

TECHNOLOGY BULLETIN 20-006

Apr 07, 2020

Improvement to ITK22 Virtual Serial Driver (Version 2.0.9.1)

UPDATE: This bulletin addresses recent changes in:

1. ITK22 Virtual Serial Driver to address customer identified issue.
2. This version is Microsoft Signed for Windows 10.

Update from v2.0.8.1 to v2.0.9.1:

This version was created for Microsoft signing and public distribution.

1. Reversion for Microsoft Certification

Changed the version number and ran Microsoft Hardware Lab Kit tests v1903. Once the tests passed this version was submitted to Microsoft to be digitally signed for Windows 10.

Update from v2.0.7.1 to v2.0.8.1:

1. Blue Screen WDF_VIOLATION

This fatal queue error is caused by driver calling WdfIoQueueStopSynchronously. This call can sometimes interfere with the queue handling and should not be used.

Driver Affected:

- PAPrinter.sys

Cause:

- WdfIoQueueStopSynchronously can interfere with Interrupt Requests being dispatched on IRQL Dispatch. This causes a blue screen.
- Issue proved with test application provided by customer.

Fix:

- WdfIoQueueStopSynchronously was used to prevent WdfRequest Writes while PAUSBComm queue was being purged.
 - Removed WdfIoQueueStopSynchronously.
 - Replaced with Write WdfRequest requeue handling when write failed with error STATUS_INVALID_DEVICE_STATE. This error is caused when PAUSBComm write queue is in stopped state caused by queue purging.

2. **Write Request Cancelled**

This error occurred when attempting to write to the printer while the write queue is still being purged.

Driver Affected:

- PAPrinter.sys

Cause:

- Purging write queue requires the queue to be stopped and each WdfRequest already queued to be completed as STATUS_CANCELLED. During this process new write requests are also cancelled with the STATUS_CANCELLED status.
- Issue proved with test application provided by customer.

Fix:

- Same fix as “1. Blue Screen WDF_VIOLATION”

3. **Blue Screen IRQL_NOT_LESS_OR_EQUAL**

This fatal error is caused by data being accessed after the request has been cancelled or completed. Or when the request is owned by a different process.

Driver Affected:

- PAUSBComm.sys

Cause:

- When WdfRequest objects are completed, the data pointers become invalid. The WDF (Windows Driver Framework) assumes that invalid pointers are caused by data that is paged. And generates this blue screen.
- Issue seen twice by customer when printer resetting.
- This issue was not duplicated during testing.

Fix:

- Ensure all WdfRequest objects in PAUSBComm driver are cancelled or completed when required by the “Windows Driver Framework”.