



| z/TPF V1.1

# TPF Users Group - Fall 2010

Title: CP Update

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Venue: SCP Subcommittee

AIM Enterprise Platform Software  
IBM z/Transaction Processing Facility Enterprise Edition 1.1.0

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# Agenda

- **PJ36967 – Select GETFC or RELFC short term pool logging**
- **PJ37297 – RLCHA enhancements**
- **PJ37600 – LODIC enhancements**
- **PJ37609 – ECB Resource monitor enhancements**
- **PJ37752 – ZRIPL enhancements**
- **PJ37953 – Display CP user exit status**
- **PJ37137 – CRPA Sweeper**
- **PJ36831 – Server Time Protocol (STP) support**

## PJ36967 – Select GETFC or RELFC short term pool logging

- **Previously PJ30297 provided ability to log GETFC and RELFC for short term pools**
  - Log all short terms GETFCs and RELFCs
- **PJ36967 added ability to select logging of:**
  - Short term GETFC
  - Short term RELFC
  - Both short term GETFC and RELFC

## Short term logging example to control logging of both GETFCs and RELFCs

### ==> ZGFSP OPT LOG SHORT

```
CSMP0097I 23.08.40 CPU-B SS-BSS SSU-HPN IS-01
GFSP0005I 23.08.40 OPT LOG SHORT -PERFORMED+
```

### ==> ZGFSP DSP

```
CSMP0097I 23.08.45 CPU-B SS-BSS SSU-HPN IS-01
GFSP0010I 23.08.45 GFS PARAMETER DISPLAY
```

```
CURRENT FILE POOL DIRECTORY RECORD:      #SONRI
CURRENT SHORT-TERM CONTROL RECORD:      #STCCR
NEW FILE POOL DIRECTORY RECORD:          N/A
NEW SHORT-TERM CONTROL RECORD:          N/A
```

```

-
KUL  SKP  4RT  LRT  SRT  STR  REJ  OPTIONS
1000 0250 0005 0005 0005 0010 0010 LT POOLS: NOMON NOLOG NOTAG
                                ST POOLS: LOG-ALL SSU-EXCLUDE
                                TAPE-RTA THRESHOLD-00000
```

### ==> ZGFSP OPT NOLOG SHORT

```
CSMP0097I 23.12.22 CPU-B SS-BSS SSU-HPN IS-01
GFSP0005I 23.12.22 OPT NOLOG SHORT -PERFORMED+
```

## Short term logging example to control logging GETFCs only

### ==> ZGFSP OPT LOG SHORT GET

```
CSMP0097I 23.10.34 CPU-B SS-BSS SSU-HPN IS-01
GFSP0005I 23.10.34 OPT LOG SHORT GET -PERFORMED+
```

### ==> ZGFSP DSP

```
CSMP0097I 23.10.39 CPU-B SS-BSS SSU-HPN IS-01
GFSP0010I 23.10.39 GFS PARAMETER DISPLAY
```

```
CURRENT FILE POOL DIRECTORY RECORD:      #SONRI
CURRENT SHORT-TERM CONTROL RECORD:      #STCCR
NEW FILE POOL DIRECTORY RECORD:          N/A
NEW SHORT-TERM CONTROL RECORD:          N/A
```

```

┌
KUL  SKP  4RT  LRT  SRT  STR  REJ  OPTIONS
1000 0250 0005 0005 0005 0010 0010 LT POOLS: NOMON NOLOG  NOTAG
                                ST POOLS: LOG-GETS  SSU-EXCLUDE
                                TAPE-RTA THRESHOLD-00000
```

### ==> ZGFSP OPT NOLOG SHORT GET

```
CSMP0097I 23.12.50 CPU-B SS-BSS SSU-HPN IS-01
GFSP0005I 23.12.50 OPT NOLOG SHORT GET -PERFORMED+
```

## Short term logging example to control logging RELFCs only

### ==> ZGFSP OPT LOG SHORT REL

```
CSMP0097I 23.21.31 CPU-B SS-BSS SSU-HPN IS-01
GFSP0005I 23.21.31 OPT LOG SHORT REL -PERFORMED+
```

