

Intel[®] Smart Connect Technology 3.0

Setup & Configuration Guide

August 2012

Revision 1.0

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Revision History

Document Number	Revision Number	Description	Revision Date
503885	0.7	<ul style="list-style-type: none">3.0 version	June 2012
	0.8	<ul style="list-style-type: none">Clarified White List usage	July 2012
	1.0	<ul style="list-style-type: none">Updated Registry Settings for NetDetect (Section 2.4 and Section 2.4.3 and Section 2.4.4)	August 2012

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1 Introduction

1.1 Purpose of this Document

This document provides an overview of the installation and configuration process for Intel® Smart Connect Technology. In addition, a section on troubleshooting various issues that may occur is included.

Intel Smart Connect Technology is a feature of the platform in which the software on the platform and combination of NIC (LAN/WLAN/WWAN) features provides content updates during periods of PC in-activity. These can be categorized as:

- Always On/Always Updated:
 - Intel Smart Connect Technology Agent schedules platform to wake up from S3 periodically to allow network applications to obtain new data (email updates, social media applications, ...) and then transitions back to S3.
 - Extended wake duration if the platform is connected to AC and lid is open (mobile). Extended wake duration allows for larger content download. Once network activity falls below 100KB for 10 seconds, the platform is transitioned back to S3.
 - During wakeup, Intel Smart Connect Technology OS Service (Agent) places platform into a lower power S0 state (e.g. panel turned off, CPU in lowest P-state). This state can be referred to as S0-ISCT.
 - Factors of battery life remaining, thermal considerations and amount of data to update factor into "Always Updated" period of activity.
- Intel Energy Efficient Always On Connectivity (EE-AOC) – mobile only:
 - WLAN running in S3 (AC/Battery) with NetDetect FW allows NIC to scan for WiFi networks that match a configured profile list and if a match is found, the platform wakes to S0-ISCT to get connected and update content.
 - WWAN running in S3 (AC/Battery with Layer 2/3 connectivity that maintains connectivity to service provider (no data transfer)

For mobile platforms, special attention to thermal monitoring and control is defined to ensure safety and reliability for systems confined to areas where thermals may rise unexpectedly due to insulating qualities of the environment (e.g. operation in a book bag or briefcase).

Intel® Smart Connect Technology Life Cycle

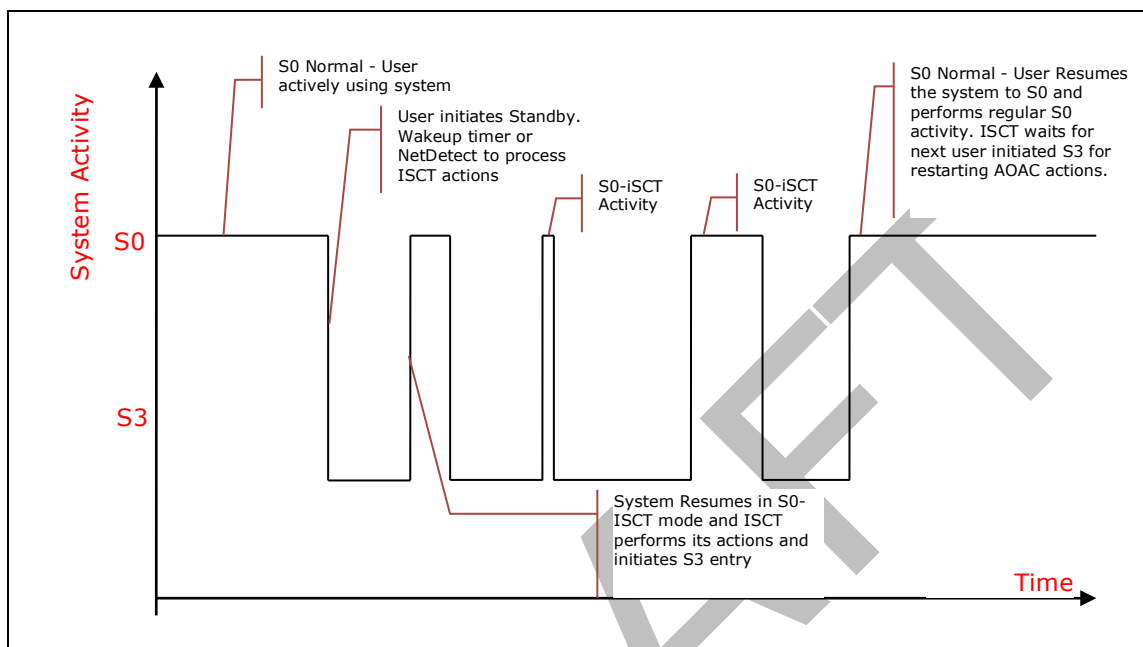
The Intel Smart Connect Technology Agent, once installed and configured to be active, periodically wakes up the system from S3 and performs user state gathering and initiates re-entry to S3 to wake up after a set time interval or based on network presence. For RTC wake events enabled by the user or other software residing on the platform, those wake events will not be run in the S0-ISCT mode if the BIOS sets the wake reason to indicate RTC wake for no S0-ISCT mode.



An example time sequence diagram shown in .

Figure 1-1.

Figure 1-1. Typical Intel Smart Connect Technology Activity



1.2 Reference Documents

Document	Document Number
ACPI / Power Management	http://www.acpi.info/
ACPI / Power Management in Microsoft Operating Systems	http://www.microsoft.com/whdc/system/pnppwr/powermgmt/default.mspx
Intel® Smart Connect Technology for 2012 Platforms Platform Design Guide	482930
Intel® Smart Connect Technology for 2012 Platforms Validation Test Plan	485844

1.3 Terminology

Term	Description
Agent	Intel® Smart Connect Technology OS Service



CRB	Customer Reference Board
CRV	Chief River
EC	Embedded Controller/Keyboard Controller
EE-AOC	Intel energy efficient always on connectivity
Intel® ME	Intel® Management Engine
SCT	Intel Smart Connect Technology
S0-ISCT	Reduced S0 power model that the Intel Smart Connect Technology Agent runs to update content
Wireless Local Area Network (WLAN)	A local area communications network based on wireless technology
Wireless Wide Area Network (WWAN)	A wide area communications network based on cellular technology



2 Installation

2.1 System Requirements

The following are required on a system:

- System BIOS supporting and enabled for Intel® Smart Connect Technology 3.0
- Microsoft Windows* 7 SP1 (32 or 64 bit version) or Microsoft Windows* 8

2.2 Installation Steps

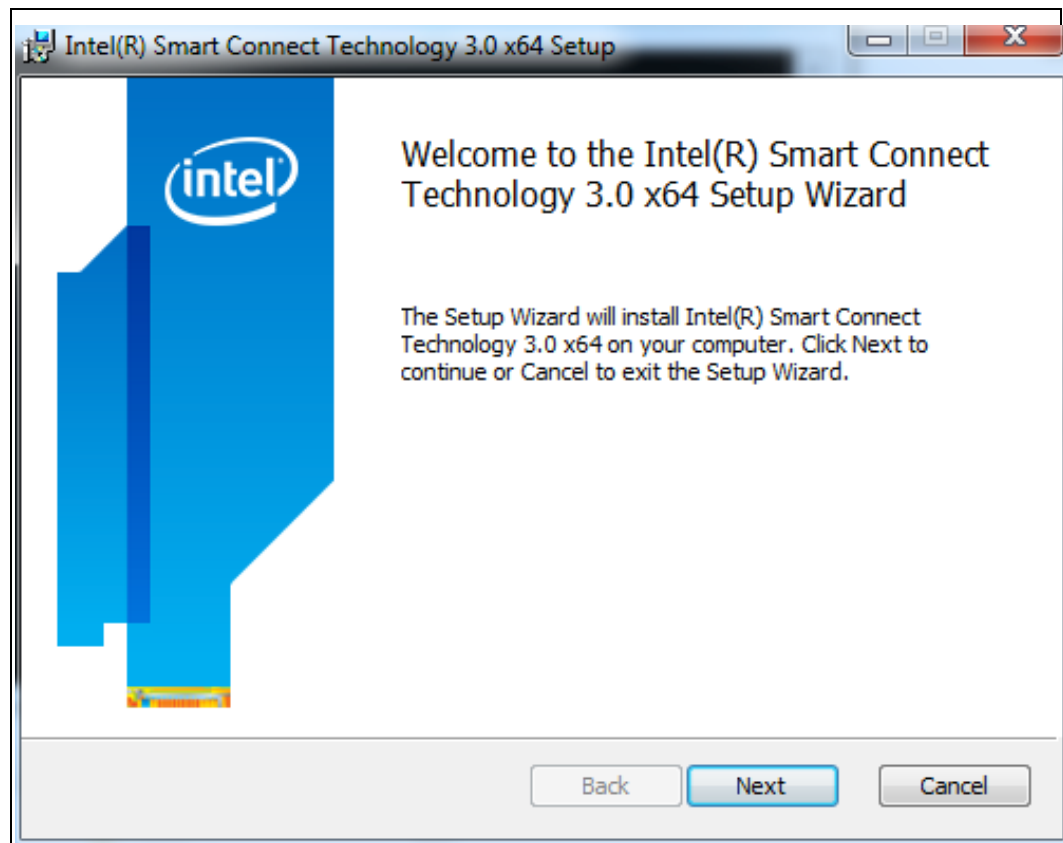
Intel Smart Connect Technology supports two methods of installation

- Silent
- Manual

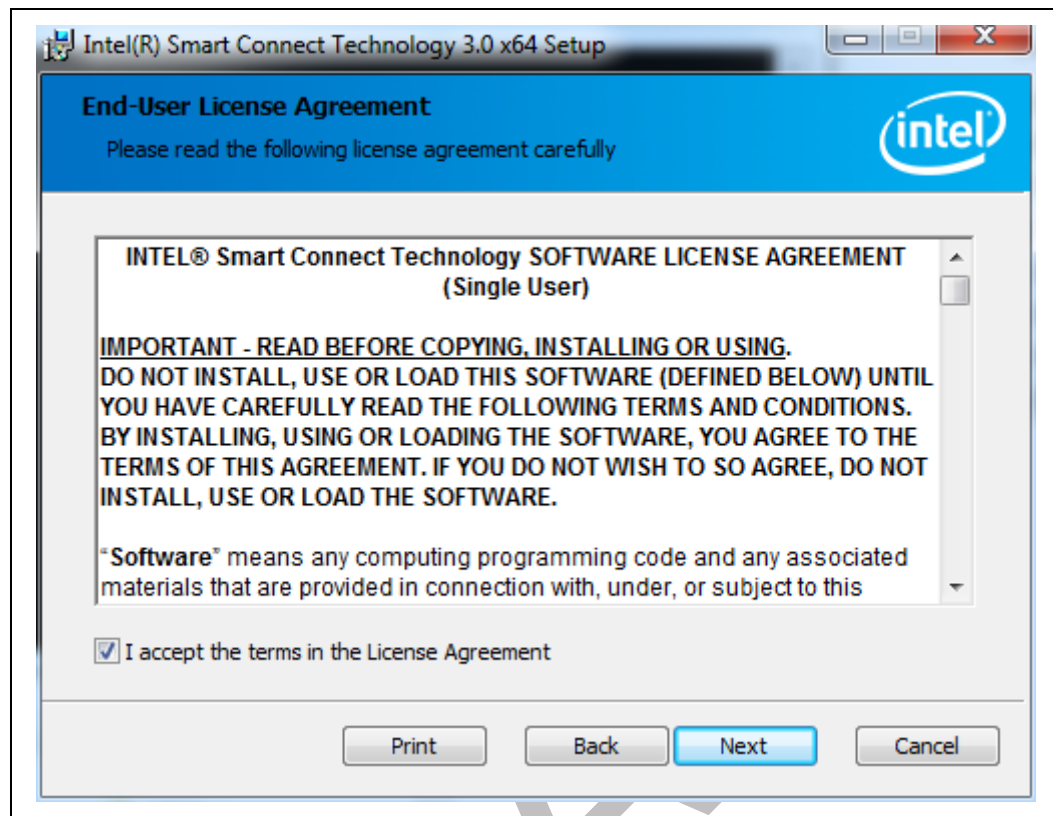
For Silent installation, run the command "setup.exe -s"

For Manual installation, run the command "setup.exe". If prompted for running with administrative privileges, select yes.

