United States District Court,
E.D. Texas, Marshall Division.

NEGOTIATED DATA SOLUTIONS, LLC,
Plaintiff/Counterclaim Defendant.
v.
DELL, INC,
Defendant/Counterclaimant/Third-Party Plaintiff.
v.
National Semiconductor Corporation,
Counterclaim Defendant/Third-Party Defendant.

Case No. 2:06-CV-528-CE

Jan. 16, 2009.

Background: Patent holder filed action against competitor alleging infringement of patents directed toward different aspects of data communications system with capability of transmitting and receiving both isochronous data and nonisochronous, or Ethernet, data. Competitor impleaded original owner and developer of patents. Parties consented to final disposition by magistrate judge. Court set forth to construe disputed claim terms.

Holdings: The District Court, Charles Everingham IV, United States Magistrate Judge, held that:
(1) inclusion of singular example of preferred embodiment link would have been improper;
(2) term, "coupled," meant connected directly or indirectly;
(3) terms, "node," "station," and "data stations," meant electronic device on network;
(4) term, "endpoint," meant device at termination of network link;
(5) introductory phrase, "in general terms," in specification was not meant to confine term to constraints subsequently imposed by remainder of sentence, to exclusion of all other possible variations;
(6) use of phrase, "integrated circuit," in preamble of patent disclosed fundamental characteristic of claimed invention that properly was construed as limitation of claim itself;
(7) phrase, "updatable table," meant table in memory that output data for controlling data transfer of data or data packets and was capable of being updated; and
(8) phrase, "multi-port memory," meant storage device that could perform two or more storage operations simultaneously.

Ordered accordingly.

Court-Filed Expert Resumes

38,820, 39,216, 39,395. Construed.

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MEMORANDUM OPINION AND ORDER

CHARLES EVERINGHAM IV, United States Magistrate Judge.

I. Introduction

Negotiated Data Solutions, LLC ("N-Data") filed its complaint against Dell, Inc. ("Dell") on December 13, 2006, alleging patent infringement. Dell subsequently impleaded the original owner and developer of the patents-in-suit, National Semiconductor ("National"). N-Data accuses Dell of infringing four patents-U.S. Patent Nos. 5,361,261 ("the '261 patent"), RE38,820 ("the ' 820 patent"), RE39,216 ("the '216 patent"), and RE39,395 ("the '395 patent"). Each of the patents was originally developed and owned by National. Some of the National engineers then left to form Vertical Networks ("Vertical"). National initially granted Vertical an exclusive license to the patents; Vertical later exchanged the exclusive license for ownership in half of these patents. Vertical then sold the patents to its patent attorney, who is the owner of the Plaintiff, N-Data.

Three of the patents asserted are reissued patents. The '261, '395, and ' 216 patents share the same priority date, as well as much of the specifications and numerous figures. The '820 patent was filed approximately two years later, but still shares much of the same common language. This opinion resolves the parties' various claim construction disputes. The court will address briefly the technology at issue in the case and then turn to the merits of the claim construction issues.

II. Background of the Technology

The four patents-in-suit relate to different aspects of a data communications system with the capability of transmitting and receiving both isochronous data and nonisochronous, or Ethernet, data. Non-isochronous data is transferred from one network node to another network node via packets. A packet may be constant or variable in size. Each packet includes the data to be transferred and may also include other information, such as housekeeping and address information. Packets in a non-isochronous protocol are generally sent in a non-uniform manner, typically with random variable data rates. A drawback to the use of non-isochronous data is that collisions may often occur between packets during transmission, creating a time-delay. Non-isochronous data is, therefore, useful in applications which are not adversely affected by a delay in time, such as e-mail or web browsing.

In contrast, isochronous data is data which is often non-packetized and of indeterminate, potentially continuous duration. An isochronous data source is a device which outputs data in a continuous stream usually at a substantially constant average data rate. Isochronous data is useful in applications which are adversely affected by a delay in time, such as video conferencing or telephone calls. Because isochronous-source data is typically not packetized, it cannot be accommodated in a packet format without substantially interfering with its isochronous character, often introducing an undesirable amount of delay or jitter. *See* '261 Patent, Background of the Invention.

Previous to the present invention, isochronous data, such as telephone conversations and video teleconferencing, was sent over ISDN, an isochronous capable service, rather than over Ethernet. The patentees thus sought to combine the aspects of isochronous data with Ethernet.

III. Discussion

A. General Principles Governing Claim Construction

[1] [2] "A claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention." Burke, Inc. v. Bruno Indep. Living Aids, Inc., 183 F.3d 1334, 1340 (Fed.Cir.1999). Claim construction is an issue of law for the court to decide. Markman v. Westview Instruments, Inc., 52 F.3d 967, 970-71 (Fed.Cir.1995) (en banc), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996).

[3] [4] [5] [6] To ascertain the meaning of claims, the court looks to three primary sources: the claims, the specification, and the prosecution history. Markman, 52 F.3d at 979. Under the patent law, the specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. A patent's claims must be read in view of the specification, of which they are a part. Id. For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. Id. "One purpose for examining the specification is to determine if the patentee has limited the scope of the claims." Watts v. XL Sys., Inc., 232 F.3d 877, 882 (Fed.Cir.2000).

[7] [8] [9] Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee's claims. Otherwise, there would be no need for claims. SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107, 1121 (Fed.Cir.1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. Intellicall, Inc. v. Phonometrics, 952 F.2d 1384, 1388 (Fed.Cir.1992). And, although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. Electro Med. Sys., S.A. v. Cooper Life Scis., Inc., 34 F.3d 1048, 1054 (Fed.Cir.1994).

[10] This court's claim construction decision must be informed by the Federal Circuit's decision in Phillips v. AWH Corp., 415 F.3d 1303 (Fed.Cir.2005) (en banc). In Phillips, the court set forth several guideposts that courts should follow when construing claims. In particular, the court reiterated that "the *claims* of a patent define the invention to which the patentee is entitled the right to exclude." Id. at 1312 (emphasis added) (quoting Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc., 381 F.3d 1111, 1115 (Fed.Cir.2004)). To that end, the words used in a claim are generally given their ordinary and customary meaning. Id. The ordinary and customary meaning of a claim term "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." Id. at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention. The patent is addressed to and intended to be read by others skilled in the particular art. Id.

[11] The primacy of claim terms notwithstanding, Phillips made clear that "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." Id. Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of "a fully integrated written instrument." Id. at 1315 (quoting Markman, 52 F.3d at 978). Thus, the Phillips court emphasized the specification as being the primary basis for construing the claims. Id. at 1314-17. As the Supreme Court stated long ago, "in case of doubt or ambiguity it is proper in all cases to refer back to the

descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims." Bates v. Coe, 98 U.S. 31, 38, 25 L.Ed. 68 (1878). In addressing the role of the specification, the Phillips court quoted with approval its earlier observations from Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1250 (Fed.Cir.1998):

Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Consequently, Phillips emphasized the important role the specification plays in the claim construction process.

[12] The prosecution history also continues to play an important role in claim interpretation. The prosecution history helps to demonstrate how the inventor and the PTO understood the patent. Phillips, 415 F.3d at 1317. Because the file history, however, "represents an ongoing negotiation between the PTO and the applicant," it may lack the clarity of the specification and thus be less useful in claim construction proceedings. Id. Nevertheless, the prosecution history is intrinsic evidence. That evidence is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims.

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193 (Fed.Cir.2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes. Id. at 1319-24. The approach suggested by Tex. Digital-the assignment of a limited role to the specification-was rejected as inconsistent with decisions holding the specification to be the best guide to the meaning of a disputed term. Id. at 1320-21. According to Phillips, reliance on dictionary definitions at the expense of the specification had the effect of "focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of the claim terms within the context of the patent." Id. at 1321. Phillips emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. Id. What is described in the claims flows from the statutory requirement imposed on the patentee to describe and particularly claim what he or she has invented. Id. The definitions found in dictionaries, however, often flow from the editors' objective of assembling all of the possible definitions for a word. Id. at 1321-22.

Phillips does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. Id. at 1323-25. Rather, Phillips held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant.

[13] [14] These patents include claim limitations that fall within the scope of 35 U.S.C. s. 112 para. 6. Section 112 para. 6 states "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure ... in support thereof, and such claim shall be construed to cover the corresponding structure ... described in the specification and equivalents thereof." 35 U.S.C. s. 112 para. 6 (2008). The first step in construing a means-plus-function limitation is to identify the recited function. *See* Micro Chem., Inc. v. Great Plains Chem. Co., 194 F.3d 1250 1258 (Fed.Cir.1999). Then, the court must identify in the specification the structure corresponding to the recited function. Id. The

"structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." Med. Instrumentation and Diagnostics, Corp. v. Elekta AB, 344 F.3d 1205, 1210 (Fed.Cir.2003) (citing B. Braun v. Abbott Labs., 124 F.3d 1419, 1424 (Fed.Cir.1997)).

[15] [16] The patentee must clearly link or associate structure with the claimed function as part of the quid pro quo for allowing the patentee to express the claim in terms of function pursuant to s. 112 para. 6. *See* id. at 1211; *see also,* Budde v. Harley-Davidson, Inc., 250 F.3d 1369, 1377 (Fed.Cir.2001). The "price that must be paid" for use of means-plus-function claim language is the limitation of the claim to the means specified in the written description and equivalents thereof. *See* O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 1583 (Fed.Cir.1997). The court now turns to a discussion of the disputed claim terms.

B. Specific terms in dispute

The four patents in this case share common technical concepts. Although each patent is unique, many of the claim terms are common to all the patents. For those common terms, all three parties have agreed that the terms should be given the same construction for each patent. The court will address the terms as organized into five sections-one section covering common terms and a section for each patent addressing unique terms.

