SAP-Sensors for X-Monitors

(SapPrtg - SapOrion - SapGold - SapEyes)



White Paper

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1. <u>Overview</u>

With the help of the SAP-Sensors you are able to get a lot of informations from SAP an direct them to the Network Monitor here PRTG from PAESSLER. Therefor no intervention to the SAP-System is required. You can contact lokal as remote SAP-Systems. The method to communicate with SAP is to use RFC (Remote Function Call). You only need the rights in conjunction with the user-name, password and client.

There is a set of extented sensors for SAP available. With this sensors you are able to read out many values from SAP and transfer them to the monitoring for analysing and monitoring.

The Working

For accessing a SAP-System a profile with the informations about the accessing-data like username, password and client is needed. This profile is generated via the tool "**SAP Profiler.Exe**" which is part of the installation. The profile is stored into the Directory of Monitoring. With the Profiler you can directly contact the SAP and view the informations.



First, the sensor reads out the profile and opens a connection to SAP via RFC (Remote Function Call). With the knowledge of username, password and client it takes a login to SAP. Then the required function is processed within SAP and the resulting is transferred back to the sensor. The sensor formats it and divides it to an information-line and channels. This data are transferred then to the monitoring system.

Within the Monitoring-System the delivered informations are collected and prepared for analysis. They could be shown graphically and used for generating a mail or SMS to notify an administrator.

The Accessmethod ,,SapRfc"

The SAP system is addressed using the RFC (Remote Function Call) method. This is a protocol based on CPI-C. In addition to the instance, e.g. '00' also the tenant, about '000' is required for access. The login is done via SAP and requires appropriate authorizations in order to be able to read the values.

SAP-Profil	er for Paessler's PRTG <icon gmbh="" software=""></icon>	
Profiles	Srv/Alias: Alute0207 / MSap731 User/Clt.: Sap* / Client=000 MSap731 Sid/Is/Ip.: (.P00) Descript.:	C Basics C Monitr C WrkLd C Bfr/Db
Details	Host.: Alute0207 Alias: MSap731 System User.: Sap* Pass: ******* 00 / 0	D (SID). Nsp 00 / EN -
OS/Dbs	B/Str: Desc.: MiniSap 7.31 C Han	SapCti a C /Java
Back	Save Ping Info Check ©Copyright 2011-20 ICON Software GmbH, All Rights reserved	Frace ed, Ver 7.2 Ican

The Accessmethod "SapCntrl"

The SAP system is addressed with the SAP tool "SapControl" and for Abap- and Java-based SAP systems. The number of the instance is required. The login is done via the participating operating system, such as Windows or J2EE.

Profiles	Srv/Alias: Alute0207 / MSap731 User/Clt.: SapAdm <sapctrl> MSap731 Sid/Is/Ip : Nsp / 00 / IP=192 168 178 70</sapctrl>	C Basics C Monitr
	(P00) Descript: MiniSap 7.31	C <icm></icm>
Details	Host.: Alute0207 Alias: MSap731 System	D (SID): Nsp
	User.: SapAdm Pass: ******** 00 / 0	000 / EN -
	R/Str: SapControl for ABAP-based Server C RFI	· SapCtl
S/Dbs	Desc.: MiniSap 7.31	na 🔿 /Java
en.	Salla Dina Info Chock	Traco

The Accessmethod "SapHana"

The SAP HANA system is addressed with the SAP tool "SapControl". In addition to the access data, only the instance number, such as "00", is required. The login is done via the participating operating system, here J2EE.

Profiles	Sry/Alias: 192.168.178.77 / SapHana User/Clt.: hxeadm <saphana SapHana Sid/Is/Ip.: Hxe / 90 / IP=192.168.178.77</saphana 	C Basics C Disk(s) C Memry
	(.P90) Descript: SAP HANA	C System
Details	Host.: 192.168.176 Alias: SapHana System User.: hxeadm Pass: ********* 90.7 0	D (SID): Hxe
	R/Str: SapCntrl for Hana-based Server C RFC	C SapCtl
	Desc.: SAP HANA (• Har	

The Accessmethod "SapOdbc"

The SAP HANA system is addressed with the Odbc tool "SapOdbc". In addition to the access data to the database, the corresponding instance number is also required. The login is done via the ODBC data source, which is to be generated separately.