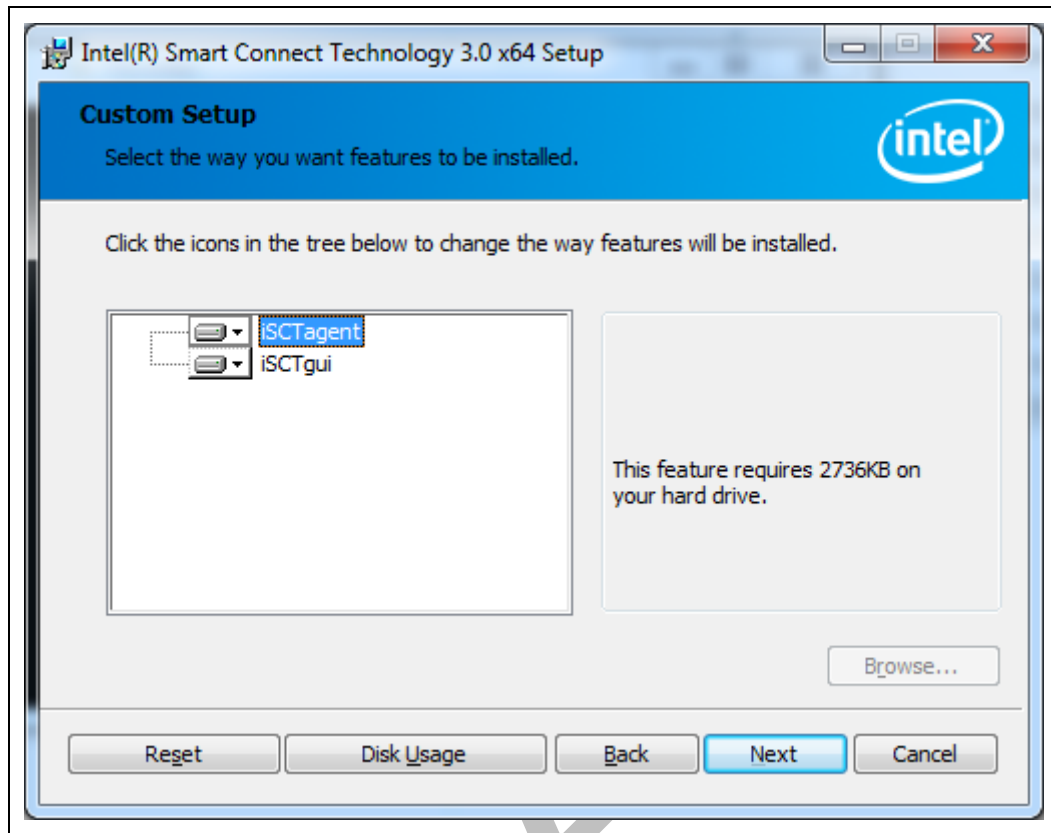
The installation will now begin and the following window is displayed:



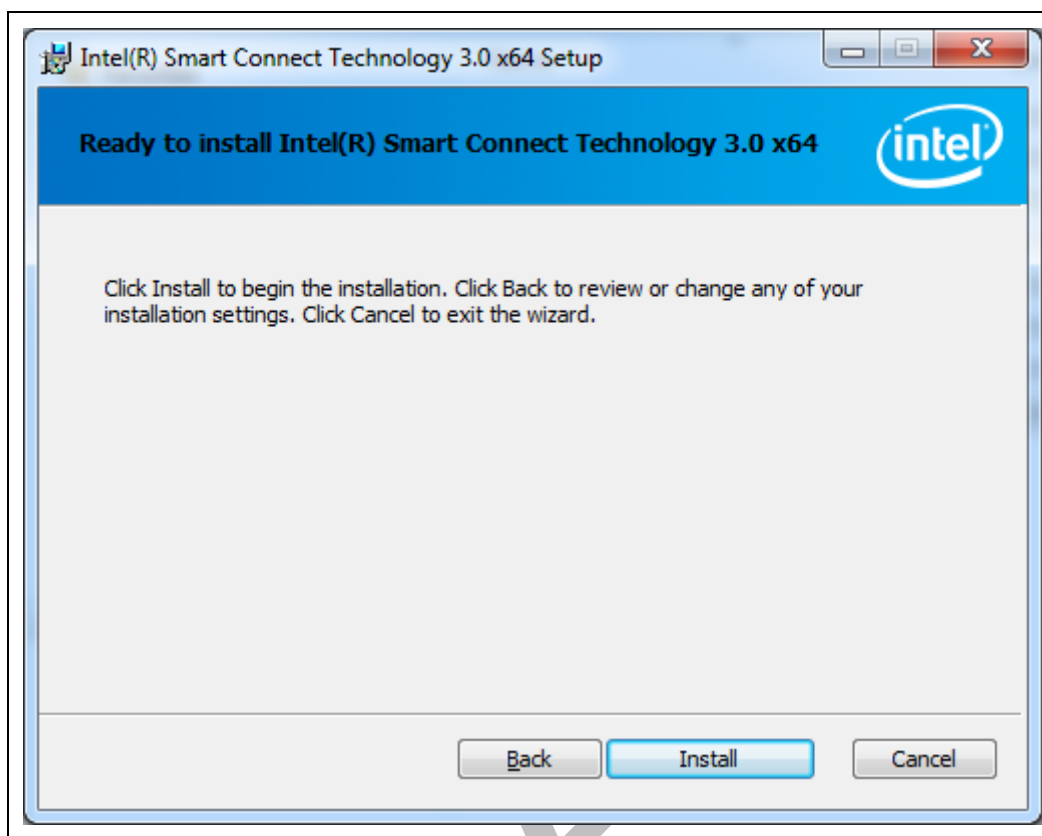
Select "Next" and the following window is display:



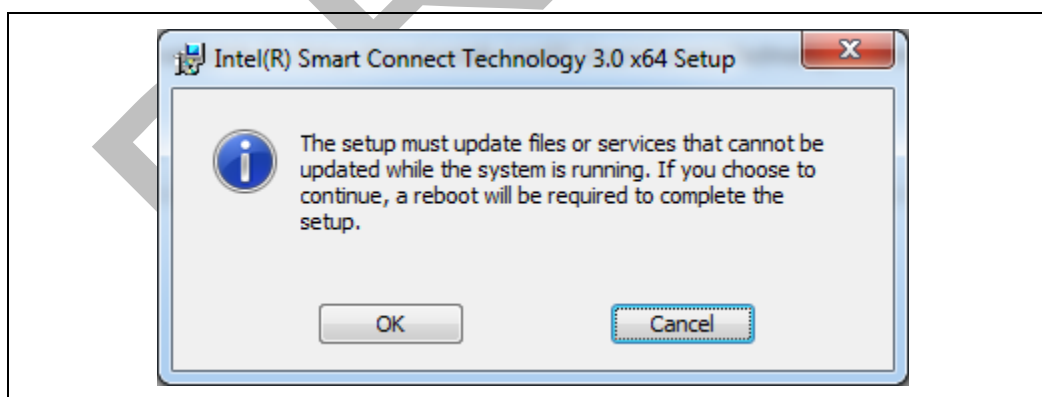
Check the checkbox labeled: "I accept the terms in the License Agreement" and select the "Next" to display:



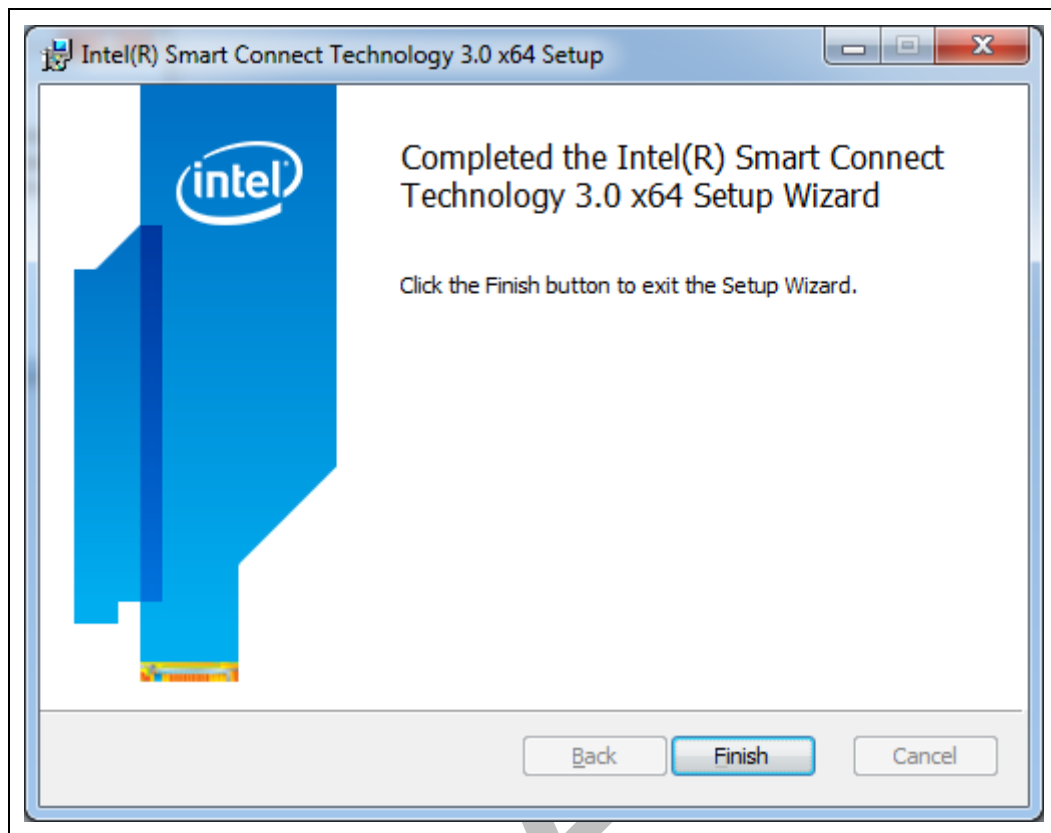
Select "Next" and the following window is displayed:



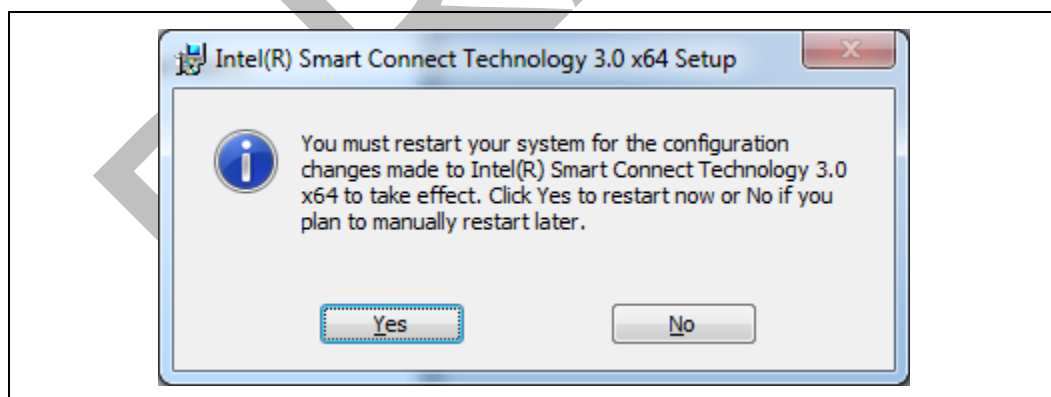
Select "Install" and after several progress windows are display, the following window is displayed:



Select "OK" to update files or services with a reboot. After several progress windows are display, the following window is displayed:



Select "Finish" and the following window is displayed:



You must select "Yes" to have the installation complete correctly as a system restart is required.