### ==> ZGFSP DSP

```
CSMP0097I 23.21.36 CPU-B SS-BSS SSU-HPN IS-01
GFSP0010I 23.21.36 GFS PARAMETER DISPLAY
```

```
CURRENT FILE POOL DIRECTORY RECORD:      #SONRI
CURRENT SHORT-TERM CONTROL RECORD:       #STCCR
NEW FILE POOL DIRECTORY RECORD:          N/A
NEW SHORT-TERM CONTROL RECORD:           N/A
```

```
—
KUL  SKP  4RT  LRT  SRT  STR  REJ  OPTIONS
1000 0250 0005 0005 0005 0010 0010 LT POOLS: NOMON NOLOG NOTAG
                                     ST POOLS: LOG-RELEASES SSU-EXCLUDE
                                     TAPE-RTA THRESHOLD-00000
```

### ==> ZGFSP OPT NOLOG SHORT REL

```
CSMP0097I 23.22.22 CPU-B SS-BSS SSU-HPN IS-01
GFSP0005I 23.22.22 OPT NOLOG SHORT REL -PERFORMED+
```

## PJ37297 – RLCHA enhancements

- **Multiple chains are chased at one time.**
  - When multiple chains are in the RLCHA buffer, multiple FINDCs will be executed before a WAITC.
  - Up to 225 FINDCs executed before WAITC.
- **URC4 user exit has new return that allows users to stop trailing chain chase.**
  - APAR PJ35967 added trailing chain chase to identify looping chains.
- **Buffer address is no longer kept in a format 1 global field. CINFC CMMRL2 is used to keep the buffer addresses.**

## PJ37600 – LODIC enhancements

- **LODIC MAXSUSPEND** specifies the maximum amount of time to suspend an ECB.
  - Time value is currently specified in minutes
- **TIMEINC** parameter added to specify whether **MAXSUSPEND** value is in minutes or seconds.

```

LGHI    R4, 5                Timeout = 5 seconds
LODI C  SUSPEND, CLASS=I BMBATCH, AVAI L=LABEL1,
        MAXSUSP=R4, MAXRTN=LABEL2, TIMEINC=SECS

```

+

```

LABEL1  DS      0H           Resources are OK
*
...
LABEL2  DS      0H           Resources are low, but MAXSUSP reached

```



## PJ37609 – ECB Resource monitor enhancements

- **Additional macros can be tracked through the ECB Resource monitor**
  - RELFC
  - ROUTC
  - SNAPC
  - TOURC
  - TWRTC

# ECB Resource Monitor

- **Resources that can be monitored**
  - Common Blocks
  - Created ECBs
  - Files
  - Finds
  - GETFC for long terms
  - GETFC for short terms
  - GETFC for both long and short terms
  - RELFC – newly added
  - ROUTC – newly added
  - SERRC
  - SNAPC – newly added
  - SWBs
  - System heap
  - TOURC – newly added
  - TWRTC – newly added
  - File rate
  - WTOPC rate

## ==&gt; ZECBM DISPLAY

CSMP0097I 10.15.57 CPU-B SS-BSS SSU-HPN IS-01

ECBM0026I 10.15.57 ECB RESOURCE LIMIT TABLE DISPLAY FOR CORE COPY

RESOURCE	1ST LIMIT WARNING	2ND LIMIT PERCENTAGE
CMBK	0	0
CRET	0	0
FILE	0	0 —
FIND	0	0
GFSL	0	0
GFSS	0	0
GRFS	0	0
RELF	0	0
ROUT	0	0
SERR	0	0
SNAP	0	0
SWBK	0	0
SYSH	0	0 —
TOUR	0	0
TWRT	0	0

FILT= 0 FILR= 0

WTOT= 0 WTOR= 0

ecbRM MONITORING IS: OFF

1ST LIMIT ACTION IS: MESSAGE

2ND LIMIT ACTION IS: MESSAGE

END OF DISPLAY+

## PJ37752 – ZRIPL enhancements

- **Provide ability to select a new image on ZRIPL command.**
- **Can specify an image for up to 3 subsystems.**

