



Intelligent Systems

# Intel® Atom™ Processor N2000 & D2000 Series Based Platforms (formerly Cedar Trail) for Intelligent Systems Designs

Customer Dashboard  
ISG Product Line Management  
WW44'12

# Legal Disclaimer

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL® PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. INTEL PRODUCTS ARE NOT INTENDED FOR USE IN MEDICAL, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS.

Intel may make changes to specifications and product descriptions at any time, without notice. All products, dates, and figures specified are preliminary based on current expectations, and are subject to change without notice.

Intel, processors, chipsets, and desktop boards may contain design defects or errors known as errata, which may cause the product to deviate from published specifications. Current characterized errata are available on request.

All code names featured are used internally within Intel to identify products that are in development and not yet publicly announced for release. Customers, licensees and other third parties are not authorized by Intel to use code names in advertising, promotion or marketing of any product or services and any such use of Intel's internal code names is at the sole risk of the user.

Intel and the Intel logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

\*Other names and brands may be claimed as the property of others.

Copyright © 2012 Intel Corporation.

# Change Log (WW44)

- Updated timelines (Linux Fedora 14 Remix update)
- Added updates to Windows\* 7 support
- Additional FAQ

# SKUs & Ordering Details

## ISG Roadmap SKUs (7 years availability)

Processor Name	TDP	CPU Freq	Gfx Freq	Cores/Cache	DDR3 Ctrl. Freq	MM# (B3 PRO)
Intel® Atom™ Processor N2800	6.5W	1.86 GHz	640 MHz	2C4T/1M L2	1066 MHz	922908
Intel® Atom™ Processor N2600	3.5W	1.6 GHz	400 MHz	2C4T/1M L2	800 MHz	922909
Intel® Atom™ Processor D2550	10W	1.86 GHz	640 MHz	2C4T/1M L2	1066 MHz	922869

## Chipset

Chipset Name	TDP	MM#
Intel® CG82NM10 Platform Controller Hub	2.1W	903500

# POR OSes and Schedules

OS	Version	Graphics/Media	Support Contact	Availability
Windows* Standard	Win7/WES7 (32b)	DX9 & Media - Accelerated (GMA)	Intel	Now
Windows* Standard	WinXP/WinXPe (32b)	DX9 - Accelerated, Media - non accelerated (EMGD)	Intel	Now
Windows* Compact	WEC7 (32b)	Non Accelerated (EMGD)	Bsquare, Adeneo	Now
Linux*	Fedora 14 Remix (32b)	Gfx & Media - Accelerated (BSP Integrated)	Timesys* LinuxLink*	Now
Linux*	Yocto-project based (32b)	Gfx & Media - Accelerated (BSP Integrated)	Timesys* LinuxLink*, Yocto project Community	Now
QNX*	SDP 6.5 SP1	Non Accelerated	QNX*	Now
VxWorks*	Version 6.9.2	Non Accelerated	Windriver* (Intel)	Now

Yocto tool has a single BSP that allows for configuring with either one of the following prefixes:

- "Cedartrail" - uses Intel Power VR to enable Graphics and Media Acceleration
- "Cedartrail-nonopvr" - Non-accelerated graphics driver (VESA)

Refer to the link for further information: [LINK](#)

## Download & Support

- Intel premier Support (QUAD): <http://premier.intel.com>
- Timesys Support via email: [llsupport@timesys.com](mailto:llsupport@timesys.com)
- Yocto based BSP Location: <http://www.yoctoproject.org/download>
- Bsquare: <http://www.bsquare.com/software-downloads.aspx>
- Adeneo: <http://www.adeneo-embedded.com/en/Products/Board-Support-Packages/Intel>
- QNX: <http://www.qnx.com/download/group.html?programid=20905>

## BLDK (Boot Loader Development Kit)

Supported OSes:

- Linux (Fedora 14 Remix, Yocto)
- WEC7

Supported platform:

