

X3T10 Project 1155D

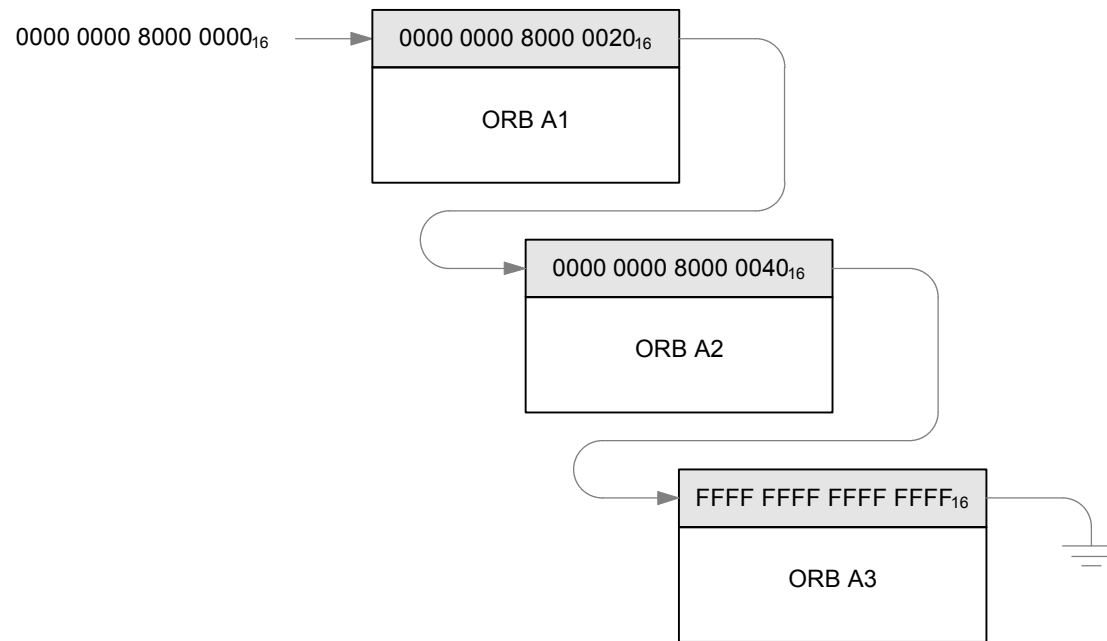
Serial Bus Protocol 2

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What is SBP-2?

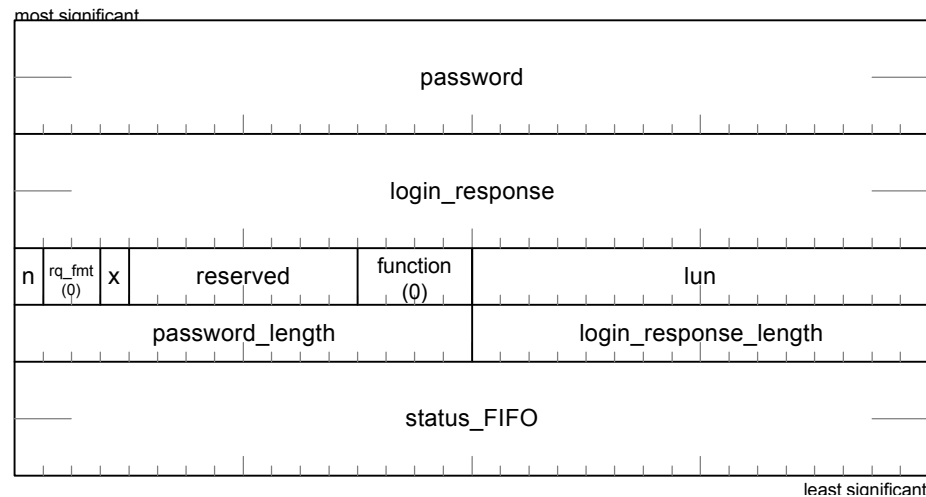
- Transport protocol tailored to 1394
 - Command, data and status
- Simple framework for 1394 systems
 - Initiators (computers, set-top boxes, etc.)
 - Targets (disks, printers, other peripherals)
- Command set neutral
 - ATAPI
 - SCSI
 - Other command sets, such as printers
- Isochronous support designed in from the start

