



New Value for Managed Service Providers: Extending Out-of-Band Remote Management to Servers

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Intel® Active Management Technology
Lenovo ThinkServer* TS200v
Level Platforms Managed Workplace*



Overview

The ability to manage their clients' IT resources efficiently and cost-effectively is at the heart of a successful managed service provider (MSP) business. Intel® Active Management Technology (Intel® AMT) has greatly facilitated remote management of business PCs based on Intel® vPro™ technology by providing an out-of-band management channel. Using this capability, MSPs are able to remotely discover, power on, and manage clients, even if those systems have a missing or damaged operating system. This technology dramatically improves efficiency by allowing more robust remote management.

With the introduction of the Lenovo ThinkServer* TS200v, managing servers using Intel AMT is now possible. A true server at a PC price point, the TS200v breaks new ground for customers and MSPs alike. This study focuses on the ability of an MSP to remotely manage this platform in a lab environment, using a variety of use-cases designed to simulate real-world scenarios.

The use-case study begins with a description of the new server hardware, as well as the reasons it is an improvement on alternatives that include using common PCs in a server's role. Next, it introduces the use-cases as part of a general discussion of the value to MSPs of managing servers using Intel AMT. Finally, the study reports on actual lab testing of the use-case scenarios, describing the test methodology and results, as well as the specific relevance of individual tests to real-world MSP operations.

Lenovo ThinkServer* TS200v: A Pioneer in Manageability

First to market as a managed server using Intel AMT, the Lenovo ThinkServer TS200v is unique. It has a breakthrough industry presence as a server that can be managed over the wire, even if it is powered down or the operating system is damaged or missing. That capability enables usage models analogous to those that have been supported by client machines with Intel vPro technology.¹

Using a suitable management console, support organizations (whether internal or external to the company) can remotely discover the system, perform routine maintenance, and even diagnose and repair problems. Importantly, these functions can be carried out regardless of the server's power or operating system state. For managed service providers, these capabilities set the stage for dramatic potential cost savings and the ability to offer more aggressive service-level agreements or to take on more clients without adding staff.

Expanding on the Capabilities of the Traditional Value-Priced Server

As a powerful, dependable computer for sharing resources within a workgroup, this new offering is an ideal first server for a small business or an excellent choice for server replacement. With a starting price under \$500, the TS200v offers a low-cost platform for robust services in growing organizations. Options are available based on a range of Intel® processors that range from the entry-level Celeron® processor to the powerful Intel® Core™ i5 processor, Windows Server* 2008, and software-based RAID, in addition to out-of-band manageability based on Intel AMT.

Don't Send a Desktop to Do the Work of a Server

It is common for businesses to press PCs into service for roles that rightfully should be filled by servers. The primary motivation for doing so has been cost, but the benefits of that savings may be fleeting, once shortcomings such as deficits in availability, security, and performance become apparent. The Lenovo TS200v overcomes those issues with a single, powerful computer dedicated to sharing centralized resources. By employing a value-option server instead of a PC, organizations gain the following advantages:

- Availability and uptime
- Increased security and reliability
- Room to grow

Managed service providers that deploy the TS200v build efficiencies and obtain new capabilities that benefit their bottom line as well as their customers'.

New Usage Models for Managed Service Providers

For MSPs, the addition of the TS200v to the scope of devices they can manage using Intel AMT extends the level of remote support they can offer to their customers. Specifically, the MSP can remotely

discover and manage the server as well as diagnose and repair trouble issues, even if the system is powered down or has sustained a catastrophic operating system failure.

This capability is supported by an out-of-band management channel that uses a chipset-resident management engine (ME) in the TS200v. While connectivity to the ME shares the same physical network interface with conventional network traffic, it is logically separate and can operate independently of the computer's ability to sustain a network connection (as long as physical connection to a LAN port and power source are maintained).

That added functionality has the clear capability to enhance services from MSPs, as well as to create new efficiencies. The key benefits to MSPs of this transition from client-only manageability using Intel AMT to including TS200v servers as managed entities include the following:

- **Seamless extension of existing practices.** MSPs can easily extend their current management practices to offer include TS200v servers using Intel AMT 6.0-compliant capabilities for out-of-band management.
- **Expanded service offerings.** The new capabilities enable MSPs to offer more comprehensive support offerings to their customers, emphasizing to those customers how the MSP is rapidly adopting the latest technology.
- **Greater reliability for customers.** MSPs can offer their customers up-to-date reliability features using enterprise-quality hard drives, ECC memory, and enhanced RAID.