- Cedar Rock CRB

Now	Nov'12	Dec'12
GOLD (B2/B3) Cedar Rock	GOLD (B2/B3) Dev kits	

# Graphics Details

Feature	Win7/WES7	WinXP/XPe	WEC7	Linux (Fedora 14 Remix / Yocto)
Driver Software name/ver.	GMA 3600/MR2 1086	EMGD/1.15	EMGD/1.15	Linux PowerVR Graphics/Media
Download link	<a href="#">Link</a> Kit # 47038	<a href="http://EDC.intel.com">EDC.intel.com</a> ; QUAD for BETA (1.15)		<a href="#">Yocto</a> ; Fedora 14 Remix (Timesys <a href="#">Link</a> )
Max eDP resolution	1080p (1920x1080 D2000 / 1366 x 768 N2000)			
Max DP resolution	WQXGA (2560x1600 D2000 / 1600 x 1200 N2000)			
Max HDMI/VGA resolution	WUXGA (1920x1200)			
Max LVDS resolution	1440x900 (D2000) / 1366 x 768 (N2000)			
Dual Independent Display	Yes	Yes	Yes	Yes
2D HW acceleration	Directdraw	Directdraw	-None-	EXA and XRandR
3D HW acceleration	DX9 Direct3D	DX9 Direct3D	-None-	OpenGL ES 2.0 HTML5WebGL
HW Media Acceleration	DXVA	-None-(SW only)	-None-(SW only)	VA API
HW Codecs supported	H.264, MPEG2, VC-1	N.A.	N.A.	H.264, MPEG2
Blu-ray	v2.0	-None-	-None-	-None-
Output Content Protection	v1.3 (HDMI) / 1.1 (DP)	v1.3 (HDMI only)	-None-	-None-
Media players	Windows* Media Player, PowerDVD*10, Total Media Theatre 3*	-	-	MPlayer*

# Reference Platforms, Collateral, FAQ

Design Collateral: [Intel® Electronic Design Kit](#)

Latest Platform Plan of Record (POR): CDI/IBL document #[465722](#)

## Cedar Trail Dev Kits

- B2 Silicon-based
  - Availability: Now
  - Order Code: BIS-6630 – EMBNORCDTMBLDVK (MM# 922737), EMBNORCDTDTDVK (MM# 922738)
  - **Special Discounts available on B2 Si based dev kits while supply lasts**
- B3 Silicon-based
  - Availability: Dec 2012
  - Order Code: BIS-6630 – EMBNORCODTB3DVK (MM# 926580), EMBNORCOMBB3DVK (MM# 926581)
- Product Brief: [Dev Kit Product Brief](#)

## Schematics for Cedar Rock (Customer Reference Board)

- Schematics: CDI/IBL/EDK document #[452479](#)
- Mini-ITX\* Schematics: CDI/IBL/EDK document #[477527](#)

## Dev Kit Buying Options

- [Intel® Embedded Development Board 1-N450](#)
- [Advantech\\* AIMB - 212D-S6A1E](#)

Latest Update: External Design Specification (EDS) Volume 1 of 2 Rev2.6 #[449930](#)

Latest Update: Technical Product Specification (TPS) #[493851](#)

## Requests to the field

If a customer is going to production with B2 stepping with Windows XP/XPe or Windows Embedded Compact 7, they should contact the ISG tech support representative via Intel premier support, as the B2 stepping has certain deficient features and there are limited work-arounds for the EMGD graphics driver.

# Windows\* 8 Solution Communication



# Windows\* 8 Support Communication

## Windows\* 8 is not supported on Intel® Atom™ Processor N2000 & D2000 Series Based Platforms

### Alternate Solutions Recommendation

- **Embedded Designs with long supply-life (>2 years) needs:**
  - Customers that need Windows\* 8 with prospective Cedar Trail D designs should consider using Huron River design instead.
  - Processor: Intel® Celeron® Processor 807UE, 1GHz, TDP: 10W, **MM# 919712**
  - Chipset: Mobile Intel® HM65 Express Chipset, TDP: 3.9W, **MM# 914377**
- **Designs with short supply life (<2 years):**
  - Customers may choose to design with NM70 chipset
  - Technical and supply related support is not provided by ISG for these designs
  - Supply is managed from PCCG roadmap

Platforms	Package type	Memory technology	Graphics	Media	Microsoft Windows*
Cedar Trail D Platform	FCBGA, Type 3 BP	DDR3, 1 channel	DX-9	HW Accelerated†	XP 7 8 WEC7
Huron River platform with Celeron 807ue			DX-10		

† Contact your BMT for pricing info

‡ HW Media Accelerator not supported on Windows\* XP on Cedar Trail

HW Media Accelerator supported on Windows\* XP on Huron River for MPGE2. Contact your ISG Representative for VC-1 VLD and H.264 VLD support.

