IN THE UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

WIAV NETWORKS, LLC,

Plaintiff,

v.

HEWLETT-PACKARD CO.,

Defendant.
_____/

No. C 10-03448 WHA

TENTATIVE CLAIM-CONSTRUCTION ORDER AND REQUEST FOR CRITIQUE

INTRODUCTION

In this patent infringement action involving communication-network technology, the parties seek construction of six terms and phrases found in the two asserted patents. Those terms and phrases are construed below. Each party has until **NOON ON JUNE 9, 2011**, to submit a five-page critique (double-spaced, twelve-point Times New Roman font, with no footnotes and no attachments) limited to points of critical concern. This is an opportunity for the parties to focus solely on their most cogent critiques, not to rehash every point made in the briefs and at the hearing. Any critiques must be limited to the claim-construction record and may not introduce new evidence.

STATEMENT

The technology at issue relates to communication networks. A communication network is a collection of devices interconnected by direct communication links between pairs of devices. Communication networks were known in the prior art. The asserted patents purport to disclose

improvements over the known prior art of networking. Specifically, the claimed inventions are directed at expanding the capabilities of communication networks and improving their performance. The accused products are portable computers with wireless networking capabilities; these products allegedly implement the claimed networking improvements.

Two patents are asserted in the second amended complaint (Dkt. No. 637). Two claims from United States patent No. 5,400,338 and five claims from United States patent No. 6,480,497 are at issue. The parties seek construction of six terms and phrases appearing in these patents. Overviews of the patents, the disputed phrases, and the associated claims are covered in detail in the analysis below.

ANALYSIS

Courts must determine the meaning of disputed claim terms from the perspective of one of ordinary skill in the pertinent art at the time the patent was filed. *Chamberlain Group, Inc. v. Lear Corp.*, 516 F.3d 1331, 1335 (Fed. Cir. 2008). While claim terms "are generally given their ordinary and customary meaning," the "claims themselves provide substantial guidance as to the meaning of particular claim terms." Additionally, a patent's specification "is always highly relevant to the claim construction analysis." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–15 (Fed. Cir. 2005) (en banc) (internal quotations omitted). Finally, courts also should consider the patent's prosecution history, which "can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." These components of the intrinsic record are the primary resources in properly construing claim terms. Courts have discretion to consider extrinsic evidence, including dictionaries, scientific treatises, and testimony from experts and inventors, but such evidence is "less significant than the intrinsic record in determining the legally operative meaning of claim language." *Phillips*, 415 F.3d at 1317–18 (internal quotations omitted).

While this order acknowledges that the parties have a right to the construction of all disputed terms needing elaboration by the time the jury instructions are settled, the Court will reserve the authority, on its own motion, to modify the constructions in this order if further

evidence — intrinsic or extrinsic — warrants such a modification. Given that claim construction is not a purely legal matter, but is (as the Supreme Court describes it) a "mongrel practice" with "evidentiary underpinnings," it is entirely appropriate for the Court to adjust its construction of claims prior to trial if the evidence compels an alternative construction. *Markman*, 517 U.S. at 378, 390. Motions for reconsideration, however, may be made only in strict accordance with the rules of procedure, if at all.

1. THE '338 PATENT.

The '338 patent, entitled "Parasitic Adoption of Coordinate-Based Addressing by Roaming Node," was issued on March 21, 1995. Metricom, Inc. was the assignee of the '338 patent at the time of issue. WiAV states that it is now the owner of this patent (Sec. Amd. Compl. ¶ 15). Two claims from the '338 patent are asserted in this litigation: independent claim 1, and dependent claim 2. Five of the six terms and phrases construed by this order are found in the '338 patent. They are italicized in the claim language below.

Claim 1 covers the following method (col. 6:39–59):

> 1. In a *packet* communication network with a plurality of *stationary nodes*, a method by which a roaming node may establish a communication link with said network comprising the steps of:
>
> transmitting a *link acquisition packet* to one or more of said *stationary nodes*;
>
> receiving a response *packet* from each of said *stationary nodes* that successfully receives said *link acquisition packet*;
>
> determining from data in said received response *packets* the one of said *stationary nodes* that provides the best communication link;
>
> selecting the one of said *stationary nodes* that provides the best communication link by transmitting to said selected *stationary node* a *packet* informing said selected *stationary node* that said selected *stationary node* is a *current parent node* for said roaming node; and
>
> transmitting data *packets* to nodes in the network using an identifier of said parent node as part of the *return identifier for said roaming node*.

Dependent claim 2 covers the following additional method (cols. 6:60–7:17):

> 2. The method according to claim 1, further permitting said roaming node to change its network communication link to a new parent node in response to changed conditions and further including the steps of:
>
> monitoring each received data *packet* from said *current parent node* to determine whether said communication link is still good;
>
> intermittently transmitting *link acquisition packets* to one or more of said *stationary nodes* to determine the quality of the possible communication link with them;
>
> receiving a response *packet* from each of said *stationary nodes* that successfully receives said *link acquisition packet*;
>
> selecting from said received response *packets* one of said *stationary nodes* to be a new parent node when the link with said *current parent node* is no longer good;
>
> transmitting to said *current parent node* a *packet* informing said *current parent node* that said *current parent node* is no longer the *current parent node* and that said new parent node is a *current parent node* for said roaming node; and
>
> transmitting to said new parent node a *packet* informing said new parent node that said new parent node is a *current parent node* for said roaming node.