**==> ZRI PL BSS. TPF02**

```
CSMP0097I 22.29.57 CPU-B SS-BSS SSU-HPN IS-01
RI PL0002I 22.29.57 ZRI PL-SUBSYSTEM ACTIVE IMAGES POSSIBLY ALTERED+
```

**==> ZRI PL BSS. TPF01 WP. TPF01**

```
CSMP0097I 22.39.05 CPU-B SS-BSS SSU-HPN IS-01
RI PL0002I 22.39.05 ZRI PL-SUBSYSTEM ACTIVE IMAGES POSSIBLY ALTERED+
```

## PJ37953 – Display CP user exit status

- **New command, ZDCPX, displays status of CP user exits.**

==> ZDCPX

CSMP0097I 20.36.17 CPU-B SS-BSS SSU-HPN IS-01

DCPX0001I 20.36.17 CP USER EXIT STATUS DISPLAY

EXIT NAME	CURRENT STATUS	AVAILABILITY
GBK	INACTIVE	UNDEFINED
RBK	INACTIVE	UNDEFINED
GCB	INACTIVE	DEFINED —
RCB	INACTIVE	DEFINED
GBE	INACTIVE	DEFINED
RBE	INACTIVE	DEFINED
GSB	INACTIVE	DEFINED
RSB	INACTIVE	DEFINED
SVC	INACTIVE	DEFINED
SVX	INACTIVE	DEFINED —
SVW	INACTIVE	DEFINED
WAI	INACTIVE	DEFINED
EXI	INACTIVE	DEFINED

# PJ37137 – CRPA Sweeper

## PJ37137 – CRPA Sweeper

- **Ability to remove programs from memory when the program has not been executed recently.**
  - BSOs can be swept.
  - CSOs are not eligible to be swept.
  - User exit (USWP) allows users to prevent a selected BSO from being swept.
- **Intended for the case where:**
  - Large number of BSOs that execute in 31-bit mode.
  - Size of the 31-bit CRPA is not large enough to hold all 31-bit BSOs.

## PJ37137 – CRPA Sweeper

- **In z/TPF all programs are core resident, but not all programs must be in memory.**
- **Example: Recoup**
  - Run on a time initiated basis (maybe once a week).
  - Need Recoup programs in memory while it runs.
  - After Recoup completes, there is no need to keep these programs in memory.
- **Intention of the sweeper is to remove programs used in utilities like Recoup so that other utilities can be run.**



## PJ37137 – CRPA Sweeper – Controls:

- **Do not sweep:**
  - Programs that are defined as PRELOAD;
  - Programs that are part of a loadset;
  - Data programs;
  - Program that have transfer vectors;
  - Programs that are not allocated;
  - Programs that are locked in memory by specifying LOCK=YES or LOCK=SPECIAL on the GETPC.

## PJ37137 – CRPA Sweeper – Controls:

- **CORREQ SIP settings and ZCTKA ALTER parameters:**
  - CRPSWLVL
    - Percentage of CRPA memory that must be in use before programs are swept from that CRPA.
  - CRPSWSIZ
    - Minimum amount of CRPA storage that will be swept. This value is in megabytes.
    - Example: if CRPSWSIZ = 2 meg and the sweeper identifies programs such that only 1 meg can be reclaimed, the sweeper will NOT sweep these programs.
  - CRPSWTIM
    - Time between sweeper invocations. This value is in minutes.

## PJ37137 – CRPA Sweeper – Additional Information

- **CRPA sweep will automatically happen when:**
  - CRPA becomes 90% full
  - CRPA becomes 95% full
- **Display of CRPA controls:**
  - ZDCRP SWEEP

==> ZDCRP SWEEP

```
CSMP0097I 21.22.13 CPU-B SS-BSS SSU-HPN IS-01
DCRP0010I 21.22.13 CORE RESIDENT PROGRAM AREA SWEEPER
TIMER                      5 MINUTES
CRPA STORAGE THRESHOLD     75 PERCENT IN USE
MINIMUM STORAGE SWEEP      1 MB
END OF DISPLAY+
```