2.3 Verifying Installation

To verify Intel Smart Connect Technology was installed correctly, follow these steps:



1. Creation of the "Intel® Smart Connect Technology" program item in the "Intel" program group in the "Start" menu.
2. Installation and status of the "ISCT Always Updated Agent" is "Started" in the "Status" column of the Services tab of the Computer Management application. If the Agent is not running ("Started" does not appear in the "Status" column), refer to the Troubleshooting section of this document for more information.

2.4 Intel® Smart Connect Technology Configuration

By default, Intel Smart Connect Technology is configured for the following:

- Periodic Update disabled
- Default update period of 15 minutes (when Periodic Updated enabled)
- Extended Hours of 7p to 7a
- Application Whitelist disabled (not populated or no registry entry)
- NetDetect Enabled

The following table contains the configurable parameters for Intel Smart Connect Technology.



Table 2-1. Intel Smart Connect Technology Configuration Values

Name	Registry Key	Min	Max	Default	Registry Setting	UI	BIOS/EC
Intel Smart Connect Technology Global Enable/Disable	PeriodicWakeEnabled	Disabled	Enabled	Disabled	✓	✓	✓
Daytime Intel Smart Connect Technology Update Frequency	S3SleepDurationSeconds	5 mins	60 mins	15 min	✓	✓	
Night time Start Range h:mins	NightTimeDuskMinutes	0h 00min	24h 00mins	19h 00mins	✓	✓	
Night time Stop Range h:mins	NightTimeDawnMinutes	0h 00min	24h 00mins	7h 00mins	✓	✓	
Night time Intel Smart Connect Technology Frequency	S3SleepDurationNightSeconds	10 mins	1380 mins (23 hours)	120 mins	✓		
Battery Life % before disabling Intel Smart Connect Technology	DCBatteryThresholdHalt	Current OS Suspend setting	95%	17%	✓		
S0-Maximum-time-wake-duration	S0WakeDurationLimitSeconds	10 sec	165 sec	45 sec	✓		
CPU Thermal Sensor Max Limit	ThermalThresholdCentigrade	60°C below TJ-	40°C below TJ-MAX	45°C below TJ-MAX	✓		
WhiteList			10 entries	✓			
Audio Settings Delay when entering S0-ISCT mode	AudioDelayMilliSeconds	0		2000 (2 seconds)	✓		

Wake Duration is the amount of time the system spends in the SCT S0 state under normal conditions (no thermal issues).



The values S0-Maximum-time-wake-duration is used to specify the amount of time allowed for a platform to stay in ISCT-S0 due to thermal limitations to ensure skin temps do not exceed Intel thermal guideline.

Expose in UI are the possible values that can be configured in the OEM version of the Intel Smart Connect Technology UI. The OEM can choose to display a subset of these values to have a simple UI to expose minimal configuration to the user.

Intel Smart Connect Technology uses the OS registry to store the above configuration values. The registry path is:

[HKEY_LOCAL_MACHINE\SOFTWARE\Intel\Intel Smart Connect Technology\Always Updated]

Note: when a registry value is updated, the Intel Smart Connect Technology Agent must either be restarted or the system rebooted for the values to take effect.

2.4.1 Application White List

The Intel Smart Connect Technology provides the ability to control the periodic wake of the platform or NetDetect enablement by checking prior to entering S3 if an application is running from a defined list of applications ("White List").

- If the list is populated (non-empty), The Intel Smart Connect Technology Agent will schedule a periodic wake (or enable NetDetect) if one of the applications defined in the white list is running prior going into S3 mode.
- If no application defined in the white list is running, then no periodic wake is scheduled or NetDetect enablement performed.
- If the list is empty or non-existing, the Intel Smart Connect Technology Agent will schedule a periodic wake or enable NetDetect.

The White List is stored in the OS Registry under the key of:

[HKEY_LOCAL_MACHINE\SOFTWARE\Intel\Intel Smart Connect Technology\Always Updated]

in the "WhiteList" string. The list supports a maximum of 10 applications. The " " (blank space) separated entries are the application executable name. The list is read at the start of the Intel Smart Connect Technology Agent.

Note: The WhiteList registry value must be created in the OEM section and the "Always Updated" section. Please see Using Intel® Smart Connect Technology for information on how to add an OEM setting.

2.4.2 Creating OEM Default Values

To allow OEMs flexibility in their usage of the Intel Smart Connect Technology, they may wish to provide their own values. During manufacturing of the platform integrating Intel® Smart Connect Technology, the OEM can create their specific registry configuration values using the following registry path:

[HKEY_LOCAL_MACHINE\SOFTWARE\Intel\Intel Smart Connect Technology\OEM]

The OEM creates the "OEM" default key in the registry. The Intel Smart Connect Technology Agent and Installation program will NOT create the OEM folder.

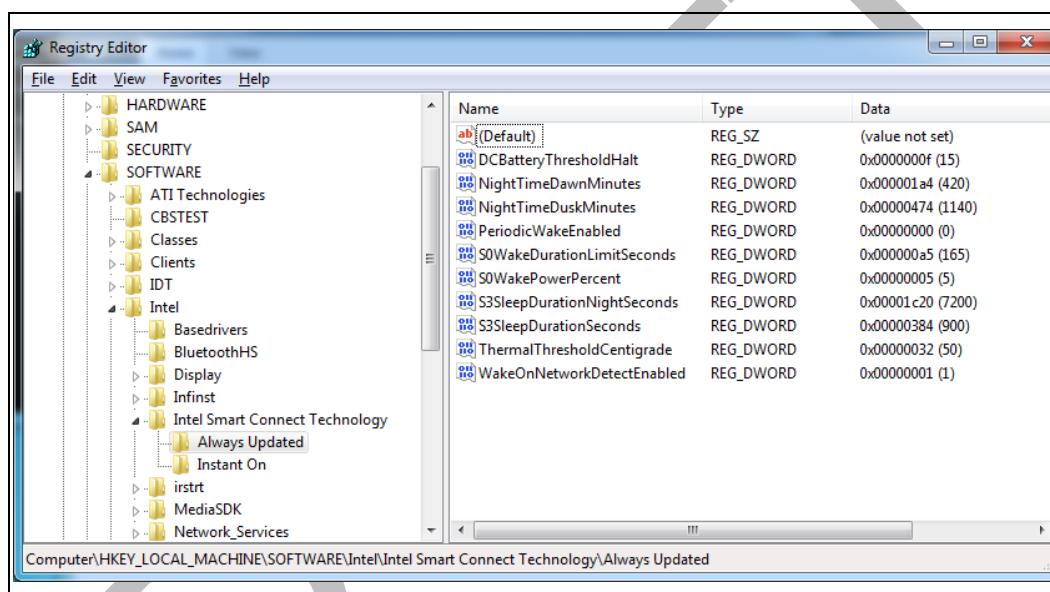


Additionally the OEM must update the registry key "Always Updated" corresponding values for the Intel Smart Connect Technology Agent to use those values instead the default Intel Smart Connect Technology values created at installation time of the software.

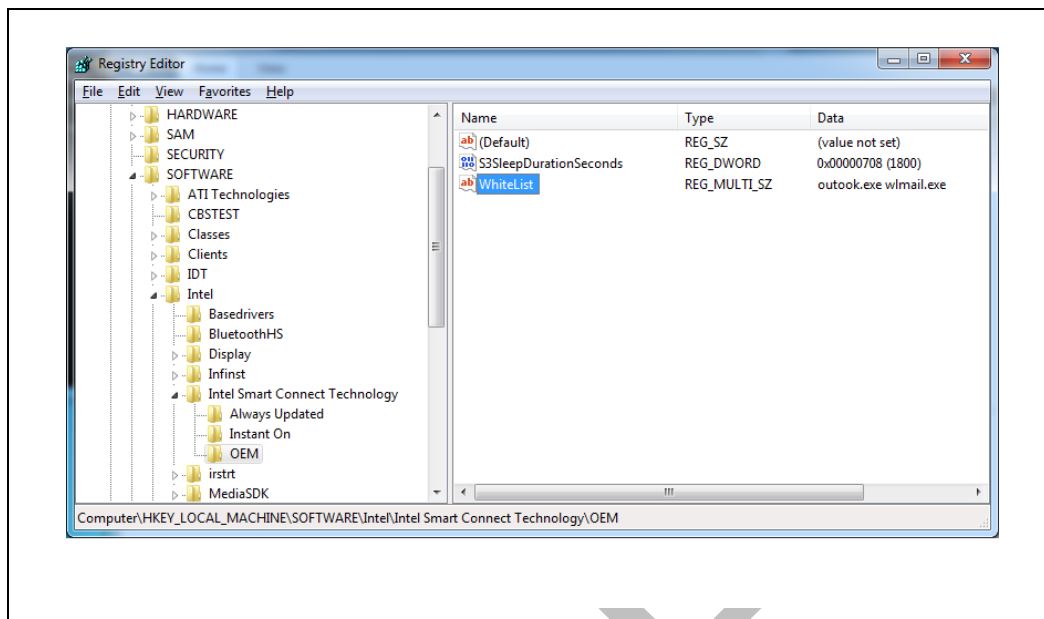
When the Intel Smart Connect Technology Agent begins execution after OS boot, it will attempt to read values from the "Always Updated" registry key. If the values in the registry key exceed the minimum and maximum values allowed, the Agent will use the Intel Smart Connect Technology default values built-in to the Agent.

The following steps illustrate how the OEM creates a new default sleep duration value setting and enables the Application Whitelist.

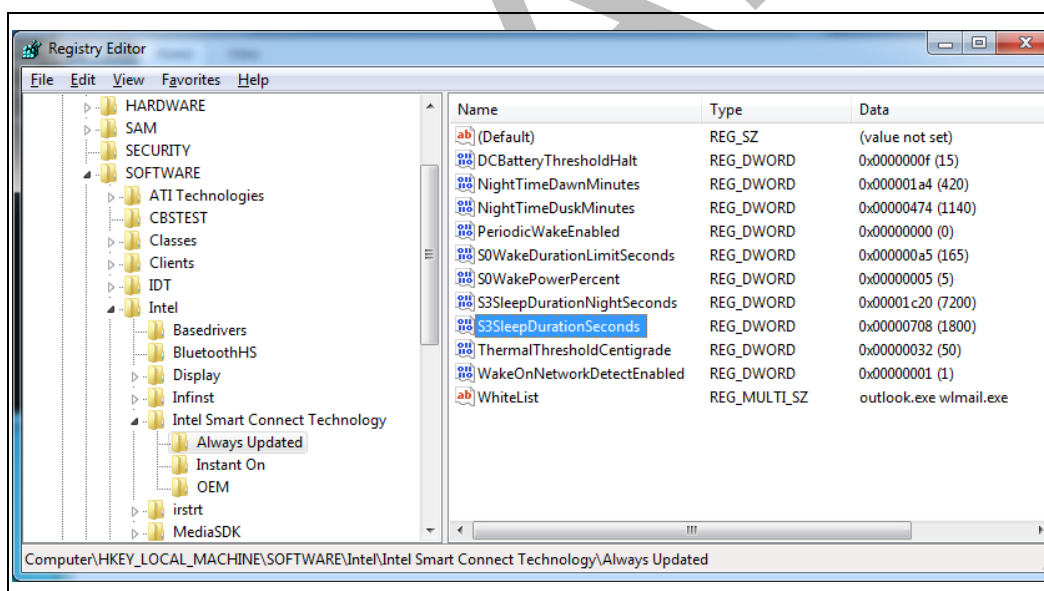
1. Install the Intel Smart Connect Technology software package. The new registry keys created are "Always Updated" and "Instant On" under the key "Intel Smart Connect Technology"



1. Create the "OEM" key under "Intel Smart Connect Technology"
2. For the default sleep duration, create a "DWORD (32-bit) Value" of "S3SleepDurationSeconds" with a value of decimal 1800 (30 minutes in seconds).
3. For the application whitelist, create a "Multi-String Value" of "WhiteList". The values in the value are the actual names of the executable separated by a blank space.



