The Transcoder in Wowza Streaming Engine™ media server software supports Intel Quick Sync and NVIDIA NVENC accelerated encoding on Windows and Linux, and NVIDIA CUDA accelerated encoding on Windows. When Transcoder runs for the first time, it checks to see if any hardware acceleration resources are available and logs this information in the Wowza Streaming Engine access log file ([install-dir]/logs/wowzastreamingengine_access.log) or the Wowza Media Server log ([install-dir]/logs/wowzamediaserver_access.log). This article describes what to look for in the logs to determine if hardware acceleration is available and if it’s being used.

Notes:

- Wowza Streaming Engine or Wowza Media Server™ software (version 3) is required.
- If you’re running Wowza Streaming Engine in standalone mode, you can also look for the following statements in real-time in the console window that you used to start the server. For more information, see Start and stop Wowza Streaming Engine.
- **Important:** NVIDIA CUDA encoding acceleration isn’t supported in the latest NVIDIA graphics drivers (340 and later). CUDA-based accelerated encoding is *not* supported in Wowza Streaming Engine 4.1.2 and later.

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**Intel Quick Sync acceleration**

Wowza Streaming Engine uses the Intel Media SDK to provide accelerated transcoding using Quick Sync technology on Windows and Linux operating systems. To determine if Quick Sync hardware acceleration is available, look for the following log statements:

**Quick Sync is available**

JNI:TranscoderSession.isQuickSyncAvailable[streamName]: Intel Quick Sync hardware acceleration is available

**Quick Sync isn't available**

JNI:TranscoderSession.isQuickSyncAvailable[streamName]: Intel Quick Sync hardware acceleration is NOT available

To use the Quick Sync encoder, in `[install-dir]/transcoder/templates/[template].xml`, set the `Encode/Video/Implementation` property (Wowza Streaming Engine) or `Encode/Video/Transcoder` property (Wowza Media Server) to `QuickSync`. If you choose the `QuickSync` encoder but hardware acceleration isn't available, Transcoder will use the default `MainConcept software encoder`.

**NVIDIA NVENC acceleration**

Wowza Streaming Engine and Wowza Media Server (version 3.6) support NVIDIA graphics cards with Kepler and Maxwell GPU architecture for accelerated transcoding on 64-bit Windows and Linux operating systems. These graphics cards incorporate the hardware-based NVENC H.264 or HEVC/H.265 video encoder. To determine if NVIDIA NVENC hardware acceleration is available, look for the following log statements:

**NVENC is available**

JNI:TranscoderSession.isCUDAAvailable[streamName]: NVidia NVENC hardware acceleration is available
NVENC isn't available

JNI:TranscoderSession.isCUDAAvailable[streamName]: NVidia NVENC hardware acceleration is NOT available

To use the NVENC encoder, in `[install-dir]/transcoder/templates/[template].xml`, set the `Encode/Video/Implementation` property (Wowza Streaming Engine) or `Encode/Video/Transcoder` property (Wowza Media Server) to **NVENC**. If you choose the **NVENC** encoder but NVENC hardware acceleration isn’t available, **NVIDIA CUDA encoder acceleration** will be used if your hardware and your version of Wowza Streaming Engine or Wowza Media Server supports it. If neither of the NVIDIA accelerated encoding technologies are supported, Transcoder uses the default **MainConcept software encoder**.

**Note:** Older graphics drivers for your NVIDIA hardware may limit NVENC-based video encoding to approximately 30 simultaneous encoding sessions. Update your graphics driver to the latest version to avoid this limitation.

NVIDIA CUDA acceleration

**Important:** NVIDIA CUDA encoding acceleration isn’t supported in the latest NVIDIA graphics drivers (340 and later). CUDA-based accelerated encoding is *not* supported in Wowza Streaming Engine 4.1.2 and later.

Wowza Streaming Engine uses the NVIDIA CUDA SDK to provide accelerated transcoding using CUDA technology on Windows operating systems. To determine if NVIDIA CUDA hardware acceleration is available, look for the following log statements:

**CUDA is available**

JNI:TranscoderSession.isCUDAAvailable[streamName]: NVidia CUDA hardware acceleration is available

**CUDA isn’t available**
JNI:TranscoderSession.isCUDAAvailable[streamName]: NVidia CUDA hardware acceleration is NOT available

To use the CUDA encoder, in [install-dir]/transcoder/templates/[template].xml, set the **Encode/Video/Implementation** property (Wowza Streaming Engine) or **Encode/Video/Transcoder** property (Wowza Media Server) to **CUDA**. If you choose the CUDA encoder but CUDA hardware acceleration isn’t available, Transcoder will use the default **MainConcept software encoder**.