1. Common Terminology

a. Group A1: Data Link Terms

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
data link('216 patent claims 15 and 97)	"physical data transmission media such as one way twisted pair wires"	"physical data transmission media such as one way twisted pair wires"	plain and ordinary meaning; if the court determines that construction is needed: "data transmission link"
link ('216 patent claims 15, 94, 97)	"physical data transmission media such as one way twisted pair wires"	"physical data transmission media such as one way twisted pair wires"	plain and ordinary meaning; if the court determines that construction is needed: "data transmission link"
communications medium('395 patent claims 1, 3, 7, 14, 100, 131)	"data transmission path between nodes such as one way twisted pair wires"	"physical media"	plain and ordinary meaning; if the court determines that construction is needed: "media for data communications"
physical media(also in '261 patent claim 2)	"data transmission path between nodes such as one way twisted pair wires"	"data transmission path between nodes such as one way twisted pair wires"	plain and ordinary meaning; if the court determines that construction is needed: "media for data transfer"
coupled('216 patent claims 15, 88, 94, 97, 135; '261 patent claims 1, 2; '395 patent claims 1, 100, 112, 125, 131; '820 patent claims 1, 8, 47, 58)	"a direct physical connection"	construction is not necessary for this term	"connected directly or indirectly"
said media ('395 patent claim 14; '261, patent claims 1, 2)	subject to Dell's proposed construction of physical media, construction is not	"communications medium"	refers to "communications medium" in claims 14 & 15

necessary for this term

(1) link, data link, communications medium, physical media

[17] The issue regarding these terms is whether the definition should include the phrase "such as one way twisted pair wires." FN1 Both defendants argue that each of the above terms, with the exception of Dell's proposed construction of "communications medium," require an example as a way of assisting the jury in understanding the meaning and scope of "link" and "data link." N-Data, however, asserts that the inclusion of an example unnecessarily emphasizes one portion of the preferred embodiment link. The court agrees with N-Data. The court is not willing to include a singular example when the specification provides various other examples. For example, the patent also indicates that "[t]he physical medium 46c can be any of a number of media types including twisted pair, coaxial or fiber optic cable." ' 261 Patent, col. 22, ll. 52-54. The court adopts N-Data's proposed construction for each of the above terms.

FN1. Defendants also seek to include "physical" in its proposed construction of "link" and "data link." The court finds no support in the specification for such limitation.

(2) coupled

[18] The issue here is whether "coupled" describes a direct connection, indirect connection, or both. Dell argues that the patents use the term throughout the specification as meaning a "direct physical connection." Contrary to Dell's assertion, claims 14 and 94 of the '216 patent, read together with the specification, suggest that "coupled" can include an indirect connection.

Claims 14 and 94 state the following:

At least a first updatable *switchtable* in said first station for storing information indicating at least the destination of data;

a *microprocessor* operating according to a first clock, *coupled* to said updatable *switchtable,* said updatable *switchtable* operating according to a second clock asynchronously with said first clock;

a *register coupled* to said *microprocessor* for receiving update data from said *microprocessor* during a first time period at a data rate corresponding to said first clock and *coupled* to said first updatable *switchtable* for outputting said update data to said first updatable *switchtable*. '216 Patent, cl. 14 (emphasis added).

Looking to the specification, claims 14 and 94 of the '216 patent appear to be shown in Figure 12. As discussed in the specification, "FIG. 12 depicts another configuration which permits the processor 138a to update the receive and transmit switch tables 140, 162 without such inefficiency." '216 Patent, col. 15, ll. 5-7. The processor is not directly connected to the switchtable. The claims, when read in light of the specification, indicate that "coupled" means more than a "direct physical connection."

As such, the court defines "coupled" to mean the following: **"connected directly or indirectly."**

(3) said media

The court agrees with Dell and holds that this phrase requires no construction.

b. Group A2: Endpoints on the Data Link

Dell's Proposed	**National's Proposed**	**N-Data's Proposed**

Term or Phrase	Construction	Construction	Construction
node('216 patent claims 83, 135; '261 patent claim 13)	"a computer connected to a network"	construction is not necessary for this term	"an electronic device, not limited to a computer"
station('216 patent claims 15, 94, 97; '395 patent claims 1, 14, 100, 107, 109, 112, 130)	"node"	construction is not necessary for this term	"an electronic device, not limited to a computer"
data stations('395 patent claims 1, 100, 107, 109)	"computer connected to a network" see node, station	construction is not necessary for this term	"an electronic device, not limited to a computer"
network **data stations**('395, patent claims 100, 107, 109)	indefinite, but to the extent it can be construed, it should be construed as data station above	subject to National's proposed construction of network, construction is not necessary for this term.	plain and ordinary meaning in light of other construed terms "network" and "data station." If the court determines that construction is needed: "electronic devices, not limited to computers, that are interconnected with other electronic devices for communicating with each other"
endpoint('216 patent claims 15, 97)	"a physical device at the termination of a network link"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "an end of a data link"
hub('216 patent claims 83, 130, 135; '261 patent claim 13)	"physical device containing network interface circuitry that connects multiple nodes over data links"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "circuitry providing a plurality of data connections"
physical layer device('395, patent claim 131, 137)	"devices for transmitting and receiving data over a physical medium"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "a device for transmitting or receiving data over a medium physical layer"
video device('395 patent claim 102)	"device transferring substantially continuous stream of data representing images and associated sounds such as a video camera or a video monitor"	construction is not necessary for this term	plain and ordinary meaning
telephone device('395, patent claims 100, 101)	"device transferring substantially continuous stream of voice data such as a telephone or a fax machine"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "a device for providing telephone call capabilities"
sources and sinks('216 patent claim 94)	construction is not necessary in light of other construed terms "data source" and "data sink"	construction is not necessary for this term	source: "circuitry that generates data" sink: "circuitry that consumes data"

data source('216 patent claims 15, 94, 97; '261 patent claims 1, 2, 13)	"physical device that outputs data"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "circuitry that generates data"
data sink('216 patent, claims 1, 13	"physical device that receives data"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "circuitry that consumes data"

(1) node, station, data stations, network data stations

[19] Dell and N-Data both agree that the terms "node," "station," and "data stations" should be given the same constructions; however, they do not agree on the construction. The issues regarding the above terms are whether they are limited to a computer and, further, whether they are connected to a network. In support of its argument that "node" should not be limited to a computer, N-Data relies on Figure 2, specifically, nodes 1(42a), 2(42b), and 3(42c). N-Data argues that nodes 1, 2, and 3 do not depict a computer. Dell argues that one of ordinary skill in the art would understand that each of the nodes would require a computer. The court is not persuaded that such a limitation is warranted by the intrinsic evidence. First, in describing Ethernet module 48f, the specification states, "sources and sinks *such as* an emulated or virtual key pad 48f provided, *for example,* on a personal computer (PC) terminal." '261 Patent, col. 5, l. 67-col. 6, l. 1 (emphasis added.) The use of phrases like "such as" and "for example" do not indicate a clear intention of the patentee to limit 48f to a computer. Furthermore, nothing in the specifications details a clear intention to limit the use of Ethernet module 48g to a computer. Second, node 1 is a example of a situation in which there is a strictly isochronous source and sink. '261 Patent, col. 6, ll. 1-5. Node 1 depicts 48a (video camera), 48b (monitor), and the accompanying circuitry for receiving data. '261 Patent, col. 5, ll. 56-61. Node 1 does not appear to require the presence of a computer at the node.

Regarding the issue of limiting the terms to a "network," the fact that the patentee limited the term "data station" to a "network data station" in certain claims of the '395 patent establishes the presumption that "data station" should not contain such a limitation. Alternatively, Dell argues that every reference to "node," "station," or "data station" is in the context of a network. Reading the specification as a whole, the patentee describes nodes and data stations on networks. The court therefore agrees with Dell's importation of the "network" limitation. To one of ordinary skill in the art, given the context of the claims and specifications, each of the terms would necessarily suggest an electronic device on a network.

Given the parties' agreement that "node," "station," and "data station" all have the same constructions, the court defines the terms as follows: **"an electronic device on a network."**

"Network data stations" needs no additional construction.

(2) endpoint, hub, physical layer device

[20] [21] [22] N-Data seeks to give these terms their plain and ordinary meaning. Dell seeks to limit "endpoint" and "hub" to a "network" and "physical device," and it seeks to limit "physical layer device" to a "physical medium." The term "endpoint" appears in only the '216 patent and patent application titled "Network Link Endpoint Capability Detection," incorporated into the patent by reference. '216 Patent, col. 9, ll. 7-10; '261 Patent, col. 13, ll. 17-20. For the reasons discussed above, the court adopts "network" as a part of the definition. The intrinsic record, however, does not support Dell's limitation of the terms to require "physical."

As such, the court defines "endpoint" as a **"device at the termination of a network link."**

"Hub" is defined to mean **"circuitry that connects multiple nodes over data links."**

A "physical layer device" is defined as **"a device for transmitting or receiving data over a medium."**

(3) video device, telephone device

These terms do not require construction.

(4) sources and sinks, data source, data sink

[23] [24] National asserts that the above terms need no construction. N-Data proposes a construction for "sources and sinks," but seeks to give "data source" and "data sink" their plain and ordinary meaning. Dell asserts that the term "sources and sinks" does not require construction in light of the other construed terms. The issue regarding "data source" and "data sink" is whether these terms should be limited to a "physical device" as Dell argues.

The court agrees with Dell regarding "sources and sinks." As to the other terms, the court agrees with N-Data's alternative constructions; the term "physical" does not provide clear and unambiguous guidance as to its meaning.

The term "data source" is defined as **"circuitry that generates data."**

The term "data sink" is defined as **"circuitry that consumes data."**

c. Group A3: Communications System

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
data communication system('216 patent claims 15, 94, 97)	"a local area network or wide area network, and in particular a network for transferring isochronous data via an asynchronous access by a processor to a local switch table"	"a local area network or wide area network, and in particular a network for transferring isochronous data via an asynchronous access by a processor to a local switch table."	plain and ordinary meaning; if the court determines that construction is needed: "system for data communications"
data communication network('395 patent claims 1, 14, 100)	"an interconnected set of computers for communicating data with each other, such as a local area network or wide area"	subject to National's proposed construction of network, construction is not necessary for this term.	plain and ordinary meaning; if the court determines that construction is needed: "two or more devices arranged to communicate data with one another"
network('261 patent claim 10; '395 patent claims 1, 14, 100, 107, 109, 112, 130; '820 patent claims 1, 30)	"an interconnected set of computers for communicating with each other, such as a local area network or wide area network"	"an interconnected set of computers for communicating with each other, such as a local area network or wide area network"	"an interconnected set of devices (e.g., hubs, nodes) for communicating with each other"
star-topology network('261 patent claim 13; '395 patent claim 107)	"a number of connected nodes that include data sources that transmit data to	subject to National's proposed construction of network, construction is not	plain and ordinary meaning; if the court determines that construction is needed: "a

	a central hub which then transmits the data to data sinks"	necessary for this term	network configuration with a hub connected to a plurality of nodes"
tree topology network ('395 patent claim 109)	"a network in which there is exactly one path between any two nodes"	subject to National's proposed construction of network, construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "a network configuration with a hub connected to a hub"

(1) data communication system

[25] [26] This term appears in only the preambles of claims 15 and 97 of the '216 patent. N-Data argues that this term should be given its plain and ordinary meaning. Both Dell and National assert that the specification expressly defines the term. The particular section relied on by Dell and National states, "[t]he present invention relates to communications between stations in a data communication system, such as a local area network or wide area network, and in particular to a network for transferring isochronous data via an asynchronous processor to a local switch table." ' 216 Patent, col. 1, ll. 13-17. The court agrees with N-Data. Given the logical reading of the above sentence, it is clear that "a network for transferring isochronous data via an asynchronous processorto a local switch table" refers back to the invention, not the data communications system. Furthermore, "a local area network or wide area network" is preceded by "such as." As discussed above, the court is not willing to limit a term to an exemplary embodiment absent clear language indicative of the patentee's intent to the contrary.

