



**serena™**

# Serena® Comparex® Quick Reference

SERENA PROPRIETARY AND CONFIDENTIAL INFORMATION

Copyright © 2001–2006 Serena Software, Inc. All rights reserved.

This document, as well as the software described in it, is furnished under license and may be used or copied only in accordance with the terms of such license. Except as permitted by such license, no part of this publication may be reproduced, photocopied, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, recording, or otherwise, without the prior written permission of Serena. Any reproduction of such software product user documentation, regardless of whether the documentation is reproduced in whole or in part, must be accompanied by this copyright statement in its entirety, without modification.

This document contains proprietary and confidential information, and no reproduction or dissemination of any information contained herein is allowed without the express permission of Serena Software.

The content of this document is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by Serena. Serena assumes no responsibility or liability for any errors or inaccuracies that may appear in this document.

## **Trademarks**

Serena and Comparex are registered trademarks of Serena Software, Inc. The Serena logo is trademark of Serena Software, Inc.

All other products or company names are used for identification purposes only, and may be trademarks of their respective owners.

## **U.S. Government Rights**

Any Software product acquired by Licensee under this Agreement for or on behalf of the U.S. Government, its agencies and instrumentalities is "commercial software" as defined by the FAR. Use, duplication, and disclosure by the U.S. Government is subject to the restrictions set forth in the license under which the Software was acquired. The manufacturer is Serena Software, Inc., 2755 Campus Drive, San Mateo, CA 94403.

Publication date: February 5, 2006

Part number: 2215

# Comparex Benefits











- **Increases software reliability** by detecting change throughout the development life cycle
- **Increases productivity** by automating comparisons in a single step
- **Increases flexibility and accuracy** of testing by comparing data in different file types and at different displacements
- **Improves auditing capabilities** by automatically providing a customizable difference report
- **Eliminates manual change verification** and saves time during large conversions











## Typical Uses of Comparex










- Compares:
  - Text to text
  - Data to data
  - Database to database
  - Directory to directory
- Performs:
  - Impact analysis
  - Extraction of test data
  - Copybook parsing
  - Load to source reconciliation








## **Comparex Compares Anything to Anything**

- Quickly detects differences between files of any content, structure, or record length, such as:
  - Source code
  - Copybooks
  - JCL
  - Master files
  - Documentation
  - Load modules
  - Data
  - Directories
  
- Supports file types including
  - VSAM
  - QSAM
  - ISAM
  - IAM
  
- Supports databases including
  - Oracle
  - DB2
  - CA-DATACOM
  - ADABAS
  - DL/I (IMS or IMS Fastpath)
  
- Enables comparison of different file types including
  - QSAM to VSAM
  - VSAM to DB2
  - DB2 to DL/I
  
- Supports files residing on disk or tape









Keyword	Description
A-IDENTITY 	= (ddd,op,t'vvvv'[ ,N = name]) Identifies an additional IDENTITY field in SYSUT1.
ASCII <b>T</b>	Specifies that an input file is in ASCII format instead of EBCDIC format.
BUFF  <b>T</b>	= $\left\{ \begin{array}{l} 60 \\ nn \end{array} \right\}$ Specifies the buffer size used for TEXT comparison processing or DATA comparisons with Random KEYS.
CASE  <b>T</b> 	= $\left\{ \begin{array}{l} \text{MIXED} \\ \text{UPPER} \\ \text{LOWER} \\ \text{RAISE} \\ \text{MONO} \end{array} \right\}$ Specifies how lowercase characters in the input stream will be treated.
CMSEND (CMS only)  <b>T</b> 	Specifies the end of user terminal input.
CMSPRINT (CMS only)  <b>T</b> 	Tells Comparex to send SYSPRINT data to a disk data set (Comparex listing A1).
CONTINUE  <b>T</b> 	Causes processing to continue beyond MAXDIFF value without displaying additional records.








