(54) Title: INSTANT ON PLATFORM

FIG. 5

(57) Abstract: A method and apparatus allows multiple computer operating systems (OS) and/or personalities to run concurrently. An instant-on platform includes a resource management service, a caching service, a profile manager, a network stack which provides TCP/IP communication to the OS, and at least one appliance. The instant-on platform can be placed in the path of network and disk traffic between said user OS and actual system hardware. User selectable profiles and personalities are also provided.

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1. An apparatus that allows multiple computer operating systems (OS) and/or personalities to run concurrently, comprising:

   an instant-on platform comprising a lightweight hypervisor that virtualizes a system network stack, wherein said instant-on platform is placed in the path of network and disk traffic between said user OS and actual system hardware; and

   a user operating system environment, wherein said user OS receives network traffic from said instant-on platform, which comprises a resource management service, a caching service, a profile manager, a network stack driver which effects TCP/IP communication with the OS, and at least one appliance;

   wherein the appliance is accessed using information obtained from at least one of a network, a local flash, a motherboard, a partitioned local hard disc drive, and an external memory;

   wherein the resource management service accesses only the system hardware needed to run the at least one appliance while it is active.

2. The apparatus of Claim 1, wherein only said system network card is virtualized and all other OS I/O functions are not virtualized, but are controlled by said user OS.

3. The apparatus of Claim 1, said user operating system comprising any of:

   a network configuration gadget, a media and peer-to-peer sharing gadget, a profile manager gadget, a Web site design gadget, a backup configuration gadget, and a network configuration gadget for network connections.

4. The apparatus of Claim 1, said instant-on platform further comprising:
a physical disk driver interface which acts as a virtual disk driver, wherein
whenever said user OS writes information to a disk, said instant-on platform
converts said information to any of a backup, memory, or RAID operation, and
wherein backup and memory are transparent to said user OS.

5. The apparatus of Claim 1, said instant-on platform further comprising:
a physical disk driver and network interface for expanding user storage
online, wherein any information said user OS writes to disk is sent via said
instant-on platform to a networked virtual hard drive, wherein if online storage is
not fast or secure enough for all hard drive data, then said instant-on platform
discerns what information is being written and decides whether to send said
information to a local drive or to an online drive.

6. The apparatus of Claim 1, further comprising:
at least one virtual client that is transparent to a user for access to one or
more Web-based information services whether a user computer on which said
instant-on platform resides is online or offline, wherein when said user computer
is online, said user accesses one or more Web-based information services from
a browser, and wherein when said user computer is offline, said user accesses
one or more Web-based information services locally via a Web-based
information service virtual machine, wherein once a connection is reestablished
with said one or more Web-based information services, said Web-based service
virtual machine synchronizes with said one or more Web-based information
services, updating and uploading locally modified documents.

7. The apparatus of Claim 1, further comprising:
a profile manager for each of one or more users or accounts that
comprises means for a user to input and save a personal profile, wherein when a
user searches a public network, any desired portion of said profile can be sent to
a site or portal to which said user searched.

AMENDED SHEET (ARTICLE 19)
8. The apparatus of Claim 1, further comprising:
   a profile manager, wherein any of the following apply;
   users only input profiles that they desire;
   users may grant the profile manager rights to collect their online and/or offline activities and history;
   when collecting a profile, users answer a series of questions, images, or selections to determine the profile and/or interest of the user; and
   users must approve passing of profile information to a site, or they may grant access for a limited period of time or for all times.

9. The apparatus of Claim 8, further comprising:
   a security mechanism in which information passed to one or more portals is encoded and used only via pattern matching;
   wherein said profile is kept confidential and cannot be spread.

10. The apparatus of Claim 8, wherein said profile is portable, wherein any of the following apply:
    users can carry said profile on a USB dongle or cell phone flash;
    said profile is available for online access;
    users can park their personality at a Web site for access anywhere;
    said profile is returned to the user after the user logs off a Web site to ensure privacy and security;
    said profile and history stays with the user and not on a particular Web site or server, wherein users no longer have to re-enter their profile for every portal, users can change and erase their profiles at any time for any and all portals, and said user profile is kept confidential and is not kept by the portals.
11. The apparatus of Claim 8, further comprising:
   a wizard by which a user defines a profile by answering a list of questions and indicating their preferences, wherein any of the following apply;
   said profiles are encrypted and saved;
   said user is asked for permission to store profile information in a database online for future access;
   said information is synchronized periodically;
   when a user visits a Web site, said user is prompted to obtain user permission before profile information is sent to the Web site;
   if said user agrees, then an encrypted file is passed to the Web site or portal;
   said information is saved as a cookie so that in the future the user does not need to be asked again;
   said user sees content in search results, relevance rated by users with similar profiles;
   a fingerprint or pattern of the user profile is created so that the user's profile information is not disclosed;
   the fingerprint or pattern is used to deliver information to the user by matching the fingerprint; and
   personalized content and services are provided without knowing the user's detailed profile.

12. The apparatus of Claim 1, further comprising:
   means for providing power savings via virtualization by any of:
   allowing system hardware to power down or to throttle back hardware reserves to what is minimally required by a currently running virtual machines, including powering down unused cores or scheduling;
   virtual machines sharing cores when a computing task is not demanding;
   based on a virtual machine or virtual environment running, powering off certain pieces of hardware; and
depending on a virtual machine running, using peer-evaluated
performance requirements to throttle back and/or turn off processors or cores to meet performance requirements for said currently running virtual machine.

13. The apparatus of Claim 1, further comprising:

a plurality of pre-installed personalities which comprise any of applications, content, services, and/or virtual machine images;

wherein virtual machine images comprise a combination of said operating system plus applications, plus content, plus services, plus data;

wherein said personalities are optionally loaded into a hard drive prior to said hard drive being assembled into a PC to enable additional OSes to be installed without impacting the existing personalities; and

wherein said personalities optionally reside in hidden partitions and are activated based on user profiles.