As such, the court defines the term as a **"system for communicating data."**

(2) data communication network, network

[27] Dell and National agree and assert that these terms should be construed to require at least two computers interconnected to exchange information. N-Data argues to the contrary. Again, Dell and National point to Figure 2 of the various patents for support. As discussed above, the court is not persuaded that the network requires two or more computers.

As such, the court defines "network" as follows: **"an interconnected set of devices which communicate with each other."**

The court gives "data communication network" its plain and ordinary meaning in light of the other construed terms.

(3) star-topology network

[28] N-Data and National both agree that the court should give this term its plain and ordinary meaning. N-Data also provides an alternative construction. Dell asserts that the court should construe the term in accordance with the specification. N-Data argues that Dell's definition improperly includes unnecessary configuration and activity requirements. Dell points to a specific paragraph of the specification, which states "[p]referably, the present system is implemented as a *star-topology network* with data sources transmitting to a central hub which, in turn, transmits the data to data sinks. A single node can act as both a source and a sink." ' 261 Patent, col. 4, ll. 10-16 (emphasis added). This cited passage clearly defines what the patentee intended "star-topology network" to require.

As such, the court defines "star-topology network" as follows: **"network configuration with data sources transmitting to a central hub which then transmits the data to data sinks. A node can act as both a**

data source and a data sink."

(4) tree topology network

[29] This term appears in only the presently asserted claims of the ' 395 patent. Similar to "star-topology network," the patentee defined the breadth of the term "tree topology network." The specification states, "[t]he system could also be arranged in a tree structure where one hub 44d is connected to others (44c 44f) as depicted e.g. in FIG 3B." '395 Patent, col. 3, ll. 24-26. The court is unwilling to adopt such strong limiting language asserted by Dell absent sufficient support from the specification.

The court defines "tree topology network" as follows: **"a network configuration with a hub connected to other hubs in a tree-like structure."**

d. Group A4: Packets

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
packet('261 patent claim 1; '820 patent claims 1, 30, 34)	"a collection of information that is bursty in nature and is transmitted as a whole from one node of a network to another, the information including a data field which may be preceded and/or followed by non-data information such as preamble information, housekeeping information and data destination information"	"a collection of information that is bursty in nature and is transmitted as a whole from one node of a network to another, the information including a data field which may be preceded and/or followed by non-data information such as preamble information, housekeeping information and data destination information"	"a collection of information including a data field which may be preceded and/or followed by non-data information such as preamble information, housekeeping information and data destination information"
packet form('261 patent claim 1)	"a collection of information that is bursty in nature and is transmitted as a whole from one node of a network to another, the information including a data field which may be preceded and/or followed by non-data information such as preamble information, housekeeping information and data destination information"	"a collection of information that is bursty in nature and is transmitted as a whole from one node of a network to another, the information including a data field which may be preceded and/or followed by non-data information such as preamble information, housekeeping information and data destination information"	Plain and ordinary meaning in light of other construed term "packet"
first/second plurality of groups of bits('261 patent claims 1, 2)	"the first of two or more 4 bit sequences that make up a packet"	construction is not necessary for this term	plain and ordinary meaning for "first/second plurality of" DEFINE "bits" as "basic unit of information storage"

(1) packet, packet form

[30] All the parties agree as to the general construction of "packet." N-Data disagrees, however, with two

additional limitations asserted by Dell and National. Dell and National both assert that "packet" refers to "information that is bursty in nature." They also assert that such information "is transmitted as a whole from one node of a network to another." Regarding the first issue, Dell and National point to the '261 patent for support, and N-Data points to the '820 patent for support. The '261 patent states, "[o]ne type of non-isochronous data transfer is a packet-type transfer.... As seen in FIG. 1A, because the fields provided for data 14a, 14b are not substantially continuous, the packetized scheme of FIG. 1A is not isochronous but is 'bursty' in nature." '261 Patent, col. 1, ll. 37-53. Thus, according to the '261 patent, "packet" is described as being bursty in nature. In light of the agreement by the parties to define certain terms uniform across each patent, the court must also examine the '820 patent. The '820 patent states, "[s]ome types of information, such as the information in a typical telephone conversation, do not lend themselves to being accumulated over time and then being transmitted as a single large packet.... Frequent transmissions of small packets of information over the network is required. Ethernet is not well suited to this 'nonbursty' type of information transfer." '820 Patent, col. 1, ll. 29-49. Here, it is clear that the '820 patent describes a "packet" as being "non-bursty." As such, the court will not limit a "packet" to being "bursty in nature."

Regarding the second issue, the agreed-to definition sufficiently defines "packet;" there is no reason to limit the term by providing a method of transmission premised solely on an extrinsic source.FN2

FN2. Dell and National rely on a technical dictionary definition of "packet" published seven years after the '261 patent was filed. *See* MICROSOFT COMPUTER DICTIONARY FOURTH EDITION 327 (Christey Bahn, ed., Microsoft Press 1999).

The court thus defines "packet" as follows: **"a collection of information, including a data field which may be preceded and/or followed by non-data information, such as preamble information, housekeeping information and data destination information."**

The court gives "packet form" its plain and ordinary meaning in light of the above construction.

(2) first/second plurality of groups of bits

[31] The issue regarding these phrases is whether they should be limited to "4 bit sequences." N-Data and National both urge that the court should give these phrases their plain and ordinary meaning. N-Data further asserts that, at the most, the court should define "bits." Dell argues that the patent "only discusses groups of bits in the context of transmitting 4-bit 'nibbles' during time slots." Dell's Responsive Claim Construction Brief at 19; *see also* ' 261 Patent, col. 7, ll. 42-61, col. 8, l.64-col. 9, l. 5, Table I (discussing the preferred embodiment). It is improper, however, to limit the phrases to their preferred embodiment absent a clear intention of the patentee to do so. The court agrees with N-Data's proposed construction.

The court defines "bits" as **"basic units of information storage."**

"First/second plurality of groups of" needs no construction.

e. Group A5: Isochronous Data

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
isochronous source('216 patent claims 15, 94, 97)	"device which outputs isochronous data"	"device which outputs isochronous Data"	"a device which outputs in a continuous stream, usually at continuous stream of data representing images and

			associated sounds, and telephone output, which can be a substantially continuous output of voice data (either analog or digitized)"
isochronous data source('216 patent claims 15, 97; '261 patent claim 2)	"device which outputs isochronous data"	"device which outputs isochronous data"	"a device which outputs data in a continuous stream, usually at substantially constant average data rate. Examples include video cameras, which output a substantially continuous stream of data representing images and associated sounds, and telephone output, which can be a substantially continuous output of voice data (either analog or digitized)"
non-isochronous data source('216 patent claims 15, 97)	"device which outputs non-isochronous data"	subject to National's proposed construction of non-isochronous data, construction is not necessary for this term	plain and ordinary meaning in light of other construed terms "isochronous data" and "isochronous data source"
isochronous data source outputting isochronous data ('261 patent, claim 2)	"device outputting isochronous data"	"device outputting isochronous data"	"a device which outputs data in a continuous stream, usually at substantially constant average data rate. Examples include video cameras, which output a substantially continuous stream of data representing images and associated sounds, and telephone output, which can be a substantially continuous output of voice data (either analog or digitized)"
isochronous port('820, patent claims 47, 58)	"isochronous network port"	"isochronous network port"	plain and ordinary meaning in light of other construed terms
isochronous network port('820 patent claim 1)	"a port for a network defined in the IEEE 802.9 specification that combines ISDN and LAN technologies to enable networks to carry multimedia"	"a port for a network defined in the IEEE 802.9 specification that combines ISDN and LAN technologies to enable networks to carry multimedia"	plain and ordinary meaning in light of other construed terms "isochronous data" and "isochronous data source"
isochronous data('216 patent claims 15, 65, 89, 90, 95, 96, 97, 112, 136, 137; '261 patent claim 2,; '395 patent claims 100, 101, 102, 112, 125)	"data which is nonpacketized and of indeterminate, potentially continuous duration, transferred in a continuous stream at a substantially constant average data rate"	"data which is nonpacketized and of indeterminate, potentially continuous duration, transferred in a continuous stream at a substantially constant average data rate"	"data in a continuous stream, usually at substantially constant average data rate. Examples include output from video cameras, which output a substantially continuous stream of data representing images and associated sounds, and

			telephone output, which can be a substantially continuous output of voice data (either analog or digitized)"
non-isochronous data('216 patent claims 65, 89, 90, 95, 96, 97, 112, 136, 137; '395 patent claims 100, 125)	"data that is not transmitted continuously, that is bursty, such as data transferred by packets or in a token ring system"	"data that is not transmitted continuously, that is bursty, such as data transferred by packets or in a token ring system"	plain and ordinary meaning in light of other construed terms "isochronous data"
isochronous('216 patent claims 15, 65, 89, 90, 94, 95, 96, 97, 112, 136, 137; '261 patent claim 2; '395 patent claims 100,101, 102, 112, 125; '820 patent claim 1, 30, 34, 47, 58)	see isochronous data	"having a single time period"	plain and ordinary meaning in light of other construed terms "isochronous data source" and "isochronous data"
non-isochronous('216 patent claims 15, 89, 90, 94, 95, 96, 97, 112, 136, 137; '395 patent claims 100, 125; '820 patent claims 30, 34)	see non-isochronous data	"having more than one time period"	plain and ordinary meaning in light of other construed terms "isochronous data source" and "isochronous data"
isochronously('216 patent claim 94)	"in an isochronous manner"	"having a single time period"	plain and ordinary meaning in light of other construed terms "isochronous data source" and "isochronous data"
non-isochronously('216 patent claim 94)	"in a non-isochronous manner"	"having more than one time period"	plain and ordinary meaning in light of other construed terms "isochronous data source" and "isochronous data"

(1) isochronous source, isochronous data source, non-isochronous data source, isochronous data source outputting isochronous data, isochronous data, non-isochronous data, isochronous, non-isochronous, isochronously, non-isochronously

[32] [33] [34] [35] In proposing constructions for the myriad of isochronous terms, the parties begin from different root terms.FN3 Aside from the varying starting points, however, the fundamental dispute is whether "isochronous" excludes packetized data; indeed, the proposed constructions submitted by the parties are substantially similar after removal of the "non-packetized" limitation. Additionally, the parties agree that the term "isochronous" connotes a time-dependency limitation.

FN3. Dell and National begin with "isochronous data," and N-Data begins with "isochronous data source." Each of the parties asserts that the specification expressly defines their respective terms. *See* '261 Patent, col. 1 ll. 23-27.

