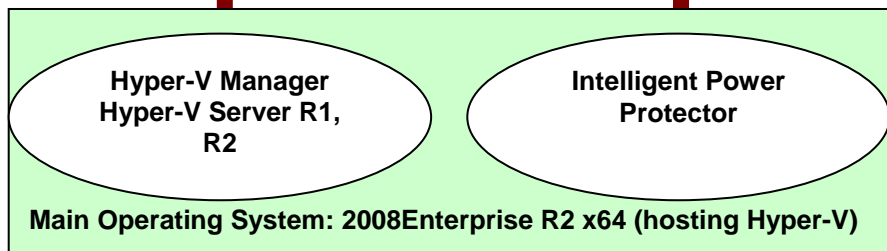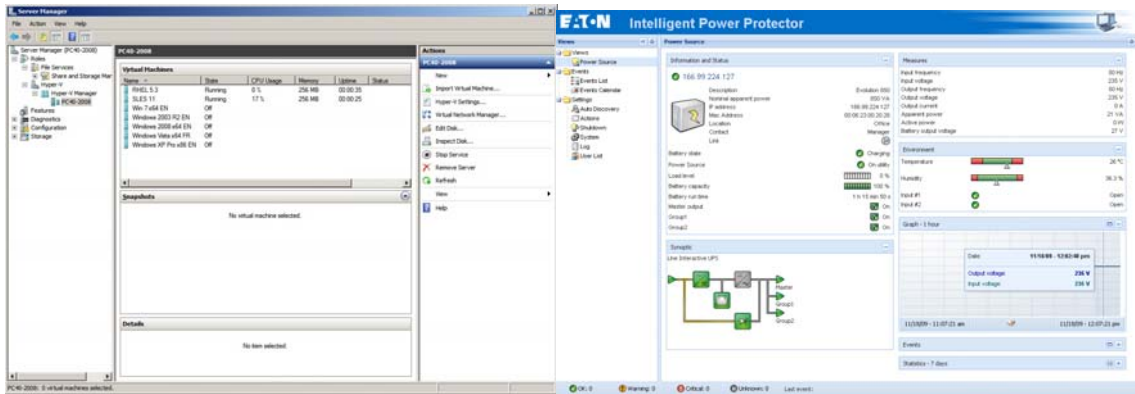# Intelligent Power Protector

User manual extension for Microsoft Virtual architectures:

- Hyper-V 6.0 Manager
- Hyper-V Server (R1&R2)

**Hyper-V Manager
Hyper-V Server R1, R2**

Intelligent Power Protector

Main Operating System: 2008Enterprise R2 x64 (hosting Hyper-V)

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Index

1 Introduction

Eaton is a first class supplier of hardware and software optimizing business continuity on your Microsoft virtual platforms worldwide. The system includes controlling proper boot and graceful shutdown of:
- The virtual machines hosted on a same physical machine.
- The main operating system hosting Microsoft Hyper-V or Hyper-V Server.

Intelligent Power® Protector is Eaton's solution to automate various data security functions. It:

- Continuously waits for information from the Mgt. Card connected to the EATON UPS.
- Warns administrators and users if AC power fails
- Proceeds to shutdown system before the end of battery backup power is reached.
- Restarts machines when AC power restarts.

Microsoft Hyper-V (or Hyper-V Server) controls the Virtual Machine's shutdown and restart functions. Version of Eaton's **Intelligent Power® Protector** can be installed on the main operating system (hosting Hyper-V).

Intelligent Power® Protector will consolidate information from the UPS which is supplying the server. Advantages of installing our protection software on the main operating system (hosting Hyper-V) include:

- Only one deployment of IPP on physical machine, to manage all virtual machines.
- Silent deployment possibility.
- Dynamic management of virtual machines configuration, with a personalized script.

This manual will guide you through the installation and configuration process of the Intelligent Power Protector on Microsoft Hyper-V (or Hyper-V Server) platform.

EATON tested virtualization security in a redundant power supply configuration, for system shutdown, electrical shutdown, and reboot.

2   Installation

Section 2 will guide the user through the installation process of **Intelligent Power® Protector** on Microsoft Hyper-V architecture. Use of Intelligent Power Protector will allow continuity of the electrical power supply to the end user's internal power system.

2.1   Prerequisites

Test configuration with Hyper-V Manager:

This procedure was validated using Microsoft Windows 2008 Enterprise R1, R2 x64 as the main operating system (hosting Hyper-V). The system had the following applications installed:

- Microsoft Hyper-V hosting several virtual machines :

  - Windows 2000 Server SP4 and Advanced Server SP4
  - Windows Server 2003 x86/x64 R2 SP2
  - Windows Server 2008 x86/x64 SP1/SP2
  - Windows XP Professional SP2/SP3 and x64 SP2
  - Windows Vista SP1/SP2 (except Home editions)
  - Windows Seven x86/x64 (except Home editions) (Only On Server 2008 R2)
  - SUSE Linux Enterprise Server 10 SP2 & 11
  - Red Hat Enterprise Linux 5.2/5.3/5.4 x86/x64

- Intelligent Power® Protector for Windows.

**Test Configuration with Hyper-V Server R1, R2:**

This procedure was validated using Hyper-V Server running on an x64 machine.

