

## Performance tests

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# 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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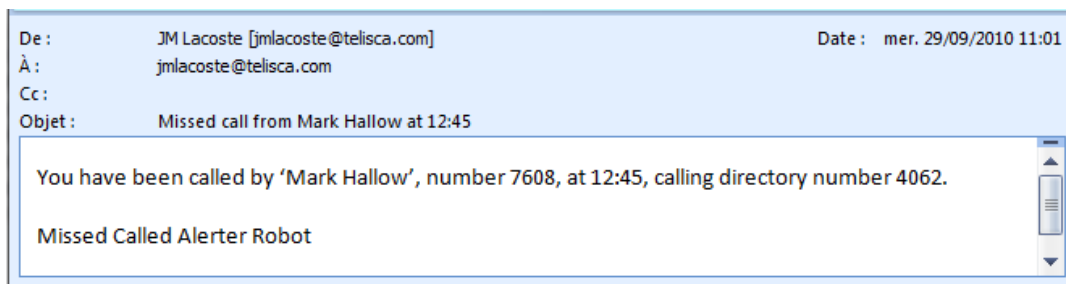
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## 1 Missed Call Email Alerter overview

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.



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 Performance 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.

Nb IP Phones	Inbound BHCA	Burst call ratio	Nb. Calls per second	Nb. Missed Calls 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 script execution	Call period (s)	Nb. Calls per second	Nb. Missed Calls per 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

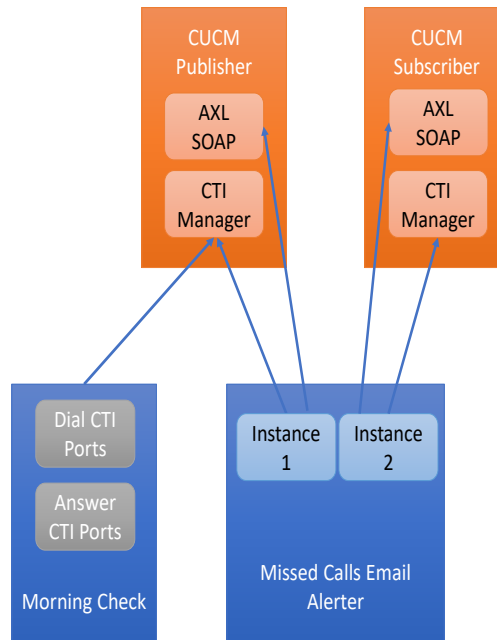
Because of additional latencies of Morning Check execution, the simultaneous executions parameters defined in Morning Check have been required to be slightly higher than calculated.

### 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 is 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.

Add a command line or a key to the script

Content

```
1000,DIAL,%1%
1000,ANSWER,%1%
2000,DROP
1000,DIAL,%2%
1000,ANSWER,%2%
2000,DROP
2000,DIAL,%1%
3000,DROP
2000,DIAL,%2%
3000,DROP
1000,DIAL,%1%
1000,ANSWER,%1%
2000,DROP
1000,DIAL,%2%
1000,ANSWER,%2%
2000,DROP
```

Name

Manageable by production's users

# Total times script is executed

# simultaneous executions of the script

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

Required telephony status max. wait delay

Times of day to execute automatically (HH:mm)

Email addresses to send detailed report (separated by ,)

Email addresses to send simplified report (separated by ,)

Add a command line to the script

Content

```
1000,DIAL,%1%
1000,ANSWER,%1%
2000,DROP
2000,DIAL,%1%
3000,DROP
1000,DIAL,%1%
1000,ANSWER,%1%
2000,DROP
1000,DIAL,%2%
1000,ANSWER,%2%
2000,DROP
2000,DIAL,%2%
3000,DROP
1000,DIAL,%2%
1000,ANSWER,%2%
2000,DROP
```

Select a CSV file and upload data  Aucun fichier sélectionné.

List fo data to use in script

## Config CTI of MCEA instance 1

**CTI server**

Primary CTI Manager host \*  ?

Backup CTI Manager host

Use same Application User as in CUCM Config  ?

Use a secured JTAPI CTI link  ?

