SCSI Bus

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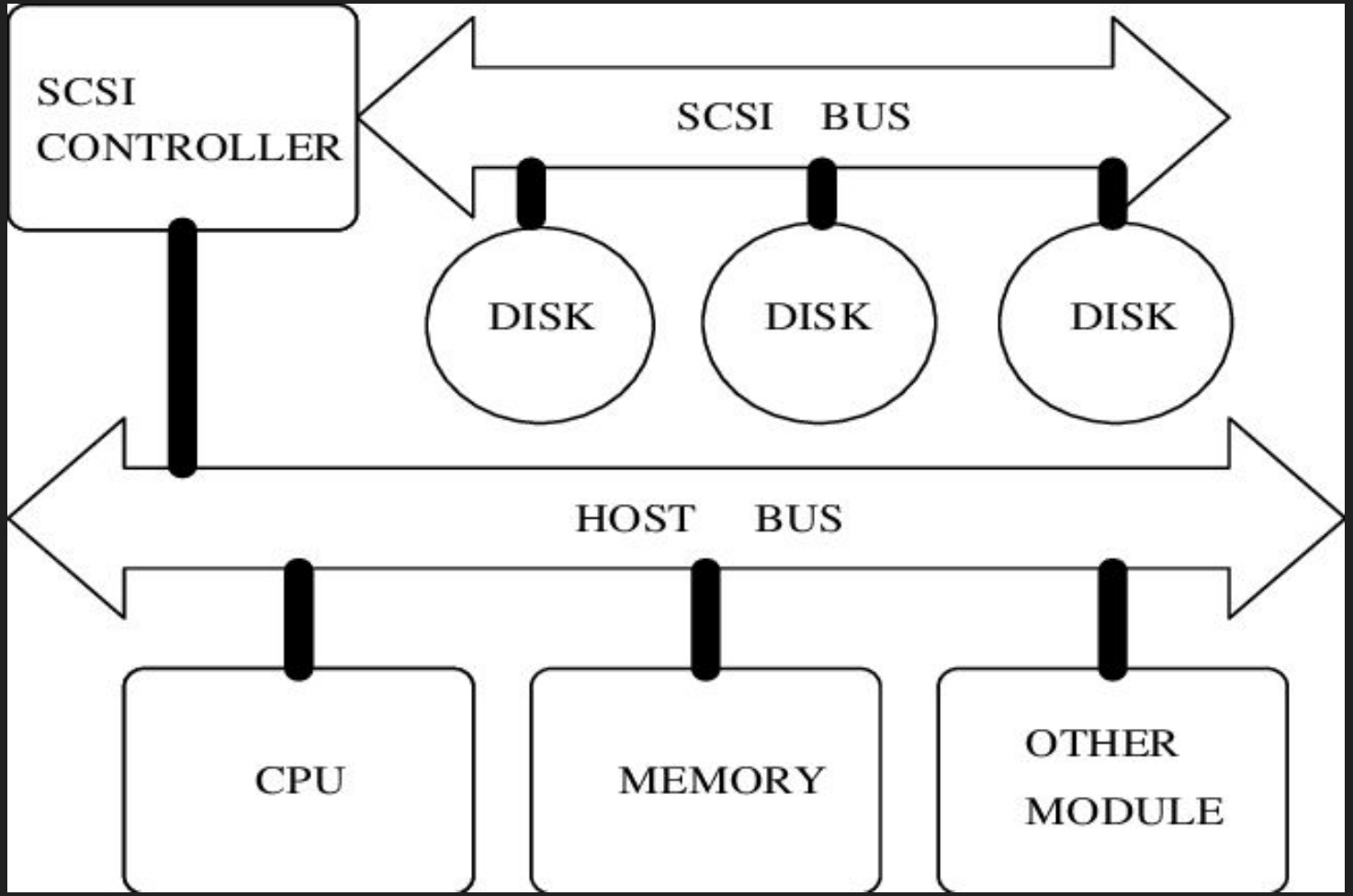
Introduction

- **S**mall **C**omputer **S**ystems **I**nterface.
- Introduced by Shurgard Associates in 1981.
- Originally called **S**hugart **A**ssociates **S**ystems **I**nterface (SASI).
- Set of standards for communication between computers and peripheral devices.

