

Intel[®] Smart Connect Technology

Setup & Configuration Guide

May 2013

Revision 1.0

Intel Confidential

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Revision History

Document Number	Revision Number	Description	Revision Date
507303	0.5	<ul style="list-style-type: none">4.0 version based on 3.0 version	October 2012
	0.8	<ul style="list-style-type: none">Updated Introduction chapter (Chapter 1)Updated Installation System Requirements (Chapter 2)Updated Creating OEM Default Values (Chapter 2)Added Remote Wake chapter (Chapter 4)	October 2012
	0.9	<ul style="list-style-type: none">New section added for Remote Wake register setting (Section 4.2; Chapter 4)	November 2012
	1.0	<ul style="list-style-type: none">Clarified "Reset All To Defaults" effects only user configurable GUI controls.Updated to 4.2 versionUpdated registry settings (section 2.5)	May 2013



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 is asleep and not otherwise able to receive information. 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 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.
- Remote Wake:
 - Allows platform in S3 / S4 sleeps states to be woken by remote application software. Once local application is done, platform goes back to existing sleep state.

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

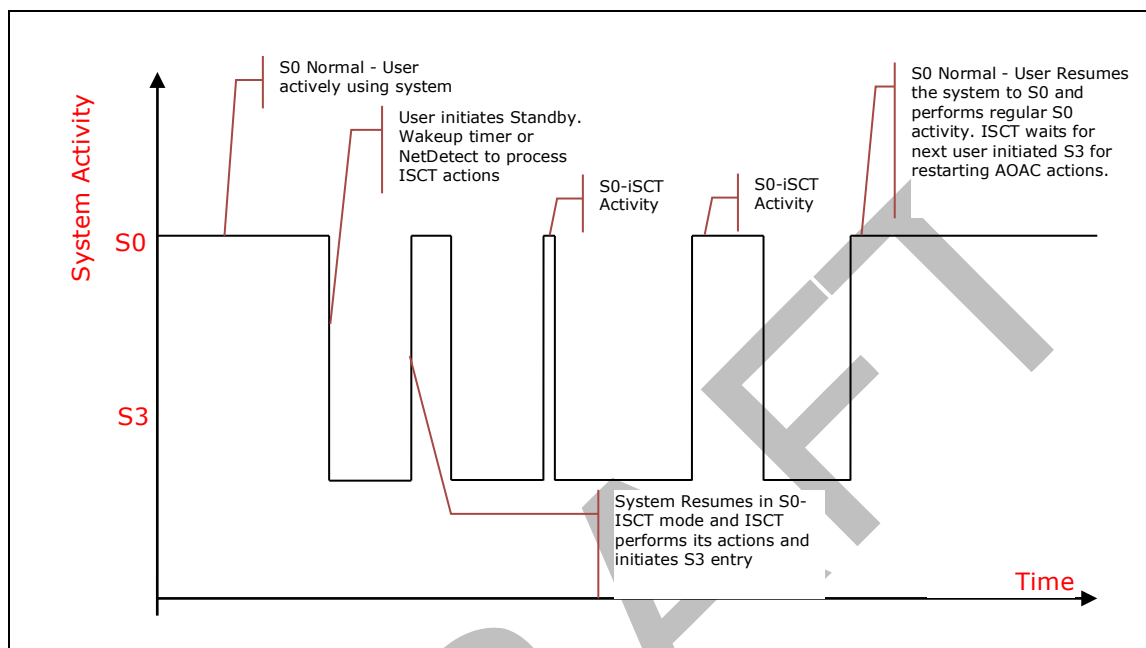
The Intel Smart Connect Technology Agent, once installed and configured to be active, periodically wakes up the system from S3 and performs network content update and initiates re-entry to S3 to wake up after a set time interval or based on network



presence. For RTC wake events enabled by the user or other software residing on the platform, ISCT treats the RTC wake as user initiated wake event and the system will enter full S0 and not iSCT-S0 state.

An example time sequence diagram is 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 4.0 Platform Design Guide	507302
Intel® Smart Connect Technology 4.0 Compliancy Test Plan	507304

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
- Microsoft* Windows* 7 SP1 (32 or 64 bit version) or Microsoft Windows 8 (32 or 64 bit version)
- Intel® Processor
- Close any running applications to avoid installation problems.
- Remove any previously installed versions of the software from the system before installing the Intel® Smart Connect Technology software
- Remote Wake over LAN feature requires Intel® ME Firmware enabled. Please see [Intel® Smart Connect Technology: Remote Wake](#) (Section: 4 in this document) for more details.



2.2 Installation Steps

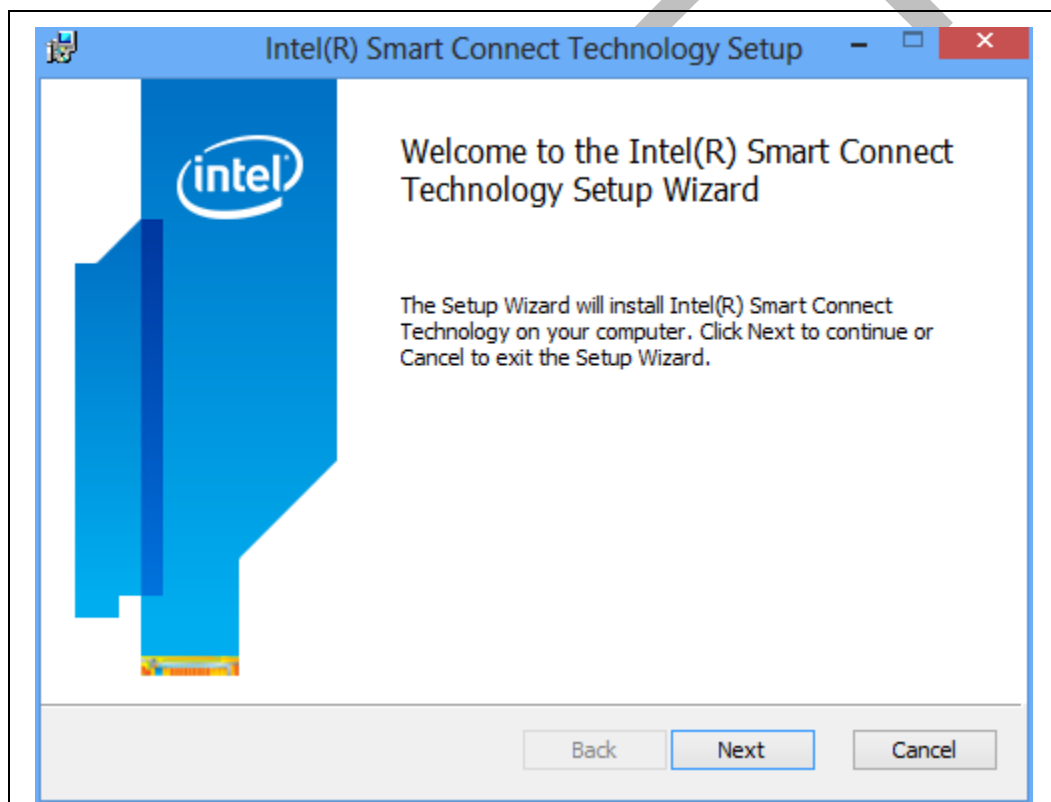
Intel Smart Connect Technology supports two methods of installation

- Silent
- Manual

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

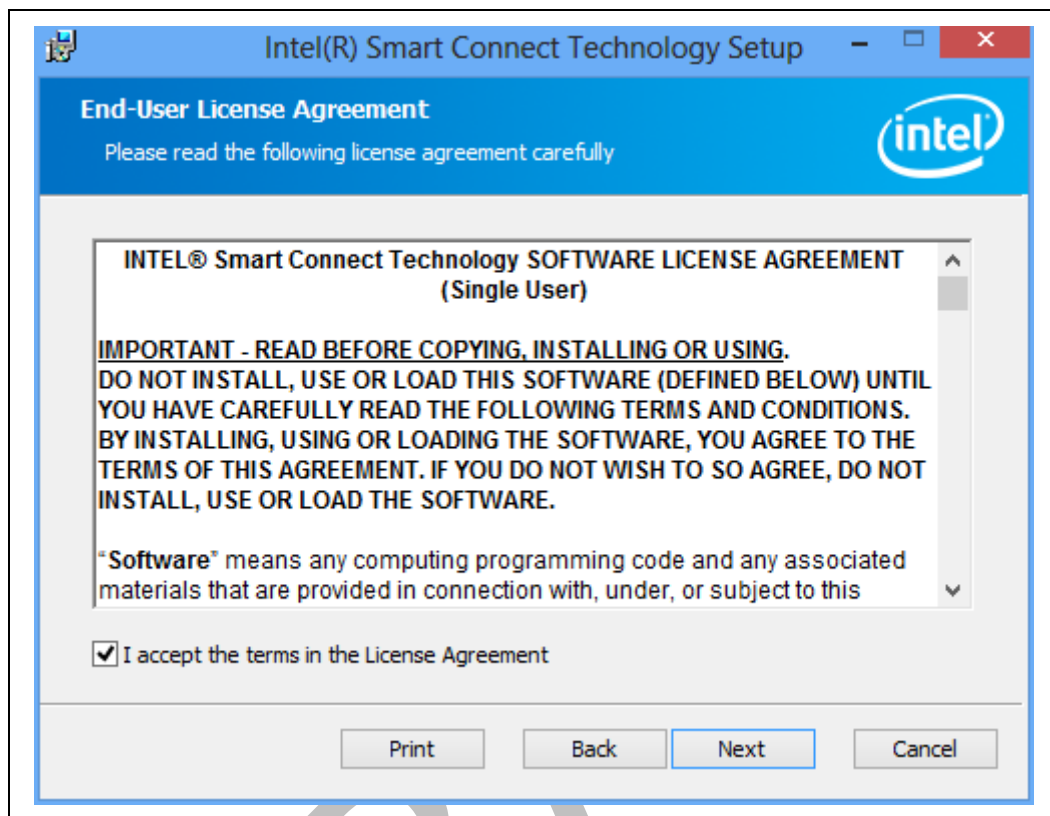
For Manual installation, run the command "setup.exe". If prompted for running with administrative privileges, select yes.

The installation will now begin and the following window is displayed (version removed in the picture):



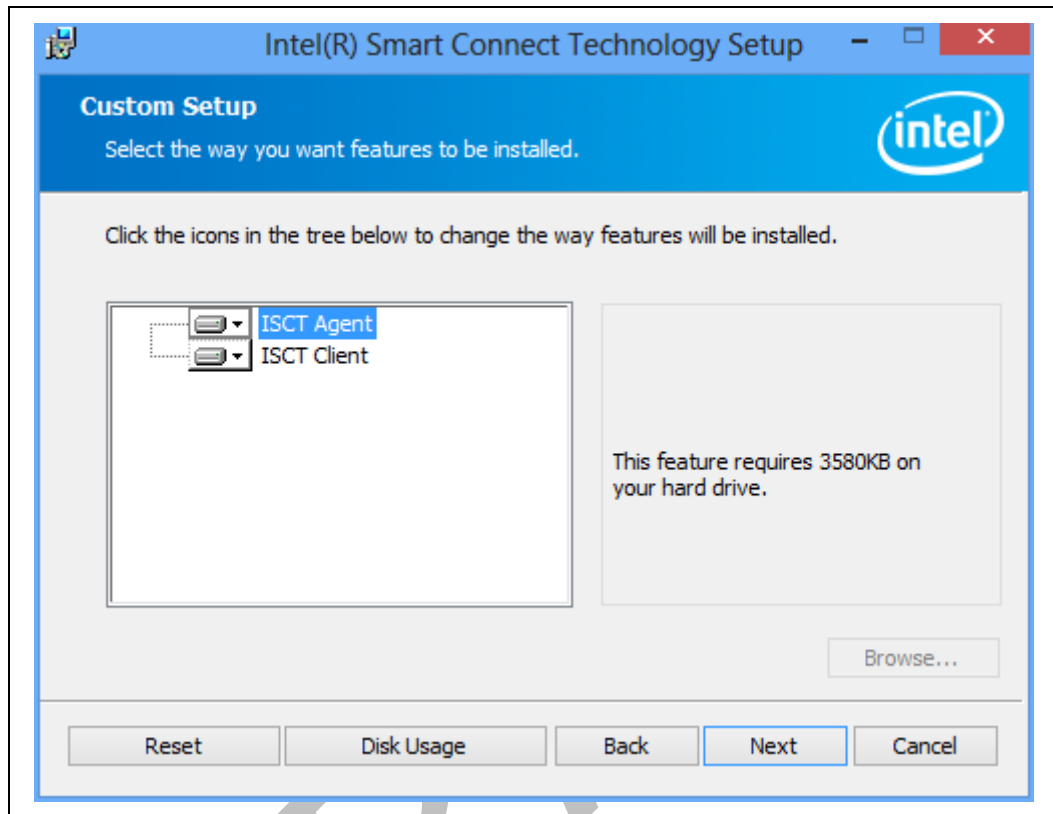


Select "Next" and the following window is display:



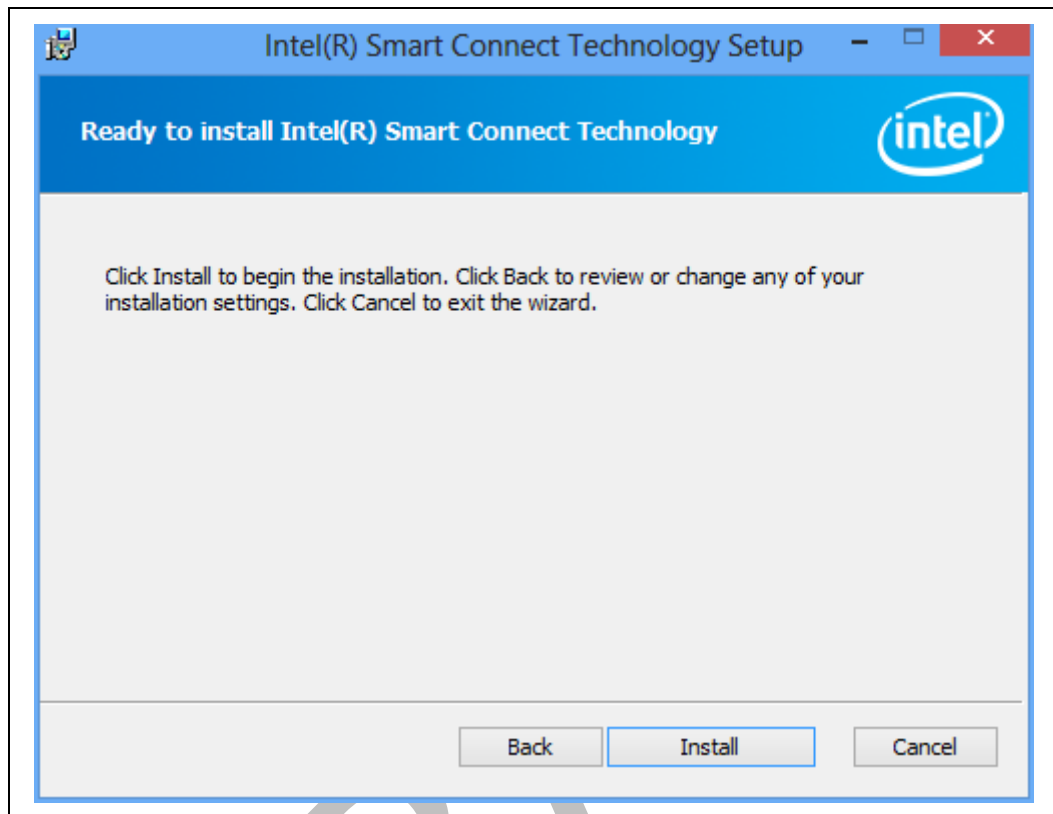


Check the checkbox labeled: "I accept the terms in the License Agreement" and select the "Next" to display:



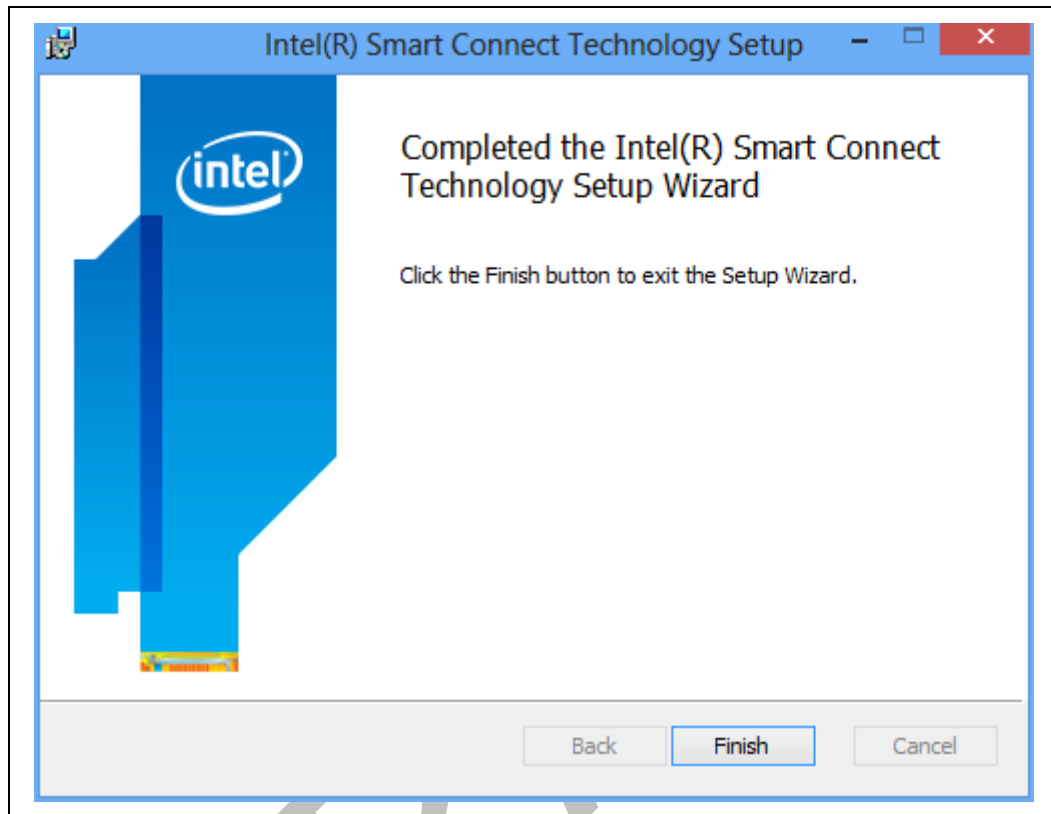


Select "Next" and the following window is displayed:

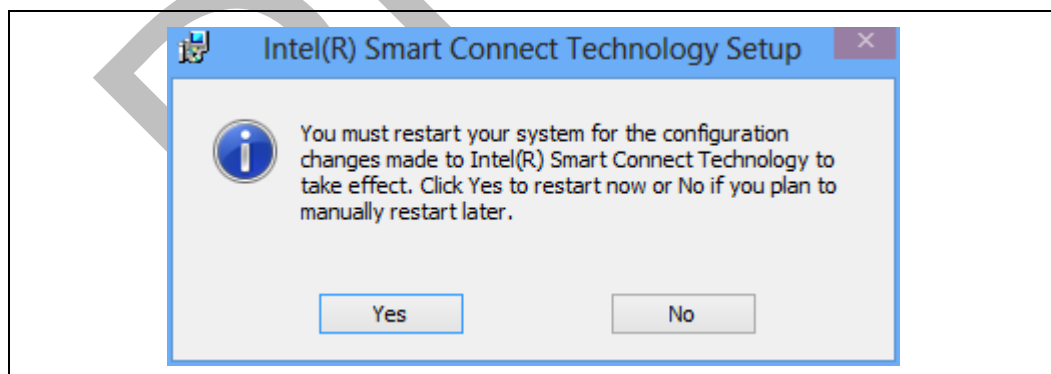




Select "Install" and after several progress windows are display, the following window is displayed:



Select "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 of the "Start" menu for Windows* 7; "Apps" and "Start" screen for Windows* 8.
2. Installation and status of the "Intel® Smart Connect Technology" is "Started" in the "Status" column of the Services tab of the Computer Management application.

2.4 Remote Wake via LAN Support (RW)

Remote Wake via Intel LAN device is managed by the Intel® ME in the S3/S4 state. The Intel® ME requires M3 support to remain on in the S3/S4 state. To enable this in the Intel® ME, the "Service Advertisement and Discovery" needs to be enabled when the Intel® ME settings are configured for the platform as the following example shows

2.5 Intel® Smart Connect Technology Configuration

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

- Always Updated (Periodic Update) turned off
- Always Reachable (Remote Wake) turned off
- Default update period of 15 minutes (when Periodic Updated enabled)
- Extended Hours of 10pm to 6am
- Application Whitelist disabled (no registry entry)

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	UI
Daytime Intel® Smart Connect Technology Update Frequency	S3SleepDurationSeconds	15 min	60 min	15 min	✓
Night time Start Range h:mins	NightTimeDuskMinutes	0h 00min	24h 00min	22h 00min	✓
Night time Stop Range h:mins	NightTimeDawnMinutes	0h 00min	24h 00min	6h 00min	✓
Battery Life % before disabling Intel® Smart Connect Technology	DCBatteryThresholdHalt	Current OS Suspend setting	95%	15%	
S0-Maximum-time-	S0WakeDurationLimitSeconds	10 sec	180 sec	45 sec	



Name	Registry Key	Min	Max	Default	UI
wake-duration					
CPU Thermal Threshold of when ISCT increases sleep duration	ThermalThresholdCentigrade	60°C below TJ-	40°C below TJ-MAX	45°C below TJ-MAX	
WhiteList	OEM\WhiteList		10 entries		
Audio Settings Delay when entering S0-ISCT mode	AudioDelayMilliseconds	0		2000 (2 seconds)	
Periodic Wake Enablement	OEM\PeriodicWakePref	0	1	0	✓
NetDetect Enablement	OEM\NetDetectPref	0	1	1	
NetDetect / Rapid Start Co-existence	OEM\NDFFSCoExist	0	1	0	
Remote Wake Enablement	OEM\RemoteWakePref	0	1	0	✓
Hide "Updates" in "?" menu	OEM\EnableCheckUpdates	0	1	1	✓
Enable logging	LoggingEnabled	0	4 (for dgview), 2 for iSCT Log	0	
Logging Level	LoggingLevel	0	16	0	

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 (ISCT-S0) when iSCT determines that it has been in iSCT-S0 mode for longer period of time due to large data transfers. This ensures skin temperature does not exceed Intel thermal guideline

Expose in UI are the possible values that can be configured in 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.

To allow OEMs flexibility in their usage of the Intel® Smart Connect Technology, they may wish to provide their own override values in the following key:

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

The Agent reads the OEM values when it begins execution after a reboot and if the values are within the minimum and maximum ranges, the Agent uses those values instead of the default values.

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.



