements for Reporting	2 Live Data reports 2 AW-RealTime reports 2 historical reports	2 Live Data reports 2 AW-RealTime reports 2 historical reports	2 Live Data reports 2 AW-RealTime reports 2 historical reports	2 Live Data reports 2 AW-RealTime reports 2 historical reports	NA
Maximum rows per report[30]	3000 for real-time 8000 for historical	3000 for real-time 8000 for historical	3000 for real-time 8000 for historical	3000 for real-time 8000 for historical	NA
Configured Business Hour Objects[31]	1000	1000	1000	1000	1000
Configured Schedule Objects per Business Hours Object[32]	50	50	50	50	50

23 These figures assume that your solution has an equal number of redundant ports. The actual number of ports is twice these figures.

[24] The total calls at agents or the VXML server in the basic layout for each Reference Design model. The added components in a global deployment increase these numbers.
[25] These figures assume that your solution has an equal number of redundant ports. The actual number of ports is twice these figures.
[26] Inbound calls per second figures assume 10% of agents are supervisors who are not directly answering calls. The figures also assume a distribution of calls with 10% transfers and 5% conferences.
[27] If one of the CVP Call Servers is down, the maximum inbound CPS per VRU PIM is also 15.
[28] You can increase this to 27,000 by changing the `ICM\<inst>\Router[A/B]\Router\CurrentVersion\Configuration\Queuing\MaxCalls` registry setting.
[29] For more details on email or chat sizing considerations, see the Enterprise Chat and Email Design Guide at https://www.cisco.com/c/en/us/support/customer-collaboration/cisco-enterprise-chat-email/products-implementation-design-guides-list.html.
[30] **Large Schedules** that are configured in Cisco Unified Intelligence Center have an upper limit of 25000 rows. For more information, see Cisco Unified Intelligence Center User Guide.
[31] Cisco HCS for Contact Center does not support the Business Hours feature.
[32] Daily schedules account for 7 of these schedule objects. You can use the remainder for holidays and exceptions.

Call Variable Limits

Table 9: Call Variable Limits

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Persistent Enabled Expanded Call Variables (Default)[33]	5	5	5	5	5
Persistent Enabled Expanded Call Variable Arrays	0	0	0	0	0
Maximum Contents per ECC (Expanded Call Context) Variable (bytes)	210	210	210	210	210
Maximum Total ECC Contents Size per ECC Payload (bytes)	2000	2000	2000	2000	2000
Maximum ECC Variable Name (bytes without null character)	32	32	32	32	32

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Maximum Total Contents and Name Size for ECC Variables per ECC Payload (bytes)	2500	2500	2500	2500	2500
Maximum ECC Variables Contents per Call (bytes)	6000	6000	6000	6000	6000
Maximum System-wide ECC Variable Contents (bytes)[34]	90,000,000	90,000,000	90,000,000	90,000,000	NA
Number of Peripheral Variables	10	10	10	10	10
Call Context for Peripheral Variables 1-10 (bytes)	40	40	40	40	40

[33] See the "Call Context" section for details.
[34] This limit is the maximum per call limit multiplied by the maximum queued calls and tasks for the system.

Other Limits

Table 10: Other Limits

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
Maximum Agent PGs with Live Data, Precision Queueing, or Single Sign-On enabled[35]	4[36]	4 [37]	12 24 (when using the Extra Large Live Data OVA)	24	50
Maximum PGs [38]	30	100	150	150	NA
Maximum Agent PGs on each VM	1	1	1	1	NA
Maximum Cisco Finesse server pairs per PG pair	1	1	1	1	NA