# Features Comparison

## CPU Features Comparison

CPU Features	Celeron 807	Celeron 847E	Celeron 807UE
Base Frequency (GHz)	1.5	1.1	1.0
Threads/Core	2/1	2/2	1/1
Graphics Frequency (MHz)	950	800	800
ECC Support	Yes	Yes	Yes
Max Memory Support (GB)	16	16	8
TDP (W)	17	17	10
Embedded Lifecycle	No	Yes	Yes

## Platform Features Comparison

Platform Features	Celeron 807+ NM70	Celeron 807ue + HM65	Atom D2550 + NM10
Intel® Active Management Technology 8.0			
Intel® Rapid Storage Technology 11.0	•	•	
Intel® Anti-Theft Technology		•	
Intel® Wireless Display			
Intel® HD Audio Technology	•	•	•
RAID			
Intel® Smart Response Technology			
Dual Display capable	•	•	•
USB 2.0 / USB 3.0	8/0	12/0	8/0
PCI Express* 1.0 ports	0	0	4
PCI Express* 2.0 ports	4	8	0
SATA ports (6Gb/s ports)	4(1)	6(2)	2(0)
VGA / LVDS	Yes	Yes	Yes
TDP	3.9W	3.9W	2.1W

# Frequently Asked Questions

# FAQs

1. What is the 64-bit Windows 7 support status?
  - 64-bit Windows 7 is NOT plan of record for this platform and is not under planning. No graphics driver is available for 64-bit Windows 7.
  - 64-bit instructions are supported on the hardware, however only 32-bit software drivers are available.
2. What is the Window 8 support status?
  - After a comprehensive analysis, Intel has decided not to support Windows 8 on Cedar Trail platform.
  - For alternative designs on Windows 8 with similar system configurations, please consider using Huron River platform with Intel® Celeron® 807UE and Mobile Intel® HM65 Express Chipset.
3. How can I get benchmarking data for Windows 7 GMA?
  - Please contact your Field Application Engineer to request the benchmarking data (CDI doc# 509291).
4. What updates were made in the Windows 7/WES 7 MR1 released in WW27?
  - This update resolved the downscaling error sightings, improved 3D performance, and provided technical advisory (explains the scenarios and best known configuration) for video player limitations in Aero\* mode.
5. What are the major fixes on Windows 7/WES7 MR2 driver released in WW35?
  - Moving windows on top of other windows will cause a trailing effect (when AERO OFF). (Root caused as hardware limitation)
  - The 5F35H BIOS hook returns no POST screen display on CRT + DP (Fixed in vBIOS)
  - CDV vBIOS DisplayPort AUX speed 564Kb/s instead of spec of 1Mb/s (Fixed in vBIOS)
  - Incorrect timings when using CH7511 DP-to-LVDS adapter (Fixed in vBIOS)
  - CH7511+LVDS: Clone and Extended modes cause black screen for modes below native resolution (Fixed in vBIOS)
6. When is Windows 7/WES 7 MR3 targeted to be released?
  - November, 2012

# FAQs cont'd.

## 7. What are the major fixes on Windows7/WES7 MR3 release?

- Using CH7511 eDP-to-LVDS, LVDS has no display after S3 resume (Fixed with workaround. To fix this issue, enable the registry key "ChrontelWAEnabled" in the INF.)
- BSOD on Dell P2210 model (Fixed in driver)
- In dual CRT + HDMI displays, no display in POST on HDMI screen after system reboot. (Fixed in vBIOS)
- When scaling is set to "Maintain Display Scaling", it is changed to "Scale Full Screen" after restating the system. (Fixed in driver).
- The 5F35H BIOS hook return no POST screen display for EFP2 combinations (Root caused as hardware limitation)

## 8. Are twin displays supported in DOS?

- Twin displays in a DOS\* environment – The best known configuration is summarized in an application note (EDC doc# 327877-001US).

## 9. What are the limitations of GMA Windows 7/WES7?

- There is a limitation of CH7511 adapter on panel scaling.
  - When having a Chrontel\* CH7511 adapter and LVDS connected (e.g.: CH7511 DP-to-LVDS + integrated LVDS) that require scaling on both screens, blank screen issue is seen on CH7511 DP-to-LVDS panel during POST. This is a hardware limitation as Cedar Trail has only one panel fitter. It works fine if using native resolution on both LVDS panels (no scaling required). There is no issue for single display; it works fine with scaling.
- There is a trailing effect when dragging a window around the screen with AERO mode disabled.
  - When AERO mode is off, moving windows on top of other windows causes a trailing effect. It is a general hardware limitation. With Aero disabled, a process shares surfaces, and rapidly moving a window over the top causes the effect because it cannot redraw quickly enough. With Aero enabled this issue is not seen because surfaces are not shared and therefore it will split the surface from behind the windows on top.
- There is a limitation of 5F35H BIOS hook function during POST
  - The limitation and the workaround is explained in an application note (CDI doc # 513764)

# FAQs cont'd.

## 10. What is the Windows XP media acceleration support status?

- For Cedar Trail, the graphics driver for Windows XP does not include hardware acceleration for media. Any encode/decode will need to be processed by software in the CPU. We recommend software decode for applications using up to 720p resolution. The media playback performance is dependent on the media player, media source file and the CPU demands from other applications running concurrently.
- **Customers requiring media acceleration on XP can chose an alternate platform as described in slide 9** (Windows\* 8 support communication). The Huron River platform described there is also enabled for Windows XP.
- For Huron River, the Intel Graphics Driver as of version 14.46 for Windows XP does include hardware decode acceleration of MPEG2 content. Please contact your ISG representative for the necessary registration key information to enable H.264 VLD and VC-1 VLD hardware decode acceleration.