# PJ36831 – Server Time Protocol (STP) support

# PJ36831 – Server Time Protocol (STP) support

- **This presentation is about z/TPF support of STP.**
- **STP is:**
  - A replacement for the Sysplex Timer (9037).
  - A means to synchronize the TOD clock among multiple physical processors.
  - A means to synchronize the TOD clock with an external time source.
- **z/TPF supports:**
  - Local mode
  - ETR only
  - Mixed mode (ETR + STP)
  - STR only

## PJ36831 – Server Time Protocol (STP) support

- **Local mode** – no TOD clock synchronization
- **ETR only** – Sysplex Timer used to synchronize TOD clock. Clock source is the Sysplex Timer
- **Mixed mode** – Both Sysplex Timer and STP are in use. Clock source is the Sysplex Timer. Sysplex timer used to synchronize TOD clock of processors attached to the Sysplex timer. STP used to synchronize TOD clock of processors not attached to Sysplex timer.
- **STR only** – STP used to synchronize TOD clock. Clock source is STP.

# PJ36831 – STP Terminology

- **CTN – Coordinated Timing Network**
  - Collection of servers that are time synchronized to a time value called Coordinated Server Time (CST)
  - CTN ID – Servers / Coupling Facilities (CFs) that make up a CTN are all configured with a common identifier CTN ID.
    - 12 byte identifier that is set at the HMC
      - 8 character name – STP ID
      - 1 byte ETR network ID
  - CTN Type
    - Mixed
    - STP
    - CTN undefined
- **ETR – Sysplex Timer**
- **Links – physical connections between servers.**
  - Coupling facility links are used for timing.

# PJ36831 – STP Terminology

- **Nodes – Servers or physical processors in the CTN.**
- **Stratum** – STP transmits timekeeping information in layers or Stratums.
  - Stratum 1 - Highest level in the hierarchy of timing network that uses STP to synchronize to CST.
  - Stratum 2 - Server/Coupling Facility (CF) that uses STP messages to synchronize to Stratum 1.
  - Stratum 3 is the highest level supported.
- **Timing mode**
  - Local
  - ETR
  - STP
- **Timing state**
  - LPAR unique
    - It is possible that a processor is synchronized but an LPAR is unsynchronized.
  - Synchronized – TOD clock is being synchronized by STP.
  - Unsynchronized – TOD clock is not synchronized.



## PJ36831 – STP command changes

- **Set TOD clock to use external synchronization mechanism:**
  - ZATIM xxxx TOD STR replaced by:
  - ZATIM xxxx TOD EXT
  - Will cause this LPAR to use either ETR or STP.
  - Will indicate that either ETR or STP or both (mixed mode) are to be used as the TOD synchronization mechanism for the loosely coupled complex.
- **Set TOD clock on this LPAR using the time from an external synchronization mechanism**
  - ZATIM xxxx STR GOOD replaced by:
  - ZATIM xxxx EXT GOOD
  - No impact to other processors in the loosely coupled complex.

## PJ36831 – STP new commands

- **Stop using an external synchronization mechanism on this LPAR only.**
  - ZATIM TOD LOCAL
- **Indicate settings for daylight savings time to be obtained from STP.**
  - ZATIM DST USESTP
- **Display general information about STP**
  - ZDTIM STP INFO
- **Display nodes in the STP network**
  - ZDTIM STP NODES

## PJ36831 - STP – Display general information

==> ZDTIM STP INFO

```
CSMP0097I  21.26.26 CPU-B SS-BSS  SSU-HPN  IS-01 _  
DTIM0062I  21.26.26 DTIM          - STP INFORMATION  
STRATUM :      1  
TIMING MODE:  ETR  
TIMING STATE: SYNCHRONIZED  
CTN TYPE:    MIXED  
CTN ID : tpfstp  
ETR NETID :  01  
TIMEZONE OFFSET: *  
DAYLIGHT SAVINGS OFFSET: *  
TOTAL TIME OFFSET: *  
LEAP SECONDS:  22 _  
STP LOWEST-SUPPORTED VERSION:  1  
END OF DISPLAY +
```