14. The apparatus of Claim 1, in which said hypervisor and platform-specific drivers are installed in a hardware system boot ROM.

15. The apparatus of Claim 1, further comprising:

means for hard drive partitioning for separation of said operating system, applications, and data.

16. A method for allowing multiple computer operating systems (OS) and/or personalities to run concurrently, comprising the steps of:

placing an instant-on platform in the path of network and disk traffic between a user OS and actual system hardware;

providing a user operating system environment, wherein said user OS receives network traffic from said instant-on platform, which comprises a resource management service, a caching service, a profile manager, a network
stack driver which effects TCP/IP communication with the OS, and at least one appliance; and

providing a plurality of multi-personality windows, each window comprising a separate personality for different profiles and users;

wherein each personality optionally offers end users pre-bundled, pre-configured, and/or pre-organized content, services, and software;

wherein each personality can be one application on its own or a combination of content, services, or software;

wherein personalities optionally comprise any of packages of personalities, or super-personalities; and

wherein files and applications within each personality are separate from those of another personality and are not visible across personalities.

17. The method of Claim 16, further comprising the step of:

providing a profile manager for allowing a user to select between a plurality of virtual machines, each of which expresses a different personality.

18. The method of Claim 16, further comprising the step of:

aggregating I/O bandwidth when multiple devices are available to make said bandwidth available to guest OSes transparently.

19. The method of Claim 16, further comprising the step of:

organizing and optimizing any of the number of icons, links, and shortcuts for each personality, and the layout of these items, for each personality’s particular use case.

20. The method of Claim 16, further comprising the step of:

isolating personalities by running personalities in software containers which are abstracted from an underlying platform;
wherein said personalities and containers optionally facilitate checkpointing and recovery of system state.

21. The method of Claim 16, further comprising the steps of:

running only those processes and services which are needed for active personalities at any particular time; and

using suspend and resume-type operations to save entire workspaces and personality state to free up resources for other activities.

22. The method of Claim 16, further comprising any of the steps of:

auto updating content, wherein media-related personalities contain content that benefit from regular updates;

auto updating personality, wherein personalities for which there are feature improvements or bug fixes after their general release are automatically updated on said user's computer while keeping all consumer data and settings intact;

P2P updating for content and personality updates by downloading large content and patches to user's computers by leveraging P2P, wherein content and updates can come piecemeal from other users, wherein an updater can reside in a separate virtual machine;

P2P updating for new and replacement personalities by downloading new or replacement personalities; and

allowing additional personalities to be recommended or proposed and downloaded for additional rebates or subsidies.

23. The method of Claim 16, further comprising the step of:

application personality coordination, wherein personalities are organized around functionality, comprising any of the steps of:
frame and window sharing by showing multiple personalities on-screen simultaneously, with each personality as a window to facilitate working simultaneously within multiple personalities;
- cut, copy, and paste;
- file access and sharing;
- facilitating same file copy functionality amongst virtual machines as amongst applications;
- personality image optimization and compression;
- favorites and preference sharing;
- streaming server to other personalities on local or remote machines; and
- user personality coordination in which personalities are organized around a user profile.

24. The method of Claim 16, further comprising the step of:
   performing personality and workspace management, comprising any of the steps of:
   - setting priority of personalities, so that personalities with more stringent resource requirements can have priority access to the hardware;
   - auto suspending and resuming on personality switch to allow a user to configure whether a personality gets suspended when it is switched from foreground to background and, if so configured, personality automatically suspends when it is switched to background and automatically resumes when it is switched to foreground;
   - fast booting and no booting to allowing fast starting up and shutting down of virtual machines, wherein switching out of a virtual machine either causes the virtual machine to shut down, thus freeing up resources to enhance system performance, or the virtual machine never shuts down, but it is saved off to battery-backed system memory or to hard disk;
   - optimizing OS images, wherein a guest OS is stripped down to contain only services needed for a personality's applications to work;
providing one or more switching mechanisms, comprising any of a docking panel, application launch bar, scroll bar, soft-keys, and physical buttons;

providing a workspace grouper for grouping personalities into workspaces, where each workspace is a virtual desktop that shows a few personalities that are commonly used together, and where a user is provided with means to switch amongst workspaces; and

providing avatars, comprising external-facing identities for each container and/or one common identity for a set of containers for user personality traits defined by a customer profile, choice of personalities, or configuration of personalities.

25. The method of Claim 16, further comprising the step of:

- providing one or more personality-specific customizations comprising any of:
  - security customizations comprising any of central virus scanning and recovery, central spyware scanning and recovery, central firewall and intrusion detection, virtual Trusted Platform Module (TPM), central username and password vault, central subscriptions and DRM manager, online update and backup of security information, virtual VPN, and open source solutions;
  - backup and restore customizations comprising any of central automated backup and recovery, online automated backup and recovery, and automated checkpoint and recovery;
  - synchronization among personalities and peripheral devices enabling seamless synchronization of media and data amongst personalities and peripheral devices, easy sharing of data amongst personalities, and different models of data repository;
  - resource manager customizations comprising any of a central download manager, for media, new personalities, security updates, partitioning and repartitioning of resources among personalities, service virtual machine tasks, and resource rentals and metering, assigning
dedicated hardware resources to different personalities, and peripheral
drivers and sharing;
  multiple service personalities customizations comprising any of
renting out computing resources and metering and dedication to peer-to-
peer activities; and
  personality-specific customizations comprising any of downloading
media content from online and playing those media content back for
consumer via various interfaces.