



## APPENDIX: PLUGIN SAP v4 MONITOR DETAILS

Data to monitor in SAP	Trans.	-m	Data type	Interval	Alarm triggering
Maximum amount of memory allowed	ST02	101	generic_data	300	-
SAPGUI average response time	RZ20	102	generic_data	300	1000
Users logged into the system	AL08	103	generic_data	300	10
Wrong IDocs from yesterday to now (those that do NOT have status 03 or 53)	WE05	104	generic_proc	43200	50
Correct IDocs from yesterday to now (those that have status 03 or 53)	WE05	105	generic_data	43200	-
IDoc monitor idocs with filters: pa1 per modification hour, number of minutes since last modification pa2 by type of logical message MESTYP DEBMAS pa3 by status STATUS pb1 per target system RCVPRN LEGACY1 pb2 per source system SNDPRN XYZCLNT001 e.g.: -m 205 -pa1 5 -pa2 DEBMAS -pa3 29 -pb1 LEGACY1 -pb2 XYZCLNT001	WE05	205	generic_data	300	-
Oracle: Tablespace, List all, % most used (inc.autoextend)	DB02	106	generic_data_string	300	-
Oracle: Tablespace. Amount of them used over 95% (inc.autoextend)	DB02	107	generic_data	300	4
Oracle: Tablespace. Amount of them used over 99% (inc.autoextend)	DB02	127	generic_data	300	2
Dumps from yesterday to the present moment (texts and amounts)	ST22	108	generic_data_string	43200	
Dumps from yesterday to the present moment	ST22	109	generic_data	43200	10
Dumps from n hours to the present moment (texts and amounts) Mandatory parameter to add: -pa1 num_hours_previous.Maximum 23 hours within the same day	ST22	148	generic_data_string	60 * hours	
Dumps from n hours ago until the present moment. Mandatory parameter to add: -pa1 num_hours_previous.Maximum 23 hours within the same day	ST22	149	generic_data	60* hours	10
System lock entries (table list and Lock mode (share/exclusive)	SM12	110	generic_data_string	300	-
System lock entries (quantity)	SM12	111	generic_data	300	3
Job canceled since yesterday (list)	SM37	112	generic_data_string	43200	
Jobs canceled since yesterday (amount)	SM37	113	generic_data	43200	5
Jobs canceled from n hours until now. (list) Mandatory parameter to add: -pa1 num_hours_previous. Maximum 23 hours within the same day	SM37	142	generic_data_string	60* hours	



Jobs canceled from n hours until now. (amount) Mandatory parameter to add: -pa1 num_hours_previous. Maximum 23 hours within the same day	SM37	143	generic_data	60* hours	5
Wrong WP DIA on the instance you connect to	SM50	114	generic_data	300	1
Waiting WP DIA (waiting/available) on the instance you connect to	SM50	202	generic_data	300	Less than 1
Failing WP BTC on the instance you connect to	SM50	115	generic_data	300	1
Waiting WP BTC (waiting/available) on the instance you connect to	SM50	203	generic_data	300	Less than 1
Failing WP UPD on the instance you connect to	SM50	116	generic_data	300	1
Waiting WP UPD (waiting/available) on the instance you connect to	SM50	204	generic_data	300	Less than 1
Failing WP UP2 on the instance you connect to	SM50	117	generic_data	300	1
Failing WP SPO on the instance you connect to	SM50	118	generic_data	300	1
Failing WP ENQ on the instance you connect to	SM50	119	generic_data	300	1
WP without restart active on the instance you connect to	SM50	150	generic_data	300	1
Stopped WP on the instance you connect to	SM50	151	generic_data	300	1