2.5.1 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\OEM]
```

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.

2.5.2 Creating OEM Default Values

The Intel® Smart Connect Technology installation process allows an OEM to specify their default values thru the usage of an INI file at the time that setup.exe is invoked. The installer will read the contents of the "SmartConnect.ini" file from the current directory or the directory of setup.exe and populate the OEM registry key with those values.

Below is an example INI file that enables logging to the ISCT log file, enables NetDetect, NetDetect and Intel® Rapid Start Technology co-existence, enables Remote Wake and sets the default sleep duration to 30 minutes.

Note "; " this comment must remain as the first visible line in the file

Example of a SmartConnect.ini file:

```
; OEM registry customization settings

[OEM]

PeriodicWakePref=1

NetDetectPref=1

RemoteWakePref=1

NDFFSExist=1

WhiteList="outlook.exe; wlmml.exe"
```



Note: the installer does not validate the settings at install time; the Agent does this. If an entry is not a valid entry (e.g. misspelled) or their values are not within the accepted range, the Agent does not allow the OEM override and displays an error message in the log file. The OEM must keep the first two lines the same as in the above example.

2.5.2.1.1 Event Logging

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

2.5.3 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 settings are created:

- HKEY_LOCAL_MACHINE \SOFTWARE\Intel\Intel Smart Connect Technology\OEM\NDFFSCoExist = 1
- HKEY_LOCAL_MACHINE \SOFTWARE\Intel\Intel Smart Connect Technology\OEM\NetDetectPref = 1



3 Using Intel® Smart Connect Technology

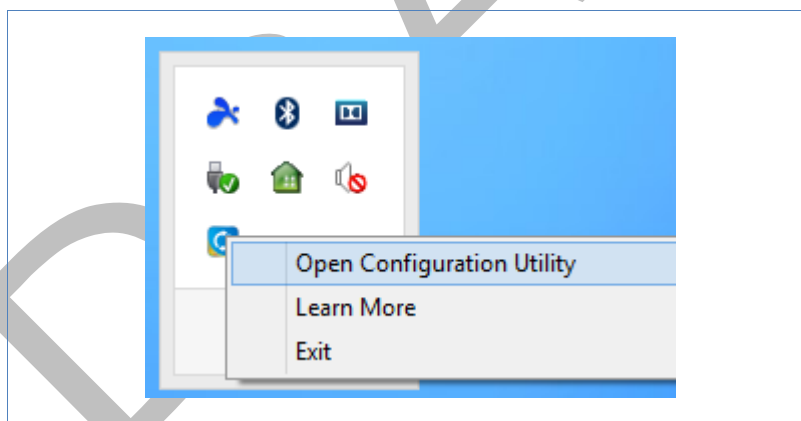
This section details how to use the Intel® Smart Connect Technology on your platform.

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 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.



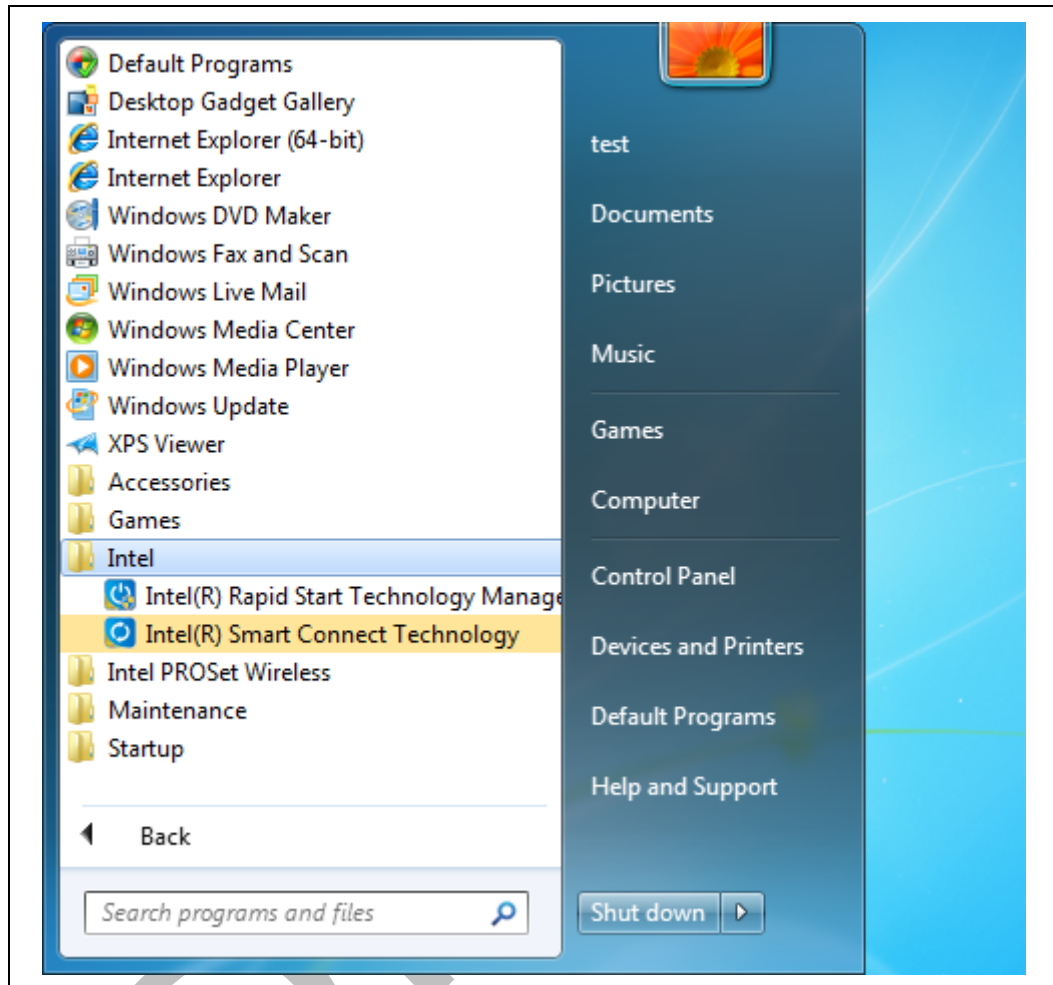
If the System Tray icon displays a yellow bang as shown in the following figure, then an error has occurred and the user can open the Configuration Utility and go to the Event History screen to view the issue.

3.2 Configuration Utility

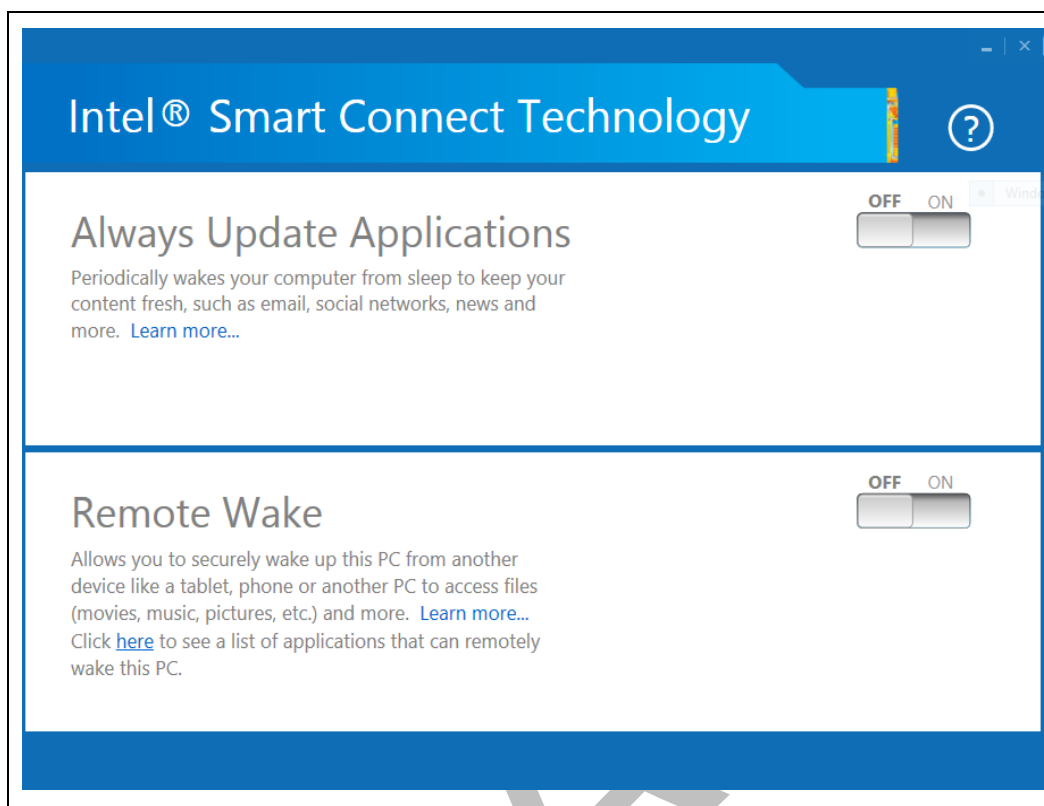
The Intel Smart Connect Technology Configuration Utility allows configuration of the sleep duration, extended hours sleep duration, and viewing of the Event History along with other settings.



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



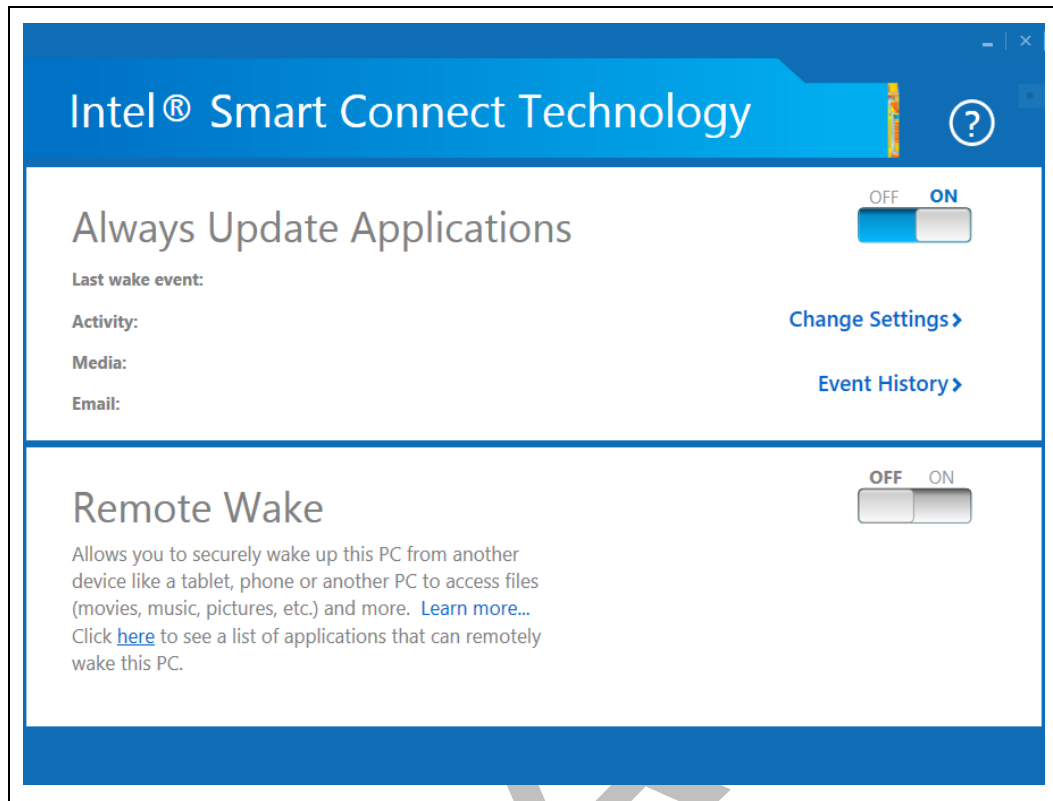
Select then "Intel® Smart Connect Technology" item to launch the application. Once launched, the following is presented:



To turn on the Always Update function, slide the slider from “OFF” to “ON” for the “Always Update Applications”.

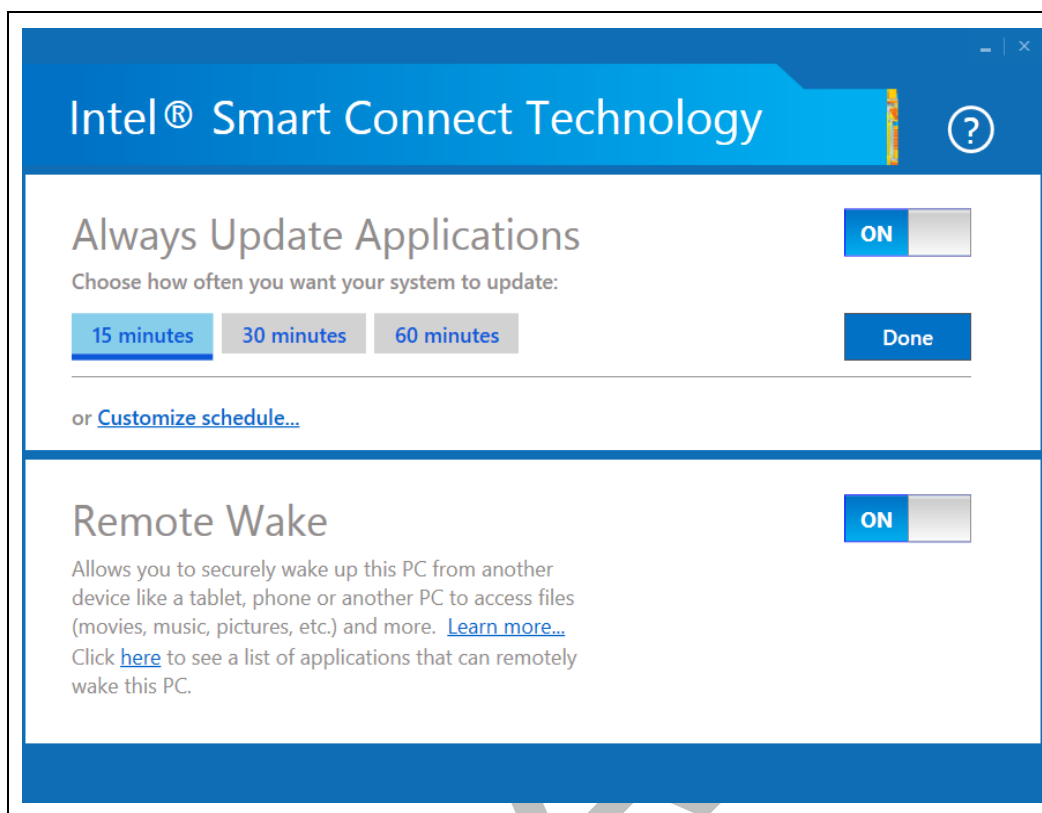
To enable Remote Wake, slide the slider from “OFF” to “ON” for the “Remote Wake” slider.

When in the “Always Update Applications is in the ON position, the GUI changes to the following:



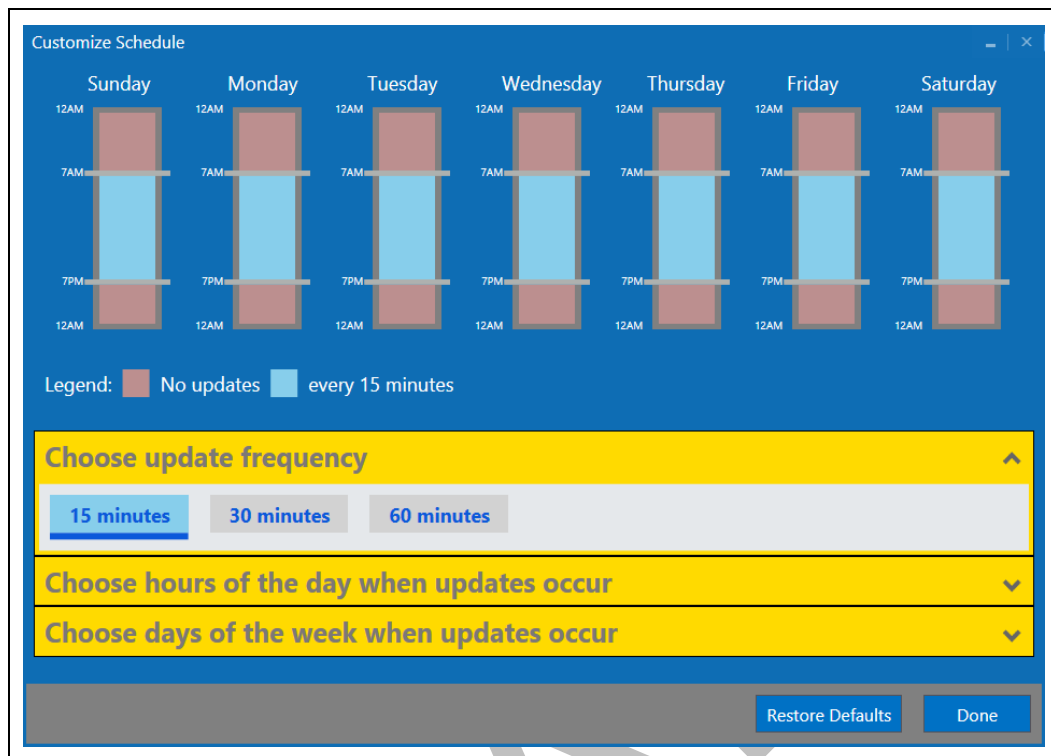
The last wake event activity of number of bytes of Media and Email transfer is shown.

To change the settings for how often the periodic wake occurs, select the "Change Settings>" control and the following is displayed:



Clicking the “Done” button, returns back to showing the last wake activity.

To change the days of the week that periodic update occurs and the extended hours settings, select the “Customize schedule...” to display the following:

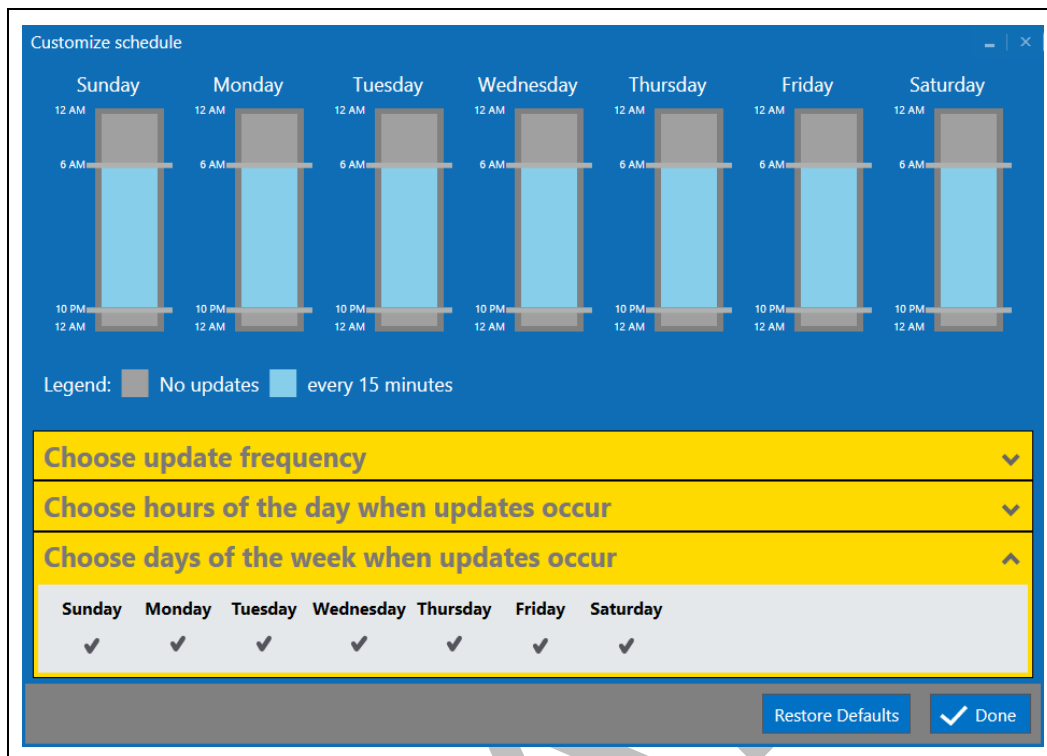


The GUI now displays the days of the week that periodic wake and remote wake are enabled for. To change the hours of the day for periodic wake, click on the down arrow on the "Choose hours of the day when updates occur" to display the following:



This allows selection of the time of when Intel Smart Connect Technology enters the Extended Power Savings time. During this time no updates occur 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 deep sleep S3 (DS3) state upon entrance to S3. Thus saving additional power (in battery mode). The Intel Smart Connect Technology Agent will schedule a wake at the end of the time.

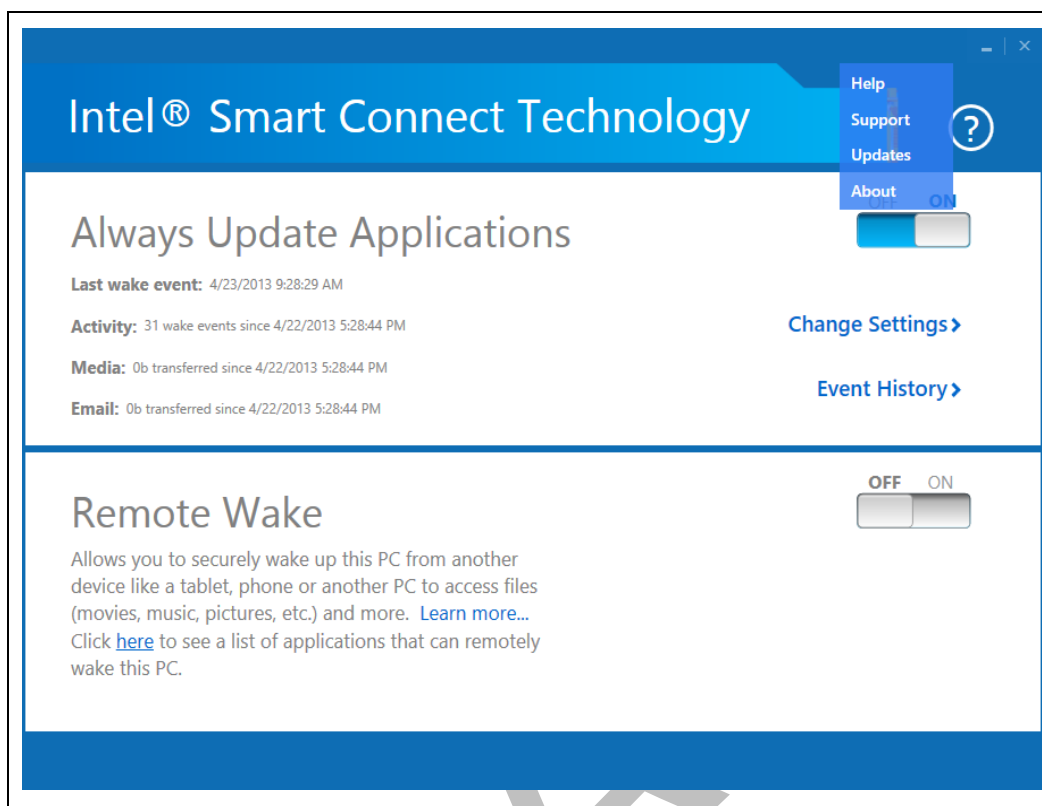
To change the days of the week that updates occur, select the "Choose days of the week when updates occur" to display the following:



When done with customization, select the "Done" button to close the window.

Selecting the "Restore Defaults", returns the settings to default. Changes to Always Update Applications and Remote Wake are not changed.

The "?" button in the upper right hand corner provides support information for using Intel Smart Connect Technology.