1. Update the "Always Updated" registry key values to match to new "OEM" registry key values.



1. Restart the Intel Smart Connect Technology Agent or reboot the system to have the new values used as the default settings.

Note: When default settings are restored via the Intel Smart Connect Technology GUI, the "OEM" registry key values will be used.



2.4.2.1.1 Event Logging

The Intel Smart Connect Technology uses the OS Event Log to store log information in the "Applications" Log. The "Source" field is "ISCT".

2.4.3 NetDetect Disablement

If the platform does not contain a WLAN card that supports NetDetect (for example Desktop System), then set the following registry setting (default is 1):

- HKEY_LOCAL_MACHINE \SOFTWARE\Intel\Intel Smart Connect Technology\OEM\NetDetectPref = 0

2.4.4 Intel® Rapid Start Technology Co-existence with NetDetect

When Intel Rapid Start Technology is available on a platform that supports Intel Smart Connect Technology, the Intel Smart Connect Technology Agent will enable NetDetect when the platform enters Rapid Start S4 if the following registry setting is created:

- HKEY_LOCAL_MACHINE \SOFTWARE\Intel\Intel Smart Connect Technology\OEM\NDFFSExist = 1

2.4.5 Battery Level Consideration

The Intel Smart Connect Technology Agent uses the current aggregated battery level (summation of all batteries in the system) when calculating the sleep duration. For the case of battery is being charged, an adjustment is made due to heat generation of the charging action by the batteries and can affect the thermal of the platform.



The Agent increases the sleep duration as follows:

Table 2-2. Sleep Duration Extension on Battery Power

Battery Level	Sleep Duration Extension
< 90 %	2 minutes
< 80 %	4 minutes
< 70 %	5 minutes
< 60 %	10 minutes
< 50 %	20 minutes
< 40 %	30 minutes
< 30 %	60 minutes
< 20 %	90 minutes
< 17 %	No wake scheduled

Table 2-3. Sleep Duration Extension While Charging

Battery Level	Sleep Duration Extension
< 90 %	1 minutes
< 80 %	2 minutes
< 70 %	3 minutes
< 60 %	4 minutes
< 50 %	5 minutes
< 40 %	10 minutes
< 30 %	15 minutes
< 20 %	30 minutes

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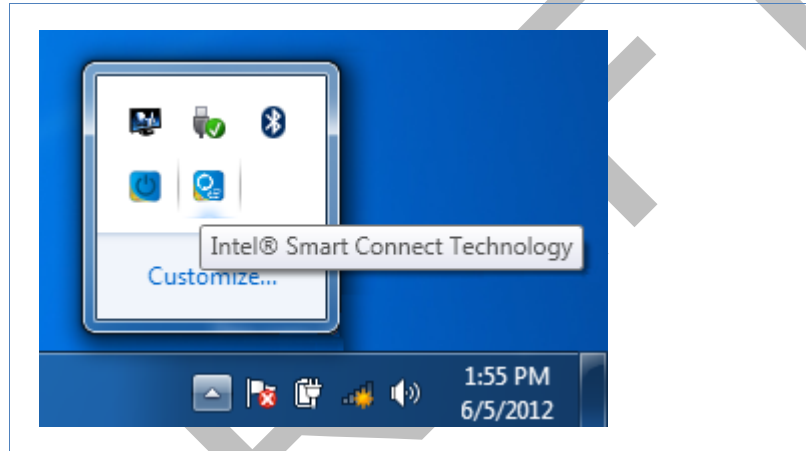


3 Using Intel® Smart Connect Technology

This section details how to use the Intel® Smart Connect Technology on your platform.

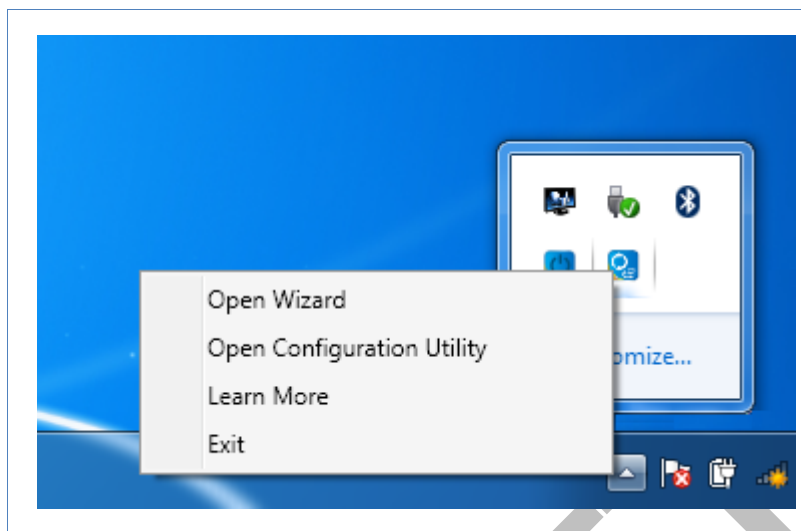
3.1 System Tray Icon

The System Tray Icon for Intel Smart Connect Technology provides a convenient shortcut for invoking the configuration applications and obtaining status.

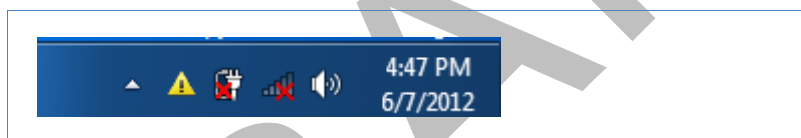


If you right mouse click (context click) on the icon, the following short cut menu is displayed with these options:

- *Open Wizard* opens the Intel Smart Connect Technology Wizard that guides the user with configuration settings
- *Open Configuration Utility* opens the Intel Smart Connect Technology Settings application for general settings and additional information
- *Learn More* opens the help file
- *Exit* dismisses the context menu



If the System Tray icon displays a yellow bang as shown in the following figure, then an error has occurred and the user can open the Configuration Utility and go to the “Advanced” tab to view the is.



3.2 Wizard Application

The Intel Smart Connect Technology Wizard application provides a guided step-by-step configuration utility. The utility is invoked by selecting it from the system tray icon.



Selecting the "Next" button will ask the user to enable or disable the Always Updated feature. The current enablement state is display in the text and the push button to the right of the text.



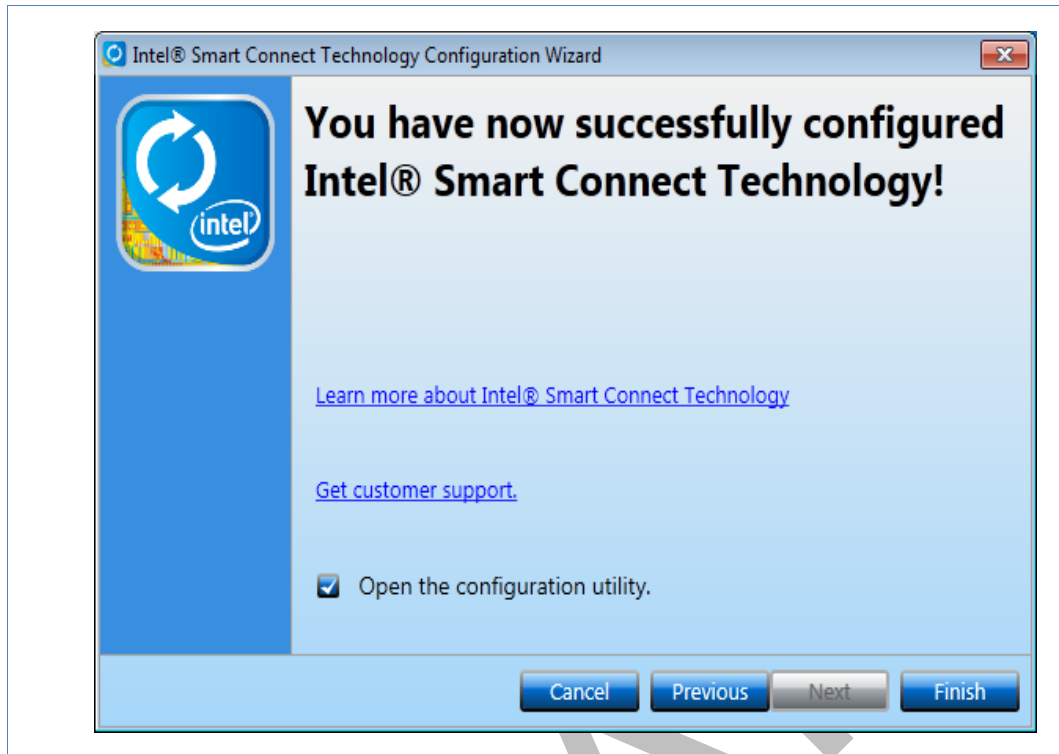
Once the Always Updated state is set, pressing the "Next" button allows the user to set the update frequency.



Once the update frequency is set, pressing the “Next” button allows the user to set the hours of extended (or Nighttime) power savings.



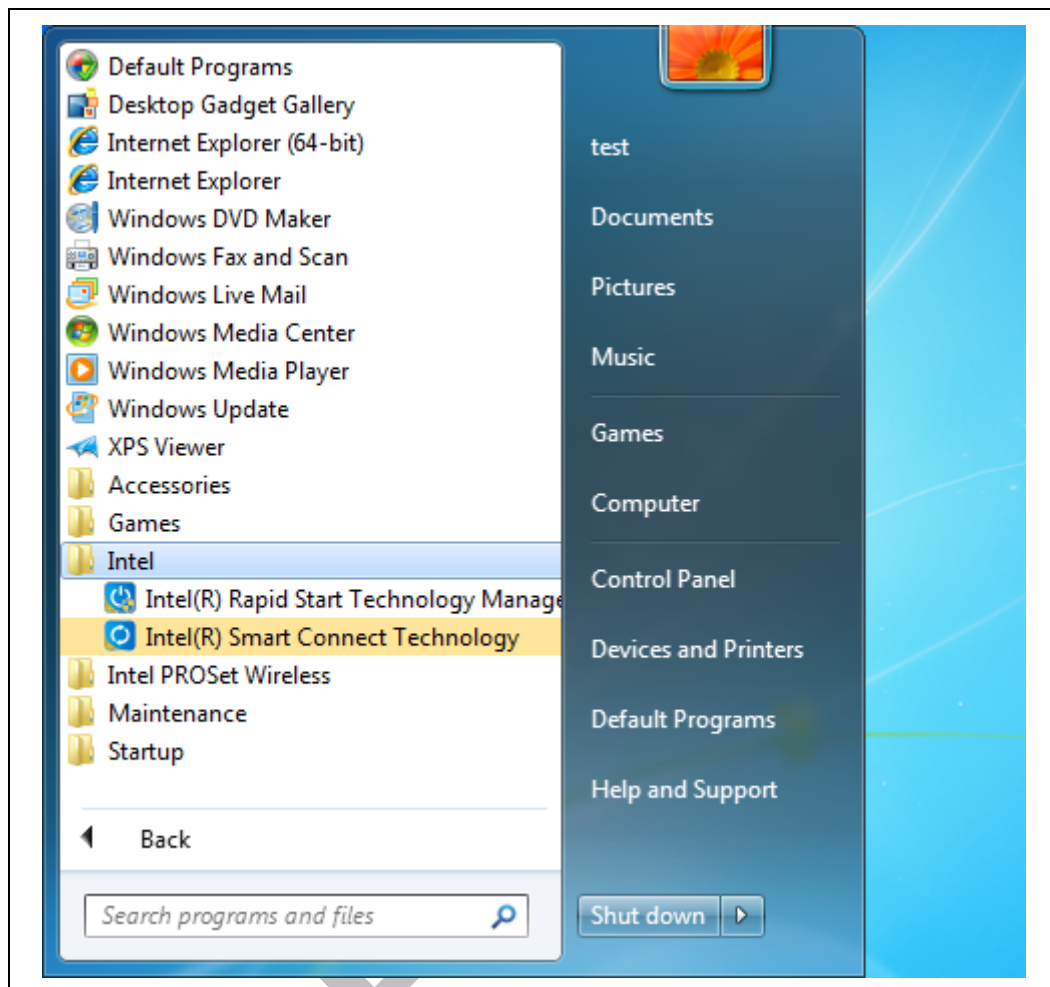
Pressing the "Next" button displays the final page of the Wizard. At this point the user can either proceed to the Configuration Utility by checking the checkbox next it or unchecking it to just exit the wizard when the "Finish" button is pressed.



