

z/OS Version 1 Release 2

UNIX System Services



LFS Enhancements



- ▲ Enhanced ASCII support
- ▲ Support for new TCP/IP Resolver
- ▲ LFS Soft Shutdown

Enhanced ASCII Support



- ▲ Automatic codeset conversion (Autoconversion)
 - File tagging
- ▲ C/C++ Compiler options
- ▲ Language Environment Run Time Library (RTL) enhancements

ASCII Support

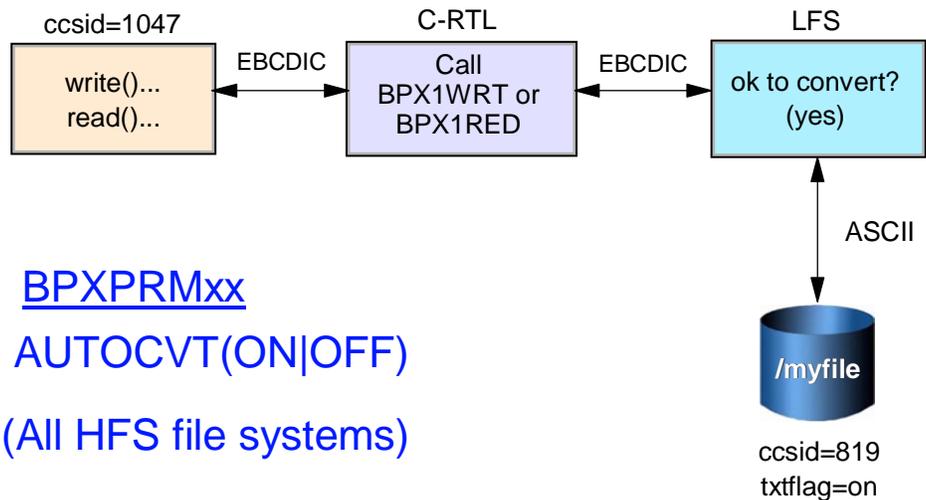


- ▲ Helps with porting of Unix applications to USS
 - Build ASCII-based applications by producing object code with ASCII string literals and character constants and a flag that identifies applications as ASCII or EBCDIC
 - Use Unicode-based wide characters (wchar_t) in ASCII-based applications
 - Transparently call native ASCII run time library functions from ASCII-based applications
 - Process user-defined ASCII multi-byte code pages with user-supplied code set related methods
 - Create ASCII-based locale objects which allow processing of ASCII data natively at run time

Automatic Conversion of Files



- ▲ ASCII<->EBCDIC conversion for read() & write()
- ▲ Programs and files can have a CCSID: File tagging



File Tagging



- ▲ A way to identify the code set of text data in files
 - File tag is metadata for the file
 - txtflag (text data) - codeset (16 byte code page)
- ▲ Used during automatic codeset conversion
 - Independent of autoconversion
- ▲ Tagging files
 - BPXPRMxx ... ROOT - MOUNT statements
 - TAG (NOTEXT | TEXT,CCSID)
 - chtag shell command
 - Changes to existing shell commands

Tag Parameter Examples



TAG(TEXT,819) Identifies text file containing ASCII (ISO-8859-1) data.

TAG(TEXT,1047) Identifies text file containing EBCDIC ((IBM-1047) data.

TAG(NOTEXT,65536) Tags file as containing binary or unknown data.

TAG(NOTEXT,0) Is the equivalent of not specifying the TAG parameter.

TAG(NOTEXT,273) Tags file with the German code set (IBM-273), but the file is ineligible for automatic conversion.

Enhanced ASCII Mounts



BPXPRMxx member

```
MOUNT FILESYSTEM('USER.FILES')
      MOUNTPOINT('/usr/lib/asciifiles')
      TYPE(HFS)
      TAG(TEXT,819)
```

Shell command

```
> /usr/sbin/mount -f user.files -t hfs -c text,819 /usr/lib/asciifiles
```

REXX syscall

```
/* rexx */
m.="
m.mnte_fsname='USER.FILES'
m.mnte_path='/usr/lib/asciifiles'
m.mnte_type='HFS'
m.mnte_filetag='033380000'x
address syscall 'mount m.'
```

Checks for Autoconversion



- ▲ Is the environment enabled for conversion
- ▲ Is there a file tag that indicates that the file is a candidate for autoconversion
- ▲ Is the program CCSID different from the CCSID in the file tag

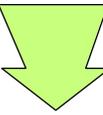
Note: All checks must be true

User Options for Autoconversion



Environment
enabled for
conversion?

Parmlib AUTOCVT(ON),
_BPXK_AUTOCVT=ON
FILETAG(AUTOCVT,)
fcntl(F_CONTROL_CVT)

global

local



MOUNT TAG(),
mount-c ccsid,text,
chtag, chattr()
FILETAG(,AUTOTAG),
fcntl(F_SETTAG)

Program
CCSID?
(default=1047)

"ASCII" (C/C++),
ThliCcsid,
fcntl()