The ’338 patent provides “a method for routing data packets through a packet communication network” in which “some nodes can roam during network operation” (col. 1:10–14). The invention addresses the following problem: “What is needed is a routing method that permits roaming nodes to be addressed in a network in which stationary nodes are addressed using a coordinate-based addressing method and that does not require excessive processing by the network or the stationary nodes in the network to maintain contact with the roaming nodes.” (col. 3:27–32). Prior art systems purportedly required stationary nodes “to continuously keep track of and in touch with each roaming node and to ‘hand off’ roaming nodes from one stationary node to another,” which required “tremendous processing and communication overhead” (col. 3:16–20).

By contrast, the invention of the ’338 patent provides a method by which, “in a packet communication system wherein stationary nodes are assigned an absolute coordinate-based

address, the addressing of roaming nodes is accomplished by parasitically adopting the coordinate-based routing scheme used for addressing stationary nodes" (col. 3:35–40). As used in the specification, an absolute coordinate-based address refers to the geographic location of a stationary node. The parasitic adoption of that coordinate-based routing scheme refers to a process by which a roaming node associates with a stationary node and uses the absolute coordinate-based address of the stationary node as part of its own location identity. In essence, the responsibility for keeping roaming nodes connected to the network is shifted from the stationary nodes to the roaming nodes, which select stationary nodes to serve as their hosts.

A. "Packet."

The parties dispute the term "packet." It appears in every claim of the '338 patent, and it also appears in claim 1 of the '497 patent. This order construes the term with a focus on its more extensive use in the '338 patent. The parties' proposed constructions are shown below.

WIAV'S PROPOSED CONSTRUCTION	HP'S PROPOSED CONSTRUCTION
"electronic message"	"a unit of data sent on a network at Layer 3"

The parties' proposed constructions are vastly different, and neither one is supported by the intrinsic evidence. In particular, the construction proposed by Hewlett-Packard Co. refers to a standardized industry model that is not mentioned in the patent itself. HP explains that its construction would support its non-infringement arguments, because the accused products "address Layers 1 and 2" but not Layer 3, and deal only in frames as opposed to packets (Opp. 29).

The claims of the '338 patent refer to packets as being transmitted from node to node within a packet communication network. The summary of the invention and detailed description of specific embodiments describe packets being transmitted, received, forwarded, and delivered by nodes. The background-of-the-invention portion of the specification describes "data packets" and "packet communication" networks as well: "Packet communication is a form of data communication whereby segments or packets of data are routed with error checking and

confirmation of receipt. Packets may be transmitted directly between a source and destination or relayed via relay stations." (col. 1:15–19). Thus, the intrinsic record of the '338 patent indicates that a packet is a segment of data that may be transmitted among nodes in a communication network. The claim language of the '497 patent also refers to packets as being sent, received, and forwarded by nodes in a network communication system (col. 8:33–34).

The '338 patent also teaches that "segments or packets of data" are structured in particular ways. For example, in discussing the prior art, the specification refers generally to "the header" of a packet (col. 1:22). The specification also describes a specific prior-art packet format that included "four layers of header information" and a "tailer," with the data payload sandwiched between the headers and the tailer (col. 2:21–29). In order for data packets to be "routed with error checking and confirmation of receipt," the information they contain must be formatted into recognizable structures that conform to a shared protocol (col. 1:15–17). At the hearing, WiAV agreed that packets must be formatted with structures such as headers.

WiAV Networks, LLC would construe the term "packet" as "electronic message." This broad construction is divorced from the context of the networking patents and is not supported by the intrinsic record and would, due to its breadth, even comprehend a simple morse code message. WiAV does not cite any evidence characterizing a packet either as electronic or as a message (Br. 4–5). In responding to HP's counterarguments, WiAV argues that the '338 patent uses the terms "packet" and "message" interchangeably in the following sentence from the specification: "In another embodiment, the stationary node processes a packet error by discarding the packet and sending a message to the source of the packet that delivery was not successful." (col. 6:12–15). This use of the term "message" to describe a particular embodiment of the invention does not define the term "packet" as being synonymous with "message." Indeed, the message referenced in this embodiment may be complex, requiring multiple packets to transmit all of the relevant information. The use of two different terms in this sentence suggests two different meanings, not equivalence.

HP would construe the term "packet" as "a unit of data sent on a network at Layer 3." HP explains that Layer 3 refers to one of the seven conceptual layers of the ISO/OSI standardized

model for developing network architectures and protocols (Opp. 5–6).[1] The ISO/OSI model, however, is not mentioned anywhere in either of the two asserted patents. HP attempts to bootstrap the ISO/OSI model into the '338 patent by cobbling together inapposite claim-construction law and focusing on an unasserted prior-art patent referenced by the '338 patent. HP's cumbersome arguments are misguided and unpersuasive.