SAP system information		120	generic_data_string	43200	-
Bad batch input since yesterday	SM35	121	generic_data	43200	1
MS SQL Server: Trans. Log current size	DB02	130	generic_data	300	Cust
MS SQL Server: Trans. Log free size available	DB02	131	generic_data	300	Cust
MS SQL Server: Trans. Log free available percentage	DB02	132	generic_data	300	96
SAP system enabled. Value 0 = SAP up Value 1 = SAP down		160	generic_data	300	1
SAP system enabled: SAPGUI connection error text		161	generic_data_string	300	-
RZ20 CCMS: Read average value 15 minutes of Monitor Performance CCMS Indicate parameter -pa1 with the TID separated by * (obtain the TID using the SALR_MTE_GET_TID_BY_NAME Function Module with transaction SE37 and indicating the text obtained in the Properties button of the RZ20)  Optionally: indicate parameter -pa2 with the value of the MTMCNAME, replacing its spaces (if any) by the character # Ex: -pa2 Transactional#RFC#and#Queued#RFC	RZ20	180	generic_data	300	-
RZ20 CCMS: Read Numerical last value of Monitor Performance CCMS Indicate parameter -pa1 with the TID separated by * (obtain the TID using the SALR_MTE_GET_TID_BY_NAME Function Module with transaction SE37 and indicating the text obtained in the Properties button of the RZ20)  Optionally: indicate parameter -pa2 with the value of the MTMCNAME, replacing its spaces	RZ20	186	generic_data	300	-



(if any) by the # character E.g.: -pa2 Transactional#RFC#and#Queued#RFC					
RZ20 CCMS: Read Numerical last value of Monitor Performance CCMS Indicate parameter -pa1 with the name of the Set Monitor separated by *, and with parameter -pa2 with the final and previous MTE branch, separated by * It is obtained by clicking on Properties of the final branch. In the -pa2, use the character _ instead of space -m 187: it returns the average of the last 15 minutes -m 179: it returns the last value E.g.: -m 187 -pa1 SAP_CCMS_Monitor_Templates*Entire_System* -pa2 Dialog*FrontEndNetTime  Optionally: indicate parameter -pa3 with the value of the MTMCNAME, replacing its spaces (if any) by the character # E.g.: -pa3 Transactional#RFC#and#Queued#RFC	RZ20	187  Y  179	generic_data	300	-
RZ20 CCMS: Read LOG last value of Monitor Performance CCMS (string text) Indicate the parent + child of the monitor (R3Syslog and BasisSystem), separate it by the character * , and add it as -pa2 parameter to an -m 188 monitor of Pandora SAP Plugin E.g.: -m 188 -pa1 SAP_CCMS_Monitor_Templates*Entire_System* -pa2 R3Syslog*BasisSystem It will indicate the values of the system log (equivalent to transaction SM21)  Optionally: indicate parameter -pa3 with the value of the MTMCNAME, replacing its spaces (if any) by the character # E.g.: -pa3 Transactional#RFC#and#Queued#RFC	RZ20	188	generic_data_string	300	-
RZ20 CCMS: Read LOG last value of Monitor Performance CCMS (string text) Indicate -pa1 parameter with the TID separated by * (obtain the TID using the SALR_MTE_GET_TID_BY_NAME Function Module with transaction SE37 and indicating the text obtained in the Properties button of the RZ20) E.g.: -m 189 -pa1 010*0000001036*101*0000000018*0000000006*	RZ20	189	generic_data_string	300	-