Command delivery



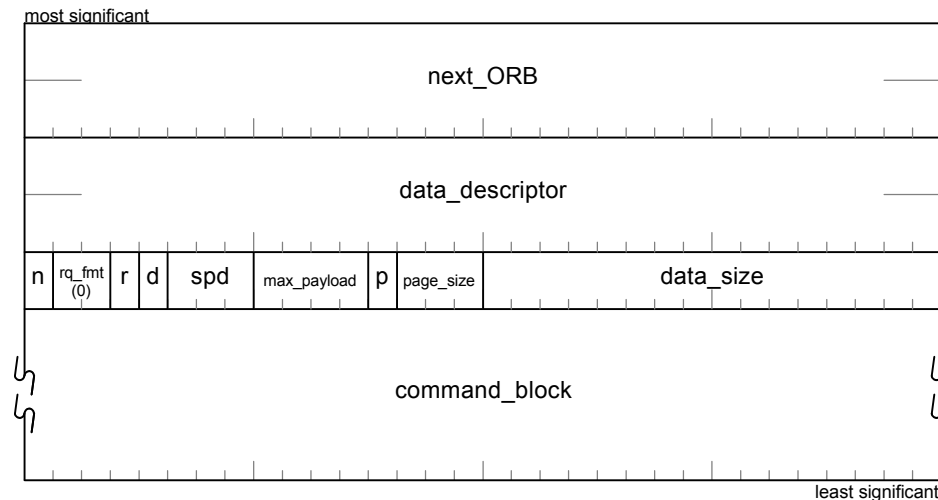
- Initiator rings target DOORBELL
- Target fetches commands at its own pace

Login ORB



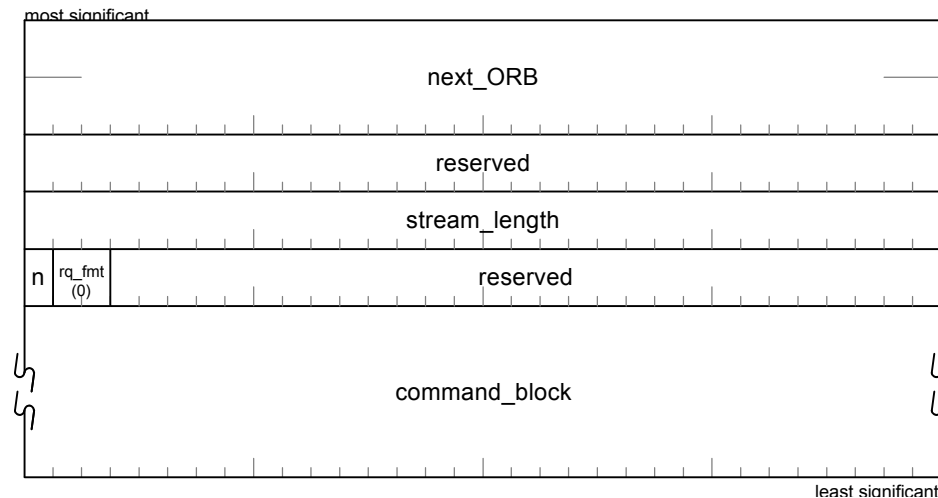
- Used to reserve the printer
- Optional password support
- Priority for existing logins after Serial Bus reset