HP's description of Layer 3 of the ISO/OSI model is based entirely on declarations and prior-art publications (*ibid.*). Because a functional understanding of packets can be gleaned from the intrinsic record, it would be improper to narrow the term to a Layer 3 limitation from this extrinsic evidence. HP's observation that the '338 patent is "consistent with the ISO/OSI model terminology" does not change this fact (Opp. 7). The only direct references to the ISO/OSI model that HP cites come from the specification and prosecution history of unasserted United States patent No. 4,939,726. HP argues that because the prior-art '726 patent is referenced and discussed at length in the asserted '338 patent, the entire specification and prosecution history of the '726 patent is part of the intrinsic record for the '338 patent (Opp. 4). Many of the decisions HP relies on in making this argument do not support the propositions for which they are cited. More importantly, they do not collectively support HP's attempt to lasso the ISO/OSI model and drag it from the extrinsic record into the '338 patent. HP has not justified reading a "Layer 3" limitation into the construction of the disputed term. At the hearing, HP admitted that the term "packet" is used generically in networking contests unrelated to the ISO/OSI model. Any further arguments that the asserted patents should be interpreted in light of the ISO/OSI model will have to be made to the jury.

The term "packet" will be construed to mean "a formatted segment of digital data typically composed of headers, a message, error correction, and a tailer."

B. "Link Acquisition Packet."

The parties dispute the phrase "link acquisition packet." It appears in all claims of the '338 patent. The parties' proposed constructions are shown below.

[1]HP further explains that "ISO/OSI" refers to the International Organization for Standardization seven-layered reference model of Open Systems Interconnection.

WiAV's Proposed Construction	HP's Proposed Construction
"an electronic message requesting information about establishing a direct electronic connection"	"a packet for acquisition and synchronization"

HP explains that its construction would support its non-infringement arguments, because the accused instrumentalities do not perform synchronization. HP also suggests that the phrase may be indefinite (Opp. 30).

Contrary to HP, the phrase "link acquisition packet" is not insolubly indefinite. Claim 1 recites "transmitting a link acquisition packet to one or more of said stationary nodes" as the first step performed by a roaming node in order to perform the claimed method for establishing a communication link with a network. Thus, a link acquisition packet is something that a roaming node transmits to one or more stationary nodes. Dependent claim 2 recites a similar step performed by a roaming node as part of a method for changing its network communication link to a new parent node: the roaming node "intermittently transmit[s] link acquisition packets to one or more of said stationary nodes to determine the quality of the possible communication link with them." Thus, the roaming node transmits link acquisition packets to stationary nodes for the purpose of identifying potential parent nodes. Independent claim 3 confirms that stationary nodes "receiv[e]" link acquisition packets from roaming nodes (col. 7:34–35).

In discussing "the operation of a roaming node according to the invention," the specification repeatedly refers to link acquisition packets as "acquisition/synchronization packets" (*e.g.*, col. 4:58–62). Synchronization, therefore, is another aspect of link acquisition packets. WiAV resists this conclusion on the grounds that the word "synchronization" does not appear in the claims (Reply Br. 13–14). The claims, however, are only the starting point for construction, and they "must be read in view of the specification, of which they are a part." *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

WiAV's proposed construction of "packet" as "electronic message" was rejected above. WiAV attempts to support the rest of its proposed construction of "link acquisition packet" by

analyzing the purpose served by link acquisition packets. This order agrees with WiAV that link acquisition packets "allow the roaming node to obtain link-quality information from stationary nodes within its range so as to determine which stationary node gives the best link with the roaming node," and that "the purpose of determining the best link is to select the parent node" (Br. 14–15). This outcome, however, does not establish that the link acquisition packets each contain a request for "information about establishing a direct electronic connection." The claims provide that "a response packet" is sent to the roaming node by "each of said stationary nodes that successfully receives said link acquisition packet," but there is no indication that the link acquisition packet includes a *request* for any specific type of *information* (col. 6:45–47). WiAV's proposed construction overreaches.

The phrase "link acquisition packet" will be construed to mean "a non-message packet sent by a roaming node to one or more stationary nodes, configured to establish a link and to synchronize data rate and format."

C. "Stationary Node."

The parties dispute the phrase "stationary node." It appears in all claims of the '338 patent. The parties' proposed constructions are shown below.

WIAV'S PROPOSED CONSTRUCTION	HP'S PROPOSED CONSTRUCTION
No construction. Or, "a network electronic device that is not moving and can send and receive packets"	Node: "an element of a network that sends, forwards, and receives packets." Stationary Node: "a node in the network that is assigned an absolute geographic coordinate-based address or a code conveying the same"

HP explains that its constructions would support its non-infringement arguments, because the accused products do not forward packets and are not assigned an absolute geographic coordinate-based address or a code conveying the same (Opp. 29–30).

HP argues for separate constructions of the phrase "stationary node" and its component term "node." Because the term "node" appears in *both* asserted patents, HP relies on evidence

from both patents in construing the term node; then, HP seeks to import its two-patent construction of "node" into the construction of the disputed phrase "stationary node," which appears only in the '338 patent. This approach is improper. The parties were instructed to identify six terms or phrases for construction. "Stationary node" was one of them, and "node" was not. Indeed, "node" was identified separately as one of the "most significant" terms that did *not* make the cut for claim construction (Dkt. No. 650 at 2–3). HP may not sneak in a seventh bonus term after the parties were limited to, and selected, six terms and phrases for construction.

