Performance tests Missed Calls Email Alerter



Directory Phone Directory Jabber UDS Server Web Directory IPS Popup / Reverse Lookup Personal Directory H350 Video Conf directory Corporate Speed Dials ClickNDial Alerting Voice Alert **IPS** Pager Admin tools Morning Check Phone Remote Phone Robot Provisioning Phone Deployment CMS Admin & Selfcare Extension Mobility Report Manager Assistant IP Phone / Jabber Interface

Productivity tools IPS Phone Config **IPS Alarm Callback IPS Lock** Wakeup Call Missed Call Alerter **Conference** Center **Busy Alerter Callback** Desktop Popup Finesse Gadgets Spark Bot Attendant Console / IVR / Group Tannounce Line Group Manager Silent Monitoring **Extension Mobility tools** TSSO Delog / Relog Pin & Password Manager Recording Call Recording Recording Notification

Reference: 181010

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1 Missed Call Email Alerter overview

Missed Calls Email Alerter can notify a user of a missed call on his IP Phone line, by sending an email.

This application is useful both for companies that do not have a unified voice mail or when the voice mail does not send an email when the caller does not leave a voice message.

The email notification is configurable and contains the time of the call, the number originally called, the caller's number and the caller's name for internal calls (Display Name) and when reverse lookup is installed. Associated to an email-SMS gateway, it is also possible to send an SMS with this information.

De: À: Cc:	JM Lacoste [jmlacoste@telisca.com] jmlacoste@telisca.com	Date :	mer. 29/09/20	10 11:01
Objet :	Missed call from Mark Hallow at 12:45			
You have b	een called by 'Mark Hallow', number 7608, at 12:45, calling directory	numb	er 4062.	
Missed Cal	ed Alerter Robot			-

Missed Calls Email Alerter is based on a CTI Server that monitors all the phones that may require Missed Calls Email Alerter. After a ringing event, if the call is dropped on no answer or if the call is forwarded on no answer, it may be considered as missed and an email is sent to the user's logged (Extension Mobility) or associated to the phone.

The email notification is triggered, depending of the settings:

- If not answered without being forwarded on no answer,
- If forwarded on no answer to another number,
- If forwarded on no answer to the voicemail,
- Only if original called number is the same or not,
- For external calls only or all calls,
- Only if calling number is known or not,

It is possible to check before sending the email that the called number is the number originally called (to avoid forwarded or redirected calls).

If the originally called number is the number of a Hunt Group (call distribution), then the application will detect this and send an email to the user associated with the number of the CUCM Hunt Group (the originally called number).

It is possible to limit MCEA use to the first line number, for instance to avoid sending notifications for second lines used as shared lines.

The application automatically finds the CUCM user ID associated with the line number (phones associated or logged using Extension Mobility) and sends the email to the address filled in CUCM End User form. If the email address is not available in CUCM's end user's info, it is possible to generate it by appending the company's domain name to the user ID or by searching the email address by user ID in LDAP or Active Directory.

Missed Calls eMail Alerter can be interface with telisca's IPS Global Directory core to do a reverse lookup based on the calling number. Then the calling name can be provided in the message.

The application can send the emails by SMTP or Exchange. Email body can include html format. The title and body of the email may be customized and may contain information about the call. Messages are sent in two different languages depending of the CUCM user's locale. A different



message can be sent when the calling name is provided (internal calling party, reverse lookup) or not.

A daily report is generated listing all missed calls treatments.

2 Performance tests description

2.1 Perfomance goal and evaluation

The goal of the performance tests is to give telisca Server sizing guidelines depending of number of users.

The performance test is conducted with a pool of CTI Ports (which simulate IP phones) with a high rate of calls to simulate a larger number of real IP Phone users. The hypothesis of calls rate is based on BHCA (Busy Hour Call Attempts) 6 which already a high value for a business usage. On the 6 calls per hour we will consider an average of 3 inbound calls. We will consider that 1/3 of the calls are missed and generate a Missed Call Alert.

	Inbound	Burst call	Nb. Calls per	Nb. Missed Calls
Nb IP Phones	BHCA	ratio	second	per second
1000	3	2	1,67	0,56
2500	3	2	4,17	1,39
5000	3	2	8,33	2,78
7500	3	2	12,50	4,17
10000	3	2	16,67	5,56
15000	3	2	25,00	8,33
20000	3	2	33,33	11,11

In order to simulate more users, the period between calls is reduced to 5 seconds:

- 2 calls with 1 second ringing, 2 seconds connected, 2 seconds idle

- 1 call with 3 seconds ringing, 2 seconds idle (missed call)

With this hypothesis, we can calculate how many real IP Phones are simulated given the numbers of CTI Ports and calls duration.

