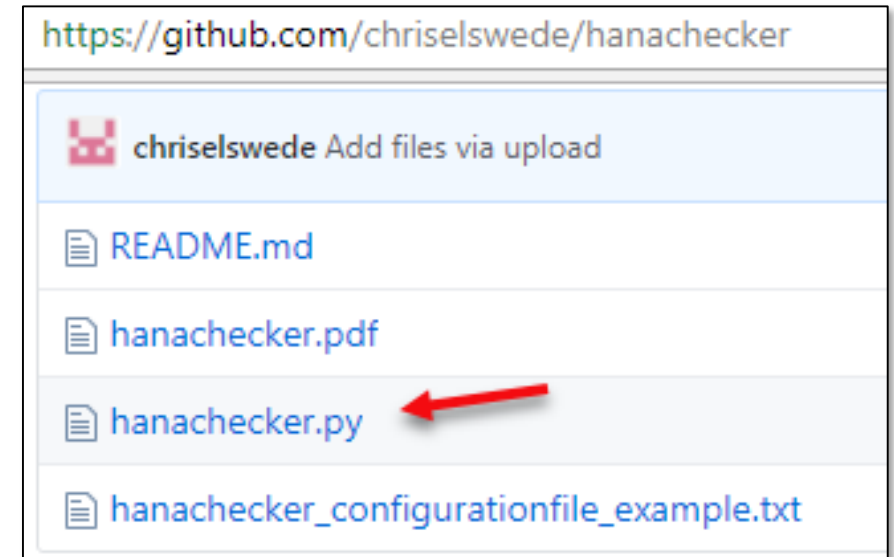




SAP Note 1999993 presents a tool that runs the mini-checks (SAP Note 1969700) and sends out emails in case of potential critical issues

1999993 - How-To: Interpreting SAP HANA Mini Check Results

- It is a python script to be downloaded from <https://github.com/chriselswede/hanachecker>
- It is intended to be executed as <sid>adm on your SAP HANA Server
- It connects via host, port and DB user, provided in hdbuserstore
- It sends out emails via an intern smtp server (to avoid firewall issues) with xmail



NOTE: You have to install the linux program "sendmail" and add a line similar to `DSsmtp.intra.ourcompany.com` in the file `sendmail.cf` in `/etc/mail/`, see [this page](#)



Host, port and DB user needs to be provided in the hdbuserstore:

```
hsiadm@dewdfglp00835:/> hdbuserstore SET HANACHECKER1KEY dewdfglp00835:30015 HANACHECKER1 PassWord1
hsiadm@dewdfglp00835:/> hdbuserstore LIST
DATA FILE      : /usr/sap/HSI/home/.hdb/dewdfglp00835/SSFS_HDB.DAT
KEY FILE       : /usr/sap/HSI/home/.hdb/dewdfglp00835/SSFS_HDB.KEY

KEY HANACHECKER1KEY
  ENV : dewdfglp00835:30015
  USER: HANACHECKER1
```

Then the hanachecker can connect using the info stored in hdbuserstore:

```
hsiadm@dewdfglp00835:/tmp/HANAChecker> whoami
hsiadm
hsiadm@dewdfglp00835:/tmp/HANAChecker> python hanachecker.py -k HANACHECKER1KEY -ff hanachecker_configurationfile.txt
"Mini Check ID 235  Description: Hosts with varying physical memory size Host:  Value: yes Expectation: no Potenti
```



The DB user that hanachecker uses to connect with needs proper privileges to run the mini-checks







The DB user that hanachecker uses only needs to read in the statistics server tables

User Name*: ☐ Disable ODBC/JDBC access

Authentication

☒ Password

Password*: Confirm*:

Granted Roles		System Privileges		Object Privileges		Analytic Privileges		Package Privileges		App	
 				 		Privileges for '_SYS_STATISTICS'					
Catalog Object				Grantor							
 _SYS_STATISTICS				SYSTEM		<input checked="" type="checkbox"/> SELECT					
 HANACHECKER1				SYS		<input type="checkbox"/> SELECT CDS METADATA					



