CLAIMS

1. A method for enabling adapters in a computing environment, comprising the steps of:

responsive to executing a Call Logical Processor (CLP) instruction for enabling an adapter, the CLP instruction comprising a function handle identifying the adapter and having an adapter not enabled indicator, the CLP instruction requesting a number of direct memory access (DMA) address spaces, the execution enabling one or more DMA address spaces comprising a) and b):

a) enabling the adapter, wherein the enabling comprises enabling registration for address translation and interruptions for supporting direct memory accesses and message signaled interruptions for the adapter; and

b) returning the function handle having an adapter enabled indicator.

2. The method of claim 1, wherein the enabling comprises enabling one or more instructions to be issued to the adapter.

3. The method of claim 1, wherein the number of address spaces to be assigned is indicated in a request block of the CLP instruction.

4. The method of claim 1, wherein the enabling further comprises:

using the function handle of the adapter to locate a function table entry associated with the adapter; and

employing information in the function table entry to determine whether the adapter is to be enabled, and wherein the enabling assigns one or more device table entries to the adapter responsive to determining the adapter is to be enabled.

5. The method of claim 4, wherein the function handle is associated with the function table entry and including a function number and an instance number, and wherein the method further comprises determining the validity of the handle, the determining comprising:

checking that the not enabled indicator indicates not enabled; and

checking that the function number designates an installed function, wherein the using is performed responsive to determining a valid handle.

6. The method of claim 4, wherein the employing comprises checking at least one of the not enabled indicator, a permanent error state indicator, an error recovery initiated indicator, a busy indicator or a permission indicator in the function table entry to determine whether the adapter is to be enabled.

7. The method of claim 1, wherein the enabling further comprises associating one or more device table entries with a function table entry associated with the adapter, the function table entry providing information regarding the adapter.

8. The method of claim 7, wherein the function table entry is associated with the function handle, and wherein the enabling further comprises performing at least one of:

setting a function enable indicator in the function table entry to indicate enabled;

setting one or more device enable indicators in the one or more device table entries to indicate enabled;

including in a contents addressable memory one or more indices to one or more device table entries, the contents addressable memory usable in locating a device table entry responsive to a request from the adapter;

setting the adapter enabled indicator in the function handle to indicate enabled; and

updating an instance number of the function handle.

9. The method of claim 1, wherein the method further comprises disabling the adapter.

10. The method of claim 9, wherein the disabling comprises:

using the function handle to locate a function table entry associated with the adapter; and

employing information in the function table entry to determine whether the adapter is to be disabled, and proceeding with disabling responsive to determining the adapter is to be disabled.

11. The method of claim 10, wherein the proceeding with disabling comprises at least one of:

setting a function enable indicator in the function table entry to disabled;

clearing and releasing one or more device table entries associated with the adapter; and

setting the not enabled indicator of the function handle to indicate disabled.

12. The method of claim 10, wherein the disabling further comprises determining the validity of the function handle, the determining comprising:

checking that the adapter enabled indicator is set to enabled; and

checking that the handle points to a valid entry in the function table, wherein the using is performed responsive to determining the function handle is valid.

13. The method of claim 12, wherein the employing comprises comparing an instance number in the function handle with an instance number in the function table entry, wherein the proceeding with disabling occurs responsive to the comparing indicating equality.

14. The method of claim 1, wherein the adapter comprises a Peripheral Component Interconnect (PCI) function.

15. A computer program comprising computer program code stored on a computer readable medium to, when loaded into a computer system and executed thereon, cause said computer system to perform all the steps of a method according to any of claims 1 to 14.

16. A computer system for enabling adapters in a computing environment, said computer system comprising:

a memory; and

a processor in communications with the memory;

a requestor element responsive to executing a Call Logical Processor (CLP) instruction for enabling an adapter, the CLP instruction comprising a function handle identifying the adapter and having an adapter not enabled indicator, the CLP instruction

requesting a number of direct memory access (DMA) address spaces, the execution enabling one or more DMA address spaces comprising a) and b):

a) enabling the adapter, wherein the enabling comprises enabling registration for address translation and interruptions for supporting direct memory accesses and message signaled interruptions for the adapter; and

b) returning the function handle having an adapter enabled indicator.