3.3 Settings Application

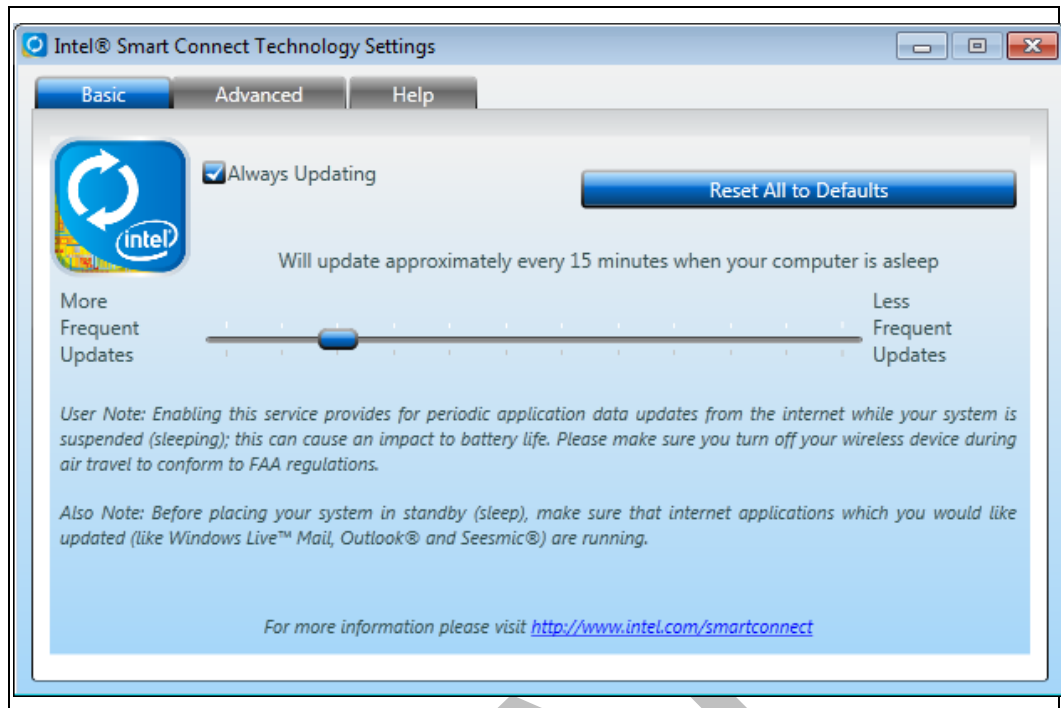
The Intel Smart Connect Technology Settings application allows configuration of the sleep duration and extended hours sleep duration.

To launch the application, locate the application in the Start menu as shown below.



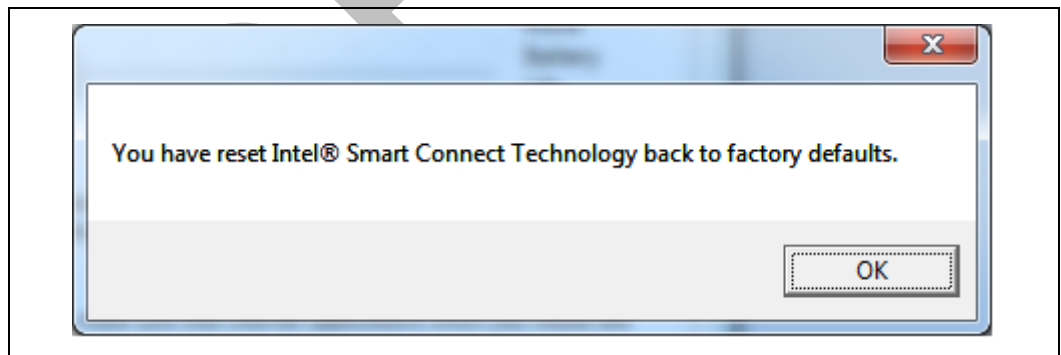
Select then "Intel® Smart Connect Technology" item to launch the application. Once launched, the following is presented:

Unless the default setting of "PeriodicWakeEnabled" is changed in the registry or the Intel® Smart Connect Technology Wizard did not enable the setting, periodic wake is not enabled. To enable Periodic Wake, select the check box labeled "Always Updating" and the application will now display:



Note that the update slider timeline is enabled. The setting displayed on the slider indicates the current setting.

The button labeled "Reset All to Defaults" is used to restore the GUI values to the installation default values (factory defaults or OEM defaults). When the button is clicked, the following dialog box is displayed to confirm to the user that the values have been reset.



On the tab labeled "Advanced" the following window is displayed:



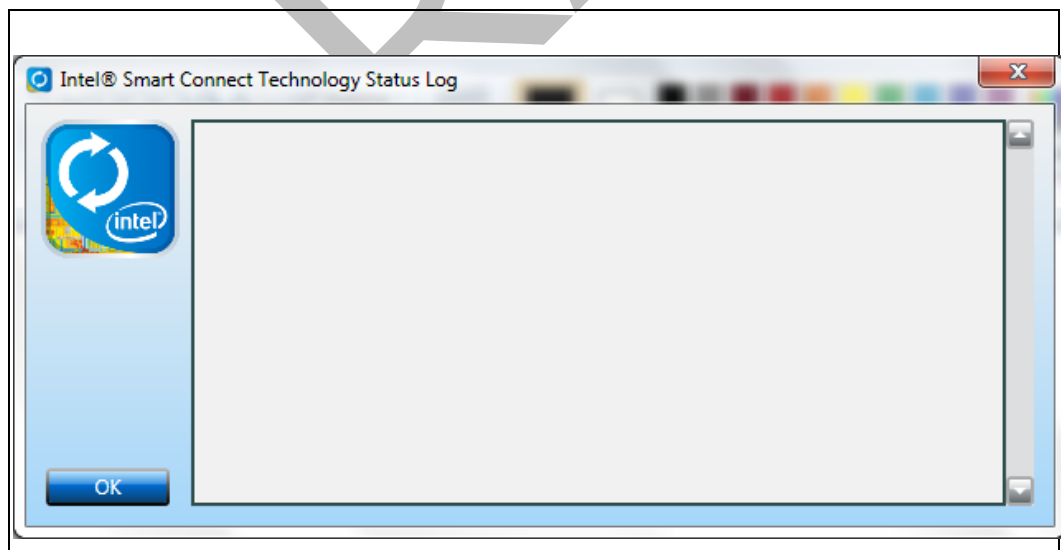
The controls on this window are used to set when the Intel Smart Connect Technology enters the Extended Power Savings time. During this time the sleep duration is set at 2 hours (adjustable via registry setting) to reduce the power consumed during normal usage hours. If the Intel® Rapid Start Technology is enabled on the platform, the Intel Smart Connect Technology Agent will instruct the Intel Rapid Start Technology to immediately transition to its low power S4 state upon entrance to S3. Thus saving additional power (both AC and battery modes).

Note: the Intel Smart Connect Technology Agent will schedule a wake at the end of Extended Power Savings so that content can be updated at that time.

The Help tab provides support information for using Intel Smart Connect Technology. By clicking on the "About" button, a dialog box is displayed containing the release version currently installed. The "Check for updates" and "Get customer support" are web links to Intel support sites. The "Topics" button brings up the help information.



The log window at the bottom of the screen displays information about recent content update sessions. By clicking on the “View Log” button, the following dialog box is display containing additional information.





3.4 Content Updating

Once the Intel Smart Connect Technology is configured and enabled on the platform, content updating is performed by the platform periodic waking from S3 (or Rapid Start S4). The following steps illustrate a typical usage scenario.

1. Verify configuration settings with the Configuration application
2. If WhiteList applications are defined, verify one or more of the applications are running on the platform (Intel Smart Connect Technology will not enable periodic wake if an application in the WhiteList is not running prior to entering S3 if WhiteList feature is enabled in the registry).
3. The platform enters S3 either by the user suspending the platform or the unattended sleep timer expiring
4. After the sleep timer expires (value configured in the Configuration application), the platform wakes from S3 and applications running are given a short period of time (if network connection exists) to update the content
5. After the short period of time (approximately 65 seconds if network connect exists), the platform transitions back to S3.

3.5 NetDetect Operation

If the platform supports NetDetect (feature of Intel® Centrino Wireless LAN), the platform will only wake from S3 if a user specified Access Point is found. This prevents unnecessary wakes from S3 if no network connection exists prior to the platform entering S3. The following steps illustrate a typical usage scenario.

1. The Intel Smart Connect Technology Agent determines no network connection exists prior to the platform entering S3
2. If the user transitions the platform to S3 (manually or via OS unattended timer), the Agent will require one periodic wake cycle to successfully enable NetDetect due to OS limitation of time allowed for Agent to transition to S3.
3. Once the periodic wake occurs, Agent will configure NetDetect in the WLAN NIC and the request OS to transition platform to S3.
4. Platform remains in S3 until the WLAN card detects an AP with a SSID that is configured for 'Connect automatically'. Upon detection, the platform is awoken and application content update occurs.
5. Because a network connection is found, periodic wake is configured and NetDetect disabled.
6. If in the following periodic wake, network connection is not found, then NetDetect is enabled, platform is placed in S3 and platform will not wake until a user specified Access Point is found.



Note: if Intel® Rapid Start Technology is enabled on the platform and active, NetDetect will not be enabled during the extended hours period.

3.5.1 Radio On/Off Handling With NetDetect

3.5.1.1 Systems with Function Key Radio On/Off

If the WLAN radio is turned off prior to entering S3, Intel Smart Connect Technology Agent will enable NetDetect. The BIOS/EC will decide if power to the WLAN card is turned off.