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
MR PIMs on each MR PG	4	4	4	4	NA
Custom Application Gateway	20	20	20	20	20 per enterprise system
Bucket Intervals	2000	4000	12,000	12,000	NA
Configured Call Types	4000	8000	15,000	15,000	15,000
Call Type Skill Group per Interval[39]	70,000	70,000	70,000	70,000	NA
Active Routing Scripts	1000	2000	6000	6000	6000
Configured Routing Scripts	2000	4000	12,000	12,000	12,000
Network VRU Scripts	2000	4000	12,000	12,000	12,000
System-wide Maximum Configured Reason Codes and Labels	2800, plus 21 system-defined	3800, plus 21 system-defined	7800, plus 21 system-defined	7800, plus 21 system-defined	NA
Not-ready Reason Codes	100 global codes 100 associated reason codes for each team 500 configured team reason codes	100 global codes 100 associated reason codes for each team 1000 configured team reason codes	100 global codes 100 associated reason codes for each team 3000 configured team reason codes	100 global codes 100 associated reason codes for each team	NA
Sign-out Reason Codes	100 global codes 100 associated reason codes for each team 500 configured team reason codes	100 global codes 100 associated reason codes for each team 1000 configured team reason codes	100 global codes 100 associated reason codes for each team 3000 configured team reason codes	100 global codes 100 associated reason codes for each team	NA
Wrap-up Reason labels[40]	100 global labels 1500 team labels	100 global labels 1500 team labels	100 global labels 1500 team labels	100 global labels 1500 team labels	NA
Administration Bulk Jobs[41]	200	200	200	200	NA

Resource	2000 Agent Reference Design Model	4000 Agent Reference Design Model	12000 Agent Reference Design Model	24000 Agent Reference Design Model	Contact Director Reference Design Model
CTI AllEventClients[42]	7/Medium PG 20/Large PG[43]	7/Medium PG 20/Large PG [44]	7/Medium PG 20/Large PG [45]	7/Medium PG 20/Large PG	NA
Real-Time Only Distributors (for configuration only)	4 (2 on each side)	4 (2 on each side)	10 (5 on each side)	10 (5 on each side)	10 (5 on each side)
Agent Targeting Rule (ATR)	1000	1000	1000	1000	NA

35 Deploy only one Agent PG, one VRU PG, and one MR PG on each VM. Use the Medium PG OVA or Large PG OVA, depending on your need for CTI All-Event Clients.
36 For Packaged CCE 2000 Agent, you have only 1 Agent PG, 1 VRU PG, and 1 MR PG. You can extend to the 4 maximum, if you use the Global topology with 3 remote sites.
37 A Cisco HCS for Contact Center Small Contact Center solution can support 50 PGs with SSO enabled. But, it can only support 12 PGs with Precision Queueing and Live Data enabling.
38 The maximum PG count includes the maximum Agent PG count (specified in the previous row).
39 Exceeding this limit causes gaps in your reporting.
40 A team cannot use more than 100 of the total team wrap-up reason labels.
41 This covers the SSO Migration Tool and the Packaged CCE Bulk Tool. It does apply to legacy bulk configuration tools.
42 The CTI AllEventClients limit includes Cisco Finesse, Enterprise Chat and Email, and Outbound Dialer connections. These limits do not apply for CTI OS desktops.
43 Does not apply for Packaged CCE, which does not use the Large PG OVA.
44 Does not apply for Packaged CCE, which does not use the Large PG OVA.
45 Does not apply for Packaged CCE, which does not use the Large PG OVA.

The following table lists the configuration limits for adding external machines in the Packaged CCE deployments.

External Machines	2000 Agent Reference Design Model		4000 Agent Reference Design Model		12000 Agent Reference Design Model	
	Main Site	Remote Site	Main Site	Remote Site	Main Site	Remote Site
Gateways	0 or more	0 or more	0 or more	0 or more	0 or more	0 or more
SocialMiner	0 or 1	None	0 or 1	None	0 or 1	None
Cisco Unified CVP Reporting	0 or 1	0 or 1	0 or 1	0 or more	0 or 1	0 or more
Cisco MediaSense	0 or 1	0 or 1	Not supported	Not supported	Not supported	Not supported
Cisco Enterprise Chat and Email (ECE)	0 or 1	4[46]	0 or 1	0 or more	0 or 1	0 or more

External Machines	2000 Agent Reference Design Model		4000 Agent Reference Design Model		12000 Agent Reference Design Model	
	Main Site	Remote Site	Main Site	Remote Site	Main Site	Remote Site
Third-party Multichannel	0 or 1	4[47]	0 or 1	0 or more	0 or 1	0 or more

[46] Subject to the availability of MR PIMS (for which maximum limit is four). For example, if you have configured two ECEs, you will be able to configure only two more ECEs or Third-party Multichannels.

[47] Subject to the availability of MR PIMS (for which maximum limit is four). For example, if you have configured two Third-party multichannels, you will be able to configure only two more Third-party multichannels or ECEs.