**IP Phones monitored by CTI**

Phone number list or prefix filter(separated by ',')

## Config CTI of MCEA instance 2

**CTI server**

Primary CTI Manager host \*  ?

Backup CTI Manager host

Use same Application User as in CUCM Config  ?

Use a secured JTAPI CTI link  ?

**IP Phones monitored by CTI**

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.



### 3 Performance tests results

#### 3.1 Simulating 5 calls per second

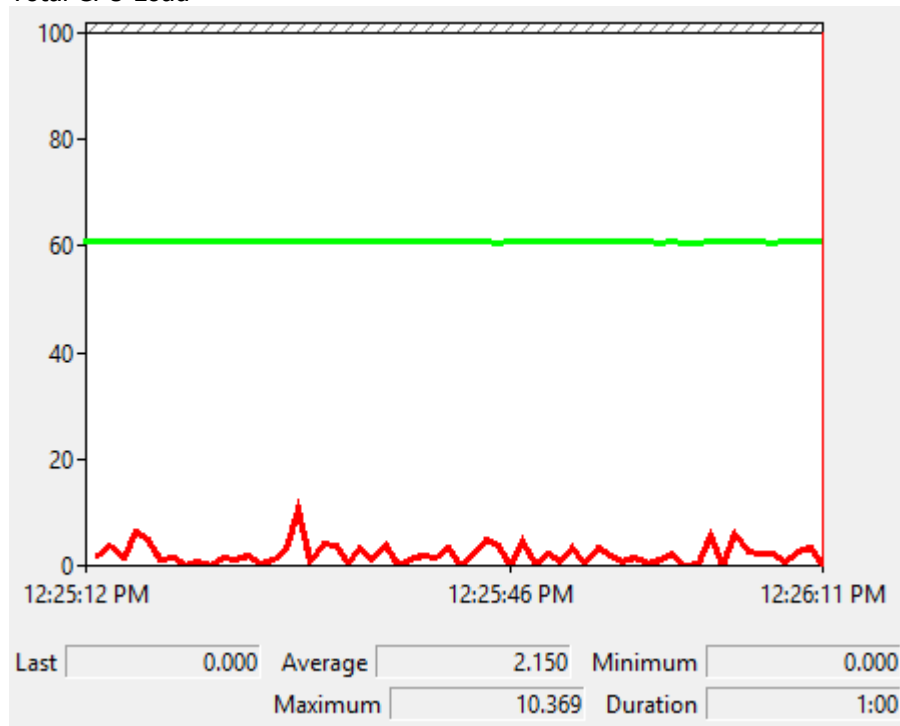
Morning check parameters