<p>It will indicate the values of the system log (equivalent to transaction SM21)</p> <p>Optionally: indicate parameter -pa2 with the value of the MTMCNAME, replacing its spaces (if any) by the character # E.g.: -pa2 Transactional#RFC#and#Queued#RFC</p>					
<p>Returns the number of entries in the OUTPUT qRFC queues. Equivalent to SMQ1 transaction information Optionally indicate parameter -pa1 QUEUE_NAME_qRFC</p> <p>Indicated to warn of collapses/delays in message forwarding in SAP XI/PI, BW, CRM, APO systems</p>	SMQ1	190	generic_data	300	-
<p>It returns the number of entries in the OUTPUT qRFC queues. Equivalent to SMQ2 transaction information Optionally indicate parameter -pa1 QUEUE_NAME_qRFC</p> <p>Indicated to warn of collapses/delays in message forwarding in SAP XI/PI, BW, CRM, APO systems</p>	SMQ2	191	generic_data	300	-
<p>It returns the number of failed entries (SYSFAIL) of tRFC submission attempts. Equivalent to SM58 transaction information Optionally indicate parameter -pa1 NUM_OF_DAYS_OLD_MESSAGES (if not indicated, it means without filtering by age, selecting all)</p> <p>Indicated to warn of collapses/delays in message forwarding in SAP XI/PI, BW, CRM, APO systems</p>	SM58	192	generic_data	300	-
<p>It returns the number of wrong entries (SYSFAIL) of the OUTPUT qRFC queue Equivalent to the information of the SMQ1 transaction</p> <p>Indicated to warn of collapses/delays in message forwarding in SAP XI/PI, BW, CRM, APO systems</p>	SMQ1	195	generic_data	300	-
<p>It returns the number of wrong entries (SYSFAIL) of the ENTRY qRFC queue Equivalent to the information of the SMQ2 transaction</p> <p>Indicated to warn of collapses/delays in message forwarding in SAP XI/PI, BW, CRM, APO systems</p>	SMQ2	196	generic_data	300	-
<p>It returns the number of MINUTES the OLDEST message has not been processed in the queues</p>	SMQ1	197	generic_data	300	-



<p>OUTPUT qRFC. Equivalent to SMQ1 transaction information Optionally indicate parameter -pa1 QUEUE_NAME_qRFC</p> <p>Indicated to warn of collapses/delays in message forwarding in SAP XI/PI, BW, CRM, APO systems</p>	SMQ1				
<p>It returns the number of MINUTES the OLDEST message has not been processed in the ENTRY qRFC queues Equivalent to SMQ2 transaction information Optionally indicate parameter -pa1 QUEUE_NAME_qRFC</p> <p>Indicated to warn of collapses/delays in message forwarding in SAP XI/PI, BW, CRM, APO systems</p>	SMQ2	198	generic_data	300	-
DialogResponseTime	RZ20	180 -pa1 010*000 000138 0*100*0 000000 079*000 000002 2*	generic_data	300	-
Dialog FrontendResponseTime	RZ20	180 -pa1 010*000 000142 5*100*0 000000 080*000 000002 3*	generic_data	300	-
Dialog Queue Time	RZ20	180 -pa1 010*000 000138 1*100*0 000000 081*000	generic_data	300	-



		000002 4*			
Dialog Load+GenTime	RZ20	180 -pa1 010*000 000140 7*100*0 000000 082*000 000002 5*	generic_data	300	-
Dialog DBRequestTime	RZ20	180 -pa1 010*000 000140 9*100*0 000000 083*000 000002 6*	generic_data	300	-
HANA DB MONITOR: FREE_PHYSICAL_MEMORY *** RETURNS GIGABYTES FREE	RSHD BMON	210	generic_data	300	-
HANA DB MONITOR: USED_PHYSICAL_MEMORY *** RETURNS GIGABYTES USED	RSHD BMON	211	generic_data	300	-



**Comments:**

Monitor 108: Dumps: texts, from yesterday

The result is a text line with the following format: <dump text> =<amount of times it took place in that past day> ;

**Example:**

MESSAGE\_TYPE\_X=3 ; LOAD\_PROGRAM\_NOT\_FOUND=1 ;

Monitor 110: Lock entries





The result is a text line with the following format: <blocking table> = < Lock mode (share/exclusive) E or X> ;

**Example:**

```
root@ges-pandoradb:/var/www/sap# php SAP_plugin_monitor.php -t 192.168.77.14 -o gestds1db -i DS1 -c 100 -s 00 -m 110 -u pandora -p
pandora E070=E ; TRDIR=X ; SETHEADER=S ; SETHEADER=E ; SETHEADER=E ; CSKS=E ; CSKS=E ; TRDIR=X ; CSKS=E ; CSKS=E ; CSKS=E ;
CSKS=E ; TRDIR=X ; TRDIR=X ; CSKS=E ; CSKS=E ; STXH=E ; RSTABLE=E ; RSTABLE=E ; RSTABLE=E ; root@ges-pandoradb:/var/www/sap#
```