The phrase identified for construction — "stationary node" — appears only in the '338 patent. To the extent the '497 patent is relevant at all to the construction of this phrase, it is extrinsic evidence and will be treated as such. Although they share an inventor, the '497 patent was issued seven years after the '338 patent, and it addresses a completely different problem within the broad field of communication networks. The nodes disclosed in the '497 patent may bear broad similarities to the nodes of the '338 patent, but network nodes are required to perform different functions in the contexts of these two different inventions. The use of the term "node" in the later-issued '497 patent is not a proper basis for reading limitations into the phrase "stationary node" within the '338 patent.

Focusing on the '338 patent, the claims require stationary nodes to "transmit" and "receive" packets under certain circumstances. Dependent claim 4 additionally requires some stationary nodes to "accept" and "forward" data packets, but these requirements are not found in any of the independent claims. Indeed, the embodiment disclosed in independent claim 3 requires only "that each stationary node can communicate directly with at least one other stationary node," meaning two-way communication (col. 7:26–28). Thus, a given stationary node in the network may be directly linked with only one other stationary node, and not with any roaming node. Such a stationary node would be able to exchange packets with the one node to which it is linked, but it would *not* be able to receive a packet from one node and then "forward" the packet to another node. The claims of the '338 patent teach that a given stationary node must be able to transmit and receive data packets, but need not be able to *forward* them.

HP seeks to add a forwarding limitation to the construction of "stationary node," but the record does not support doing so. As the foregoing analysis demonstrated, the claims of the '338 patent indicate that a stationary node need not be able to forward packets. The extrinsic evidence HP relies on from the '497 patent, the unasserted '726 patent, and the Finn publication do not show that the stationary nodes of the '338 patent must be capable for forwarding. The usage of the terms "device" and "node" in the '338 patent also does not support reading a forwarding limitation into the phrase "stationary node," as HP asserts (Opp. 10–13). HP points out that Figure 3 of the '338 patent, "a flow chart describing the operation of a stationary node," references a "'forward' table," but Figure 3 depicts only one possible embodiment of a stationary node. HP also characterizes the specification of the '338 patent as requiring each node to have a means for routing and forwarding, but the cited language describes only the invention that was claimed in the prior-art '726 patent, not the invention claimed in the asserted '338 patent (col. 1:60–66). In short, HP cannot overcome the clear indication in the claim language that not all of the stationary nodes disclosed in the '338 patent must be able to forward data packets.

The specification of the '338 patent further teaches that stationary nodes have coordinate-based addresses. The background section explains that the invention addresses the following problem: "What is needed is a routing method that permits roaming nodes to be addressed *in a network in which stationary nodes are addressed using a coordinate-based addressing method . . .* " (col. 3:27–30) (emphasis added). Similarly, the summary of the invention explains that it is implemented "in a packet communication system wherein *stationary nodes are assigned an absolute coordinate-based address*" (col. 3:35–37) (emphasis added). These statements do not describe particular embodiments of the invention (as WiAV argues), but rather the general context and character of the invention itself. The specification further explains that a "coordinate-based address" is an identifier based on "absolute geographic coordinates," such as latitude and longitude (col. 3:11). Thus, a stationary node has an addresses based on its geographic location.

The specification also discusses stationary nodes in opposition to "roaming nodes," which are nodes that "can roam during network operation" (col. 1:13–14). Thus, a stationary node is one that can *not* roam during network operation. This construction differs in a subtle but

important way from WiAV's proposal, which would define stationary nodes as "not moving," but not necessarily fixed or un*able* to move. WiAV's construction would vitiate the patent's distinction between stationary nodes and roaming nodes by allowing a node that can roam but is not now moving to qualify both as a stationary node and a roaming node. This result contradicts the patent's distinction between stationary and roaming nodes. A stationary node is immobile.

HP argues that stationary nodes must be actually engaged in sending and receiving packets, not merely *capable* of doing so. According to HP, a node that merely *can* send, receive, and forward packets, but that is not so engaged, is not "in a . . . network," as required by the claims, in any meaningful sense (Opp. 13). HP provides no support for its interpretation of what it means for a node to be in a network, and this order disagrees. Requiring each stationary node to regularly participate in packet routing would presuppose a level and distribution of network traffic that is both unrealistic and unduly restrictive. The capability of transmitting and receiving packets is enough.

WiAV opposes construction of the phrase "stationary node." This order finds, however that the meaning of "stationary node" would not be readily apparent to the jury. A construction is warranted. Assuming the phrase will be construed, WiAV argues that the ordinary meaning of "stationary" is "not moving." WiAV cites extrinsic evidence supporting this definition, and WiAV also cites portions of the specification that contrast roaming nodes with stationary nodes, concluding that the stationary nodes do not move during the same period of time when roaming nodes move. WiAV also cites the prosecution history of the '338 patent, noting that the phrase "roaming node" in claim 3 originally read "current roaming node." According to WiaV, the dropped modifier "current" suggested that a roaming node could stop moving and become a stationary node (Br. 9–10). As explained, the temporal aspect of WiAV's "not moving" construction is problematic. This construction was rejected above because it vitiates the patent's distinction between stationary nodes and roaming nodes. None of WiAV's evidence redeems its "not moving" construction from this failing.