17. A computer system for enabling adapters in a computing environment, said computer system comprising:

a memory; and

a processor in communications with the memory, wherein the computer system is configured to perform a method, said method comprising:

responsive to executing a Call Logical Processor (CLP) instruction for enabling an adapter, the CLP instruction comprising a function handle identifying the adapter and having an adapter not enabled indicator, the CLP instruction requesting a number of direct memory access (DMA) address spaces, the execution enabling one or more DMA address spaces comprising a) and b):

a) enabling the adapter, wherein the enabling comprises enabling registration for address translation and interruptions for supporting direct memory accesses and message signaled interruptions for the adapter; and

b) returning the function handle having an adapter enabled indicator.

18. The computer system of claim 17, wherein the enabling comprises enabling one or more instructions to be issued to the adapter.

19. The computer system of claim 17, wherein the enabling further comprises:

using the function handle of the adapter to locate a function table entry associated with the adapter; and

employing information in the function table entry to determine whether the adapter is to be enabled, and wherein the enabling assigns one or more device table entries to the adapter responsive to determining the adapter is to be enabled.

20. The computer system of claim 17, wherein the enabling further comprises associating one or more device table entries with a function table entry associated with the adapter, the function table entry providing information regarding the adapter.

21. The computer system of claim 20, wherein the function table entry is associated with the function handle, and wherein the enabling further comprises performing at least one of:

setting a function enable indicator in the function table entry to indicate enabled;

setting one or more device enable indicators in the one or more device table entries to indicate enabled;

including in a contents addressable memory one or more indices to one or more device table entries, the contents addressable memory usable in locating a device table entry responsive to a request from the adapter;

setting the adapter enabled indicator in the function handle to indicate enabled; and

updating an instance number of the function handle.

22. The computer system of claim 17, wherein the method further comprises disabling the adapter, and wherein the disabling comprises:

using the function handle to locate a function table entry associated with the adapter; and

employing information in the function table entry to determine whether the adapter is to be disabled, and proceeding with disabling responsive to determining the adapter is to be disabled.

23. The computer system of claim 22, wherein the proceeding with disabling comprises at least one of:

setting a function enable indicator in the function table entry to disabled;

clearing and releasing one or more device table entries associated with the adapter; and

setting the not enabled indicator of the function handle to indicate disabled.

24. A computer program product for enabling adapters in a computing environment, said computer program product comprising:

a computer readable storage medium readable by a processing circuit and storing instructions for execution by the processing circuit for performing the steps of the method of any of claims 1 to 14.

CLAIMS

1. A method for enabling adapters in a computing environment, comprising the steps of:

responsive to executing a Call Logical Processor CLP instruction issued by an operating system for enabling an adapter selected by the operating system the CLP instruction comprising a function handle identifying the adapter and having an adapter not enabled indicator, the CLP instruction requesting a number of direct memory access DMA address spaces to be assigned to the adapter, the execution enabling one or more DMA address spaces and comprising:

a) enabling the adapter, wherein the enabling comprises enabling registration for address translation and interruptions for supporting direct memory accesses and message signaled interruptions for the adapter, and wherein the enabling comprises determining that the requested number of DMA address spaces is available by checking that there are device table entries for the requested number of DMA address spaces, and assigning a number of device table entries corresponding to the requested number of DMA address spaces to the adapter; and

b) returning the function handle having an adapter enabled indicator.

2. The method of claim 1, wherein the enabling comprises enabling one or more instructions to be issued to the adapter.

3. The method of claim 1, wherein the number of address spaces to be assigned is indicated in a request block of the CLP instruction.

4. The method of claim 1, wherein the enabling further comprises:

using the function handle of the adapter to locate a function table entry associated with the adapter; and

employing information in the function table entry to determine whether the adapter is to be enabled, and wherein the enabling assigns one or more device table entries to the adapter responsive to determining the adapter is to be enabled.

5. The method of claim 4, wherein the function handle is associated with the function table entry and including a function number and an instance number, and wherein the method further comprises determining the validity of the handle, the determining comprising:

checking that the not enabled indicator indicates not enabled; and

checking that the function number designates an installed function, wherein the using is performed responsive to determining a valid handle.

6. The method of claim 4, wherein the employing comprises checking at least one of the not enabled indicator, a permanent error state indicator, an error recovery initiated indicator, a busy indicator or a permission indicator in the function table entry to determine whether the adapter is to be enabled.

7. The method of claim 1, wherein the enabling further comprises associating one or more device table entries with a function table entry associated with the adapter, the function table entry providing information regarding the adapter.

