

#### **SETUP & CONFIGURATION GUIDE FOR**

# Inte VPro

This Setup Guide details what makes a true Intel® vPro™ technology-based PC, and how to set up and configure Intel® AMT (Active Management Technology) and Intel® KVM Remote Control (keyboard, video, mouse) on an Intel vPro technology-based PC.

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# WHAT IS Intel vPro technology?

Intel vPro technology provides system access and the ability to remotely isolate and repair systems after OS failure. This is accomplished using Intel® Active Management Technology—a powerful tool for remote and out-of-band PC management—and Intel® KVM Remote Control, which lets you control the keyboard, video, and mouse of a remote PC.

However, this remote access contains inherent security risks requiring the use of secure passwords to make the connection. The steps outlined in this Setup Guide will help you configure your PCs and ensure that they are protected.

An Intel vPro technology-based PC (desktop or mobile) includes the following components:

- Intel<sup>®</sup> Core<sup>™</sup> i7 vPro<sup>™</sup> processor, Intel<sup>®</sup> Core<sup>™</sup> i5 vPro<sup>™</sup> processor, or Intel<sup>®</sup> Core<sup>™</sup>2 vPro<sup>™</sup> processor
- Current generation chipset: Q57 (for Intel Core i5/i7) Q57 chipset with Intel Core i5 vPro processors (exclusive platform configuration for Intel KVM Remote Control)
- Previous-generation chipsets: Q45 (for Intel<sup>®</sup> Core<sup>™</sup>2 Duo) and Q35 (for Core 2)
- Intel<sup>®</sup> LAN on motherboard network card (Intel-based NIC)
- Embedded management firmware

# WHAT IS Intel AMT?

Intel AMT is a powerful hardware-based technology for security and remote management of PCs. With Intel AMT, IT administrators can remotely monitor and manage computers any time. Access to the PC is available when the power is off, the OS is inoperable, management agents are missing, or hardware (such as a hard drive) has failed. When integrated into a third-party management solution, computers with Intel vPro technology let service providers spend less time managing the computer and more time focusing on strategic business initiatives.

### WHAT IS Intel KVM Remote Control?

Intel KVM Remote Control is one of many features found in Intel AMT. Intel KVM Remote Control is embedded in the hardware, enabling IT administrators to repair an employee's or customer's PC remotely both above and below the OS. Intel KVM benefits include:

- A pre-installed, built-in VNC-based solution in the user's PC
- No client agents required
- Works with any VNC-based viewer (versions 3.3, 3.8, or 4.0) that has tested interoperability with Intel KVM (based on RFB protocol)

Intel KVM offers several improvements over traditional KVM solutions. Unlike softwarebased KVM, Intel KVM allows repair of BIOS problems, pre-and post-boot, OS freeze-ups, OS shutdowns, and the network stack. Unlike a NIC-based KVM, the Intel solution requires no additional hardware or software on the client and includes built-in security.

# System requirements

To begin the setup and configuration procedure, you need the following:

- An Intel vPro technology-based client PC (this is the end-user vPro client PC that is being configured)
- A remote management console (this PC is used by Intel<sup>®</sup> Channel Partners or IT managers to configure the client PC)
- Two USB flash drives
  - The first will be used for the Intel AMT Configuration Utility
  - The second USB flash drive will be formatted with a special file that is used during reboot (Section 1, Option 1, Step 3)



# SECTION 1: Getting started w/ Intel AMT

Intel AMT must be configured with the appropriate security, network, and operational parameters before a third-party management application can access its capabilities.

In this guide, we will refer to the Intel vPro technology-based PC for the end user as "the client PC," and the PC being used by the IT manager to configure it as the "remote management console."

Let's start with setting up Intel AMT, which has two configuration options:

- 1. Using the Intel AMT Configuration Utility (for small PC networks) or
- 2. Using Intel<sup>®</sup> Setup and Configuration Service Lite (for large networks—more than 100 PCs)

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#### SECTION 1: Option 1: Using the Intel AMT Configuration Utility (for small PC networks)



SECTION 1: Opt	tion 1:			
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#### SECTION 1: Option 1: Using the Intel AMT Configuration Utility (for small PC networks)

This option is recommended for smaller PC networks (less than 100) because it allows you to run a Windows\* based utility on the client PC. There is no need to enter the BIOS to configure the client PC.