Putting Use Cases to the Test

To support the use-case testing in this study, Intel and Lenovo engaged with test engineers at Alpheon Corporation, an MSP headquartered in Morrisville, North Carolina. Alpheon used the Level Platforms Managed Workplace* 2010 managed-services platform in a lab environment. Managed Workplace is designed to centrally monitor and manage SMB customers using a web-based console located at the MSP. It consists of two components:

- **Onsite Manager** is an application that is installed in a single instance at each customer's site, either on an existing Microsoft Windows* computer or as an appliance. It provides management services for virtually any IP device.
- **Service Center** is the management console installed at the MSP site. It hosts a web-based management console that uses Microsoft IIS and Microsoft SQL Server*.

Test Server Configuration

The system under test was a Lenovo ThinkServer* tower with one Intel® Core™ i5 processor 650 at 3.2 GHz with 4 GB RAM running Windows Server* 2008 R2 Standard and using an Intel® 82578DM Gigabit Ethernet Server Adapter.

Multiple customer sites typically interface with a single instance of Service Center using XML web services over SSL. Managed Workplace can be integrated with Microsoft Windows Server Update Services for patch management. The broad use cases tested were as follows:

- **Remote Device Discovery**, which includes inventory, analysis, and status-alerting functionality for managed systems.
- **Remote Maintenance and Management**, which includes patch and software installation as well as BIOS editing.

- **Remote Diagnosis and Repair**, including troubleshooting, problem diagnosis, and image restoration from a hidden partition.

For organizational purposes in this discussion, the Use Cases are numbered 1 to 3, and tasks within them are numbered using second-level numbering (i.e., the tasks within Use Case 1 are numbered 1.1, 1.2, and 1.3).

<p>"As a managed service provider, our ability to remotely monitor and maintain server hardware is key to our success. Lenovo's new ThinkServer TS200v with Intel AMT sets the stage for dramatic cost savings, improved response time, and new services."</p> <p style="text-align: right;">- Greg Donovan, Alpheon</p>	<p>"This ecosystem—including the TS200v from Lenovo, Managed Workplace from Level Platforms, and skilled technicians from Alpheon—deliver a new level of benefits to end-customers. It's really exciting to see this transition grow out of Intel AMT."</p> <p style="text-align: right;">- Kevin Havre, Intel</p>
<p>"The TS200v brings together robust functionality and cost-effectiveness for both end-customers and MSPs. Lenovo is very excited to be the first to offer a server that can be managed out of band with Intel AMT, which is re-defining the value server market segment for small businesses."</p> <p style="text-align: right;">- Doug Petteway, Lenovo</p>	<p>"Lenovo has created a truly ground-breaking server with the introduction of the TS200v. This kind of innovation around Intel AMT is a foundation for us to build the next generation of remote manageability for MSPs and their customers."</p> <p style="text-align: right;">- Ryck Marciniak, Level Platforms</p>

Use Case 1: Remote Device Discovery

The power-off computer-detection capabilities of Intel AMT allow for a comprehensive remote view of MSP customer hardware, protected by an administrator password. This 24/7 access provides fast, accurate discovery of MSP customer systems, resulting in fewer onsite visits and lower administrative overhead, so that MSPs can serve more customers with existing staff. To gauge the viability of this use case with regard to the system under test, the device discovery tasks described below were performed in the lab.

Task 1.1: Initial and Ongoing Client System Inventory

Establishing and maintaining an accurate, up to date inventory of customer computer systems is a core MSP service. Whether it is the initial inventory for a new customer that establishes a baseline, or a regular monthly inventory to track changes, getting an accurate count of customer computers is a central component of managing customer contracts.

"Using the out-of-band management capability of Intel® AMT on the TS200v, we can discover and keep track of the servers on our clients' networks, regardless of system health or power state. That's a powerful source of efficiency for an MSP like us."

- Amos Brown, Alpheon

Test Result:

Testing in the lab confirmed successful discovery of the system under test and the ability to view system information such as details about the processor, BIOS, memory, and disk.

