Citrix XenClient

Guest SMBIOS

Version 1.6

Contents

Goal

Selectively present base SMBIOS and other relevant firmware information to guest VMs so that applications and operating systems that rely on such information will work in virtual environment similar to the way it would on bare metal.

Why Do We Want to Pass-Through SMBIOS Information to a Guest VM?

The following are some of the reasons for passing through SMBIOS information:

- To ensure licensing information stored in the firmware are available to the virtual machines
- OEM user applications that rely on SMBIOS data would work the same way they would on bare metal
- When passing through devices, OEM supplied device drivers that rely on SMBIOS information will work.
- Allow ESD/CCM tools to collect inventory information.
- Additionally some licensing and performance testing systems in different versions of Windows use this information.

How can you enable SMBIOS Pass-Through?

SMBIOS pass-through and ACPI-SLIC pass-through are enabled when smbios-pt = true and acpi-pt = true is specified in the guest VM configuration file.

How Do We Pass-Through SMBIOS Information to Guest?

Within xenguest, we scan the ROM BIOS region to get the base firmware SMBIOS information and copy it to our HVM SMBIOS information table in the HVM information page. HVMLoader, when building the virtual firmware space, references this table for base SMBIOS information and populates the virtual SMBIOS table with the base firmware information.

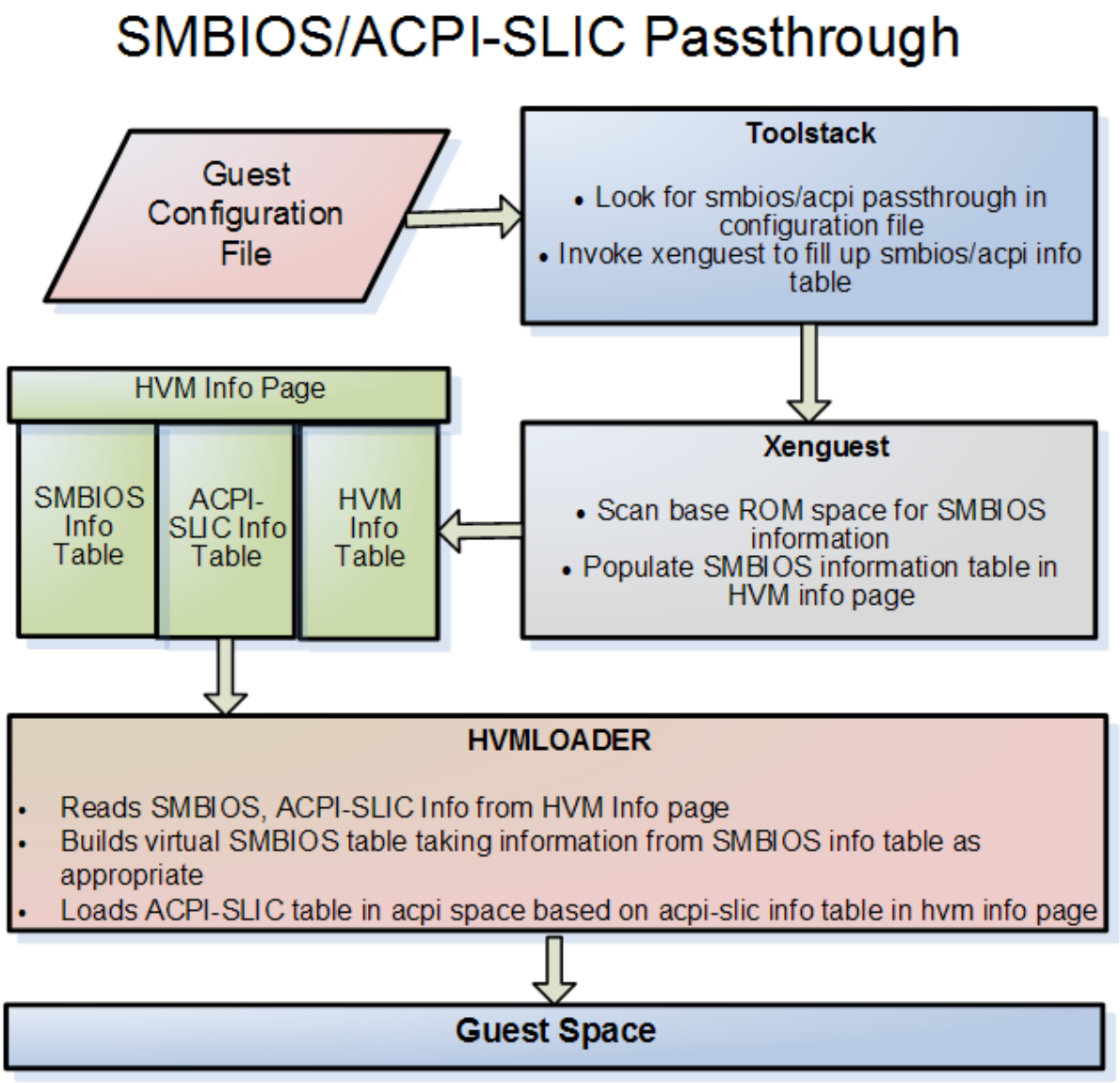
Components

Toolstack/xenguest

The toolstack looks for the "smbios-pt = true" configuration file option and if present enlists help from xenguest smbios helper functions to glean the necessary information from the base firmware space. The xenguest subcomponent does most of the work by first scanning the base ROM BIOS space for SMBIOS information and then populating the HVM SMBIOS information table in HVM Info page with that information.

HVMLoader

HVMLoader first checks whether or not HVM SMBIOS information table is initialized in the HVM information page to include base SMBIOS information and if so, while building the guest virtual space replaces the necessary tables with information provided through the HVM SMBIOS information table.



