IT solutions for global businesses

An Overview of the Components
This presentation provides an overview of the SmartIS components ("scanners") that are available today. If you don’t see something you need, please ask.
Servers

Mainframe

Distributed

SMF  IMS  Cobol  Space  etc.
JCL  DB2

Files  SAP  Scheduler
SMF  IMS  DB2
JCL
Servers - Overview

SmartIS is available for two different server types: DB2 on z/OS and ORACLE or MS-SQL on distributed systems. Customers often decide which platform to use based only on commercial arguments. However, there are significant functional differences between SmartIS z/OS and SmartIS distributed.

<table>
<thead>
<tr>
<th></th>
<th>z/OS</th>
<th>Distributed</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS for SmartIS Server</td>
<td>z/OS</td>
<td>Windows</td>
</tr>
<tr>
<td>RDBMS</td>
<td>DB2</td>
<td>ORACLE (any OS) or MS-SQL (Windows)</td>
</tr>
<tr>
<td>Supported dialogs</td>
<td>ISPF, Windows PC Client, Eclipse</td>
<td>Windows PC Client, Eclipse</td>
</tr>
<tr>
<td>Multi Client Support</td>
<td>Yes (incl. RACF Exit)</td>
<td>-</td>
</tr>
<tr>
<td>Table and Display Manager</td>
<td>Yes, (ISPF Program)</td>
<td>-</td>
</tr>
<tr>
<td>IT Charts</td>
<td>Yes (with PC Client)</td>
<td>-</td>
</tr>
</tbody>
</table>
Which Server to Choose?

**SmartIS z/OS**

- Our users want to use ISPF dialogs.
- We need to load data from multiple systems into one SmartIS system.
- We want to adapt the default displays to our own requirements.
- We want to create IT Charts.
- We have (administrative) problems with the installation and maintenance of software on distributed systems.
- We use mainly z/OS scanners.

**SmartIS “decentralized”**

- We have no z/OS, or want to migrate away from it.
- We must save z/OS CPU costs at any price.
- Our customers do not have valid TSO user IDs.
- I want a complete SmartIS system on my laptop (consultant/tele-worker solution).
- We use mainly SmartIS DS scanners.
Dialogs
Dialogs - Overview

Often the users’ preferences are the only factors considered, but there are significant differences between the three dialog types.

<table>
<thead>
<tr>
<th></th>
<th>ISPF</th>
<th>PC Client</th>
<th>Eclipse Plug-in</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>z/OS</td>
<td>Windows or Linux with Wine</td>
<td>Integrated in Eclipse (RDz)</td>
</tr>
<tr>
<td>Search Criteria</td>
<td>Panels and free SQL</td>
<td>Panels and free SQL</td>
<td>Via Keywords</td>
</tr>
<tr>
<td>Batch</td>
<td>Results as a list</td>
<td>Lists or HTML, incl. graphs</td>
<td>-</td>
</tr>
<tr>
<td>Special Functions</td>
<td>TWS Gendays, File and J CL Browse, Sort, Group, etc.</td>
<td>File and J CL Browse, Sort, Group, etc.</td>
<td>-</td>
</tr>
<tr>
<td>Line Commands</td>
<td>Internal (data) and external (any TSO command)</td>
<td>Internal (data) and external (any Windows program)</td>
<td>-</td>
</tr>
<tr>
<td>Charts</td>
<td>-</td>
<td>Net and Bar Charts</td>
<td>-</td>
</tr>
</tbody>
</table>
Which Dialogs? – Some Considerations

**ISPF**

- Our users can or want to work only with ISPF.
- We want to integrate our own TSO Utilities into the dialog.
- We want to create lists in batch mode, without a “PC report generator”.
- We have (administrative) problems with the installation and maintenance of software on Windows systems.

**PC Client**

- Our users don’t want to - or can’t - use ISPF programs.
- We want to create charts like netplans and barcharts.
- We want to generate complex HTML documents.
- Our users don’t have valid TSO user IDs (technical TSO user is required).