- Microsoft Hyper-V Server was hosting:

  - Windows 2000 Server SP4 and Advanced Server SP4
  - Windows Server 2003 x86/x64 R2 SP2
  - Windows Server 2008 x86/x64 SP1/SP2
  - Windows XP Professional SP2/SP3 and x64 SP2
  - Windows Vista SP1/SP2 (except Home editions)
  - Windows Seven x86/x64 (except Home editions) (Only on Hyper-V Server R2)
  - SUSE Linux Enterprise Server 10 SP2 & 11
  - Red Hat Enterprise Linux 5.2/5.3/5.4 x86/x64

- And Intelligent Power® Protector for Windows.

- **Note:** Hyper-V Server doesn't support RS232 communication port; please connect the UPS through the USB link or through the Network link.

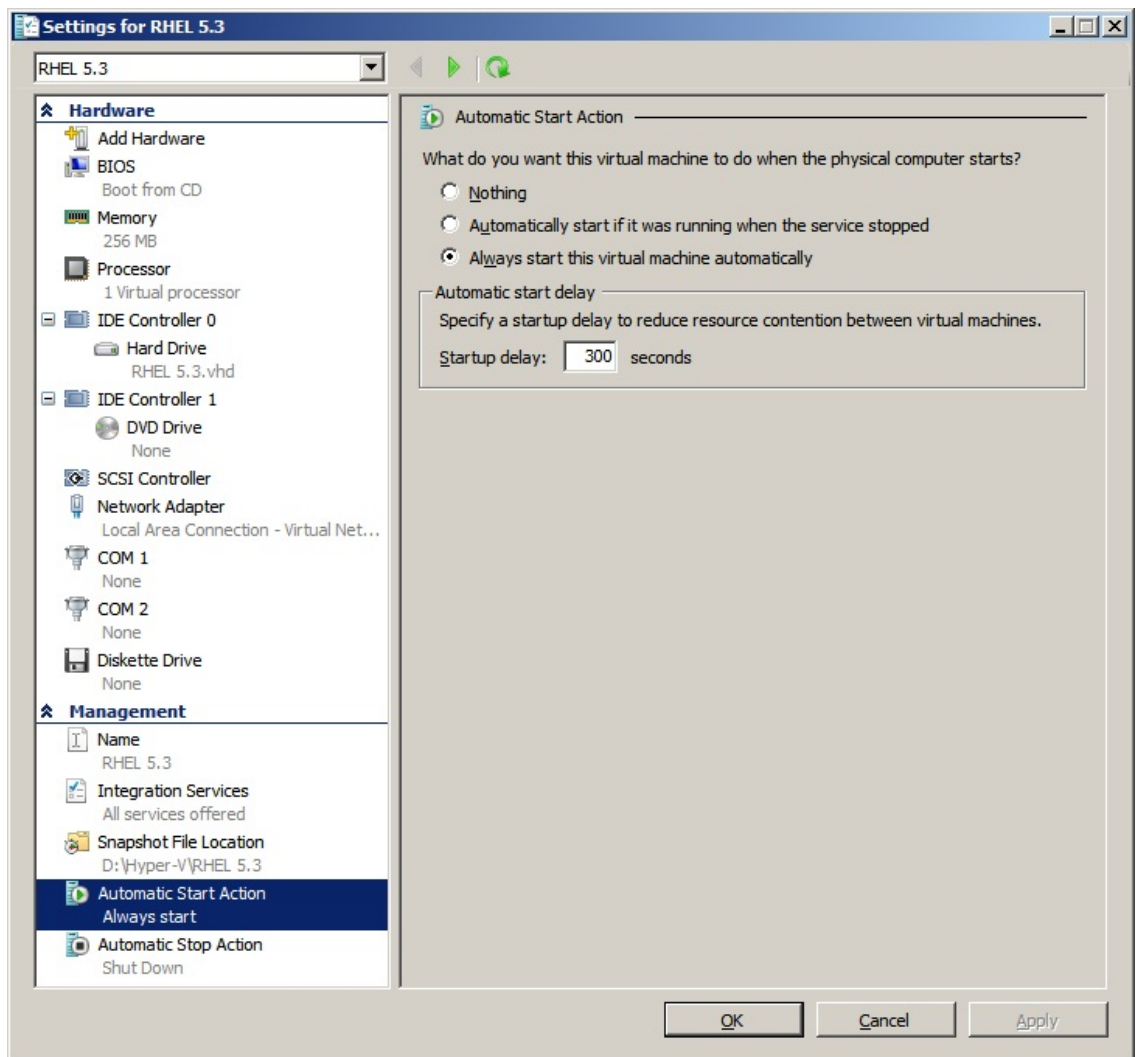## 2.2 Microsoft Hyper-V Manager / Hyper-V Server R1,R2 configuration

- For the automatic OS boot on start-up: the user must configure the physical machine to allow automatic OS boot on start-up. This is found in the machine's BIOS. For further information, see specific documentation of the physical hardware.