3.5.1.2 Systems with HW Switch Radio On/Off

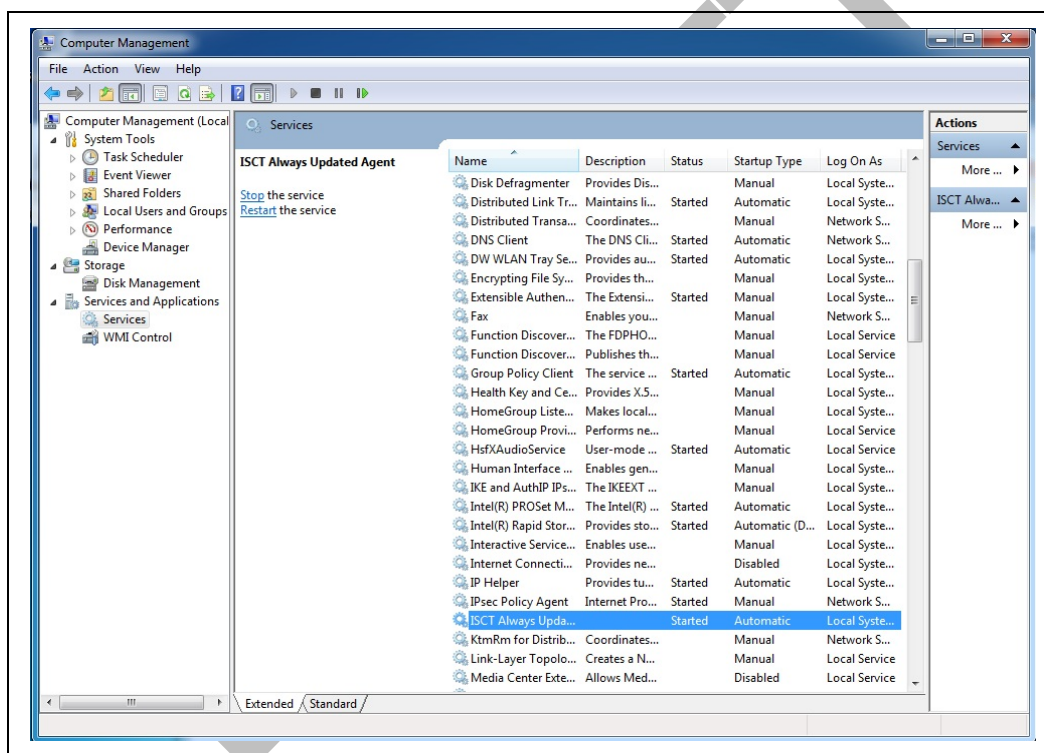
If the WLAN radio is turned off prior to entering S3 and the platform leaves the radio powered in S3, then upon turn the radio back on in S3, NetDetect will begin scanning for user configured Access Points.

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4 Troubleshooting

This section lists some steps that can be used to verify that your system is configured correctly for the Intel® Smart Connect Technology to work.

- 1) Verify the Intel Smart Connect Technology Agent (ISCT Always Updated Agent) is started in the Services tab of the Computer Management application. If the Agent is not running ("Started" does not appear in the "Status" column), right click and select the "Start" operation. If the Agent still does not start, verify that the BIOS APCI method GABS returns a 1 for bit 0. This indicates to the Agent that Intel Smart Connect Technology is enabled on the platform.

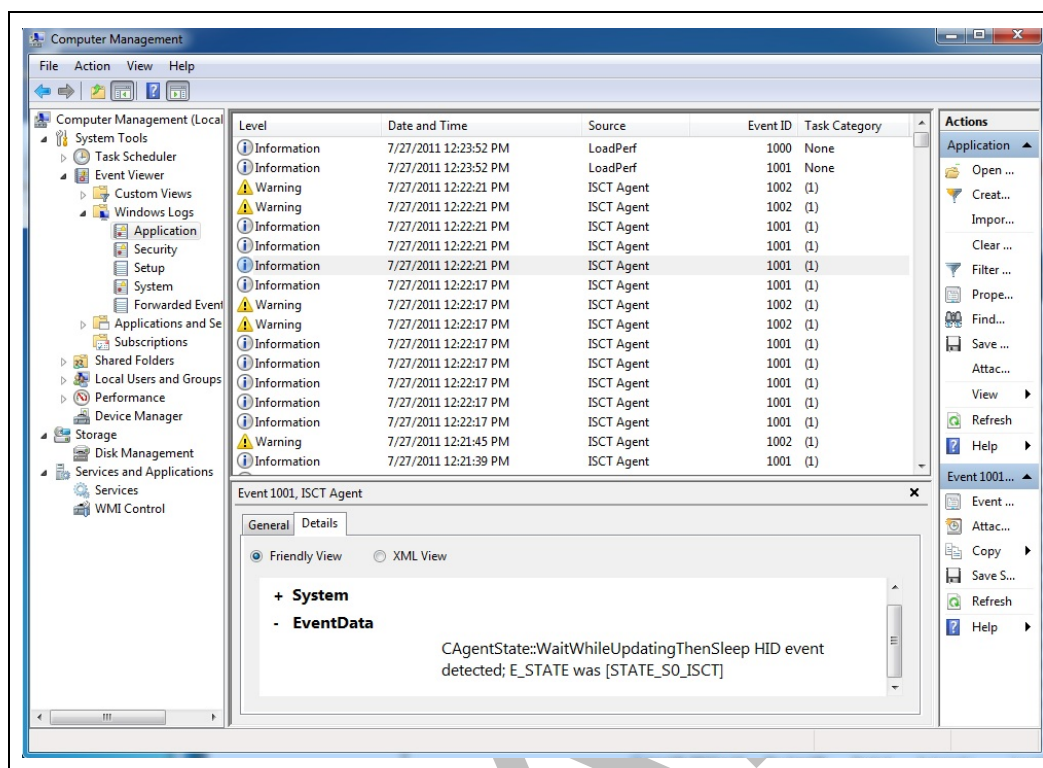


- Verify that the Intel Smart Connect Technology Settings GUI application have the service enabled as illustrated in the picture below. If the service is not enabled, click on the "Enable Service" button to enable the service. Upon clicking of the button, the text on the button will change to "Disable Service" if the GUI was successful in enabling (if the ISCT Always Updated Agent is started - see previous bullet).

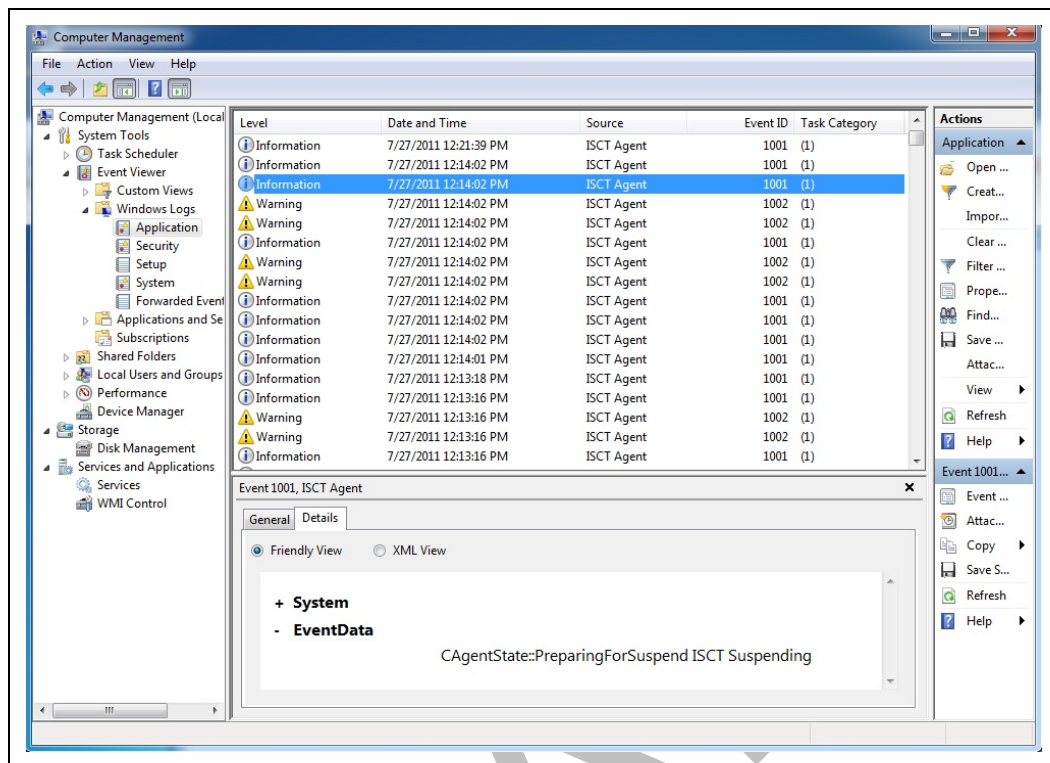


If the above two steps are successful and the platform does not wake or only wakes once or the sleep duration is not as expected, verify the following by checking the "Source" column of the Event Viewer Application Log for the ISCT Agent entries.

1. A HID event was received upon resume from S3. This could be caused by a "virtual keyboard" application that sends a HID event upon resume from S3 or the EC/BIOS reports a HID event in the _WAK ACPI method. If the HID event is received, the Event Viewer will have the following entry:

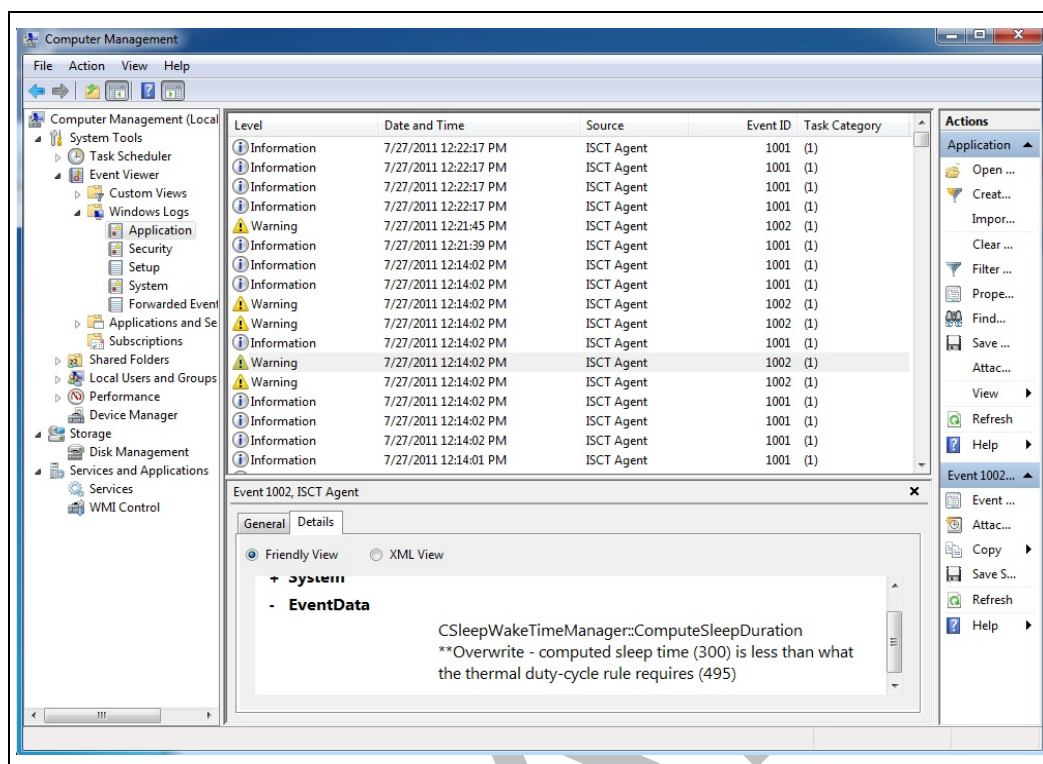


2. If you never see a wake after enabling a sleep duration in the GUI and you have the Whitelist enabled in the Registry for Intel Smart Connect Technology, verify that one of the applications listed in the registry is running prior to placing the platform into S3. For more information on Whitelist, refer to section on [Application Whitelist](#) usage.
3. If the above step is okay, verify that a wake was scheduled by the Agent by looking for the following entry in the Event Viewer:



- If the observed sleep duration is greater than the value set in the GUI, the reason is that the Agent takes into consideration battery life, previous wake duration, thermal conditions and duty cycle for the actual sleep time used. Duty cycle is a rule that the Agent uses to preserve battery life and prevent thermal issues during S0-ISCT mode if the battery (> 90%) and thermals are normal. The duty cycle is calculated as: $S0-ISCT / (S0-ISCT + S3) \leq 10\%$.

