APC Managed Services Integration Kit

APC Smart-UPS® and AVG Managed Workplace RMM Integration

Installation and Configuration Guide

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Preliminary Information

Introduction

APC Managed Services Integration Kits provide advanced SNMP monitoring of APC Smart-UPS® with Remote Monitoring and Management (RMM) solutions, using integrated SNMP Monitoring Policies. This document details the process to configure SNMP polling and traps for APC Smart-UPS, using the AVG Managed Workplace RMM solution. The SNMP Object Identifiers (OIDs) and traps detailed allow Managed Service Providers to monitor APC Smart-UPS with a Network Management Card (NMC) AP9630, AP9631 or AP9635 installed.

System Requirements

To configure AVG Managed Workplace for SNMP monitoring of APC Smart-UPS, the following configuration is required:

- AVG Managed Workplace version 10 or higher.
    - See the AVG website **www.avg.com/managed-workplace** for specific operating system requirements.
    - For AVG technical support, visit **support.avg.com**
- APC Smart-UPS with an NMC 2 installed. See "Supported Devices".
    - SNMPv1 and SNMPv2c are supported.
- If PSA integration is required, see the **AVG website** for more information on integrations available for PSA tools.

Supported Devices

Advanced SNMP monitoring of APC Smart-UPS with AVG Managed Workplace RMM using integrated SNMP monitoring policies is available for APC Smart-UPS with a Network Management Card 2 installed (AP9630, AP9631 and AP9635).

Related Documents

The APC by Schneider Electric website, **www.apc.com**, includes the following UPS Network Management Card documentation:

- **Network Management Card 2 Installation Guide**, for AP9630, AP9631, and AP9635. See the NMC 2 Installation Guide for detailed instructions on the installation and configuration of the Network Management card for APC Smart-UPS.
- **Network Management Card 2 User Guide**, for AP9630, AP9631, and AP9635. See the NMC 2 User Guide for detailed network and SNMP configuration of the Network Management Card 2.

Terminology

Monitoring Policies
A collection of monitors and associated alert rules for a specific SNMP-enabled device (e.g. a UPS).

Monitor
An OID reference that defines an SNMP MIB Object and specifies how often it polls devices, or checks for SNMP traps.

Alerts
Alerts are actions associated with a Monitor, including Create Ticket, Self-Heal, Run Script, Escalate Alert, Send Email and Call Pager.

Onsite Manager
A utility to configure Windows or Mac OSX devices for management. The device on the network with Onsite Manager installed acts as a probe for the discovery process.

Prerequisite Set Up and Discovery Process

To begin the configuration of AVG Managed Workplace for SNMP monitoring of APC Smart-UPS, log in to AVG Managed Workplace using the **Login Name** and **Password** used during the installation of AVG.

Set up Site and Install Onsite Manager

1. Go to **Site Management > Create Site**
2. Enter the **Site Name** of the network to be monitored.
3. Select the desired **Service Delivery Model** for your network, and click **Next**.
4. Select **Deployment Options**: **Typical Deployment**
5. Click **Next**, then **Create**
6. The Onsite Manager is downloaded automatically. Install the Onsite Manager on a machine that is persistently connected to the network.
7. Click **Finish**

Configure the Network Management Card SNMP Settings

All Network Management Cards installed in APC Smart-UPS present on the network must be configured to communicate via SNMP in order to be discovered by the Onsite Manager, and to send SNMP Traps to the Onsite Manager. AVG Managed Workplace can communicate via SNMPv1 and SNMPv2c.

For each Network Management Card on the network, open the **NMC Web interface** in a web browser.

SNMPv1 Configuration

1. To confirm that SNMPv1 is enabled, go to **Configuration > Network > SNMPv1 > Access** and check that the **Enable** checkbox is selected. SNMPv1 is enabled by default.
2. Go to **Configuration > Notification > SNMP Traps > Trap Receivers** and click **Add Trap Receiver.**
3. Enter the Trap Receiver details of the **Onsite Manager**. Enter:
   - **Trap Generation**: Enable
     a. **NMS IP / Host Name**: Enter the IP Address of the machine on which **Onsite Manager** is installed. See "Set up Site and Install Onsite Manager" on page 2.
   - **Language**: Select desired language of SNMP Traps. English is the default.
   - **SNMPv1 Community Name**: Enter the Community String used in the Discovery Process. The default string is `public`.
   - **Authenticate traps**: Enable.
4. Click **Apply** to save the Trap Receiver settings.

Note: Use of SNMPv2c is supported by the NMC SNMPv1 options.