- "Help" button brings up the help information
- "Support" button opens a browser to either the Intel® Smart Connect Technology support web site
- "Updates" button (if available on menu) opens a browser to the Intel Smart Connect Technology web site and checks for available updates
- "About" button displays a dialog box containing the release version

Selecting the "Event History>" displays the event history (periodic wake and remote wake) from the last time the system was booted. To save the history to file, select the "Generate Log" button.



Event	Time	Duration	Activity	Data Transferred	Information
User Initiated	4/23/2013 10:43:52 AM				
Timer	4/23/2013 10:35:03 AM	19 seconds	No Updates Processed		
Timer	4/23/2013 10:19:39 AM	19 seconds	No Updates Processed		
OS Initiated	4/23/2013 9:30:38 AM				
Network Detected	4/23/2013 9:28:29 AM	11 seconds	No Updates Processed		1018: No internet connection available.
Timer	4/23/2013 9:11:12 AM	11 seconds	No Updates Processed		1018: No internet connection available.
Timer	4/23/2013 8:53:50 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 8:36:24 AM	21 seconds	No Updates Processed		
Timer	4/23/2013 8:19:02 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 8:01:43 AM	14 seconds	No Updates Processed		
Network Detected	4/23/2013 7:44:18 AM	20 seconds	No Updates Processed		
Timer	4/23/2013 7:27:01 AM	12 seconds	No Updates Processed		1018: No internet connection available.
Timer	4/23/2013 7:09:38 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 6:52:18 AM	14 seconds	No Updates Processed		
Timer	4/23/2013 6:34:56 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 6:17:34 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 6:00:06 AM	23 seconds	No Updates Processed		

3.3 Content Updating

Once the Intel® Smart Connect Technology is configured and enabled on the platform, content updating is performed by the platform periodically 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. iSCT waits for a maximum of 15 seconds (20 seconds if VPN connection) for a network connection to become available. If there is no network connection, it immediately goes back to sleep.



6. Once a network connection has been established, iSCT checks if the connection is to the internet, if not NetDetect is enabled and the platform goes back to sleep. If an internet connection is present then iSCT monitors the network traffic rate to and from the machine. If the traffic rate falls below 100KB/sec for 10 seconds, iSCT immediately puts the system back into S3.
7. If at any time during a wake, the iSCT defined thermal limit has been reached or the battery has been drained past the defined limit, iSCT immediately puts the system back into S3.
8. If the system is running on DC, and the maximum wake time has been exceeded, iSCT immediately puts the system back into S3. There is no maximum wake time when the system is running on AC.

3.4 NetDetect Operation

If the platform supports NetDetect (feature of selected WLAN NICs), the platform will only wake from S3 if a network access point which can be used for connectivity is found (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, and the iSCT Agent finds that no network is currently available, it 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.

3.4.1 Radio On/Off Handling with NetDetect

3.4.1.1 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 when the user upon turns the radio back on in S3, NetDetect will



begin scanning for user configured Access Points if the turning on of the switch causes the platform to wake to S0-ISCT.

3.4.1.2 Systems with Function Key Radio On/Off

If the WLAN radio is turned off prior to entering S3, Intel® Smart Connect Technology Agent will not set either the timer or NetDetect. A soft switch has no ability to be turned on when the system is in S3. In this case, iSCT will not set either the timer or net detect and the system will not wake.

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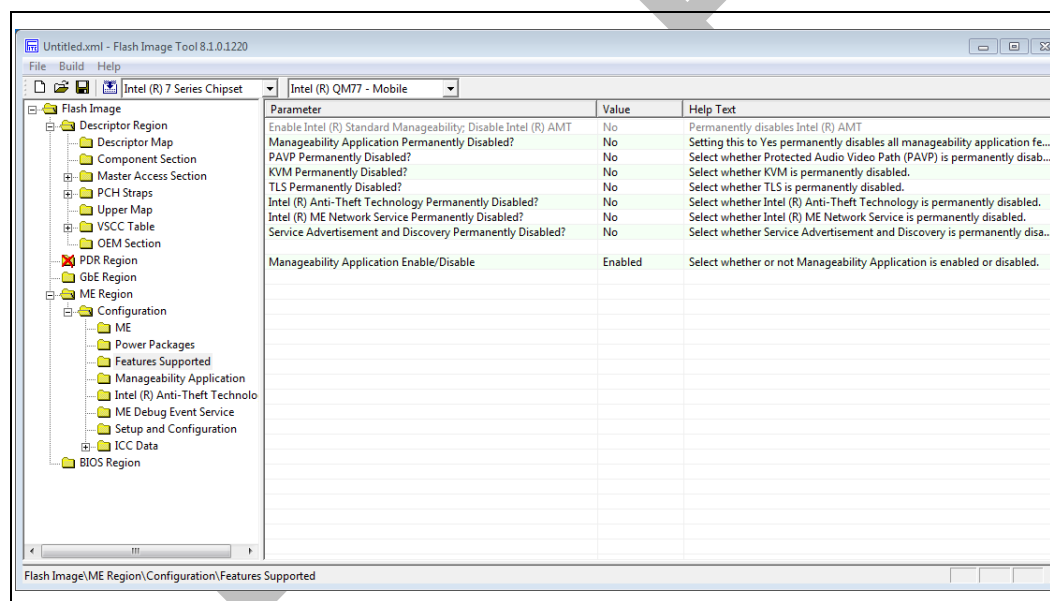


4 Intel® Smart Connect Technology: Remote Wake

This chapter provides setup and reference guide to test Intel® Smart Connect Technology feature of Remote Wake on Shark Bay platforms for Windows 8 (32- or 64 bit) operating system.

4.1 Remote Wake via LAN support (RW)

Remote Wake via Intel LAN device is managed by the Intel® ME in the S3/S4 state. The Intel® ME requires M3 support to remain on in the S3/S4 state. To enable this in the Intel® ME, the "Service Advertisement and Discovery" needs to be enabled when the Intel® ME settings are configured for the platform as the following example shows.

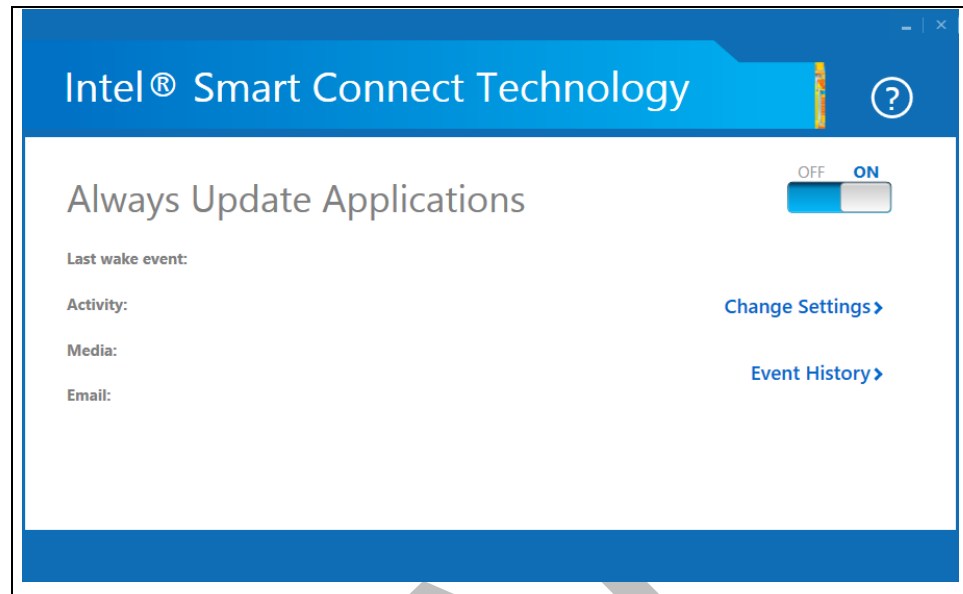