**Monitoring Points of each SAP Security system - Checklist Standard v**

Data to monitor in SAP	Trans.	-m	Data type	Interval	Alarm triggering
<p>Security Series:</p> <p>Retrieve Profile Instance parameter -pa1 = parameter name</p>	RZ11	1201	generic_data	43200	-
<p>Security Series:</p> <p>Retrieve from the modification history, the number of changes to add/modify an authorization profile, within the X days prior to execution -pa1 = number of days old of the change. E.g.: 1 -pa2 = authorization profile. E.g.: SAP_ALL</p> <p>E.g.: -m 1202 -pa1 1 -pa2 SAP_ALL</p> <p>Double action: an alert must be prepared that executes the Java</p> <p>-m 1203, which is the one that returns (using the same parameters) for the audit report, the fields (;):. User who made the modification, date, time and modification type letter. (C or M)</p>	SU01	1202	generic_data_string	43200	-
<p>Query to 1 Table.</p> <p>Returns: number of records found</p> <p>-pa1 = table name in UPPERCASE -pa2 = fields to return, in UPPERCASE separated by * -pa3 = where filter, with spaces for * and quotes ' for # . Replace &lt; with / Replace &gt; with \ Before each AND or OR, precede with the character @ Do not enter quotes or leave spaces in each field Indicate the names of the fields in capital letters</p>	SE16	1204	generic_data	300	



<p>E.g.: -m 1204 -pa1 USR02 -pa2 BNAME*ANAME*ERDAT -pa3 TRDAT*/*#DESET90DAYSAGO# Allowed substitution macros: In date fields (DATE): DESET0DAYSAGO DESET1DAYSAGO DESET2DAYSAGO DESET7DAYSAGO DESET30DAYSAGO DESET60DAYSAGO DESET90DAYSAGO In time fields (TIME): DESET0HOURSAGO DESET1HOURSAGO DESET2HOURSAGO DESET3HOURSAGO DESET4HOURSAGO DESET5HOURSAGO DESET6HOURSAGO DESET10HOURSAGO DESET16HOURSAGO DESET1MINUTEAGO DESET5MINUTEAGO DESET10MINUTEAGO DESET30MINUTEAGO</p>	SE16				
<p>Query to 1 Table. Returns: string with the data. Fields are separated by Each log separated by *  -pa1 = table name in UPPERCASE -pa2 = fields to return, in UPPERCASE , separated by * -pa3 = where, with spaces for * Before each AND or OR, precede with the @ character</p>	SE16	1205	Generic_data_string	43200	



Parameters to format the OUTPUT table -separow _ -sapafie #					
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Query Examples

Jobs that have finished OK with a certain name	-m 1205 -pa1 TBTCTO -pa2 JOBNAME -pa3 JOBNAME*EQ*#ZJOB1##@AND*STATUS*EQ*#F#
Jobs that start with the letter Z and are canceled	-m 1205 -pa1 TBTCTO -pa2 JOBNAME -pa3 JOBNAME*LIKE*#Z%##@AND*STATUS*EQ*#A#
Jobs desde ayer hasta hoy, que están en Delay (esperando un WP Batch)	-m 1205 -pa1 TBTCTO -pa2 JOBNAME -pa3 JOBNAME*LIKE*#Z%##@AND*SDLSTRDT*GE*#DESET1DAYSAGO#@AND*STATUS*EQ*#S#
Jobs from yesterday to today that are Active, and that have been running on the machine for more than 2 hours	-m 1205 -pa1 TBTCTO -pa2 JOBNAME -pa3 JOBNAME*LIKE*#Z%##@AND*SDLSTRDT*GE*#DESET1DAYSAGO#@AND*STATUS*EQ*#R##@AND*SDLSTRTTM*GT*#DESET1HOURSAGO#
Fields on Jobs SDLSTRDT SDLSTRTTM = Date and time of the Job start schedule  STRTDATE STRTTIME = START TIME IN ACTIVE  ENDDATE ENDTIME = END TIME (OK OR NOT)	STATUS A field = CANCEL F = FINISHED R = ACTIVE S = RELEASED = That its start time has already arrived, but it IS waiting for a WP BATCH, so it increases the Delay time
Change detection of	-m 1205 -pa1 T000 -pa2 MANDT*CCCORACTIV*CCNOCLIIND -pa3 MANDT*=#050#