[36] In support of their inclusion of the "non-packetized" limitation, Dell and National cite to a specific reference in the specification: "*[i]n general terms,* isochronous data is data which is non-packetized and of indeterminate, potentially continuous duration." Id. (emphasis added). There has been much debate, however, concerning the above-emphasized introductory phrase. The court agrees with N-Data that the introductory phrase, "in general terms," while defining the term in a broad, high-level manner, is not meant to confine the term to the constraints subsequently imposed by the remainder of the sentence, to the

exclusion of all other possible variations.

Additionally, notwithstanding the use of "in general terms," the patents contain a number of examples in which isochronous data can be packetized. One key example appears in Figures 3 and 5 of the '820 patent. Figure 3 displays the schematics of an IsoEthernet network expansion card that can be used for isochronous information transfer. In Figure 3, the IsoPhy (isochronous Ethernet physical layer) separates or combines Ethernet and B channel (isochronous) data. *See* '261 Patent, col. 5 ll. 1-2, ll. 29-32; ' 261 Patent, Table III. Figure 5 illustrates an expanded view of blocks 301 and 302 of the IsoBuffer, block 209. Within block 301, there are three other components pertinent to the term at issue, two HDLC Packet Framers/Deframers and one ATM Packet Framer/Deframer. HDLC (High-level Data Link Control) is an information framing protocol used to frame information for isochronous communication over a standard digital telephone line. '820 Patent, col. 1, ll. 63-67. ATM (Asynchronous Transfer Mode) is an alternative information transferring protocol. '820 Patent, col. 2, ll. 35-37. These two protocols "packetize[ ] or depacketize[ ] information" and are "disposed in the B-channel data path between isoPhy block 206 and ISA bus 201." '820 Patent, col. 5, ll. 41-45; col. 6, ll. 29-30. Whether or not there is a "transmut [ation]," as Dell suggests, from packetized data on one side to non-packetized data on the other, the integration of such protocols within the isochronous data transfer pathway contemplates packetized isochronous data. A construction that excludesan embodiment is rarely correct. *See also* U.S. Patent App. 07/969,916, p. 32 ll. 15-18 (parent application acknowledging that isochronous data could be transferred using a bus, such as the P1394, that transfers isochronous data via packets); '820 Patent, col. 1, ll. 38-48 (explaining that telephone conversations, an example of isochronous data, are transferred via small packets); U.S. Patent No. 4,556,970, U.S. Patent No. 4,674,082, U.S. Patent No. 4,866,704, U.S. Patent No. 5,164,938, and U.S. Patent No. 5,200,952 (prior art references cited by the patent examiner that describe packetized transfer of isochronous data).

Accordingly, the court defines "isochronous data" as follows: **"data of indeterminate, potentially continuous duration."**

The court defines "isochronous data source" as **"a device which outputs data of indeterminate, potentially continuous duration in a continuous stream, usually at a substantially constant average data rate."**

The court defines "isochronous" as **"continuous, with a uniform time period."**

The court defines "isochronous source" as **"a device which outputs in a continuous stream."**

The remaining terms are given their plain and ordinary meaning in light of the previously construed terms.

(2) isochronous port and isochronous network port

These terms are found in the '820 patent. Dell and National give both terms the same construction, limiting the terms to the IsoEthernet standard IEEE 802.9. The specification of the '820 patent fails to mention "isochronous port" and references "isochronous network port" a few times without expressly defining the term. Dell and National argue that the patents' intrinsic evidence and the terms' plain and ordinary meaning do not support a distinction between the two disputed terms. *See* '820 Patent, col. 3, ll. 6-8; col. 3, ll. 59-62; col. 3, l. 64-col. 4 l. 2; cl. 87. N-Data argues that Dell and National are improperly importing a limitation from the specification and, notwithstanding such importation, have also misinterpreted the specification. The court agrees with N-Data; Dell and National's construction improperly limits the terms. The specification explains that the isoENET line ("an isochronous network specified by IEEE 802.9a (herein after referred to as 'isoENET'))" is represented in Figure 3 as a twisted pair of wires 205, entering block 206, the IsoPhy. Id. at col. 5, ll. 27-32. In Figure 3, the specification then shows that the "isochronous network port" is located between the IsoMux 211 and the IsoBuffer 209, a completely different point in the isochronous data path.

Id. at Fig. 5. As such, Dell and National's construction is inconsistent with the specification. Additionally, the court is not persuaded that the terms should be given the same definition. Claim 1 uses the term "isochronous network port," while claim 45 uses the term "isochronous port." Id. at cls. 1, 45. Finally, the only word within these terms that is not construed elsewhere is "port;" Dell and National's construction does not clarify this term. As such, these terms are given their plain and ordinary meaning in light of previous constructions.

f. Group A6: Blending Data from Different Sources

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
time division multiplexed bus('395 patent claim 112)	"a bus wherein data from a data source is put onto discrete time intervals and in order for a destination node to select the signals for receipt from a certain time interval"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "a bus containing data arranged as a repeating series of frames or templates"
time-multiplexed data('216 patent claims 15, 97)	see time-division multiplexing data	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "data that has been processed into a repeating series of frames or templates; whereby some portion of bandwidth are allocated for a particular type of data, e.g. isochronous data"
frame('216 patent claim 15; '261, patent claims 1, 2; '820, claims 30, 34, 49, 50, 61; '821, patent claim 1)	"format for data transmission over physical media"	construction is not necessary for this term	"a structure or template used to provide an allocation of bandwidth"
time frame ('261 patent claim 1)	"fixed period of time for receiving a framed signal on a network"	construction is not necessary for this term	"a structure or template used to provide an allocation of bandwidth"
slots('261 patent claim 1; '820 patent claims 30, 34)	"predetermined equal length subdivision of a frame"	construction is not necessary for this term	"a portion of a frame"
time slot ('261 patent claim 1)	"fixed period of time for receiving a slot signal on a network"	construction is not necessary for this term	"a portion of a frame"
isochronous slot ('820, patent claims 30, 34)	"data from the destination and protocol information on the one slot of each successive frame that is reserved for and carries isochronous data"	subject to National's proposed construction of isochronous, construction is not necessary for this term	"a portion of a frame containing isochronous data"
non-isochronous slot ('820 patent claim 34)	"data from the destination and protocol information of one or more slots of each successive frame that is not reserved for isochronous data"	subject to National's proposed construction of non-isochronous, construction is not necessary for this term	"a portion of a frame containing non-isochronous data"

multiplexer ('216 patent claim 94; '820 patent claims 47, 58)	"circuit capable of interleaving two or more different types of data from two or more inputs for a single output"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "circuitry for processing data into a repeating series of frames or templates"
time-division multiplexing data('216 patent claims 15, 97)	"data in which two or more signals are sent over a common transmission port by breaking the signals into portions and assigning a port sequentially to each signal portion, each assignment being for a discrete time interval" see multiplexer	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "processing data into a repeating series of frames or templates"
circuit switch multiplexer/ demultiplexer ('820 patent claim 1)	"a circuit device capable of switching [changing] the physical path that data is taking over a network and has a multiplexer/demultiplexer for multiplexing [combining two or more different types of data input for transfer over the network as a single output] and demultiplexing [separating two or more different types of data inputs over a network as a single output into the respective types of data] the same network data"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "circuitry for processing data into a repeating series of frames or templates, and/or circuitry for processing a repeating series of frames or templates into data; which may be controlled in part by output of a storage device"

(1) time division multiplexed bus FN4

FN4. N-Data defines all of the "multiplex" terms essentially the same, while Dell provides varying constructions. The court will address the terms as grouped by Dell's varying arguments.

[37] For this first term, N-Data and National assert that the patents offer a straightforward explanation of the term, and, as such, it needs no construction. '395 Patent, col. 3, ll. 2-6. N-Data also provides an alternative definition, should the court determine the term needs construction. Dell seeks to impose a function-of-time and purpose limitation. During the claim construction hearing, N-Data agreed with the court that the patent requires the intervals to be arranged as a function of time. In support of their own incorporation of such a limitation, N-Data pointed to their alternative proposed definition, requiring the data to be "arranged as a repeating series of frames." As explained in the hearing, N-Data's primary concern is that Dell's limitation is "of a fixed nature" that limits the term to the IsoEthernet, which has very specific discreet time frames of a fixed nature.

As a threshold matter, contrary to N-Data and National's argument, these terms should be construed. Even

with contextual clues provided by the specification and explanations provided by the parties, the court believes that the average juror is going to need assistance in giving a meaning to the above terms. Further, while the court agrees with N-Data to the extent that Dell seeks to limit the term to a *discrete* time interval, N-Data's supposed function-of-time support is not adequate. Its alternative construction would not assist the jury in assigning a function of time to such terms. Finally, the court does not find any support for the inclusion of a purpose limitation as Dell suggests; such limitation would be extraneous and improper.

Accordingly, the court defines "time division multiplexed bus" as **"a bus wherein data from a data source is put into time intervals and arranged as a repeating series of frames or templates."**

(2) multiplexer, time-division multiplexing data; time-multiplexed data

[38] [39] [40] N-Data and National argue that these terms should be given their plain and ordinary meaning. N-Data also submits alternative definitions, should the court determine they need construction. Similar to above, the court believes that the jury would find construction of the terms assistive.

The central issue regarding these terms is whether they should be limited, as Dell suggests, to devices capable of receiving at least two inputs. N-Data argues that such limitation excludes a preferred embodiment. N-Data points to Figure 2 of the '216 patent in support of their contention. N-Data argues that a multiplexer can have one input and there is no requirement that each multiplexer have at least two inputs. Specifically, N-Data asserts that "multiplexer," as used in the patents in the context of "time division multiplexing," refers to the time placement of data in frames and not to the selection of inputs. Dell points to extrinsic sources and ordinary usage of the term for their definition of "multiplexer."

The court agrees with N-Data. Figure 2 of the '216 patent discloses two situations in which there is one input. In Node 1, the multiplexer has only one input and one output. Similarly, in the demultiplexing direction, there is one input and one output. Node 3 presents the same situation. Although N-Data's proposed definition may contradict the standard definition of multiplexer, the court must define the disputed term in light of the specification and claim language. Here, the court finds that the patentee disclosed multiplexers having only one input.

Dell proposes the same construction for "time-multiplexed data" and "time-division multiplexing data;" however, it does not provide intrinsic evidence in support of their multiple limitations.

