IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

Concurrent Ventures, LLC and XtreamEdge, Inc.,	§	
	§	
Plaintiffs,	§	
v.	§	**CIVIL ACTION NO. 1:24-cv-335-ADA**
	§	
Advanced Micro Devices, Inc. and Pensando Systems, Inc.,	§	**JURY TRIAL DEMANDED**
	§	
Defendant.	§	

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Plaintiffs Concurrent Ventures, LLC and XtreamEdge, Inc. (collectively "Plaintiffs") hereby respond to the Opening Claim Construction Brief, Dkt. 79 ("Br."), of Defendants Advanced Micro Devices, Inc. and Pensando Systems, Inc. (collectively "Defendants").

Each of Defendants' proposed constructions seek to limit the plain and ordinary meaning of the terms at issue without even attempting to show that the terms are ambiguous, were redefined via lexicography, or that their claim scope was disclaimed. In contrast, Plaintiffs seek to give the claim terms their plain and ordinary meaning. Defendants' repeated requests to import unsupported limitations into the claims should be rejected.

I. Asserted Patents and Disputed Terms

A. U.S. Patent No. 8,924,596

1. "queue implemented in hardware" (claims 1, 7, 13)

Term	Plaintiffs' Construction	Defendants' Construction
"queue implemented in hardware"	Plain and ordinary meaning	"queue implemented in physical circuits without software intervention"; Alternatively, indefinite under Plaintiffs' infringement theories

Defendants seek to add a new negative limitation to the claims: that the claimed queues must not only be "implemented in hardware" but also "without software intervention." Notably, Defendants do not claim that the patentee "act[ed] as his own lexicographer" or "disavow[ed] the full scope of a claim term," as is required to construe a term "outside of its plain and ordinary meaning." *Thorner v. Sony Computer Ent. Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1580 (Fed. Cir. 1996)). For good reason; the standard for both exceptions is "exacting," *Thorner*, 669 F.3d at 1365, and Defendants cannot meet it. Instead, Defendants cobble together extrinsic evidence. But extrinsic evidence should only be considered when there is a "genuine ambiguity in the claims, after consideration of all available

intrinsic evidence." *Vitronics*, 90 F.3d at 1584; *Profectus Tech. LLC v. Huawei Techs. Co.*, 823 F.3d 1375, 1380 (Fed. Cir. 2016) ("Extrinsic evidence may not be used to contradict claim meaning that is unambiguous in light of the intrinsic evidence.") (internal quotations omitted).

Worse, Defendants' proposed negative limitation is contradicted by the claims, the specification, and by the reality of how queues operate. Nor is it necessary to clarify some alleged ambiguity in the phrase, which Defendants acknowledge they understand. The claims already require that the queues be "implemented in hardware." Indeed, it is clear from Defendants' brief that their argument is actually one of non-infringement masquerading as a claim construction issue. There is no basis for Defendants' proposed negative limitation.

First and foremost, Defendants' proposed negative limitation is explicitly contradicted by the surrounding claim language, which ***requires*** software intervention in the queues. *See Kamstrup A/S v. Axioma Metering UAB*, 43 F.4th 1374, 1383-84 (Fed. Cir. 2022) (rejecting a "proposed construction [that] reads in a negative limitation that is at odds with the claim language."). In particular, claims 7 and 13 recite software[1] that can be executed on a "second processing element" to perform a number of functions involving the queues. '596 Patent, claims 7, 13 (the software "issues said command ***to said input queue*** on behalf of said first processing element" and "receives a response corresponding to said command ***from said output queue***" (emphasis added)). The claims thus explicitly require "software intervention" in the "queue[s] implemented in hardware." Defendants' construction would render the claims contradictory and nonsensical, both ***requiring*** and ***prohibiting*** software intervention in the queues. *See AlterWAN, Inc. v. Amazon.com, Inc.*, 63 F.4th 18, 23 (Fed. Cir. 2023) ("The district court's construction . . . is not a reasonable construction

[1] The claims refer to the software as "computer storage storing instructions." Min Decl., ¶31; '596 Patent, 7:59-67, 8:34-50; Br. at 2 (software is "instructions executed by hardware").

in light of the specification since it requires the impossible.")

The specification similarly contradicts Defendants' construction. The specification explains that "[t]he invention considers the case where software must issue commands to a hardware module." '596 Patent, 3:11-12. The specification describes multiple embodiments in which the software intervenes in the hardware queues by issuing commands and receiving responses. *See, e.g.*, '596 Patent, 6:28-36 ("computer storage storing instructions, which when executed by one of the additional processing elements . . . issue[s] the command to the input queue 408"), 7:23-32. Defendants' negative limitation would thus exclude preferred embodiments. *See Sequoia Tech., LLC v. Dell, Inc.*, 66 F.4th 1317, 1327 (Fed. Cir. 2023) ("[A] claim construction excluding a preferred embodiment is rarely, if ever correct.") (internal quotations omitted).

Defendants point to various portions of the specification to support their construction, but do ***not*** claim that any constitute a definition of a "queue implemented in hardware" or patentee's disavowal of "software intervention" in the queues. *See Vitronics Corp*, 90 F.3d at 1580. First, Defendants argue that the patent "differentiate[s] between components implemented in hardware, such as the input and output queues, and software running on processing elements." Br. at 3-4. But the simple fact that the patent ***differentiates*** between software and hardware does not show that software cannot *interact* with the hardware. Second, Defendants cite the specification's disclosure that "[t]he hardware will then automatically, without software intervention, update the reserved free space when the command is actually removed from the queue for consumption." Br. at 4 (quoting'596 Patent, 4:43-46). But this passage refers to the ***register*** implemented in hardware, not the ***queues***. And in any event, the passage is only identifying a single action that the register can take "without software intervention"—and that action is not implementing the queues. Third, Defendants point to the statement that:

> [t]he software, therefore, need only read a register and check its return value to make a reservation and know if it was successful or not. All arbitration and mutual exclusion tasks between multiple processing elements are handled in hardware. There is no need for the software overhead of multiple processing elements handling the synchronization of a shared available space count variable in shared memory or otherwise.

'596 Patent, 4:14-19. This is neither definitional nor a disavowal; and in any event it refers to the "reservation" register, not the queues. Defendants do not even attempt to explain how these passages support their sweeping requirement that software cannot intervene in the queues.

Defendants' construction also contradicts the practical reality of how queues operate, as it assumes that a queue being implemented in hardware means that there is no software involvement. Br. at 2 ("[T]he distinguishing characteristic between a queue implemented in software, versus a queue implemented in hardware, ***is whether software is involved*** in that implementation." (emphasis added)). It does not. Queues implemented in hardware often have some degree of interaction, or "intervention," with software, and a POSITA would understand that fact. Min Decl., ¶31. Most queues use pointers, which are processed using software. *Id.*, ¶32. Thus, even when a queue is implemented in hardware, software interacts with it. *Id.* The well-understood meaning of a "queue implemented in hardware" does not exclude software intervention. *Id.*, ¶¶32-33.