## PJ36831 - STP – Display nodes in the STP timing network

==> ZDTIM STP NODES

CSMP0097I 21.32.08 CPU-B SS-BSS SSU-HPN IS-01

DTIM0302I 21.32.08 DISPLAY OF STP NODES: CTN ID = tpfstp , ETR  
NETID = 1

NODE ID	STRATUM	LINKS
00000001153F 002094	1	0
CURRENT PROCESSOR		
END OF DISPLAY +		

## PJ36831 - STP – Display TOD status

==> ZDTIM TOD

CSMP0097I 21.29.19 CPU-B SS-BSS SSU-HPN IS-01

CLKS0010I 21.29.19 TIME OF DAY CLOCK LOCAL STANDARD TIME  
TIME: 21.29.19 DATE: 10/17/10+

CSMP0097I 21.29.19 CPU-B SS-BSS SSU-HPN IS-01

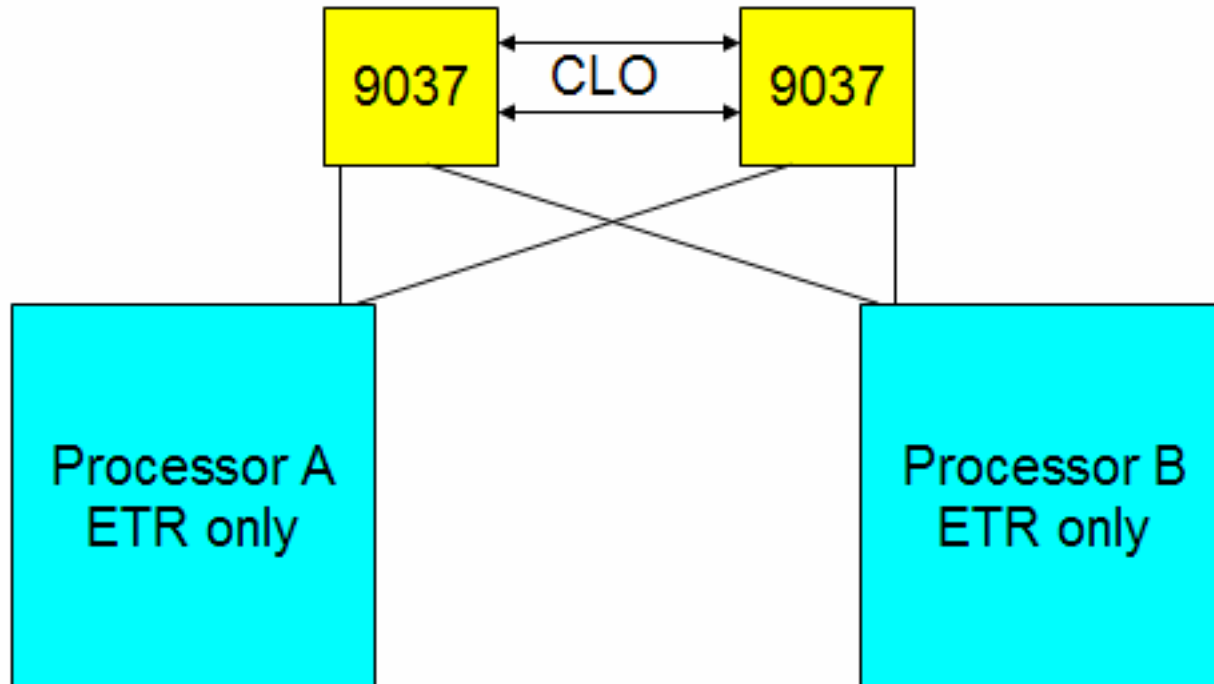
CLKS0181I 21.29.19 SOURCE: REMOTE STATUS: CONFIRMED  
MASTER- CUID: B SERIAL: 03153F MODEL: 2094  
MASTER SYNC SOURCE - STR NETWORK ID: 01  
CTN ID: tpfstp \_  
ETR NET-ID 01  
END OF DISPLAY +

## PJ36831 – ZATIM TOD EXT and ZATIM EXT selection

<b>ETR attached</b>	<b>CTNID</b>	<b>Master sync source</b>
<b>Yes</b>	<b>Not defined</b>	<b>ETR</b>
<b>Yes</b>	<b>Mixed CTN</b>	<b>ETR + STP</b>
<b>No</b>	<b>Mixed CTN</b>	<b>ETR + STP</b>
<b>No</b>	<b>STP only</b>	<b>STP</b>