In light of the above discussion, the court defines "multiplexer" as **"circuitry for processing data from one or more inputs into a repeating series of frames or templates."**

The court defines "time-multiplexed data" as **"data that has been processed into a repeating series of frames or templates."**

The court defines "time-division multiplexing data" as **"processing data into a repeating series of frames or templates according to time intervals."**

(3) frame, time frame, slot, time slot, isochronous slot, and non-isochronous slot

[41] [42] [43] [44] [45] [46] These terms relate to aspects of the time-division multiplexed bus. With the exception of National, the parties agree that "frames" are composed of "slots," but disagree as to whether a "slot" is fixed, predetermined, and equal. National asserts that construction is not necessary for these terms. N-Data further proposes the same definition for "frame" and "time frame," as well as "slots" and "time slot." N-Data argues that the patents expressly teach that various frame structures or templates may be used to practice the invention. *See* N-Data's Brief at 12 (citing '261 Patent, col. 9, l. 56-col. 10, l. 1). The '261 patent

explains as follows:

The described frame structure ... provides data rates for the isochronous and non-isochronous data.... Other types of frame structures could be used in connection with other isochronous and/or non-isochronous data sources and sinks such as other types of packet-based systems, ... in which case *a different frame structure or template can be used to provide an allocation of bandwidth suited for the particular purpose*.'261 Patent, col. 9, l. 56-col. 10, l. 1 (emphasis added).

In support of its limitations, Dell cites to a different portion of the specification, in which the patent explains the necessity of "frames" comprised of fixed, predetermined, and equal "slots."

Since *only predetermined positions of the time slots* in each time frame are used for each of the various types of data, it is possible to separate the packet-sourced data from the isochronous-sourced data even though the form of the two types of data, as they travel across the physical medium, appears identical. Id. at col. 4, ll. 4-9 (emphasis added).

Dell contends that in order for a time-division multiplexed system to separate isochronous data from non-isochronous data and utilize its advantageous property of separation based on timing information, the slots of the repeating frames must be fixed, predetermined, and equal. If such is not the case, the system would be required to examine the contents of the data stream, negating any advantages of a time-division multiplexed system over other systems.

The court agrees with Dell. While N-Data's citation seems to support its construction, its reading does not support the purpose of the invention as a whole-the claim language must be read in light of the patent as a whole. Dell's cited specification reference does not imply that a frame structure or template must be flexible, but merely that there can be variable frame structures or templates according to "the particular purpose," so long as each is predetermined, fixed, and equal according to "the particular purpose." Additionally, intrinsic evidence supports giving each term varying constructions. *See* '261 Patent, col. 2, ll. 44-55; col. 7, ll. 52-61; col. 8, l. 64-col. 9, l. 18; col. 15, l. 66-col. 16 l. 2; Table I, Figs. 10A-10B, 11.

As such, the court defines "frame" as **"format for data transmission."**

The court defines "time frame" as **"fixed period of time for receiving a framed signal."**

The court defines "slots" as **"predetermined equal length subdivisions of a frame."**

The court defines "time slot" as **"fixed period of time for receiving a slot signal."**

The court defines "isochronous slot" as **"predetermined equal length subdivision of a frame containing isochronous data."**

The court defines "non-isochronous slot" as **"predetermined equal length subdivision of a frame containing non-isochronous data."**

(4) circuit switch multiplexer/demultiplexer

National and N-Data argue that these terms do not need construction and should be given their plain and ordinary meaning. Dell's proposed construction does not enlighten the jury as to its meaning; Dell uses the terms to be defined, "circuit" and "switch," in its proposed definition. As such, the court gives these terms their plain and ordinary meaning.

g. Group A7: Allocation of Available Bandwidth

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
multiplexer providing a first, dedicated bandwidth('216 patent claim 94)	"the multiplexer reserves the same fixed portion of bandwidth"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "circuitry for processing data into a repeating series of frames or templates; the circuitry multiplexer allocating some portion of bandwidth for a particular type of data, e.g. isochronous data"
periodically repeating frame structure, said frame structure defining at least a first dedicated bandwidth('216 patent claim 15)	"frame structure reoccurs with a fixed frequency that reserves the same fixed portion of bandwidth"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "a repeating series of frames or templates; whereby specifying some portion of bandwidth is allocated for a particular type of data, e.g. isochronous data"
wherein the data transfer rate for said isochronous data is substantially independent of the non-isochronous demand on said data system('216 patent claim 15)	"the speed at which isochronous data is transferred is substantially unrelated to and unaffected by the total amount of non-isochronous data to be transferred on the network"	subject to National's proposed constructions of isochronous data and non-isochronous data, construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "the speed at which isochronous data is transferred is substantially independent of the amount of non-isochronous data on the data communications system"
bandwidth for isochronous data transfers is insensitive to a level of non-isochronous data transfers in the system('216 patent claims 90, 95, 137)	"the speed at which isochronous data is transferred is substantially unrelated to and unaffected by the total amount of non-isochronous data to be transferred on the network"	subject to National's proposed constructions of isochronous data and non-isochronous data, construction is not necessary for this term	plain and ordinary meaning in light of other construed terms "isochronous data" and "non-isochronous data" if the court determines that construction is needed: "the bandwidth available for isochronous data transfers is not sensitive to the number of non-isochronous data transfers on the data communications system"
bandwidth for non-isochronous data transfers is insensitive to a level of isochronous data transfers in the system('216 patent claim 95; '820 patent claim 96)	"the speed at which non-isochronous data is transferred is substantially unrelated to and unaffected by the total amount of isochronous data to be transferred on the network"	subject to National's proposed constructions of isochronous data and non-isochronous data, construction is not necessary for this term	plain and ordinary meaning in light of other construed terms "isochronous data" and "non-isochronous data" if the court determines that construction is needed: "the bandwidth available for non-isochronous data transfers is not sensitive to the number of isochronous data

			transfers on the data communications system"
first bandwidth is allocated for data from the isochronous source('216 patent claim 97)	"the same fixed portion of bandwidth is reserved for isochronous data" see isochronous data	subject to National's proposed construction of isochronous source, construction is not necessary for this term	plain and ordinary meaning in light of other construed terms "isochronous" if the court determines that construction is needed: "some portion of bandwidth is allocated for isochronous data"

National and N-Data argue that these phrases do not need construction and should be given their plain and ordinary meaning. Dell did not address this group of terms in either their responsive brief or claim construction presentation. In light of the previously construed terms, the court determines that construction of these terms is unnecessary.

h. Group A8: Miscellaneous Terms

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
status data('395 patent claim 3)	"one of six status bits related to status of port activity, low power mode, port isochronous capacity, P or physical layer portion interrupt, D channel interrupt, and/or cascade mode"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "data indicating at least a status of port activities, or a status of interrupts of at least one data stations"
high bandwidth bus('395 patent claim 112)	"a bus having a bandwidth capable of transmitting the collective isochronous data streams arriving from all nodes connected to a hub on a network e.g., a time slot interchange, TSI ring"	Construction is not necessary for this term	"a bus having a bandwidth capable of transmitting the collective isochronous data streams arriving from all nodes connected to a hub e.g., a time slot interchange or TSI ring, FDDI-II and P1394"
means for generating at least one predetermined data pattern for transmission onto said communications medium('395 patent claim 7)	Function: "generating at least one predetermined data pattern for transmission onto said communications medium" Structure: "processor writes a combination of two patterns in two dedicated registers 1422a, 1422b in Fig. 14 of the '395 patent"	Function: "generating at least one predetermined data pattern for transmission onto said communications medium" Structure: "Quiet Pattern 1 (Fig. 14, Element 1422a), Quiet Pattern 2 (Fig. 14, Element 1422b)"	Function: "generating at least one predetermined data pattern for transmission onto said communications medium" Structure: "the corresponding structures in the specification include register 1422a or register 1422b in Fig. 14"
register ('216 patent claims 15, 75)	"a dedicated device separate from memory for storing a specific type of data"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "storage device" "available storage"
holding register ('216 patent claim 15)	"register"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "storage

			device"
first-in-first-out buffer ('395 patent claim 100)	subject to Dell's proposed construction of buffer, construction is not necessary for this term	construction is not necessary for this term	"a queue storage location that can receive and hold a plurality of data elements and output them in the order received"
buffer ('261 patent claims 1, 2, 10; '395 patent claim 100; '820 patent claim 51, 58, 62)	"temporary storage device"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "temporary storage circuitry"
integrated circuit('820, patent claims 1, 8, 30)	"interconnected circuit elements disposed on a single substrate"	construction is not necessary for this term	plain and ordinary meaning
disposed on the same integrated circuit('820 patent claim 30)	"both circuits are physically located on the same single substrate"	construction is not necessary for this term	plain and ordinary meaning in light of other construed term "integrated circuit" if the court determines that construction is needed: "located on the same integrated circuit"
memory('216 patent claims 53, 75, 77, 94, 97, 124; '261 patent claim 10; '395 patent claims 1, 14, 100; '820 patent claims 8, 58)	"holding place for data and instructions"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "storage circuitry having a plurality of addressable locations where information is stored"

(1) status data

For this term, N-Data and National argue that it does not need construction. N-Data alternatively proposes a definition taken directly from claims 2 and 3 of the '395 patent. Dell intends to limit the term to one of a listing of six status bits, pointing to two citations in the specification. *See* '395 patent, col. 1, ll. 13-17; col. 7, ll. 7-14. The court agrees with N-Data and National; as such, construction is not necessary in light of the clear language of claims 2 and 3 of the '395 patent.

(2) high bandwidth bus

[47] National asserts that this term does not need construction. N-Data and Dell agree on the general definition, but disagree as to the examples listed. N-Data incorporates all of the Dell examples and adds two additional ones-FDDI-II and P1394. The court agrees with N-Data; if multiple examples are incorporated into a definition, it would be misleading to exclude others when there are only a few that are excluded, as in this case. N-Data references two instances in the intrinsic record in which the patent expressly provides for two additional examples. *See* '395 patent, col. 3, ll. 42-43; U.S. Patent App. No. 07/969,916, col. 32, ll. 15-18.

Accordingly, the court defines "high bandwidth bus" as **"a bus having a bandwidth capable of transmitting the collective isochronous data streams arriving from all nodes connected to a hub, e.g., a time slot interchange, 'TSI' ring, FDDI-II, and P1394."**

(3) means for generating at least one predetermined data pattern for transmission onto said communications medium

[48] All of the parties agree on the function of this means-plus-function element. They agree that the

function is as follows: "generating at least one predetermined data pattern for transmission onto said communications medium." Regarding the structure, all the parties agree that any such structure at least encompasses the 1422a and/or 1422b registers. By its proposed construction, Dell seems to require both 1422a and 1422b. The specification supports N-Data's interpretation, however. *See* '395 patent, col. 14, ll. 28-32 ("[i]f there is no valid B-channel data destined for a physical layer port ... *one of two* 'quiet' or 'idle' patterns is sent to the port instead." (emphasis added)). With a supporting reference, it is clear that the phrase "at least one" requires only one of the two registers. Dell imposes additional limitations by its inclusion of a functional step and the requirement that the registers be "dedicated." The court can find no support for such extraneous limitations.

