Processor Error Injection

1. Features

Support injection of correctable, uncorrectable(fatal and non-fatal) processor error through EINJ interface. The errors being injected is GMI link error and will be captured in MCA bank 22.

2. Requirements

OS with APEI support.

3. Howto

3.1. Preparation

Enable PFEH.

3.2. Steps for injecting errors under Linux

a. Load kernel module einj

modprobe einj

b. Switch working directory

cd /sys/kernel/debug/apei/einj

c. Find out supported error types

cat available_error_type
output:
```
0x00000001        Processor Correctable
0x00000002        Processor Uncorrectable non-fatal
0x00000004        Processor Uncorrectable fatal
```

d. Set error type to inject

echo $type_code > error_type

NOTE: $type_code is selected from output of `cat available_error_type',
      1 for correctable, 2 for uncorrectable non-fatal, 3 for
      uncorrectable   fatal.

e. Choose target CPU by apicid(optional)

echo $apicid > param3
echo 1 > flags

f. shoot

echo 1 > error_inject

3.3. Check result

After injecting processor errors, the error will be captured in MCA bank
registers. For correctable errors, SMI handler may log the error to SEL.
For uncorrectable processor errors, a system warm-reset may arise and BIOS
should check MCA bank registers to find out what happened.