Defendants' argument that adopting the "'plain and ordinary' meaning does not resolve" the parties' dispute, Br. at 4-5, similarly does not hold water. The only claim scope dispute that Defendants have raised is whether their negative limitation should be imported into this claim element.[2] Adopting the plain and ordinary meaning would reject Defendants' request to add their proposed negative limitation and resolve that dispute. Moreover, Defendants implicitly acknowledge that they understand the plain and ordinary meaning of a "queue implemented in

[2] Defendants' proposed negative limitation is also sufficiently vague, particularly in light of the specification, that it would be insufficiently helpful for an infringement analysis. *See Soundview Innovations LLC v. Hulu*, 33 F.4th 1326, 1336 (Fed. Cir. 2022)

hardware." Br. at 2-3 ("When a queue is implemented in hardware, there are dedicated physical circuits for queue functions and management . . . . On the other hand, when a queue is implemented in software, software maintains and uses a data structure in memory (e.g., RAM) as a queue . . . ."). That makes sense, as "queue" and "hardware" are well-understood terms. *See, e.g.*, Ex. J (CV-AMD0017565) at 464 (defining "queue"); Ex. B (CV-AMD0017608) at 338 (defining "hardware" and "hardware buffer"), 609 (defining "queue"). There is no obligation for a court to construe straightforward terms whose meaning and scope are readily understood. *See Summit 6, LLC v. Samsung Elecs. Co.*, 802 F.3d 1283, 1291 (Fed. Cir. 2015) ("Because the plain and ordinary meaning of the disputed claim language is clear, the district court did not err by declining to construe the claim term."); *Advanced Aerodynamics, LLC v. Spin Master Ltd.*, No. 6:21-CV-00002-ADA, 2022 WL 1518930, at *4 (W.D. Tex. Mar. 15, 2022), report and recommendation adopted, No. W-21-CV-00002-ADA, 2022 WL 2762716 (W.D. Tex. Apr. 6, 2022). Here, there is no question what "queue implemented in hardware" means—only whether Defendants' negative limitation should be added.[3] The Court need only give the term its plain and ordinary meaning.

Defendants' proposed construction, as well as the alternative indefiniteness argument, are squarely aimed at non-infringement, not claim construction. *See, e.g.*, Br. at 2. But whether Defendants' "Hardware Queues," *see* Ex. 3[4] at 28 (cited at Br. at 2), are "queue[s] implemented in hardware" is a fact question that cannot be resolved during claim construction. *See, e.g.*, *Lazare Kaplan Int'l, Inc. v. Photoscribe Techs., Inc.*, 628 F.3d 1359, 1376 (Fed. Cir. 2010) ("This court agrees with the Defendants that the parties' dispute concerns factual questions relating to the test

[3] Defendants' indefinite-in-the-alternative argument fails for the same reason. A term that even Defendants can readily understand is not indefinite. *Datanet LLC v. Dropbox, Inc.*, No. 6-22-CV-001142, 2023 WL 7545234, at *24 (W.D. Tex. Nov. 10, 2023); Min Decl., ¶34.

[4] Numbered exhibits refer to the exhibits attached to Defendants' brief, at Dkt. 79.

for infringement and not the legal inquiry of the appropriate scope of the [term] limitation.”).

2. “register” (claims 1, 7, 13)

Term	Plaintiffs’ Construction	Defendants’ Construction
“register”	Plain and ordinary meaning[5]	“set of flip-flops that store a set of related bits”

Defendants’ construction limits “register” to one specific way to implement a register (“flip-flops”) without providing any support for excluding both every other aspect of a “register” and every other means of implementation. The term “register” is well understood and needs no construction. *See Summit 6*, 802 F.3d at 1291.

As an initial matter, Defendants attempt to manufacture a much broader dispute by arguing that “[t]he parties dispute whether the claimed register must be a hardware register.” Br. at 6. That is wholly untrue. There is no dispute that the “register” must be “implemented in hardware,” as the claim language reads “register implemented in hardware.”[6] The vast majority of Defendants’ brief is thus beside the point, as it only attempts to show that registers must be implemented in hardware, which is undisputed. *See, e.g.*, Br. at 6-7 (“The specification confirms that the register is implemented in hardware.”).

The actual dispute is whether a “register” should be defined as only a “set of flip-flops.” It should not. Defendants do not claim that their proposed construction comes from the intrinsic evidence, and indeed it does not—neither the patent nor prosecution history use the term “flip-

[5] During the claim construction disclosure process, Plaintiffs provided Defendants a description of the term’s plain and ordinary meaning in an attempt to help reach agreement and relieve the Court of the burden of resolving this dispute. That attempt was not a tacit agreement that construction is needed, as Defendants now argue. Br. at 8 (“Plaintiffs ask for plain and ordinary meaning but propose a construction, tacitly admitting construction is needed.”). It would be detrimental to the conferral process if parties could successfully weaponize proposals offered during that process in an attempt to narrow or resolve the issues needing Court resolution.

[6] Plaintiffs’ original description of the plain and ordinary meaning of “register” did not reference “hardware” for the simple reason that the only term at issue is “register,” not the entire phrase “register ***implemented in hardware***.”

flop." For this reason alone, Defendants' proposed construction should be rejected. *See Polaris Innovations Ltd. v. Brent*, 48 F.4th 1365, 1376 (Fed. Cir. 2022) (explaining that a narrowing construction "must find support in the intrinsic record to limit the broad claim language only to [a specific] option"); *Network-1 Tech., Inc. v. Hewlett-Packard Co.*, 981 F.3d 1015, 1023-25 (Fed. Cir. 2020) (rejecting a construction that would limit the scope of the term because nothing in the intrinsic record supported the narrow scope).

Defendants' only support for their construction is extrinsic evidence (dictionaries and their expert's declaration), but the extrinsic evidence demonstrates the incompleteness of Defendants' construction. Fundamentally, a "register" is a storage area that can be addressed by name, and thus a "register implemented in hardware" is a storage area implemented in hardware that can be addressed by name. Min Decl., ¶37. A "flip-flop" is a distinct circuit within memory that stores one bit of information. Min Decl., ¶45. Registers can store several bits, and accordingly can include several flip-flops, but a register can also store bits in other ways, such as using Static RAM (SRAM), which most commonly utilize transistors, not flip-flops. *Id.* ¶¶38-45. Thus, as Plaintiffs' expert, Dr. Min, explains, a register ***might*** be implemented using "flip-flops," but a register can also be implemented in other ways. Further, even registers that do use "flips-flops" are not solely composed of (or defined by) flip-flops. Min Decl. ¶38; Ex. B (CV-AMD0017608) at 636 (defining "register" to include "Logic element (gates, flip-flops, shift registers)"—more than just "flip-flops"). As an analogy, a house might be built of brick, but it can also be built of cement or wood. And even it is built of brick, it is incorrect to define a house as a "set of [bricks]." Just so here.