HANAChecker takes a mini-check SQL statement file as input

- The mini-check files have to be downloaded from SAP Note [1969700](#)
- Note: Always use the mini-check file that corresponds to your SAP HANA Revision
- Note: It is recommended to regularly download these files to always have the latest versions as SAP Note [1969700](#) is being updated frequently

Flag	Unit	Details	Explanation	Default
-mf		mini-check file	Full path of the mini-check file (Cannot be used together with -zf)	"

Possible Files:

File	CHID	Example
HANA_Configuration_MiniChecks_<revision compatibility>.txt	MXXXX	M0231
HANA_Configuration_MiniChecks_Internal_<revision compatibility>.txt	IXXXX	I0076
HANA_Security_MiniChecks.txt	SXXXX	S1045
HANA_TraceFiles_MiniChecks.txt	TXXXX	T1200

Example:

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py  
-mf HANA Configuration MiniChecks 1.00.120+.txt -en c  
hris@comp.com,smtp.comp.com -M1115 chris@du.my
```



HANAChecker can take the SQLStatements.zip file as input

- The .zip file has to be downloaded from SAP Note [1969700](#)
- HANAChecker will use the corresponding check files based on your HANA revision

Flag	Unit	Details	Explanation	Default
-zf		Full path to SQLStatements.zip	Full path of the SQLStatements.zip file (SAP Note 1969700). Cannot be used together with –mf and has to be used together with -ct	"
-ct		Check Types	M = Mini-Checks, I = Internal Mini-Checks, S = Security Mini-Checks, T = Trace Mini-Checks	"

Example:

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -zf SQLStatements.zip -ct M,I,S,T -M1142
lena@comp.com -S0120 chris@du.my -T0101 per@du.my -en chris@comp.com,smtp.intra.comp.com

"Mini Check ID S0120 Description: SYSTEM user deactivated Value: no Expectation: yes C: X"
is sent to chris@du.my
"Mini Check ID T0101 Area: Statistics server Description: Unique constraint violation Host:
mo-fc8d991e0 Port: 30003 Count: 24 LastOccurrence: 2018/03/07 08:33:41 C: X SAPNote: 214
7247 TraceText: plan plan6992814@mo-fc8d991e0:30003 failed with rc 301; unique constraint vio
latedTrexUpdate failed on table ' SYS_STATISTICS:HOST_LOAD_HISTORY_HOST_BASE' with error: uniq
ue constraint violation in self check for table SYS_STATISTICS:HOST_LOAD_HISTORY_HOST_BASEen,
constraint='$trexexternalkey$', udiv='2018-03-07 08:33:38;12,mo-fc8d991e0;2018-02-23 07:03:27
.215', pos=708, indexname= SYS_TREE_CS #150584 #0 #P0, rc=55" is sent to per@du.my
"Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host: mo-fc8d991e0 Val
ue: 2 Expectation: 0 C: X SAPNote: 2124112" is sent to lena@comp.com
```



HANAChecker can send out emails for all critical mini-checks

The HANAChecker executes the mini-checks and sends out emails for every mini-check that are “Potential Critical”, i.e. the column “C” has an “X” in it

For this to work (see [this page](#) for more information):

- an internal smtp server has to be used, e.g. ourcompany.intra.com,
- the Linux program “sendmail” has to be installed and
- a line like DSsmtp.intra.ourcompany.com in file sendmail.cf in /etc/mail/ has to be added

The sender’s email address and the internal smtp email server has to be provided:

Flag	Unit	Details	Explanation	Default
-en		email-notification	<sender’s email>,<mail server>	“

Example:

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_MiniChecks_1.00.120+.txt -en chris@comp.com,smtp.intra.comp.com -M1115 chris@du.my
```




HANAChecker sends out emails to the addresses mapped for the mini-checks

If the flag -<CHID> is specified for a email address and the mini-check with that check id (CHID) is potential critical then an email is send to that email address

Flag	Unit	Details	Explanation	Default
-<CHID>		mini-check to email address	If that particular mini-check specified by the flag is potential critical an email is sent to the addresses specified by the value of the flag	

Example (mini-checks):

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_MiniChecks_1.00.120+.txt
-en chris@comp.com,smtp.intra.comp.com -M1142 chris@du.my -M1150 per@du.my,lena@du.my

"Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host: mo-fc8d991e0 Value: 2
Expectation: 0 C: X SAPNote: 2124112" is sent to chris@du.my
"Mini Check ID M1150 Description: Pinned statements in SQL cache (%) Host: mo-fc8d991e0 Value: 27
.83 Expectation: <= 20.00 C: X SAPNote: 2124112" is sent to per@du.my
"Mini Check ID M1150 Description: Pinned statements in SQL cache (%) Host: mo-fc8d991e0 Value: 27
.83 Expectation: <= 20.00 C: X SAPNote: 2124112" is sent to lena@du.my
```

Example (security mini-checks):

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Security_MiniChecks.txt -en chris@comp.
com,smtp.intra.comp.com -S0120 lena@du.my

"Mini Check ID S0120 Description: SYSTEM user deactivated Value: no Expectation: yes C: X" is sen
t to lena@du.my
```

Monitoring

HANAChecker – Only One Email



HANAChecker can be told to only send one email per email address

The flag -oe flag tells HANAChecker that if one email address is supposed to get notified by many mini-check warnings, they are sent in only one email

Flag	Unit	Details	Explanation	Default
-oe		one email per address	true: only one email is sent per email address, false: one email is sent per critical mini check	false

Example: Here lena@du.my gets only one email, including warnings from mini-check M1142, and M1150

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_MiniChecks_1.00.120+.txt -en chris@comp.com,smtp.intra.comp.com -M1142 lena@du.my -M1150 lena@du.my -oe true

"Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host: mo-fc8d991e0 V
alue: 2 Expectation: 0 C: X SAPNote: 2124112
Mini Check ID M1150 Description: Pinned statements in SQL cache (%) Host: mo-fc8d991e0 Va
lue: 27.28 Expectation: <= 20.00 C: X SAPNote: 2124112" is sent to lena@du.my
```


HANAChecker – Always Send a Notification Email



HANAChecker can send an email to all unique email addresses even if none of the mini-checks for those addresses seemed critical – just to notify that HANAChecker was executed

Flag	Unit	Details	Explanation	Default
-as		always send at least a notification email	true: all email addresses will be send at least a notification email, even if none of the mini-checks assigned to the emails were potential critical	false

Example: Here all emails, chris@du.my, lana@du.my, and per@du.my, gets the notification email. Note that Per also get the notification email so he will know that the HANAChecker ran even though none of his mini-checks were critical.

```
oqladm@ls80010:/tmp/HANAChecker> python hanachecker.py -zf SQLStatements.zip -ct M -en chris@comp.com,smtp.intra.comp.com
-M1142 chris@du.my,lana@du.my -M1150 per@du.my,lana@du.my -as true
"HANACecker was executed 2018-06-08 21:42:22 on OQL. If any of the mini-checks that you are responsible for seem critical,
you will be notified now." is sent to lana@du.my
"Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host: ls80010 Value: 1 Expectation: 0 C: X SAPN
ote: 2124112" is sent to lana@du.my
"HANACecker was executed 2018-06-08 21:42:22 on OQL. If any of the mini-checks that you are responsible for seem critical,
you will be notified now." is sent to per@du.my
"HANACecker was executed 2018-06-08 21:42:22 on OQL. If any of the mini-checks that you are responsible for seem critical,
you will be notified now." is sent to chris@du.my
"Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host: ls80010 Value: 1 Expectation: 0 C: X SAPN
ote: 2124112" is sent to chris@du.my
```

HANAChecker – Always Send One Email



If both the `-as` and the `-oe` flags are set to true then all email addresses get one email and one email only; the email includes always the notification that HANAChecker ran and then, if any of the mini-checks were critical, those mini-check notifications will follow

