



Efficient Location-Based Services

Use Cases for Improving IT Efficiency using Intel® Core™ vPro™ Processors with Location-Based Services



Executive Summary

The 4th generation Intel® Core™ vPro™ processor family introduced a location-based services capability. Location is becoming increasingly important to productivity in business. Intel® vPro™ technology with location-based services uses technology to get and act upon location data. Wi-Fi is a proven technology for location, which is normally based on discrete tags attached to the device being tracked. Intel extends the value of location-based services by lowering the barriers to adoption with 4th generation Intel Core vPro processors and a special package from AeroScout. This special version of MobileView* includes support for two location use cases:

- **Find near me**, which can help to locate resources and assets within the enterprise
- **Asset tracking**, which adds the element of location to devices with a 4th generation Intel Core vPro processor

There are, of course, additional usages available with enhanced versions of MobileView.

Location-Based System Components

The different components needed for a location-based services solution based on Wi-Fi are:

- **Wi-Fi access points** to pick up tag packets with received signal strength indication (RSSI). The solution is compatible with existing enterprise Wi-Fi infrastructure from Cisco and Aruba.
- **Tracked mobile resources** transmitting Wi-Fi tag packets. AeroScout tags Intel® platforms with the 4th generation Intel Core vPro processors. Intel® PROSet for Wireless Software needs to be installed on the Intel vPro platform.
- **Infrastructure**. This includes defined site structure (e.g., campuses, buildings, or floors) and calibrated maps with fixed Wi-Fi access points (e.g., Cisco Wireless Control System* and Aruba Mobility Controller*).

- **Mapping method**. This displays the calculated location of the mobile resource in human readable form (e.g., AeroScout MobileView). For instance, you could use as a map a JPEG file exported from a CAD or Visio* file. The AeroScout Find Near Me* application is needed for the find near me use case.
- **Location engine**. This calculates the mobile resource location from RSSI data (Cisco Mobility Services Engine*, AeroScout Location Engine*).

Wi-Fi Tag Operation Overview

As already mentioned, Wi-Fi tags attached to the device being tracked are used for location-based services. Wi-Fi tags are small, battery-powered wireless devices for accurately locating and tracking any asset or person. Ultrabook™ and mobile devices with 4th generation Intel Core vPro processors integrate the location tag into the device, reducing cost and enabling new usages.

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These discrete tags for the Intel vPro technology-based mobile platforms and Ultrabooks periodically broadcast short Wi-Fi messages that are received by all wireless access points within range. The Intel vPro technology-based mobile platforms and Ultrabooks transmit these special tags in both standby and active modes. Each wireless access point measures the RSSI of the message and forwards the packet with its RSSI to a location-tracking server in the network. The location server uses this information to calculate the location of the client device.

There are three Wi-Fi tag types that can be selected and sent by the Intel vPro technology-based mobile platforms and Ultrabooks:

- **Wireless Distribution System* (WDS*)**, a format developed by AeroScout and Cisco
- **Independent Basic Service Set* (IBSS*)**, a format developed by AeroScout and Aruba
- **Cisco Compatible Extensions* (Cisco CCX*)**, which provides advanced tag options such as motion, temperature, pressure, and humidity

The tags are transmitted in multiple channels (channels 1, 6, and 11). They are transmitted twice for reliability. Tags are layer 2 multicast packets.

Intel® PROSet for Wireless Software

Intel PROSet for Wireless Software needs to be installed on the Intel vPro technology-based mobile platforms and Ultrabooks. There are two steps:

- Creating the right Intel PROSet for Wireless Software package
- Using Intel vPro technology with location-based services

Creating the right Intel PROSet for Wireless Software package is done on an IT administrator's workstation. You need to download and install the appropriate version of Intel PROSet for Wireless Software. Install all three options:

- Intel® My Wi-Fi Technology
- Intel PROSet for Wireless Enterprise Software
- Administrator Toolkit

Use the administrator toolkit to create profiles. The administrator toolkit allows you to create the correct Wi-Fi profile for your environment (pre-logon/common profile) with location-based services as one of the applications settings. Under location-based services, check the appropriate values for tag type and tag transmission interval for your network environment. If you save these settings, you will get a self-extracting file containing the defined settings that can be used to configure the Intel vPro technology-based mobile platforms and Ultrabooks. That saved file is ready to be distributed to these platforms.

Using Intel vPro Technology with Location-Based Services

On Intel vPro technology-based mobile platforms and Ultrabooks, install the appropriate version of Intel PROSet for Wireless Software with these two options:

- Intel My Wi-Fi Technology
- Intel PROSet for Wireless Enterprise Software

If you run the self-extracting file (see above), the contents of the profile for Intel vPro technology with location-based services will be installed and configured on the platform. As soon as the profile is installed, an Intel location-based services dialog is displayed. Intel location-based services is, by default, disabled. The end-user needs to initially opt in to enable it for the first time. An end user can enable or disable Intel location-based services at any time using Intel PROSet for Wireless. The pre-logon/common profile defined in the Intel PROSet for Wireless tool is used to detect the enterprise environment. Tags are only transmitted when the Intel vPro technology-based mobile platform or Ultrabook is inside the enterprise environment.



Use Cases and MobileView

The special package of AeroScout MobileView includes support for two location use cases:

- **Find near me.** This can help to locate resources and assets within the enterprise. Employees in large, multi-location businesses and government organizations can use it to quickly locate assets such as printers, conference rooms, or other resources when visiting a remote office. In Industrial environments such as energy and utilities, organizations are using it to track the location of equipment requiring maintenance.
- **Asset tracking.** This use case adds the element of location to devices with a 4th generation Intel Core vPro processor. An IT administrator can track clients within the enterprise, even when the device is in sleep mode. If a lost or stolen system is still on campus, an IT administrator can quickly locate it.

Enterprises can deploy this version of MobileView to implement these two use cases and begin considering additional usages.

Conclusion

Intel and AeroScout have joined forces to deliver seamless, Wi-Fi-based indoor location-based services on Intel vPro technology-based mobile platforms and Ultrabooks. AeroScout Wi-Fi tags integrated directly into Intel vPro technology-based mobile platforms and Ultrabooks add the element of location to these platforms and enable location use cases such as find near me and asset tracking on these platforms.

Learn more about Intel Core vPro Technology with location-based services and the collaboration with AeroScout at www.aeroScout.com/intellbs.

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