That a register's definition is not limited to "a set of flip-flops" is further confirmed by dictionaries from the time of the patent, which make clear that a "register" can be implemented in other ways and has a broad meaning, far beyond just a collection of flip-flops. Ex. B (providing

10 different definitions of "register" in the computer science context); Ex. C ("A memory location with a microprocessor, used to store values and external memory addresses . . ."); Ex. D ("A set of bits of high-speed memory within a microprocessor or other electronic device, used to hold data for a particular purpose. ***Each register in a central processing unit is referred to in assembly language programs by a name*** such as AX (the register that contains the results of arithmetic operations in an Intel 80x86 processor) or SP (the register that contains the memory address of the top of the stack in various processors)." (emphasis added)).[7] Defendants' own extrinsic evidence does not show otherwise. For example, Ex. 4 (Comprehensive Dictionary of Electrical Engineering) and Ex. M (Electrical Engineering Dictionary) state that a register *contains* flip-flops; Ex. L (The Art of Electronics) explains that the register *includes* flip-flops, *as well as* inputs and outputs; Ex. K (Digital Design Principles & Practices) explains that a register *contains* flip-flops, "store[s] a collection of related bits," and that "the only real constraint is that all of the bits are stored using the same clock signal;" Ex. 5 (Electrical Engineering: An Introduction) also states that a register *contains* a set of flip-flops; and Ex. 6 (Principles of Digital Design) states that "a register . . . can be thought of as a bitwise *extension* of a flip-flop" and that "a simple register has *n* inputs and *n* outputs *in addition to the clock signal*." (emphasis added). Thus, Defendants' dictionary definitions show only that registers can *contain* flip-flops, not that registers are *limited to* flip-flops.

[7] Defendants complain that these definitions concern how registers operate ***within*** microprocessors, while the '596 Patent discloses embodiments where "the reservation register [is] outside of the processors." Br. at 8-9. But the embodiments are not limiting—there is no reason the "register" cannot be within a microprocessor. In any event, Defendants have not shown that a "register" means something different inside of a microprocessor than it means outside of one.

B. U.S. Patent No. 9,529,767

1. "abstraction protocol" (claims 1, 2, 4, 6, 16)

Term	Plaintiffs' Construction	Defendants' Construction
"abstraction protocol"	Plain and ordinary meaning	"Indefinite; Subject to § 112(f), claimed function: abstracting communication of commands between master controllers and edge controllers, corresponding structure: none"

a. The "abstraction protocol" is not subject to § 112(f).

Defendants assert that the term "abstraction protocol" is subject to § 112(f), fails to disclose sufficient structure, and is thus indefinite. Defendants' argument fails at the first step of the analysis: "abstraction protocol" is not a means-plus-function term subject to § 112(f) and thus should be given its plain and ordinary meaning.

A claim term is subject to § 112(f) only when it recites the "means . . . for performing a specified function without the recital of structure, material, or acts in support thereof." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347 (Fed. Cir. 2015). When a claim does not use the word "means," there is a rebuttable presumption that § 112(f) does not apply." *Id.* at 1348. That presumption will only be overcome "if the challenger demonstrates that the claim term fails to recite[] sufficiently definite structure or else recites function without reciting sufficient structure for performing that function." *Id.* (cleaned up). "Abstraction protocol" does not use the word "means," and Defendants fail to overcome the presumption that § 112(f) does not apply.

First, Defendants attempt to manufacture a "means" and a "function" where none exist. The relevant claim language provides that various controllers and the "storage media device" "communicate via the abstraction protocol." '767 patent, claims 1, 16. The patent similarly explains that the "abstraction protocol provides high-level access commands to storage media devices." '767 Patent., 4:4-7. In other words, the abstraction protocol is a set of "high-level access

commands" (i.e., "rules") that the various parts of the system can use to communicate with each other. Defendants acknowledge that "[a] 'protocol' is a set of rules that define a procedure to follow when transmitting and receiving data between devices." Br. at 11; Ex. 9, ¶ 11. That is, they admit an "abstraction protocol" is simply a "set of rules"—not a "means" to do anything.

Nor do Defendants attempt to explain how a "set of rules" can perform a ***function***. It cannot. Just as giving a speech in English does not mean that the English language itself is what gave that speech, communicating via the "abstraction protocol" does not mean the "abstraction protocol" is what performs the action of "communicating."[8] This distinction is highlighted by Defendants' proposed "function." Defendants allege that the claimed function is "***enabling*** communication of commands between master controllers and edge controllers for a storage media device."[9] Br. at 12 (emphasis added). But notably, Defendants altered the claim language to arrive at that alleged function. The claims do not state that the abstraction protocol "enabl[es]" communication, but rather that "the master controller and the edge controller communicate ***via the abstraction protocol***." The fact that Defendants' alleged function is not actually found in the claims demonstrates that the claims do not require the "abstraction protocol" to perform a function.

Second, even if "abstraction protocol" were somehow a structural means to perform a function, it would not fall within § 112(f) because it was a widely known and used term in the field of computer engineering at the time of the invention. A term does not invoke § 112(f) when "persons skilled in the art would understand the claim language to refer to structure, assessed in light of the presumption that flows from the drafter's choice not to employ the word 'means.'"

[8] The comparison to language is particularly apt, as protocols, including the abstraction protocol, can be thought of as a machine-readable language. Min Decl., ¶53.

[9] Defendants articulate a different "function" in the chart at the beginning of their argument. Br. at 10. The "enabling" function is the only one they argue for in their brief.

Samsung Elecs. Am., Inc. v. Prisua Eng'g Corp., 948 F.3d 1342, 1354 (Fed. Cir. 2020); *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003) ("[T]his court inquires into whether the 'term, as the name for the structure, has a reasonably well understood meaning in the art.'") (quoting *Greenberg v. Ethicon Endo– Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996))). Thus, the term is not a means-plus-function term if it is "used in common parlance or by ordinarily skilled artisans to designate *sufficiently definite* structure." *Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348, 1365 (Fed. Cir. 2013); *see Identity Sec. LLC v. Apple, Inc.*, No. 1:22-CV-58-LY, 2022 WL 16641851, at *5 (W.D. Tex. Nov. 2, 2022) (terms not subject to § 112(f) because "encryption or encoding algorithms" were well understood in the art).

A POSITA would understand that "abstraction protocol" refers to a class of conventional, publicly disclosed protocols in which some details of how to accomplish a task are generally not exposed to the programmer (i.e., a user). Min Decl. ¶49. (explaining that "abstraction protocols were commonly known and identifying two examples of conventional, publicly disclosed abstraction protocols known to a POSITA at the time of the invention). This is also explained by the specification itself, which states that the "abstraction protocol provides high-level access commands to storage media devices." '767 Patent, 4:4-7, 4:35-38 ("This abstraction protocol . . . supports common high-level read and write access to a pool of storage media devices, each of which may have a SATA or SAS [different storage protocols] interface."). In this way, the host is "agnostic" as to which specific storage protocol is being used by the underlying device. *Id.* at 4:16-19 ("The host generally need not be aware of storage media devices' interface protocol during operation."). An "abstraction protocol" was a well-understood category of protocols, and thus not a means-plus-function term. *See Power Integrations*, 711 F.3d at 1365.