## 11. Where is the Windows XP GOLD graphics driver EMGD 1.15 available?

- The XP Gold graphics driver is available through IPS.
- Only 2D and 3D operations are accelerated. The XP driver does not provide support for obsolete legacy D3D fixed functions. If an application uses the older D3D fixed functions (shown on the next slide), these calls must be converted to the DX9 programmable shader equivalent calls at the application level.
- The XP graphics driver is compatible with both B-3 and B-2 steppings.

## 12. What is the status of CH7511 adapter card support on EMGD XP and WEC7?

- There is a known defect under investigation jointly with Chrontel\* that we expect to be resolved in time for the EMGD 1.15 Gold release. Please contact Chrontel support for the latest CH7511 firmware updates at: [techsupport@chrontel.com](mailto:techsupport@chrontel.com)

## 13. What is the Timesys and Yocto Graphics driver support model?

- Timesys is providing support for a Fedora 14 Remix based BSP and LinuxLink/Yocto-based BSP. Customers must register on the Timesys website to access the BSP at: <https://linuxlink.timesys.com/intel/linux>
- For non-BSP support (i.e., graphics drivers), please contact your ISG tech support representative via Intel premier support for assistance.
- The Timesys standard support channel for BSP questions is via email at: [lsupport@timesys.com](mailto:lsupport@timesys.com).

# FAQs cont'd.

14. What is the POR status for other Linux variants, e.g., Ubuntu, MeeGo and Android?
- Ubuntu, MeeGo, and Android operating systems are not supported by Intel ISG. However, you can download drivers from the Ubuntu and MeeGo websites.
  - Please contact Ubuntu for technical support of a Cedar Trail BSP.
  - Please visit the MeeGo website for Cedar Trail drivers (<https://meego.com/downloads/releases/1.2/meego-v1.2-netbooks>) and contact the MeeGo Community for support.
16. Do we support Adobe Flash\* for Linux?
- No Adobe Flash player acceleration is currently supported for Linux.
17. Is there any performance impact when the display is rotated?
- Yes, when using Linux XRandR to perform rotation, there will be a visible performance impact.
  - No, when using Windows 7/WES7, there is no significant performance impact.
18. What is supported for QNX?
- Customers who update to QNX version 6.5.5 SP1 will get basic support for this product out-of-the box. No specific board package is required. There are variants of the platform that can be downloaded depending on which hosts the customer uses.  
Please contact QNX for various support options covered here: <http://www.qnx.com/support/index.html>
19. Can virtualization be done on this product?
- Intel VT-x technology is not enabled on this product. Hence virtualization will not be accelerated.
20. What is the expected XP software video decode performance?
- At 720p resolution, video decode is expected to support up to 720p video via software decode providing an acceptable viewing experience when video overlay is used in the driver and graphics/CPU use is dedicated to the video playback.
  - Please contact your Field Application Engineer to request for the benchmarking data (CDI doc# 512649).

# FAQs cont'd.

## 21. Where can I get Linux device drivers?

- The Linux device distributions will include the required device drivers.
- The distributions can be downloaded at the following locations
  - The Fedora 14 remix distribution can be downloaded from Timesys (downloadable from [www.timesys.com](http://www.timesys.com)).
  - The Yocto derived Linux distribution can be downloaded from the Yocto project website: [http://www.yoctoproject.org/download/all?keys=&download\\_type=1&download\\_version=\(GOLD](http://www.yoctoproject.org/download/all?keys=&download_type=1&download_version=(GOLD) version targeted for Oct'2012). It includes the GOLD Graphics driver.