client opening	

Generic Monitor Invocation of RFC “Z” function module custom developed by the client

Data to monitor in SAP	Trans.	-m	Data type	Interval	Alarm triggering
<p>Custom built RFC Z function module invocation</p> <p>-pa1 = RFC Function Module name Optional: -pa2 = value of a possible Import “INPUT” value that would be passed from Pandora to the RFC</p> <p>Returns: the content that the ABAP program developed to measure in said function module has been returned in the Export parameter “OUTPUT” To trigger Critical alerts, the monitor must be registered with the Generic_Data data type (numerical return value) and the RFC Function Module must return a character “1” to define it as an error and for the alert to be triggered, or a character “0” to define that the monitor does not trigger an alert.</p> <p>Example: -m 1220 -pa1 Z_CHECK_STATUS -pa2 optional_entry</p>	SE37	1220	Generic_data o Generic_data_string	43200	



**Monitoring Points of each SAP system - Checklist Standard v**

Data to monitor in SAP	Trans.	-m	Data type	Interval	Alarm triggering
<p>Query to 2 Table.            -pa1 = table name            -pa2 = fields, separated by *            -pa3 = where filter, with spaces for * and quotes ' for #            . Replace &lt; with / Replace &gt; with \            Do not enter quotes or leave spaces in each field Enter the names of the fields in capital letters.</p> <p>Returns: number of logs found E.g.:            -m 1210            -pa1 USR02 -pa2 BNAME*ANAME*ERDAT            -pa3 TRDAT*/*#DESET90DAYSAGO#</p> <p>Allowed substitution macros:            In date fields (DATE):            DESET0DAYSAGO DESET1DAYSAGO            DESET2DAYSAGO DESET7DAYSAGO            DESET30DAYSAGO DESET60DAYSAGO            DESET90DAYSAGO</p> <p>In time fields (TIME):            DESET0HOURSAGO DESET1HOURSAGO            DESET2HOURSAGO DESET3HOURSAGO</p>	SE16	1210	Generic_data	43200	



DESET4HOURSAGO DESET5HOURSAGO DESET6HOURSAGO DESET10HOURSAGO DESET16HOURSAGO DESET1MINUTEAGO DESET5MINUTEAGO DESET10MINUTEAGO DESET30MINUTEAGO	SE16				
Example:  -m 1210 -pa1 USR21 -pa2 BNAME*PERSNUMBER -pa4 1 -pb1 ADRP -pb2 PERSNUMBER*NAME_TEXT -pb4 0					