In arguing that "abstraction protocol" is not known in the field, Defendants first err by

parsing the term into its constituent words —"abstraction" and "protocol"—and examining each word in isolation. Br. 11. Defendants thus fail to consider the term as a whole. Defendants cite no case endorsing such an approach, nor can they: the § 112(f) analysis is highly context-specific, and each word cannot be analyzed in a vacuum. *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1007 (Fed. Cir. 2018); *Sonrai Memory Ltd. v. Oracle Corp.*, No. 1:22-cv-94-LY, 2022 WL 800730, at *9 (W.D. Tex. Mar. 16, 2022); *Apex Inc.*, 325 F.3d at 1372 ("The primary source of this error lies in the district court's reliance on single words of the limitations . . . ."). Here, even Defendants' experts admit that a POSITA would understand what a "protocol is" and that "abstraction" means the "process of simplifying or generalizing often used in engineering and software design." Ex. 9, ¶13. For example, simplifying or generalizing may involve hiding underlying details or complexities." *Id.* Defendants' description aligns with the understanding of Plaintiffs' expert, Dr. Min. Min Decl. ¶50. That both experts understand the full term "abstraction protocol" demonstrates that it has a specific and well-understood meaning.

Defendants' second error lies in their assertion that "abstraction protocol" is a means-plus-function term because "abstraction is a highly-subjective design process." Br. at 12 ("a POSITA would not immediately know what that structure would look like until they go through significant design efforts."). But

> [N]either the fact that a [term] is defined in terms of its function, nor the fact that the term [] does not connote a precise physical structure in the minds of those of skill in the art detracts from the definiteness of structure. Even though the term [] does not specifically evoke a particular structure, it does convey to one knowledgeable in the art a variety of structures . . . .

Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 705 (Fed. Cir. 1998). A term need not detail a "precise physical structure" to avoid § 112(f)—it is enough to convey a well-known class, as "abstraction protocol" readily does.

Third, the surrounding claim language and specification provide additional details regarding the "abstraction protocol." *See Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1299 (Fed. Cir. 2014), *overruled on other grounds by Williamson*, 792 F.3d 1339 ("Structure may also be provided by describing the claim limitation's operation, such as its input, output, or connections."); *Sonrai Memory*, No. 1:22-cv-94-LY, 2022 WL 800730, at *9; *WSOU Invs. LLC v. Oneplus Tech. (Shenzhen) Co.*, No. W-20-cv-00952-ADA, 2022 WL 3500120, at *11 (W.D. Tex. May 24, 2022). Claims 1 and 16 require the "abstraction protocol" to be "a full-duplex protocol" and to "support[] full command queuing for the at least one storage media device." The specification provides even more structure: the abstraction protocol is "performance-centric;" "supports common high-level read and write access to a pool of storage media devices;" "is link-agnostic;" and "may be carried via a multiplicity of direct attach or networked interfaces, including but not limited to PCIe, Ethernet (e.g., 1GbE, 10GbE, 40GbE, or 100GbE), Infiniband, ThunderBolt, Firewire, USB, and/or custom interfaces." '767 Patent, Abstract, 4:4-63. Thus, the "operation" and "connections" of the "abstraction protocol" are well defined.

In any event, the "abstraction protocol" is not indefinite even if subject to § 112(f). For a term subject to § 112(f), "the patent specification must disclose with sufficient particularity the corresponding structure for performing the claimed function and clearly link that structure to the function." *Nevro Corp. v. Bos. Sci. Corp.*, 955 F.3d 35, 42 (Fed. Cir. 2020). "[T]he specification need only disclose adequate defining structure to render the bounds of the claim understandable to an ordinary artisan." *Telcordia Techs., Inc. v. Cisco Sys., Inc.*, 612 F.3d 1365, 1377 (Fed. Cir. 2010); *see also Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007) (observing that "this is not a high bar"). Here, even Defendants admit that the specification

describes the "features" and "properties" of the "abstraction protocol." Br. at 11; '767 Patent, Abstract, 4:4-63. Thus, the "abstraction protocol" is not indefinite.

b. "Abstraction protocol" is not indefinite under *Nautilus*.

Defendants argue in the alternative that "abstraction protocol" is indefinite even if § 112(f) does not apply "because the claims and intrinsic evidence do not provide any objective criteria to determine whether a storage protocol has been sufficiently simplified or generalized to constitute the claimed abstraction protocol." Br. at 12-13. That applies the wrong test. A term is only indefinite if it, when "read in light of the patent's specification and prosecution history, fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 908 (2014). Here, the specification provides the abstraction protocol's precise "features" and "properties." '767 Patent, Abstract, 4:4-63; Br. at 11. And it is a well-known term among those skilled in the art. Min Decl. ¶50. Thus, a POSITA would be able to discern with reasonable certainty the scope of the term.

2. "storage media device interface" (claims 1, 16)

Term	Plaintiffs' Construction	Defendants' Construction
"storage media device interface"	Plain and ordinary meaning[10]	"a physical interface for transmitting and receiving commands and data between the edge controller and the storage media device"

The parties agree that the "storage media device interface" communicates with the storage media device. Br. at 13. But Defendants' proposed construction adds a host of new, unsupported limitations as well: that the interface must be "physical" (by which they presumably mean it must be hardware); that it must be for "transmitting and receiving commands and data;" and that the communication must be "between ***the edge controller*** and the storage media device." Fatally,

[10] Plaintiffs again initially proposed a description of the plain and ordinary meaning in an attempt to reach a compromise with Defendants.

Defendants again do not even allege that the patentee acted as its own lexicographer to redefine "storage media device interface" or disclaimed part of its claim scope. *See Vitronics Corp*, 90 F.3d at 1580. Nor do Defendants allege that the meaning of "storage media device interface" is ambiguous. There is thus no basis to import Defendants' proposed limitations from either the specification or the extrinsic evidence.

First, Defendants do not explain why the "storage media device interface" should be limited to "a physical interface." Nothing in the claims, specification, or prosecution history limits the interface to a hardware interface. Defendants merely quote dictionaries that provide definitions of hardware interfaces, but every such dictionary also includes definitions of non-hardware interfaces—omitted from Defendants' brief. Ex. 10 at 3-4 ("The point at which a connection is made between two hardware devices, ***between a user and a program or operating system, or between two applications.***" (emphasis indicating text not included in Defendants' brief)); Ex. 14 at 2 ("ln software, it is a standard format for exchanging data."); Ex. 15 at 2 ("Software that logically interconnects two computers or a computer and another device and allows them to interoperate. Such software generally is characterized as performing a gateway function.").