4.2 Remote Wake Registry Setting

The registry entry *RemoteWakePref* in the OEM registry section ([HKEY_LOCAL_MACHINE\SOFTWARE\Intel\Intel® Smart Connect Technology\OEM]) is for OEM to enable/disable Remote Wake (RW) feature on the system. OEM can configure to remove RW configuration settings from Intel® Smart Connect Technology Configuration Utility.



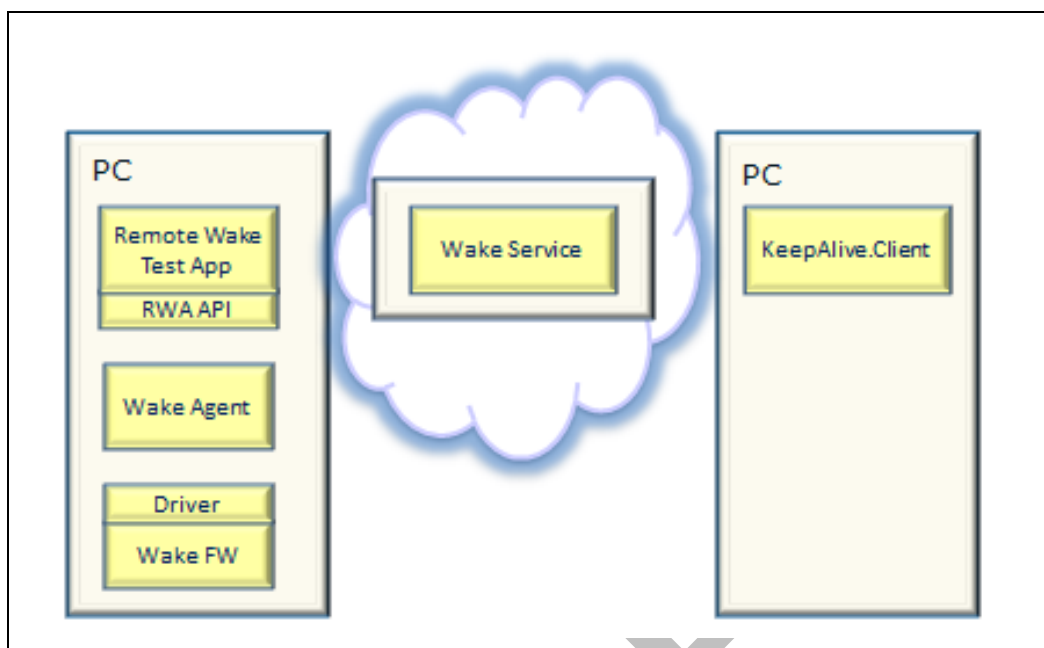
If RemoteWakePref = 0, RW will be permanently "Disabled" and there will not be any RW settings shown on the Configuration Utility. The end user cannot turn on Remote Wake.



4.3 Remote Wake Testing

4.3.1 Test Components

Two PCs are required for end to end testing. One, as shown on the left below, installed with the Remote Wake components and another, as shown on the right for an application to issue a wake request. Both PCs require internet access without proxies or VPNs. The Remotely Wake-able machine should not have set a BIOS or HDD password if hibernate is being used for testing. Additionally, laptops in Sx will power down the LAN interface on Battery / DC mode. Therefore testing using the LAN interface requires the laptop operates on AC power. WLAN supports both AC and Battery / DC modes.



The Remote Wake Test framework requires; Remote Wake Test Application and Wake Service Client in the iSCT release kit.

The Remote Wake Test application provides a user interface for testing the PC client infrastructure. This application is not installed with Intel Smart Connect Technology. The Remote Wake Test app substitutes for an ISV's "3rd Party App" application and communicates with the Wake Agent via the Remote Wake Agent API. It does not communicate Session Id information with the cloud, instead displaying the remote wake platform status in a dialog box. This application is detailed below in Remote Wake Test Application.

The Wake Service Client framework described here uses a PC console based application as shown on the PC above on the right side. It will directly communicate with the Intel Cloud Wake Service. The test user needs to provide the session id information from the Remote Wake Test app PC on the left side for the PC on the right side which is using a wake request via the Wake service client test application. The Wake service client composes of three files: WakeService.KeepAlive.Client.exe, WakeService.KeepAlive.Client.exe.config and WakeService.Common.dll.

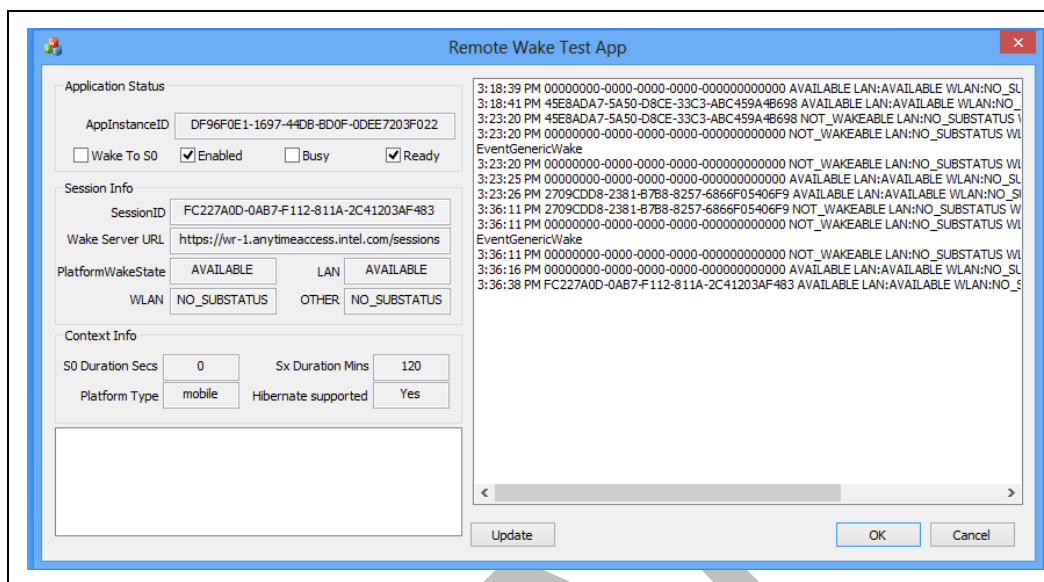
4.3.2 Remote Wake Test Application

Remote Wake Test Application called RWTestAppMFC.exe can be found in the Intel Smart Connect Technology Compliance Kit "<build_dir> \ ProductReleaseDrop \ Application" for 32 bit version and a 64 bit version can be found in "<build_dir> \ ProductReleaseDrop \ Application64".

Note: Remote Wake Test Application is only compatible with the associated release version of Intel® Smart Connect Technology.



RWTestAppMFC loads the COM object and issues an "Enable" command. The Wake Agent issues a 'Register' command to the Wake Service. The Wake Agent sends the Session ID to the Test App which displays it with other status information.



Note the *SessionID* GUID and the *PlatformWakeStatus* of AVAILABLE indicating the Wake Agent has successfully configured the underlying hardware and the Session ID will be used when the PC transitions to S3/S4. Note the LAN interface, shown as AVAILABLE, will be used to send Keep Alive packets as the WLAN indicates NO_SUBSTATUS. WLAN status will change if WLAN is used by Remote Wake App. Refer to the Remote Wake Agent API for detailed descriptions of *PlatformWakeStatus* and LAN/WLAN/Other states.

4.3.3 Wake Service Client

The PC with the Wake Service Client (using WakeService.KeepAlive.Client.exe) will be used on a separate PC to remotely wake the system under test.

Open a command prompt, start the WakeService.KeepAlive.Client.exe from Web Service Client folder, and enter an "s"-command with the Session ID from the Remote Wake Test App's Session ID text box. The results will be shown below with #1. Note the Status: UNKNOWN state, this means a Remote Wake PC has registered but it is still not sleeping and sending Keep Alive packets.

The Remote Wake enabled PC can now be put into S3 (Sleep) or S4 (Hibernate). It will start to send Keep Alive packets to the cloud service. Enter an "s"-command and Session ID again. The results will be shown below with #2. Note the Status: SLEEPING.

The Remote Wake enabled PC can now be put into S3 (Sleep) or S4 (Hibernate). It will start to send Keep Alive packets to the cloud service. Enter an "s"-command and



Session ID again. The results will be shown below with #2. Note the Status: SLEEPING.