Keyword	Description
<p>COPYDIFF</p> <p> <b>T</b> </p> <p>(CMS only: UPDATE)</p> <p>(DOS only: MAINT)</p> <p>(MVS only: GEM IEBUPDATE)</p>	<p>Specifies that differing records are to be copied from SYSUT2 to the output file (SYSUT3).</p> <pre>= [ ( ( { PAN }       { LIB }       { GEM       { IEBUPDTE } }, { SEQFLD = 'ddll, ddll' }       { MAINT }       { UPDATE }       { CMN       { MEMBER }       { OTH }       [ , PASS = { YES } ] [ , VERS = { YES       NO       YESHHMM } ]       [ , STAMP = { YES       NO       VYYYYMMDD } ] [ , TEMP = { YES } ] [ , RESEQ = { YES } ] ] ] ]</pre>
<p>COPYSAME</p> <p></p>	<p>Specifies that matching records are to be copied from SYSUT2 to the output file (SYSUT3).</p>
<p>COPYSPLIT</p> <p> <b>T</b> </p>	<p>Specifies matching records are to be copied to SYSUT3A. Differing records are to be copied from SYSUT1 to SYSUT3B and from SYSUT2 to SYSUT3C. Records considered insertions on SYSUT1 are to be copied to SYSUT3D. Records considered insertions on SYSUT2 are to be copied to SYSUT3E.</p> <p>All SYSUT3x files are optional and may be omitted or allocated as DUMMY.</p>
<p>CPXEXIT</p> <p> <b>T</b></p>	<p>=XXXXXXXX Specifies the name of the load module for "key field" inspection exit.</p>
<p>CPXIFACE</p> <p> <b>T</b> </p>	<p>=XXXXXXXX Specifies the same load module names for SYSUT1 and SYSUT2.</p>
<p>CPXIFACE1 CPXIFACE2</p> <p> <b>T</b> </p>	<p>=XXX If the original and modified files have different interface names, CPXIFACE1 and CPXIFACE2 specify load modules for processing SYSUT1 and SYSUT2, respectively.</p>















Keyword	Description
DASH  <b>T</b> 	$= \left\{ \begin{array}{l} C'.' \\ t'vv' \end{array} \right\}$ Specifies the character used to highlight differences on the difference report.
DATA 	$\left[ =CSECT,[ADCON= \begin{array}{l} YES \\ NO \end{array} ] \right]$ Signifies that records are formatted and fields may have different data formats. CSECT specifies synchronization when comparing load modules.
DECIMAL  <b>T</b>	Specifies that relative displacements for each line in a report are to be shown in decimal.
DELETE <b>T</b>	$= \left\{ \begin{array}{l} C'xxx' \\ xxx' \end{array} \right\}$ Specifies the control card text for deleted records in COPYDIFF delta decks. For COPYDIFF=OTH only.
DESEN 	$= (ddd,t'vvvv',N = name)$ Identifies the record fields that should not be printed or displayed and the text that will be overlaid in the corresponding output field. The desensitizing parameters for SYSUT1 and SYSUT2 are the same.
DESEN1 DESEN2 	If the desensitizing parameters are different for SYSUT1 and SYSUT2, DESEN1 and DESEN2 specify the desensitizing parameters for SYSUT1 and SYSUT2 files, respectively.
DIRECTORY 	$\left[ = \left\{ \begin{array}{l} USER \\ SPF \\ PDF \\ LOAD \end{array} \right\} \right]$ Specifies that Comparex will only compare the directory entries for the type of library specified. (LOAD is for MVS only.)
DSNUT1 DSNUT2 DSNUT3 (VSE only)  <b>T</b> 	$= dsname$ Data set names for the SYSUT1 and SYSUT2 input files, or the SYSUT3 output file. These names are cosmetic only and are not used in Comparex processing.