- **Note:**
  It may be required to activate Virtualization Technology Enabled (in the machine's BIOS) to run Hyper-:
  CPU Information -> Virtualization Technology -> Enabled

- **To enable graceful virtual machines shutdown**, it is necessary to install on each Virtual Machine the additional program **"Guest Component Service"** included in the operating system and to configure it.

  > To install "Guest Component Service"
  - Open the Hyper-V console and start your virtual machine.
  - Select the Action tab -> insert the disk integration services.
  - Install the Service. To check that installation works fine, verify that the software is available in the Control Panel of the virtual machine ("Add / Remove Programs").

  > To configure the services.
  - Open Hyper-V console and select the virtual machine where the service was installed.
  - Do a Right-click. Choose Settings -> Integration Services.
  - Check the box "Operating System shutdown".

This configuration is illustrated on the following screenshot:
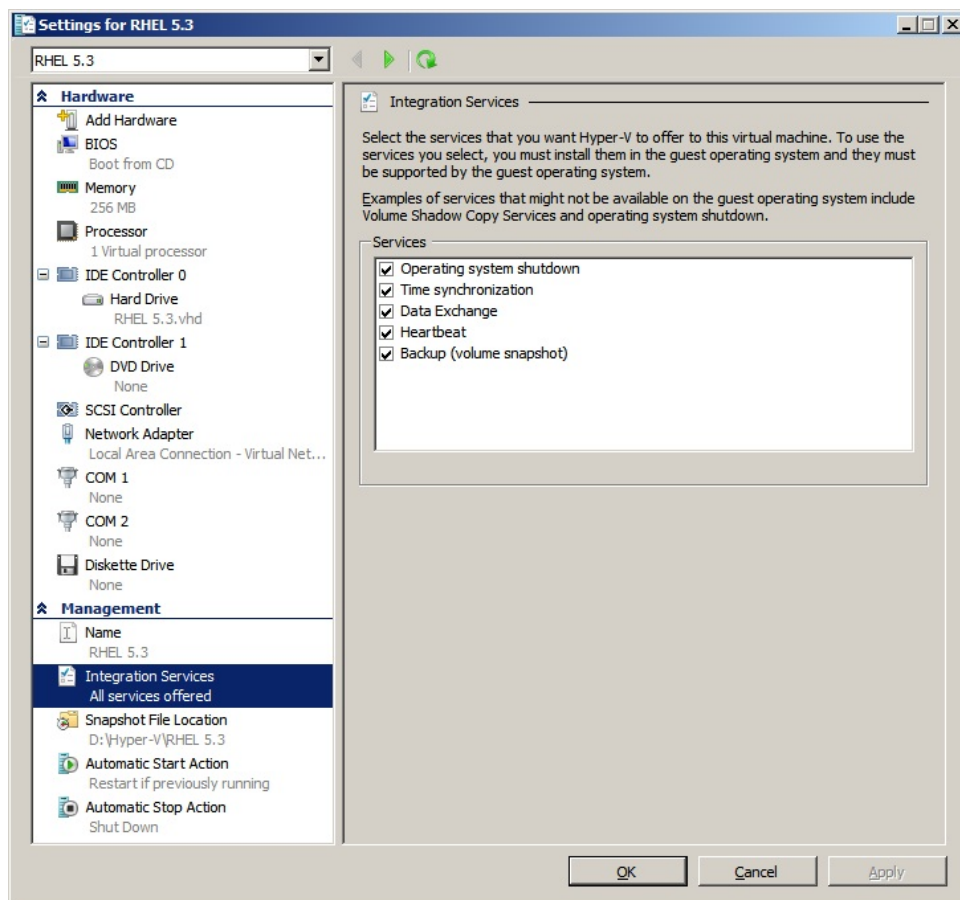
- To Ensure an **automatic boot** of each virtual machine when Microsoft Hyper-V starts-up, use the following procedure:

    > From the "Hyper-V" manager:

    - Select the virtual Machine list
    - Select the "Virtual Machine"

    - Select "Parameters" -> "Manage" -> "Automatic Start Action"

    - Choose the appropriate parameters for the virtual machine that coincide with the start rules of the specific application.

    This configuration is illustrated on the following screenshot:

- Follow this procedure to ensure an **automatic graceful shutdown** of each virtual machine when Microsoft Hyper-V stops:

  > From the "Hyper-V" manager:

  - select the virtual Machine list,
  - select the "Virtual Machine"
  - select "Parameters" -> "Management"-> "Automatic Stop Actions",

  - choose the appropriate parameters for the virtual machine, to fit with shutdown rules of the specific application,