## 22. What are Dual Independent configurations supported for Linux?

- The following combinations are supported for Extended/Clone Mode when LVDS is turned off in the kernel configuration:

	LVDS	HDMI (port B)	HDMI (port A/C)	DP (port B)	DP (port A/C)	eDP (port A/C)	VGA
LVDS	-	Yes	Yes	Yes	Yes	Yes	Yes
HDMI (port B)	Yes	-	No	N/A	Yes	Yes	Yes
HDMI (port A/C)	Yes	No	-	Yes	N/A	N/A	Yes
DP (port B)	Yes	N/A	Yes	-	No	Yes	Yes
DP (port A/C)	Yes	Yes	N/A	No	-	N/A	Yes
eDP (port A/C)	Yes	Yes	N/A	Yes	N/A	-	Yes
VGA	Yes	Yes	Yes	Yes	Yes	Yes	-



# FAQs cont'd.

23. What caused 3DMark06 to prompt "Device Lost" error message when it is executed?

- In 3DMark06, some of the tests used complex shader processes which take a longer time to finish. The hardware is not hung, but the OS thinks that it has timed out (TRD) and triggered this error. This error handling is part of the 3DMark06 error handling mechanism. This is root caused as a third-party defect with no fix on the graphics driver.

24. **DisplayPort\* (DP) Certification Logo License waiver for Cedar Trail platform.**

As per latest announcement from VESA, from May 2012 onwards two more compliance test cases (EDID Compliance Test v1.1 & Interoperability Compliance Test v1.0) were added for DP certification. The Cedar Trail platform only supports the DisplayPort v1.1 specification that only does Physical and Link Layer compliance testing.

Device Type	PHY Layer Tests	Link Layer Tests	EDID Tests	Interoperability Tests
Source	Yes	Yes	New	New

Intel has the waiver from VESA to launch the Cedar Trail products with DP logo without the new compliance test runs with below criteria:

VESA\* has granted waiver **till 31<sup>st</sup> Dec 2012** for DP for Cedar Trail products:

- It should be finished product that was marked with the DP logo and was shipping prior to 1<sup>st</sup> May 2012.
- Customers are required to apply for the DisplayPort logo license waiver with VESA\* to get the waiver.
  - An "Application for DP License Waiver" (License Waiver) must be submitted by the VESA member company whose brand appears on the finished product.
  - When applying for a license, customer should reference that the product "includes Cedar Trail and was shipping on or before 1<sup>st</sup> May 2012, and bears the DP mark or logo". That way, VESA\* will know the circumstances of the request.
- Note that this waiver allows the product to bear the logo but does not allow it to be called a certified product. Certified status is only achieved by passing the certification tests.

# EMGD Fixed Function Support Windows XP – Cedar Trail

Windows XP accelerated Gold EMGD 1.15 graphics driver does not provide support for obsolete legacy D3D fixed functions. If an application uses the older D3D fixed functions below, these calls must be converted to the DX9 programmable shader equivalent calls at the application level.

- The following D3dDrawPrimitives2 calls are not supported:
  - D3DDP2OP\_SETMATERIAL
  - D3DDP2OP\_SETLIGHT
  - D3DDP2OP\_CREATELIGHT
  - D3DDP2OP\_SETTRANSFORM
- The following render states are not supported:
  - D3DRS\_VERTEXBLEND
  - D3DRS\_INDEXEDVERTEXBLENDENABLE
  - D3DRS\_TWEENFACTOR
  - D3DRS\_FOGVERTEXMODE
  - D3DRS\_LIGHTING
  - D3DRS\_AMBIENT
  - D3DRS\_COLORVERTEX
  - D3DRS\_LOCALVIEWER
  - D3DRS\_DIFFUSEMATERIALSOURCE
  - D3DRS\_SPECULARMATERIALSOURCE
  - D3DRS\_AMBIENTMATERIALSOURCE
  - D3DRS\_EMISSIVEMATERIALSOURCE
  - D3DRS\_POINTSCALEENABLE
  - D3DRS\_POINTSCALE\_A
  - D3DRS\_POINTSCALE\_B
  - D3DRS\_POINTSCALE\_C
  - D3DRS\_NORMALIZENORMALS
- The following texture stage states are not supported:
  - D3DTSS\_COLOROP
  - D3DTSS\_COLORARG1
  - D3DTSS\_COLORARG2
  - D3DTSS\_ALPHAOP
  - D3DTSS\_ALPHAARG1
  - D3DTSS\_ALPHAARG2
  - D3DTSS\_BUMPENVMAT00
  - D3DTSS\_BUMPENVMAT01
  - D3DTSS\_BUMPENVMAT10
  - D3DTSS\_BUMPENVMAT11
  - D3DTSS\_BUMPENVLSCALE
  - D3DTSS\_BUMPENVLOFFSET
  - D3DTSS\_COLORARG0
  - D3DTSS\_ALPHAARG0
  - D3DTSS\_RESULTARG
  - D3DTSS\_CONSTANT



Intelligent Systems

# Intel® Atom™ Processor N2000 & D2000 Series Based Platforms (formerly Cedar Trail) for Intelligent Systems Designs

Product Introduction for new designs  
ISG Product Line Management  
WW36'12

# Legal Disclaimer

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL® PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. INTEL PRODUCTS ARE NOT INTENDED FOR USE IN MEDICAL, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS.