For example using default wake duration of 65 seconds and sleep duration of 5 minutes (300 seconds), the duty cycle calculation is: $65 / (65 + 300) = 15\%$. This value exceeds the 10% duty cycle rule. Thus the Agent adjusts the sleep duration to 585 (about 10 minutes) to meet the 10% rules. If the application running upon resume to the S0-ISCT mode quickly updates data and the network heuristics show that network activity has reduced after 10 seconds for example, then the next wake duration may be 5 minutes since the duty cycle is smaller. The following Event Viewer entry shows the sleep duration actually used:



For other issues, the ISCT Agent entries in the Event Viewer may provide information about how the Intel Smart Connect Technology Agent is working.

4.1 Enabling Logging

As mentioned above the Event Viewer provides logging information about Intel Smart Connect Technology Agent, however this information may be difficult to read and export for assistance.

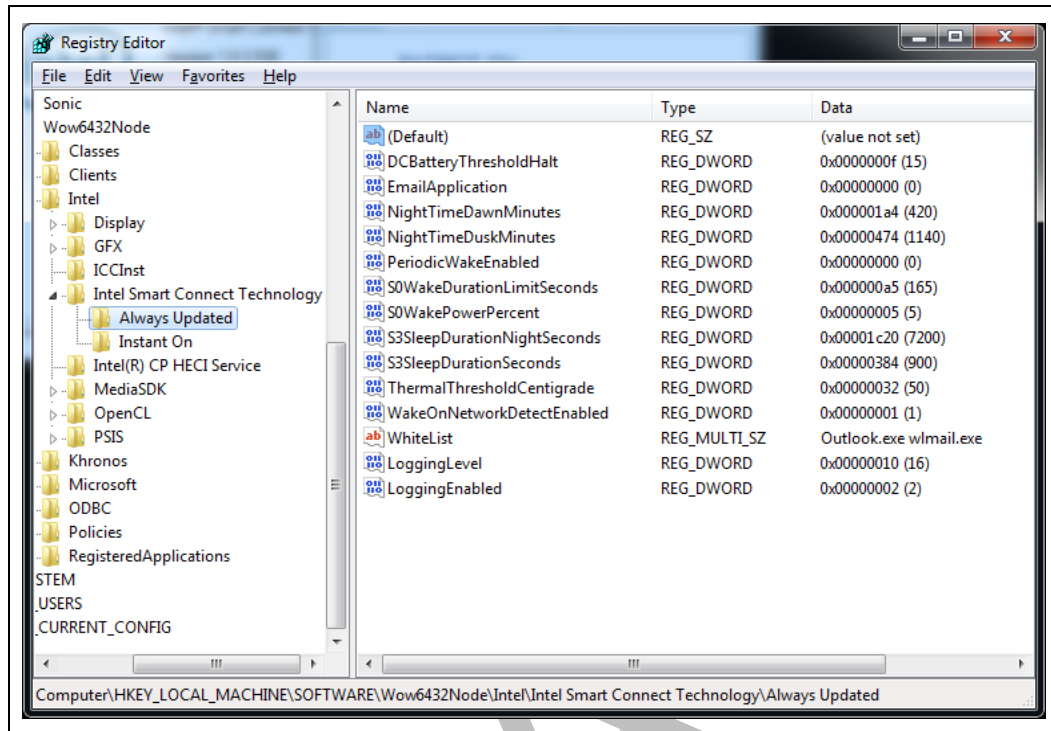
An alternative to the Event Viewer for logging information is the log files that are created in the C:\ProgramData\Intel\iSCT directory. Note that the "C:\ProgramData" directory is hidden.

For troubleshooting, it is recommend enabling additional logging information by adding two registry entries:

- "LoggingLevel" with a DWORD value of 0x10
- "LoggingEnabled" with a DWORD value of 0x2

These registry entries are illustrated in Figure 4-1. For more information on the registry settings for the Intel Smart Connect Technology refer to the [registry section](#) of this document.

Figure 4-1. Logging Registry Settings



4.2 Using DebugView (Dbgview.exe)

DebugView (Dbgview.exe) is a publicly available utility that allows capture of kernel and application debug messages. It is extremely valuable for capture output messages from the Intel Smart Connect Technology Agent for debugging/troubleshooting wake and transition to S3 issues. It is recommended to enable the logging and debug information for the Agent as documented earlier in this section ("LoggingLevel" and "LoggingEnabled" registry values). "LoggingEnabled" must be set to a value of "4" for DebugView output.

4.2.1 DebugView Configuration

DebugView must be invoked with Administrative privileges to capture kernel messages and other messages. In addition the following to screen shots show the recommended settings:

Figure 4-2. DebugView Capture Settings

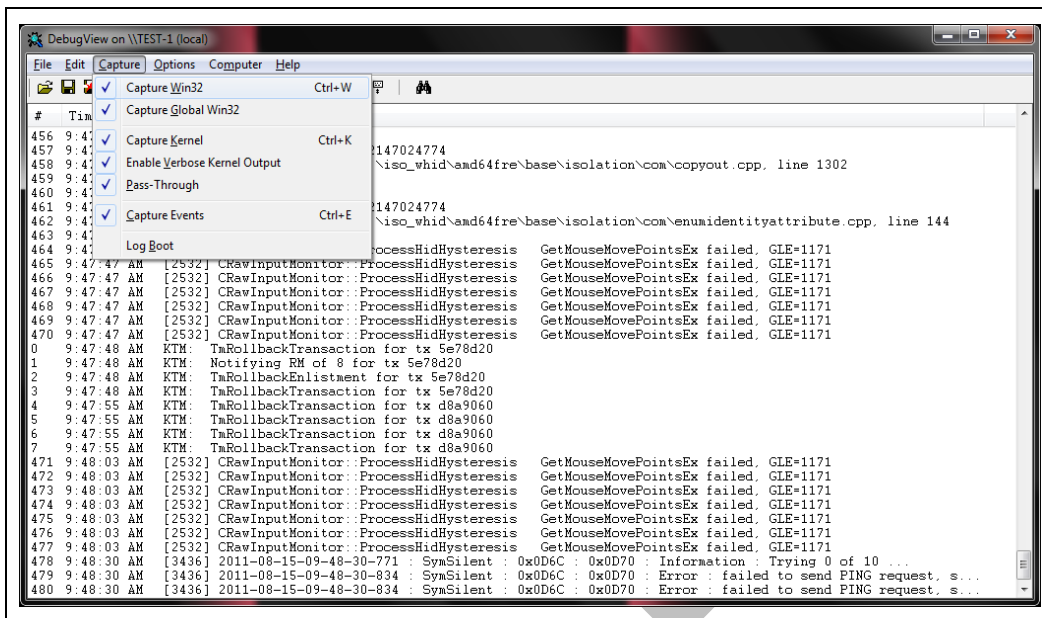
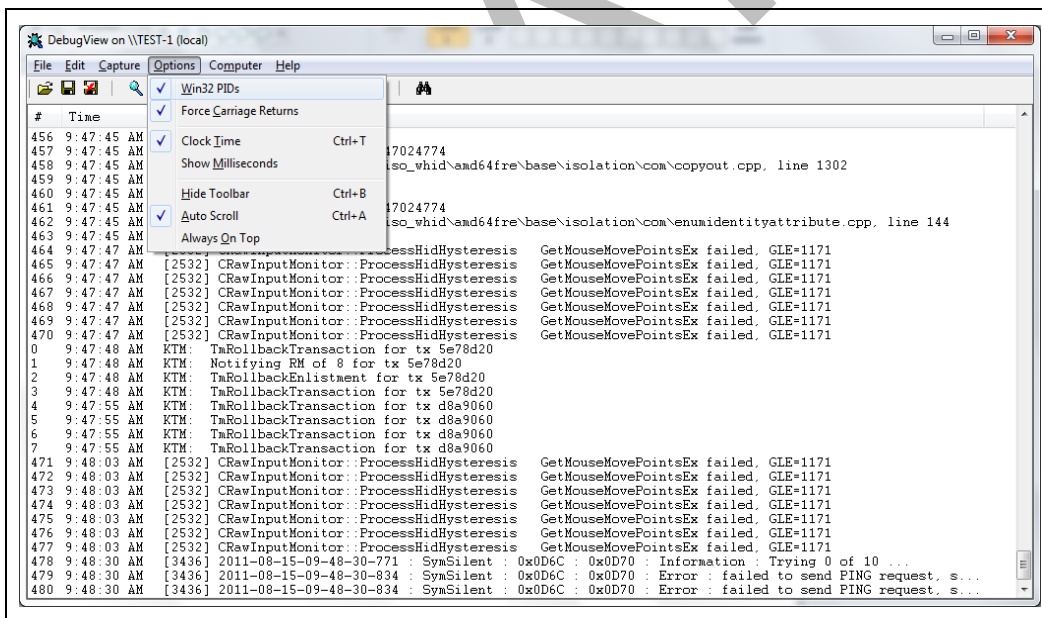


Figure 4-3. DebugView Options Settings



4.2.2 Example DebugView Output



4.2.2.1 Periodic Wake by Timer

```
=====
=====

Periodic Wake: System transitioning from S0 to S3

=====
=====

00000000  3:14:39 PM[1136] EventsWndProc  **Power Broadcast - PLATFORM
GOING TO SUSPEND

00000003  3:14:39 PM[1136] CAgentState::OnSuspendRequest  ----
PeriodicWakeEnabled is set to TRUE.

00000004  3:14:39 PM[1136] CAgentState::OnSuspendRequest  User initiated
suspend, will be woken up by timer.

00000010  3:14:39 PM[1136] EventsWndProc  **End of PBT_APMSUSPEND -
E_STATE is [STATE_S3]

=====
=====

Periodic Wake: System resuming from S3 to S0_iSCT power state

=====
=====

00000077  3:19:43 PM[1136] EventsWndProc  **Power Broadcast - ISCT
Resuming...

00000081  3:19:44 PM[1136] CAgentState::OnSystemWakeup  System resumes
from S3 at [17149593]

00000089  3:19:44 PM[1136] CAgentState::ComputeNextPowerState  Wake up by
BIOS timer.

00000091  3:19:44 PM[1136] CAgentState::UpdatePowerState  <b> changing
E_STATE to [STATE_S0_ISCT]

=====
=====

Periodic Wake: IP address available, using periodic wake timer

=====
=====

00000116  3:19:53 PM[1136] CNetworkAdapters::GetLivePhysicalDevices  Adapter
Found: Intel(R) Centrino(R)
Ultimate-N 6300 AGN, IP: 25820160
```



```
00000117 3:19:53 PM[1136] CNetworkAdapters::GetLivePhysicalDevices Adapter
Found: Intel(R) Centrino(R)
Ultimate-N 6300 AGN, IP: 25818944
```

```
=====
=====
```

```
Periodic Wake: System transitioning to S3 from S0_iSCT & Setting Periodic Wake to
True
```

```
=====
=====
```

```
00000124 3:20:04 PM[1136] CAgentState::OnSuspendRequest ----
PeriodicWakeEnabled is set to TRUE.
```

```
00000138 3:20:04 PM[1136] CAgentState::GoToSleepNow -----
ISCT v1501 SUSPEND. The system wakeup event is enabled-----
```

```
00000141 3:20:04 PM[1136] EventsWndProc **Power Broadcast - PLATFORM
GOING TO SUSPEND
```

```
00000142 3:20:04 PM[1136] EventsWndProc **End of PBT_APMSUSPEND -
E_STATE is [STATE_S3]
```