What Kind Of SMBIOS Information Do we Pass-Through To Guest?

Currently, we pass-through type the following SMBIOS tables:

- BIOS Information (Type 0)
- System Information (Type 1)
- System Enclosure or Chassis (Type 3)
- OEM Strings (Type 11)

How do we Plan To Extend It?

We plan to augment our existing implementation with the following changes.

The following tables will be passed-through to the guest VM:

- Base Board Information (Type 2)

- OEM Type 129
- OEM Type 130
- OEM Type 131

The following tables will be virtualized based on the parameters used to initialize the virtual machine:

- Cache Information (Type 7)
- Portable Battery (Type 22)

We are also going to look at partially passing through the following tables, focused on supporting the Windows Vista Experience Index mechanism.

- System Slots (Type 9)
- On Board Devices Information (Type 10)

ACPI-SLIC Pass-Through And Why?

Apart from passing through SMBIOS data, we also pass through the ACPI-SLIC table as is to the guest when acpi-pt = true is set. ACPI-SLIC pass-through implementation is similar to SMBIOS pass-through. The toolstack upon identifying that the acpi-pt option is enabled, delegates to xenguest to populate the HVM ACPI information table in HVM info page. Xenguest scans the ROM BIOS space as it did for SMBIOS information and initializes the HVM ACPI information table with necessary information. HVMLoader will then, while building the ACPI space, load this table and also fix-up OEM Id, OEM Table Id, OEM Revision, Creator Id and Creator Revision for RSDT and XSDT and OEM Id for RSDP, FADT, MADT and HPET and TPM TCPA when used.

Licensing and SMBIOS/ACPI-SLIC Pass-Through

Among other things passing-through SMBIOS and ACPI-SLIC has a direct impact on licensing and thus user experience within guest environment. In specific, following is a brief description of what type of information pass-through helps with what type of licensing -

MSDN License – SMBIOS table pass-through

OEM Retail License – SMBIOS and ACPI-SLIC Pass-through

Volume License – This seems to rely on factors beyond SMBIOS and ACPI-SLIC pass-through. Information like drive serial number appears to influence whether or not the OS is activated.

References

http://www.dmtf.org/standards/smbios/