```

C:\Windows\system32\cmd.exe - WakeService.KeepAlive.Client.exe

C:\Users\clord1\Desktop\executable>WakeService.KeepAlive.Client.exe

Interactive WakeService client.
<To send keep-alives in non-interactive mode, add commandline flag -n
To wake up another session non-interactively, specify session id and/or message
on command line>
r: Register new session
g: Get current session details
k: Start sending keep alives
u: Unregister current session
s: Get Session state
w: Send wake with no message to session
m: Send wake with message to session
a: Subscribe to a session
b: Unsubscribe from a session
c: Read Updates
d: Acknowledge Updates
q: Quit
-----
s
Enter session id:
fc227a0d-0ab7-f112-811a-2c41203af483
-----
Session id: fc227a0d-0ab7-f112-811a-2c41203af483
Status: UNKNOWN
Extended Status:
LastChange: 2012-09-14T22:36:35.450Z
Last KA Received: 0001-01-01T00:00:00.000Z
KeepAlive Period: 30
Wakeable In: -1
-----
Interactive WakeService client.
<To send keep-alives in non-interactive mode, add commandline flag -n
To wake up another session non-interactively, specify session id and/or message
on command line>
r: Register new session
g: Get current session details
k: Start sending keep alives
u: Unregister current session
s: Get Session state
w: Send wake with no message to session
m: Send wake with message to session
a: Subscribe to a session
b: Unsubscribe from a session
c: Read Updates
d: Acknowledge Updates
q: Quit
-----
s
Enter session id:
fc227a0d-0ab7-f112-811a-2c41203af483
-----
Session id: fc227a0d-0ab7-f112-811a-2c41203af483
Status: SLEEPING
Extended Status:
LastChange: 2012-09-15T01:53:23.696Z
Last KA Received: 2012-09-15T01:53:23.696Z
KeepAlive Period: 30
Wakeable In: 91
-----

```

Issue a "w"-command to wake the PC without sending optional wake packet data.