The court adopts N-Data's proposed construction of "means for generating at least one predetermined data pattern for transmission onto said communications medium."

(4) register and holding register

[49] N-Data and National argue that these terms do not need construction. N-Data also proposes an alternative construction. Dell's construction, however, is consistent with the specification and the ordinary meaning of "register." As such, the court adopts Dell's constructions for these terms. *See* '216 patent, col. 16, ll. 16-21; col. 16, ll. 28-36.

(5) buffer, first-in-first-out buffer

[50] The dispute with regards to these terms is whether "buffer" is a device or circuitry. In light of the intrinsic evidence, the court defines "buffer" as **"temporary storage circuitry."**

The court gives "first-in-first-out buffer" its plain and ordinary meaning in light of the above definition.

(6) integrated circuit, disposed on the same integrated circuit, and memory

[51] [52] National and N-Data argue that these terms need no construction. N-Data again proposes alternative constructions, should the court define them. N-Data's primary argument suggests that, because the term "integrated circuit" appears in the preamble of certain claims, it is not a limitation on the claims and needs no interpretation. Dell argues alternatively, citing to case law and prosecution history.

[53] [54] As the Federal Circuit has stated, "[i]n general, a preamble limits the invention if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed.Cir.2002). Furthermore, "[w]hether to treat a preamble as a limitation is a determination resolved only on review of the entire ... patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim." Poly-America, L.P. v. GSE Lining Tech., Inc., 383 F.3d 1303, 1309 (Fed.Cir.2004). The Federal Circuit, in Catalina, went on to discuss several "guideposts" a court may use in determining whether a preamble acts as a limitation. Specifically, the following facts indicate an intention for the preamble to be limiting: dependence on a preamble phrase for antecedent basis; when the preamble is essential to understanding limitations or terms; when the preamble recites additional structure; and the patentee's clear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art. Catalina Mktg. Int'l, Inc., 289 F.3d at 808. Conversely, a preamble is not limiting if it simply extols benefits or features or describes the use of an invention. Id.

Here, the term appears in the preamble of claims 1 through 44, the original claims of the '820 patent. It does not, however, appear in any of the claims that were subsequently modified and reissued, for example, claim 45. In a reissue application declaration, the inventor stated, "[b]y reason of claiming only claims 1-44, which is less than the full right to claim in the patent, additional claims are added, for example, see claim

45." Dell's Brief Ex. L. In its claims construction presentation, Dell highlights what it views as the key difference between claims 1 and 45: the change from "An integrated circuit" to "apparatus." As N-Data points out, however, there are other meaningful differences. First, the inventor broadens "isochronous network port" in claim 1 to "isochronous port" in claim 45. Second, the inventor broadens "a" in all of the limitations of claim 1 to "one or more" in claim 45. '820 Patent, cls. 1, 45. As discussed previously, the court gives "isochronous network port" and "isochronous port" varying constructions.

Notwithstanding N-Data's argument, the court agrees with Dell's limitation. As used in the preamble, the term "integrated circuit," "discloses a fundamental characteristic of the claimed invention that is properly construed as a limitation of the claim itself." Poly-America, L.P., 383 F.3d at 1310. The term "integrated circuit" is found throughout the specification, and the patentee uses it to describe the preferred embodiment. Furthermore, the patentee uses the term to provide structure, rather than to merely show some intended use or purpose.

Accordingly, the court adopts Dell's construction of the term "integrated circuit" and holds that its use in the preamble is limiting.

In light of the above construction, the court gives the phrase "disposed on the same integrated circuit" its plain and ordinary meaning.

The court gives "memory" its plain and ordinary meaning.

2. Specific Terminology for the '216 Patent

a. Group B1: table for controlling data transfers

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
updatable table('216 patent claims 15, 53, 65, 83, 97, 112, 130, 136)	"a table of data in memory provided in connection with switching or routing of data or data packets and is capable of being modified, i.e., updated"	construction is not necessary for this term	"a table in memory that outputs data for controlling data transfer of data or data packets and is capable of being updated"
switch table('216 patent claim 94)	"a table of data in memory that outputs data for controlling the switching [without routing] of data or data packets and is capable of being updated"	construction is not necessary for this term	"a table in memory that outputs data for controlling the switching of data or data packets"
updatable switch table('216 patent claim 94)	"a table of data in memory that outputs data for controlling the switching [without routing] of data or data packets and is capable of being updated"	construction is not necessary for this term	"a table in memory that outputs data for controlling the switching of data or data packets and is capable of being updated"

(1) updatable table

[55] At issue in the construction of this term is the function of the table. N-Data proposes that the "updatable table" have the function of "controlling data transfer of data or data packets," while Dell

proposes its function as "switching or routing of data or data packets." National asserts that construction is not necessary.

The court agrees with N-Data. The limitation of the term as argued by Dell is not warranted by the specification. The specification indicates that the updatable table, while capable of switching or routing, is also capable of other data transfer operations. *See* '216 Patent, Figs. 13A-13B, Table IV.

The court adopts N-Data's construction of "updatable table."

(2) switch table/updatable switch table

[56] [57] For the reasons discussed above, the court does not believe that the limitations suggested by Dell are warranted by the intrinsic evidence.

As such, the court adopts N-Data's construction of "switch table" and "updatable switch table."

b. Group B2: update data for updating the table

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
update data('216 patent claims 15, 53, 54, 94, 97, 101)	"control words and data words"	"data sent by a microprocessor to an updatable table operating asynchronously with the microprocessor"	plain and ordinary meaning; if the court determines that construction is needed: "data sent to update a table (e.g. updatable table, switch table, routing table, updatable switch table) for controlling data transfer in a system"
control word('216 patent claims 54, 101)	"16 bits indicating a particular updatable table address"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "group of bits indicating control information"
data word('216 patent claims 54, 101)	"16 bits containing all the data to be loaded into the updatable table data locations"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "group of bits containing data information"
destination of data('216 patent claim 94)	"the data sink and station where data is to be transferred"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "destination where the data is to be transferred"
destination data('216 patent claims 15, 97)	see destination of data	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "information about the destination of one or more data transfers"
control data for controlling data transfers	**"information relating to an updatable table data**	**construction is not necessary for this term**	**plain and ordinary meaning; if the court determines that**

in the system	transfer used to indicate the ta		construction is
	Dell's Proposed	**National's Proposed**	**N-Data's Proposed**
Term or Phrase	**Construction**	**Construction**	**Construction**
('216 patent claim 53)	ble and the address so that data can be transferred to and stored in the proper tables and the proper locations within the tables"		needed: "data output from the updatable table to control data transfer in the system"
at a data rate corresponding to said first clock ('216 patent claim 15)	"a fixed data transmission speed based on the first clock"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "at a data rate that is based on the first clock"

(1) update data

[58] N-Data argues that this term should not be construed; instead, N-Data asserts that the claim language clearly defines the term. Similar to previous terms, N-Data proposes an alternative construction. National and Dell each assert additional, varying constructions. By each of their constructions, National and Dell seek to improperly limit the term to an embodiment.

This term does not have an ordinary meaning outside of the '216 patent. As such, the court is required to look to the intrinsic evidence for support to give meaning to the term. The court agrees with N-Data's construction. N-Data's construction is consistent with the use of the term throughout the patent. *See, e.g.,* '216 patent, col. 17, ll. 59-67.

The court defines the term as **"data sent to update a table for controlling data transfer in a system."**

(2) control word/data word; destination of data/destination data; control data for controlling data transfer in the system; at a data rate corresponding to said first clock

In light of the previous constructions and the incorporation of common terms, the court gives the above terms their plain and ordinary meaning. Dell's constructions each propose limiting the terms to specific embodiments within the specification. Such constructions are rarely correct, absent express language to the contrary.

c. Group B3: procedure for updating the table with the update data

	Dell's Proposed	**National's Proposed**	**N-Data's Proposed**
Term or Phrase	**Construction**	**Construction**	**Construction**
Asynchronously('216 patent claims 15, 53, 94, 97)	"not synchronized with the specified clock"	construction is not necessary for this term	"running in accordance with two different clocks, e.g., a 33 MHz clock and a 12.5 MHz clock"
multi-port memory('216 patent claims 77, 124)	"storage device that can perform two or more storage operations simultaneously"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "memory with more than one port to access the memory"

(1) asynchronously

[59] In discussing the term "asynchronously," the patent states "[t]he switch table and the processor are asynchronous in the sense that they run in accordance with two different clocks." '216 Patent, col. 15, ll. 59-63. Although Dell cites to the prosecution history for support for its construction, given the clear discussion of the term in the specification, the court agrees with N-Data's original construction. This construction is in accordance with the specification and claim language.

(2) multi-port memory

[60] The court adopts Dell's proposed construction of "multi-port memory."

3. Specific Terminology for '261 Patent

a. Group C1: predetermined/non-contiguous/contiguous

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
contiguous('261 patent claim 1)	"immediately preceding or following in time or sequence"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "preceding or following in time or sequence"
during a first set of predetermined ones of said time slots, at least some of said first set of predetermined ones of said time slots being non-ontiguous('261 patent claim 1)	"the transmission of the groups of bits is such that it is decided in advance which non-contiguous time slots are to be used to place the first plurality of groups of bits in order that packet sourced data is separated from isochronous data"	construction is not necessary for this term	plain and ordinary meaning in light of the other construed terms "predetermined," "slots," "time slots," and "contiguous"
media access controller('261 patent claims 1, 2)	"device used to transmit and receive data over physical media"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "circuitry that outputs data in a packet form"
predetermined('261 patent claim 2; '395 patent claim 7)	"a determination is made in advance of transmission"	construction is not necessary for this term	"a determination is made in advance of transmission"

(1) contiguous

[61] The crux of the dispute over the construction of this term is whether "immediately" is warranted as a limitation. N-Data argues that the inclusion of "immediately" improperly limits the term and finds no support in either the claims or specification. Dell argues that, without the limitation, there would be no distinguishing characteristics between "contiguous" and "non-contiguous." Both N-Data and Dell point to Figure 11 of the '261 patent for support; indeed, the interpretation of what the patentee intended Figure 11 to represent provides the ultimate enlightenment as to the meaning of the present term.

The court agrees with Dell. As discussed in the claims construction hearing, it is the court's opinion that N-Data's proposed definition does not distinguish between "contiguous" data 458 and "non-contiguous" data 456. The ' 261 patent states as follows:

Referring to Table I, and FIG. 11, after the output of the first 4 bits of Ethernet data 452, there will be a wait of 0.2441 sec (during which, isochronous data 454 will be output). This pattern will be repeated six times 456, after which, there will be a transmission of five nibbles of Ethernet data contiguously 458. Thereafter, there will be another wait of 0.2441 sec 460 and so forth. '261 Patent, col. 7, ll. 54-61.