**Eclipse**

- Our users want to use Eclipse or RDz and they don’t want to leave that development environment under any circumstances.
Scanners

SmartIS

- Inventory
- Process
- PL1
- COBOL
- IMS
- VTOC
- DB2
- CICS
- SAP
- TWS
- UC4
- CA7
- HSM
- JCL
- SMF
- JAVA

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The choice of scanners essentially determines the value of SmartIS. The scanners can be grouped as follows:

**Scheduler Scanners**
under z/OS and DS (Distributed Systems)

**Source Code Scanners**
mainly z/OS and Java DS

**z/OS Scanners**
e.g. JCL, SMF, CICS, etc.

**DS Scanners**
e.g. Inventory, File System, SAP
Scheduler Scanners
Scheduler Scanners - Examples

The scheduler scanners typically analyze the definition databases of the respective scheduler, and eventually plan data (daily schedule) and history (job starttimes and duration). Some typical queries can be:

- **Definition:** Which Jobs run on CPU “XYZ”?
- **Definition:** Which Jobs have the Runcycle “DAILY”?
- **I need a Graph (netplan) to show certain Jobs.**
- **Plan:** Which Jobs are scheduled to run today?
- **History:** Which Jobs of Owner “ABC” were executed last week? When and how did they run?
Scheduler Scanners - Functions

In addition to providing basic data, SmartIS scanners offer advanced features - far more than the standard scheduler dialog can provide:

- The PC client displays complex job streams in an easy-to-read graphic, e.g. netplans. Special features such as CA-7’s, Control-M smart tables, UC4 plan hierarchy, TWS EQQADD are interpreted and resolved.
- Forecast: An administrator creates a batch forecast for a specific day, the user can integrate this information in his queries – Which Jobs are planned to be executed?
- Multiple schedulers: Normally the scheduler’s dialog works against one scheduler sub-system. SmartIS’ multi-client support allows for the loading of data from multiple scheduling sub-systems into a single SmartIS system.
This chart provides an overview of the main data sources and functions of the scanners:

<table>
<thead>
<tr>
<th>OS</th>
<th>Definition</th>
<th>Plan</th>
<th>History</th>
<th>Graphics</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-Auto</td>
<td>z/OS</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>Jobnet</td>
</tr>
<tr>
<td>APM/HS-5000</td>
<td>z/OS</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>Jobnet, barchart</td>
</tr>
<tr>
<td>Bagjas</td>
<td>z/OS</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>Jobnet</td>
</tr>
<tr>
<td>CA-7</td>
<td>z/OS</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>Various jobnets</td>
</tr>
<tr>
<td>CA-Scheduler</td>
<td>z/OS</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>Job &amp; forecastnet</td>
</tr>
<tr>
<td>Control-M</td>
<td>z/OS, DS</td>
<td>Yes</td>
<td>-</td>
<td>Yes</td>
<td>Job and tablenet, barchart</td>
</tr>
<tr>
<td>Cron</td>
<td>UNIX</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Streamworks</td>
<td>DS</td>
<td>Yes</td>
<td>-</td>
<td>Yes</td>
<td>Jobnet</td>
</tr>
<tr>
<td>TWS-z</td>
<td>z/OS</td>
<td>Yes</td>
<td>CP, LTP</td>
<td>Yes</td>
<td>Jobnet, barchart</td>
</tr>
<tr>
<td>TWS-d</td>
<td>DS</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td>Jobnet (def &amp; plan)</td>
</tr>
<tr>
<td>UC4</td>
<td>DS</td>
<td>Yes</td>
<td>Yes (Activities)</td>
<td>Yes</td>
<td>Job and plannet, barchart</td>
</tr>
<tr>
<td>Zeke</td>
<td>z/OS</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td>Jobnet (def &amp; plan)</td>
</tr>
</tbody>
</table>
Sourcecode Scanner

[Image of a software interface with a table and dropdown menus]
Sourcecode Scanner - Basics

A source code scanner analyzes an arbitrary number of PO libraries or source directories (Java):

- Starting from the main program, all sub-structures are analyzed, e.g. includes, procedures, external programs. Pre-processor instructions and assignments are dynamically resolved, e.g. program names in variables.
- Database access is analyzed (DB2 EXEC SQL, IMS CBL TDL1 and PLITDLI).
- A subsequent program analyzes further, independently of the language, e.g. “COBOL program calls assembler routine”.
- Development stages are resolved correctly.
- All results are based on the main program, regardless of whether a call (SQL, CICS), or a declaration (file, variable) is executed in the main program itself, or in a subroutine to the n-th level.
Sourcecode Scanner - Examples

The following examples show that the type of information provided by the source code scanners is not only relevant to programmers:

- Which programs call a particular subroutine?
- Which programs write to a particular DB2 table?
- Which programs use CICS, DL1 / IMS or dynamic SQL?
- Which programs use certain files? (In conjunction with the JCL scanner.)
- Which programs call subroutines that have been created with an old compiler version? (In conjunction with the load module scanner.)
- How many lines of code must be taken into account for a certain project?
SmartIS has scanners for the following programming languages:

**z/OS**
- Assembler
- C
- COBOL
- Easytrieve
- PL/1
- Natural

**Distributed**
- Java
Loadmodule Scanner

In addition to the source code scanner, SmartIS has a load module scanner, which analyzes the executable programs. Some examples:

- When was the program linked?
- Which compiler version was used?
- Which modules are unusually large?
- Which modules are linked to the main program?
- Which programs have APF authorization?
Only with z/OS scanners is SmartIS a complete repository for the mainframe environment:

- **JCL**: Jobs, PROCs and SYSIN
- **DB2**: DB2 system catalog
- **CICS**: CSD file
- **IMS**: PSB and DBD
- **SMF**: SMF job/step runtimes, file usage, CICS transactions
- **Space**: VTOC, VSAM, SMS, HSM, RMM or CA-1, CA-Disk
- **PO**: PO member, statistics and contents
- **Output**: Beta 93, CA-Deliver or Control-D
The most important z/OS scanner, is the JCL scanner. It analyzes any number of libraries containing JCL, PROCs, and data cards (SYSIN):

- Based on the Jobs, all “sub-structures” are analyzed, e.g. includes, procedures, SYSIN.
- Standard and scheduler variables are resolved.
- SYSIN (instream and files) of standard utilities are interpreted, e.g. IDCAMS, DB2 utilities.
- Typical controller programs, as well as customized programs, are recognized and resolved, e.g. IKJEFT01, RUN PROGRAM DB2, IMS region controller DFSRRC00, Natural and Earl.
- All (!) JCL parameters are analyzed and can be queried.
### JCL Scanner - Examples

Some examples – beyond the “usual” standard queries:

- The JCL scanner analyzes DB start / stop commands, and determines the affected tables. This allows you to find out which Jobs are stopping or starting a certain DB2 table.

- Together with the IMS scanner, the JCL scanner analyzes which Job uses which PSBs and which IMS databases are accessed through this PSB. This allows you to find out which Jobs are using a certain IMS database.

- Together with the DB2 scanner, the JCL scanner analyzes which Job uses which plan, DB2 utilities, tables and tablespaces. This allows you to find out which Job uses a certain DB2 table.

- The JCL scanner can optionally handle any DD statements like SYSIN DD, this means the content of the file is analyzed, allowing searches for special commands, e.g. FTP.
DB2 Scanner
The DB2 scanner creates an extract of DB2’s system catalog, and it analyzes the relationships between tables/views, jobs, and programs.

- The extract allows you to load the extracts of any number of DB2 subsystems into one SmartIS system and to query all data.
- A further advantage of the extract, is that the DB2 subsystems are not blocked when performing complex queries.
- The table-job analysis allows you to find out which DB2 tables are accessed by which Jobs. (See JCL Scanner for further details.)
The scanner analyzes the CICS CSD files (CICS system definition). Some query examples:

- Which programs belong to which transactions?
- Which programs run in a “remote CICS”?
- Which programs use key=CICS?
- Which datasets are used in which transactions?
- Which queues are used?
- Which DB2 subsystems are used?
- Which DB2 plans are used?
- Which TCP/IP services use which ports?
The scanner analyzes the IMS PSB and DBD binary objects and determines, together with the JCL scanner, relationships between jobs, programs, PSBs and DBDs.

- The DBD analysis was extended in SmartIS 3.4. It provides query capabilities across all DBD attributes, such as access type, (HDAM, HIDAM), segments, fields, etc.
- It determines the transaction/PSB/program relationships. This allows you to query which database is accessed in which jobs.
- With the Proc options, you can also identify the type of access.
SMF Scanner

Table SMF - Step Information

<table>
<thead>
<tr>
<th>Jobname</th>
<th>S...</th>
<th>Owner</th>
<th>Program</th>
<th>RetCode</th>
<th>Start-Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C</td>
<td>1</td>
<td>P390C</td>
<td>IKJEFT01</td>
<td>CC 0001</td>
<td>2010-10-18,09:07:34</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-06-04,16:54:04</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-06-04,16:42:34</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-05-09,15:54:44</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-05-09,15:31:44</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-04-01,15:46:34</td>
</tr>
<tr>
<td>$COMP</td>
<td>2</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0004</td>
<td>2011-03-29,18:38:44</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0004</td>
<td>2011-03-29,18:38:04</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-03-01,10:20:54</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-03-01,09:36:44</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-02-09,19:50:54</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-02-09,19:48:44</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-02-09,19:23:54</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-02-08,19:51:34</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-02-08,19:37:24</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-02-08,13:11:34</td>
</tr>
<tr>
<td>$COMP</td>
<td>1</td>
<td>P390C</td>
<td>ISRSUPC</td>
<td>CC 0001</td>
<td>2011-02-08,12:48:44</td>
</tr>
</tbody>
</table>

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SMF Scanner - Overview

The scanner analyzes SMF Dump Data and creates detailed historical data program and job runs, file access, and CICS transactions.