Security data to be monitored	Parameter	min_critical value, as alarm trigger threshold
[SEC] Number of invalid login attempts until user	-m 1201 -pa1 login/fails_to_user_lock	Print value in Audit Report, along with timestamp. Not Relevant for alarm
[SEC] Min. number of chars which differ between old and new password	-m 1201 -pa1 login/min_password_diff	Print value in Audit Report, along with timestamp.
[SEC] Min. number of digits in passwords	-m 1201 -pa1 login/min_password_digits	Print value in Audit Report, along with timestamp. Not relevant for alarm
[SEC] Minimum Password Length	-m 1201 -pa1 login/min_password_lng	Print value in Audit Report, along with timestamp. Not relevant for alarm
[SEC] Enable automatic unlock off locked user at midnight	-m 1201 -pa1 login/failed_user_auto_unlock	Print value in Audit Report, along with timestamp. Not relevant for alarm
[SEC] List of Words from the list of Passwords not allowed	-m 1205 -pa1 USR40 -pa2 BCODE	Print result table in Audit Report, along with timestamp. Not relevant for alarm
[SEC ] List of users not logged in in the last 3 months (to save SAP licenses)	-m 1205 -pa1 USR02 -pa2 BNAME*TRDAT -pa3 TRDAT*/*#DESET90DAYSAGO#	Print result table in Audit Report, along with timestamp. Not relevant for alarm
[SEC ] List of users who have never entered the system (to save SAP licenses)	-m 1205 -pa1 USR02 -pa2 BNAME -pa3 TRDAT*=*#00000000#	Print result table in Audit Report, along with timestamp. Not relevant for alarm
[SEC] Recover the modification history, the list of users changed to add/modify an authorization role, within the day before the execution Note: replace SAP_ALL_RESTRICTED with the name of the role to monitor	-m 1205 -pa1 CDPOS -pa2 TABKEY -pa3 TABKEY*LIKE*#%DESET1DAYSAGO%#*#*@AND*OBJECTCLAS*EQ*#PFCG#*#@AND*OBJECTID*EQ*#SAP_ALL_RESTRICTED#	Print result table in Audit Report, along with timestamp. Not relevant for alarm
[SEC] Recover the modification history, the amount of users changed to add/modify an authorization role, within the day before the execution Note: replace SAP_ALL_RESTRICTED with the name of the role to monitor	-m 1204 -pa1 CDPOS -pa2 TABKEY -pa3 TABKEY*LIKE*#%DESET1DAYSAGO%#*#*@AND*OBJECTCLAS*EQ*#PFCG#*#@AND*OBJECTID*EQ*#SAP_ALL_RESTRICTED#	Relevant for alarm





[SEC ] List of users who currently have the SAP_ALL profile	-m 1205 -pa1 UST04 -pa2 BNAME -pa3 PROFILE*EQ*#SAP_ALL#	Print results table in Audit Report, Not relevant for alarm
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Test: It returns the value -pa1 = xxx	1900	generic_data or string	300	-
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## Mass execution using “metamodule”

Requirement: Version 8.8 20200419 metamodule/AGENTPLUGIN, release “Windows Local Agent”.

The normal performance is that a Login to SAP action is performed for each execution, and the total time is proportional to the number of monitors. In cases of indicating too many monitors, too much time is accumulated in executing these actions from Login to SAP one after the other.

To solve these accumulated times, all module\_plugin parameters can be replaced by a single one, with the indication of the metamodule (value -m 4000).

It requires having in the C:\Program Files (x86)\pandora\_agent\util folder the sap\_metamodule.ini file that is supplied (as a template) inside Deset\_SAP\_Plugin(windows\_agent\_8.8\_20200419).zip

The file will contain as many sections with different names as monitors you want to run, and in each one indicate the parameters as required by each monitor.

When executed, it will login to SAP only once, and will return the xml data package of the result of executing all the monitors included in the sap\_metamodule.ini file, using a minimum amount of time.

The format of the sap\_metamodule.ini file will necessarily contain name sections:  
[module\_sap\_X], where X will be a consecutive number starting with 1.

Example of a sap\_metamodule.ini file that executes module 160 and 180 with a specific parameter:

```
[module_sap_1]
m=160

[module_sap_2]
m=180
pa1=010*0000001380*100*0000000079*0000000022*
```



For each different agent/SAP/SID, its own configuration file "sap\_metamodule.ini" can be used, and it will be indicated with the optional parameter -pa1<nombre\_de\_fichero sap\_metamodule.ini>

Ex: from agent.conf for metamodule execution parameter:

```
module_plugin java -classpath "C:\Program Files (x86)\pandora_agent\Deset_SAP_Plugin.jar" Deset_SAP_Plugin -u user -p *** -s 00 -t svsapdes.local -c 001 -m 4000 -pa1 sap_metamodule_svsapdes.ini
```