Keyword	Description
EBCDIC  <b>T</b> 	Specifies that an input file is in EBCDIC format instead of ASCII format.
END  <b>T</b>	=(ddd,op,t'vvvv') Identifies a condition that, if found in a record, will stop Comparex processing.
FIELD  <b>T</b>	$= (ddd, \left\{ \begin{array}{l} \text{len} \\ \text{END} \end{array} \right\}, \left\{ \begin{array}{l} \text{C} \\ \text{Z} \\ \text{P} \\ \text{B} \\ \text{UP} \\ \text{UB} \end{array} \right\} ) [ / \text{dateformat} ] [ \text{.N} = \text{name} ]$ <p>Defines a specific field to be compared rather than all fields. You can specify multiple fields during a DATA comparison, but only one FIELD or MASK during a TEXT comparison. The field position and format are the same for SYSUT1 and SYSUT2.</p>
FIELD1 FIELD2  <b>T</b>	If the field is in a different position or has a different format in the original and modified files, FIELD1 and FIELD2 designate the field's position and format in SYSUT1 and SYSUT2, respectively.
FILTERIN   FIN  <b>T</b> 	$= ( \left[ \left\{ \begin{array}{l} \text{m} \\ \text{MEMBER} \\ \text{CSECT} \end{array} \right\} \right] \text{d1} [ \text{.d2} ], \text{op}, \text{t'vvvv'} [ \text{.N} = \text{name} ] )$ <p>Specifies which records will be included in the comparison process. The record being processed must pass all FILTERIN specifications to be included in further processing. (AND logic)</p>




















Keyword	Description
<p>FILTEROUT   FOUT</p>  <b>T</b> 	$= \left( \left[ \begin{array}{c} m \\ \text{MEMBER} \\ \text{CSECT} \end{array} \right] \right) d1[-d2],op,t'vvvv[N = name ]$ <p>Specifies which records will be excluded from the comparison process. The record being processed must pass all FILTEROUT specifications to be excluded from further processing. (AND logic)</p>
<p>FILTORIN   FORIN</p>  <b>T</b> 	$= \left( \left[ \begin{array}{c} m \\ \text{MEMBER} \\ \text{CSECT} \end{array} \right] \right) d1[-d2],op,t'vvvv[N = name ]$ <p>Specifies which records will be included in the comparison process. The record being processed must pass any FILTORIN specification to be included in further processing. (OR logic)</p>
<p>FILTOROUT   FOROUT</p>  <b>T</b> 	$= \left( \left[ \begin{array}{c} m \\ \text{MEMBER} \\ \text{CSECT} \end{array} \right] \right) d1[-d2],op,t'vvvv[N = name ]$ <p>Specifies which records will be excluded from the comparison process. The record being processed must pass any FILTOROUT specification to be excluded from further processing. (OR logic)</p>
<p>FLDSONLY</p> 	<p>Specifies that only differing bytes defined by FIELD statements are underscored with the DASH character.</p>
<p>FORMAT</p> 	$= \left\{ \begin{array}{l} xy \\ xyF \\ xyS \\ \text{FIELD} \\ \text{SMART} \end{array} \right\}$ <p>Specifies the data format characteristics of the difference report. x=0-2; y=1-6</p>
<p>FRAME</p> <b>T</b>	$\left[ = \left[ \begin{array}{c} \text{num} \\ \text{YES} \\ \text{NO} \end{array} \right] \right]$ <p>Specifies that the DASH and PLUS characters are used to frame differing blocks of text records.</p>













Keyword	Description
GENFLDS  <b>T</b>	Tells Comparex to print a visual representation of all IDENTITY, FIELD, and MASK statements.
HALT  <b>T</b> 	$= \begin{cases} \text{NO} \\ \text{YES} \\ \text{COND} \end{cases}$ Tells Comparex whether to stop processing after all keywords have been scanned.
HEX  <b>T</b>	Specifies that relative displacements are displayed/printed in hexadecimal.
IDENTITY 	$= (\text{ddd}, \text{op}, \text{t}^{\text{vvvv}} [\text{,BREAK}] [\text{,N} = \text{name}])$ <p>Identifies a record type on SYSUT1 that activates the processing of the FIELD and MASK statements that follow the IDENTITY. These FIELD and MASK statements are in effect until the next IDENTITY is encountered.</p>
IGNORSIN 	Specifies that the positive hexadecimal signs X'.C' and X'.F' are equivalent.
INSERT <b>T</b>	$= \begin{cases} \text{C}^{\text{xxx}} \\ \text{xxx} \end{cases}$ Specifies the control card text for inserted records in COPYDIFF delta decks. For COPYDIFF=OTH only.
INTERLEAVE 	$= \text{nn}$ Specifies the number of lines that are grouped together when the output format is interleaved.