SAP-Profile	er for Paessler's PRTG <icon gmbh="" software=""></icon>
Profiles	Srv/Alias: 192.168.178.77 / SapHana Basics User/Clt.: SYSTEM <sapodbc> Disk(s) SapHana Sid/Is/Ip.: Hxe / 90 / IP=192.168.178.77 Memry (.P90) Descript.: SAP HANA System</sapodbc>
Details Rtr/IP	Host.: 192.168.17E Alias: SapHana System D (SID): Hxe User.: SYSTEM Pass: ********* 90 / 000 / DE
OS/Dbs	Desc.: SAP HANA
Back	Save Ping Info Check Frace ©Copyright 2011-20 ICON Software GmbH, All Rights reserved, Ver 7.2 Icon

2. The SAP-Profiler

For the usage of sensors there is the definition of a profile required. You could create a profile via the "**SAP Profiler.Exe**" and put in the necessary informations for connecting to SAP. Additionally you are able to view the resulting before you define it within the monitoring.



The opening of the SAP-Profilers contains the reference to the homepage as well as the imprint. By clicking the symbol of "profile" one reaches in the overview.



Here the possibility exists to branch out to an already available profile or to put on a new profile by means of "New". By means of the symbolic strip on the left side other representation possibilities are available.

Interactive Access SapRfc

Pre-built sensors from the "Basic Overview", "Monitoring", "Workload" and "Databases" areas are already available for the direct application for the "SAP" area with the access method "RFC":

SAP-Profile Profiles	er for Paessler's PRTG <icon so<br="">Srv/Alias: Alute020 User/Clt:: Sap* / 0 MSap731 Sid/Is/Ip.: Nsp / 00 (.P00) Descript.: MiniSap</icon>	ftware GmbH> 07 / MSap731 Client=000 0 / IP=192.168.178.70 7.31	Basics Monitr WrkLd Bfr/Db
Details Rtr/IP	SAP CpuUsage CPU-Usage SAP DiskUsage Disk-Usage SAP FreeSpace Disk Free SAP MemUsage Memory-A SAP NetUsage Network, SAP PageUsage Roll/Pagin	jes: Total, User, System jes: Queues, RSP-Times Spaces, Directories (%) llocations, Free, Paging Traffics, In, Out ng, Usage, Max, Local	Available Available Available Available Available Available
OS/Dbs	式 < Cmd >		
Back	Exec Show ©Copyright 2011-20 ICON Software	Info Check re GmbH, All Rights recerv	ed, Ver 7.2 Ican

In addition to the sensors already available, it is possible to select additional sensors from the "SAP CCMS Monitoring" area via the "SAP Monitoring" sensor and to create them as a userdefined sensor.



Custom sensors can be integrated geanu like the already available sensors in the monitoring, e.g. PRTG.

Interactive Access SapCntrl

Here is an example of how to show the alerts (AlertTree) for ABAP and J2EE-based SAP systems using the SapControl access method:

Profiles	Srv/A User/ MSap731 Sid/Is (.P00) Descr	<mark>Jias: Alute0207 / MSap731 Clt.: SapAdm < / ≺SapCtrl> s/Ip.: Nsp / 00 / IP=192.168.178.70 ript.: MiniSap 7.31</mark>	C Basic C Moni C State C <icm< th=""><th>is tr is ></th></icm<>	is tr is >
Details Rtr/IP	Ctrl MemStates Ctrl PgeStates Ctrl SumAlerts Ctrl SumStates SAP SapCtrl	List all States for the Memory List all States for the Paging Summary of Red/Yel-Alerts Summary of all Alerts/States Accesses via SapControl User-Defined Sensors	Available Available Available Available Available	< >
S/Dbs	SAP SapCtrl	Show AlertTree		•
Back	Exec S ©Copyright 2011-20	Show AlertTree Show AlertTree /All * ICC GetAlerts /Fields=1/2 /Scan=Red GetAlerts /Fields=1+2/3 /States GetAlertTree /Fields=3/3 /All /Cou	/Count unt	^

After the new installation, only the sensor "SAP SapControl" is proposed. In the visual display of the Alert Tree, the individual areas can be split interactively. Depending on the data structure, different functions are offered



In this example, you can assign the associated values for the program entry or the status for the child entries to a new sensor.