The phrase "stationary node" will be construed to mean "an immobile network element that has an address based on its geographic location, and that can transmit and receive packets, but need not be able to forward packets."

D. "Current Parent Node."

The parties dispute the phrase "current parent node." It appears in all claims of the '338 patent. The parties' proposed constructions are shown below.

WIAV'S PROPOSED CONSTRUCTION	HP'S PROPOSED CONSTRUCTION
"for a time, the exclusive communicating intermediate device with other devices in the network"	No construction. Or, "the stationary node to which a roaming node has a presently established link"

Claim 1 of the '338 patent sets forth a method by which a roaming node can select a stationary node to be "a current parent node" for the roaming node, thereby establishing "a communication link" between the roaming node and the communication network to which the stationary nodes belong. Dependent claim 2 sets forth further method steps by which the roaming node can "change its network communication link to a new parent node." When "the link with said current parent node is no longer good," the roaming node selects a different stationary node "to be a new parent node." To implement the change, the roaming node (1) informs the said current parent node that it is no longer the current parent node, and that the said new parent node is now a current parent node for the roaming node, and (2) informs the said new parent node that it is a current parent node for the roaming node.

Thus, the claims of the '338 patent teach that a "current parent node" is a stationary node in a communication network that is providing a communication link between the network and a roaming node. The specification uses the phrase "current parent node" consistently with this understanding. HP opposes construing the phrase "current parent node" (Opp. 18). This order, however, finds that the jury would benefit from elaboration of this phrase.

WiAV asserts that "for a time" is the ordinary meaning of "current," but does not object to "presently" or "at the present time" as alternative glosses (Br. 16). The term "present" is more

synonymous with "current" than is the phrase "for a time," because the phrase "for a time" connotes transience without any connection to the *present* time.

WiAV also asserts that the relationship between a roaming node and its current parent node is exclusive (*ibid.*). HP agrees, as the term "the" in its proposed construction signifies exclusivity. This order concurs with the parties on this point. Under the claimed methods, a roaming node has only one "network communication link" with one parent node at a time.

WiAV further emphasizes the "intermediate" nature of a parent node, but WiAV does not identify any language in the claims or specification that describes parent nodes as intermediaries (*ibid.*). The fact that parent nodes serve as intermediaries does not necessarily distinguish them from other stationary nodes. Independent claim 3 explains that "any stationary node can communicate with any other stationary node by relaying data through any number of stationary nodes" in the network (col. 7:28–31). True, only a parent node serves as an intermediary *for a roaming node*. A stationary node that is not a parent node, however, also may serve as an intermediary by forwarding packets from one stationary node to another. The general concept of intermediacy does not distinguish parent nodes from all other stationary nodes, and it need not be incorporated into the construction of the disputed phrase.

The phrase "current parent node" will be construed to mean "the stationary node on which a roaming node now relies as the exclusive communication link between the roaming node and the communication network to which the stationary node belongs."

E. "Return Identifier for Said Roaming Node."

The parties dispute the phrase "return identifier for said roaming node." It appears in claim 1 of the '338 patent. The parties' proposed constructions are shown below.

WIAV'S PROPOSED CONSTRUCTION	HP'S PROPOSED CONSTRUCTION
"address information for sending a reply packet back to the roaming device"	"information sent in data packets originating at the roaming node, wherein such information is [used/for use] by all other nodes to route packets back to the roaming node"

HP explains that its construction would support its non-infringement arguments, because the accused element is used only in local, "one-hop" communications as opposed to network-wide routing (Opp. 30).

Claim 1 recites a method step in which a roaming node, having acquired a current parent node, "transmit[s] data packets to nodes in the network using an identifier of said parent node as part of the return identifier for said roaming node" (col. 6:57–59). The claims make no other mention of the disputed phrase. The specification's summary of the invention elaborates on this aspect of the invention: "The coordinates of this parent stationary node are used in the header block of each packet transmitted from the roaming node and these coordinates are seen by all receiving nodes and then used in subsequent transmissions back to the roaming node." (col. 3:42–47).

The parties agree that the return identifier is information that originates at the roaming node and can be used by other nodes to send communications back to the roaming node (Reply Br. 17 n.2). This interpretation is rooted firmly in the claim language and specification. The parties' disagreements cluster around certain details they seek to add to this general description.

WiAV characterizes the return-identifier information as "address" information. HP opposes this descriptor as unsupported and ambiguous (Opp. 21). The patent does not refer to the return-identifier information as an "address." A separate portion of the patent, however, discloses various types of addresses, including local and ultimate source and destination addresses (col. 2:34–49). The coordinates of the parent node do represent a type of address, but the term "address" would not add value to the construction. A more precise description of the return-identifier information is that it identifies the origin of a data packet in terms of the parent node.

In its brief, HP construes the return-identifier information as being "used by all other nodes to route packets back to the roaming node." WiAV objects that such a construction would require *every single other node in the network* to route packets back to the roaming node, whereas the patent claims contain no such requirement (Reply Br. 16–17). This order agrees. There is no requirement that "all other nodes" use the return-identifier information. Only if a given node

happens to send or become involved in forwarding "subsequent transmissions back to the roaming node" would that node have occasion to use the return-identifier information. The event of a roaming node transmitting a data packet to the network does not automatically trigger a reciprocal transmission from *every other node* in the network. Hence, the return-identifier information need not be "used by all other nodes" as HP proposes.