CCCTION 1. Oction 1.

You will need two blank USB flash drives. Each must be less than 2GB

Load the first blank USB drive with the Intel AMT Configuration Utility

Insert both USB flash drives into the client PC to be provisioned

SECTION 1: Opt				
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#### 3 Launch the Intel AMT Configuration Utility from the first USB flash drive

- Step through the screens of the wizard. The first screen is a welcome screen, click Next
- Enter the desired configuration data, click Next
- Select the second USB flash drive from the drop-down list. This drive will be reformatted, so make sure the correct USB drive is selected.

Ensure the second USB flash	Intel® AMT Activator Console									
drive is inserted into an active USB port on the client PC. Select it from the list. Click Next.	Action: C	reate Configuration USB Key								
	Welcome Input Data Action Finish	Use a USB drive to assign configuration data to this computer. Select the relevant drive from the list below USB Drive: I:\ Refresh List of USB Drives								
		< Previous Next > Cancel								



Intel<sup>®</sup> vPro<sup>™</sup> Technology Activator Wizard

Confirm that you want to format the second USB drive and you will see this screen. Click Next (this will take about 10 to 15 seconds).

second USB flash drive



Finish

Overview	1,	2	3	4 5,	,6
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SECTION 1: Option 1	:				



During the boot process, the BIOS will find the second USB flash drive and load the setup.bin file that was created. Press "Y" when prompted and then hit any key to proceed with booting. This takes about 5 seconds. Intel(R) Management Engine BIOS Extension Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.

Found USB Key for provisioning Intel(R) AMT Continue with Auto Provisioning (Y/N)





#### Verify that Intel AMT is configured on the client PC



After the reboot into Windows\* verify that Intel AMT is configured. Double-click the IMSS ICON in the tool tray on the client PC. Go to the advanced tab of the IMSS interface. Confirm that the status is "configured." You have now provisioned Intel AMT. You have set the password, policy and power settings. This system can now be controlled by any Intel vPro technology enabled management software. Intel® Management and Security Status

atores on your computer.	
tel® Management Engine	
atus:	Configured
mware Version:	6.0.0.1184
ecure Output Window Setting	gs
he secure output service is inter e user.	nded to display messages from the Intel® Management Engine to
essage Language	English

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1/12/2009



Intel AMT configuration is complete. You are now ready to configure KVM. Go to Page 34, Section 2 "How to set up KVM Remote Control."

NOTE: If you completed Option 1 above, you should NOT complete Option 2.

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#### SECTION 1: Option 2: Using Intel SCS Lite (for larger PC networks)

- 01 Install SCS lite on a desktop or server in your domain or workgroup environment. The SCS Lite utility can reside in one of many locations to allow you to complete the configuration process.
- 02 Make sure you have an active network connection from the remote management console and the client PC.
- 03 Launch SCS Lite from the remote management console.
- client PC that you will configure.

04 Create a profile for the

- A Creating a Profile
- **B** Configuring Optional Settings

- C Defining Domains in the Setup
- D Defining Network Setups in the Profile
- E Creating WiFi Setups
- F Defining System Settings
- 05 Create a pre-shared key (PSK) and load onto a USB flash drive. Each PSK is unique and can be used to set up only one PC.
- 06 Insert the USB drive with pre-shared keys into the Intel vPro technology-based PC.
- 07 Reboot.



- 09 Launch the activator GUI from the USB flash drive.
- 10 Connect to the SCS service 11 Setup is complete. on the remote management console.

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5

Verify that Intel AMT is configured on the client PC.

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11.12

#### SECTION 1: Option 2:

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#### SECTION 1: Option 2: Using Intel SCS Lite (for larger PC networks)

Intel Setup and Configuration Service Lite (Intel<sup>®</sup> SCS Lite): How to remotely select a preconfigured profile using Intel SCS Lite

In setup option 2, we will remotely select a preconfigured profile using Intel SCS Lite. This option is recommended when you are configuring 100 or more PCs, because it allows for a more streamlined configuration process and can help eliminate input errors. However, this method can be used for fewer than 100 PCs if it makes sense for your environment.