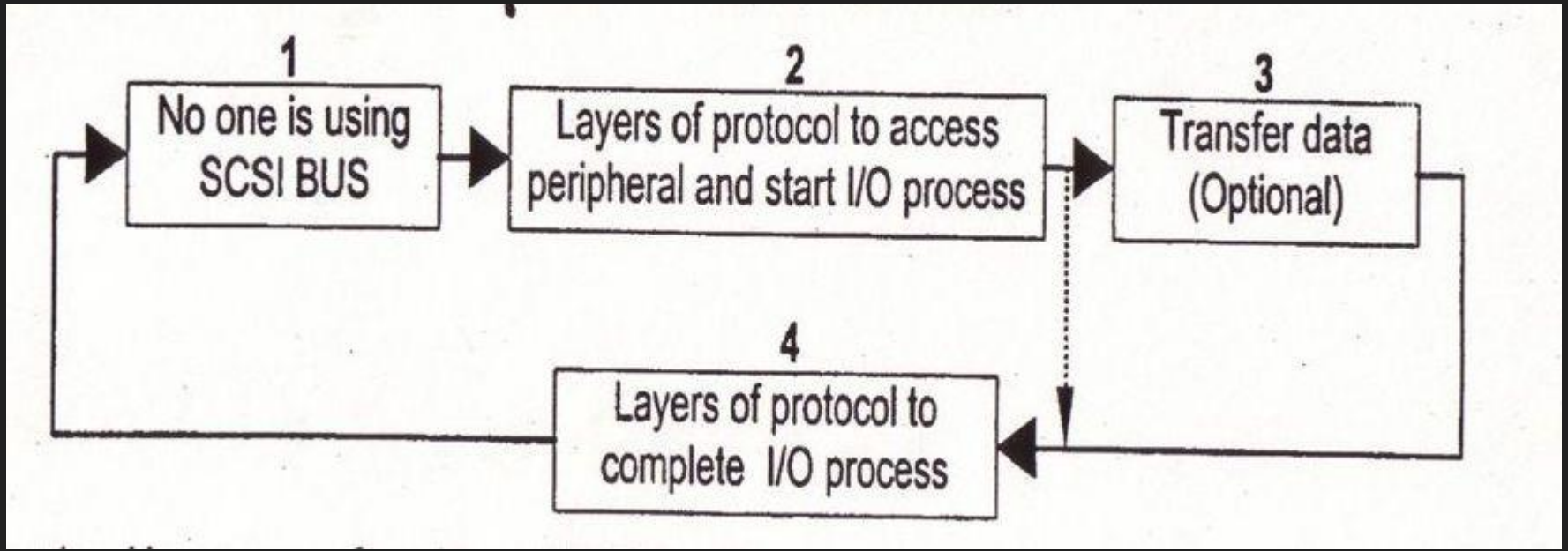
About SCSI

- Standards for physically connecting and transferring data between computers and peripheral devices.
- SCSI ports allow data to be transmitted in a daisy chain.
- Upto 8 - 16 devices can be connected to a single SCSI bus.
- SCSI uses handshaking signal between devices.


SCSI
CONTROLLER
SCSI BUS
DISK
DISK
DISK
HOST BUS
CPU
MEMORY
OTHER
MODULE

Working of SCSI

- SCSI utilizes a protocol method to transfer data between devices on the bus. It is a circular process that start and ends in the same layer.
- From the first layer, additional layers of protocol must be executed before any data is transferred to or from another device.


1
No one is using SCSI BUS
2
Layers of protocol to access peripheral and start I/O process
3
Transfer data (Optional)
4
Layers of protocol to complete I/O process

Working of SCSI

- Layers of protocol must be completed after the data has been transferred to end the process.
- The protocol layers are referred to as “SCSI Bus Phases”

SCSI Bus Phase

The SCSI architecture includes eight distinct phases:

1. Bus Free Phase
2. Arbitration Phase
3. Selection Phase
4. Reselection Phase
5. Command Phase
6. Data Phase
7. Status Phase
8. Message Phase

SCSI Bus Phase

1. Bus Free Phase

   The Bus Free phase indicates that there is no current I/O process and that the SCSI bus is available for a connection.

2. Arbitration Phase

   The Arbitration phase allows one SCSI device to gain control of the SCSI bus so that it can initiate or resume an I/O process.

SCSI Bus Phase

3. Selection Phase

The Selection phase allows an initiator to select a target for the purpose of initiating some target function (e.g., READ or WRITE command). During the Selection phase the I/O signal is negated so that this phase can be distinguished from the Reselection phase.

4. Reselection Phase

Reselection is an optional phase that allows a target to reconnect to an initiator for the purpose of continuing some operation that was previously started by the initiator but was suspended by the target.

SCSI Bus Phase

5. Command Phase

The Command phase allows the target to request command information from the initiator.

6. Data Phase

The Data phase is a term that encompasses both the Data In phase and the Data Out phase.

SCSI Bus Phase

Data In Phase:

The Data In phase allows the target to request that data be sent to the initiator from the target.

Data Out Phase:

The Data Out phase allows the target to request that data be sent from the initiator to the target.