Interactive Access SapHana

Pre-built sensors from the "Basic Overview", "Plate Design", "Memory Assignment" and "System Information" are available for the "SAP HANA" area with the "SapControl" access method:

Profiles	SapHana (.P90) SopHana (.P90) Srv/Alias: 192.168 User/Clt.: hxeadm Sid/Is/Ip.: Hxe / 9 Descript.: SAP HA	8.178.77 / SapHana <	Basics Disk(s) Memry System
Details	Hana AccPoints AccessPo	iints of Hana-DBase	Available ^
	Hana Instance Displys In:	stance-Properties	Available
	Hana Processes State of a	ctual Processes	Available
Rtr/IP	Hana RunTimes Runtimes	of the Processes	Available
	Hana SysCheck Check for	SapHana-Access	Available
	Hana SysInfo Info about	t SapHana-Access	Available 💙

In addition to the sensors already available, it is possible to create additional sensors (user sensors) interactively via the sensor "SAP SapHana".

Profiles	SapHana (.P90) SapSolution Sid/Is/I Descrip	s: 192,168,178,77 / SapHana t: hxeadm / / <saphana> p.: Hxe / 90 / IP=192,168,178,77 t: SAP HANA</saphana>	Basics Disk(s) Memry System
Details	Hana Processes Hana RunTimes Hana SysCheck Hana SysInfo SAP SapHana	State of actual Processes Runtimes of the Processes Check for SapHana-Access Info about SapHana-Access SapHana User-Access(Hana) User-Defined Sensors	Available Available Available Available Available
S/Dbs	💁 SAP SapHana	GetProcessList /Fields=2/3	
ack	Exec Sh ©Copyright 2011-20 IC	GetProcessList /Fields=2/3 GetProcessList /Fields=2/6 /Unit= * GetAccessPointList /Fields=3+2/5 GetInstanceProperties /Fields=1/3 *	Hours

According to its definition, this can be used in monitoring, e.g. PRTG.

Interactive Access SapOdbc

Pre-built sensors from the "Basic Overview", "Plate Design", "Memory Assignment" and "System Information" are available for the "SAP HANA" area with the "ODBC" access method:

Profiles	Srv/Alias: 192.168.178.77 / SapHa User/Clt.: SYSTEM < / <sapodbc: SapHana (P90) Sid/Is/Ip.: Hxe / 90 / IP=192.168.1 Descript.: SAP HANA</sapodbc: 	ana > 78.77 77.77 77.77 77.77 77.77 77.77 77.77 77.77 77.77 77.77 7
Details Rtr/IP	Odbc CpuInfo Display Details of the CPUs Odbc LckWaits Lock-Waits of Records/Ta Odbc LogBuffer Infos about the Log-Buffers Odbc NetStates Display Network-Statistics Odbc NetWorks Network-Activities/Traffics	s Available Available ables Available s Available Available Available
OS/Dbs	Odbc SysCheck Check for SapOdbc-Acces	s Available 🗸

In addition to the sensors already available, it is possible to create additional sensors (user sensors) interactively via the sensor "SAP SapOdbc".

Profiles	Srv/Alias: 192.168.178.77 / SapHana User/Clt.: SYSTEM < / <sapodbc> Sid/Is/Ip.: Hxe / 90 / IP=192.168.178.77 Descript.: SAP HANA</sapodbc>	C Basic C Diskl C Mem C Syste	os (s) ry em
Details Details Rtr/IP	Odbc Services Listing of running Services Summary about the System Odbc SysState Odbc SysState Overview of System-States Shows Workload-Activities SapOdbc User-Access User-Defined Sensors	Available Available Available Available Available	
DS/Dbs	Sys.M_License /RecNo=1 /Hide		-
Back	Sys.M_License /RecNo=1 /Hide Sys.M_Services /Fields=3/6 * Sys.M_System_Overview /Fields=1+2/3		^

Any information from the SAP HAHA tables can be retrieved and converted into a sensor. This can then be used in monitoring, e.g. PRTG.

Interactive Access <SapSql>

The "<SapSql>" area is also available for the "SAP HANA" area and the "ODBC" access method. Queries on the SAP HANA tables can be carried out using SQL statements:



In this example, the parameter "/Fields2=Memory" was replaced by the SQL statement "Select * from Sys.M_System_Overview where Name='Memory'".



Using the "Exec" button, this can be carried out and a sensor can also be generated.