  This configuration is illustrated on the following screenshot:
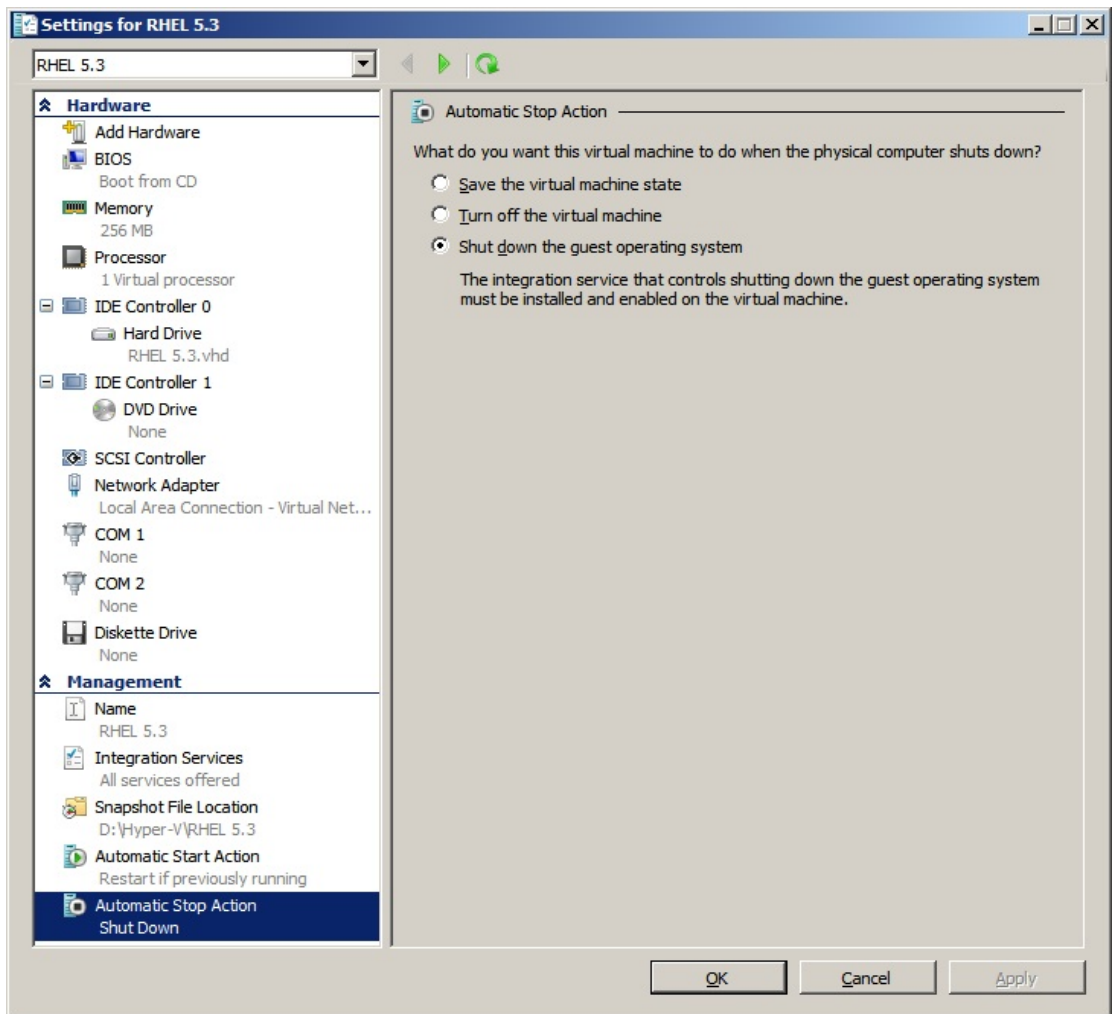
Note:

With Windows Hyper-V Server, this configuration will be done remotely. MMC Microsoft console is installed on a remote computer running Windows 2008 Server or Vista SP1.
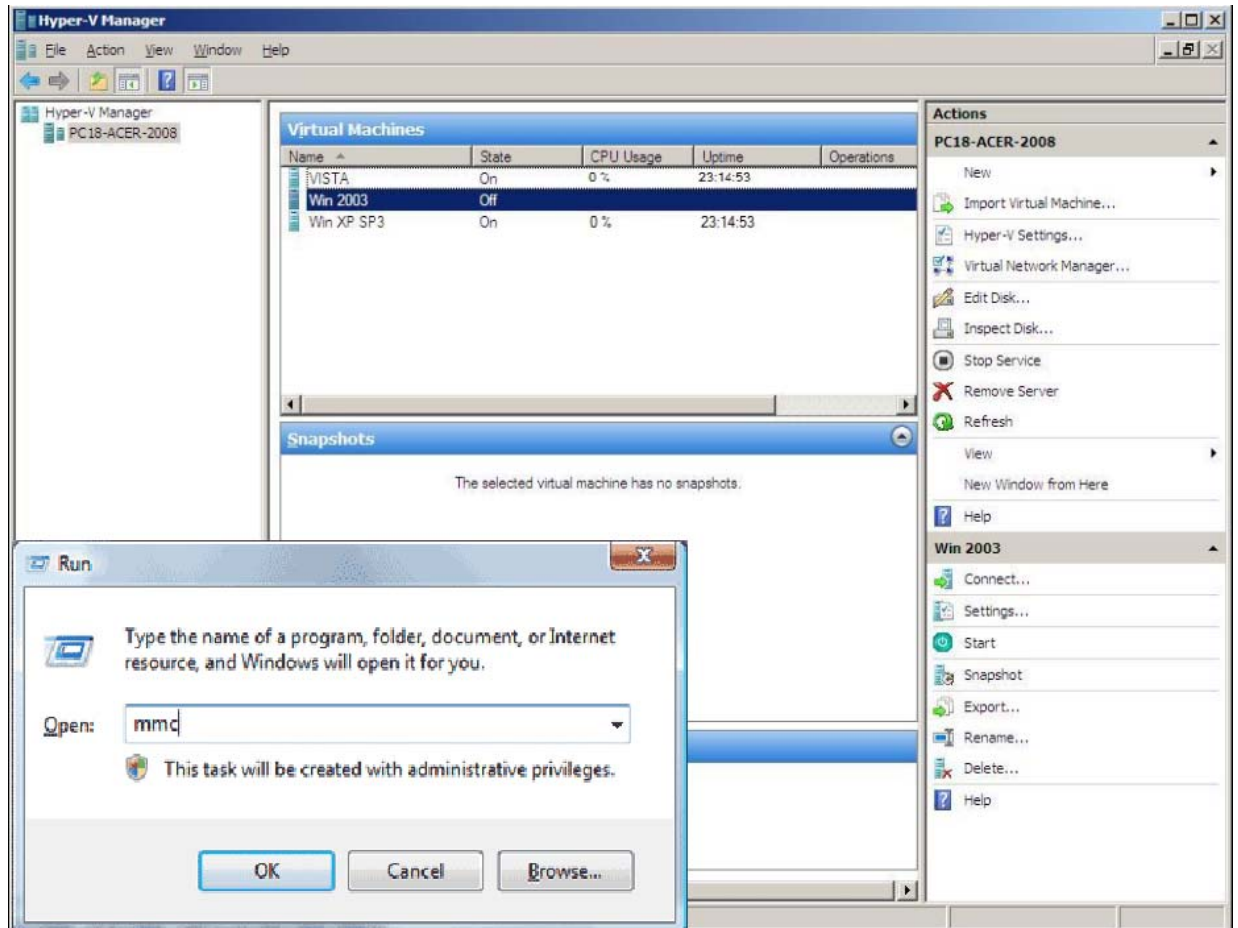
2.3 EATON hardware architecture

