Business Events Update

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Business Events
Delivered
Enhancements
z/TPFDF Data Events without HOLD

- **Previously:** Data events for z/TPFDF were created only when a subfile was opened with HOLD
  - What about databases that can be updated without HOLD?
  - Subfiles can be updated without HOLD if DB010C=NO is coded on the DBDEF

- **Now:** Data events can be created for subfiles opened without HOLD
  - If updates without HOLD are allowed, data events are created regardless of HOLD status
  - No change in behavior for subfiles that must be opened with HOLD for updates

- APAR PI86942
z/TPFDF Data Event Partition Filter

• **Previously:** For a z/TPFDF file with partitions, data events are created for all subfiles across all partitions
  - Each partition may represent different users or customers
  - May want to create data events for some partitions and not others

• **Now:** Enable a subset of partitions for data events in the business event specification
  - Use the `<partitionIncludeList>` element to define which partitions are enabled for data events
    - Data events are only created for listed partitions
    - No change in behavior if `<partitionIncludeList>` element is not defined
      - Data events are created for all partitions

• APAR PI89192
When collecting updates, a data event contains changed LRECs
- Unchanged LRECs are not part of the data event
- May contain important context
- For example: Customer ID or name
- Event consumers can’t process events without proper context

 Automatically collect LRECs when the subfile is opened and before changes are made
- Use collectOpen=“Y” attribute on <lrec> element to identify LREC IDs to be collected
- LREC IDs with collectOpen=“Y” are collected during subfile open and when updated
- Easily include important context in your data events from seldom updated LRECs

APAR PI89192

Business Event Specification

```xml
<eves:esDataEvent>
  <eves:zTPFDF>
    <eves:collectionType>
      Updates
    </eves:collectionType>
    <eves:lrecIncludeList>
      <lrec id="80" name="CustIDlrec" collectOpen="Y"/>
      <lrec id="90" name="Translrec"/>
    </eves:lrecIncludeList>
  </eves:zTPFDF>
</eves:esDataEvent>
```
z/TPFDF Data Events: Collecting Subfiles

- When collecting subfiles, a data event contains all LRECs in the subfile
  - Collects LRECs asynchronously after the subfile is closed by the application
- Deleted subfiles do not contain any LRECs
  - Data events for deleted subfiles may not have proper context
- Use collectOpen attribute to collect LRECs when the application opens the subfile
  - Deleted subfiles only - Data events include LRECs collected during collectOpen processing
- Does not affect subfile collection for created and updated subfiles
  - Collect LRECs asynchronously and ignore collectOpen LRECs
- APAR PI89192

Business Event Specification

```xml
<eves:esDataEvent>
  <eves:zTPFDF>
    <eves:collectionType>
      Subfile
    </eves:collectionType>
    <eves:lrecIncludeAll>
      <lrec id="80" name="PNRIDlrec">
        collectOpen="Y"
      </lrec>
    </eves:lrecIncludeAll>
  </eves:zTPFDF>
</eves:esDataEvent>
```
New JSON & XML Formats

• Format business events as JSON or XML documents
  • Use <afStandardFormat> element in the dispatch adapter specification
  • Documents based on event message format
    • DFDL for event message format is specified by <esEventMessageFormat> element in business event specification
• Parses directly from binary to desired document
  • Efficient - No intermediate infonodes
  • Transformation Engine eligible
• Documents are encoded using UTF-8
  • If transmitting over MQ, set <charSetName> element in dispatch adapter to UTF8

JSON
APAR PJ44767
Example:
{"Event": {
  "EventHeader": {
    "size":61,
    "structID":"C5C8",
    "version":1,
    "ECBCtxFlag":0,
    "UsrCtxFlag":0,
    "eventName": "MySampleEvt",
    "eventType":2,
    "ssuName":"BSS",
    ...
  },
  "EventData": {
    "EventDataHdr": {
      ...
    }
  }
}