Supported operating systems for Intel SCS Lite include:

- Windows XP Professional SP2\* (validated)
- Windows Server 2003x64\* and Enterprise x32\* (validated)
- Windows XPx64\* (supported, not validated)
- Windows Vista Enterprisex32/x64\* and Business x32\* (supported, not validated)

SECTION 1: Option	2:							
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Prior to installing Intel SCS Lite, you need to:

- Have local administrator privileges on the computers where you want to install SCS components
- Make sure <u>.NET Framework version 2.0</u> is installed on the computer
- Create a user account to run the Intel SCS windows service
- Ensure that the network access setting is "Classic" if the Intel SCS is installed in a Windows\* Workgroup environment
- Ensure that all users who will need access to the Intel SCS have the required permissions
- Install Intel SCS Lite. Intel SCS Lite must reside within your firewall on a desktop or server in your domain or workgroup environment. Intel SCS Lite can reside in one of many locations to allow you to complete the configuration process.
- 2 Make sure you have an active network connection from the remote management console to the client PC
  - To verify an active network connection, open the Command prompt on the remote management console, perform ping command to the client PC
  - If ping fails, check the network connection and firewall settings. You need to make sure there is an active network connection before you can proceed.

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#### Launch Intel AMT SCS console

On the remote management console, double-click the Intel Setup and Configuration Service icon.





#### 4 Create a profile for the client PC that you will configure

A configuration profile enables you to set up multiple Intel AMT systems with the same set of configuration properties. It is possible to create several profiles with different settings and select from the profiles when you want to configure the systems. The Intel SCS Lite console includes a wizard that you can use to create and modify the profiles. The profiles you create are displayed in the Configuration Profiles node of the console tree.





#### A Creating a Profile

4

- Select Configuration Profiles from the console tree, and perform one of the following:
  - Right-click and select Add Profile
  - From the toolbar, click Actions > Add Profile
- **2** The Getting Started window of the Configuration Profile Wizard appears.
- **3** In the Profile Definition section, enter a name and description for the profile or leave the default values. The profile name must be unique.
  - Click Next. The Optional Settings window appears.

#### Configuration Profile Wizard: My Profile





#### **B** Configuring Optional Settings

Select the check boxes of the optional settings you want to configure and click Next to continue in the Configuration Profile Wizard and configure the settings.

Configuration Profile Wizard: My Profile





#### C Defining Domains in the Setup

The Home Domains window of the Configuration Profile Wizard enables you to define a list of domains where the Intel AMT system is permitted to operate.

- 1 Click Add. The Domain Properties window appears.
- 2 Enter the DNS suffix and click OK. The Domain Properties window closes and the domain appears.
- **3** Or you can select Allow Intel AMT functionality via VPN. This configures Intel AMT systems to accept management traffic over a VPN connection when Intel AMT detects that the system is operating outside the enterprise network.

#### Configuration Profile Wizard: My Profile • **Optional Settings: Home Domains** Home Domains List Getting Started Use the following list to define at least one home domain where the Intel® AMT functionality Optional Settings will be available: Home Domains Edit... Network Configuration System Settings Add.... Finish < Previous Next > Cancel Modify Profile Options



#### Defining Network Setups in the Profile

The Network Configuration window enables you to configure which protocols will be used between an Intel AMT device configured with this profile and a wireless access point. You can define network setups in the profile by selecting one of the following:

- Allow WiFi connection without WiFi setups: Using the host WiFi settings, define a home domain in the Home Domains list and do not select a WiFi setup.
- Allow WiFi connection with the following WiFi setups: Perform the following to define up to 15 profiles in the WiFi setup list.
  - Add a new WiFi setup to the list by clicking Add
  - Edit an existing WiFi setup by clicking Edit
  - Remove a WiFi setup from the list by clicking Remove