Simultaneous			Nb. Missed	
script	Call	Nb. Calls	Calls per	
execution	period (s)	per second	second	Nb IP Phones
8	5	1,67	0,56	1000
21	5	4,17	1,39	2500
42	5	8,33	2,78	5000
63	5	12,50	4,17	7500
83	5	16,67	5,56	10000
125	5	25,00	8,33	15000
167	5	33,33	11,11	20000

Because of additional latencies of Morning Check execution, the simultaneous executions parameters defined in Morning Check have been required to be slightly higher than calculated.

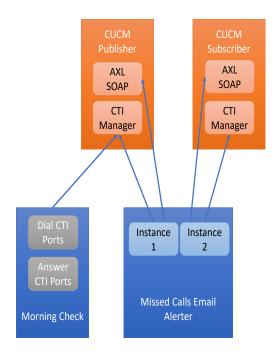
2.2 Test platform architecture



We are using telisca Morning Check application to generate calls from CTI Ports and answer calls on other CTI Ports.

Missed Calls Email Alerter in installed with two instances. Each instance is configured on a different CUCM server. Each instance is CTI Monitoring by JTAPI half of the answer CPI Ports.

Four virtual machines are used for the test.



Each instance is CTI Monitoring a different range of answer CTI Ports.

Virtual machines configurations:

- Morning Check: 2 vCPU, 4 GB RAM
- Missed Calls Email Alerter: 2 vCPU, 4GB RAM

2.3 Morning Check script

The script generates calls from CTI Ports, answers or not the call and drops it. It alternates between destination numbers of two ranges which are associated to the instances on MCEA virtual machines associated themselves to two different CUCM servers.

1 7

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c	CTI server
Primary CTI Manager host *	102.2.111.10 ⑦ Test
Backup CTI Manager host	Test
Use same Application User as in CUCM Config E	0
Use a secured JTAPI CTI link	0
IP Phones monitored by CTI	All IP Phones filtered by prefix + automatic
Phone number list or prefix filter(separated by ',')	115
Config CTI of MCEA instance 2	
CTI se	erver
Primary CTI Manager host * 102.2	.111.11 🕐 Test
Backup CTI Manager host	Test
Use same Application User as in CUCM Config ${igstyle { {\Bbb O} } }$	
Use a secured JTAPI CTI link 🗌 🕅	
IP Phones monitored by CTI All IP	Phones filtered by prefix + automatic
Phone number list or prefix filter(separated by ',')	

2.4 Performance test limitation

The performance test does not include the load of sending an email when abandon call is detected.

The performance test cannot measure the real memory usage as the number of CTI Ports monitored is only 1% of the real number of CTI Ports. However, the experience in production shows that the CTI Server module needs between 512MB and 1GB with 5000 phones monitored.

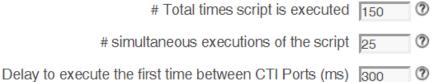
The performance test is based on a burst call ratio of 1.5 (compared to the value calculated with BHCA), depending of the company's activity this value could be higher.

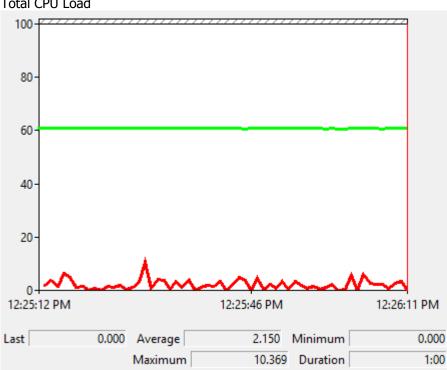
The performance test is based on two instances, if more instances are executing simultaneously an overhead of CPU resource should be considered.