Second, Defendants' construction would require that the "storage media device interface" be "for transmitting ***and*** receiving commands ***and*** data." Defendants nowhere address this aspect of their proposed construction. As such, they fail to explain why the "storage media device interface" must be able to both transmit ***and*** receive, and why it must be able to do so on both "commands" ***and*** "data." These baseless limitations should be rejected.

Third, there is no basis in the patent for Defendants' argument that the "storage media device interface" must enable communication "between the edge controller and the storage media device." As noted above, the parties agree that the "storage media device interface" must enable

communication with "the storage media device." But there is no indication in the patent that this communication must also be with "the edge controller."

The term "storage media device interface" appears in both independent claims 1 and 16, but in different contexts. In claim 1, the "storage media device interface" is a part of the "edge controller." '767 patent, claim 1 ("the edge controller comprising . . . at least one storage media device interface"). But there is no such limitation in claim 16—that claim does not require the "storage media device interface" to be a part of any other component of the system. *Id.*, claim 16 ("A routable packet-switched network supported by an abstraction protocol comprising . . . at least one storage media device interface"). For claim 1, Defendants' addition of "edge controller" to the claim term is unnecessarily redundant as the "storage media device interface" is already *within* the edge controller. *See also* '767 Patent, 5:32-40; *see* Figs. 4A, 4C (showing the "SMD Interface" within the Edge Controller), 6:33-35 ("one or more SMD interfaces 418' & 420' which communicate with one or more SMDs 422' & 424' via SATA and/or SAS links 426' and 428'").

Worse, for claim 16, Defendants' construction is just wrong: nothing in claim 16 requires any interaction at all between the "storage media device interface" and the "edge controller." Defendants' construction appears to be based on improperly importing embodiments in which the "storage media device interface" is inside of the "edge controller." Br. at 13; Ex. 10, ¶28. That embodiment is captured by claim 1. There is no basis to import that limitation into claim 16 via the "storage media device interface." *See Continental Circuits LLC v. Intel Corp*., 915 F.3d 788, 797 (Fed. Cir. 2019) (cautioning against importing limitations from the specification).

Defendants' extrinsic evidence is unavailing. Extrinsic evidence cannot provide a basis to limit claims when, as here, there is no support in the intrinsic evidence. *Seabed Geosolutions (US) Inc. v. Magseis FF LLC*, 8 F.4th 1285, 1287 (Fed. Cir. 2021) ("If the meaning of a claim term is

clear from the intrinsic evidence, there is no reason to resort to extrinsic evidence."). Even if considered, Defendants' extrinsic evidence is wholly insufficient to support their proposed construction. As discussed *supra*, the dictionary definitions do not require a "physical interface." Defendants' expert declaration simply repeats Defendants' characterizations of the intrinsic evidence. *Compare* Br. at 13 ("The storage media device interface is the only type of interface used to connect an edge controller with a storage media device in the specification. Long Decl. ¶28.") *with* Long Decl. (Ex. 10) ¶28 ("In the specification, a storage media device interface is the only described interface for connecting an edge controller to a storage media device."); *see Aristocrat Techs. Australia Pty Ltd. v. Int'l Game Tech.*, 709 F.3d 1348, 1360 (Fed. Cir. 2013) (there is "nothing improper in discounting conclusory statements as 'not useful.'"). In any event, as Plaintiffs' expert explains, a POSITA would not understand a "storage media device interface" to require Defendants' added limitations. Min Decl., ¶¶57-59.

C. U.S. Patent No. 10,873,753

1. "interleaved memory" (claims 4, 7, 15)

Term	Plaintiffs' Construction	Defendants' Construction
"interleaved memory"	"blended different types of memory"	"an arrangement of different types of memory that are alternately accessed to achieve an average access bandwidth"

"Interleaved memory" is a particular "arrangement of memory superposition" where "memory superposition" is "two or more types of memory" that "are made available for a data flow or other data processing operation." '753 Patent, 7:1-9, 8:35-40. "Interleaved memory" should be construed to mean "blended different types of memory." This construction comes from the specification, which explains that "[a]nother arrangement of memory superposition 140 is interleaved memory, to achieve an average access bandwidth. Input bandwidth, output bandwidth, or power could be blended among different types of RAM or drives such as rotational or disk

drives versus solid-state drives, storage media modules, and different drive interfaces." '753 Patent, 8:35-40. In other words, "interleaved memory" requires a "blend[] among different types of" memory. Plaintiffs' construction is consistent with the relevant dictionary definition, which defines "interleaved memory" broadly, as "a memory system consisting of several memory modules (or banks) with an assignment of addresses that makes consecutive accesses fall into different modules." Ex. F (Electrical Engineering Dictionary) (CV-AMD0017645) at CV-AMD0017674 (definition of interleaved memory). The specification's definition also comports with a POSITA's understanding of "interleaved memory." Min Decl., ¶¶62-64.

Defendants take issue with Plaintiffs' construction in two respects. First, Defendants argue that Plaintiffs' construction misunderstands the specification because it is the "characteristics" that must be blended, not the "memories themselves." Br. at 16. But it is in fact Defendants who misread the specification. As quoted above, the specification explains that "interleaved memory" can be used to "achieve an average access bandwidth" by using the bandwidth and power "blended among different" types of memory. Thus, it is the use of the memory that must be blended "among different types of memory." In other words, the memory types must themselves be blended so that the bandwidth and power can be applied among the different types of memory. Min Decl., ¶64. Second, Defendants assert that Plaintiffs' construction is duplicative of "memory superposition," which already requires "a plurality of types of memory." Br. at 16. But "interleaved memory" requires that different types of memory be "blended together," while "memory superposition" only requires "two or more types of memory." '753 Patent, 7:1-9. Thus, the terms are not duplicative.

Defendants' proposed construction adds new limitations that do not find support in the intrinsic evidence. First, Defendants' construction requires importing an ***outcome***—"to achieve an average access bandwidth"—into the claim. Defendants do not provide any evidence supporting

this limited scope. In particular, there is no requirement in the patent that "interleaved memory" create a particular outcome. Min Decl., ¶64. And it is well-settled that an unclaimed effect or purpose should not be read into a claim. *See United Therapeutics Corp. v. Liquidia Tech., Inc.*, 74 F.4th 1360, 1368–69 (Fed. Cir. 2023) (declining to read an effect limitation into the claim, court noting that "[r]ead in context, the claim language…does not import any additional efficacy limitations . . . ."); *see also Puma Biotechnology, Inc. v. AstraZeneca Pharms. LP*, No. 21-cv-1338-MFK, 2023 WL 2683559, at *12 (D. Del. Mar. 29, 2023) (finding "no basis to read in a specific purpose" in a claim without support from the specification). There is no basis to add this outcome limitation to the claims.