Configuration Profile Wize	onfiguration	
Getting Started Optional Settings Home Domains <u>Network Configuration</u> System Settings Finish	WiFi Connection         C       Allow WiFi connection without a WiFi setup         Image: Allow WiFi connection with the following WiFi setups:       Image: Connection with the following WiFi setup         Image: Connection with the following WiFi setup       Image: Connection with the following WiFi setup         Image: Connection with the following WiFi setup       Image: Connection with the following WiFi setup         Image: Connection with the following WiFi setup       Image: Connection with the following WiFi setup         Image: Connection with the following WiFi setup       Image: Connection with the following WiFi setup         Image: Connection with the following WiFi setup       Image: Connection with the following wiFi setup         Image: Connection with the following wiFi setup       Image: Connection with the following wiFi setup         Image: Connection with the following wiFi setup       Image: Connection with the following wiFi setup         Image: Connection with the following wiFi setup       Image: Connection with the following wiFi setup         Image: Connection with the following wiFi setup       Image: Connection with the following wiFi setup         Image: Connection with the following wiFi setup       Image: Connection with the following wiFi setup         Image: Connection with the following wiFi setup       Image: Connection with the following wiFi setup         Image: Connection with the following wiFi setup       Image: Connection with the following wiFi setup	
	Modify Profile Options <pre><pre><pre><pre>Addify Profile Options</pre><pre><pre><pre>Cancel</pre></pre></pre></pre></pre></pre>	
		21

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SECTION 1: Option 2:

#### **E** Creating WiFi Setups

- 1 From the Network Configuration window, click Add. The WiFi Setup window appears.
- 2 In the Setup Name field, enter a name for the WiFi setup.
- **3** Optionally, in the SSID field, enter a Service Set Identifier (SSID). The SSID must be a string of 1 to 32 characters naming a specific wireless LAN.

secup Mame: 😈	
5SID: 🚯	
Data Encryption	
Key Management Protocol:	WiFi Protected Access (WPA)
Encryption Algorithm:	Temporal Key Integrity Protocol (TKIP)
Authentication ———	
Passphrase: 🚯	

SECTION 1: Opti	on 2:							
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- **4** From the Key Management Protocol drop-down list, select one of the following:
  - WiFi Protected Access (WPA)

7

- Robust Security Network (RSN)
- **5** From the Encryption Algorithm drop-down list, select one of the following:
  - Temporal Key Integrity Protocol (TKIP)
  - Counter mode CBC MAC Protocol (CCMP)
- 6 In the Authentication section, enter a Passphrase for the WiFi setup. The Passphrase must contain between 8 and 63 printable ASCII characters.
  - Click OK. The WiFi setup appears in the WiFi setup list.

Fi Setup		_
Data Encryption		
Key Management Protocol:	WiFi Protected Access (WPA)	
Encryption Algorithm:	Temporal Key Integrity Protocol (TKIP)	
Authentication ———		
Passphrase: 🚯		
Confirm Passphrase:		



#### **F** Defining System Settings

The System Settings window of the Configuration Profile Wizard enables you to define a profile's default network, security, and power management settings.

In the Management Interfaces section, select the interfaces you want to enable with this profile:

- Web UI Enables you to manage and maintain Intel AMT systems using a browser-based interface
- Serial Over LAN Enables you to remotely manage Intel AMT systems by encapsulating keystrokes and character display data in a TCP/IP stream
- IDE Redirection Enables you to remotely enable, disable, format, or configure individual floppy or IDE CD drives and to reload operating systems and software from remote locations. These actions are independent of and transparent to the host.

Configuration Profile Wizard: Profile2

			System Se Getting Started Optional Settings Home Domains Network Configuration System Settings Finish	ttings Management Inte Select which manag ♥ Web UI ♥ Serial Over LAN ♥ IDE Redirection ■ KVM Power Management Specify the system Always On Amounts	erfaces ement interfaces to KVM ent Settings power states in whi	enable: I Settings ch the Management -			
				Modify Profile Options	5	< Previous	s Next >	Cancel	24
SECTION 1: Op	otion 2:		••••	•••	0	0	0	0	
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- **2** From the drop-down list in the Power Management Settings section, select one of the following:
  - Host is on (SO) The Intel AMT manageability features are available only if the operating system of the Intel AMT system is up and running.
  - Always on (S0-S5) The Intel AMT manageability features are available in any of the system power states, provided the computer is connected to the power supply.
- **3** If you selected Always on (S0-S5), in the "time out if idle" field, enter the minimum time (in minutes) that the Intel AMT ME device will remain operable when there is no activity. The device will return to a sleep state after the idle timeout period. The timeout timer is restarted whenever the device is serving requests. If the value of the parameter is zero, the device will remain on when there is no activity.