As the previous passage suggests, there is a distinction between contiguous and non-contiguous data transfer, a distinction not captured in N-Data's proposed construction. Under N-Data's construction, e.g., the data transferred on 450 would be contiguous with the data that is transferred at the first part of 458, something obviously not intended by the specification.

As such, the court defines "contiguous" as **"immediately preceding or following in time and sequence."**

(2) during a first set of predetermined ones of said time slots, at least some of said first set of predetermined ones of said time slots being non-contiguous

N-Data and Dell agree on the construction of "predetermined," and "time slots" and "contiguous" have already been construed by the court. National asserts that construction is not necessary. In light of previous discussions, the court gives the above phrase its plain and ordinary meaning.

(3) media access controller

[62] Claim 1 of the '261 patent states "media access controller which outputs first data in a packet form." N-Data proposes replacing "media access controller" in the above claim language with "circuitry." Dell seeks to import "transmit," "receive," and "physical media." The court finds no support for inclusion of "transmit" and "physical media"; however, the patent specification expressly discusses the ability of a media access controller to "receive" data. *See* '261 patent, col. 3, ll. 10-15 (stating, "[i]n another embodiment, a new media access controller can be provided which receives data ....").

As such, the court defines the term as follows: **"circuitry that outputs and receives data in packet form."**

4. Specific Terminology for the '395 Patent

a. Group D1: "Star" Topology with a Hub and Spokes

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
receive datapath('395 patent claims 1, 14)	"a signal pathway for transferring data from the physical layer interface of the network into the receive memory buffer"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "path of received data"
transmit datapath('395 patent claims 1, 7, 14)	"a signal pathway for transferring data from the transmit memory buffer into the physical layer interface of the network"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "path of transmitted data"
receive memory device('395 patent claim 14)	"a ping-pong buffer within a hub/switch, comprised of two 1536 byte buffers, coupled to the receive	construction is not necessary for this term	"a shared (i.e., single) memory that receives data"

	datapath via a 10 bit parallel isochronous data bus"		
transmit memory device('395 patent claim 14)	"a ping-pong buffer within a hub/switch, comprised of two 1536 byte buffers, coupled to the transmit datapath via a 10 bit parallel isochronous data bus"	construction is not necessary for this term	"a shared (i.e., single) memory that transmits data"
receive memory means('395 patent claims 1, 14, 100)	subject to Dell's proposed construction of receive memory device, construction is not necessary for this term	construction is not necessary for this term	"a shared (i.e., single) memory that receives data"
transmit memory means ('395 patent claim 1)	Function: "transmitting up to 1536 bytes to communications medium over a transmit datapath corresponding to each data station" Structure: "'395 patent at 154 in Fig. 7"	construction is not necessary for this term	"a shared (i.e., single) memory that transmit data"
transmit memory ('395, patent claims 1, 4, 100)	subject to Dell's proposed construction of transmit memory device, construction is not necessary for this term	construction is not necessary for this term	"a shared (i.e., single) memory that transmits data"
receive memory ('395 patent claims 1, 14, 100)	subject to Dell's proposed construction of receive memory device, construction is not necessary for this term.	construction is not necessary for this term	"a shared (i.e., single) memory that receives data"

(1) receive datapath/transmit datapath

[63] [64] Claim 1 recites similar corresponding language for the transmit datapath; this language appears to have been added by the patentee during prosecution of U.S. Patent 5,566,169 ("the '169 patent"; parent of the '395 patent) to clarify how the datapath is coupled to the other elements in the claim. Dell is seeking to limit "communication medium" to "physical layer interface of the network." The court finds inadequate support in the patent to support such a limitation.

As such, the court defines "receive datapath" as **"path of received data."**

The court defines "transmit datapath" as **"path of transmitted data."**

(2) receive memory device/transmit memory device

[65] [66] [67] [68] Dell and N-Data agree that "receive memory device" and "receive memory" should be construed identically. Similarly, the parties agree that "transmit memory device" and "transmit memory" also share a construction. National asserts that the terms need no construction.

Claim 14 of the '395 patent recites "a receive memory device and a transmit memory device." '395 Patent, cl. 14. The claim further recites, "a *plurality of receive datapaths* for providing at least some data received

over said media *to said* receive memory device." Id. (emphasis added). Claim 1 recites similar language. Id. at cl. 1. Looking to the prosecution history of the '169 patent, the patentee argued that the present invention is distinguished from ring-based topologies such as that described in the Hamada reference because, "[i]n the present invention ... the purpose of the receive datapath is to *combine the multiple data lines in order to fill a single buffer*." N-Data's Opening Brief Ex. C at 10. In the Hamada reference, the memory was repeated in each node of the ring, unlike in the present invention. As such, it is clear that the patentee clearly distinguished the present invention over the Hamada reference.

In light of the prosecution history, the court adopts N-Data's proposed construction for "receive memory device," transmit memory device, "transmit memory," and "receive memory."

(3) receive memory means/transmit memory means

[69] The parties dispute whether the court should construe the above terms under 35 U.S.C. s. 112, para. 6 as a means-plus-function term. N-Data argues that the terms should not as there is no function recited. Dell argues in the alternative, pointing to a specific citation in the specification reciting the function of "receive memory means." Both parties cite case law for their respective propositions.

The applicable portion of claim 1 of the '395 patent states as follows:

1. In a data communication network ... which outputs a plurality of control signals, apparatus comprising:

a receive memory means and a transmit memory means;

a receive datapath corresponding ... to said receive memory means; .... (emphasis added)

[70] In determining whether to apply the statutory procedures of section 112, para. 6, the use of the word "means" triggers a presumption that the inventor used this term to invoke the statutory mandates for means-plus-function clauses. 35 U.S.C. s. 112, para. 6; *see* Greenberg v. Ethicon Endo-Surgery, Inc., 91 F.3d 1580, 1584 (Fed.Cir.1996). "Nonetheless, mere incantation of the word 'means' in a clause reciting predominantly structure cannot evoke section 112, para. 6." York Prods., Inc. v. Central Tractor Farm & Family Center, 99 F.3d 1568, 1574 (Fed.Cir.1996).

The first step for the court is to identify the recited function. *See* Micro Chem., Inc. v. Great Plains Chem. Co., 194 F.3d 1250 1258 (Fed.Cir.1999). Here, the claim language does not link the term "means" to a function; in fact the claim language omits "for" and simply ends. Furthermore, the function that Dell cites to is not located in the claim. Without a "means" sufficiently connected to a recited function, the presumption in use of the word "means" does not operate, and the court will not construe the term as a means-plus-function term.

b. Group D2: Controllable/Selective Transmission to the Receive Buffer Selectively transmitting/controllably provides

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
controllably provides the data output by the deserializer to the receive memory('395 patent claim 14)	"transfers data produced by the deserializer to the receive memory [device] in a manner restricted such that it is guaranteed that the write data is stored in the	construction is not necessary for this term	plain and ordinary meaning in light of other construed terms "controllably provides," "deserializer," and "receive memory" if the court determines that construction is

	latch and not overwritten for a minimum of at least 16 clock cycles"		needed: "controllably providing data from each receive data path to the receive memory depending on control signals from the processor"
means for selectively transmitting, in response to one of said plurality of control signals, said data output by said deserializer to said receive memory means; ('395 patent claim 1)	Function: "selectively transmitting, in response to one of said plurality of control signals, said data output by said deserializer to said receive memory means" Structure: "combination of 1314 and 1316 of Fig. 13 of the '395 patent"	Function: "selectively transmitting, in response to one of said plurality of control signals, said data output by said deserializer to said receive memory means" Structure: "RX-Latch1-16 (Fig. 13, Element 1314)"	Function: "selectively transmitting, in response to one of said plurality of control signals, said data output by said deserializer to said receive memory means" Structure: "latch 1314 and/or tri-state structure 1316 in Fig. 13"
latch ('395 patent claim 14)	"a dedicated circuit (different from a FIFO) for temporary storage wherein the inputs and outputs (both of which can be 0 or 1) are controlled by a timing signal and the outputs retain their value until the timing signal is modified"	construction is not necessary for this term	"an electronic circuit used to store information"

(1) controllably provides said data by said desearializer to said receive memory device

For construction of this phrase, Dell is seeking to import limitations from the specification. N-Data and National assert that it needs no construction. As for many of the terms already discussed, the claim language adequately provides guidance as to the meaning of the above phrase.

As such, the court declines to construe the phrase "controllably provides said data by said deserializer to said receive memory device." The court rejects, however, Dell's asserted limitations.

(2) means for selectively transmitting

[71] For this phrase, the parties agree that the court should construe it under 35 U.S.C. s. 112, para. 6. The claim language at issue states, "means for selectively transmitting, in response to one of said plurality of control signals, said data output by said deserializer to said receive memory means [.]" '395 Patent, cl. 1. Both parties agree as to its function but disagree as to its structure. N-Data asserts that latch 1314 and/or tristate buffer 1316 is the structure necessary to perform the recited function, while Dell asserts that the structure is a combination of latch 1314 and tristate buffer 1316.

[72] [73] Dell points to Figure 13 for support of its dual structure. Figure 13 clearly indicates, as Dell suggests, that data flows through the deserializer 1312, through the latch 1314, and then through the tristate buffer 1316, to the receive memory means. In construing means-plus-function terms, however, the court is instructed that the corresponding structure includes only that which is "necessary to perform the claim function." Micro Chem., Inc., 194 F.3d at 1258. The analysis in Micro Chemical only supports N-Data to the extent that "[a] means-plus-function claim encompasses all structure in the specification corresponding to that element and equivalent structures." Id. at 1258. In Micro Chemical, the Federal Circuit pointed to a number of alternative embodiments disclosed in the patent for support of its broadened construction. To the contrary, in this case, there is no reference in the '395 patent that indicates that "selectively transmitting" can

be done with either the latch 1314 or the tristate buffer 1316 alone. The specification makes clear that "tri-state 1316 provides the function of all sixteen ports being able to write to the RX buffer one at a time." '395 Patent, col. 14, ll. 1-2. While the court must walk a fine line in limiting terms, the court agrees with Dell's argument in the present instance that the function of "selectively transmitting" must be performed by both the latch 1314 and the tristate buffer 1316. The claims and specifications, when read as a whole, provide support for Dell's construction.

As such, the court adopts Dell's construction.

(3) latch

[74] The court agrees with N-Data's construction of the term "latch." The court cannot find any support for the limitations imposed by Dell. Furthermore, the specification indicates that the patentee uses "buffer" and "latch" interchangeably in certain instances. Such use confirms the court's decision not to limit the term as Dell suggests.

