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*A Need For Intervention: Keeping Competition Alive in the Networking Industry in the Face of Increasing Patent Assertions Against Standards*

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Juniper Networks represents an emerging class of companies offering high-performance networking equipment designed specifically for the Internet. The essence of the Internet can be characterized as a single network made up of interoperable equipment from different companies. Interoperability is made possible by the establishment of open standards that define the manner by which networking equipment must communicate. Like other networking equipment, Juniper Networks' products implement numerous open standards set by bodies such as the Internet Engineering Task Force.

As Director of Intellectual Property at Juniper Networks, I am responsible for handling the company's intellectual property matters, including investigating assertions that Juniper Networks' compliance with certain networking standards may infringe third party patents. In the past several years, I've observed a sudden surge in these types of assertions (some valid, others not) against any vendor building standards-compliant equipment. The reason for the surge is understandable—patent owners hope to profit from the wide deployment of products that must implement Internet standards. In the absence of intervention, however, these assertions risk halting future development in the Internet. At particular risk are young, small networking equipment vendors as well as the collaborative environment vital to sustain standards work. I provide the comments in this statement as my personal views based on my experience and observations. My views do not necessarily reflect the views of Juniper Networks.

### **The Nature of Networking Technology**

Before the Internet, computer networks were generally built on vendor-proprietary platforms for specialized applications. That meant networking equipment from different vendors were not interoperable and therefore could not be used together in a single network. Building such a network required selecting a single vendor who could supply the entire range of products needed to build the network. Because development of so many products required a breadth of expertise and significant resources, competition was generally limited to larger-sized companies.

What made the Internet different was that it was based on standardized protocols, such as the Internet Protocol as well as numerous routing, transport, and other protocols. These standardized protocols were specifically designed to support a network that could scale globally for generalized (rather than specialized) applications. Proprietary network vendors quickly became extinct.

As a standards-based network, the Internet opened up opportunities for competition. Rather than buying everything from a single vendor, companies building the infrastructure for the Internet could mix and match standards-compliant equipment from different vendors to form “best-of-breed” networks (i.e., networks built with the best equipment, regardless of whether that equipment came from one or many vendors). This opened the door for smaller companies, which built businesses around limited product offerings.

While the Internet has experienced significant changes over the past decade, it is still in its infancy. To ensure that the Internet evolves in a direction that addresses ever-changing customer demands and expectations,<sup>1</sup> networking vendors rely on rapid standardization through industry collaboration. The Internet Engineering Task Force (IETF), the preeminent networking standards setting body, establishes networking standards for the Internet through industry participation.<sup>2</sup> Individuals from various organizations (large and small alike) contribute ideas for standardization before reaching consensus. Equipment vendors track the IETF’s standard work and often implement protocols only after they’ve reached a certain stage of standardization. This ensures that the protocol implementations will not require changes in the future or, even worse, maintenance of multiple versions. As the ones most affected by delays in standardization, Internet equipment customers sometimes pressure vendors to converge on standards quickly to ensure availability of features supported by interoperable equipment. When finally adopted, IETF standards become the common blueprint that all Internet equipment vendors follow.

This is not to say proprietary protocols are extinct in the Internet. Some vendors may choose to implement proprietary protocols to establish competitive advantage (either through differentiation or early market acceptance before standardization). Enforcing patents to protect that competitive advantage does not raise the same anticompetitive concerns as enforcing patent rights over standards.

Given the collaborative nature of the work done by standards setting bodies such as the IETF and the market’s desire for rapid convergence on

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<sup>1</sup> This may include improvements in reliability, bandwidth, latency, security, and efficiency as well as provisioning of new services, features, and functions.

<sup>2</sup> IETF standards emerge from published documents known as Requests For Comments (RFCs) and Internet Drafts. Details of the standardization process are outlined in RFC 2026 (entitled “The Internet Standards Process--Revision 3”) and RFC 3160 (entitled “The Tao of IETF: A Novice’s Guide to the Internet Engineering Task Force”), both of which can be found at [www.ietf.org](http://www.ietf.org).

standards, it is easy to understand how lay engineers involved in the standards setting process may naturally expect (rightly or not) that these standards can be freely implemented, unencumbered by patent rights. After all, in contrast to proprietary protocols, standards emerge from industry collaboration and are published for the very purpose of enabling the networking community to build interoperable products. As patent awareness heightened, the IETF encouraged contributors to license essential patents on “openly-specified, reasonable, nondiscriminatory” terms to alleviate concerns about patent rights and minimize delays in the standardization process.<sup>3</sup> While the meanings of these terms were left open, the IETF’s clear intent was to raise the industry’s comfort level that known impediments to standards use had been removed.

Patent issues, however, persist in the IETF. For example, the IETF recently put a high-priority standardization effort<sup>4</sup> on hold for six months when a patent owner asserted that complying with the standard would infringe his patent. The IETF wasn’t able to resolve the issue with the patent owner, and instead determined that the patent didn’t apply. The IETF consequently chose to resume the standardization effort, though whether a court agrees with the IETF’s determination remains to be seen.

### **Typical Patent Assertion Scenario**

As capital expenditures for Internet infrastructure equipment escalated over the past several years, so too have assertions that networking equipment infringe patents by virtue of compliance with standards.<sup>5</sup> Today, a number of companies generate significant revenue from the licensing of patent portfolios, the most valuable patents being those that are widely infringed and for which infringement cannot be avoided. Patent owners have targeted standards-compliant networking equipment, usually by dusting off issued patents directed to old (but related) technologies or modifying claims in pending patent applications to read on published standards.