Keyword	Description
<p>KEY</p> 	<p>= (ddd, len <math>\left[ \begin{array}{c} \{ \text{C} \\ \text{Z} \\ \text{P} \\ \text{B} \\ \text{UP} \\ \text{UB} \} \end{array} \right] \left[ \begin{array}{c} \{ \text{A} \\ \text{D} \\ \text{R} \} \end{array} \right] \right)</math> Specifies a control field to use for file synchronization. The field position, length, and format are the same for both SYSUT1 and SYSUT2 files. (Maximum number of keys is 40. Maximum length is 256 bytes.)</p>
<p>KEY1 KEY2</p> 	<p>If field position, length, or format are different in SYSUT1 and SYSUT2 files, then KEY1 and KEY2 designate the field's position, length, and format in SYSUT1 and SYSUT2, respectively.</p>
<p>KEYSONLY</p> 	<p>Specifies that, for synchronization mismatches, only the lines that contain the control fields will be printed.</p>
<p>KILLECHO</p>   	<p>Suppresses the printing of installation defaults after the first page of the Comparex report.</p>
<p>KILLRC</p>   	<p>Specifies that the system return code is set to zero.</p>
<p>KILLSPIE</p>   	<p>= NO Specifies that Comparex will use normal SPIE/ESPIE/STXIT-based diagnostics. = YES Allows Comparex to produce a full ABEND dump.</p>
<p>LINE</p>  	<p>= (32 <sub>nn</sub> <math>\left[ \begin{array}{c} \{ \text{HORIZONTAL} \} \\ \{ \text{ALPHA} \\ \text{VERTICAL} \} \end{array} \right] \right)</math> Specifies the number of bytes displayed on each line of the output report, and the format of the display.</p>

Keyword	Description
MASK  <b>T</b>	$= (\text{ddd}, \left\{ \begin{array}{l} \text{len} \\ \text{END} \end{array} \right\}, \left\{ \begin{array}{l} \text{C} \\ \text{Z} \\ \text{P} \\ \text{B} \\ \text{U} \\ \text{P} \\ \text{U} \\ \text{B} \end{array} \right\}) \text{ [N = name]}$ <p>Identifies an area to be excluded from the comparison process. You can specify multiple MASKs during a DATA comparison, but for TEXT, MASK is equivalent to only one FIELD. The field position, length, and format are the same for both SYSUT1 and SYSUT2 files.</p>
MASK1 MASK2  <b>T</b> 	<p>If field position or length are different in SYSUT1 and SYSUT2, then MASK1 and MASK2 designate the field's position and length in SYSUT1 and SYSUT2, respectively.</p>
MAXDIFF  <b>T</b> 	$= \left\{ \begin{array}{l} 999999999999 \\ \text{nn} \end{array} \right\}$ <p>Specifies the maximum number of differences to be displayed on the difference report.</p>
MAXMATCH 	$= \left\{ \begin{array}{l} 999999999999 \\ \text{nn} \end{array} \right\}$ <p>Specifies the maximum number of differences to be displayed on the difference report, but only for synchronized (matched) records.</p>
MBRHDR  <b>T</b> 	$= \left\{ \begin{array}{l} \text{YES} \\ \text{NO} \\ \text{COND} \\ \text{MATCH} \end{array} \right\}$ <p>Specifies when Comparex prints the header record for each member of a directory-embedded data set.</p>
MLC <b>T</b>	$= \left\{ \begin{array}{l} 5 \\ \text{nn} \end{array} \right\}$ <p>Specifies how many consecutive records must match after a mismatch to determine if the original and modified files are once again synchronized.</p>

