Intel® Graphics Driver v38.15.0 for Windows* 7 (32-bit) for Intel® Pentium®/Celeron® Processor N3000 Family and Intel® Atom™ x5-E8000 Processor

Release Notes

March 2016
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## Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>- Support Intel® Pentium®/Celeron® Processor N3XXX Family C0/D1 Steps and Intel® Atom™ x5-E8000 Processor D1 step.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Update Message of the Week (MOW) CDI document number.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Updated resolution of Known Issue #5221324, the ARB_compressed_texture_pixel_storage test and OpenGL 4.2 (compressed-pxstore) test pass in latest build #1125, remove from the OGL failure list.</td>
</tr>
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Intended Audience

This document is intended for all platform and system developers who need to interface with the graphics subsystem. This includes but is not limited to: platform designers, system BIOS developers, system integrators, original equipment manufacturers, system control application developers, and end users.

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Customer Support

The Intel® Premier Support (IPS) provides an interactive website where Intel® Software Development Product customers can submit questions and requests for technical support.

To submit a question or sighting, go to Intel® Premier Support:
https://premier.intel.com/

For more information on registering with Intel® Premier Support, go to:

Note: If your distributor provides technical support for this product, please contact them for support rather than Intel.
1.0 Introduction

Intel® Graphics Driver is designed specifically to support the unique GRAPHICS DRIVER requirements of embedded applications for Intel® processor-based platforms with integrated graphics capability. This document provides release specifics and technical information on:

- Release package contents
- System requirement, hardware and software compatibility
- Features information and limitation
- Known issues
- Reference documents

For detailed installation instructions, please refer to the User Guide which is included in the release package.

1.1 Terminology

Table 1. Terminology

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP*</td>
<td>Display Port</td>
</tr>
<tr>
<td>BKC</td>
<td>Best Known Configuration</td>
</tr>
<tr>
<td>BIOS</td>
<td>Basic Input/Output System</td>
</tr>
<tr>
<td>BMP</td>
<td>BIOS Modification Program; allows customizing the data in VBT</td>
</tr>
<tr>
<td>CRB</td>
<td>Customer Reference Board</td>
</tr>
<tr>
<td>eDP*</td>
<td>Embedded Display Port</td>
</tr>
<tr>
<td>GOP</td>
<td>Graphics Output Protocol</td>
</tr>
<tr>
<td>HDMI</td>
<td>High-Definition Multimedia Interface, an uncompressed, all-digital, audio/video interface</td>
</tr>
<tr>
<td>IOTG</td>
<td>Intel® Internet of Things Group</td>
</tr>
<tr>
<td>OS</td>
<td>Operating System</td>
</tr>
<tr>
<td>SoC</td>
<td>System On Chip</td>
</tr>
</tbody>
</table>
Introduction

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>vBIOS</td>
<td>Video Basic Input Output System. A component of system BIOS that drivers graphics input and output</td>
</tr>
<tr>
<td>VBT</td>
<td>The Video BIOS Table (VBT) is a block of customizable platform-specific data used by the Video BIOS and device drivers such as Flat Panel Timings, OEM definable Mode Timings, GPIO pins, Clock and more.</td>
</tr>
<tr>
<td>VIP</td>
<td>Intel® Validation Internet Portal</td>
</tr>
</tbody>
</table>

1.2 Reference Documents

Table 2. Reference Documents

<table>
<thead>
<tr>
<th>Document</th>
<th>Document No./Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel® Graphics Driver v38.15.0 for Intel® Pentium®/Celeron® Processor N3000 Family Windows User’s Guide</td>
<td>332136</td>
</tr>
<tr>
<td>Intel® HD Graphics – Binary Modification Program (BMP) - User Guide for GOP/VBIOS VBT - Rev. 1.0</td>
<td>556723</td>
</tr>
<tr>
<td>Best Known Configuration (BKC) of Windows* 7/Windows Embedded Standard* 7 for IOTG Braswell Customer Reference Board (Cherry Hill**)</td>
<td>556987</td>
</tr>
<tr>
<td>Braswell Platform for Internet of Things (IoT) Product Overview</td>
<td>541278</td>
</tr>
<tr>
<td>Braswell (IOTG) Platform - Message of the Week (MOW)</td>
<td>558590</td>
</tr>
<tr>
<td>Intel® Graphics Driver v38.15.0 (32-bit) for Windows* 7 Operating Systems Technical Product Specification (TPS) Supporting Intel® Pentium®/Celeron® Processor N3000 Family</td>
<td>558204</td>
</tr>
</tbody>
</table>