Second, Defendants add in that the "different types of memory" must be "***alternately*** accessed." The patent does not require this limitation. Notably, Defendants do not identify any support for their "alternatively" limitation, but simply treat "interleaved" and "alternated" as synonymous without any evidence. *See, e.g.*, Br. at 16 ("access to the memories are ***alternated (interleaved)*** between those different memories" (emphasis added). To the contrary, interleaved memory can be accessed in a number of ways—not only alternately—such as in a staggered or parallel fashion, Min Decl., ¶¶62, 64, or sequentially. Ex. F (CV-AMD0017645) at CV-AMD0017674 (explaining that "sequential interleaving" is a form of "interleaved memory").

2. "swapped memory over a specified address range" (claims 4, 7, 15)

Term	Plaintiffs' Construction	Defendants' Construction
"swapped memory over a specified address range"	Plain and ordinary meaning	"memory with a specified address range where information is moved between the memory and non-volatile storage"

The plain and ordinary meaning of "swapped memory over a specified address range" is just what it says: memory that has been swapped (or moved) between storage locations for a

specified range of memory addresses. Defendants would limit the term to swapping memory *only* "between the memory and non-volatile storage," but they fail to show that limitation is necessary to cure some supposed ambiguity, and they do not even try to show lexicography or disclaimer. The '753 specification explains that "swappable memory over a specified address range" is "another arrangement of memory superposition." '753 Patent, 8:41-42. "Swapped memory" refers to memory that has been moved (i.e., "swapped"), and "over a specified address range" refers to a specific defined range of memory addresses rather than the *entire* memory. Min Decl., ¶67. This is straightforward, and nothing in the claims or specification limits the memory swapping to any particular locations, and indeed, there are a number of possible storage locations available for memory swapping, such as between locations inside the memory, as well as between memory and non-volatile storage. *Id.* Defendants' construction would exclude any swapping other than specifically between memory and non-volatile storage, but they offer virtually no intrinsic evidence to support this narrowed construction.

Defendants next resort to extrinsic evidence, but extrinsic evidence cannot be used to change the intrinsic meaning of term. *Profectus Tech. LLC*, 823 F.3d at 1380. In any event, Defendants' extrinsic evidence fails to support their proposal. Neither of Defendants' cited dictionary define "swapped memory"—the term the patentees chose to put in the claims. The dictionaries instead discuss "swap" and "swap file." Br. at 17. Defendants' inability to present a single use of the term "swapped memory" indicates that the term does not have a specialized, narrowed meaning. Moreover, Defendants' own dictionary includes a type of swapped memory—"bank switching"—in which memory is moved *between memory locations*, not between memory and non-volatile storage. Min Decl., ¶¶67-68; Ex. G at 51. Thus, even if extrinsic evidence were a valid approach here, it does not support Defendants' narrowed construction.

Finally, Defendants assert claim construction is required for a lay juror to understand the term. Br. at 17. That is not the standard. The Court need only resolve the actual claim scope dispute between the parties, *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008), which it would do by rejecting Defendants' narrowed construction. Where one party urges a "wrong" construction, a court properly resolves the claim scope dispute by rejecting that construction and giving the term its plain and ordinary meaning. *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1304 (Fed. Cir. 2007). Ultimately, Defendants' position is contradictory: they appear to agree with Plaintiffs that the term should be given its "ordinary and customary meaning in the art," Br. at 18, but then urge a construction that would narrow the meaning beyond that ordinary meaning. Since both parties agree that the ordinary meaning should apply, the claim is not in need of construction. *See Summit 6*, 802 F.3d at 1291.

3. "one or more swappable pods or cards" / "the plurality of swappable pods or cards" (claims 1-6)

Term	Plaintiffs' Construction	Defendants' Construction
"one or more swappable pods or cards" / "the plurality of swappable pods or cards"	[one or more / plurality of] pods or cards that are removable, insertable, or replaceable	Indefinite

As an initial matter, Defendants do not dispute that Plaintiffs' proposed construction is correct. Nor could they, as the specification explains that "[p]ods and cards are removable, insertable, replaceable and optionally hot-swappable in the chassis." '753 Patent, 2:56-57. This reflects the plain and ordinary meaning of the term at issue.

Defendants instead allege that the "swappable pods or cards" terms in claim 1 are indefinite, but that argument is based on a misunderstanding of the claim and failure to consider the specification. Defendants argue there is ambiguity as to whether the claims can be satisfied by just one swappable card or pod, but the claims follow a logical order that clearly shows that

"plurality" refers to "one or more." Defendants thus fail to meet their burden to prove by clear and convincing evidence that this claim is indefinite. *Sonix Tech. Co. v. Publ'ns Int'l, Ltd.,* 844 F.3d 1370, 1377 (Fed. Cir. 2017) ("Indefiniteness must be proven by clear and convincing evidence.").

It is well established that plural terms (like "plurality") can mean "one or more" when the context supports it. "[I]n context, the plural can describe a universe ranging from one to some higher number, rather than requiring more than one item." *Versa Corp. v. Ag-Bag Int'l Ltd.*, 392 F.3d 1325, 1330 (Fed. Cir. 2004); *In re Omeprazole Pat. Litig.*, 84 F. App'x 76, 80 (Fed. Cir. 2003). The Federal Circuit has held there is no prohibition on claim language reciting, for example, a "group of one or more agents" or a "set of one or more items." *UTTO Inc. v. Metrotech Corp.*, 119 F.4th 984, 996 (Fed. Cir. 2024); *IEX Corp. v. Blue Pumpkin Software, Inc.*, 122 F. App'x 458, 465 (Fed. Cir. 2005).

Here, the specification and abstract use the term "the plurality of swappable pods or cards" to refer back to "the one or more swappable pods or cards" such that "the plurality" refers to "the one or more swappable pods or cards." '753 Patent, 1:25-35, Abstract. In particular, claim 1 requires "one or more swappable pods or cards in one or more chassis" where "each of the one or more swappable pods or cards" has hardware and software modules. The claim goes on to recite additional requirements for "the plurality of swappable pods or cards." The "plurality" can only refer to the "one or more" "swappable pods or cards," as that is its antecedent basis. A POSITA would thus understand that claim 1 uses the term "plurality" to refer to the "one or more" swappable pods or cards. This meaning is clear in contrast with other claim elements, where only "one or more of the plurality" must have some characteristic, instead of the entire plurality. *Compare* '753 patent, claim 1 ("***one or more of* the plurality of swappable pods or cards** having a portion for user-definable hardware modules or user-definable software modules") *with id.* ("***the***

plurality of swappable pods or cards being user-configurable"). There is no ambiguity here in the full context of the '753 Patent. The meaning of the claim is clear to a POSITA: the "plurality of swappable pods or cards" refers to the "plurality [of the one or more] swappable pods or cards."