Feature Availability for Reference Designs

These sections summarize the features available in contact center solutions that follow the Contact Center Enterprise Reference Designs.

Agent and Supervisor

Capability	Supported	Notes

Call Flows	Post-route by CVP
	Comprehensive call flow:
	• Inbound and outbound calls
	• Supplementary services
	  • Hold and resume
	  • Blind, consult, and refer transfers and conferences
	  • Router requery	

Outbound campaigns	Cisco Outbound Option supports these dialing modes: • Predictive • Preview • Direct Preview • Progressive	The SIP Dialer uses the UDP transfer protocol for SIP.
Mobile Agent	Nailed-up and Call-by-call modes	
Silent Monitoring	Unified CM-based (BiB)	You cannot monitor mobile agents with Unified CM-based silent monitoring.

Capability	Supported	Notes
Recording	Unified CM-based Network-based Recording CUBE(E)-based TDM gateway-based	
CRM Integration	CRM integration is available through the Cisco Finesse Web API, Finesse gadgets, and existing CRM connectors.	You can integrate with a CRM using the following methods: • CRM iFrame in the Finesse container. This method is simple and easy but does not provide deep CRM integration. • Third-party gadget in the Finesse container. This method achieves full CRM integration but requires custom development using third-party and Finesse APIs. • Finesse gadgets in a CRM browser-based desktop. This method provides lightweight integration into the CRM application. • Finesse Web API s or the CTI Server protocol to integrate into a CRM application. This method provides deep CRM integration but requires custom development.
Desktop	Cisco Finesse Finesse IP Phone Agent	FIPPA only supports a subset of Finesse's features.
Desktop Customization	Cisco Finesse API	

Voice and Infrastructure

Capability	Supported	Notes
Music on Hold	Unicast with Unified CM subscriber or voice gateway Multicast using voice gateway	

Capability	Supported	Notes
Proxy / Cisco Unified SIP Proxy (CUSP)	SIP Proxy is an optional component.	Instead of using CUSP, some deployments can achieve High Availability (HA) and load balancing using these solution components: • Time Division Multiplexing (TDM) gateway and Unified CM, which use the SIP Options heartbeat mechanism to perform HA. • Unified CVP servers, which use the SIP server group and SIP Options heartbeat mechanism to perform HA and load balancing. • Outbound Option. The Outbound dialer can connect to only one physical gateway, if SIP proxy is not used.
Ingress Gateways	See the *Compatibility Matrix* for your solution at https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-device-support-tables-list.html for the supported hardware.	
Protocol	Session Initiation Protocol (SIP) over Transmission Control Protocol (TCP) Session Initiation Protocol (SIP) over User Datagram Protocol (UDP) for Outbound Option SIP Dialer to egress voice gateway. All subsequent transfers to endpoints must use SIP TCP. Secure SIP to SIP signaling	Contact center enterprise solutions do not support H.323. You can use SIP over UDP only for the Outbound Dialer. From the Outbound Option SIP Dialer to the egress gateway has to use UDP.
Codec	For VRU: G.711 mu-law and G.711 a-law For voice agents: G.711 mu-law, G.711 a-law, G.729, and G.729a For video: • Video track: H.264	Contact center enterprise solutions do not support iSAC or iLBC. Mixed codecs for Mobile Agent. Remote and Local ports must use the same codec. Mixed codecs for CVP prompts. CVP prompts must all use the same codec.

Capability	Supported	Notes
Media Resources	Gateway or Unified CM based: • Conference bridges • Transcoders and Universal Transcoders • Hardware and IOS Software Media Termination Points	For Unified CM-based resources, appropriately size Unified CM for this load.

IP Phone Support

For a list of supported phones, see the *Compatibility Matrix* for your solution at https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-device-support-tables-list.html. Supported phones need the Built-In-Bridge (BIB), CTI-controlled features under SIP line side.

SCCP-based line side protocol is not supported in newer phones.

Administration Interfaces

Capability	Supported	Notes
Core Component Provisioning	• Gateways - CLI • Unified CVP - Web-based Packaged CCE Administration • Unified CCE - Web-based administration and thick client configuration tools • Unified CCMP for Unified CCE solutions, Unified CCDM for Cisco Hosted Collaboration Solution for Contact Center solutions. • Cisco VVB - Web-based Packaged CCE Administration and operations console • Unified CM - Web-based administration • Cisco Finesse - Web-based Packaged CCE Administration • Unified Intelligence Center - Web-based administration	For provisioning, Packaged CCE does not support CCMP or CCDM.