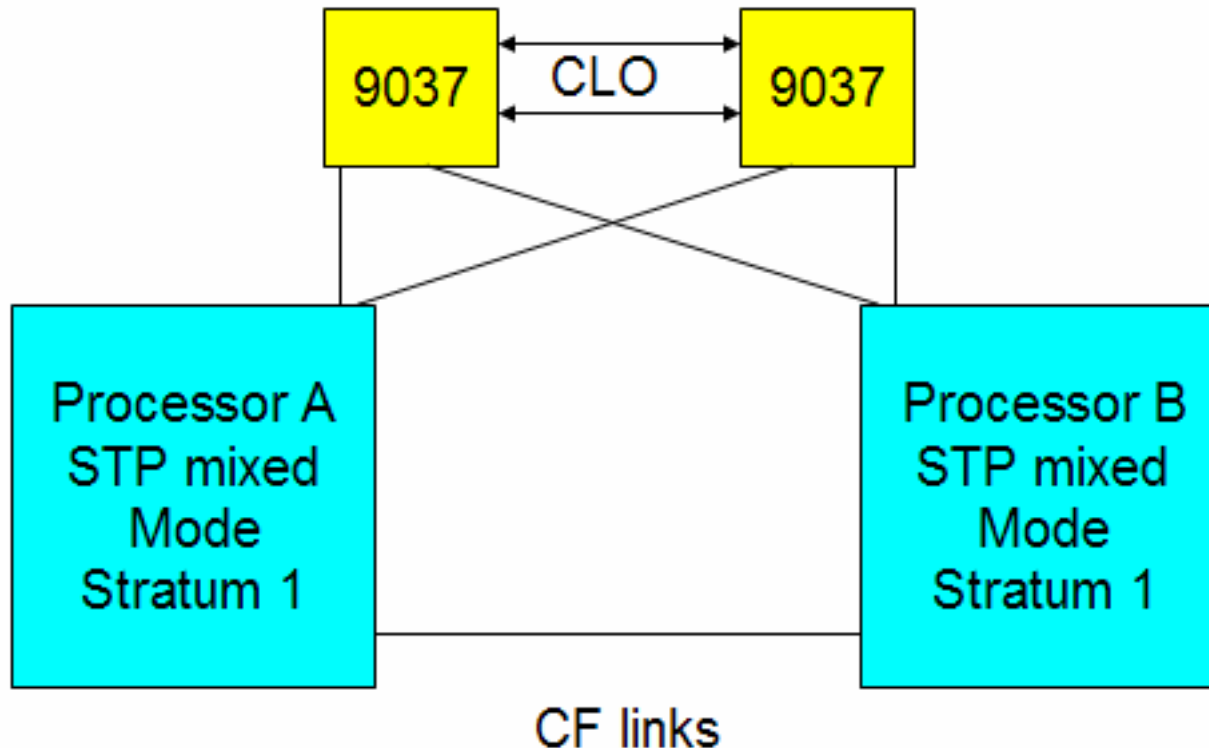
- **ETR attached means that an ETR is attached on machine where the ZATIM TOD EXT is executed.**
- **CTNID means that the machine where ZATIM TOD EXT is executed is part of a CTN with a CTNID defined.**