D. U.S. Patent No. 10,985,943

1. "programmable logic device" (claims 1, 10)

Term	Plaintiffs' Construction	Defendants' Construction
"programmable logic device"	Plain and ordinary meaning[11]	"an integrated circuit where the user can alter the connection pattern of the circuits"

Defendants' brief misstates the parties' disputes regarding "programmable logic device," needlessly confusing the actual issues. First, there is no dispute that "programmable logic device" ("PLD") is a term of art. *Cf.* Br. at 19 ("The parties disagree whether 'PLD' is a term of art"). Second, Plaintiffs do not contend that a PLD includes a device where only "the software is programmable." *Cf. id.* Third, Plaintiffs do not contend that a PLD can "cover nearly any IC [integrated circuit]." *Cf. id.* at 20. Indeed, Defendants' own position is unclear; their construction explicitly narrows the term beyond the plain and ordinary meaning, yet statements in their brief suggest that they actually support the broader plain and ordinary meaning.

Contrary to Defendants' presentation, the parties' fundamental dispute is what aspects of the hardware circuitry must be configurable to constitute a PLD, and by what means they can be configured. Plaintiffs' argument is straightforward: something qualifies as a PLD if the electronic circuitry can be programmable or reprogrammable. In contrast, Defendants seek to import three limitations: (1) that something is a PLD only if one specific part of the circuit—the "connection pattern of the circuits"—is alterable (Br. at 19); (2) that the underlying circuitry must be capable

[11] Plaintiffs again provided a description of the term's plain and ordinary meaning to try reach a compromise with Defendants. Plaintiffs do not contend that this description should be adopted by the court as a construction to be given to the jury.

of being *physically* altered, such that circuitry capable of being altered via firmware or software would not qualify as a PLD (*id.* at 20 (arguing Plaintiffs' understanding of PLD is wrong because it would "encompass a device whose operation can be configured or reconfigured through software")); and (3) that a PLD is limited to an "integrated circuit" (*id.* at 19).

Once again, Defendants stumble at the starting block. In order to narrow or redefine a claim term, Defendants must first establish that the term's meaning is ambiguous, that Plaintiffs defined the term in the specification, or that they disavowed the full claim scope. *Vitronics Corp*, 90 F.3d at 1580 ("[W]here the patent documents are unambiguous, expert testimony regarding the meaning of a claim is entitled to no weight."). And in all events, Defendants cannot use extrinsic evidence to alter the meaning of PLD in the context of the '943 Patent. *See Genuine Enabling Tech. LLC v. Nintendo Co.*, 29 F.4th 1365, 1373 (Fed. Cir. 2022) ("[E]xpert testimony may not be used to diverge significantly from the intrinsic record."); *Grace Instrument Indus., LLC v. Chandler Instruments Co., LLC*, 57 F.4th 1001, 1010 (Fed. Cir. 2023).

Turning first to the intrinsic evidence, the '943 Patent broadly describes the claimed "programmable device[s]" and provides multiple examples: "an FPGA [Field Programmable Gate Arrays] . . . , a PLD, or an ASIC [Application-Specific Integrated Circuit], or more than one of these, or some combination of these, or other programmable device that can configure electronic circuitry, ***in some versions including one or more processors or controllers***." '943 Patent, 4:30-35 (emphasis added). These examples of "programmable devices" (FPGA, PLD, and ASIC) are not mutually exclusive categories of devices, but instead overlap. For example, Defendants acknowledge that an FPGA is "a type of PLD." Br. at 21. ASICs are also types of PLDs, Min Decl., ¶74—but both FPGAs and PLD can ***also*** be thought of as types of ASICs. Ex. N (CV-AMD0017624); Ex. O (CV-AMD0017561). In short, the specification's reference to "an FPGA,"

"a PLD," or "an ASIC" broadly defines these terms interchangeably for purposes of the patent, so each simply refers to a "programmable device that can configure electronic circuitry."

The extrinsic evidence also confirms that PLD should not be limited to Defendants' proposed construction. The Dictionary of Electronics defines PLD broadly as "[a] logic device where the designer must program the function required into the device." Ex. P (CV-AMD0017582) at 454; *see also* Ex. O (CV-AMD0017561) ("PLDs are circuits that built in a way that can be reconfigured."); Ex. F (CV-AMD0017645) at CV-AMD0017676 ("PLDs are "able to implement combinational and/or sequential digital functions defined by the designer and programmed into this circuit."). Notably, this definition ***only*** requires that a PLD is a "logic device" (not just an "integrated circuit," as Defendants propose) and that the "designer must program the function required into the device." *Id.* Nothing in that construction limits ***how*** the circuitry is programmed or that the "connection pattern of the circuits" must be what is altered. Defendants present figures of PALs (Phase Alternation Lines) and PLAs (Programmable Logic Arrays) and argue they are representative of all PLDs, Br. at 24, but PALs and PLAs are sub-types of PLDs and thus do not define the full scope of a PLD. Ex. P (CV-AMD0017582) at 454, 419, 451. Ultimately, as Dr. Min explains, "[a] PLD can configure not only connection pattern of the circuitry or the functional blocks, but also the portions of circuitry themselves." Min Decl., ¶74. Thus, a PLD "can provide configurability of the circuitry in any variety of manner." *Id.*

Courts have construed PLD broadly, consistent with its plain and ordinary meaning. For example, in *802 Systems Inc. v. Cisco Systems, Inc.*, the court construed "programmable logic device" to have its "known meaning . . . in the art," which is a "device that can have its logic reprogrammed with code." No. 2:20-CV-00315-JRG-RSP, 2021 WL 3403647, at *8 (E.D. Tex. Aug. 4, 2021). That construction is contrary to Defendants' proposed construction, because it

allows the PLD to be "reprogrammed with code" (i.e., software). *See also Altera Corp. v. Clear Logic, Inc.*, 424 F.3d 1079, 1081 (9th Cir. 2005) ("programmable logic devices ('PLDs') . . . are chips that can be programmed to perform various logic functions. ***A customer uses . . . software to program the PLD*** . . . ." (emphasis added)); *Realtime Data, LLC v. Packeteer, Inc.*, No. 6:08-cv-144, 2009 WL 10742296, at *24 (E.D. Tex. June 22, 2009) (construing "programmable logic device" as "digital hardware component that is reconfigurable.").

Defendants identify nothing in the patent that narrows the broad plain and ordinary meaning of PLD. They point to the claim requirement that the PLD include "one or more sandboxes with user-definable programmable electronic circuits of the PLD." Br. at 19-20. But that statement only reinforces that the PLD must have some sort of "user-definable programmable electronic circuits"—it does not limit in what way those circuits may be user-definable and programmable, and it certainly does not limit PLDs to "an integrated circuit where the user can alter the connection pattern of the circuits."

Similarly, Defendants rely on the specification's statement that "[t]he use of FPGAs 122, and especially with the introduction of sandboxes 132, support the 'hardware defined every-thing' concept, and allow systems to be built for what's next, i.e., systems not yet designed." Br. at 20-21 (quoting '943 Patent, 3:14-17). But this passage does not even mention PLDs, and Defendants fail to explain how it supports their proposed construction. Defendants next argue that the specification shows that a PLD must have configurable hardware, not just configurable software. Br. at 21. But that is not in dispute—the dispute is by what means the hardware is capable of being configured—and so Defendants' arguments on that point are of no relevance.