Intel may make changes to specifications and product descriptions at any time, without notice. All products, dates, and figures specified are preliminary based on current expectations, and are subject to change without notice.

Intel, processors, chipsets, and desktop boards may contain design defects or errors known as errata, which may cause the product to deviate from published specifications. Current characterized errata are available on request.

All code names featured are used internally within Intel to identify products that are in development and not yet publicly announced for release. Customers, licensees and other third parties are not authorized by Intel to use code names in advertising, promotion or marketing of any product or services and any such use of Intel's internal code names is at the sole risk of the user.

Intel and the Intel logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

\*Other names and brands may be claimed as the property of others.

Copyright © 2012 Intel Corporation.

# Content

- Roadmap & Cedar Trail Platform
- Recommended Usage Models & Conditions
- Ingredients for Intelligent & Connected Systems
- Hardware Technical Specification
- Software Ingredients

# Intel® Atom™ processors for Intelligent System platforms

Q3'12

Q4'12

Q1'13

Q2'13

Q3 '13

## Cedar Trail Platform

Intel® Atom™ Processor D2550, N2800, N2600  
Intel® NM10 Chipset

## Luna Pier Platform

Intel® Atom™ Processor N450, N455, D410, D425, D510, D520  
Intel® 82801HM I/O Controller Hub (ICH8M)

## Queens Bay Platform

Intel® Atom™ Processor E640/640T, E660/660T, E680/680T  
Intel® EG20T Platform Controller Hub

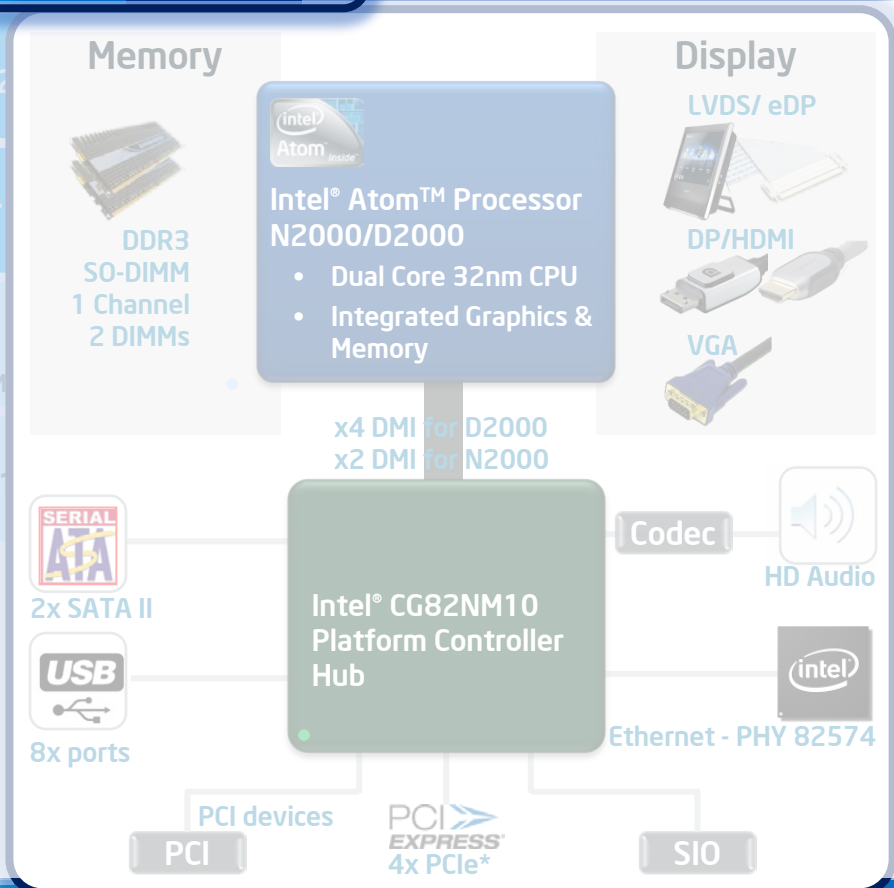
## Navy Pier Platform

Intel® Atom™ Processor N270  
Mobile Intel® 945GSE Express Chipset with 82801GBM I/O Controller Hub (ICH7M)

## Menlow Platform

Intel® Atom™ Processor Z530/530P, Z520PT, Z510/510P/510PT  
Intel® SCH US15L/US15W/US15WP/US15WPT Chipset with I/O Controller