4.2.2.2 Net Detect

```
=====
=====
```

```
Net Detect: System enables wake by NetDetect as no wireless detected
```

```
=====
=====
```

```
00000223 3:26:17 PM[1136] CAgentState::OnSuspendRequest iSCT initiated
suspend with a software RF Kill switch and RF is enabled, will be woken up by
netdetect only.
```

```
00000224 3:26:17 PM[1136] CAgentState::DisableWakeup ***Either wireless is
disabled or no network connectivity - the system can only be woke up by NetDetect or
user.
```

```
=====
=====
```

```
Net Detect: Periodic Wake is disabled System transitions from S0_ISCT to S3
```

```
=====
=====
```

```
00000225 3:26:17 PM[1136] CAgentState::OnSuspendRequest ISCT Suspending -
Periodic Wake Agent
```

```
00000226 3:26:17 PM[1136] CAgentState::GoToSleepNow -----
ISCT v1501 SUSPEND. The system wakeup event is disabled-----
```



00000229 3:26:17 PM[1136] EventsWndProc **Power Broadcast - PLATFORM
GOING TO SUSPEND

00000230 3:26:17 PM[1136] EventsWndProc **End of PBT_APMSUSPEND -
E_STATE is [STATE_S3]

=====

Net Detect: System wakes up by NetDetect, transitions from S3 to S0_iSCT

=====

00000273 3:31:22 PM[1136] CAgentState::ComputeNextPowerState Wake up by
NetDetect - transition to S0_iSCT

00000274 3:31:22 PM[1136] CAgentState::UpdatePowerState E_STATE was
[STATE_S3]

00000275 3:31:22 PM[1136] CAgentState::UpdatePowerState changing
E_STATE to [STATE_S0_ISCT]

=====

Net Detect: IP address available on resume by NetDetect

=====

00000300 3:31:32 PM[1136] CNetworkAdapters::GetLivePhysicalDevices Adapter
Found: Intel(R) Centrino(R) Ultimate-N 6300 AGN, IP: 25820112

00000301 3:31:32 PM[1136] CNetworkAdapters::GetLivePhysicalDevices Adapter
Found: Intel(R) Centrino(R) Ultimate-N 6300 AGN, IP: 25818944

=====

Net Detect: System transitioning to S3 when no network detected for 10 seconds

=====

00000305 3:31:42 PM[1136] CAgentState::WaitWhileUpdatingThenSleep Received
Network Heuristic event

00000306 3:31:43 PM[1136] CAgentState::UpdatePowerState E_STATE was
[STATE_S0_ISCT]

00000307 3:31:43 PM[1136] CAgentState::UpdatePowerState changing
E_STATE to [STATE_S3]

=====



Net Detect: Periodic wake event activated after NetDetect wake

=====

00000308 3:31:43 PM[1136] CAgentState::OnSuspendRequest ----
PeriodicWakeEnabled is set to TRUE.

00000320 3:31:43 PM[1136] CAgentState::OnSuspendRequest iSCT initiated
suspend with one or more network connections, will be woken up by a timer.

wakeup event is enabled-----

00000323 3:31:43 PM[1136] CAgentState::GoToSleepNow E_STATE was
[STATE_S3]

=====

DRAFT



4.2.2.3 S3 transitions

=====

User interrupted Periodic Wake (user interrupt S0-ISCT)

=====

00000265 1:32:34 PM[3120] RECVD WM_POWERBROADCAST --> System resuming
from low power state from S0-iSCT

00000268 1:32:34 PM[1136] CAgentState::UpdatePowerState changing
E_STATE to [STATE_S0]

=====

User Wake: Wake from S3 by power button

=====

00000216 2:16:04 PM[1136] CAgentState::OnSystemWakeup E_STATE was
[STATE_S3]

00000217 2:16:04 PM[1136] CAgentState::ComputeNextPowerState Wake up by
power button press.

00000218 2:16:04 PM[1136] CAgentState::UpdatePowerState E_STATE was
[STATE_S3]

=====

Battery < 90% - Sleep period extended

=====

00000163 2:40:46 PM[1800]
CSleepWakeTimeManager::GetSleepDurationWithBatteryBackoff AC = 0,
BatteryLifePercent = 86

00000164 2:40:46 PM[1800] CSleepWakeTimeManager::ComputeSleepDuration
Battery based sleep time = 420

00000165 2:40:46 PM[1800] CSleepWakeTimeManager::ComputeSleepDuration
Battery based sleep time adjusted by sleep-till-dawn = 420



```
=====
=====
```

No Whitelist application found, no wake scheduled

```
=====
```

```
=====00000005 5:05:01 PM[1852]
```

```
EventsWndProc **Power Broadcast - PLATFORM GOING TO SUSPEND
```

```
00000006 5:05:01 PM[1852] CAgentState::UpdatePowerState E_STATE was
[STATE_S0]
```

```
00000007 5:05:01 PM[1852] CAgentState::UpdatePowerState <b> changing
E_STATE to [STATE_S3]
```

```
00000008 5:05:01 PM[1852] CAgentState::OnSuspendRequest ----
PeriodicWakeEnabled is set to TRUE.
```

```
00000009 5:05:01 PM[1852] CAgentState::OnSuspendRequest ***WhiteList is not
empty, but no listed application is running - will not wake up.
```

```
00000010 5:05:01 PM[1852] CAgentState::OnSuspendRequest ISCT Suspending -
User/OS Request
```

```
=====
=====
```

Whitelist application found, enabling periodic wake

```
=====
=====
```

```
11:47:01:696, [t:0x6EC] : Prepare for sleep 94288704 [L=16][M=ISCT]
```

```
11:47:01:696, [t:0x6EC] : ----PeriodicWakeEnabled is set to TRUE.
```

```
[L=1][M=ISCT]
```

```
11:47:01:696, [t:0x6EC] : White List Applications wlmail.exe - Found
```

```
[L=16][M=ISCT]
```

```
11:47:01:712, [t:0x6EC] : Application wlmail.exe - Found [L=16][M=ISCT]
```

```
11:47:01:712, [t:0x6EC] : ***WhiteList is either empty or at least one of application
in the white list is running. [L=16][M=ISCT]
```

```
=====
=====
```

Extended Hours being used instead of GUI scheduled sleep period

```
=====
=====
```

```
00000126 6:00:45 AM[1804] CSleepWakeTimeManager::IsNowDuringNightTime
sees Dawn 480 and Dusk 360
```

```
00000127 6:00:45 AM[1804] CSleepWakeTimeManager::ComputeSleepDuration
choosing Nighttime
```

```
00000129 6:00:45 AM[1804] CSleepWakeTimeManager::ComputeSleepDuration
Battery based sleep time = 7200
```



```
00000130 6:00:45 AM[1804] CSleepWakeTimeManager::ComputeSleepDuration
Battery based sleep time adjusted by sleep-till-dawn = 7155

00000131 6:00:45 AM[1804]
CSleepWakeTimeManager::GetSleepDurationWithThermalBackoff ISCT Delta2TjMAX
61, thresh 50, over-temperature 0 times

00000132 6:00:45 AM[1804] CSleepWakeTimeManager::ComputeSleepDuration
Use thermal based sleep time (battery based (7155), the thermal based (7200))

00000133 6:00:45 AM[1804] CSleepWakeTimeManager::ComputeSleepDuration
*****ISCTNextSleepDuration = 7155 seconds.

00000134 6:00:45 AM[1804] CAgentState::OnSuspendRequest ISCT initiated
suspend with one or more network connections, will be woken up by a timer.

00000136 6:00:45 AM[1804] CAgentState::GoToSleepNow -----
ISCT v1501 SUSPEND. The system wakeup event is enabled-----

00000140 6:00:45 AM[1804] EventsWndProc **End of PBT_APMSUSPEND -
E_STATE is [STATE_S3]

=====
=====

Wake at end of Extended Hours
=====
=====

00000213 8:00:15 AM[1804] CSleepWakeTimeManager::IsNowDuringNightTime
sees Dawn 480 and Dusk 360

00000214 8:00:15 AM[1804] CSleepWakeTimeManager::ComputeSleepDuration
choosing Day time

00000216 8:00:15 AM[1804] CSleepWakeTimeManager::ComputeSleepDuration
Battery based sleep time = 300

00000217 8:00:15 AM[1804] CSleepWakeTimeManager::ComputeSleepDuration
Battery based sleep time adjusted by sleep-till-dawn = 300
```

4.2.2.4 Thermal Threshold Exceeded

```
00006511 11:26:29 AM[2200]
CSleepWakeTimeManager::GetSleepDurationWithThermalBackoff ISCT Delta2TjMAX
49, thresh 50, over-temperature 1 times

00006512 11:26:29 AM[2200]
CSleepWakeTimeManager::ComputeSleepDuration Use thermal based sleep time
(battery based (600), the thermal based (1200))

00006513 11:26:29 AM[2200]
CSleepWakeTimeManager::ComputeSleepDuration *****ISCTNextSleepDura
tion = 1200 seconds.§
```




5 Intel CRB BIOS Settings

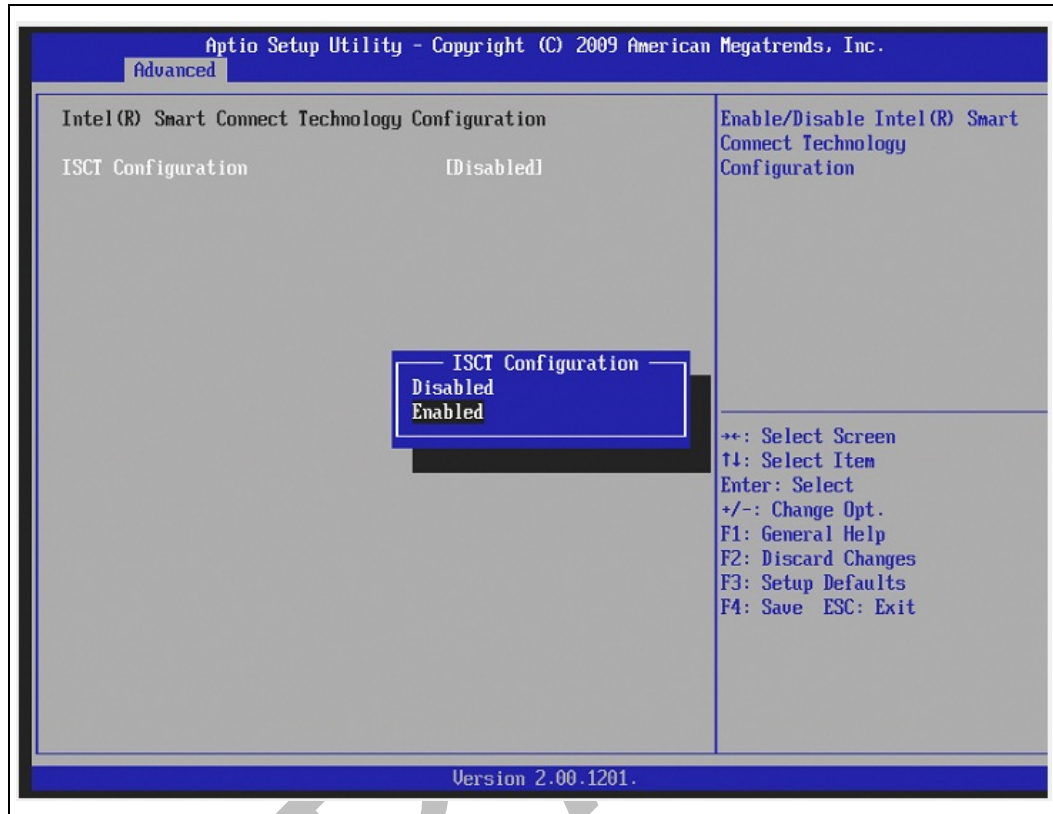
This section details the BIOS Settings for the Intel CRB to enable Intel® Smart Connect Technology.

From the "Main" setup BIOS screen, select the "Advanced" tab.





Select "Intel(R) Smart Connect Technology Configuration" and change "Disabled" to "Enabled".





For each of the items in the ISCT options, set them to "Enabled".



Press "F4" to save the settings and reboot the CRB.