

Changes

CPEXpert Release 13.2:

The main changes to the DASD Component for CPEXpert Release 13.2 are to:

- C Update the discussion of DASD performance problems and specific findings of the DASD Component, to include discussion of FICON infrastructure implications, Parallel Access Volume (PAV), and cached device issues.
- C Specifically identified all findings that relate to “legacy” systems (e.g., 3380 devices attached to 3990-2 controllers) so readers will not be confused about discussions that do not apply to more modern environments.
- C Provide better analysis of cache controller features, operation, and performance implications.
- C Provide better analysis of device DISC time (including DISC time caused by physical channel activity).
- C Provide better analysis of device PEND delay time (including PEND delay time caused by cache controller activity and miss hits).
- C Create an approach whereby the configuration model created by the DASD Component can be retained in a specific library (rather than the SAS WORK library), and provide an option to process from this library rather than re-create the configuration model. Retaining the configuration model allows capacity planners to access the configuration model for capacity planning purposes. Providing the option to process the retained configuration model allows performance analysts to examine problem areas repeatedly without incurring the overhead of creating the configuration model.
- C Add physical channel type (e.g., ESCON, FICON Bridge, FICON Native, etc.) and physical channel activity to the configuration model so future analysis can detect performance problems with channels based on type of channel.
- C Add RMF Cache Controller statistics to the configuration model (only for those devices that are selected for detailed analysis). These cache controller statistics allow current analysis of cache controller performance problems (and facilitate expended analysis in future releases of CPEXpert).
- C Provide the following new rules:
 - C DAS131 PEND time was caused by channel busy
 - C DAS132 PEND delay time was caused by director port busy
 - C DAS133 PEND delay time was caused by controller busy delays

- C DAS134 PEND delay time was caused by device busy delays
- C DAS135 PEND delay time was caused by other delays
- C DAS160 Disconnect was major cause of response delay

CPExpert Release 13.1:

The main changes to the DASD Component for CPExpert Release 13.1 are to:

- C A new feature allows users to specify target response times for specific data sets. The DASD Component will use information from TYPE42DS records to detect data sets that miss a specified response objective. The devices on which the data sets reside will then be analyzed to identify performance problems.
- C Variables have been added so a user can specify that CPExpert should ignore devices that are below a minimum I/O response, below a minimum I/O rate, or below a minimum total I/O wait time; and to suppress listing RMF intervals for devices that have no problems in the interval.
- C The CPExpert modification to MXG or neuMICS has been modified to revised the "MAXDASD variable value exceeded:" message. This message can be produced by the CPExpert code that extracts device information from SMF TYPE30 records (as either MXG or neuMICS processes the SMF data). The previous message indicated that the MAXDASD variable was too low and some devices were ignored by CPExpert. One implication of this message was that user tended to increase the MAXDASD value to very large numbers. Since this value controls array sizes in many modules of the DASD Component, a large value for MAXDASD caused unnecessary overhead. With the new approach, the code lists the jobs that have excess devices. A user can decide whether these jobs are sufficiently important to warrant the increased execution time of the DASD Component.
- C The logic that processes TYPE42DS has been revised to significantly increase execution efficiency of the DASD Component.
- C Add the ability to select up to 10 systems individually for analysis. Until Release 131, a user had the options of analyzing data for all systems in the performance data based, analyzing data for a specific sysplex (in case the performance data base contained data for more than one sysplex), or analyzing data for a specific system in the performance data base. With Release 13.1, up to 10 systems can be individually selected for analysis.

- C Enhance the options provided with the SAS Output Delivery System (ODS). With Release 13.1, users who exercise the SAS ODS feature for creating CPEXpert output can optionally create the output as a PDF file, which can be emailed to other users. Additionally, users can optionally specify a STYLE feature for either HTML or PDF output, if they have a preferred STYLE for HTML or PDF output. The optional links that are available with the HTML have been revised; SAS at some user sites did not create the HTML output in the “standard” way, and the CPEXpert code that inserted links into the HTML output did not work properly. I have revised the code to place the links into the output as the output is created, rather than attempting to place the links into the final HTML output created by SAS.
- C CPEXpert now specifies `OPTIONS COMPRESS=N;` to override any site specification for file compression. Experiments have shown that CPEXpert code runs significantly faster (using much less CPU time) if compression has been turned off.

CPEXpert Release 12.2:

The main changes to the DASD Component for CPEXpert Release 12.2 are to:

- C Enhance the DASD Component to analyze problems with VSAM data sets¹. This analysis is a partial automation of the analysis and guidance given in IBM’s *VSAM Demystified* Redbook, SG24-6105. The VSAM analysis is performed if a MXG performance data base exists, and if SMF Type 42 (Data Set Statistics) and SMF Type 64 files exist in the MXG performance data base. These are MXG files TYPE42DS and TYPE64, respectively. The following rules have been added to the DASD Component as a part of the VSAM analysis:

DAS600: Excessive Control Area (CA) splits occurred

DAS604: Excessive secondary extents were allocated

DAS605: Excessive extents were used and secondary allocation unit was small

DAS606: Primary or Secondary allocation unit was small

DAS607: VSAM data set is close to maximum number of extents

DAS610: Relatively small CI size was used for sequential processing

DAS611: Relatively large CI size was used for direct processing

DAS612: Relatively large CI size was used for mixed processing

¹Thanks to Glenn Bowman (Wakefern Food Corporation, NJ), Joan Kelley (IBM Poughkeepsie, NY), and John Cothran (IBM Dallas, TX) for providing VSAM test data.