Keyword	Description
<p>MODE</p>  <p><b>T</b> </p>	<p>= <math>\left\{ \begin{array}{l} \text{APPLICATIONS APL} \\ \text{SYSTEMS SYS} \end{array} \right\}</math> Specifies how relative displacements and variable length records are handled.</p> <p>MODE=APPLICATIONS: displacements are relative to 1; record descriptor word (RDW) is ignored.</p> <p>MODE=SYSTEMS: displacements are relative to 0; RDW is processed.</p>
<p>NIBBLE</p> 	<p>Specifies that each half-byte (nibble) of data is to be compared.</p>
<p>PAGE</p>  <p><b>T</b> </p>	<p>= <math>\left\{ \begin{array}{l} 58 \\ nn \end{array} \right\}</math> Specifies the number of lines to print on each page.</p>
<p>PLUS</p>  <p><b>T</b></p>	<p>= <math>\left\{ \begin{array}{l} \text{C'+}' \\ \text{'vv'} Specifies the character that underscores the excess bytes when the data record on the modified file is longer than the record on the original file. Also used as the framing character in TEXT processing.</math></p>
<p>PRINT</p>  	<p>= <math>\left\{ \begin{array}{l} \text{MATCH} \\ \text{NOMATCH} \\ \text{MISMATCH} \\ \text{NOMISMATCH} \\ \text{FULL} \end{array} \right\}</math> Specifies which of the matched or mismatched records will be printed.</p>
<p>PRINT</p> <p><b>T</b></p>	<p>= <math>\left\{ \begin{array}{l} \text{FULL} \\ \text{MLC} \end{array} \right\}</math> For TEXT comparisons, determines which original file (SYSUT1) records will be printed.</p>
<p>REPLACE</p> <p><b>T</b></p>	<p>= <math>\left\{ \begin{array}{l} \text{C'xxx'}</math>  <math>\left. \begin{array}{l} \text{xxx} \end{array} \right\}</math> Specifies control card text for replaced records in COPYDIFF delta decks. For COPYDIFF=OTH only.</p>
<p>SCAN</p>  <p><b>T</b></p>	<p>Causes Comparex to process only the original file (SYSUT1), displaying any records that meet the filtering criteria.</p>

Keyword	Description
SEGMENT 	$= (\text{ddd}, \text{EQ}, \text{'vvvv' } [ , ( \left\{ \begin{array}{l} \text{A} \\ \text{D} \\ \text{R} \end{array} \right\}, \text{ddd}, \text{len} ) ] )$ <p>Specifies a control field when the input files are databases.</p>
SKIPUT1 SKIPUT2  <b>T</b>	$= \text{nn}$ <p>Bypasses the specified number of records in the input files.</p>
SQUEEZE   SQZ <b>T</b>	$= \text{'vv'}$ <p>For <b>TEXT</b> comparisons, determines which characters will be ignored during comparison. Depending on the text language you define, you can ignore up to 40 characters.</p>
STOPAFT  <b>T</b> 	$= \left\{ \begin{array}{l} 99999999 \\ \text{nn} \end{array} \right\}$ <p>Specifies the maximum number of records to be read from either of the input files.</p>
SYSUT1 SYSUT2 (for proprietary libraries)  <b>T</b> 	$= ( \left\{ \begin{array}{l} \text{PAN} \\ \text{LIB} \\ \text{OTH} \end{array} \right\} [ [ \left\{ \text{MEMBER} = \right\} \text{XXX} ] [ , \text{INCLUDE} = \left\{ \begin{array}{l} \text{NO} \\ \text{YES} \end{array} \right\} ] ] [ , \text{DDNAME} = \text{XXX} ] [ , \text{LEVEL} = \text{n} ] [ \text{PARM} = \text{'XXX'} ] )$ <p>Specifies parameters passed to the Comparex interface (CPXIFACE) for reading proprietary files structures.</p>
SYSUT1 SYSUT2 (for CMS)  <b>T</b> 	$= \left\{ \begin{array}{l} \text{'fn ft fm' } \\ \text{DUMMY} \end{array} \right\}$ <p>Specifies the disk data set names for SYSUT1 and SYSUT2 files.</p>