The prerequisites for Intelligent Power Protector installation are described in the "**Intelligent Power®
Protector** – User Manual" <u>chapter</u>: "Installation Prerequisites". (http://download.mgeops.com/)
For UPS systems compatibility, please refer to the chapter "Appendix -> Compatibility List"

2.4 Network architecture

All hardware elements must have an operational network configuration that allows free dialog amongst
each other.

**Connections through the following ports must be authorized within the firewall of the main
operating system:**

- Connections on tcp port **4679** and **4680** to enable a remote access for supervision and
  configuration through Web Browser. These ports are reserved at IANA (http://www.iana.org).

- Connections through TCP port **80** must be opened as a destination port (for output) on the
  machine hosting Intelligent Power Protector. (To enable communication between Intelligent
  Power Protector and Network Management Card).

To configure network parameters of the **main operating system**, please refer to its user manual.

2.5   Installing IPP on Hyper-V Server R1,R2 and Windows Server 2008 R2 (Hyper-V Manager)

- Download the latest version of Intelligent Power Protector Windows version package from Eaton's website : http://powerquality.eaton.com/Support/Software-Drivers/default.asp and choose the version windows of IPP
- Copy the package on your system
- Execute the package from the DOS Windows command and Go to the directory where you placed Intelligent Power Protector

  - To start the installer in graphical mode, type:
  ipp_win_x_xx_xxx.exe –install or **start ipp_win_x_xx_xxx.exe**
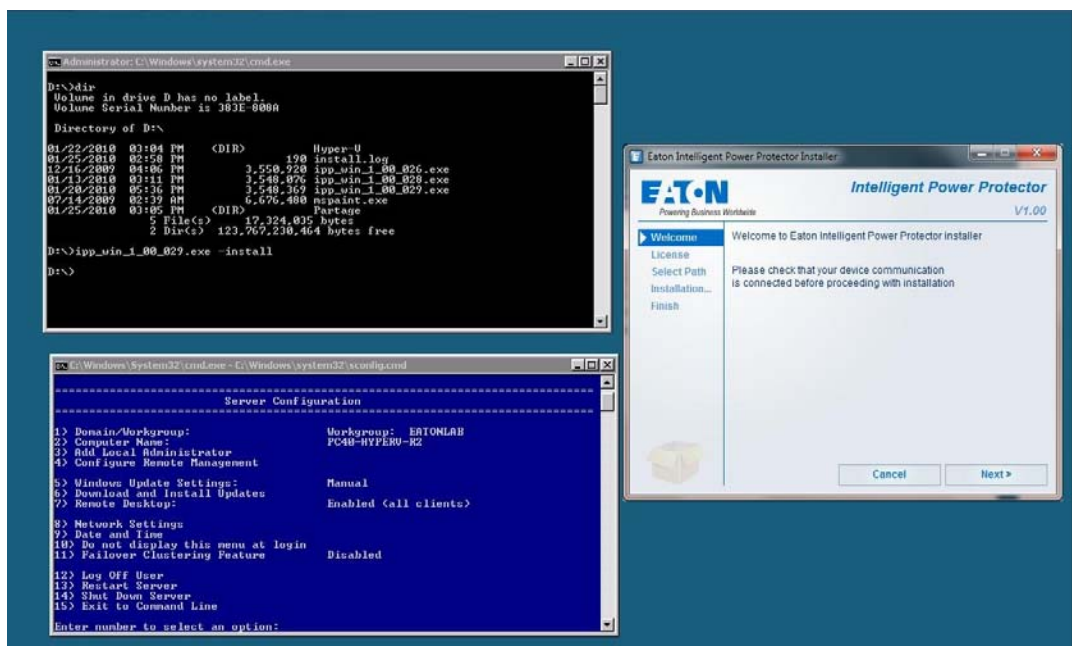
  - To start the installer in silent mode, type:
  ipp_win_x_xx_xxx.exe –install –silent