# Total times script is executed  ?

# simultaneous executions of the script  ?

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

Total CPU Load



## 3.2 Simulating 10 calls per second

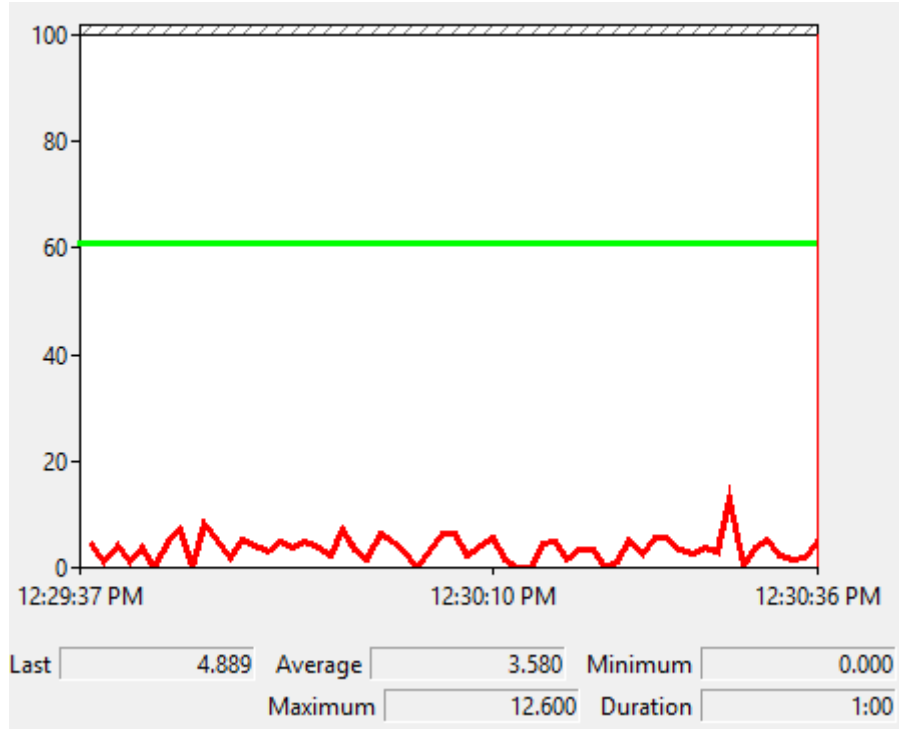
Morning check parameters

# Total times script is executed  ?

# simultaneous executions of the script  ?

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

Total CPU Load



### 3.3 Simulating 15 calls per second

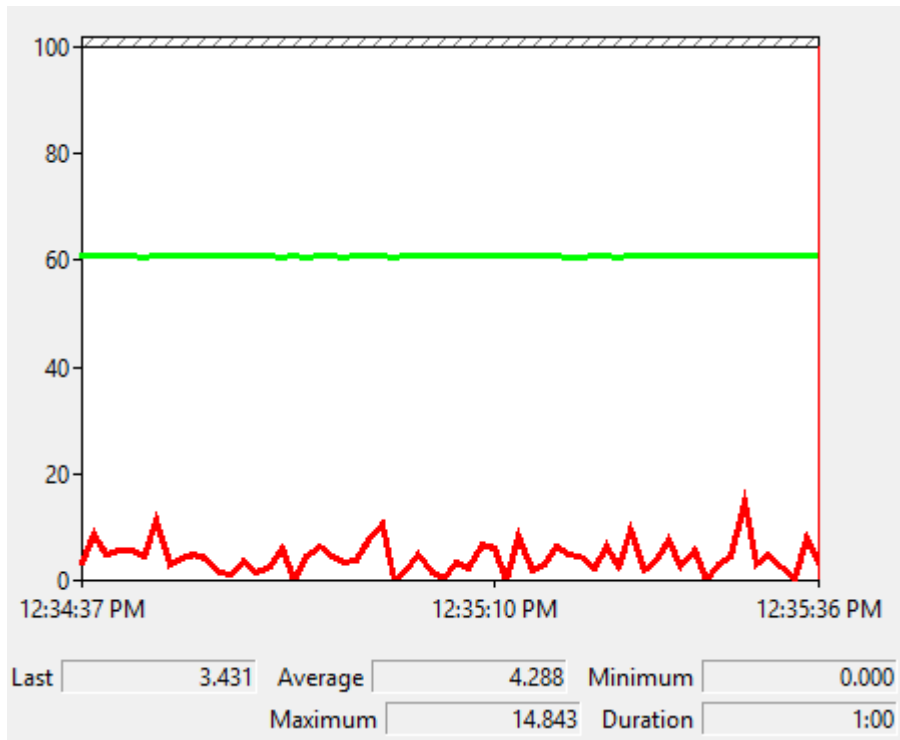
Morning check parameters