■ Recommended for new designs  
■ Legacy platforms



# Recommended Usage Models & Conditions

## Types of Usage

### Platforms

	Mobile Embedded	General Embedded	Deeply Embedded
<b>Cedar Trail Platform</b>	Highly recommended	Highly recommended	Not recommended
Luna Pier Platform	Some cases apply	Highly recommended	Not recommended
Queens Bay Platform	Some cases apply	Highly recommended	Not recommended
Navy Pier Platform	Not recommended	Highly recommended	Not recommended
Menlow Platform	Not recommended	Highly recommended	Some cases apply

■ Highly recommended  
■ Some cases apply  
■ Not recommended

All platforms validated for
 

- 80/20 usage (80% active, 20% idle)
- Operating time >7 years\*\*\*

All platforms are available for sale for 7 years from the date of origin.

## Typical Applications



Entry Signage



Embedded Boards



Industrial Control



Entry POS, Medical



New concept computing



DVR, NVR

# Low Power & Responsive

## Key ingredients for Intelligent & Connected Systems

### Intel® Boot Loader Development Kit



Small footprint customer defined firmware for quick boot-up of fixed function embedded solutions.

### Intel® Rapid Start



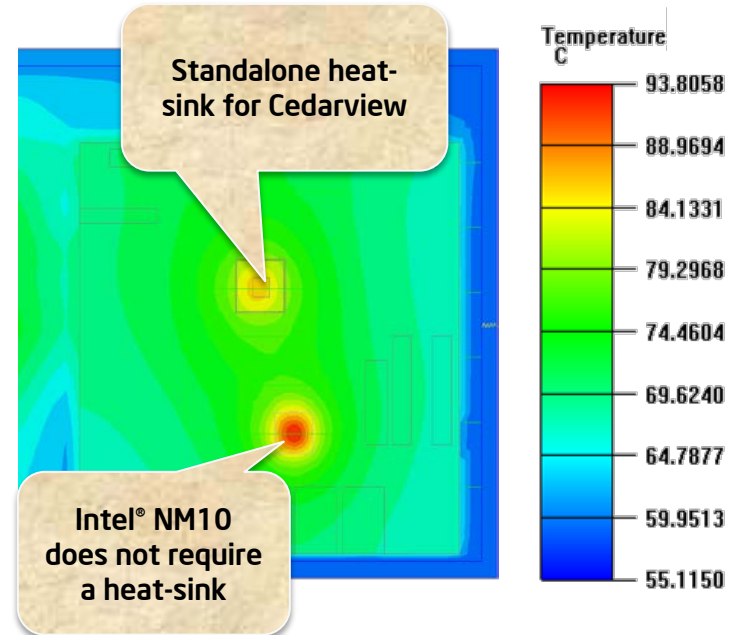
"Always on" experience with fast resume from near zero power standby

### Intel® Smart Connect Technology



Email client, Widgets, RSS feed, & web always updated and ready-to-go with Intel Periodic Update Software

### Thermal Model of a Fan-less Retail System



#### Fan-less Design

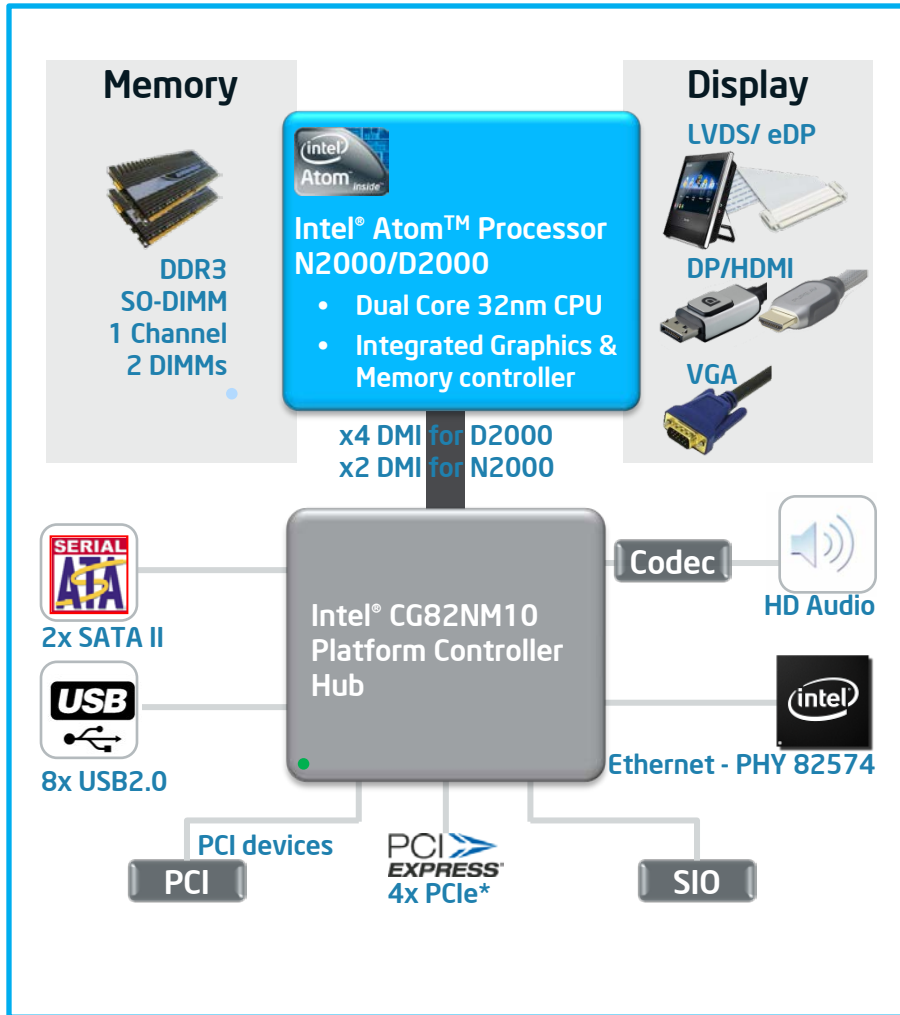
- All SKUs allow for fan-less form factors.
- 3.5W part allows for smaller fan-less designs