- At the end of the installation it is possible to access to the IPP web interface

2.6   Uninstalling IPP

To uninstall IPP from the DOS Window, go to the directory where you have installed the Intelligent Power Protector. (Default installation path is C:\Program Files\Eaton\IntelligentPowerProtector)

  - To uninstall in graphical mode, type:
  ipp_win_x_xx_xxx.exe –uninstall
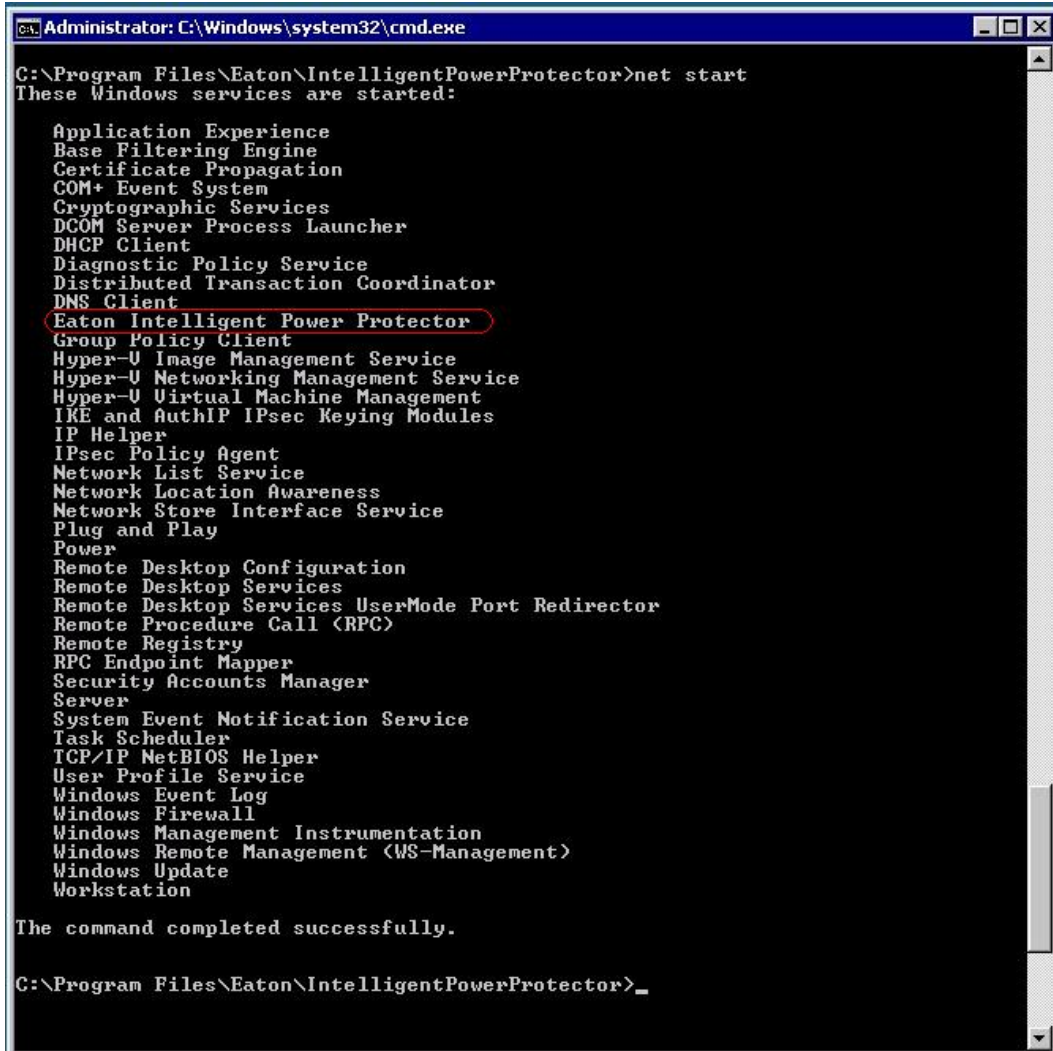
  - To uninstall in silent mode, type:
  ipp_win_x_xx_xxx.exe –uninstall –silent