Keyword	Description
<p>SYSUT1 SYSUT2 (for VSE)</p>   	$= \left( \begin{array}{l} \text{DISK} \\ \text{VSAM} \\ \text{ISAM} \\ \text{ISAM 11} \\ \text{ISAM 14} \\ \text{ISAM 30} \\ \text{ISAM 40} \\ \text{TAPE} \\ \text{NLTAPE} \\ \text{DUMMY} \end{array} \right), \text{BLKSIZE} = \left\{ \begin{array}{l} 80 \\ \text{nn} \end{array} \right\}, \text{RECFM} = \left\{ \begin{array}{l} \text{E} \\ \text{FB} \\ \text{V} \\ \text{VB} \\ \text{S} \\ \text{SB} \\ \text{U} \end{array} \right\}$ <p>[,LRECL = nn][,RKP = nn][,KEYLEN = nn])</p> <p>Specifies the data set organization and attributes for the SYSUT1 and SYSUT2 files being compared.</p>
<p>SYSUT1 SYSUT2 (for MVS)</p>   	$= \left\{ \begin{array}{l} \text{QSAM} \\ \text{ISAM} \\ \text{VSAM} \\ \text{PDS} \\ \text{DUMMY} \end{array} \right\}$ <p>Overrides data set organization specified in JCL.</p>
<p>SYSUT3 (for CMS)</p>   	$= \left\{ \begin{array}{l} \text{'fn ft fm'} \\ \text{DUMMY} \end{array} \right\}$ <p>Specifies an optional output file to be written when COPYSAME or COPYDIFF are specified.</p>
<p>SYSUT3 (for VSE)</p>   	$= \left( \begin{array}{l} \text{DISK} \\ \text{VSAM} \\ \text{TAPE} \\ \text{NLTAPE} \\ \text{DUMMY} \end{array} \right), \text{BLKSIZE} = \left\{ \begin{array}{l} 80 \\ \text{nn} \end{array} \right\}, \text{RECFM} = \left\{ \begin{array}{l} \text{F} \\ \text{FB} \\ \text{V} \\ \text{VB} \\ \text{S} \\ \text{SB} \\ \text{U} \end{array} \right\} [,LRECL = \text{nn})$ <p>Specifies an optional output file to be written when COPYSAME or COPYDIFF are specified.</p>
<p>SYSUT3 (for MVS)</p>	$= \left\{ \begin{array}{l} \text{QSAM} \\ \text{ISAM} \\ \text{VSAM} \\ \text{DUMMY} \end{array} \right\}$ <p>Specifies an optional output file to be written when COPYSAME or COPYDIFF is specified.</p>

Keyword	Description
<p>TEXT</p> <p><b>T</b></p>	<p><math>[ = [S] \left\{ \begin{array}{l} \text{ALC} \\ \text{BAL} \\ \text{C} \\ \text{CLIST} \\ \text{COBOL} \\ \text{FORTRAN} \\ \text{HTML} \\ \text{JCL} \\ \text{NATURAL} \\ \text{PANEL} \\ \text{PASCAL} \\ \text{PL/I} \\ \text{PL1} \\ \text{PL/I} \\ \text{PLI} \\ \text{REPORT} \\ \text{REXX} \\ \text{RPG} \\ \text{SCRIPT} \\ \text{XML} \end{array} \right\} ]</math></p> <p>Tells Comparex that a TEXT comparison is to be performed. Also specifies the language format of the text records. Specifying a language impacts the characters you can ignore (or SQUEEZE out) during a comparison.</p>
<p>WILDCARD</p> <p> <b>T</b> </p>	<p><math>= \left\{ \begin{array}{l} \text{C' ' } \\ \text{t'vv' } \end{array} \right\}</math> Specifies a character used to indicate that any value passes the logical test in FILTER, IDENTITY, and SEGMENT keywords.</p>



## LEGEND



This symbol identifies keywords that apply to DATA-type comparisons.



This symbol identifies keywords that apply to TEXT-type comparisons.



This symbol identifies keywords that apply to DIRECTORY-type comparisons.

[ ]

Brackets indicate an optional entry.

( )

Parentheses must be coded as shown in example.

{ }

Braces indicate a required entry when more than one selection is available.

CAPS

Uppercase letters indicate a keyword, name, or field that must be coded exactly as shown.

lowercase

Lowercase within syntax description represents variable information to be supplied.

ddd

Relative displacement from the first position of the input record. When MODE=SYSTEM, displacements are relative to 0, and values range from 0 to 32767. When MODE=APPLICATION, displacements are relative to 1, and values range from 1 to 32767.

len

Length in bytes. Values range from 1 to 32766.

t'vv...'

An encoded data value, where:

t =            encoding type: X for hexadecimal or C for character;

                  and

vv...        is the value of the data (enclosed within apostrophes).

For example, X'5D' is the hexadecimal representation for the packed-decimal number negative 5.

\_\_\_\_\_        Underscore indicates the default value for the specified parameter.