Performance tests results 3

3.1 Simulating 5 calls per second

Morning check parameters

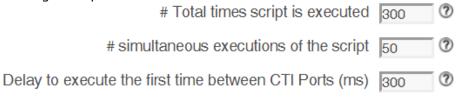




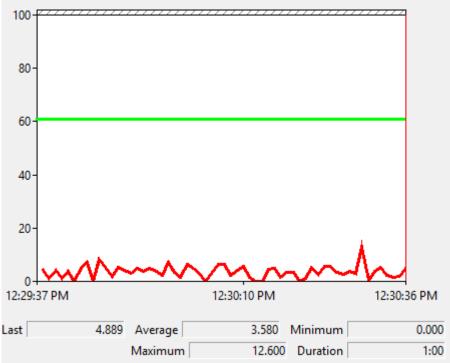
Total CPU Load

3.2 Simulating 10 calls per second

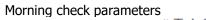








3.3 Simulating 15 calls per second

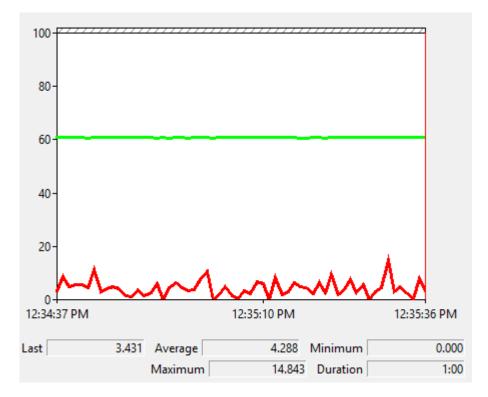




simultaneous executions of the script 75

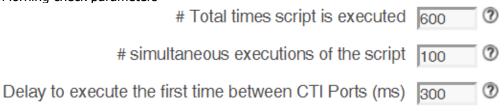
Delay to execute the first time between CTI Ports (ms) 300 0

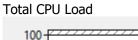
Total CPU Load

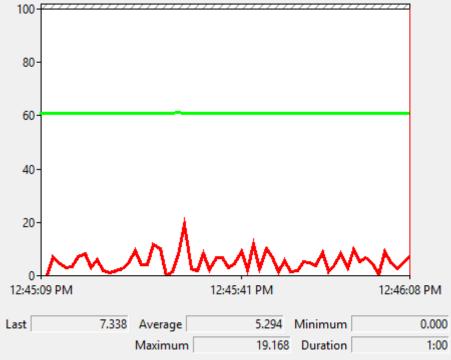


3.4 Simulating 20 calls per second

Morning check parameters

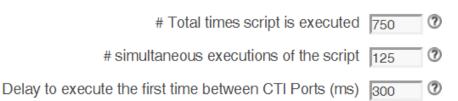




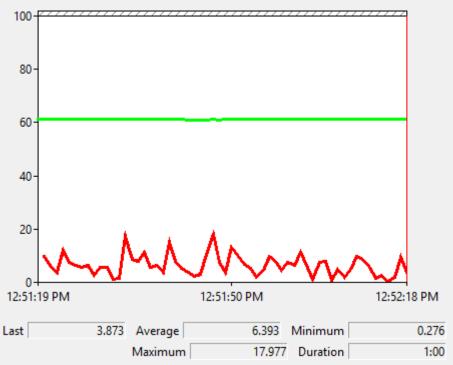


3.5 Simulating 25 calls per second

Morning check parameters

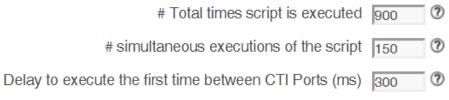




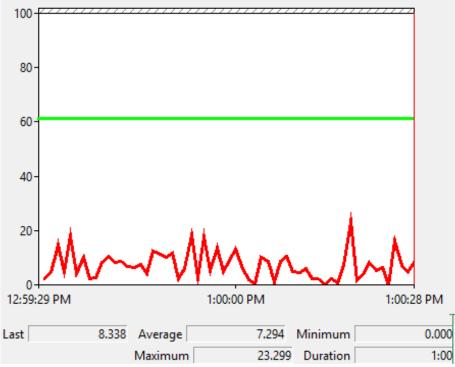


3.6 Simulating 30 calls per second

Morning check parameters

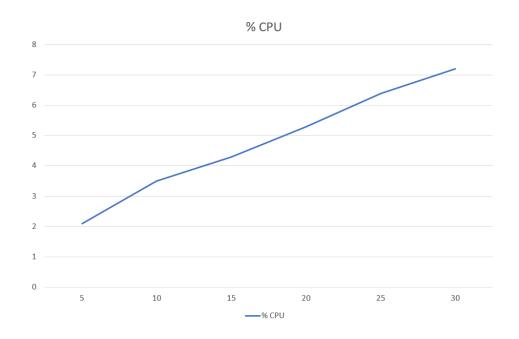








3.7 CPU load by call/sec





4 Sizing guidelines

We can conclude from the above tests the following guide lines to size Missed Calls Email Alerter Virtual Machine according to the number of IP Phones CTI Monitored.

The guideline considers the limitation of the test. It assumes the application is installed on several instances (up to four) to split the load on several CUCM Susbcribers.

Nb IP Phones	vCPU	RAM	Disk
1000	1	4GB	70GB
2500	1	4GB	70GB
5000	1	6GB	70GB
7500	1	6GB	90GB
10000	2	8GB	110GB
15000	2	10GB	150GB
20000	3	12GB	200GB