Example: Here all email addresses, chris@du.my, lena@du.my, and per@du.my, get one email

```
oqladm@ls80010:/tmp/HANAChecker> python hanachecker.py -zf SQLstatements.zip -ct M -en chris@comp.com,smtp.
intra.comp.com -M1142 chris@du.my,lena@du.my -M1150 per@du.my,lena@du.my -as true -oe true
"HANAChecker was executed 2018-06-08 21:44:40 on OQL. If any of the mini-checks that you are responsible for
seem critical, you will be notified now.
Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host: ls80010 Value: 1 Expectation:
0 C: X SAPNote: 2124112" is sent to lena@du.my
"HANAChecker was executed 2018-06-08 21:44:40 on OQL. If any of the mini-checks that you are responsible for
seem critical, you will be notified now." is sent to per@du.my
"HANAChecker was executed 2018-06-08 21:44:40 on OQL. If any of the mini-checks that you are responsible for
seem critical, you will be notified now.
Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host: ls80010 Value: 1 Expectation:
0 C: X SAPNote: 2124112" is sent to chris@du.my
```



HANAChecker sends out emails to the addresses grouped for the checks

The flag `-cg` can specify ranges of mini-checks and map an email address for each of these ranges

Flag	Unit	Details	Explanation	Default
<code>-cg</code>		mini-check groups	Groupings of mini-checks with responsible email addresses associated	

Example: Here lana@du.my gets emails for every potential critical mini-check between M1140 and M1149 and chris@du.my gets emails for every potential critical mini-check between M1150 and M1159

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_MiniChecks_1.00.120
+.txt -en chris@comp.com,smtp.intra.comp.com -cg M1140-M1149,lana@du.my,M1150-M1159,chris@du.my

"Mini Check ID M1150 Description: Pinned statements in SQL cache (%) Host: mo-fc8d991e0 Valu
e: 27.28 Expectation: <= 20.00 C: X SAPNote: 2124112" is sent to chris@du.my
"Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host: mo-fc8d991e0 Valu
e: 2 Expectation: 0 C: X SAPNote: 2124112" is sent to lana@du.my
```



HANAChecker can send out emails for all potential critical checks to the emails defined as “catch all” emails

Flag	Unit	Details	Explanation	Default
-ca		catch all emails	The email addresses specified receive an email about each potential critical mini-check	

Example:

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_MiniChecks_1.00.120+.txt -en chris@comp.com,smtp.intra.comp.com -ca peter@du.my,chris@du.my
```

```
"Mini Check ID M0012 Description: Revision level Value: 121.00 Expectation: >= 122.03 C: X SAPNote: 2021789" is sent to chris@du.my
```

```
"Mini Check ID M0115 Description: Service startup time variation (s) Host: mo-fc8d991e0 Value: 3299447 Expectation: <= 600 C: X SAPNote: 2177064" is sent to chris@du.my
```

...

```
"Mini Check ID M0012 Description: Revision level Value: 121.00 Expectation: >= 122.03 C: X SAPNote: 2021789" is sent to peter@du.my
```

```
"Mini Check ID M0115 Description: Service startup time variation (s) Host: mo-fc8d991e0 Value: 3299447 Expectation: <= 600 C: X SAPNote: 2177064" is sent to peter@du.my
```

...

Monitoring

HANAChecker – Ignore Checks



While using the “Catch All” flag, you can “Ignore” some checks with the `-ic` flag, i.e. catch all except some checks

Example:

Flag	Unit	Details	Explanation	Default
-ic		ignore checks	A list of mini-check CHIDs to be ignored by the catch all emails	

Example:

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_MiniChecks_1.00.120+.txt -en chris@comp.com,smtp.intra.comp.com -ca chris@du.my -ic M0012,M0209

"Mini Check ID M0115 Description: Service startup time variation (s) Host: mo-fc8d991e0 Value: 3299447 Expectation: <= 600 C: X SAPNote: 2177064" is sent to chris@du.my
"Mini Check ID M0551 Description: Proper setup of timezone table TTZZ Value: no Expectation: yes C: X SAPNote: 1791342" is sent to chris@du.my
```

...



One can define different mini-check files with the -mf flag and assign different mini-check types to emails, e.g.