#### DTS Enabled

- Cedarview has a Digital Thermal Sensor (DTS) enabled for low cost temperature monitoring.



# Hardware Technical Specifications



## CPU Features

<b>Processor Frequency</b>	1.6-1.86GHz
<b>L2 Cache</b>	512Kb per core
<b>Max C-state</b>	C6†
<b>Core/Thread</b>	2/4
<b>*Ts</b>	Intel® 64, HT, XD, EIST, Speedstep®, Thermal monitoring
<b>Memory</b>	DDR3/DDR3L@800/1066† up to 4GB‡
<b>Graphics</b>	SGX545@640MHz‡
<b>Display</b>	HDMI/DP, LVDS, eDP
<b>Media Acceleration</b>	Video Decode: MPEG2, h.264, VC-1, 1080p
<b>TDP</b>	3.5W -10W
<b>Process Technology</b>	32nm
<b>Package Size</b>	22mm X 22mm

† applicable to mobile processors

‡ Exceptions apply on certain SKU's

## Networking Options for Intel® CG82NM10 Platform Controller Hub / chipset



Colleyville  
82583V  
(MAC/PHY)



Crane Peak /  
Condor Peak  
(802.11bgn Wi-Fi)



Kilmer/  
Kelsey Peak  
(Wi-Fi / WiMax)



Rainbow Peak  
Wi-Fi/Bluetooth

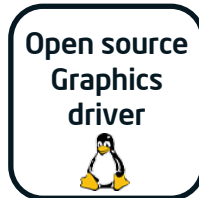
- Cedar Trail platform has flexibility to support PCIe mini card based networking solutions

# Platform Solutions & Eco System

Middleware/  
Applications



Graphics &  
Media Drivers



OS  
Solutions



Firmware &  
Boot-loader



Dev-Kit  
Solutions



## Websites

- Intel BLDK: <http://www.intel.com/go/bldk>
- Intel Linux Graphics Driver: <http://intellinuxgraphics.org>
- Adeneo: <http://www.adeneo.com>
- Advantech: <http://www.advantech.com>
- American Megatrend: <http://www.ami.com>
- ArcSoft: <http://www.arcsoft.com>
- Bsquare: <http://www.bsquare.com>
- Byosoft: <http://www.byosoft.com.cn>
- Cyberlink: <http://www.cyberlink.com>
- Eurotech: <http://www.eurotech.com>
- Fedora: <http://www.fedoraproject.org>
- Insyde Software: <http://www.insydesw.com>
- Microsoft: <http://www.microsoft.com>
- Phoenix technologies: <http://www.phoenix.com>
- Timesys: <http://www.timesys.com>
- Windriver: <http://www.windriver.com>
- Yocto Project: <http://www.yoctoproject.org>

## GOLD Software components release: early Q4-2012

- \* Windows XP does not have HW media Acceleration support
- \*\* Windows 8 is not supported for this platform
- \*\*\* Timesys\* provides commercial support for Fedora 14 Remix and Yocto based distributions

Intel developed solution     External Ecosystem



**Intelligent Systems**