# Total times script is executed  ?

# simultaneous executions of the script  ?

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

Total CPU Load



## 3.4 Simulating 20 calls per second

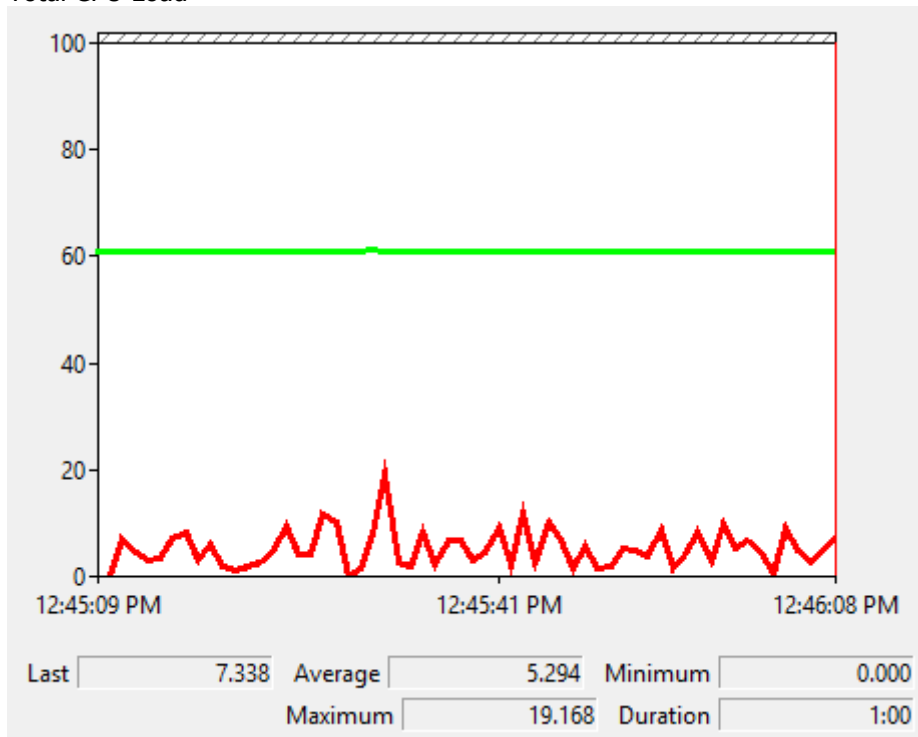
Morning check parameters

# Total times script is executed  ?

# simultaneous executions of the script  ?

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

Total CPU Load



## 3.5 Simulating 25 calls per second

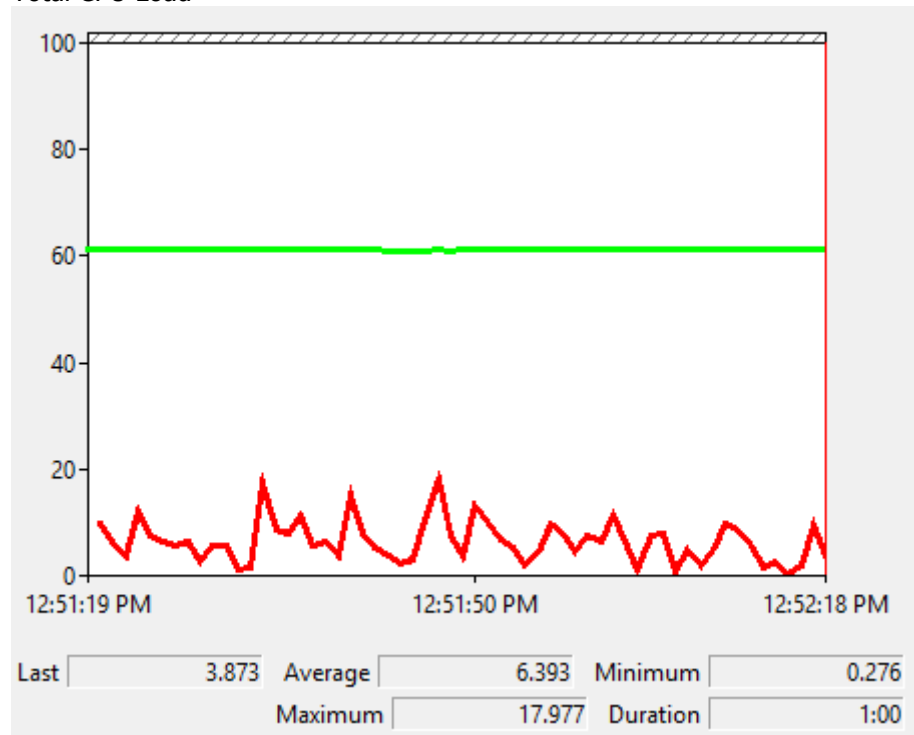
Morning check parameters