3. SAP Workload

The Remote Function Call (RFC) access method can also be used to read the workload data collected by SAP. For this purpose, several prepared sensors from practice are already included in the SAP profiler and can be applied directly:

Profiles	Srv/Ali User/C MSap731 Sid/Is/ (.P00) Descri	as: Alute0207 / MSap731 Clt.: Sap* / Client=000 /lp.: Nsp / 00 / IP=192.168.178.70 pt.: MiniSap 7.31	Basics Monitr WrkLd Btr/Db
Details Details Rtr/IP	SAP ClientUsage SAP ClientUsage SAP ClientUsage SAP ClientUsage SAP ClientUsage SAP ClientUsage SAP ClientUsage	Steps for Dialog, Batch, Rsp, Cpu Dialog about Rsp, CpuTimes Batch about RspTme, CpuTme CPU-Times for Dia, Btc, Rsp DBs-Time for Dia, Btc, Rsp Response-Times Dia, Btc, CPU	Available Available Available Available Available Available
J/Dbs	式 < Cmd >		

4. SAP Buffer Usage

The Remote Function Call (RFC) access method can also be used to read out the buffer assignments managed by the SAP. For this purpose, too, several prepared sensors from practice are already included in the SAP profiler, which can be applied directly in the monitoring involved:

	Srv/Alia: User/Clt MSap731 Sid/Is/Ip (.P00) Descript	<mark>s: Alute0207 / MSap731 .:: Sap* / Client=000 o.: Nsp / 00 / IP=192.168.178.70 .:: MiniSap 7.31</mark>	Basics Monitr WrkLd Bfr/Db
Details Details Rtr/IP	SAP BufferTunes SAP BufferUsage SAP BufferUsage SAP BufferUsage SAP BufferUsage SAP BufferUsage SAP MaxCurSize	Buffers and actual Tune-Summary Buffer, Quality about Alloc, Objects DBase Usages Tables, Fields, CUA Buffer-States for Alloc, Fields, CUA Buffer-Swaps for Alloc, Fields, CUA Shows the MaxDB Current Sizing	Available Available Available Available Available Available
IS/Dbs	K < Cmd >		R

5. <u>SAP Databases</u>

The "RFC" (Remote Function Call) access method can also be used to evaluate the databases involved by the SAP using the prepared sensors. The SAP HANA database has its own access path.

The following databases are directly supported by the RFC sensors:

- DB400
- MaxDb
- Oracle

For further databases, reference should be made to "SAP CCMS Monitoring", i.e. transaction "RZ20". There you will find further entries which can be adapted to a sensor via the SAP profiler.

Here is an example of the MaxDB database:

SAP-Profile	er for Paessler's PRTG <icon gmbh="" software=""> Srv/Alias: Alute0207 / MSap731 User/Clt.: Sap* / Client=000 MSap731 (.P00) Sid/Is/Ip.: Nsp / 00 / IP=192.168.178.70 Descript.: MiniSap 7.31</icon>	C Basics C Monitr C WrkLd C Bfr/Db
Details Rtr/IP	SAP MaxCurSize Shows the MaxDB Current Sizing Displays MaxDB Logging-Queues SAP MaxLgState Displays MaxDB Logging States Displays actual MaxDB-Logging SAP MaxMsIndx Displays MaxDB missing Indices	Available Available Available Available Available
OS/Dbs	< Cmd >	E.
Back	Exec Show Info Check ©Copyright 2011-20 ICON Software GmbH, All Rights received	race red, Ver 7.2 (can)

6. Local/Global Sensors

The sensor could be used to access a single or a group of SAP-Systems. At the single usage only on SAP is consulted. By using the global feature a group of SAP's will be sequencially consulted. The resulting is transferred to monitoring. For example, you could request the Response-Times of all SAP-Systems.

ofiles	Srv/Al User/0 MSap731 Sid/Is/ (.P00) Descri	ias: Alute02077 Clt.: Sap* / Clier /Ip.: Nsp / 00 / pt.: MiniSap 7.3	/ MSap ht=000 IP=192 31	731 .168.1	I78.70 Basics Monitr WrkLd F Bfr/Db
etails	Profile	Host	Sid	ls	Description
968	☑ Ides500.P09	162External	E62	09	Remotezugriff IDES
	LapTop.P00	LapTop	M	00	Lokales SAP-Syst
es⊂ ₩/ID	MiniSap.P01	162External	N4S	01	Remote MiniSap
u711	MiniTst.P01	162External	N4S	01	Remote MiniSap
e	SapEnv.P09	162External	E62	09	Entwicklungssyst
/Dbs	SapTst.P09	162External	E62	09	SAP Test-System

Within the monitoring you will see an overview of all collected responses at a glance.