AVG Managed Workplace Discovery Process

Once each NMC on the network has been configured for SNMP communication, a discovery process can be initiated in AVG Managed Workplace to discover all of the SNMP-enabled devices. To begin the discovery process:

1. In the Managed Workplace user interface, go to **Site Management > Sites** and select the site that was created in "Set up Site and Install Onsite Manager" on page 2.

2. Select the **Credentials** tab to confirm that the default SNMP credentials match those configured on the NMC.

3. Select the **Network Discovery** tab and click **Scan Now**. The default subnet is derived from the IP address of the **Onsite Manager**.

4. Once the discovery is complete, go to **Status > Devices** to view all the network devices, including the APC Smart-UPS discovered.

SNMP Monitoring Policies

Overview

The SNMP Monitoring Policies for APC Smart-UPS and AVG Managed Workplace are available for download from the **APC by Schneider Electric** website, **www.apc.com**.

Inventory

The self-extracting executable contains five Monitoring Policies:

- **APC Smart UPS – About**
  The About Monitoring Policy provides information about the UPS such as Model, Part Number, Serial Number, Manufacture Date and Battery related information. See "SNMP About Information" on page 5.

- **APC Smart UPS – Configuration**
  The Configuration Monitoring Policy provides information about the configuration of the UPS, such as Alarm Status, Self Test Interval and Voltage Transfer points. See "SNMP Configuration Information" on page 5.

- **APC Smart UPS – Group Configuration**
  The Group Configuration Monitoring Policy provides information about the configuration of the UPS Outlet Groups, such as Outlet Group Name, Power On Delays, and Power Off Delays. See "SNMP Outlet Group Information" on page 5.

- **APC Smart UPS – Status**
  The Status Monitoring Policy provides information about the status of the UPS, such as Battery Charged Percentage, Load, Battery Voltage, and Battery Temperature. See "SNMP Status Information" on page 5.

- **APC Smart UPS – Traps**:

  The Trap Monitoring Policy define a set of UPS events upon which SNMP Traps can be raised. See "SNMP Trap Monitoring Policies" on page 5.

Object Identifiers (OIDs)

The table below lists the OID names made available in each Monitoring Policy file. They provide APC Smart-UPS status and configuration information for SNMP polling, and SNMP trap alerts for key events.

SNMP About Information

- upsBasicIdentModel
- upsAdvIdentSkuNumber
- upsAdvIdentSerialNumber
- upsAdvIdentDateOfManufacture
- upsBasicBatteryLastReplaceDate

- upsAdvBatteryRecommendedReplaceDate
- upsAdvIdentFirmwareRevision
- upsAdvBatteryExternalSKU
- upsAdvBatteryInternalSKU

SNMP Configuration Information

- upsAdvConfigAlarm
- upsAdvTestDiagnosticSchedule
- upsAdvConfigLowTransferVolt
- upsAdvConfigHighTransferVolt

- upsAdvConfigLowBatteryRunTime
- upsBasicStateOutputState
- upsAdvConfigAlarmTimer

SNMP Outlet Group Information

- upsOutletGroupConfigPowerOffDelay
- upsOutletGroupConfigPowerOnDelay
- upsOutletGroupStatusGroupState

- upsOutletGroupStatusName
- upsOutletGroupStatusTableSize

SNMP Status Information

- upsBasicStateOutputState
- upsHighPrecOutputLoad
- upsHighPrecBatteryCapacity
- upsAdvBatteryRunTimeRemaining
- upsHighPrecOutputCurrent
- upsHighPrecBatteryTemperature
- upsHighPrecOutputEfficiency
- upsHighPrecOutputEnergyUsage

- upsHighPrecBatteryActualVoltage
- upsHighPrecInputLineVoltage
- upsHighPrecInputFrequency
- upsHighPrecOutputVoltage
- upsHighPrecOutputFrequency
- upsAdvInputLineFailCause
- upsAdvTestDiagnosticsResults
- upsAdvStateAbnormalConditions

SNMP Trap Monitoring Policies

- upsCriticalCondition
- upsCriticalConditionCleared
- upsWarningCondition
- upsWarningConditionCleared
- upsInformationalCondition
- upsInformationalConditionCleared
- apcInternalCommunicationFault
- apcInternalCommunicationFaultCleared
- smartAvrReducing
- smartAvrReducingOff
- communicationLost
- communicationEstablished

- noBatteries
- noBatteriesCleared
- upsOverload
- upsOverloadCleared
- upsSleeping
- upsWokeUp
- lowBattery
- returnFromLowBattery
- upsTurnedOff
- upsTurnedOn
- batteryOverTemperature