# Total times script is executed  ?

# simultaneous executions of the script  ?

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

Total CPU Load



## 3.6 Simulating 30 calls per second

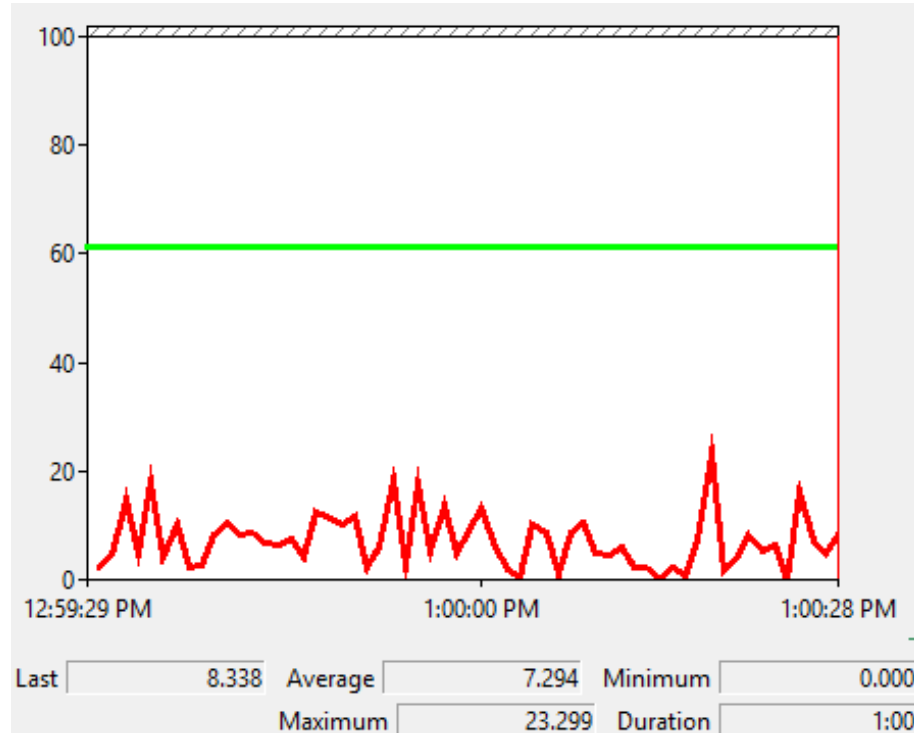
Morning check parameters

# Total times script is executed  ?

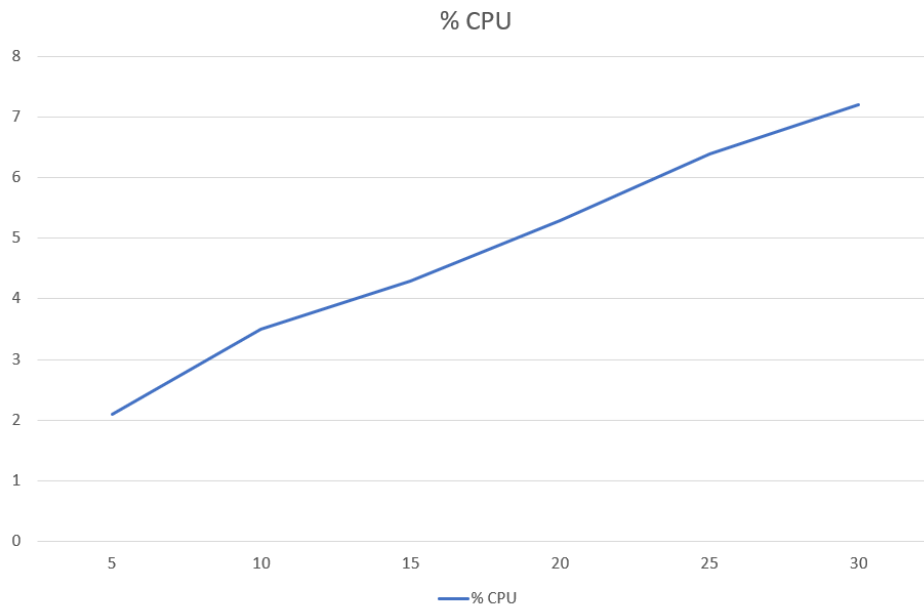
# simultaneous executions of the script  ?

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

Total CPU Load



## 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 Subscribers.

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