SAP-Profile	er for Paessler's PRTG	. <icon (<="" software="" th=""><th>SmbH></th><th></th></icon>	SmbH>	
Profiles	Srv/Ali User/C MSap731 Sid/Is/ (.P00) Descrip	C Basics C Monitr C WrkLd C Bfr/Db		
Details	Dialog Response Time	e, ResponseTime: No	Systems=3, Proces	sed=3, Fa 🛨
Rtr/IP	Channel 01: Ide	s500.P09 5Env.P09 5Tst.P09	18 91 2	Msec Msec Msec
		E Global	Dsplu Inform	ation-Becords
(D)	Done Sr	ce Chart	Sensor	Log(s)
Back	©Copyright 2011-2010	CON Software GmbH	All Rights reserved	l, Ver 7.2 (con

7. <u>SAP CCMS Monitoring</u>

Within the range of "SapMon" you can request informations from SAP CCMS Monitoring, the transaction "RZ20". There are data named by "Monitoring Sets". This data are structured and contains a lot of informations. This informations you can call via the Profiler and transfer them to a sensor. This sensor could be used also within the monitoring.



The sensor "SAP Monitoring" reads the data directly from SAP and you are able to assign an Alias-Name. All offered values could be requested and transfered to the monitoring. By using the sensor within monitoring you are able to assign a reaction, for example sending a mail.

	Srv/Alias: Alute0207 / M User/Clt.: Sap* / Client=I	Sap731 000	000	Basics Monitr
MSap731 (.P00)	Descript.: MiniSap 7.31	192.168.178.70	C	WrkLd Bfr/Db
SAP Monitori	ng: Buffers, Buffers, HitRati	0		
💰 Channel	01: Program	96	%	
💑 Channel	02: GenericKey	100	%	-
💑 Channel	03: SingleRecord	69	%	
💑 Channel	04: Screen	98	%	-
SAP Mon	itoring	9 🔲 Dsply Inform	ation	-Record
Dana	Sroo Char	t Soneor	1	an(e)

8. SAP User-Interface

As an extension to the sensors you are able to add user-data form SAP. Therefore you can create a usertable within SAP and fit it with your own data. The values of that table could be read and transferred to the monitoring. Therefore you need only a small table named "ZPRTG" (for PRTG) within the SAP-System.

(छ रछ श्र	
ata Broi	wser: Ta	abelle ZPRTG 17 Tre	ffer		
) 🖉 🗞 🤅	3 8 7	B B 🗿 🖬			
belle:	ZPRTG			Actor 110-000000000	
gezeigte Fi	elder: 6	von 6 Feststehende Führungs	spalten:	2 Listbre 	ite 0250
SENSOR	CHANNEL	DESCR	STATE	VALUE	UNIT
FACTURA	**	FACTURA PROCESSING		29 88 12	COMS
FACTURA	88	NO DE ACCOUNTS		120	#
FACTURA	01	AMOUNT TOTAL		344.20	EUR
FACTURA	62	JOB RUNTIME		36	MIN
IDOC	**	IDOC PROCESSING STATE	3	28.08.12	DOC'S
IDOC	88	IDOC'S TOTAL	1	63144	DOCS
IDOC	01	IDOC'S PROCESSED	1	62321	DOCS
IDOC	02	IDOC'S WAITING	2	812	DOCS
IDOC	03	IDOC'S FAILED	3	11	DOCS
SUPPLIER	* *	SUPPLIER PROCESSING CHAIN	1	01.09.12	CHAIN
SUPPLIER	00	STEP 01 - DONE OK	1		
SUPPLIER	01	STEP 02 - DONE OK	1		
SUPPLIER	02	STEP 03 - WARNING	2		
SUPPLIER	83	STEP 04 - DONE OK	1		
SUPPLIER	84	STEP 05 - ABORTED	3		
CUDDI TED	05	STEP 06 - PLANNED	0		
JOUFFLICK	the second se	OTED OT DI ANNED	Lo.	1	1

The contents of the User-Table could be organised as shown (Samples):

Sensor "Factura: A simple report for a done CCMS-Job. You could show the running dates and statistics. Only the data will be presented
Sensor "IDOC: A state fort he IDOC's, the shown informations could be received via a small ABAP itself. You see the number of Idocs and there states
Sensor "Supplier: Presenting a processing chain. With a small ABAP you are able to store the state of each process. Only the state is shown

You can define an unlimited number of User-Sensors. The administration of them would be done by a small ABAP or a function. The selected table-entries are directly read and transferred to the monitoring. The assignments of reactions will be done directly by Monitoring-Administration.