```
-mf <mini-check file>,<security-mini-check file>,...
-cg M0100-M0200,email1@comp.com,S0100-S0200,email2@comp.com
```

Example:

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_MiniChecks_1.00.120+.txt
,HANA_Configuration_MiniChecks_Internal_1.00.120-1.00.122.99.txt,HANA_Security_MiniChecks.txt,HANA_T
raceFiles_MiniChecks.txt -cg M1100-M1150,chris@du.my,I0010-I1000,john@du.my,S0100-S0125,lena@du.my,T
0099-T0105,per@du.my -en chris@me.com,smtp.intra.me.com
"Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host: mo-fc8d991e0 Value: 2
Expectation: 0 C: X SAPNote: 2124112" is sent to chris@du.my
"Mini Check ID M1150 Description: Pinned statements in SQL cache (%) Host: mo-fc8d991e0 Value: 27
.93 Expectation: <= 20.00 C: X SAPNote: 2124112" is sent to chris@du.my
"Mini Check ID T0101 Area: Statistics server Description: Unique constraint violation Host: mo-fc
8d991e0 Port: 30003 Count: 24 LastOccurrence: 2018/03/05 06:33:41 C: X SAPNote: 2147247 TraceT
ext: plan plan5636987@mo-fc8d991e0:30003 failed with rc 301; unique constraint violatedTrexUpdate fa
iled on table '_SYS_STATISTICS:HOST_LOAD_HISTORY_HOST_BASE' with error: unique constraint violation
in self check for table _SYS_STATISTICS:HOST_LOAD_HISTORY_HOST_BASEen, constraint='$trexexternalkey$
', udiv='2018-03-05 06:33:38;12,mo-fc8d991e0;2018-02-22 20:18:42.21', pos=18052, indexname=_SYS_TREE
_CS_#150584_#0_#P0, rc=55" is sent to per@du.my
"Mini Check ID S0120 Description: SYSTEM user deactivated Value: no Expectation: yes C: X" is se
nt to lena@du.my
```



Run hanachecker “forever” with the –hci flag

Flag	Unit	Details	Explanation	Default
-hci	Days	hanachecker interval	After these number days hanachecker will restart	-1 (exits)

Example: HANAChecker runs here the mini-checks and sends emails once every day

```
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_MiniChecks_1.00.120+.txt -en chris@comp.com,smtp.intra.comp.com -M1170 peter@comp.com -hci 1

"Mini Check ID M1170   Description: Average database request time (ms)   Value: 6.91
Expectation: <= 2.00   C: X   SAPNote: 2000002" is sent to peter@comp.com
"Mini Check ID M1170   Description: Average database request time (ms)   Value: 6.91
Expectation: <= 2.00   C: X   SAPNote: 2000002" is sent to peter@comp.com
"Mini Check ID M1170   Description: Average database request time (ms)   Value: 6.91
Expectation: <= 2.00   C: X   SAPNote: 2000002" is sent to peter@comp.com
```

Note: HANAChecker could ofcourse also be scheduled by a cron job – do then NOT use the -hci flag!



To control the output of the hanachecker there are these flags

Flag	Unit	Details	Explanation	Default
-od		output directory	full path of the folder where the hanachecker logs are written	/tmp/hanachecker_output
-so		standard out switch	1: write to std out, 0: do not write to std out	1

Example:

Here an output folder is deleted and then automatically created again by hanachecker and a new log file is written into it:

```
mo-fc8d991e0:/tmp/HANAChecker> rm -r /tmp/hanachecker_output/
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_Minichecks_1.00.120+.txt -en chris@comp.com,smtp.intra.comp.com -M1170 peter@comp.com -so 0

mo-fc8d991e0:/tmp/HANAChecker>
mo-fc8d991e0:/tmp/HANAChecker> more ../hanachecker_output/hanacheckerlog_2018-03-05_12-37-00.txt
"Mini Check ID M1170   Description: Average database request time (ms)   Value: 6.91
Expectation: <= 2.00   C: X   SAPNote: 2000002" is sent to peter@comp.com
```