Defendants turn to the prosecution history, Br. at 20, but that merely states that "[p]rogrammable logic device, or PLD, is a term of art referring to a specific type of integrated

circuit that has user programmable electronic circuits." Ex. 21. Again, that a PLD "has user programmable electronic circuits" does not support Defendants' request to limit PLDs to users physically altering "the connection pattern of the circuits." There is thus nothing in the intrinsic evidence that limits the plain and ordinary meaning of a PLD as containing electronic circuitry capable of being configured or reconfigured.

Defendants' extrinsic evidence fares no better. Notably, none of Defendants' extrinsic evidence limits *how* the hardware circuitry can be configured in a PLD—and it certainly does not exclude using firmware or software to accomplish the configuration as Defendants propose. Ultimately, while it is not clear what exactly Defendants intend to exclude with their construction, it is clear that there is no basis in either the intrinsic or extrinsic evidence to limit the scope of PLD. Any arguments Defendants have about whether their products include sufficient programmability are for another day. *See Lazare Kaplan Int'l, Inc.*, 628 F.3d at 1376; *Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319 (Fed. Cir. 2016) ("Indeed, we noted in *O2 Micro* that there are limits to the court's duties at the claim construction stage. For example, courts should not resolve questions that do not go to claim scope, but instead go to infringement . . . .") (internal citation omitted).

E. U.S. Patent No. 10,944,634

1. "geographical area" (claims 1, 8, 15)

Term	Plaintiffs' Construction	Defendants' Construction
"geographical area"	Plain and ordinary meaning	"physical place such as an apartment complex, neighborhood, city, or state"

Once again, Defendants seek to rewrite an unambiguous and easily understood claim term without even attempting to show that the patentee intended to act as its own lexicographer or disclaim claim scope in the specification. Defendants' proposed construction should be rejected on that basis alone. *See Vitronics Corp*, 90 F.3d at 1580.

There is no proper basis to rewrite "geographical area" as "physical place such as an apartment complex, neighborhood, city, or state." The term "geographical area" appears in independent claims 1, 8, and 15, which all require a tuning server to determine "that a next network connection from the first endpoint device to a second endpoint device matches a ***geographical area*** of a past network connection." '634 Patent, 14:6-8 (emphasis added), 14:60-62, 15:48-16:2. Defendants' only purported rationale for their construction is that the specification gives examples of "geographic area" and Defendants contend that all of those examples are "physical places." Br. at 27 (quoting '634 Patent, 2:52-57). But it is black letter law that examples should not limit claim scope. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005). Moreover, even if the examples were "physical places" they are also "geographical areas," as well as other synonyms.

Ultimately, Defendants' actual request appears to be for the Court to decide as a matter of law that an "IP address" is not a "geographical area" for infringement purposes. That is a question for the jury and cannot be resolved at claim construction. *See, e.g.*, *Lazare*, 628 F.3d at 1376.

Defendants also put forward a complex reading of the prosecution history that is full of inference and implication, but lacks even a suggestion that the applicant made a clear and unmistakable disclaimer of claim scope. Br. at 27-19. In order for prosecution disclaimer to attach, the patentee must "unequivocally disavow[] a certain meaning to obtain his patent." *Omega Eng'g, Inc, v. Raytek Corp.*, 334 F.3d 1314, 1324-25 (Fed. Cir. 2003) ("[T]he alleged disavowing statements [must] be both so clear as to show reasonable clarity and deliberateness, and so unmistakable as to be unambiguous evidence of disclaimer.") (internal citation omitted). Here, there are no such statements. The crux of Defendants' argument is that a cited prior art reference, Cole, disclosed an "IP address" but neither the patentee nor the examiner identified the "IP address" as a "geographical area." There is no credible argument that the applicant's (or the

examiner's) failure to say something could qualify as a clear and unmistakable disclaimer. Nor do Defendants cite any authority for this proposition. And even if they had, Defendants misstate the facts—***Cole does not mention an IP address***. Ex. H. Defendants instead claim that it was well known that the networks referenced in Cole use IP addresses. Br. at 27-28. Defendants' chain-of-suppositions falls far short of showing that Plaintiffs "unequivocally disavowed" IP addresses.

2. "network connected device" (claims 16, 20)

Term	Plaintiffs' Construction	Defendants' Construction
"network connected device"	Plain and ordinary meaning	indefinite

Defendants assert that the term "network connected device" is indefinite but, confusingly Defendants never explain how that term itself is indefinite. Nor could they. A "network connected device" is a simple, easy to understand concept: a device connected to a network. There can be no real dispute that the term is clear. Min Decl., ¶78.

Instead, Defendants argue that up to *six other terms* from the claims are indefinite and then try to retrofit them into "network connected device." *See* Br. 30. Again, there is no confusion about what the "network connected device" means—Defendants arguments only concern what these other six other terms mean. Defendants' identification of one term to argue that six others are indefinite appears to be an attempt to circumvent the Court's ten-term limit on claim construction. *See* Standing Order Governing Patent Proceedings (OGP) 4.4—Patent Cases. In any event, Defendants' indefiniteness arguments fail on the merits as well. "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention[.]" *Nautilus*, 572 U.S. at 901. Indefiniteness must be proven by "clear and convincing evidence." *Sonix Tech.*, 844 F.3d at 1377. Defendants fall short of satisfying their burden.

The crux of Defendants' argument is that claims 16 and 20 are "circular" because the claims require the "network connected device" "acting as a tuner server" to send data to itself. But the ability to send information to and from itself is a standard feature of a network connected device and does not introduce any indefiniteness. Min Decl., ¶¶79-80. For example, a tuner server can (through software) control and take actions remotely and send parameters from the first endpoint device back to itself in order to process that data. *Id.* This is further shown by the specification, which explains that the "network connected device" (or "tuner server") has a "higher level view of the network traffic and not only offloads the calculations but can also incorporate knowledge of the higher level view of the network topology to enhance congestion control over/among the network(s)." '634 Patent, 5:5-9. The "network connected device" thus exercises "control over" "the network" to accomplish its goals—including "control[ing]" the endpoints to send data back to itself for processing. Further, the specification explains that "[t]he tuning server 302 may then be locally co-located with various endpoints (e.g. with the same data center). '634 Patent, 5:9-11. In that instance, the "network connected device" can exercise "control" over the various "endpoints" to send data back to the "network connected device" because they are located in the same location. A POSITA would understand the meaning and scope of claims 15, 16, and 20, and thus they are not indefinite.

II. Conclusion

For the reasons above, Plaintiffs' proposed claim constructions should be adopted.

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Respectfully Submitted,
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CERTIFICATE OF SERVICE

I certify that the forgoing document was served upon all counsel of record via the Court's ECF system.

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