- DAS620: The number of data buffers should be increased
- DAS621: The number of index buffers should be equal to index levels
- DAS622: The number of index buffers should be more than STRNO value
- DAS625: NSR was used, but a large percent of the access was direct
- DAS635: LSR was used, but a large percent of the access was sequential
- C Options are provided to analyze VSAM data sets residing only on “poorly performing” devices, analyze all VSAM data sets, analyze only VSAM data sets (suppressing the normal “worst devices” analysis), or suppress analysis of VSAM data sets.
 - C An option is provided to suppress analysis of DASD altogether, but simply create the model of the I/O configuration, and associated device/controller/channel activity. This option can be useful for reporting I/O activity for capacity planning.
 - C A report optionally is produced when common analysis is not performed because data sources are not available (or CPEXpert has not been advised that the data sources are available). For example, the report will alert you to missing application analysis if the modification to MXG or MICS has not been made so CPEXpert has application data available.
 - C A report optionally is produced if the DASD report is excessively large, and suggestions are given about how to reduce the size of the report.
 - C The DASD Component is updated to support z/OS Version 1 Release 4.

CPEXpert Release 12.1:

The main changes to the DASD Component for CPEXpert Release 12.1 are to:

- C Completely revise the Component to eliminate the requirement that users provide IOCP macros from which CPEXpert built a model of the I/O configuration. IBM now provides sufficient information in standard SMF records so the DASD Component can automatically create I/O configurations using SMF Type 70, Type 73, Type 74, Type 75, and Type 78CF. With Release 12.1 of CPEXpert, users will no longer need to provide IOCP macros to the DASD Component, since CPEXpert can obtain the information automatically.
- C Eliminate all documentation related to IOCP macros and other documentation for user-provided input related to the I/O configuration.

- C Provide data set access information related to those data sets (managed by DFSMS) residing on volumes with poor performance.
- C Include a detailed analysis of PEND time, when PEND time is a major cause of performance problems.
- C Include the ability to analyze more than one sysplex in a single execution of the DASD Component
- C Enhance the output to provide a sysplex view of DASD volumes with poor performance, regardless of whether a specific system is being analyzed.
- C Update the Component to support z/OS Version 1 Release 3.

CPEXpert Release 11.2:

The main changes to the DASD Component for CPEXpert Release 11.2 are to:

- C Update the Component to support z/OS Version 1 Release 2.
- C Add support for the SAS Output Delivery System (ODS) feature, to enable optional web access of CPEXpert reports (this new option was suggested by **Harald Seifert** of HUK, Coburg, Germany).
- C Add optional links in CPEXpert reports (if the SAS ODS feature is invoked), that link rule output to CPEXpert documentation for the rules produced.
- C Revise the entire DASD Component User Manual to correct administrative errors and to make to document easier to use.

CPEXpert Release 11.1:

The main changes to the DASD Component for CPEXpert Release 11.1 are to update the Component to support z/OS Version 1 Release 1.

CPEXpert Release 10.2:

The main changes to the DASD Component for CPEXpert Release 10.2 are to update the Component to support OS/390 Version 2 Release 10.

CPExpert Release 10.1:

The main changes to the DASD Component for CPExpert Release 10.1 are to:

- C Update the Component to support OS/390 Version 2 Release 9.
- C Revise the DASD Component User Manual to correct Section 2, Chapter 4 (Installing the modification for MICS).
- C Revise the DASD Component User Manual to remove the requirement that the GENPARMS module be executed.

CPExpert Release 9.2:

The main changes to the DASD Component for CPExpert Release 9.2 are to update the Component to support OS/390 Version 2 Release 8.

CPExpert Release 9.1:

The main changes to the DASD Component for CPExpert Release 9.1 are to:

- C Update the Component to support OS/390 Version 2 Release 7.
- C Correct documentation to reflect existing logic to handle more than 4 paths to a device.
- C Add a description of techniques that are used to generate an IOCP input data set, using the Hardware Configuration Definition (HCD) component of MVS.
- C Add documentation of Rule DAS102 and Rule DAS202 to describe the rules that have been a standard part of the output (but had been left out of the User Manual).
- C Revise the description of installing the modification for MXG if you use the MXG BUILDPDB or use SAS/ITSV to process SMF data.
- C Revise output based on suggestions from users.
- C Correct code based on errors reported by users.

CPExpert Release 8.2:

The main changes to the DASD Component for CPExpert Release 8.2 are to:

- C Update the Component to support OS/390 Version 2 Release 6.

- C Correct code based on errors reported by users.

CPExpert Release 8.1:

The main changes to the DASD Component for CPExpert Release 8.1 are:

- C Added code to support Workload Definitions for MVS (Goal Mode), when exercising the “Loved One” analysis option. The effect of this change is to allow users to specify Service Classes for Goal Mode processing, rather than specify Performance Groups as done in pre-Goal Mode operation.
- C Modified the DASDMXG module to include Report Classes for MVS (Goal Mode). Additionally, added code in all relevant modules to support Report Class processing.