```
C:\Windows\system32\cmd.exe - WakeService.KeepAlive.Client.exe

C:\Users\clordi\Desktop\executable>WakeService.KeepAlive.Client.exe

Interactive WakeService client.
<To send keep-alives in non-interactive mode, add commandline flag -n
To wake up another session non-interactively, specify session id and/or message
on command line>
r: Register new session
g: Get current session details
k: Start sending keep alives
u: Unregister current session
s: Get Session state
w: Send wake with no message to session
m: Send wake with message to session
a: Subscribe to a session
b: Unsubscribe from a session
c: Read Updates
d: Acknowledge Updates
q: Quit
-----
w
Enter session id:
fc227a0d-0ab7-f112-811a-2c41203af483
Wake sent
-----
Interactive WakeService client.
<To send keep-alives in non-interactive mode, add commandline flag -n
To wake up another session non-interactively, specify session id and/or message
on command line>
r: Register new session
g: Get current session details
k: Start sending keep alives
u: Unregister current session
s: Get Session state
w: Send wake with no message to session
m: Send wake with message to session
a: Subscribe to a session
b: Unsubscribe from a session
c: Read Updates
d: Acknowledge Updates
q: Quit
-----
```

Alternatively the "m"-command can be issued to wake the platform with a message in the wake packet.

Note the "Wake sent" below. The sleeping PC should now wakeup.

§



5 Intel® ME Co-existence with Intel® Smart Connect Technology

Intel® Smart Connect Technology does not have any dependency on Intel® MEI driver or Intel ME FW. Additionally Intel® Smart Connect Technology does not consume SPI flash space. The Intel® Centrino® Wireless NetDetect feature is resident in the FW of the WLAN NIC.

5.1 Intel® ME WLAN Provisioning

When the Intel® ME is provisioned for WLAN support during its M3 state and the platform is on AC, NetDetect will not be functional as the Intel® ME will take ownership of the WLAN card. The following table illustrates the Intel® ME states and provisioning modes that effect Intel® Smart Connect Technology and NetDetect operations.

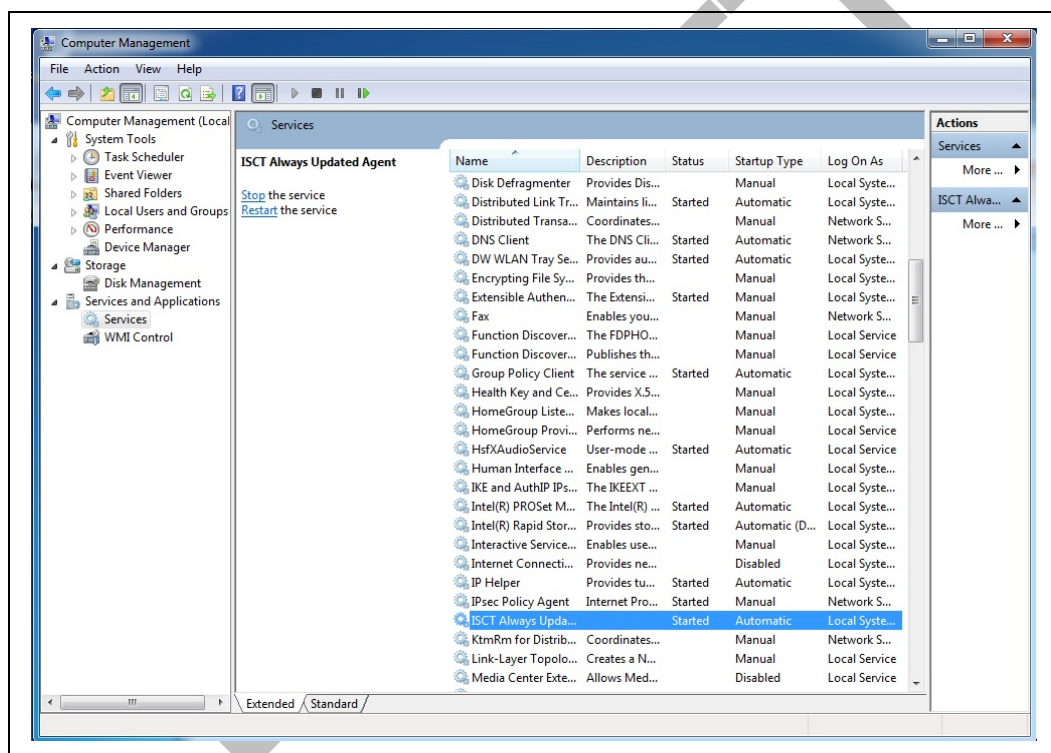
Table 5-1. Intel® ME Co-existence with Intel® Smart Connect Technology

System State	Intel® ME State	Intel WLAN Ownership	Provisioned	Power State	Intel® Smart Connect Technology	NetDetect Available
S0	M0	Host	Yes	AC	Yes	Yes
S3	M3	ME	Yes	AC	Yes	No
S4	M3	ME	Yes	AC	Yes	No
S3	Moff	Host	Yes	AC	Yes	Yes
S4	Moff	Host	Yes	AC	Yes	Yes
S3	Moff	Host	Yes	DC	Yes	Yes
S4	Moff	Host	Yes	DC	Yes	Yes
S3	M3	Host	No	AC	Yes	Yes
S4	M3	Host	No	AC	Yes	Yes
S3	Moff	Host	No	DC	Yes	Yes
S4	Moff	Host	No	DC	Yes	Yes

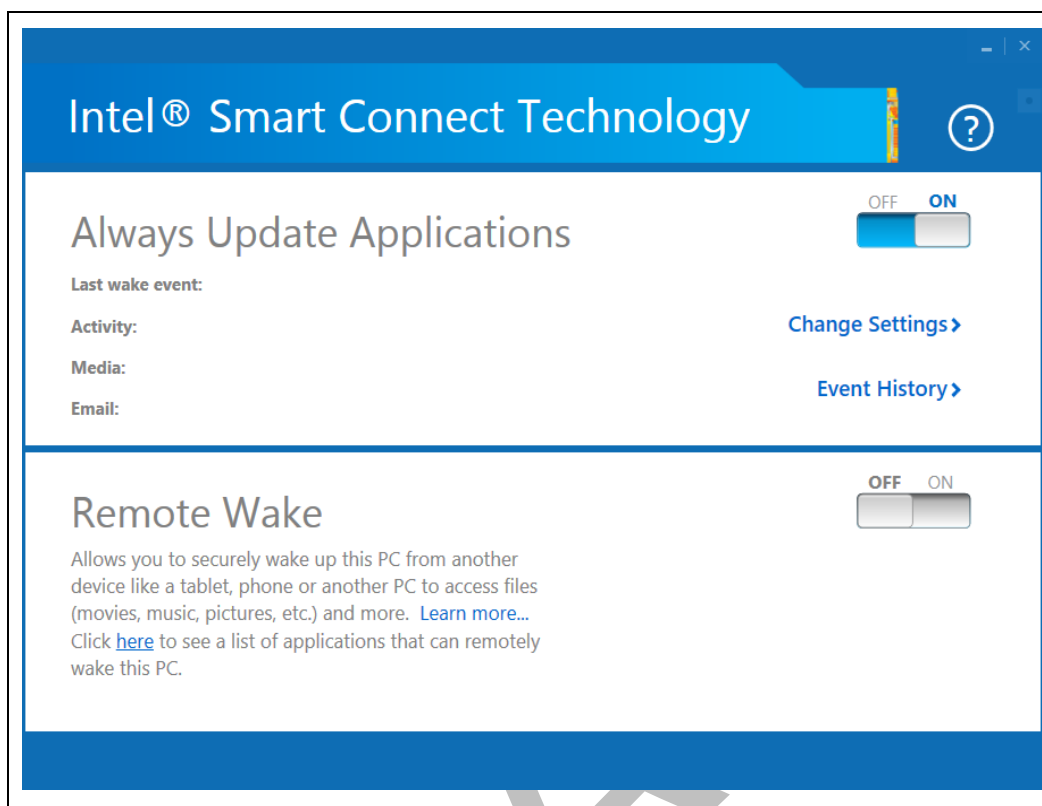
6 Troubleshooting

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.

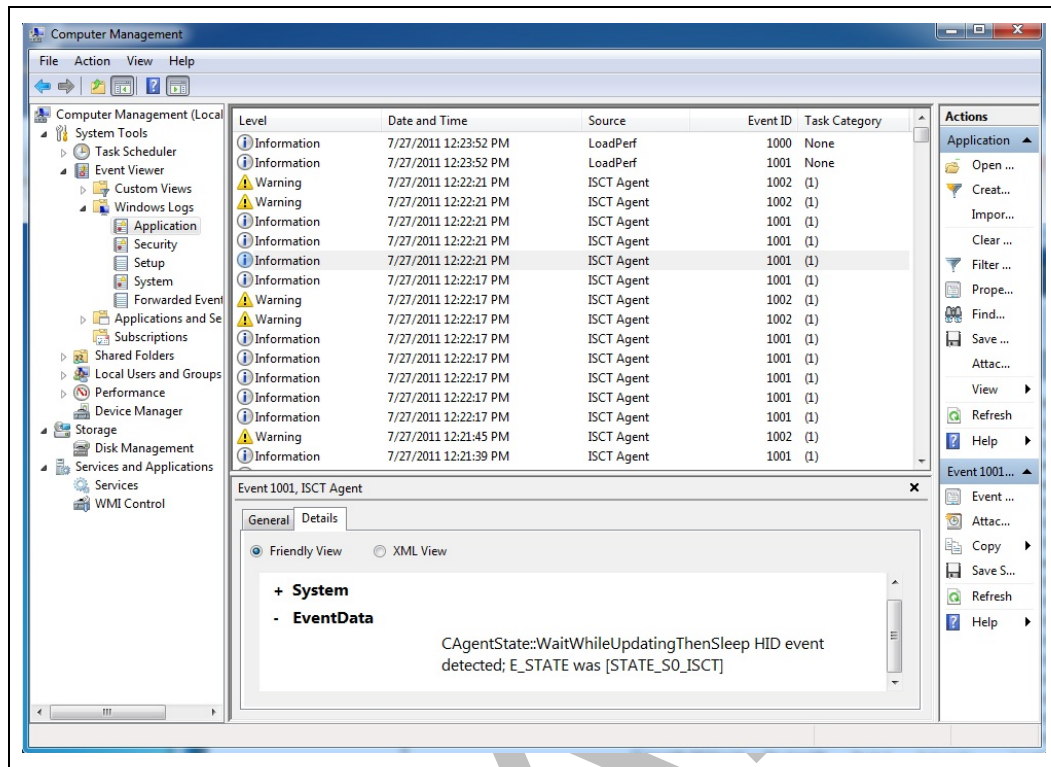


- Verify that the Intel Smart Connect Technology Configuration Utility has "Always Update Applications" slider control in the "ON" position as shown below:

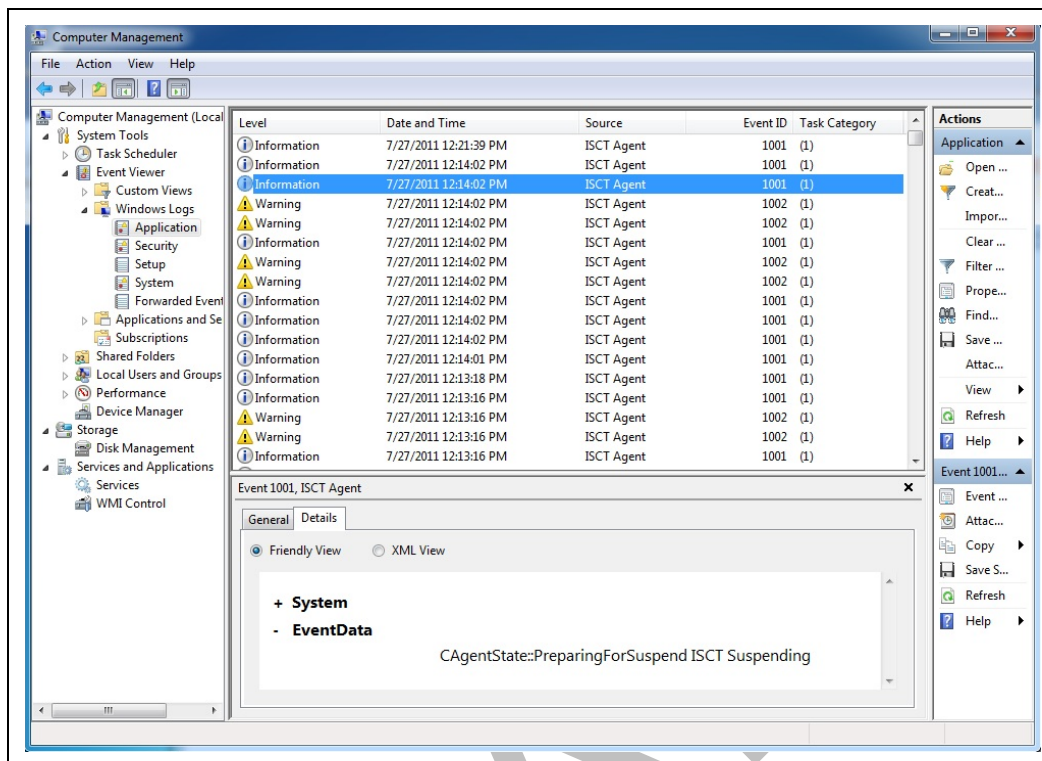


If the above two steps are successful and the platform does not wake or only wakes once or the sleep duration is not as expected, verify the following by checking the “Source” column of the Event Viewer Application Log for the Intel Smart Connect Technology Agent entries.

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:

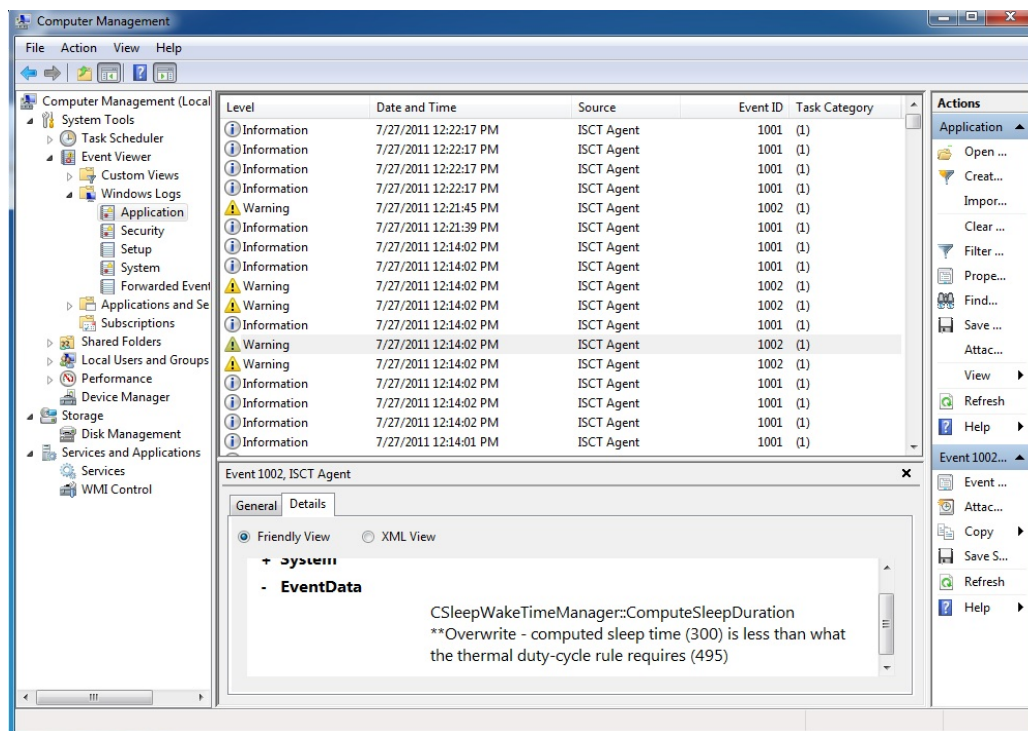


2. If you never see a wake after setting a sleep duration in the GUI and you have the Whitelist enabled in the Registry for Intel Smart Connect Technology, verify that one of the applications listed in the registry is running prior to placing the platform into S3. For more information on Whitelist, refer 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 thermal conditions for the actual sleep time and if on battery, the current battery charge level.

5.



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

In addition to the Event Viewer, the "Event History" of the iSCT Configuration Utility can be used. The following shows a detailed list of wake events and their reasons:



Event History

Number of events: 35

Event	Time	Duration	Activity	Data Transferred	Information
User Initiated	4/23/2013 10:43:52 AM				
Timer	4/23/2013 10:35:03 AM	19 seconds	No Updates Processed		
Timer	4/23/2013 10:19:39 AM	19 seconds	No Updates Processed		
OS Initiated	4/23/2013 9:30:38 AM				
Network Detected	4/23/2013 9:28:29 AM	11 seconds	No Updates Processed		1018: No internet connection available.
Timer	4/23/2013 9:11:12 AM	11 seconds	No Updates Processed		1018: No internet connection available.
Timer	4/23/2013 8:53:50 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 8:36:24 AM	21 seconds	No Updates Processed		
Timer	4/23/2013 8:19:02 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 8:01:43 AM	14 seconds	No Updates Processed		
Network Detected	4/23/2013 7:44:18 AM	20 seconds	No Updates Processed		
Timer	4/23/2013 7:27:01 AM	12 seconds	No Updates Processed		1018: No internet connection available.
Timer	4/23/2013 7:09:38 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 6:52:18 AM	14 seconds	No Updates Processed		
Timer	4/23/2013 6:34:56 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 6:17:34 AM	17 seconds	No Updates Processed		
Timer	4/23/2013 6:00:06 AM	23 seconds	No Updates Processed		

Generate Log

6.1 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.

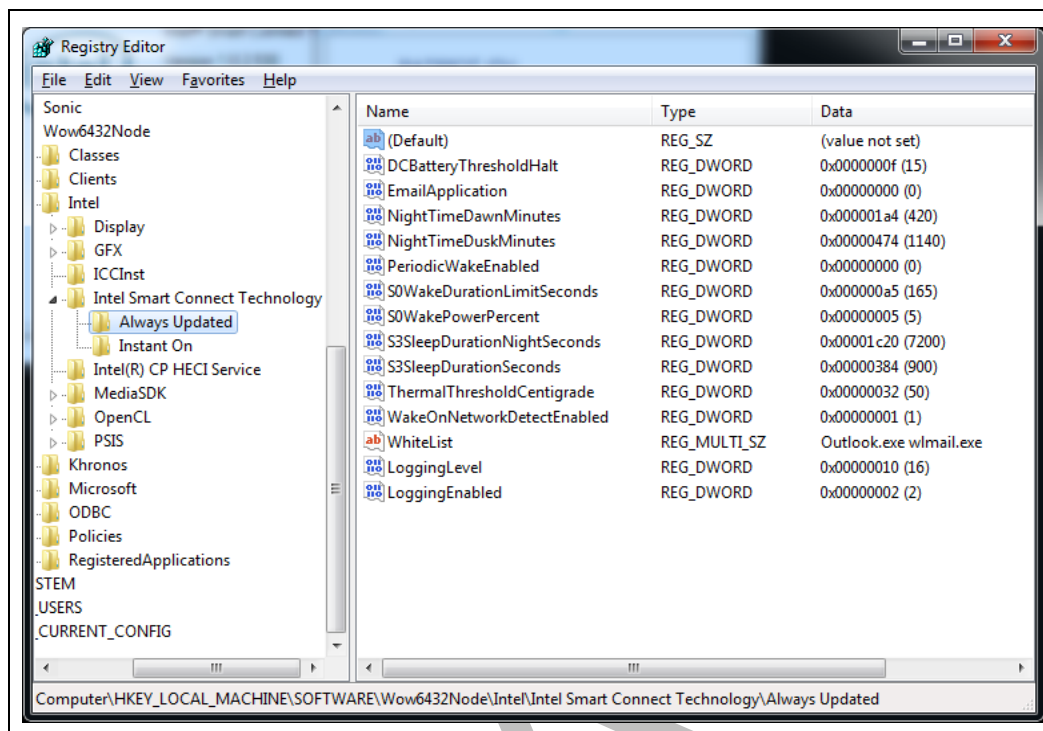
An alternative to the Event Viewer for logging information is the log files that are created in the C:\ProgramData\Intel\iSCT directory. Note that the "C:\ProgramData" directory is hidden.

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 6-1](#). For more information on the registry settings for the Intel Smart Connect Technology refer to the [registry section](#) of this document.

Figure 6-1. Logging Registry Settings



6.2 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.

6.2.1 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 6-2. DebugView Capture Settings

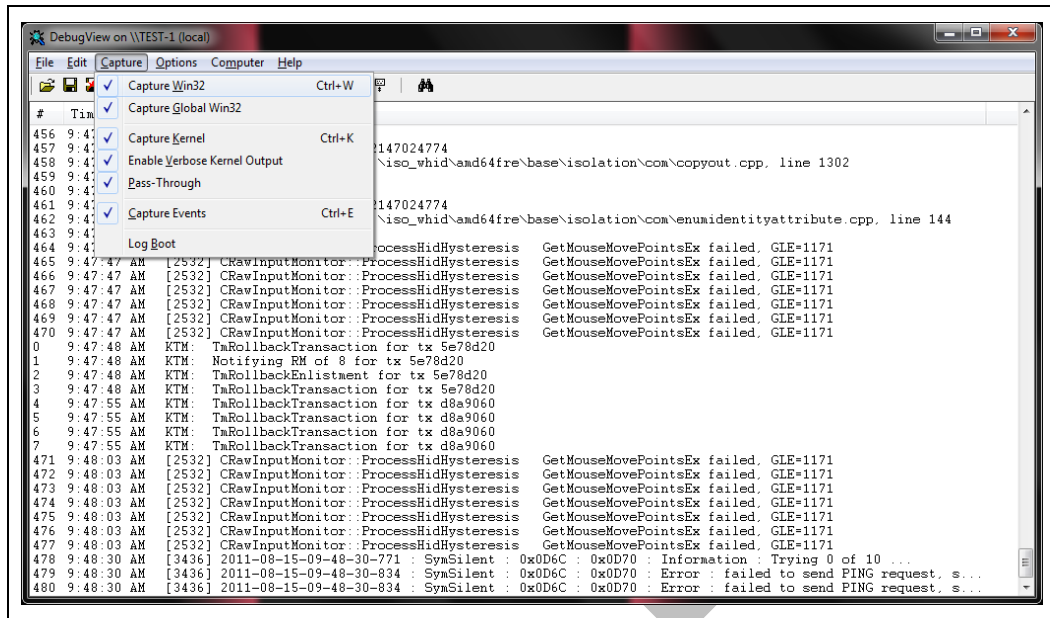
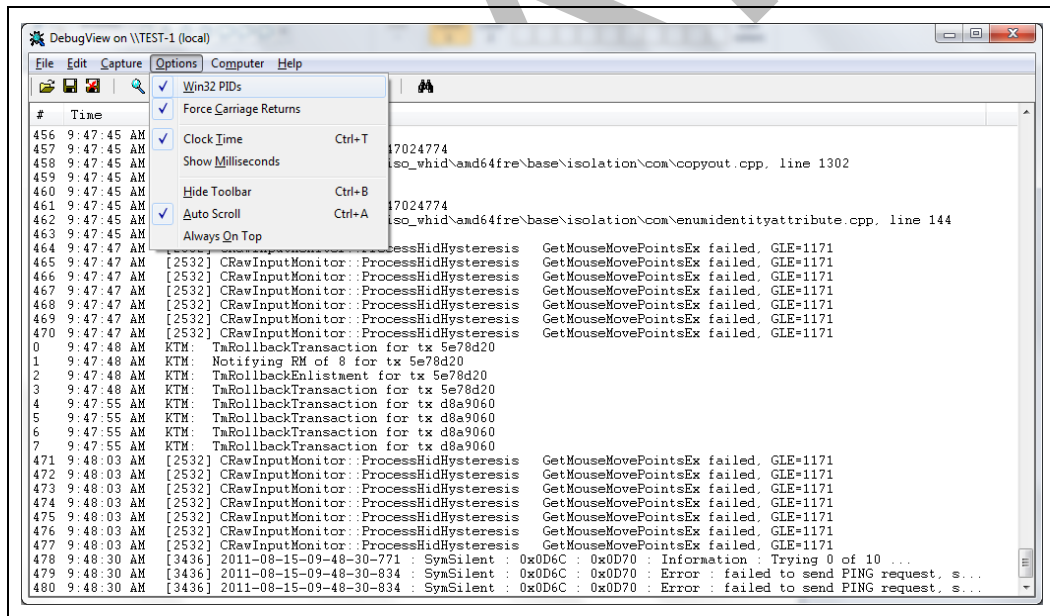


Figure 6-3. DebugView Options Settings





6.2.2 Example DebugView Output

6.2.2.1 Thermal Threshold Exceeded

In this example, the current CPU temperature exceeded the recommended delta between CPU TjMax and the current Intel Smart Connect Technology recommended values. The next wake period (sleep duration) was doubled to allow platform thermals to cool the platform.