Normal command block ORB



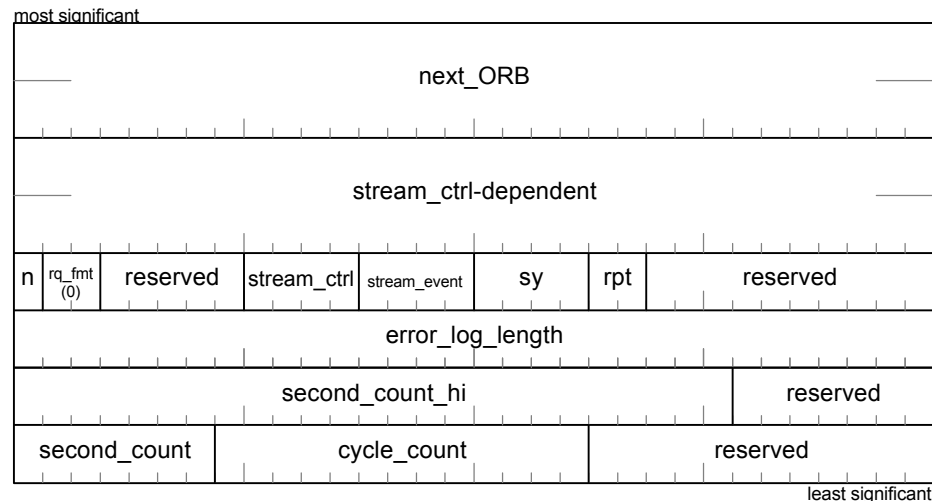
- Used for asynchronous printing modes
- Print data referenced by data descriptor
 - Speed, maximum payload per packet
 - Paged versus nonpaged

Stream command block ORB



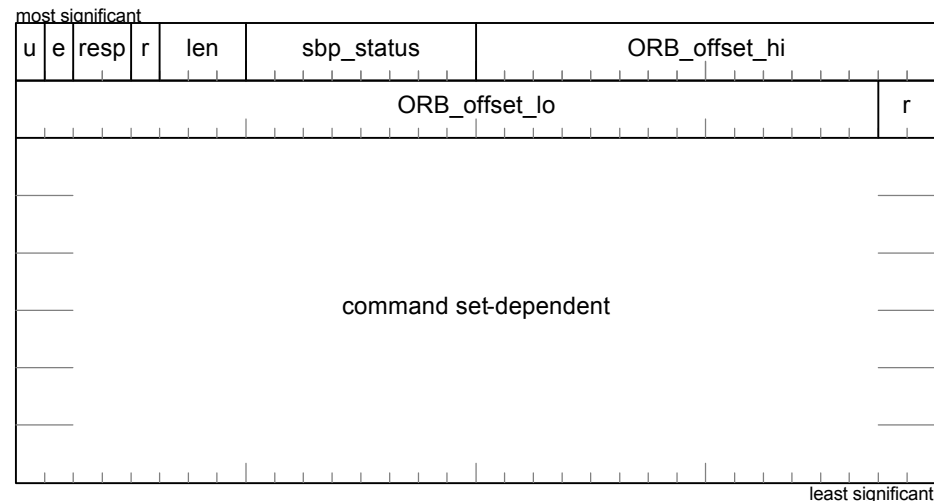
- May use same commands as normal ORB's
- No data buffer—listens to isochronous channel
- Works in conjunction with stream control ORB's

Stream control ORB



- Configure printer for isochronous reception
- Meter isochronous data flow to printer
 - START, STOP or PAUSE functions
 - Synchronize to cycle time or SY value

Completion status (optional)



- Printer writes to initiator's status FIFO
- ORB address used to identify status block
- Unsolicited status for printer state change
 - Initiator handshake to acknowledge status

Is SBP-2 applicable to printers?

- Command packets vs. CSR's
 - Advantages of separate data stream
 - Extensible without hardware changes
- Designed for job management / printer sharing
 - Separate queue for management requests
 - Separate work queues for each initiator
- Immediately usable by SCSI printers
 - SBP-2 originated as a SCSI project
 - 1394 to SCSI bridges demonstrated at Comdex

Why separate commands and data?

■ Asynchronous data

- Printer fetches data at its own pace
- No need to poll printer for RDY indication

■ Isochronous data

- Data source may be “dumb” device that doesn’t know how to talk to a printer
 - Intelligence is in the print controller
- Single frame snapshot(s) from a video stream

■ Flexibility for future applications

Brainstorming

- Can SBP-2 be simplified for low-end printers?
 - No stream control queue—just use PCR's
- What formats will printer data have?
 - Text
 - Rasterized images
 - Raw video, MPEG or others...
- Is one protocol appropriate for all printers?
- Should printer design consider bridges?
- ...

More information

- Draft standard PDF file

- X3T10 FTP site

[ftp.symbios.com:/pub/standards/io/x3t10/drafts/sbp2](ftp://ftp.symbios.com/pub/standards/io/x3t10/drafts/sbp2)

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