MSP Benefit:

Being able to monitor both powered up and powered down machines helps to ensure inventory accuracy without an onsite visit. This remote accuracy offers the powerful ability to make more frequent inventory assessments without increased costs. The end result is greater levels of service at lower cost.

Task 1.2: Initial and Ongoing System Analysis

Regular monitoring of the attributes of the customer's computer systems is another core MSP function. MSPs should be able to drill down into individual customer computers to see a detailed hardware profile, including processor, memory, video cards, and other types of hardware information. This drill-down capability should also apply to software, giving the MSP visibility into operating system type, version, and patch level, in addition to installed applications, such as productivity and antivirus software.

Test Result:

Testing successfully allowed remote connection and the collection of information such as Windows services and events, performance counters, hardware, security status, and more.

MSP Benefit:

By continually monitoring these assets in real time, an MSP can increase the number of first-call resolutions and reduce the cost of onsite visits by providing the technician with complete and accurate information about the problem systems in advance. This visibility can be particularly helpful when planning for significant upgrades, improving project efficiency and avoiding customer dissatisfaction.

Task 1.3: Alerts for Computers That Are Down or Missing from the Network

Because Intel AMT can be used to detect systems that are powered off or are in low-power states, Managed Workplace can determine when a computer has been removed from the network.

Test Result:

Testing confirmed the ability to remotely create and configure monitoring and alert rules for specific events.

MSP Benefit:

This capability can enable MSPs to respond to such situations the moment they happen.

Use Case 2: Remote Maintenance and Management

Remote power-management functionality allows MSPs to ensure that tasks requiring a reboot are completed and confirmed from remote locations, without an onsite visit. This functionality enables new services that MSPs can offer customers (such as power management) and makes some tasks possible remotely (such as applying BIOS updates) that were previously only possible with an onsite visit.

"With the TS200v's ability to extend out-of-band remote management to servers, we can handle more trouble tickets without traveling to the customer site. That efficiency promises to cut our costs and make our business more profitable."

- Amos Brown, Alpehon

Task 2.1: Routine Maintenance: Install Patches and Software without an Onsite Visit

MSPs often need to deploy patches or software packages to computers on the customer's network. A common practice is to install them after normal business hours so that workers are not interrupted. In these scenarios, powered off computers can prevent MSPs from successfully completing the installations.

Test Result:

Testing confirmed the ability to remotely power on the target computer, create a patch-management policy (in conjunction with Windows Server Update Services), and deploy a software package.

MSP Benefit:

The power-on and power-off capabilities of Intel AMT can enable MSPs to remove this obstacle from patch and software installation tasks, ensuring that the task is completed the first time. This approach reduces overhead costs and increases customer satisfaction.

Task 2.2 BIOS Edit

MSPs occasionally need to access and edit the BIOS settings on remote computers to diagnose, repair, or enable additional functionality in customer computers.

Test Result:

Testing confirmed, with certain caveats, the ability to remotely view and change BIOS settings, restarting the system as needed. While testing overall returned positive results, the test team encountered some limiting issues when connecting to the system under test using Serial-over-LAN connectivity. To explore this issue further, they attempted to connect to the TS200v from Level Platforms Onsite Manager consoles running under both Windows Server 2003 Web Edition and Windows Server 2008 Web Edition. The results are as follows:

- **Serial-over-LAN connection attempt from Onsite Manager on Windows Server 2003:** The management console incorrectly reported the device as "Down" and Power Status as "Not Available."
- **Serial-over-LAN connection attempt from Onsite Manager on Windows Server 2008:** The management console successfully opened an RDP session but was unable to start the Serial-over-LAN session using a terminal application.

Further investigation revealed this issue to be due to a change in the operating system. The issue will be addressed in a forthcoming Managed Workplace service pack.

MSP Benefit:

This capability enables MSPs to perform a variety of maintenance and configuration tasks remotely that would otherwise require an onsite visit.

Use Case 3: Remote Diagnosis and Repair

An MSP's profitability is directly related to the efficiency of its support personnel. MSPs can best leverage support personnel by focusing first on preventing support incidents from occurring. This focus on preventative maintenance will reduce the number of support incidents, although it will not eliminate them. Support incidents will still occur, and once they do, the MSP can further improve efficiency by increasing the percentage of support incidents that are handled remotely during the first call for support, using the remote diagnosis and repair functionality in Intel AMT.