	Finish	Power Management Settings —			-		
		Specify the system power states in which t	the Management Engine (M	E) is operational:			
		Always On (S0-S5)	~				
		Time out if idle: 0 😂	minutes				
		Device Access					
		Define the passwords that will be set on th	ie systems:				
		ME Bios Extension (MEBx) password: 🚯 P	@ssw0rd	Show pass	word		
		Intel® AMT admin user password: 🚺 P	@ssw0rd	Show pass	word		
		Network Settings	requests		- 11		
			requests				
		Modify Profile Options	< Previous	Next >	Cancel		
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- 4 In the ME Bios Extension (MEBx) password field, enter the password used during Remote Configuration. If the MEBx password of the Intel AMT device is the factory default, the Intel SCS will change it to the password you enter here.
- 5 In the "set the password of the admin user" field, define the password used by the Administrator ("admin") for remote communication with the system. The password must be at least 8 characters, with at least one of each of the following:
  - A number
  - A non-alpha numeric character (note that "\_" is considered alpha numeric)
  - A lowercase Latin letter
  - An uppercase Latin letter
- **6** Optionally, select Enable Intel AMT to respond to ping requests. When this box is selected, the Intel AMT device will respond to a ping.

7 Click Finish to save the profiles you have set up.

	System Se	ettings		agement Engin	e (ME) is operationa	1:	
		Time out if id Device Acce Define the pa ME Bios Exter Intel® AMT a Network Se V Enable Int	0-55) le: 0 ss sswords that will be set or nsion (MEBx) password: dmin user password: things things ell® AMT to respond to pir	minutes minut	Show pa	issword Issword	
		Modify Profile O	<u>ptions</u>	< Previous	Next >	Cancel	20
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Create a pre-shared key (PSK) and load onto a USB flash drive. Each PSK is unique and can be used to set up only one PC.

A From the console tree, select TLS-PSK Configuration Keys and perform one of the following:

- Right-click and select Add Security Keys
- From the toolbar, click or select Actions > Add Security Keys

The Create TLS-PSK Keys window appears.

5

**B** In the "number of keys to store" field, enter the number of keys that you want to create (up to 1024 keys)

**C** In the manufacturing default MEBx password field, enter the MEBx password that was entered in the firmware by the manufacturer

Number of keys to store	e (one key per system):	Ŀ	50	
1anufacturing default M	EBx Password:	[	admin	
New MEBx Password:	Fixed Password:	0	P@ssw0rd	
	🔘 Randomize Passwo	ord		
		C	ок	Cancel

SECTION 1: Option	n 2:							
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- Fixed Password Select to use the same password with all the keys, and enter the password that you want to use.
- Randomize Password Select to create a different, random password for each key.



Click OK. The Create TLS-PSK window closes and the generated key values appear on the list.

6 Remove the USB flash drive from the remote management console PC and insert that same USB flash drive with pre-shared keys into the client PC



Select the "Y" key when prompted. PSK is now installed on your Intel vPro technology-based system (client PC). Intel(R) Management Engine BIOS Extension Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.

Found USB Key for provisioning Intel(R) AMT Continue with Auto Provisioning (Y/N)

SECTION 1: Option	2:						
• Overview	<b>1</b> , 2	3	4	5	6, 7	O. 8,9	 ······0 11, 12



#### Plug in USB drive with Intel AMT <u>Configuration Utility</u> into client PC

If the Intel AMT Configuration Utility is already loaded on the client PC, right-click the configuration tool shortcut icon and select Run as administrator.



9 If you choose to run the Intel AMT Configuration Utility directly from a USB flash drive, insert a new USB flash drive (that was not used with the PSK in Step 5) and launch the Intel AMT Configuration Utility from that USB flash drive





#### Connect to the SCS service on the remote management console





Ensure this computer is part of a workgroup is selected. Input the following: Server name: This is the computer name of the remote management console. In this example it is "laptop1" Username with permissions on server: This is your Windows login name for the setup and configuration PC or server Password: This is your windows login password for the setup and configuration PC or server. Click Next.