At the hearing, HP amended its proposed construction to characterize the information as being "for use" by all other nodes instead of "used" by all other nodes. HP explained that this change was intended to address WiAV's concern that HP's construction required actual use of the information by every other node in the network. WiAV did not agree that HP's new language solved that problem. In any event, this order concludes that the information must be only use*able* by the other nodes that receive or forward it.

The phrase "return identifier for said roaming node" will be construed to mean "information in a data packet sent from a roaming node to a network, that indicates the origin of the packet by identifying the parent node to which it was transmitted, and that can be used by any other node in the network receiving or forwarding it to send reply or subsequent communications to the roaming node."

2. THE '497 PATENT.

The '497 patent, entitled "Method and Apparatus for Maximizing Data Throughput in a Packet Radio Mesh Network," was issued on November 12, 2002. Ricochet Networks, Inc. was the assignee of the '497 patent at the time of issue. WiAV states that it is now the owner of this patent (Sec. Amd. Compl. ¶ 10). Five claims from the '497 patent are asserted in this litigation: independent claims 1, 27, and 28, and dependent claims 6 and 8, which depend upon claim 1. Claims 1, 6, and 8 cover methods; claims 27 and 28 cover apparatus. Only one of the phrases construed by this order is found exclusively in the '497 patent. It is italicized in the claim language below.

Claim 1 covers the following method (col. 8:23–45):

> 1. In a *mesh network communication system* capable of dynamically establishing links between communicating nodes, a method for optimizing net throughput on a link from a first node to a second node, the method comprising steps of:
>
> dynamically establishing the link between the first node and the second node with a first signal, wherein:
>
> the first and second nodes are part of a *mesh network communication system*, and
>
> each of the first and second nodes sends, receives, forwards packets with the *mesh network communication system* [*sic*];
>
> determining at least one performance metric, at the second node, of data-link on-air characteristics of the first signal from the first node;
>
> relaying information relating to the at least one performance metric from the second node to the first node; and
>
> dynamically modifying at least one signal characteristic of a second signal transmitted from the first node to the second node, wherein the dynamically modifying step is responsive to at least one performance metric.

Dependent method claim 6 incorporates the method of claim 1 and adds the limitation that the performance metric must be "based, in part, on a signal strength of the first signal received at the second node" (col. 8:61–63). Dependent method claim 8 also incorporates the method of claim 1 and adds the limitation that the performance metric must be "based on statistical information about the link" (col. 8:66–67). Independent apparatus claims 27 and 28 disclose a transceiver and a controller, respectively, that could be used to perform methods related to that of claim 1 (col. 10:24–61).

The '497 patent purports to optimize net throughput "by dynamically modifying signal characteristics of the signals transmitted between nodes in response to performance metrics" (col. 2:64–67). The '497 patent recognizes that conditions may vary from node to node within a network. For example, a given node might handle an unusually large volume of traffic, or it might be located near machinery that generates a certain type of interference with signal

reception. If reception conditions vary from node to node, then the optimal characteristics of an incoming signal also vary from node to node.

The '497 patent discloses a way for different nodes within a network to receive signals with different characteristics that are selected to maximize reception success based on the varying conditions at each node. For example, a node might be located near a source of static interference that causes single-bit errors. A coding technique called "interleaving" enables such errors to be repaired by the recipient. Accordingly, this particular node might instruct other nodes to use the interleaving technique when sending packets to this node (col. 7:55–65). When sending packets to different nodes that are not subject to static interference, the sending nodes need not invest in this extra coding. They might, however, make other adjustments to the signal characteristics (*e.g.*, data rate, modulation type, etc.) based on the reception conditions at the other nodes. Maximizing the performance of each node-to-node link based on the unique reception conditions at each node has the net effect of maximizing the overall performance of the whole network (cols. 2:64–3:5).

The ability to modify signal characteristics and use extra coding techniques such as interleaving was known in the prior art. The advance claimed by the '497 patent is a way to dynamically customize the communication signal linking any two nodes in a network. In contrast to the prior-art approach of using the same type of signal uniformly throughout a network, the dynamically-varying links disclosed in the '497 patent purportedly deliver the highest performance capable of being supported by the arrangement and condition of the network nodes at any given time. The essence of the supposed invention is the exploitation of signal variability "on a per-link basis" throughout a communication network (col. 3:49–54).

A. "Mesh Network Communication System" and "Mesh Network Wireless Communication System."

The parties dispute the phrases "mesh network communication system" and "mesh network wireless communication system." The former is used in asserted independent claims 1 and 27; the latter is used in asserted independent claim 28. The parties' proposed constructions are shown below.

WIAV'S PROPOSED CONSTRUCTION	HP'S PROPOSED CONSTRUCTION
"a network in which at least three electronic devices can communicate on alternative routes, such as directly or though intermediate devices"	"a collection of nodes in a wireless network which autonomously connect, send, receive, forward and analyze packetized traffic in the network, wherein there are one or more intermediate nodes between the source and destination of a communication, and excluding point-to-point, star, conventional wireline, cellular, bus, and computer backplane architectures"

The parties' proposed constructions share very little in common. HP explains that its construction would support its non-infringement theories, because the accused products do not forward packets and do not use a mesh network architecture for networking (Opp. 30). Indeed, at the hearing HP stated that the accused wifi products use a star network architecture rather than a mesh one.