8. The method of claim 7, wherein the function table entry is associated with the function handle, and wherein the enabling further comprises performing at least one of:

setting a function enable indicator in the function table entry to indicate enabled;

setting one or more device enable indicators in the one or more device table entries to indicate enabled;

including in a contents addressable memory one or more indices to one or more device table entries, the contents addressable memory usable in locating a device table entry responsive to a request from the adapter;

setting the adapter enabled indicator in the function handle to indicate enabled; and

updating an instance number of the function handle.

9. The method of claim 1, wherein the method further comprises disabling the adapter.

10. The method of claim 9, wherein the disabling comprises:

using the function handle to locate a function table entry associated with the adapter; and

employing information in the function table entry to determine whether the adapter is to be disabled, and proceeding with disabling responsive to determining the adapter is to be disabled.

11. The method of claim 10, wherein the proceeding with disabling comprises at least one of:

setting a function enable indicator in the function table entry to disabled;

clearing and releasing one or more device table entries associated with the adapter; and

setting the not enabled indicator of the function handle to indicate disabled.

12. The method of claim 10, wherein the disabling further comprises determining the validity of the function handle, the determining comprising:

checking that the adapter enabled indicator is set to enabled; and

checking that the handle points to a valid entry in the function table, wherein the using is performed responsive to determining the function handle is valid.

13. The method of claim 12, wherein the employing comprises comparing an instance number in the function handle with an instance number in the function table entry, wherein the proceeding with disabling occurs responsive to the comparing indicating equality.

14. The method of claim 1, wherein the adapter comprises a Peripheral Component Interconnect (PCI) function.

15. A computer program comprising computer program code stored on a computer readable medium to, when loaded into a computer system and executed thereon, cause said computer system to perform all the steps of a method according to any of claims 1 to 14.

16. A computer system for enabling adapters in a computing environment, said computer system comprising:

a memory; and

a processor in communications with the memory;

a requestor element responsive to executing a Call Logical Processor CLP instruction issued by an operating system for enabling an adapter selected by the operating system the CLP instruction comprising a function handle identifying the adapter and having an adapter not enabled indicator, the CLP instruction requesting a number of direct memory access DMA address spaces to be assigned to the adapter, the execution enabling one or more DMA address spaces, and comprising:

a) an enabler for enabling the adapter, wherein the enabling comprises enabling registration for address translation and interruptions for supporting direct memory accesses and message signaled interruptions for the adapter, and wherein the enabling

comprises determining that the requested number of DMA address spaces is available by checking that there are device table entries for the requested number of DMA address spaces, and assigning a number of device table entries corresponding to the requested number of DMA address spaces to the adapter; and

b) a return component for returning the function handle having an adapter enabled indicator.

17. The computer system of claim 16, wherein the enabling comprises enabling one or more instructions to be issued to the adapter.

18. The computer system of claim 16, wherein the enabling further comprises:

using the function handle of the adapter to locate a function table entry associated with the adapter; and

employing information in the function table entry to determine whether the adapter is to be enabled, and wherein the enabling assigns one or more device table entries to the adapter responsive to determining the adapter is to be enabled.

19. The computer system of claim 16, wherein the enabling further comprises associating one or more device table entries with a function table entry associated with the adapter, the function table entry providing information regarding the adapter.

20. The computer system of claim 19, wherein the function table entry is associated with the function handle, and wherein the enabling further comprises performing at least one of:

setting a function enable indicator in the function table entry to indicate enabled;

setting one or more device enable indicators in the one or more device table entries to indicate enabled;

including in a contents addressable memory one or more indices to one or more device table entries, the contents addressable memory usable in locating a device table entry responsive to a request from the adapter;

setting the adapter enabled indicator in the function handle to indicate enabled; and

updating an instance number of the function handle.

21. The computer system of claim 16, wherein the system further comprises a disabler for disabling the adapter, and wherein the disabling comprises:

using the function handle to locate a function table entry associated with the adapter; and

employing information in the function table entry to determine whether the adapter is to be disabled, and proceeding with disabling responsive to determining the adapter is to be disabled.

22. The computer system of claim 21, wherein the disabling comprises at least one of:

setting a function enable indicator in the function table entry to disabled;

clearing and releasing one or more device table entries associated with the adapter; and

setting the not enabled indicator of the function handle to indicate disabled.