```
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))

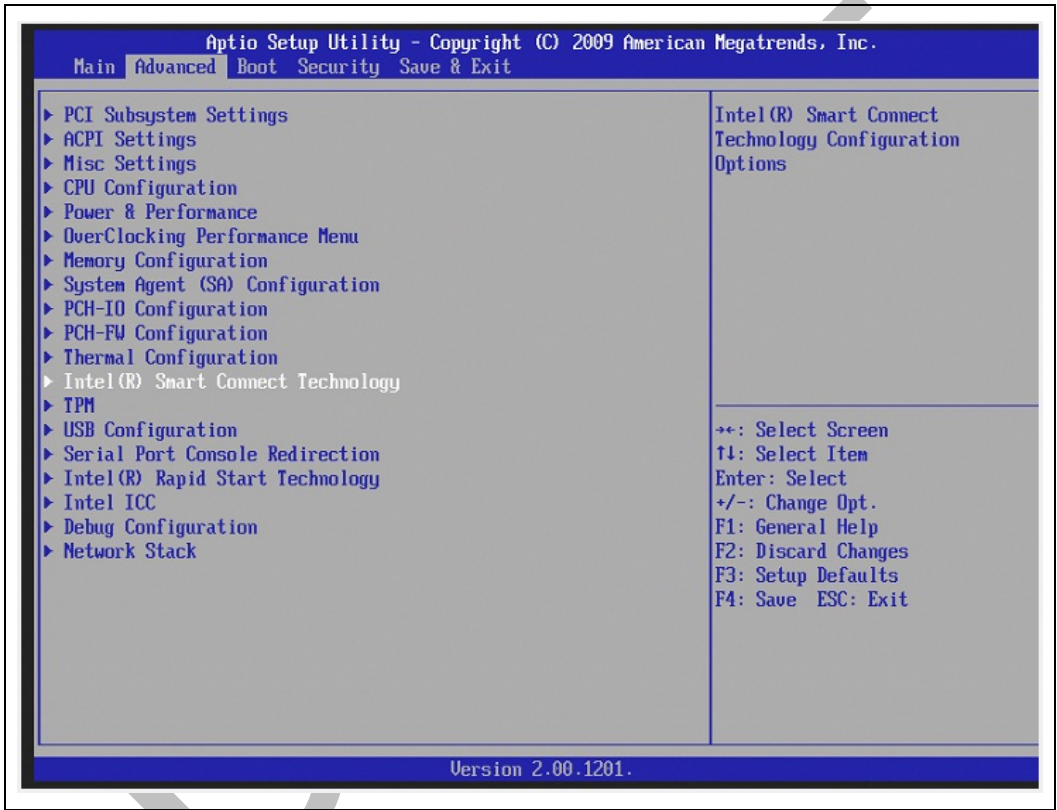
00006513      11:26:29 AM      [2200]
CSleepWakeTimeManager::ComputeSleepDuration  *****ISCTNextSleepDuration =
1200 seconds.
```



7 Intel CRB BIOS Settings

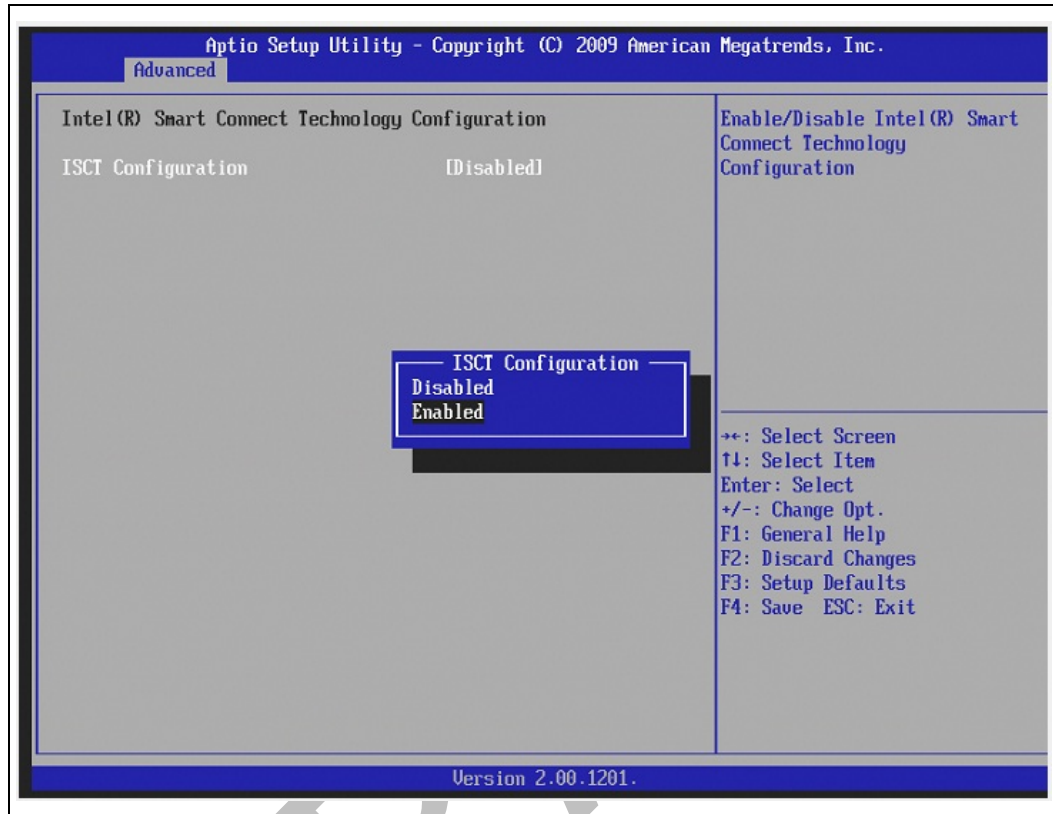
This section details the BIOS Settings for the Intel CRB to enable Intel® Smart Connect Technology.

From the “Main” setup BIOS screen, select the “Advanced” tab.



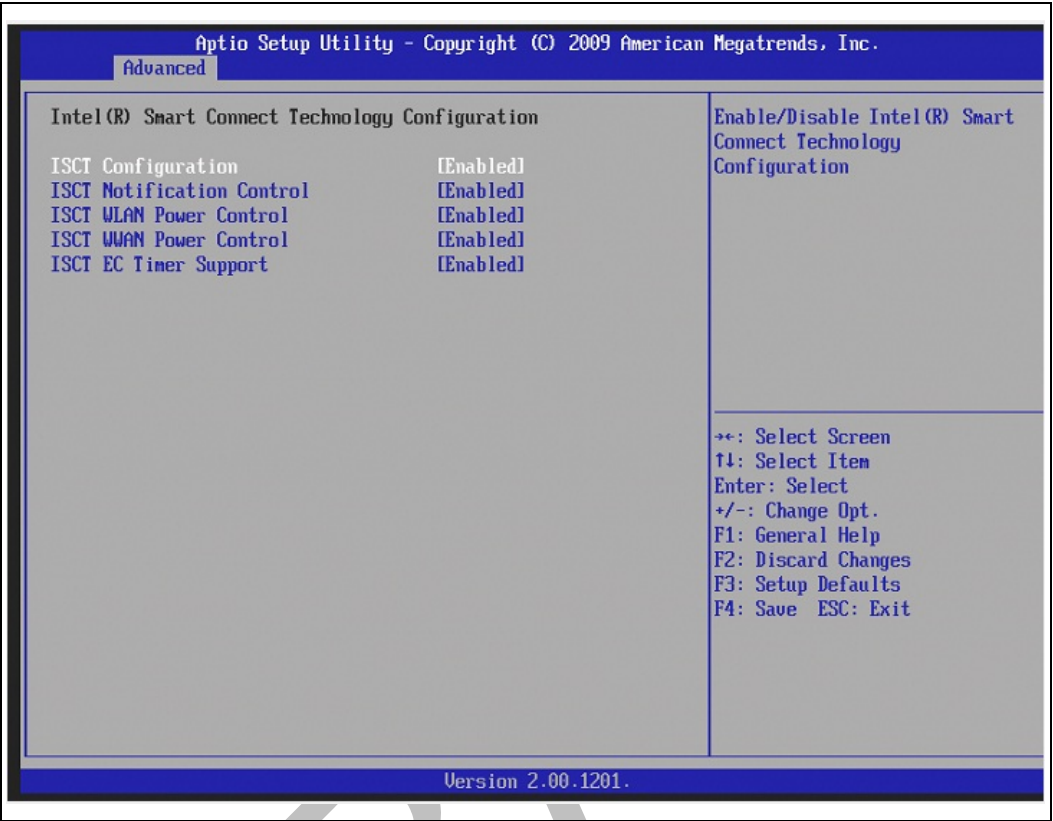


Select "Intel(R) Smart Connect Technology Configuration" and change "Disabled" to "Enabled".





For each of the items in the Intel Smart Connect Technology options, set them to "Enabled".



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

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