- Exact start and end times. Since SmartIS 3.5: in hundredths of seconds. Delivers all important data, such as CPU usage, EXCP, IO. The information is available on both step and job levels.
- Since SmartIS 3.4, CICS transactions and data are available – with 60 values, another 270(!) values can be added by the admin.
- Optional incremental update.
- Graphical representation of selected job run times in bar charts.
- The SMF data are a perfect data base for optimization of any kind, e.g. a daily top 10 list of programs with the highest CPU usage.
Space Scanner

Table Space - Dataset Info (VTOC)

- SYS1.VDS.VS
- SYS1.VTOCXR
- ISP.SISPLDA
- ISP.SISPLPA
- ISF.SISFLPA
- TCP/IP.SEZALOAD
- FFST.SEPWMI
- SYS1.SMP.OTABLES
- ADCD.Z110.WLMIN
- IOE.SIOELMOD
- IOE.SIOEOEXEC
- IOE.SIOEMSGE
- IOE.SIOEPNLE
- IOE.SIOEPROC
- IOE.SIOEASAMP
- IOA.SIOALMOD
- TCP/IP.SEZALOAD
- HLA.SASMOD1

Datasetname | GDGGGen | D... | RECF | XT | VOLSER | BLKSZ |
------------|---------|------|------|----|---------|-------|
SYS1.VDS.VS | External Programs | ? | 1 | ZARES1 | 4096 |
SYS1.VTOCXR | Browse - The Dataset | F | 1 | ZARES1 | 2048 |
ISP.SISPLDA | | | U | 1 | ZARES1 | 614 |
ISP.SISPLPA | JCL | | U | 1 | ZARES1 | 614 |
ISF.SISFLPA | PO | | U | 1 | ZARES1 | 614 |
TCP/IP.SEZALOAD | Space | | | | | |
FFST.SEPWMI | SMF | | | | | |
SYS1.SMP.OTABLES | | | | | | |
ADCD.Z110.WLMIN | | | | | | |
IOE.SIOELMOD | | | | | | |
IOE.SIOEOEXEC | | | | | | |
IOE.SIOEMSGE | | | | | | |
IOE.SIOEPNLE | | | | | | |
IOE.SIOEPROC | | | | | | |
IOE.SIOEASAMP | | | | | | |
IOA.SIOALMOD | | | | | | |
TCP/IP.SEZALOAD | | | | | | |
HLA.SASMOD1 | | | | | | |

SMS Data Class

CA-Disk Backup | 1276 |
CA1 Information f. DSN | 303 |
DSN Occurrences | 1272 |
HSN Backup Info | 792 |
HSN Migrated Info | 614 |
RMM Information f. DSN | 792 |
SMS Mgmt. Class | 792 |
SMS Storage Class | 792 |
SMS Storage Group | 792 |
Volume Info | 792 |
VSAM Info | 303 |
Space Scanner - Overview

The scanner analyzes space, SMS, VTOC, the data storage manager (HSM or CA-Disk), and the tape management system (RMM or CA-1).

- VTOC: physical file size of allocated and actually used disk space, STORCLAS, MGMTCLAS, etc.
- Volumes: Allocated and actually used disk space, last backup, etc.
- VSAM: Records, CA and CI splits, etc.
- HSM (CA-Disk) Backup, Migrate, etc.
- SMS: MGMTCLAS, STORCLAS, and DATACLAS.
- RMM (CA-1): Volume serial number, creation and expiration dates, etc.
The scanner analyzes any number of PO libraries (determined by the administrator). In addition to the PO member statistics, the content of the members is stored in the database. It offers:

- Convenient full-text search with any kind of search operators and wildcards.
- Very fast.
- Access rights to the members are not mandatory (but a security check is optional, if required).
- The user doesn’t need to know where he should search – the administrator has prepared that already in advance.
- Helps in most cases where SmartIS has no special scanners, for example: REXX, SAS, or other “exotic” programming languages.
The scanner analyzes the output management system’s own database, either Beta93, CA-Deliver or Control-D. Typical queries are:

- Which Jobs create lists?
- The lists are created for which users?
- In which Jobs is a particular list created?
- Where are which (special) functions used?
DS Scanner