**MainConcept software**

If your hardware doesn’t support acceleration technologies, you can use the default MainConcept software encoder, which doesn’t use hardware acceleration. To use the MainConcept software encoder, in [install-dir]/transcoder/templates/[template].xml, set the **Encode/Video/Implementation** property (Wowza Streaming Engine) or **Encode/Video/Transcoder** property (Wowza Media Server) to **default**.

**Notes**

- You can configure the configure the **Implementation** setting in Wowza Streaming Engine for encoding presets and the decoding preset in **Wowza Streaming Engine Manager**. For more information, see **Set up and run Transcoder in Wowza Streaming Engine**.
- You’ll only experience accelerated transcoding performance if you have the required hardware and drivers. Make sure that you’re always running the latest driver for your hardware:
  - Server specifications for Intel Quick Sync acceleration with Wowza Streaming Engine transcoding
  - Server specifications for NVIDIA NVENC and NVIDIA CUDA acceleration with Wowza Streaming Engine transcoding
- On more recent Windows operating systems, Intel Quick Sync and NVIDIA CUDA hardware acceleration may not be available when running Wowza Streaming Engine as a system service due to a security measure called Session 0 Isolation. For information about how to work around this issue, see **Enable hardware-accelerated transcoding for Wowza Streaming Engine when running as a Windows service**.
If the computer running Wowza Streaming Engine has both NVIDIA NVENC and CUDA graphics cards, you'll see the following statement in the console window after Transcoder starts:

```
J NI: TranscoderSession.isCUDAAvailable[streamName]: NVidia CUDA and NVENC hardware acceleration is available
```

To specify the encoder to use, in `[install-dir]/transcoder/templates/[template].xml`, set the `Encode/Video/Implementation` property (Wowza Streaming Engine) or `Encode/Video/Transcoder` property (Wowza Media Server) to the appropriate value. Note that the NVENC encoder is nearly four times faster than the legacy CUDA encoder and consumes less power.

If your NVIDIA graphics card doesn’t have the NVENC hardware-based video encoder, which comes with most NVIDIA graphics cards with Kepler and Maxwell GPU architecture, NVIDIA CUDA encoding acceleration will be used if your hardware and Wowza media server software version supports it. If neither of these accelerated encoding technologies are supported, then the unaccelerated MainConcept software encoder is used.

You can log the results of the Transcoder hardware inspection that occurs when the Transcoder is invoked for the first time using the `transcoderLogHardwareInspection` property. To add this property, do the following:

1. In Wowza Streaming Engine Manager, click the **Server** tab.
2. On the Server Setup page **Properties** tab, click **Custom** in the **Quick Links** bar.

   **Note:** Access to the **Properties** tab is limited to administrators with advanced permissions. For more information, see **Manager credentials**.

3. In the **Custom** area, click **Edit**.
4. Click **Add Custom Property**, specify the following settings in the **Add Custom Property** dialog box, and then click **Add**:

   - **Path** - Select `/Root/Server`.
   - **Name** - Enter `transcoderLogHardwareInspection`.
   - **Type** - Select **Boolean**.
   - **Value** - Enter `true`.
5. Click **Save**, and then restart the live application to apply the changes.

The logs captured when the `transcoderLogHardwareInspection` property is enabled are similar to the following. In this example, NVIDIA CUDA and Intel Quick Sync hardware was found during the inspection:

```
{
    "infoCUDA":{
        "available":true,
        "availableFlags":65659,
        "countGPU":1,
        "driverVersion":367.35,
        "cudaVersion":8000,
        "isCUDAOldH264WindowsAvailable":false,
        "gpuInfo":{
            "name":"Quadro M5000",
            "versionMajor":5,
            "versionMinor":2,
            "clockRate":1038000,
            "multiprocessorCount":16,
            "totalMemory":8513257472,
            "coreCount":2048,
            "isCUDANVCUVIDAvailable":true,
            "isCUDAH264EncodeAvailable":true,
            "isCUDAH265EncodeAvailable":true,
            "getCUDANVENCVersion":5
        }
    },
    "infoQuickSync":{
        "available":true,
        "availableFlags":523,
        "versionMajor":1,
        "versionMinor":16,
        "isQuickSyncH264EncodeAvailable":true,
        "isQuickSyncH265EncodeAvailable":false,
        "isQuickSyncVP8EncodeAvailable":false,
        "isQuickSyncVP9EncodeAvailable":false,
        "isQuickSyncH264DecodeAvailable":true,
        "isQuickSyncH265DecodeAvailable":false,
        "isQuickSyncMP2DecodeAvailable":true,
        "isQuickSyncVP8DecodeAvailable":false,
        "isQuickSyncVP9DecodeAvailable":false
    },
    "infoVAAPI":{
        "available":false
    },
"infoX264": {
    "available": false
},
"infoX265": {
    "available": false
},
"infoAdvantechVega": {
    "available": false
},
"infoIntrinsicScaler": {
    "available": true
}