## PJ36831 – STP Support – ETR only configuration



- **ZATIM TOD EXT will select ETR as master sync source**

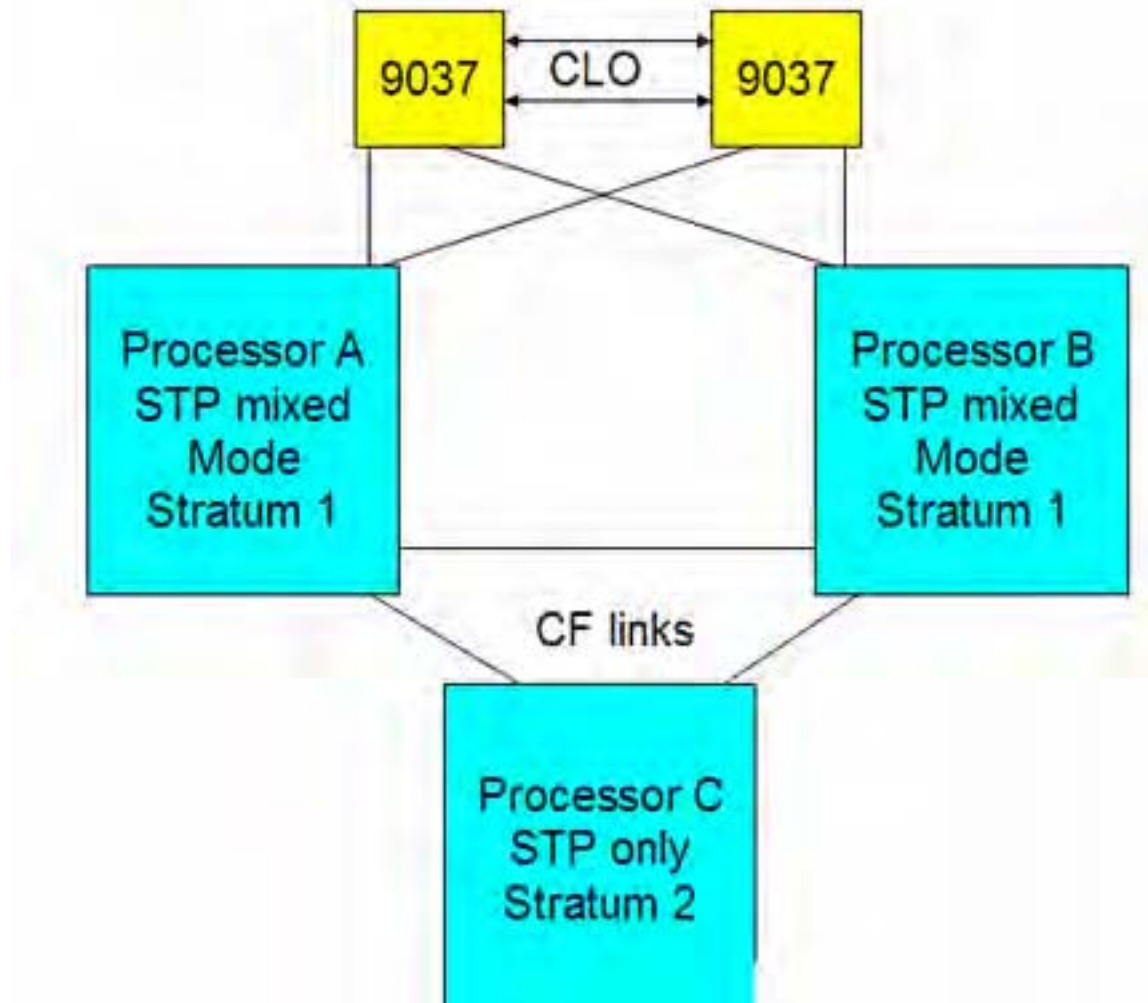
## PJ36831 – STP Support – Mixed mode configuration



- **CTNID defined as mixed mode. CTNID includes the Network ID of the ETR.**
- **ZATIM TOD EXT will select ETR and STP as master sync source**

