CLAIMS

1. A computer implemented method for hiding selected installed function of a multi-function instruction, the multi-function instruction architected to perform a function of a plurality of installed functions, the method comprising:

setting a value controlling availability of installed functions to a multi-function instruction of a Host computer comprising one or more processors, a processor having a first plurality of said installed functions of the multi-function instruction, the first plurality of installed functions comprising one or more first installed functions and one or more second installed functions; and

executing a multi-function instruction, the multi-function instruction comprising an opcode field, the execution comprising:

responsive to the multi-function instruction specifying a query function, performing the query function to determine installed functions available to the multi-function instruction;

the query function execution using the value to determine the one or more second installed functions;

the query function execution storing a result value indicating one or more of the one or more first installed functions are not available to the multi-function instruction; and

responsive to the multi-function instruction specifying a non-query function of the first plurality of said installed functions; performing the non-query function when the non-query function is one of said second installed functions; and blocking performing said non-query function when the non-query function is a function other than one of said second installed functions.

2. The method according to Claim 1, wherein the value is set by a hypervisor of the Host computer for a virtual machine of the Host computer, the virtual machine comprising one or more logical processors, the one or more logical processors being assigned to one or more physical processors, a physical processor having the one or more second installed functions of the multi-function instruction, wherein the multi-function instruction is executed in the virtual machine by a logical processor of one or more logical processors on a physical processor of the one or more physical processors.

3. The method according to Claim 2, wherein the determining the one or more second installed functions is based on the opcode of the multi-function instruction.

4. The method according to Claim 2, further comprising:

setting by the hypervisor, another value controlling availability of installed functions to a multi-function instruction executing on another virtual machine of the Host computer system; and

executing another multi-function instruction in the another virtual machine by another logical processor of one or more another logical processors;

responsive to the another multi-function instruction specifying another query function, performing the another query function to determine installed functions available to the another multi-function instruction;

the another query function execution using the another value to determine one or more third installed functions; and

the another query function execution storing another result value indicating one or more of the one or more third installed functions are not available to the another multi-function instruction.

5. The method according to Claim 2, wherein the stored result value is a bit significant value, where each bit position corresponds to a function, and a bit being 1 indicates the corresponding function is installed.

6. The method according to Claim 2, wherein the query function is specified by a multi-function instruction specified function code or a multi-function instruction specified test bit.

7. The method according to Claim 6, wherein the multi-function instruction is a zArchitecture instruction consisting of any one of a cryptographic instruction, a Perform Timing Facility Function instruction, Perform Floating Point Operation instruction or a Perform Locked Operation instruction, wherein the cryptographic instruction comprises any one of a Cipher Message instruction, a Cipher Message with Chaining instruction, a Compute Intermediate Message Digest instruction, a Compute Last Message Digest

instruction, a Compute Message Authentication Code instruction, wherein the multi-function instruction specifying a query function comprises:

responsive to the multi-function instruction being a cryptographic instruction or a PTFF instruction, obtaining the muti-function instruction specified function code to be executed, the obtained function code consisting of a query function, wherein the stored result value is a plurality of bits, each bit of the plurality of bits indicating whether a corresponding function code is supported; and

responsive to the multi-function instruction being a cryptographic instruction or a PTFF instruction, obtaining the muti-function instruction specified function code to be executed, the obtained function code not being the query function, performing a cryptographic function or a PTFF function according to the obtained function code; and

responsive to the multi-function instruction being the Perform Locked Operation instruction or the Perform Floating Point Operation instruction and the multi-function instruction specified test bit is 1, determining that a multi-function instruction specified function code is installed, wherein the stored result value is a condition code value; and

responsive to the multi-function instruction being the Perform Locked Operation instruction or the Perform Floating Point Operation instruction and the multi-function instruction specified test bit is 0, performing a Floating Point function or a locked operation according to the obtained function code.

8. A computer system for hiding selected installed function of a multi-function instruction, the multi-function instruction architected to perform a function of a plurality of installed functions, comprising:

a memory;

a processor in communication with the memory, the processor comprising an instruction fetching element for fetching instructions from memory and one or more execution elements for executing fetched instructions;

wherein the computer system is configured to perform the method as claimed in any of claims 1 to 7.

9. A computer program product for hiding selected installed function of a multi-function instruction, the multi-function instruction architected to perform a function of a

plurality of installed functions, the computer program product comprising a tangible storage medium readable by a processing circuit and storing instructions for execution by the processing circuit for performing the method as claimed in any of claims 1 to 7.

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CLAIMS

1. A method for hiding first installed functions of a multi-function instruction, the multi-function instruction being architected to perform a function of a plurality of installed functions, the method comprising:

setting a value controlling availability of installed functions to a multi-function instruction of a Host computer comprising one or more processors, a processor having a first plurality of said installed functions of the multi-function instruction, the plurality of installed functions comprising one or more first installed functions and one or more second installed functions, the value being set by a hypervisor of the Host computer for a virtual machine of the Host computer, the virtual machine comprising one or more logical processors, the one or more logical processors being assigned to one or more physical processors, a physical processor having the one or more second installed functions of the multi-function instruction, wherein the multi-function instruction is executed in the virtual machine by a logical processor of one or more logical processors on a physical processor of the one or more physical processors; and

executing a multi-function instruction in the virtual machine by a logical processor of the one or more logical processors, the multi-function instruction comprising an opcode field, the execution comprising:

responsive to the multi-function instruction specifying a query function, performing the query function to determine installed functions available to the multi-function instruction;

the query function execution using the value to determine the one or more second installed functions;

the query function execution storing a result value indicating the one or more first installed functions that are not available to the multi-function instruction in the virtual machine by a logical processor of the one or more logical processors; and

responsive to the multi-function instruction specifying a non-query function of the plurality of said installed functions; performing the non-query function when the non-query function is one of said second installed functions; and blocking performing said non-query function when the non-query function is a function other than one of said second installed functions;

setting by the hypervisor, another value controlling availability of installed functions to a multi-function instruction executing on another virtual machine of the Host computer system;

and

executing another multi-function instruction in the another virtual machine by another logical processor of one or more another logical processors;

responsive to the another multi-function instruction specifying another query function, performing the another query function to determine installed functions available to the another multi-function instruction;

the another query function execution using the another value to determine one or more third installed functions; and

the another query function execution storing another result value indicating the one or more third installed functions that are not available to the another multi-function instruction in the virtual machine by a logical processor of the one or more logical processors.

2. The method according to Claim 1, wherein the determining the one or more second installed functions is based on the opode of the multi-function instruction.

3. The method according to Claim 1, wherein the stored result value is a bit significant value, where each bit position corresponds to a function, and a bit being 1 indicates the corresponding function is available.

4. The method of Claim 1, wherein the query function is specified by a multi-function instruction specified function code or a multi-function instruction specified test bit, the test bit indicating that the validity of the function code is to be tested.

5. A computer system for hiding first installed functions of a multi-function instruction, the multi-function instruction architected to perform a function of a plurality of installed functions, comprising:

a memory;

a processor in communication with the memory, the processor comprising an instruction fetching element for fetching instructions from memory and one or more execution elements for executing fetched instructions;

wherein the computer system is configured to perform the method as claimed in any of claims 1 to 4.

6. A computer program product directly loadable into the internal memory of a digital computer, comprising software code portions for performing, when said product is run on a computer, the steps of the method as claimed in claims 1 to 4.