The claims of the '497 patent use the disputed phrases without elaboration, so this order looks to the specification to build a construction. To introduce the prior-art framework within which the invention is implemented, the background-of-the-invention section states: "In a mesh network, there is an [*sic*] collection of nodes which autonomously connect, send, receive, forward and analyze packetized traffic in the network . . ." (col. 1:10–12). Similarly, the detailed description of the preferred embodiments describes "a mesh network 10." It states: "In such a network 10, an interconnected mesh of data-packet sending and receiving nodes is collectively collecting, routing and delivering data packets." (col. 4:21–29).

The prosecution history of the '497 patent provides further evidence of how the applicants used the disputed phrase. In responding to a rejection based on prior art, the applicants emphasized that in a mesh network, "a node could be an intermediate point in the mesh network and not necessarily the source or destination" of a message. The response further explained: "Mesh networks use routing and other algorithms to relay a message to its destination where one node is the source, there are one or more intermediate nodes and a destination node." (Hwang Exh. 4 at 77).

The ’497 patent specification and prosecution history say that a mesh network contains nodes that can relay a message to its destination by sending, receiving, analyzing, and forwarding data packets. This form of operation is the essence of a mesh network for purposes of the ’497 patent.

The patent also indicates that its purported invention is to be implemented wirelessly. Claims 1 and 27 refer to the “data-link on-air characteristics” of a “signal” (cols. 8:37–38, 10:37–38). Claim 28 explicitly requires a “wireless” communication system (col. 10:43). Thus, all of the asserted claims relate to wireless technology. The specification confirms this interpretation with frequent references to “radio.” The summary and detailed description discuss “radio hardware” such as “transmitter(s),” “receiver(s),” and an “antenna” (*e.g.*, cols. 3:34, 4:48–50). They also discuss the “on-air characteristics” of “signals,” including “bandwidth” and “frequency” (*e.g.*, cols. 3:3–5, 5:58). The background section begins with the plain statement, “[t]his invention relates to packet communications in a *radio-based* mesh network” (col. 1:7–8) (emphasis added). The mesh network of the ’497 patent is wireless.

WiAV observes that claim 28 explicitly requires “a mesh network *wireless* communication system” (emphasis added), whereas claims 1 and 27 require only “a mesh network communication system.” According to WiAV, this drafting choice raises “a presumption” that the latter phrase does not incorporate a “wireless” limitation (Reply Br. 20). Any such presumption is rebutted by the overwhelming evidence described above. In particular, the statement quoted from the background section satisfies WiAV’s demand for “words or expressions of manifest exclusion or restriction” (Br. 23). WiAV also advances the fallback argument that even if the mesh network is construed to require *some* wireless connections, the construction should not require an *entirely* wireless network (Reply Br. 20). The ’497 patent contemplates wireless — and *only* wireless — technology. A construction crafted to accommodate a partially wireless network would strain the patent.

HP argues that the specification also defines “mesh network” as a specific type of data communication network architecture, as opposed to other types of network architecture such as a “bus” or “star” arrangement of nodes (Opp. 23–25). The portion of the specification HP cites,

however, does not support incorporating this comparison into the construction. The passage specifically addresses "[m]esh packet radio networks," not simply mesh networks, and it does not describe how the various architectures differ (col. 1:23–28). Construing mesh networks in opposition to bus or star networks would be neither accurate nor informative in light of the cited passage of the specification. HP's other arguments for its proposed exclusionary limitation fail as well. The prosecution-history statement distinguishing prior art that "only addresses point-to-point communication where the transmitter is the source of the communication and the receiver is the destination of the communication" may impact claim scope, but it does not define "mesh network" for purposes of claim construction (Hwang Exh. 4 at 77). The specification statement cited to show that architecture, or topology, is an important aspect of a mesh network, mentions topology only in passing (Opp. 25).[2] The extrinsic evidence HP offers to illustrate other architectures in contrast to the mesh network illustrated in Figure 1 do not compel exclusion of star and bus arrangements. In sum, HP has not shown good cause to construe the disputed phrases by listing a variety of things that a mesh network is *not*.