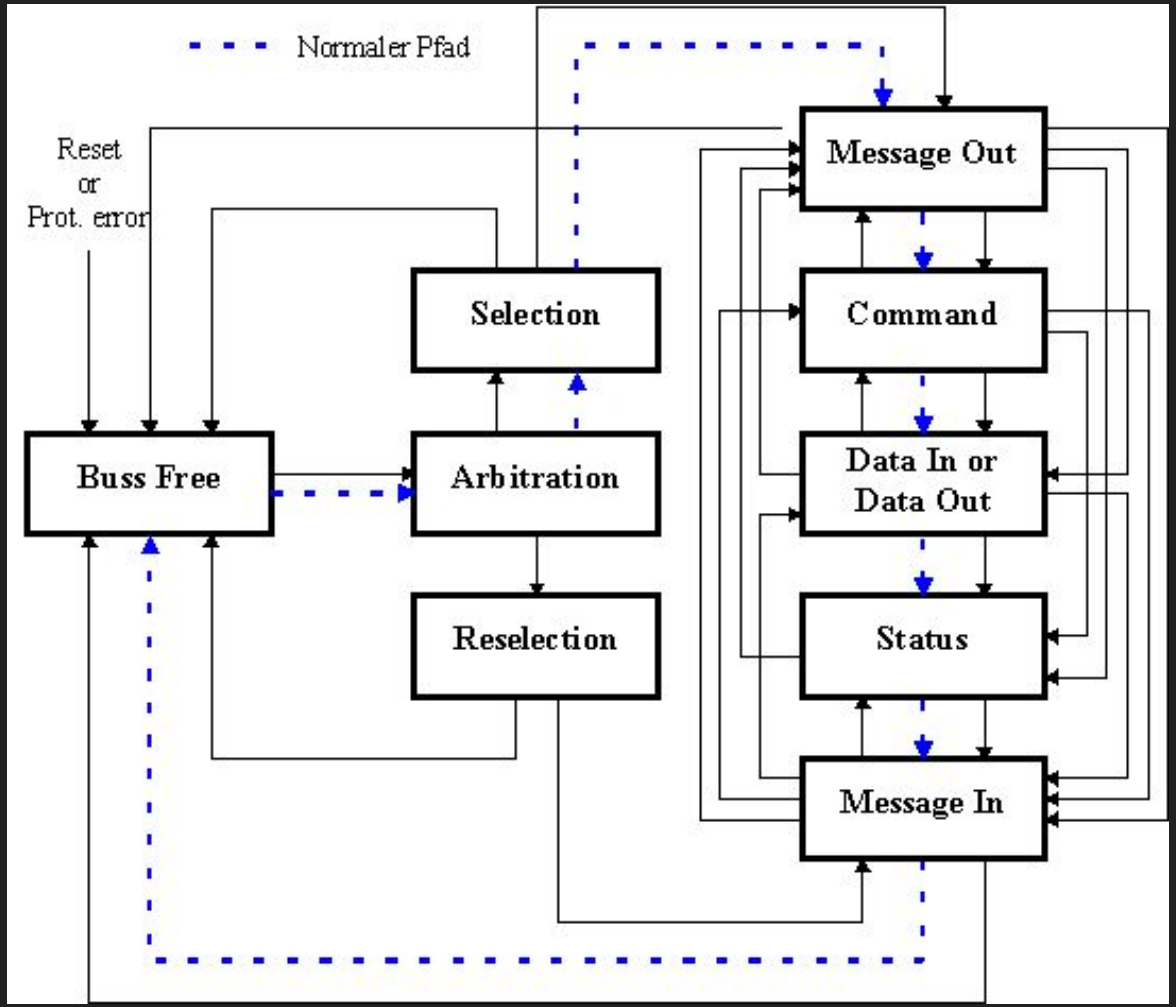
SCSI Bus Phase

7. Status Phase

The Status phase allows the target to request that status information be sent from the target to the initiator.

8. Message Phase

The Message phase allows the target to request message sent from initiator to target (Message Out) and sent to initiator from target (Message In).


Normaler Pfad
Reset
or
Prot. error
Buss Free
Selection
Arbitration
Reselection
Message Out
Command
Data In or
Data Out
Status
Message In

Advantages of SCSI

- The exchange of data in between the devices occurs through only a single cable.
- Since the SCSI are independent devices, they have their own unique controller.
- The device could work with all types of computers uniformly.
- The easy availability of these devices makes it easy to replace the old bulky devices with the new advanced and portable ones

Disadvantages of SCSI

- Compared to the other models, the SCSI drive is very expensive and comes at a high price.
- It is hard to configure the interface perfectly since each device has its own unique identification.