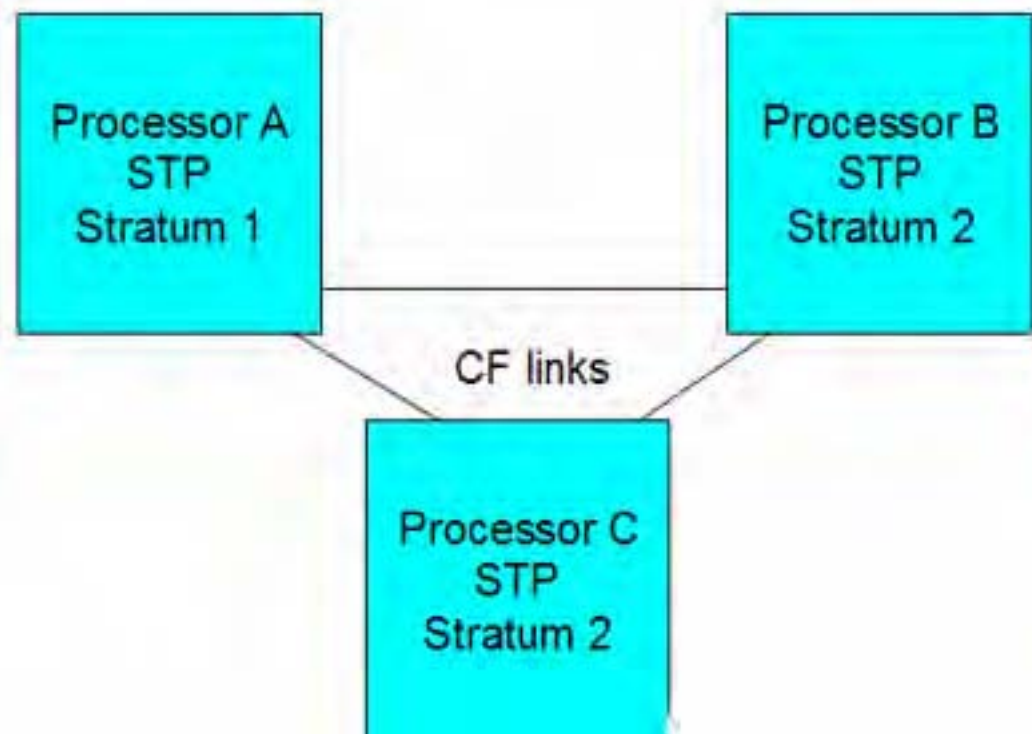


## PJ36831 – STP Support – Mixed mode configuration



## PJ36831 – STP Support – STP only configuration

- **CTNID** defined as **STP** only.
- **ZATIM TOD EXT** will select **STP** as master sync source.
- **Processor A** is defined as preferred **Stratum 1** at **HMC**.



## PJ36831 – Migration to STP

- **Go directly to STP:**
  - Described in Information Center
    - Migrating from local timing mode to STP timing mode
  - High level description:
    - 1) TPF must be IPLed with PJ36831 applied and STP enabled.
    - 2) Cycle z/TPF to 1052 state
    - 3) Enter command ZDTIM TOD
    - 4) Enter command ZATIM xxxx TOD EXT
    - 5) Cycle z/TPF to Norm state

## PJ36831 – Migration to STP

- **Sysplex timer is currently in use**
  - Described in detail in Information Center
    - Migrating from ETR to STP timing mode
  - High level description:
    - 1) Each TPF processor must be IPLed with PJ36831 applied and STP enabled.
    - 2) At the HMC define CTN ID in mixed mode.
    - 3) At the HMC do setup to use STP (e.g. define preferred stratum 1, alternate stratum 1, etc.)
    - 4) At the HMC define CTN ID in STP only.

## PJ36831 – STP day to day operations

- **Monitor for messages that indicate a change happened**
- **The following messages result in a change in TOD sync source:**
  - CLKS0158W ETR IS NO LONGER IN USE
  - CLKS0153W STP IS NO LONGER IN USE

## PJ36831 – STP day to day operations

- **Messages that indicate a change. If the change is not expected, recommend to investigate the reason for the change.**
  - CLKS0160E STP MACHINE CHECK RECEIVED: CLOCK SOURCE ERROR
  - CLKS0161I STP MACHINE CHECK RECEIVED: CONFIGURATION CHANGE
  - CLKS0163E STP MACHINE CHECK RECEIVED: SYNC CHECK
  - CTKS0156I STP SYNC CHECK ADJUSTMENT *adjust\_value*
  - CLKS0165I STP EXTERNAL INTERRUPT RECEIVED: TIME CONTROL PARAMETER CHANGE
  - CLKS0166I STP EXTERNAL INTERRUPT RECEIVED: LINK AVAILABILITY CHANGE
  - CLKS0152W STP HAS ONLY ONE LINK TO NODE *nodeid*

## PJ36831 – STP Reference

- **The following link provides more information about STP in general**

<http://www-03.ibm.com/systems/z/advantages/pso/stp.html>

The end





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