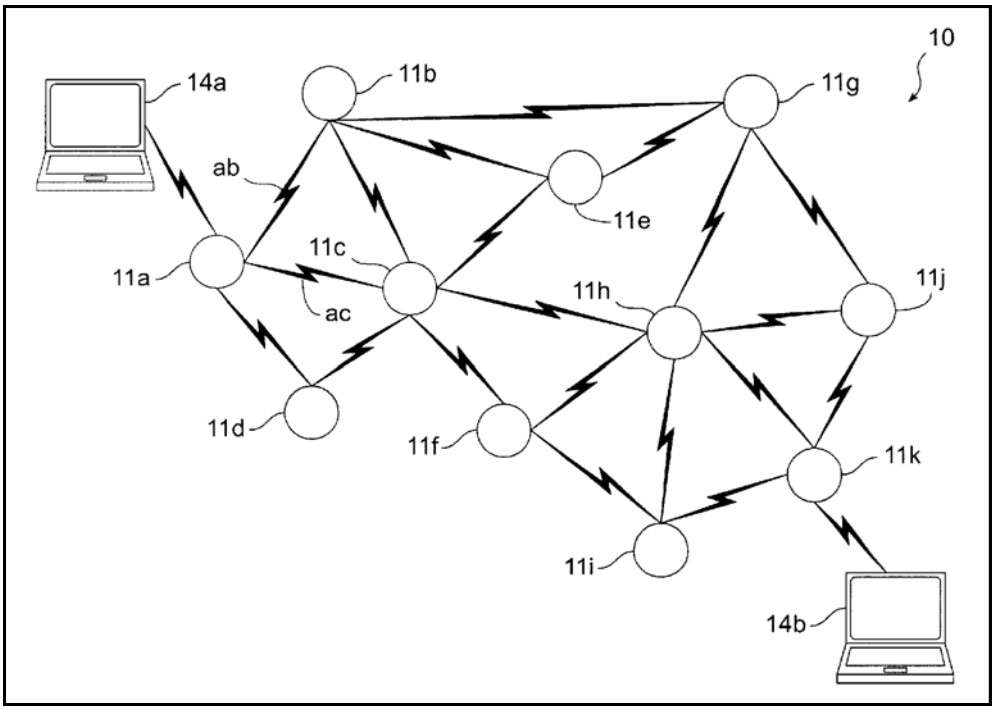
HP also argues that the nodes of a mesh network must be able to "autonomously connect." This phrase is found in the statement from the background section of the specification quoted above. Autonomous connection is not mentioned in any of the other statements regarding mesh networks. Indeed, the specification does not elaborate on what is meant by "autonomously connect" or how autonomous connection might be relevant to the claimed invention. This single, ambiguous statement does not justify reading an autonomous-connection limitation into the construction of the "mesh network" phrases.

WiAV argues that the nodes of a mesh network need not be able to "forward" packets to other nodes. WiAV's evidence on this point is unconvincing. WiAV views the "forward" limitation as "an improper attempt to incorporate an embodiment from the specification into the claim" (Br. 24). The concept of forwarding, however, comes from a definitional statement in the

[2]The topology of a network is the layout pattern of the nodes and links. For example, they may be arranged in a straight line, or they may form a ring.

background section — not from a description of a specific embodiment (col. 1:10–12). WiAV also views the mesh network depicted in Figure 1 as incompatible with a forwarding requirement.

Figure 1 from the '497 Patent: A Mesh Network



The specification explains that items 11a–11k in Figure 1 are "nodes," each of which "has capabilities for transmitting to and receiving from various other nodes" (col. 4:22–25). The specification does not describe items 14a and 14b, which appear to be laptop computers. WiAV interprets the laptops as being "part of the mesh network" and notes that the laptops "cannot forward packets because each is linked to only one node" (Br. 24). It is true that the laptops cannot forward packets, but there is no evidence that they are "nodes" in the mesh network. Rather, the "nodes" are identified with the 11a–11k numbering scheme, and the laptops are labeled with a separate numbering scheme. Thus, a more plausible reading of Figure 1 recognizes that while the laptop devices are connected to the mesh network, they are not *nodes* within the mesh network. Every node depicted in Figure 1 is connected to at least two other nodes, meaning that it can forward packets. The inability of the laptops to forward packets does not detract from the ability of the nodes to do so.

WiAV also would construe the disputed phrases to require at least three nodes arranged such that alternative routes are available for transmitting a message between any two nodes. A forwarding requirement necessarily would imply at least three nodes, so a three-node limitation would be redundant in light of the foregoing analysis. WiAV's proposed alternative-route limitation is not supported by any evidence from the intrinsic record. The proffered dictionary definition, standing alone, is not a sufficient basis for reading such a limitation into the disputed phrase.

The phrases "mesh network communication system" and "mesh network wireless communication system" both shall be construed to mean "a wireless communication system composed of nodes that can relay a message to its destination by sending, receiving, analyzing, and forwarding data packets."

For clarity, it is worth noting that the "mesh network communication system" of the '497 patent has been construed to require nodes that can forward packets, while a forwarding limitation has *not* been incorporated into the construction of the "stationary nodes" of the '338 patent. This difference in construction results from differences in the patents themselves. The '338 patent does not mention a "mesh network communication system." Instead, it refers to "a packet communication network" or "a packet communication system." The "stationary nodes" of the '338 patent do not necessarily belong to a "mesh network communication system" as disclosed in the '497 patent. Thus, they do not need to be capable of forwarding packets simply because nodes in a "mesh network communication system" must be able to do so.

CONCLUSION

The constructions set forth above will apply in this action. The Court reserves the authority, on its own motion, to modify these constructions if further evidence warrants such a modification. Additionally, by **NOON ON JUNE 9, 2011**, each side may file a five-page critique (double-spaced, twelve-point Times New Roman font, with no footnotes and no attachments) limited to points of critical concern. This is an opportunity for the parties to focus solely on their

most cogent critiques, not to rehash every point made in the briefs and at the hearing. Any critiques must be limited to the claim-construction record and may not introduce new evidence.

IT IS SO ORDERED.

Dated: June 2, 2011.

WILLIAM ALSUP
UNITED STATES DISTRICT JUDGE