5. Specific Terminology for '820 Patent

a. Group E1

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
framing information('820, patent claims 30, 34)	"packetizes data with destination and protocol information for transmission of data from one network node to another"	construction is not necessary for this term	"packaging information"
framing network information	"packetizes data with destination and protocol information for transmission of data from one network node to another"	subject to National's proposed construction of network, construction is not necessary for this term	"packaging information for transfer over a network"
deframing information('820 patent claim 30)	"unpacketizes data from destination and protocol information upon receiving data from a network node"	construction is not necessary for this term	"depackaging information"
framed information('820 patent claim 34)	see framing network information	construction is not necessary for this term	"packaged information"
protocol('820, patent claims 1, 30, 34, 47, 48, 49, 50, 51, 58, 59, 61, 62)	"a formal set of conventions governing the format and relative timing of message exchange between two nodes"	"a formal set of conventions governing the format and relative timing of message exchange between two communications terminals"	plain and ordinary meaning; if the court determines that construction is needed: "a formal set of conventions governing the format of message exchange between two communications circuits"
first protocol packet framer circuit('820 patent claim 34)	"a single circuit that only frames (packetizes data with destination and protocol information for transmission of data from one network node to another) network	subject to National's proposed constructions of protocol and packet, construction is not necessary for this term	"circuitry that packages data in a packet by including overhead data to process/route the data according to a first protocol"

	data for transmitting data between nodes over the network according to a specific protocol (set of rules for transmitting and receiving packets of network data between nodes)"		
second protocol packet framer circuit('820 patent claim 34)	"a single circuit that only frames (packetizes data with destination and protocol information for transmission of data from one network node to another) network data for transmitting data between nodes over the network according to a specific protocol that is different than the protocol used by the first protocol packet deframer circuit"	subject to National's proposed constructions of protocol and packet, construction is not necessary for this term	"circuitry that packages data in a packet by including overhead data to process/route the data according to a second protocol"
a second protocol packet deframer circuit('820 patent claim 30)	"a single circuit that only deframes [unpacketizes data from destination and protocol information] network data upon receiving data from a network node according to a specific protocol that is different than the protocol used by the first protocol packet deframer circuit"	subject to National's proposed constructions of protocol and packet, construction is not necessary for this term	"circuitry that depackages data that has been packaged into a packet according to a second protocol"
a first protocol packet framer/deframer circuit('820 patent claim 1)	"a single circuit that both frames [packetizes data with destination and protocol information for transmission of data from one network node to another] and deframes [unpacketizes data from destination and protocol information] network data for transmitting and receiving data between nodes over the network according to a specific protocol [set of rules for governing the format of data transfer]"	subject to National's proposed constructions of protocol and packet, construction is not necessary for this term	"circuitry that packages data in a packet by including overhead data to process/route the data according to a first protocol (framer) or depackages data that has been packaged into a packet according to the first protocol (deframer)"
a second protocol packet framer/deframer circuit('820 patent claim 1)	"a single circuit (different than the first) that both frames and deframes network data for	subject to National's proposed constructions of protocol and packet, construction is not necessary	"circuitry that packages data in a packet by including overhead data to process/route the data according to a second protocol

	transmitting and receiving data between nodes over the network according to a specific protocol that is different than the protocol used by the first protocol packet framer/deframer circuit"	for this term	(framer) or depackages data that has been packaged into a packet according to the second protocol (deframer)"
first protocol circuit('820, patent claims 47, 48, 49, 50, 51, 58, 59, 61, 62)	"a first protocol packet framer/deframer circuit"	subject to National's proposed construction of protocol, construction is not necessary for this term	"circuitry that packages data according to a first protocol"
second protocol circuit('820, patent claim 47, 58)	"a second protocol packet framer/deframer circuit"	subject to National's proposed construction of protocol, construction is not necessary for this term	"circuitry that packages data according to a second protocol"
deframing information of an isochronous slot('820 patent claim 30)	"unpacketizing data from the destination and protocol information on another slot on another frame wherein the slot is different from that described "as an isochronous slot" and is reserved for and carries a small amount of "nonbursty" [isochronous] information"	"subject to National's proposed construction of isochronous, construction is not necessary for this term"	plain and ordinary meaning in light of other construed terms "deframing information," "isochronous data," "isochronous data source," and "slot" if the court determines that construction is needed: "depackaging information of an isochronous portion of a frame"
deframing information of another isochronous slot ('820 patent claim 30)	"unpacketizing data from the destination and protocol information on another slot on another frame wherein the slot is different from that described "as an isochronous slot" and is reserved for and carries a small amount of "nonbursty" [isochronous] information"	subject to National's proposed construction of isochronous, construction is not necessary for this term	plain and ordinary meaning in light of other construed terms "deframing information," "isochronous," "slot," "deframing information of an isochronous slot" if the court determines that construction is needed: "depackaging information of another isochronous portion of a frame"

(1) framing information, framing network information, deframing information, and framed information

[75] [76] [77] [78] For these terms, N-Data proposes a construction which generally equate "framing" with "packaging." Dell gives "framing information" and "framing network information" the same construction and seeks to limit the terms to "packetize[ing] data with destination and protocol information for transmission of data from one network node to another." In construing the terms together, Dell argues that claim 30 provides an antecedent basis for claim 34.

The court agrees with N-Data's argument. The '820 patent includes numerous examples in which the patentee equates "framing" with "packaging." *See* '820 Patent, col. 2, ll. 31-37; col. 3, ll. 8-16; col. 6, ll. 15-20. Furthermore, the court is not persuaded that "framing information" and "framing network information" should be given the same construction.

As such, the court adopts N-Data's proposed constructions of the above terms.

(2) protocol

[79] The two remaining issues related to the construction of this term are (1) whether "protocol" should require "relative timing" as a part of the formal set of conventions, and (2) whether the message exchange controlled by a protocol is between "nodes" or "communications circuits."

Dell and National's imposition of "relative timing" into the definition overlooks the context in which the term is used within the patent. The term "protocol" is used to describe the format by which packets are framed/deframed in both the claims and specification. Nowhere in the patent is there a discussion of the "relative timing" requirements between the communications terminals.

In light of the previous construction of "node," the court adopts N-Data's proposed construction.

(3) first/second protocol packet framer circuit, a first/second protocol packet deframer circuit, and a first/second protocol packet framer/deframer circuit

[80] [81] In light of the already construed terms "protocol," "framing information," and "packet," the court defines the above phrases as follows:

The court defines "first protocol packet framer circuit" as **"circuitry that packages information in a packet according to a first protocol"** and "second protocol packet framer circuit" as **"circuitry that packages information in a packet according to a second protocol."**

[82] [83] The court defines "a first protocol packet deframer circuit" as **"circuitry that depackages information that has been packaged as a packet according to a first protocol"** and "a second protocol packet deframer circuit" as **"circuitry that depackages information that has been packaged as a packet according to a second protocol."**

Regarding the final phrase, the specification clearly suggests that the use of the slash in "framer/deframer" is meant to mean "or." The specification states, "[a]lthough a 'framer/deframer' circuit does not really 'frame' or 'deframe' information but rather 'packetizes' or 'depacketizes' information...." '820 Patent, col. 6, ll. 28-30.

Accordingly, in light of the above constructions, the court defines the phrases as follows:

[84] The court construes "a first protocol packet framer/deframer circuit" as **"circuitry that packages information in a packet according to a first protocol (framer) or depackages information that has been packaged as a packet according to a first protocol (deframer)."**

[85] The court construes "a second protocol packet framer/deframer circuit" as **"circuitry that packages information in a packet according to a second protocol (framer) or depackages information that has been packaged as a packet according to a second protocol (deframer)."**

(4) first protocol circuit and second protocol circuit

[86] [87] For these terms, Dell seeks to import the phrase "framer/deframer" into its construction. Although the patent specification may not expressly discuss the above terms, it does contemplate "unframed data" and "nonframed data" in the context of "protocol circuits," contrary to Dell's suggestion. *See* '820 Patent, col. 7, l. 57-col. 8, l. 5; cl. 51.

As such, the court adopts N-Data's construction.

(5) deframing information of an isochronous slot and deframing information of another isochronous slot

The court gives the above phrase its plain and ordinary meaning in light of previously construed terms.

b. Group E2: Management of Data Transfers

Term or Phrase	Dell's Proposed Construction	National's Proposed Construction	N-Data's Proposed Construction
manage('820 patent claim 48)	see manages raw data	construction is not necessary for this term	"keep track of and use information necessary to transfer data"
manages raw data('820, patent claims 48, 59)	"directs unframed data within the protocol circuit (framer/deframer circuit)"	Construction is not necessary for this term	plain and ordinary meaning in light of other construed terms "manage" and "raw data" if the court determines that construction is needed: "keeps track of and uses information necessary to transfer unframed data"
manages nondeframed data('820, patent claims 50, 61)	"directs framed data within the protocol circuit (framer/deframer circuit)"	construction is not necessary for this term	plain and ordinary meaning in light of other construed terms "manage" and "nondeframed data" if the court determines that construction is needed: "keeps track of and uses information necessary to transfer data that has been packaged, but not depackaged"
manages unframed data('820 patent claim 49)	"directs unframed data within the protocol circuit (framer/deframer circuit)"	construction is not necessary for this term	"keeps track of and uses information necessary to transfer unpackaged data"
constant bit rate buffer circuit('820, patent claim 51, 62)	"circuit used to monitor and control transmission and receipt of raw unframed or nondeframed streams of data"	construction is not necessary for this term	"circuitry used to maintain a substantially constant bit rate during transfers, such as by tracking stream transfer information rather than only by tracking the beginning and ending of packets"
buffer memory('820 patent claim 58)	"buffer"	construction is not necessary for this term	plain and ordinary meaning; if the court determines that construction is needed: "temporary storage memory"

(1) manage, manages raw data, manages non-deframed data, and manages unframed data

[88] [89] [90] The parties agree on the definition of "raw data" as "unframed data." Accordingly, the only terms necessitating construction are "manage" and "non-deframed." N-Data's construction comes directly from the specification. *See* '820 Patent, col. 7, ll. 57-63. Dell cites to an extrinsic source for its definition. There is no intrinsic support for Dell's definition.

As such, the court adopts N-Data's proposed construction for "manage."

Accordingly, the court adopts N-Data's proposed construction for "manages raw data."

Regarding the remaining terms, as indicated above, the patents are replete with suggestions that "framing" is akin to "packaging." *See, e.g.,* '820 Patent, col. 2, ll. 31-37; col. 3, ll. 8-16; col. 6, ll. 15-20. Additionally, "non deframed" is logically the same as "framed data."

For these reasons, the court defines "manages non deframed data" as follows: **"keeps track of and uses information necessary to transfer data that has been packaged."**

The court adopts N-Data's construction of "manages unframed data."

IV. Conclusion

The court adopts the above definitions for those terms in need of construction. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the court.

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