Using Autoconversion in Programs

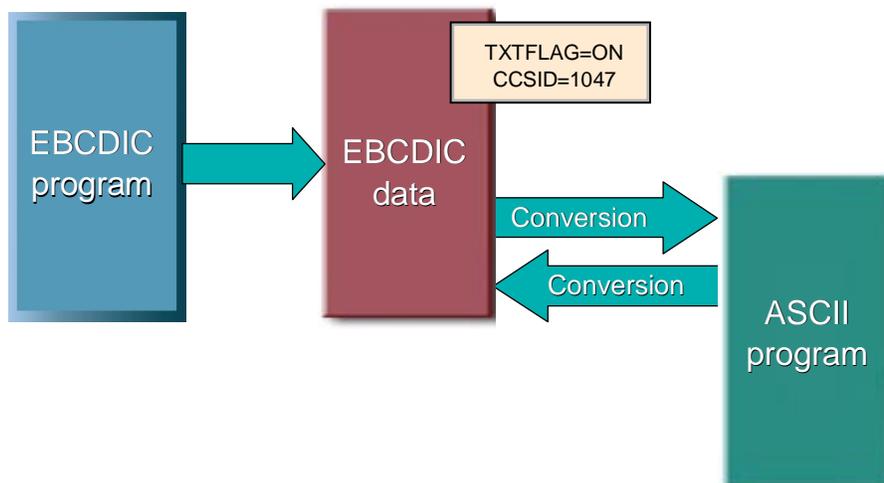


- ▲ For entire programs written in C/C++, use the ASCII compiler to change it to 819 (ISO8859-1 ASCII)
- ▲ For C/C++ threads, use the F_CONTROL_CVT subcommand of fcntl()
- ▲ For Assembler programs and threads, use the F_CONTROL_CVT subcommand of the BPX1FCT callable service. F_CONTROL_CVT sets the CCSID of the program associated with each opened file. (That is, the program CCSID can be different depending on which file is chosen.)
- ▲ For threads, set field Thliccsid using the mapping macro BPXYTHLI

Programs Accesssing Data



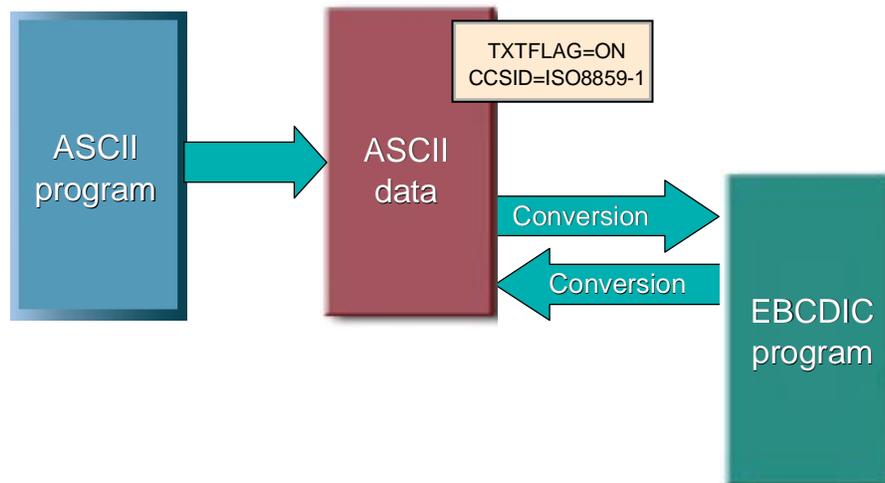
EBCDIC data accessed by ASCII program



Programs Accessing Data



ASCII data accessed by EBCDIC program



TCP/IP Resolver Support



▲ New TCP/IP Resolver Address Space

- Common search order for IP address / hostname resolution
- New Parmlib statement (BPXPRMxx):
RESOLVER_PROC(*procname*) or
RESOLVER_PROC(NONE) or
RESOLVER_PROC(DEFAULT)
- LFS starts *procname* when an INET domain is defined in BPXPRMxx
- TCP/IP supplies the default procedure

D OMVS,OPTIONS



```
BPXO043I 10.57.12 DISPLAY OMVS 932
OMVS      000F ACTIVE          OMVS=(2A)
CURRENT UNIX CONFIGURATION SETTINGS:
MAXPROCSYS      =      300      MAXPROCUSER      =      10125
MAXFILEPROC     =      65535     MAXFILESIZE      = NOLIMIT
MAXCPUPTIME     = 2147483647     MAXUIDS          =      50
MAXPTYS         =      256
MAXMMAPAREA     =      4096     MAXASSIZE        = 2147483647
MAXTHREADS     =     100000     MAXTHREADTASKS  =      32768
MAXCORESIZE     =    4194304     MAXSHAREPAGES   =    32768000
IPCMSGQBYTES   =     262144     IPCMSGQNUM      =     10000
IPCMSGNIDS     =     20000     IPCSEMNIDS      =     20000
IPCSEMNOPS     =     32767     IPCSEMNSEMS     =      25
IPCSHMMPAGES   =     25600     IPCSHMNIDS      =     20000
IPCSHMNSEGS    =      1000     IPCSHMSPAGES    =    2621440
SUPERUSER      = BPXROOT        FORKCOPY         = COPY
STEPLIBLIST    =
USERIDALIASTABLE=
PRIORITYPG VALUES: NONE
PRIORITYGOAL VALUES: NONE
MAXQUEUEDSIGS  =     100000     SHRLIBRGNSIZE   =    67108864
SHRLIBMAXPAGES =      4096     VERSION          = Z02RA1
SYSCALL COUNTS = NO           TTYGROUP         = TTY
SYSPLEX        = YES          BRLM SERVER      = SC63
LIMMSG         = NONE         AUTOCVT          = OFF
RESOLVER PROC  = DEFAULT
```

LFS Soft Shutdown



▲ F BPXOINIT,SHUTDOWN=FILESYS

- Unmounts filesystems prior to re-IPL
- Cached buffers synched to disk

▲ Non-Sysplex:

- Unmount Force all filesystems

▲ Sysplex:

- Unmount automounted filesystems & filesystems mounted on them
- Move Automove(Yes) filesystems to other systems
- Unmount Force remaining filesystems