SYSTEMS AND METHODS PROVIDING A MOBILE ZERO CLIENT

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation application of co-pending U.S. patent application Ser. No. 14/019,216, entitled "Systems and Methods Providing a Mobile Zero Client," filed on Sep. 5, 2013, which is incorporated by reference herein in its entirety.

FIELD OF THE INVENTION

The invention relates to a portable computing device configured to selectably switch between a wired zero client mode in which the portable computing device operates as a terminal for a host computer via a wired communication channel, a wireless zero client mode in which the portable computing device operates as a terminal for the host computer via a wireless communication channel, and a local mode in which the portable computing device operates independently from the host computer.

BACKGROUND OF THE INVENTION

Data and systems security has been a priority for systems administrators especially as computing devices have become portable and the workforce has accordingly become more mobile. However, allowing portable devices to access, store, and manage data and applications locally can be problematic because enterprise security may be put at risk as the portable devices become lost, connect to insecure networks (such as public "hotspots"), and/or otherwise become vulnerable to attack. Conventional systems attempt to address some security issues with the use of remote processing where terminals connect to host computers that serve display content.

Conventional systems for remote processing, however, typically require dedicated wired connections for the terminals to operate in a truly zero client manner. With the portability of devices, this may limit the usability of such systems. Conventional systems for remote processing suffer from these and other problems.

SUMMARY OF THE INVENTION

The disclosure solving these and other drawbacks of conventional systems relates to a portable computing device configured to selectably switch between a wired zero client mode in which the portable computing device operates as a terminal for a host computer via a wired communication channel, a wireless zero client mode in which the portable computing device operates as a terminal for the host computer via a wireless communication channel, and a local mode in which the portable computing device operates independently from the host computer. The portable computing device may include one or more zero client processors that facilitate operation in the wired or wireless zero client mode and one or more local control processors that facilitate operation in the local mode. The portable computing device may include input devices such as a keyboard that is used to receive inputs for the host computer during the wireless or wired zero client modes or for the local control processors during the local mode. The host computer may be remote from the portable computing device.

When operating in the wired or wireless zero client mode, the portable computing device uses the one or more zero client processors for basic functions and relies on a host computer remote from the portable computing device to provide display information based on a process executing at the host computer. For example, when operating in the wired or wireless zero client mode, the portable computing device acts as a terminal (e.g., display and input interface) for the host computer. In this manner, information, application, and/or other logic remains securely at the host computer instead of at the portable computing device when operating in the wired or wireless zero client mode.

During the wired zero client mode, the portable computing device communicates with the host computer via a wired network connection. When operating in the wired zero client mode, the one or more zero client processors establish the wired network connection to the host computer independent of the one or more local control processors.

During the wireless zero client mode, the portable computing device communicates with the host computer via a wireless network connection. When operating in the wireless zero client mode, the one or more zero client processors rely on the one or more local control processors to facilitate the wireless network connection to the host computer.

When operating in the local mode, the portable computing device uses one or more local control processors to function independent of the host computer as well as independent of the one or more zero client processors. In the local mode, the portable computing device may operate as a standalone computing device.

The portable computing device may include one or more local control processors and one or more zero client processors configured to perform some or all of a functionality of a plurality of modules. For example, the one or more local control processors may be configured to execute a controller and gateway (CG) module and the one or more zero client processors may be configured to execute a zero client module. Other modules may be executed by the one or more local control processors and/or the one or more zero client processors.

The CG module may be configured to operate the portable computing device in a local client mode, facilitate mode management (e.g., selection) for the portable computing device, provide functionality to the portable computing device during the wireless or wired zero client mode, and/or to provide other functionality to the portable computing device. In some implementations, the CG module may include a local client module, a mode management module, a network management module, a power management module, and/or other modules. In some implementations, the local control processor may cause the CG module to be executed on the portable computing device.

In some implementations, the local client module may be configured to operate the portable computing device in a local client mode. The local client module may be configured to operate the portable computing device independent of the host computer. For example, the local client module may include or otherwise execute an operating system of the portable computing device. In some implementations, the local client module may be configured to receive input from one or more input devices during the local client mode. The local control processors may also be configured to provide display information based on one or more processes executing at the local control processors.

In some implementations, the mode management module may be configured to switch between a plurality of modes of operation of the portable computing device. For example, the mode management module may facilitate switching from one of the plurality of modes to another of the plurality of modes.