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## **Highball: a High Speed, Reserved-Access, Wide Area Network**

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### **Abstract**

This document describes a network architecture called Highball and a preliminary design for a prototype, wide-area data network designed to operate at speeds of 1 Gbps and beyond. It is intended for applications requiring high speed burst transmissions where some latency between requesting a transmission and granting the request can be anticipated and tolerated. Examples include real-time video and disk-disk transfers, national filestore access, remote sensing and similar applications. The network nodes include an intelligent crossbar switch, but have no buffering capabilities; thus, data must be queued at the end nodes. There are no restrictions on the network topology, link speeds or end-end protocols. The end systems, nodes and links can operate at any speed up to the limits imposed by the physical facilities.

This document presents an overview of an initial design approach and is intended as a benchmark upon which a detailed design can be developed. It describes the network architecture and proposed access protocols, as well as functional descriptions of the hardware and software components that could be used in a prototype implementation. It concludes with a discussion of additional issues to be resolved in continuing stages of this project.

Keywords: supercomputer networks, gigabit networks, reservation-TDMA, Highball architecture.

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## Table of Contents

1.	Introduction . . . . .	1
1.1.	Overview . . . . .	2
1.2.	Traffic Models . . . . .	3
1.3.	Design Approach . . . . .	4
2.	Network Architecture . . . . .	6
2.1.	Network Protocols . . . . .	8
2.1.1.	Slotted-ALOHA Mode . . . . .	8
2.1.2.	Fixed-TDMA Mode . . . . .	9
2.1.3.	R-TDMA Mode . . . . .	10
2.2.	Scheduling Algorithms . . . . .	11
2.2.1.	Breadth-First Algorithms . . . . .	12
2.2.2.	Incremental Algorithms . . . . .	12
2.2.3.	Other Algorithms . . . . .	13
2.3.	Burst Formatting and Framing . . . . .	13
2.4.	Scheduling Operations . . . . .	15
2.5.	Node Synchronization . . . . .	16
3.	Hardware Overview . . . . .	17
3.1.	Crossbar Switch, Controller and Interfaces . . . . .	17
3.2.	Data Transceiver and Controller . . . . .	18
3.3.	Master Clock . . . . .	21
3.4.	Node Processor . . . . .	21
3.5.	Link Simulator . . . . .	22
4.	Software Overview . . . . .	23
4.1.	Normal Operation . . . . .	24
4.2.	Link and Node Synchronization . . . . .	24
4.3.	Network Synchronization . . . . .	25
4.4.	Schedule Synchronization . . . . .	26
5.	Scheduling Algorithms . . . . .	27
6.	Simulation . . . . .	28
6.1.	A Special-Purpose Simulator . . . . .	29
6.2.	Preliminary Simulation Results . . . . .	30
7.	Development Beyond the Initial Prototype Network . . . . .	31
7.1.	Getting Fast . . . . .	31
7.2.	Reducing Processing Requirements . . . . .	32
7.3.	Reducing Reservation Delays . . . . .	33
8.	References . . . . .	33

## List of Figures

Figure 1.	NSFNET Backbone Network . . . . .	4
Figure 2.	Reservation TDMA Network . . . . .	6
Figure 3.	Burst Schedules . . . . .	13
Figure 4.	Burst Format . . . . .	14
Figure 5.	Node Controller . . . . .	17
Figure 6.	Switch Controller . . . . .	18

Figure 7. Transceivers and Input/Output Controller . . . . .	19
Figure 8. Master Clock . . . . .	20
Figure 9. Node Processor . . . . .	21
Figure 10. Link Simulator . . . . .	22
Figure 11. Link Simulator Detail . . . . .	22
Figure 12. Software Queues . . . . .	23
Figure 13. Throughput-Delay . . . . .	30

**List of Tables**

Table 1. Scheduling Times . . . . .	28
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