"This testing demonstrates that we can remotely re-image the TS200v from a bare-metal state, which is amazing. Our technicians are thrilled."

- Amos Brown, Alpheon

Task 3.1: Use Remote Control to Troubleshoot a Problem

One scenario that front-line MSP support staff members commonly face is a condition where a computer cannot successfully boot, such as in the case of a corrupt boot file. Remote control through Managed Workplace assumes that the operating system boots normally. Front-line support staffs that face non-bootable devices without the benefits of Intel AMT have greater difficulty resolving this issue remotely. In many cases, it must be escalated to a higher level of support, possibly requiring an onsite visit.

Test Result:

Testing demonstrated the ability to remotely connect to the TS200v, modify BIOS settings, and boot to images on network shares.

MSP Benefit:

This result shows that Managed Workplace takes advantage of Intel AMT to provide first-call resolution for a customer reporting an "Operating System not found" or similar pre-boot error. This is an extremely powerful capability that often results in a first-call resolution for this common issue, avoids a dispatch, reduces costs, and increases customer satisfaction.

Task 3.2: Remotely Diagnose a Problem before an Onsite Visit

Some problems simply cannot be resolved remotely. Hardware failure, such as a hard disk failure, is one of those problems. However, by making the best use of Intel AMT, Managed Workplace can provide the onsite support staff with critical diagnostic information that helps ensure that the problem is solved with only one onsite visit.

Test Result:

Testing confirmed the ability to remotely diagnose a failed hard disk drive before technicians go onsite to fix it.

MSP Benefit:

Amos Brown, the Alpheon test engineer who headed the testing in this study, characterized this capability by saying, "This is huge for us. We will be able to remotely gather pre-boot hardware information and component status. We can then contact the vendor providing the device with the error code and component status – to have the 'advance replacement' process started quickly – prior to a dispatch to diagnose."

Task 3.3: Remotely Restore an OS Image from a Hidden Partition

Failure to boot is not always a failure of the hard disk or the MBR—the OS itself could become corrupt and fail to boot. This condition might normally require an onsite visit, but with Intel AMT and Managed Workplace, MSPs can remotely restore a default image stored in a hidden partition on the hard disk.

Test Result:

Testing of this task in the lab verified the ability to use IDE Redirect with Managed Workplace to replace a corrupted operating system with a backup image.

MSP Benefit:

This capability allows MSPs to perform a common task remotely that would otherwise require an onsite visit, saving resources that would otherwise be consumed in travel to the site.

Conclusion

The use cases examined here have the potential to provide substantial cost savings to MSPs, as well as introducing new potential revenue sources. This use-case study confirmed that Intel AMT extends the management capabilities of Level Platforms Managed Workplace 2010 to include robust remote management of the ThinkServer TS200v servers at MSP customer locations, even if those machines are powered off or have suffered a catastrophic operating system failure.

For managed-service providers, this extended functionality translates into better discovery and inventory of customer computers, provides for more effective resolution of customer computer problems with fewer onsite visits, and allows them to provide richer ongoing management and power optimization offerings to clients.

Solution Provided by:



Alpheon

lenovo

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PLATFORMS**

Related Links

- For more information about Intel Active Management Technology, see www.intel.com/technology/platform-technology/intel-amt.
- For more information about the Lenovo ThinkServer TS200v, see www.lenovo.com/thinkserver.
- For more information about Level Platforms Managed Workplace, and to try it for free, see www.levelplatforms.com/product.
- For more information about Alpheon Corporation, see www.alpheon.com.

¹ The term "Intel AMT," as used here, refers to the set of hardware features that underlie out-of-band manageability on enabled Intel® platforms. The branding term "Intel vPro technology" refers to a broader set of client computer features that include chipset and processor support for being managed using Intel AMT. The corresponding sets of features to support manageability in the Lenovo ThinkServer TS200v are not branded as Intel vPro technology, so they are referred to here simply as "Intel AMT."

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Intel® Active Management Technology requires the platform to have an Intel® AMT-enabled chipset, network hardware and software. The platform must also be connected to a power source and an active LAN port.

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