2.7 **Useful commands**

● Useful Commands to list Windows services activated : `net start`

```
C:\Program Files\Eaton\IntelligentPowerProtector>net start
These Windows services are started:

    Application Experience
    Base Filtering Engine
    Certificate Propagation
    COM+ Event System
    Cryptographic Services
    DCOM Server Process Launcher
    DHCP Client
    Diagnostic Policy Service
    Distributed Transaction Coordinator
    DNS Client
    Eaton Intelligent Power Protector
    Group Policy Client
    Hyper-V Image Management Service
    Hyper-V Networking Management Service
    Hyper-V Virtual Machine Management
    IKE and AuthIP IPsec Keying Modules
    IP Helper
    IPsec Policy Agent
    Network List Service
    Network Location Awareness
    Network Store Interface Service
    Plug and Play
    Power
    Remote Desktop Configuration
    Remote Desktop Services
    Remote Desktop Services UserMode Port Redirector
    Remote Procedure Call (RPC)
    Remote Registry
    RPC Endpoint Mapper
    Security Accounts Manager
    Server
    System Event Notification Service
    Task Scheduler
    TCP/IP NetBIOS Helper
    User Profile Service
    Windows Event Log
    Windows Firewall
    Windows Management Instrumentation
    Windows Remote Management (WS-Management)
    Windows Update
    Workstation

The command completed successfully.


C:\Program Files\Eaton\IntelligentPowerProtector>_
```

2.8   Alarms reception:

When there is a UPS status change, a notification window displays the alarms:
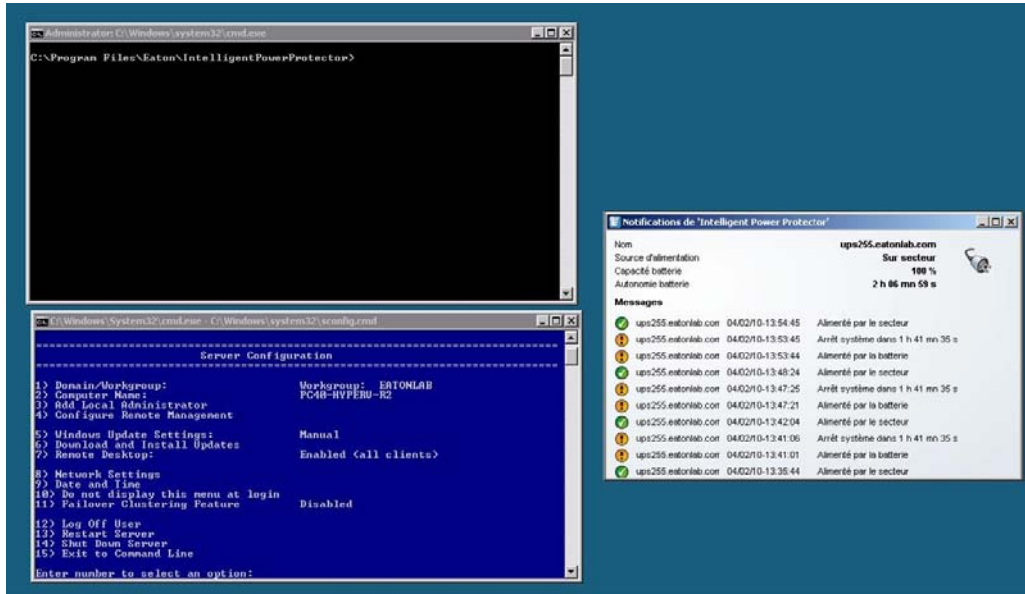
2.9   Using IPP with Hyper-V Server R1, R2 or Hyper-V Manager

After IPP installation, follow these 3 steps to use IPP or refer to the IPP User Manual

2.9.1   Step 1 (Access)

Local access (for Hyper-V Manager on Windows 2008)

- From the system where Intelligent Power® Protector is installed, you can use the following shortcut:
  Start -> Programs -> Eaton -> Intelligent Power Protector ->Open Eaton Intelligent Power Protector

Remote access (for Hyper-V Server or Hyper-V Manager on Windows 2008)

- From a remote machine, you can type the following URL in a Web browser
  https://<name or IP address of computer hosting IPP>:4680/
  or
  http://<name or IP address of computer hosting IPP>:4679/

- In SSL mode, accept the certificate (by clicking on Yes)

- (enter **admin** as Login **/ admin** as Password and click on the **Login** button)
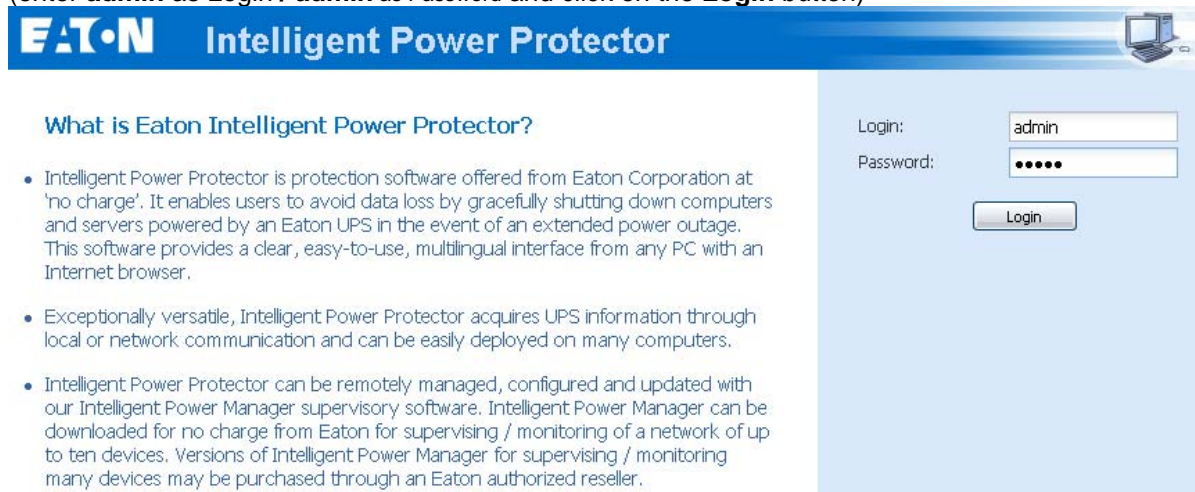
2.9.2   Step 2 (Configuration)