- batteryOverTemperatureCleared
- upsOnBattery
- powerRestored
- upsBatteryNeedsReplacement
- upsBatteryReplaced
- hardwareFailureBypass
- returnFromBypass
- upsOutletGroupTurnedOn
- upsOutletGroupTurnedOff
- upsOutletGroupCommand
- upsDiagnosticsFailed
- upsDiagnosticsPassed

Installation

Prerequisites

In advance of installing Monitoring Policies in AVG Managed Workplace, make sure that the following steps are complete:

1. A Site has been set up in Managed Workplace, and the Onsite Manager has been installed. See "Set up Site and Install Onsite Manager" on page 2.
2. Each Network Management Card on the network has been configured for SNMP. See "Configure the Network Management Card SNMP Settings" on page 2.
3. The Managed Workplace Discovery process is complete, and SNMP-enabled devices have been found on the network. See "AVG Managed Workplace Discovery Process" on page 3.
4. The SNMP Monitoring Policies have been downloaded from the APC website. See "SNMP Monitoring Policies" on page 4.

There are four steps in the process to add SNMP monitoring for APC Smart-UPS to AVG Managed Workplace RMM:

1. Import the Monitoring Policies to AVG Managed Workplace. See "Importing SNMP Monitoring Policies to AVG Managed Workplace" on page 6.
2. Customize the Alert Parameters of the Monitoring Policies for SNMP Polling and SNMP Traps. See "Change Alert Parameters" on page 7.
3. Assign the Monitoring Policies to APC Smart-UPS devices on the network. See "Assigning Monitoring Policies to APC Smart-UPS devices" on page 9
4. View the Monitoring Policy results. See "View SNMP Data" on page 10.

Importing SNMP Monitoring Policies to AVG Managed Workplace

1. Download the SNMP Monitoring Policies for APC Smart-UPS from **www.apc.com**. Save the files to your computer.
2. In Managed Workplace, go to **Configuration > Policies > Monitoring** and select **More Actions > Import Monitoring Policy:**
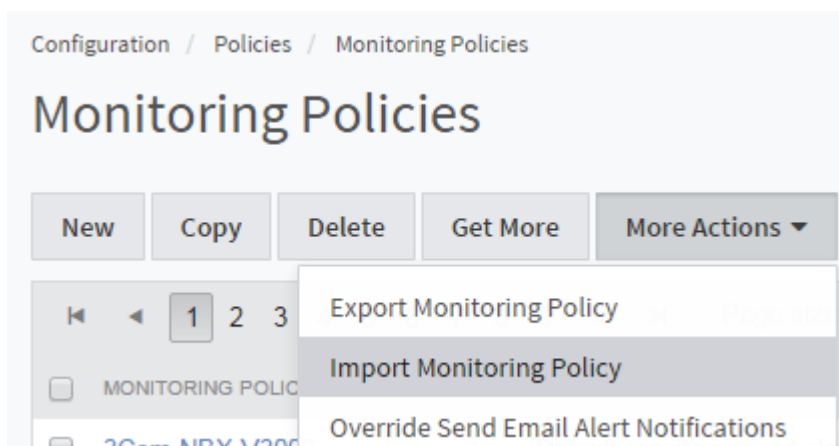
3. Click on the **Choose File** button and **Browse** to the location of the Monitoring Policies. Select the first Monitoring Policy and click **Open.** Click on the **Import** button.

4. To verify that the Monitoring Policy has been imported successfully, go to **Configuration > Policies > Monitoring** to view the list of imported Monitoring Policies.

5. Repeat steps 1–4 to import all five Monitoring Policy files.

Change Alert Parameters

Polling

It is recommended to configure the alert parameters of a Monitoring Policy before applying it to a Smart-UPS device. To configure alert parameters for Polling Monitoring Policies:

1. Go to **Configuration > Policies > Monitoring**

2. Click on the name of the Monitoring Policy to be modified:

☐	APC Smart UPS - About
☐	APC Smart UPS - Configuration
☐	APC Smart UPS - Group Config
☐	APC Smart UPS - Status

3. On the Monitoring Policy page, select the **Monitors** tab. Click on the Monitor Title to be modified:

	MONITOR TITLE ▲	STATE
☐	Abnormal Condition State	Enabled
☐	Battery charge state %	Enabled
☐	Battery Temperature	Enabled
☐	The current internal UPS temperature expressed in tenths of degrees Celsius.	
☐	Estimated runtime	Enabled

4. On the **Modify SNMP Monitor** page, select the **Alerts** tab, and click **Add**:

   a. Enter a descriptive Alert **Title**.

   b. On the **Alert Rules** pane, click **Add** to configure the rule upon which the Alert is triggered:

Modify SNMP Monitor - Battery Temperature

Modify Alert Configuration - Battery temperature Alert

SNMP Rule Parameters

Trigger alert when SNMP counter **upsHighPrecBatteryTemperature.0** is

greater than ▼ threshold 30 * for the last 1 * data points.