XML
APAR PJ44894
Example:
<MySampleEvt:Event>
  <MySampleEvt:EventHeader>
    <ibev:size>61</ibev:size>
    <ibev:structID>C5C8</ibev:structID>
    <ibev:version>1</ibev:version>
    <ibev:ECBCtxFlag>0</ibev:ECBCtxFlag>
    <ibev:UsrCtxFlag>0</ibev:UsrCtxFlag>
    <ibev:eventName>MySampleEvt</ibev:eventName>
    <ibev:eventType>2</ibev:eventType>
    <ibev:ssuName>BSS</ibev:ssuName>
    ...
  </MySampleEvt:EventHeader>
  ...
</MySampleEvt:Event>
Previously: Transmit business events over MQ using a single remote queue name

- Define the queue name using the `<queueName>` element in the dispatch adapter
  - Example: SEND.TO.OPS
- All processors in the loosely coupled complex use the same queue name
- All events go to the same event consumer
- May overload a single event consumer

Now: Transmit business events over MQ using a different queue name for each processor

- New attribute adds the processor ID as a suffix to the queue name
  - Use `suffixType=".procid"` attribute on `<queueName>` element
  - Examples: SEND.TO.OPS.A SEND.TO.OPS.B
- Events can go to different event consumers

APAR PJ45085
Business Event Data Areas

Event Message

- Event name, timestamp, intercept name, etc.
- Initialized and managed by z/TPF system

Event Header

Event ECB Context

- Optional user area shared across events for an ECB

Event User Context

- Optional user area unique to an event

Event Data

- Signal Event: User data passed from tpf_bev_signal() API
- Data Event: Database context and data captured by z/TPF system

User Format Data

- Optional data area separate from the business event
ECB and User Context

- Event ECB Context
  - Context across all events for this ECB
  - For example: message type (booking, reaccommodation, credit auth), ECB information, etc.

- Event User Context
  - Context specific to this event
  - For example: PNR ID for this PNR subfile

- For both types of context
  - User defined size and structure
  - Added through application or dispatch enrichment programs
  - Part of the event - Included in standard formats
  - Must be defined by the event message DFDL schema

Event Message

- Event Header
  - Event name, timestamp, intercept name, etc.
  - Initialized and managed by z/TPF system

- Event ECB Context
  - Optional user area shared across events for an ECB

- Event User Context
  - Optional user area unique to an event

- Event Data
  - Signal Event: User data passed from tpf_bev_signal() API
  - Data Event: Database context and data captured by z/TPF system
User Format Data

- User format data is “extra” data that is passed along with the event
  - It is NOT part of the event
  - Pass control information, formatting instructions, etc. between user programs
  - Stage context information for later processing
  - Use for any other event processing needs

- Created, accessed, and changed in user programs
  - Application enrichment program
  - Dispatch enrichment program
  - Event custom data format program

- See the tpf_bev_data_format_user_data structure in the tpf/ibev.h header file
  - Structure is a length field followed by an undefined data area
  - User defined size and data area

User Format Data

- Optional data area separate from the business event
Business Event Standard Formats

- Format the event message using a predefined set of formats

- Formats the event message using the DFDL schema in the business event specification
  - Includes all event message components
  - DFDL schema specified by <esEventMessageFormat> element

- Specify format using <afStandardFormat> element in the business event dispatch adapter specification
  - JSON
  - XML
  - NONE (Binary)
  - CBE (Common Base Event)

Event Message

- Event name, timestamp, intercept name, etc.
  - Initialized and managed by z/TPF system

- Optional user area shared across events for an ECB

- Optional user area unique to an event

- Signal Event: User data passed from tpf_bev_signal() API
  - Data Event: Database context and data captured by z/TPF system
Business Event Custom Format

• Use event custom format programs to create user defined formats
  • User written program that formats the event
  • Any format you need - binary, character, mixed, custom JSON / XML, or anything else
  • Formatted event must be a single continuous area of ECB heap

• Format program is called by business event dispatch processing before transmit

• Specify event custom format program name using the <afEventCustomFormat> element in the business event dispatch adapter specification
For more information, see the z/TPF Knowledge Center

• For information on business events, see the “Business event processing” topic

• For syntax and examples on the business event specification and the dispatch adapter specification, see “Deployment descriptors” topic

• z/TPF Knowledge Center https://www.ibm.com/support/knowledgecenter/SSB23S
Thank You!
Notes

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