Capability	Supported	Notes
Service Creation Environment	Unified CCE Internet Script Editor Unified CCE Script Editor CVP Call Studio	
Serviceability	Cisco Prime Collaboration - Assurance Unified System Command Line Interface (CLI) RTMT Analysis Manager Diagnosis SNMP syslog	Contact center enterprise solutions do not support RTMT Analysis Manager Analyze Call Path. Finesse supports RTMT only for log collection.

VRU and Queueing

This table lists the VRU and call queuing features that optimize inbound call management.

Capability	Supported	Notes
Voice Response Unit (VRU)	Unified CVP Comprehensive Model Type 10	
Caller Input	DTMF - RFC2833 Automatic Speech Recognition and Text-to-speech (ASR/TTS)	
Video	CVP and Video Basic CVP Video in Queue	
CVP Media Server	The CVP Media Server uses the third-party Microsoft Internet Information Services (IIS). The CVP installer adds the CVP Media Server coresident on the Unified CVP Server.	

Reporting

Capability	Supported	Notes
Reporting tools	Cisco Unified Intelligence Center Third-party reporting applications Custom reporting	For Packaged CCE, Exony VIM is supported for reporting only. Packaged CCE does not support Exony VIM provisioning features.

Capability	Supported	Notes
Database sources	Unified CCE AW-HDS-DDS Unified CCE Live Data Unified CVP Reporting	For a typical 1000 agent deployment with an average rate of 8 calls per second, the retention period is approximately 24 months. For a longer retention period, install an external HDS. To size the needs for your deployment, use the DB Estimator tool in the ICMDBA tool.
Database Integration	CVP Database Element	Unified CVP VXML Server supports connections to third-party Microsoft SQL Server databases.
Retention	All contact center enterprise solutions have a fixed retention size for the AW-HDS-DDS. For more retention, you need an external HDS-DDS node. Use the DB Estimator Tool in the ICMDBA tool to calculate the vDisk size based on your solution sizing and customer retention requirements. The DB vDisk of the AW-HDS-DDS can be custom-sized when you deploy the OVA. A 2000 Agent Reference Design can have up to 4 external HDS. For more information about the HDS sizing, see the *Cisco Collaboration Virtualization* page for your solution at http://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/cisco-collaboration-virtualization.html.	

Capability	Supported	Notes
Report capacities	Two hundred Unified Intelligence Center users can concurrently run: • Two real-time reports with 100 rows per report, with 10 columns each. • Two historical reports with 2000 rows, with 10 columns each. • Two live data reports with 100 rows, with 10 columns each. (Adjust this based on the deployment type whether LD runs or not). This is applicable for both Unified CCE and Packaged CCE solutions. **Note** • Do not run more than ten concurrent reports on any client machine. This is a combined limit for reports that run on the Unified Intelligence Center User Interface, Permalinks, and Dashboards on the client machine. • However, you cannot run ten concurrent reports for the 200 maximum reporting users on each node. • You have fewer reporting users on a node, they can run proportionally more reports. But, no client machine can exceed the ten report limit.	In addition, 30 users each running one real-time XML permalink and one historical XML permalink is supported. (This results in approximately 7200 real-time XML permalink executions per hour and 60 Historical XML permalink executions per hour.) The real-time reports have the capacity of 100 rows per report, with 10 columns each and the historical reports have the capacity of 2000 rows, with 10 columns each.

Third-Party Integrations

Option	Notes
Recording	Recording Methods: • CUCM-based (BiB) • Network-based Recording • CUBE Forking Optionally, you can use a third-party recording server integration.
Wallboards	Wallboard provide real-time monitoring of your service to customers. They display information on customer service metrics, such as number of calls waiting, waiting call length, and service levels.
Workforce Management	WFM allows the scheduling of multiple Contact Service Queue (CSQs) and sites. You can use a single WFM implementation worldwide.
Cisco Solution Plus	Refer to the Cisco Solution Plus program for supported options.
Automated Call Distributor (ACD)	You cannot use a third-party ACD in a Reference Design.