   Click **Save**.

   c. On the **Alert Categories, Actions and Notifications** pane, you can categorize the alert, trigger Alert Actions such as **Create Trouble Ticket**, **Self-Heal** the alert, or **Run Script**. You can configure Alert Notifications such as **Send Email** and **Call Pager**, and configure an Escalation Notification, such as **Escalate Alert**.

   d. Click **Save** to update the SNMP Polling Alert.

5. Click **Save** on the Modify SNMP Monitor page. The Polling Monitoring Policy can now be assigned to an APC Smart-UPS device.

Traps

To configure alert parameters for Trap Monitoring Policies:

1. Go to **Configuration > Policies > Monitoring**

2. Click on the name of the Monitoring Policy to be modified:

☐ APC Smart UPS - About

☐ APC Smart UPS - Configuration

☐ APC Smart UPS - Group Config

☐ APC Smart UPS - Status

☐ APC Smart UPS - Traps

3. On the Monitoring Policy page, select the **Monitors** tab. A list of Trap Monitor Titles and their state is displayed. Click on the **Trap Monitor Title** to be modified.

4. On the **Modify SNMP Monitor** page, select the **Alerts** tab.
   NOTE: The rule by which an SNMP Trap alert is triggered is predefined, and should not be edited.

On the **Alert Categories, Actions and Notifications** pane, you can categorize the alert, trigger Alert Actions such as **Create Trouble Ticket**, **Self-Heal** the alert, or **Run Script**. You can configure Alert Notifications such as **Send Email** and **Call Pager**, and configure an Escalation Notification, such as **Escalate Alert**.

5. Click **Save** to update the SNMP Trap Alert.
6. Click **Save** on the Modify SNMP Traps Monitor page. The Trap Monitoring Policy can now be assigned to an APC Smart-UPS device.

Assigning Monitoring Policies to APC Smart-UPS devices

You can assign Monitoring Policies to APC Smart-UPS devices that have been discovered in the AVG Managed Workplace Discovery process. See "Prerequisite Set Up and Discovery Process" on page 2.

Manual Device Application

1. Go to **Configuration > Policies > Monitoring**
2. Click on the **Monitoring Policy Name** to be applied to APC Smart-UPS devices.
3. Select the **Manual Application** tab.
4. On the **Applied Devices** tab, click **Add**.
5. On the Add Devices dialog, click the **Filter** button:

6. Select one or more Smart-UPS devices from the list of devices, and click **OK** to assign the Monitoring Policy to those Smart-UPS devices.

7. Repeat steps 1-6 for each Monitoring Policy to be assigned.

View SNMP Data

1. Go to **Status > Devices**

2. Select the APC Smart-UPS device to which the Monitoring Policies have been applied.

3. On the Device page, select **Monitoring > SNMP** or **Monitoring > SNMP Traps**:
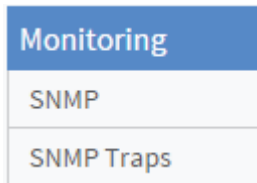
a. The **SNMP** page displays the polling values returned by the SNMP Polling Monitoring Policies applied to the device, detailing **Object Name** and **Value:**

OBJECT NAME	TEXT VALUE
upsAdvIdentSkuNumber.0	SMX1500RM2U
upsAdvIdentDateOfManufacture	01/03/2000

b. The **SNMP Traps** page displays the SNMP traps for the device received by Managed Workplace:

	EnterpriseSpecific	1.3.6.1.4.1.318	227337060	13/03/2016 03:11:50

OID	VALUE
1.3.6.1.4.1.318.2.3.3.0	UPS: Lost the local network management interface-to-UPS communication.

NOTE: If after five minutes no SNMP Traps or SNMP Polling information appears on the device summary page, perform the following troubleshooting steps:

1. Go to **Status > Devices** and select the Smart-UPS device.

2. On the **Device** page, click on the **Delete Device** button to delete the device from the inventory, which also deletes the device associations with the Monitoring Policies.

3. Go to **Site Management > Sites** to select the site.

4. Go to the **Network Discovery** tab and click **Scan Now** to rediscover the device on the network.

5. Follow the steps detailed in "Assigning Monitoring Policies to APC Smart-UPS devices" on page 9 to re-apply the Monitoring Policies to the device.

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