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2.0  Release Content

This release contains the following:

- User Guide
- Release Notes (this file)
- License
- VBIOS and BMP (BIOS Modification Program) is required for Windows* 7/Windows Embedded Standard* 7 to Customize the BIOS for individual flat panel display. The VBIOS and BMP can be obtained from VIP (https://platformsw.intel.com/). If you do not have access, contact your Intel Representative

Note:

<REL> = Release Type: Alpha, Beta, or Gold

<XXXX> = build version number

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3.0 Hardware and Software Compatibility

This section provides a complete summary of the hardware and software compatibility.

3.1 Supported SoC

The SoC supports the Intel® Pentium®/Celeron® Processor N3000 Family and Intel® Atom™ x5-E8000 Processor.

Please check with your system provider to determine the Intel® processor used in your system.

3.2 Support Operating Systems

This version of driver supports the following OS or distributions:

- Microsoft® Windows® 7 Professional (32-bit)
- Microsoft® Windows® 7 Ultimate (32-bit)
- Microsoft® Windows Embedded Standard® 7 (32-bit)
- Microsoft® Windows Embedded POSReady® 7 (32-bit)

3.2.1 BIOS/Firmware Version

The driver is supported with the BIOS/Firmware version specified in the BKC for Windows® 7/Windows Embedded Standard® 7. Refer to the BKC for details.
4.0 Features and Limitations

4.1 New in This Release

- Support Intel® Pentium®/Celeron® Processor N3XXX Family and Intel® Atom™ x5-E8000 Processor D1 Stepping.

4.2 Existing Features from Previous Release

The following are existing features from previous releases:

- Driver includes Microsoft* WHQL certification.
- Supports up to three simultaneous displays (refer to Limitations for details)
- Driver supports a Display Interface of HDMI 1.4b, eDP* 1.4, DP* 1.1a.
- Driver supports a wide range of display resolutions. 640x480@60Hz is the minimum resolution supported and 2560x1600X24bpp@60Hz is the maximum resolution supported on eDP*, 3840x2160X24bpp@30Hz/2560x1600x24bpp@60Hz is the maximum resolution supported on DP*, and HDMI Display.
- Single, clone, and extended display modes are supported.
- 2D, D3D, OpenGL* 1.x/2.x/3.x/4.2 and OpenCL* 1.2 are supported.
- HDCP version 1.4 is supported.
- Full video decoding capability for HEVC, H.264, MPEG2, MVC, WMV/VC-1, JPEG, MJPEG, and VP8.
- Full video encoding capability for H.264, MVC, JPEG, and MJPEG.
- Media SDK which offers a custom framework for video encoding.
- HD Audio.
- MVC Encode and Decode supported via Media SDK.
- LVDS bridge support for eDP*/DP* to LVDS based on Chrontel* 7511 and Parade* PS8625.
- Support OpenGL and OpenCL extensions.

4.3  Limitations

The following are limitations or unsupported features in this version of the driver:

- Intel® Automatic Display Brightness is not supported in this release.
- eDP* interface only validated up to v1.3.
- Three simultaneous displays are validated only with the configuration of the DDI0-HDMI port, DDI1-DP port, and DDI2- DP port. Results may differ based on configuration, resolution, and workload.
## 5.0 Known/Fixed Issues

### 5.1 Known Issues

Table 3 lists the known issues in this release:

<table>
<thead>
<tr>
<th>Reference Number</th>
<th>Description</th>
<th>Resolution/Workaround</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>5221316</td>
<td>In Common User Interface (CUI) profile page new profile settings created do not follow user selections</td>
<td>This is determined to be design behavior. Whenever a new profile is created, all the pages (Display, Video, #D, Options and others) are defaults made available to users.</td>
<td>No Fix (Expected behavior)</td>
</tr>
<tr>
<td>5221324</td>
<td>GLSL v1.x, 4.x failures.</td>
<td>The specific OGL failures include Multithreading (multithread), Framebuffer object (fbo), Draw buffers 2 (draw-buffers2), GLSL built-in functions, textureGrad (glsl-bif-tex-grad), Texture integer sampling (int-textures-sampling), GLSL sampler 2D rectangle (glsl-sampler2DRect), Various OpenGL 3.x tests (gl33), Sampling shadows maps with textureGrad* (shadow-grad), Tessellation shader usage test (tess-usage), Double precision types test (glsl-fp64-types), Sample shading test (sample_shading), Various OpenGL 4.0 tests (gl40), ARB_get_program_binary test, OpenGL 4.1 (get-program-binary), ARB_shading_language_420pack test, OpenGL 4.2 (glsl-420pack), ARB_base_instance test, OpenGL 4.2 (baseinstance), Various OpenGL 4.2 tests (gl42).</td>
<td>No Fix planned at this time</td>
</tr>
<tr>
<td>5221380</td>
<td>No display when passive converter/cable is used.</td>
<td>The DP Port of the Cherry Hill CRB doesn’t support passive converter; please use active converter. This is a CRB limitation that cannot be fixed in the graphics driver.</td>
<td>No Fix (HW limitation)</td>
</tr>
<tr>
<td>5221404</td>
<td>vbebat02.exe shows corruption on certain resolution in certain monitor.</td>
<td>This is root caused to test tool issue that cannot be fixed in the graphics driver.</td>
<td>No Fix</td>
</tr>
</tbody>
</table>
### Known/Fixed Issues

<table>
<thead>
<tr>
<th>Reference Number</th>
<th>Description</th>
<th>Resolution/Workaround</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>5221491</td>
<td>High CPU usage and video playback lagging on 4K display.</td>
<td>Observed high CPU usage on playing 4K video using media player classic. Video playback start to lag and not in sync with audio when CPU utilization increased. This issue only happens when configure the media player classic with Intel® QSV or DXVA2 (Copyback) as the hardware decoder. For workaround, please configure with DXVA2 (Native).</td>
<td>No Fix (Quick Sync and DXVA2 (Copyback) are not supported)</td>
</tr>
<tr>
<td>1504169384</td>
<td>For system setup of DP port with certain UHD monitor, the CUI Display Resolution Setting list doesn't have 4 K resolution option.</td>
<td>Issue under investigation, there is no planned workaround at this time.</td>
<td>TBD</td>
</tr>
<tr>
<td>1504169311</td>
<td>Black Screen when running 3DMark11 on Cherry Hill CRB DDI2 port (Display Port).</td>
<td>Issue under investigation, there is no planned workaround at this time.</td>
<td>TBD</td>
</tr>
<tr>
<td>1504169256</td>
<td>No display on Cherry Hill CRB DP port (J5A1) after perform more than 6 cycle of screen rotation.</td>
<td>Issue under investigation, there is no planned workaround at this time</td>
<td>TBD</td>
</tr>
<tr>
<td>1504169108</td>
<td>4 K video playback lagging when Windows AERO theme is enabled.</td>
<td>Disable AERO in 4K video playback situations.</td>
<td>TBD</td>
</tr>
</tbody>
</table>

### 5.2 Fixed Issues

Table 4 lists the issues fixed in this release:

<table>
<thead>
<tr>
<th>Reference Number</th>
<th>Description</th>
<th>Resolution/Workaround</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
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March 2016

Document Number: 332832-002US

Release Notes

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6.0  Where to Find the Release

The Intel® Graphics Driver package can be downloaded from one of the following locations:

- The Intel® Validation Internet Portal (VIP). You can search for the packages by kit number or version number. The Intel® Graphics Driver packages kit number is specified in the platform specific BKC of Windows* Operating System, and also published in the Message of the Week (MOW). BKC and MOW can be obtained from IBL/CDI. For access to VIP, go to https://platformsw.intel.com/home.aspx. If you do not have access, contact your Intel® Representative.


Table 5 lists the release package version numbers.

Table 5. Release Package Versions

<table>
<thead>
<tr>
<th>Release Type</th>
<th>Title</th>
<th>Release Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR1</td>
<td>Intel® Graphics Driver MR1</td>
<td>38.15.0.1125</td>
</tr>
<tr>
<td></td>
<td>38.15.0.1125</td>
<td></td>
</tr>
</tbody>
</table>
7.0 **Software Licenses**

This is a Gold release with production licenses.

The Intel® Graphics Driver, Intel® Display Audio Driver, and Intel® Media SDK are subject to the terms of the license agreement located in the license file in this distribution package. Read, understand, and agree to the terms before using the Drivers in this release package.

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