HANAChecker – Used To Only Log Checks



If the `-en` flag is not specified, HANAChecker can be used to simply write all potential critical mini-checks in the log file, without sending out emails:

```
python hanachecker.py -mf HANA_Configuration_MiniChecks_1.00.120+.txt  
-ca dummy@me.com -so 0
```

Example:

```
mo-fc8d991e0:/tmp/HANAChecker> rm -r /tmp/hanachecker_output/  
mo-fc8d991e0:/tmp/HANAChecker>  
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -mf HANA_Configuration_  
MiniChecks_1.00.120+.txt -ca lena@comp.com -so 0  
  
mo-fc8d991e0:/tmp/HANAChecker>  
mo-fc8d991e0:/tmp/HANAChecker> more ../hanachecker_output/hanacheckerlog_201  
8-03-05_12-40-31.txt  
"Mini Check ID M0012 Description: Revision level Value: 121.00 Expectatio  
n: >= 122.03 C: X SAPNote: 2021789"  
"Mini Check ID M0115 Description: Service startup time variation (s) Host:  
mo-fc8d991e0 Value: 3299447 Expectation: <= 600 C: X SAPNote: 2177064"  
"Mini Check ID M0209 Description: Recommended operating system kernel versi  
on Host: mo-fc8d991e0 Value: no (3.0.101-68-default instead of >= 0.108.7)  
Expectation: yes C: X SAPNote: 2235581"  
"Mini Check ID M0551 Description: Proper setup of timezone table TTZZ Valu  
e: no Expectation: yes C: X SAPNote: 1791342"
```

...



HANAChecker can be controlled with a configuration file
(additional flags given will overwrite flags in the configuration file)

Flag	Unit	Details	Explanation	Default
-ff		flag file	full path to the configuration file	

Example:

```
mo-fc8d991e0:/tmp/HANAChecker> more hanachecker_configurationfile.txt
Comp's HANA CHECKER Configuration File:

-mf HANA_Configuration_MiniChecks_1.00.120+.txt,HANA_Security_MiniChecks.txt
-en chris@comp.com,smtp.intra.comp.com
-cg M1140-M1145,peter@comp.com,M1146-M1150,sara@comp.com
-M1142 lena@comp.com,per@comp.com
-S0120 chris@ourcompany.com
-so 0

mo-fc8d991e0:/tmp/HANAChecker> rm -r ../hanachecker_output/
mo-fc8d991e0:/tmp/HANAChecker> python hanachecker.py -ff hanachecker_configur
ationfile.txt
mo-fc8d991e0:/tmp/HANAChecker> more ../hanachecker_output/hanacheckerlog_2018
-03-05_12-54-16.txt
"Mini Check ID M1142 Description: Table(s) using > 10 % of SQL cache Host:
mo-fc8d991e0 Value: 2 Expectation: 0 C: X SAPNote: 2124112" is sent to pe
ter@comp.com
```

...

HANAChecker – Real Life Example



Emails were retrieved from HANAChecker for potential critical mini-checks:

The screenshot shows an Outlook inbox with three emails from HANAChecker. The third email is highlighted with a blue border.

Subject	Sender	Time	Content
HANAChecker: A Potential Critical Mini-Check [REDACTED]!	[REDACTED]@[REDACTED].com	Mo 10:20	Mini Check ID 1170 Description: Average database request time (ms) Host: Value: 6.91 Expectation: <= 2.00 Potential Critical: X SAP Note: 2000002
HANAChecker: A Potential Critical Mini-Check [REDACTED]!	[REDACTED]@[REDACTED].com	Mo 10:20	Mini Check ID 750 Description: Stat. server tables with retention < 42 days Host: Value: 14 Expectation: 0 Potential Critical: X SAP Note: 2147247
HANAChecker: A Potential Critical Mini-Check [REDACTED]!	[REDACTED]@[REDACTED].com	Mo 10:20	Mini Check ID 2113 Description: Last global table consistency check (days) Host: Value: never Expectation: <= 32.00 Potential Critical: X SAP Note: 2116157