	Network Settings	
Velcome		
and Data	This computer is part of a domain	
ipur Data	This computer is part of a workgroup	
	Contra California	
	Specify the name of the server running the service, ar that have permissions to perform WMI calls on that se	nd enter a usemame and password rvice.
	Server Name:	laptop 1
	Username with permissions on the server:	admin
	Password:	••••

In the drop-down box, select the profile you created previously. Click Next.



< Previous

Next >

Cancel

						< Previous	Next >	Cancel	51
SECTION 1: Option	2:								
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You should now see this screen. The client PC is downloading the profile settings you created.

<b>•</b> •••••••••••••••••••••••••••••••••••	Operatio	on: Configure System	
Welcome Input Data Action Finish		Your system is currently unconfigured and ready for configuration.   Select a profile to use for configuration:   Your Profile     Requesting configuration of this system     This may take a few minutes	•
		< Previous Next	Cancel









#### Verify that Intel AMT is configured on the client PC

Double-click the IMSS ICON in the tool tray on the client PC. Go to the advanced tab of the IMSS interface. Confirm that the status is configured. You have now provisioned AMT. You have set the password, policy, and power settings. This system can now be controlled by any Intel vPro technology-enabled management software.

ntel® Management Engine is an	additional component that enables management and security		
eatures on your computer.			
ntel® Management Engine			
Status:	Configured		
Firmware Version:	6.0.0.1184		

You are finished configuring Intel AMT. Now we'll move on to Section 2, using KVM (keyboard, video, and mouse).

SECTION 1: Option	2:							
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# SECTION 2: How to set up Intel KVM Remote Control

Intel KVM (keyboard, video, and mouse) Remote Control is built-in to Intel vPro technology-based PC platforms to help you remotely manage your PCs. From boot to working in the OS, the KVM session never loses connection. Intel KVM Remote Control is embedded in hardware enabling IT to fix problems remotely above and below the OS. (See "What is Intel KVM Remote Control?" on Page 4.)

#### SECTION 2: How to set up Intel KVM Remote Control (a feature of Intel vPro technology)



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#### SECTION 2: How to set up Intel KVM Remote Control (a feature of Intel vPro technology)

This section will walk you through setting up KVM in a small network. Verify that Intel AMT is configured on the client PC (See step 5 on Page 12.)

For this example we are using RealVNC Viewer Plus\*. http://realvnc.com

From your Remote Console PC: double-click the desktop Icon to launch the connection window.







Choose your connection method.

RealVNC

VNC Viewer Plus: New Connection

Input the machine name or IP address of the PC you want to control with KVM. Choose your encryption level. Ensure Intel<sup>®</sup> AMT KVM is selected for your connection mode. Click Connect.

	1	21-	
	AMT Server	vpropc	*
	Encryption:	None	
Co	nnection Mode:	Intel® AMT KVM	÷





#### Input your Intel AMT authentication username and password.

Input your Intel AMT user name and password when prompted Note: this is the username created during the provisioning process. This is NOT a windows log in user name and password. Intel AMT Authentication: vpropc

÷	Username:	admin	ОК
Ve	Password:	******	Cancel





console.

You should see these images on your screen:





Setup is complete. You are now connected.



### SECTION 3: Resources

More information on Intel vPro technology, Intel Active Management Technology, and Intel Remote KVM is available at the links below.

#### Intel<sup>®</sup> vPro<sup>™</sup> Expert Center

Main website with an array of technical documentation, tools, community forums, and tips

#### Provisioning Method Selection Guide

Describes all the methods for provisioning manually or with Intel-supplied activation tools

#### **Detailed Activation Training**

Third party software documentation and training detailing how software vendors like Altiris\*, LanDesk\*, and Microsoft SCCM\* integrated setup and configuration into their consoles

#### Intel Tech Show Videos

Live-action training and demonstrations of new technologies including the setup and configuration described in the document. (click on "Tech Show")