[Image of a software interface with folders and file structures, including categories like Distributed, Files, Volumes, Services/Daemons, Software, Hardware, Processes, and SAP R/3.]
**DS Scanner**

Whether your production runs mainly on z/OS or distributed systems, the DS scanners provide important information. Available scanners are:

- **Filesystem**
  - Files and Volumes ("Space and PO")

- **Services/Daemons**
  - Overview of all services

- **Inventory**
  - Software and hardware

- **Processes**
  - Program run times ("SMF")

- **SAP**
  - SAP R/3 “production data”
DS Scanner – Files and Volumes

```
[Image of file and volume structure]
```

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DS Scanner - Files

The scanner analyzes the Windows and UNIX server file systems. The directories and/or files to be analyzed are specified by the administrator. Possible queries:

- Which servers have the files ABC*.DEF?
- How much space is consumed by these files?
- Which files were changed by user XYZ within the last two weeks?
- Are there duplicates of files ABC*? If so, where is the newer version?

By using the PC Client’s external command feature, you can define line commands, e.g. browse or delete file (requires FTP).
A very interesting scanner is the file content scanner. It reads selected files and stores the content in the SmartIS repository, comparable to the z/OS PO scanner. Possible queries:

- Which scripts under Windows or UNIX have FTP calls?
- Which scripts execute database queries against a certain database?

Of course you can make all of these queries with a “grep”, but...

- Do all users know grep?
- Do you have “grep” on Windows?
- Do you really want to execute the grep command on all servers and merge the resulting lists later?
The scanner analyzes the volumes on your Windows and UNIX servers and writes the most important information regarding disk space into the SmartIS repository. Possible queries are:

- How much disk space do we have in total installed under UNIX compared to Windows?
- How much space is free on some volumes?
- How much space was available on these volumes a month ago?

By the way... All DS scanners can store historical data!
DS Scanner – Services/Daemons
DS Scanner – Services / Daemons

Services / Daemons are comparable to z/OS STCs and perform essential tasks on Windows and UNIX. Therefore, it is not only important to the system administrators to know which services are installed and active. Possible queries are:

- Our scheduling agent needs a certain additional service. Is it installed on all Windows machines, and is it active?
- On which machines are (possibly illegal!) FTP services running?
- Was a particular service running on a particular machine yesterday?

Of course you can perform these queries with “onboard” software, such as log viewers. But to do so, you’d need to log in to every machine and search for the applicable logs.
DS Scanner – Inventory
DS Scanner – Inventory

The inventory scanner provides an overview of the hardware and software installed on your servers. Possible queries are:

- Our scheduling agent needs additional software. Is it installed on the UNIX servers with the right version?
- A new program requires a relatively large amount of CPU. Is the processor on the selected machine “fast” enough?
- Which ORACLE version was installed a month ago on the Windows servers?

Of course you can perform all of these queries with the help of your system’s management software – provided you have the necessary permissions and the know-how.
DS Scanner – Processes

![Table Distributed - Processes - Processes]

<table>
<thead>
<tr>
<th>DNS/IP...</th>
<th>Start Time</th>
<th>End Time</th>
<th>Du...</th>
<th>Process name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC45</td>
<td>2010-05-07,15:07:28</td>
<td>2010-05-07,15:09:01</td>
<td>92</td>
<td>wmiprvse.exe</td>
</tr>
</tbody>
</table>
DS Scanner – Processes

On distributed systems there is nothing by default like SMF. History is only available if the processes are started by a scheduler that has a history function. In all other cases, the SmartIS Process Scanner is a good help, e.g.:

- What processes were active on server X between 09:15 and 09:30?
- How much CPU time was a process consuming?
- Show certain processes graphically in a barchart.

As a service, the SmartIS Process Scanner naturally has an impact on the server, but you can control that by decreasing the refresh rate. The results will not be as accurate, but a balance can be reached.
DS Scanner – SAP

The SAP scanner extracts production-relevant data from any number of SAP R/3 systems. Some sample queries:

• What SAP Jobs were planned last week in the SAP systems ABC and DEF?
• Which “unplanned” SAP Jobs ran, i.e. launched by SAP’s internal scheduler?
• Which “Batch Input Maps” are defined for the group XYZ?

SAP has integrated cross references, but:

• Not for all SAP systems.
• You need SAP know-how and permissions.
SmartIS Summary

SmartIS is a modular system, which can be as powerful as you need. Pricing is based on the OS platform and number of scanners, so you purchase as much, (or little), as you like. Additional scanners can always be added on at a later date.

- Fast
- Flexible
- Time-saving
# For more information and Customer References

<table>
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