When started, the application automatically performs a **Quick scan**.
- *Using the Quick scan operation, you will discover:*

  => *Serial line connected UPSs (RS232 or USB)*
  The discovered UPS connected through (RS232 or USB) is automatically assigned as the Power source (the Status icon is Green)

  => **Networked UPSs** *through broadcast within a few seconds (Network Management Cards 66102*
  The discovered UPS connected through (Network) are not automatically assigned as the Power source (You have to select the node and click on the button **Set as Power**

Source the icon becomes Green ✅)

The discovered nodes are displayed in **Settings → Auto Discovery**

For the other nodes, please perform the discovery based on IP address ranges (**Range scan**)
- *Using the Range Scan operation you will discover the nodes that are outside of the Network segment and nodes that are not compatible with the "Quick scan" feature.*
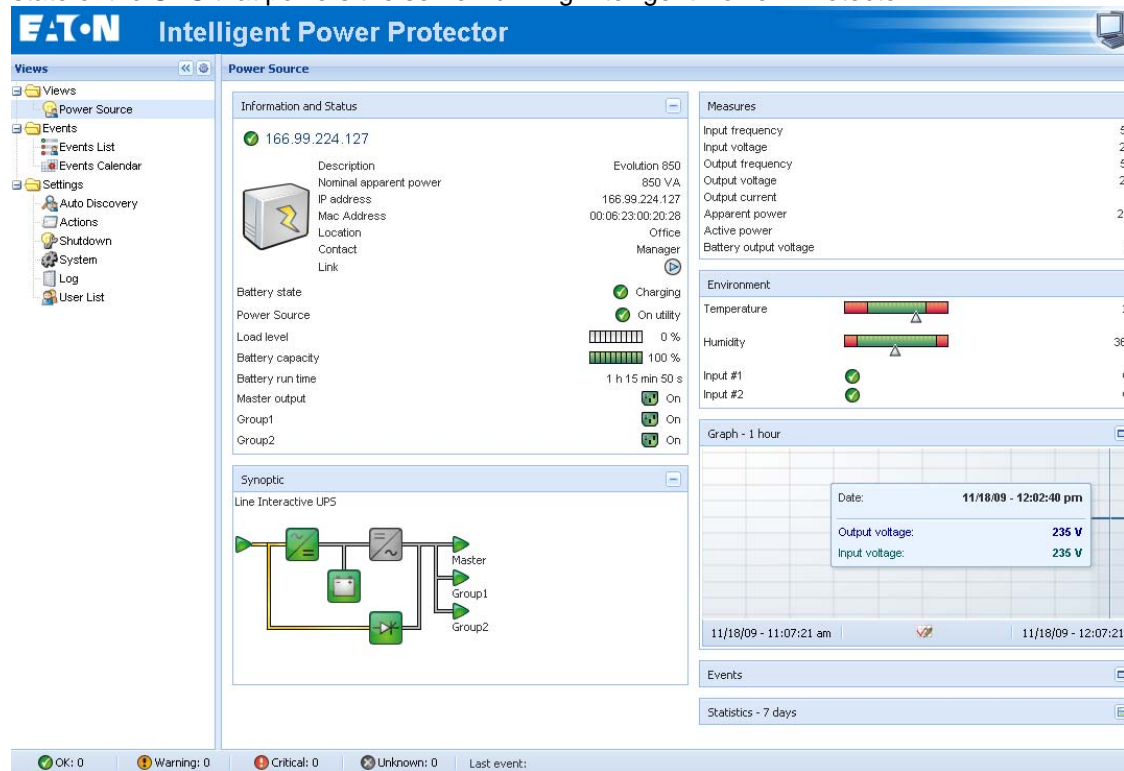
In the **Settings → Shutdown** page, assign the IP address of the UPS that powers the local Computer.

In the **Settings → User List** page, assign the access rights through "login and password"

2.9.3 Step 3 (Operation)

- The **Views → Power Source** menu item (optional) allows you to supervise the current state of the UPS that powers the server running Intelligent Power® Protector

- The **Events → Event List** view allows you to view the device events.

---

3 Appendix

3.1 References

- "User's Manual Intelligent Power Protector" downloaded from the website :
  http://powerquality.eaton.com

- For download Eaton's software : http://powerquality.eaton.com/Support/Software-Drivers/default.asp

- References documents for Microsoft Hyper-V are available on
  http://www.microsoft.com/windowsserver2008/en/us/hyperv.aspx