In a typical scenario, a patent owner initiates contact with a networking vendor. The patent owner asserts that the networking vendor’s product complies with a particular standard (or set of standards) and that such compliance infringes one or more of its patents. The patent owner then demands payment of a royalty, usually a running royalty calculated as some percentage of sales revenue. Most of the situations I am aware of share the following characteristics:

- the patent owner (usually a mature company) holds a large patent portfolio, including patents relating to networking technologies, and does not sell products that compete with the products it has accused of infringement;

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<sup>3</sup> See RFC 2026, section 10.

<sup>4</sup> The standard related to supporting foreign language domain names.

<sup>5</sup> I use the term “assertion” because even unsubstantiated allegations of infringement may cause significant disruption and injury.

- the networking vendor (usually a smaller, younger company) has few or no patents relevant to the patent owner's principle business and has experienced a relatively high degree of success in selling products;
- compliance with the standard (or set of standards) identified by the patent owner is necessary for interoperability in the Internet environment.

These patent owners ultimately want money and are not seeking to protect some competitive advantage. As a tactic, however, they may threaten litigation and injunctions to maximize the royalty amounts that can be extracted.

It is no coincidence that under this scenario, the patent owners are usually larger companies and the networking vendors are usually smaller, younger companies. Larger companies typically have large patent portfolios and will cross-license each other on a royalty-free basis. Smaller companies, however, typically lack comparable patent portfolios and thus are on unequal footing when it comes to negotiating patent licenses for standards they must implement in their Internet equipment.

Evidence of this problem is not merely anecdotal. The IETF maintains a list of numerous notices from companies asserting patent rights over IETF standards.<sup>6</sup> While this list reveals only those assertions brought to the attention of the IETF, its size alone reveals the severity of the problem.

### **The (Anticompetitive) Effects of Patent Assertions on Standards**

When a networking vendor is approached by a patent owner asserting that compliance with a standard infringes its patent, the vendor has several primary options:

1. discontinue the accused product;
2. redesign the product so it no longer complies with the standard at issue;
3. refuse to pay and, if sued, challenge the validity of the assertion in court;
4. negotiate and pay a royalty.

All four options lead to the same result—harm to competition. While option 1 clearly harms competition by reducing consumer choice, option 2 has the same effect. The utility of Internet networking equipment lies in its ability to interoperate with other networking equipment. Equipment that is not interoperable cannot be used. That leaves options 3 and 4.

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<sup>6</sup> The list can be found at the IETF's Page of Intellectual Property Notices, <http://www.ietf.org/ipr.html>.

Option 3 forces the networking vendor to take a heavy risk. The networking vendor may believe, in good faith, that the assertion is without merit. If a court or jury disagrees with that belief, however, the networking vendor may be exposed to substantial damages for patent infringement. The damages award, as well as trebling if infringement is found to be willful, may bankrupt or at the very least raise the cost of product manufacturing to uneconomical levels. Even when the networking vendor prevails, it must devote significant resources to defend its position, resulting in lost opportunity costs and consequently damage to its business.

For risk-averse companies, option 4 may be the only reasonable choice. In this scenario, however, networking vendors lack leverage to negotiate any kind of reasonable royalty amount. This should be no surprise. By its selection, the patent owner identified the networking vendor because it does not have patents applicable to the patent owner's principle business and the networking vendor's past sales give rise to significant potential exposure for past damages if it were sued. As such, the networking vendor does not have much ability to "negotiate," and may be left with simply paying whatever the patent owner demands.

To better appreciate the burden of these patent assertions, it may be helpful to consider the perspective of a networking vendor in concrete terms. Two points deserve emphasis. First, because a single standard may include significant detail, any number of patents may be asserted against various aspects of the standard. These patents may be owned by numerous companies. Second, each networking vendor may implement dozens or more networking standards in its products. Taken together, a networking vendor may face numerous assertions from numerous patent owners alleging that a single product's compliance with standards infringes numerous patents. With no limit on the number of patents that could apply, there is no limit on the amount of royalties that could be owed. Paying a 1% royalty on each patent, for example, could lead to a total of 20%, 30% or even 50% of a product's revenues paid to royalties—an obviously ridiculous but possible result.

When networking vendors are viewed as a group, the impact of the anticompetitive effect becomes more apparent. The group of vendors most affected is made up of smaller, younger companies that have emerged to build products specifically for the Internet. These companies emerged out of a demand in the marketplace for companies that could innovate and execute better than the companies before them. Younger companies already face natural barriers to entry (e.g., the need for expertise, resources, credibility) in competing with mature companies. To permit patent assertions to impose further barriers will only lead to fewer choices for customers.

Companies with large portfolios may attempt to justify their licensing practices on the basis that the entire patent portfolio, which includes patents not related to standards, is being licensed. While this may be true, my experience has been that these companies focus on the standards patents during

negotiation as a heavy hammer to force the license. Without the standards patents, it is not likely that these companies would extract nearly the same royalties since the portfolio would not have the same value.

This is not to say that the patent system doesn't have its place. Patents promote innovation by protecting a company's investment in innovation. And while that protection is important, it must be balanced to ensure that the harm it inflicts does not violate other rights. In the specific context of patents assertions made against networking equipment by virtue of compliance with standards, the clear effect is anticompetitive.

Beyond the anticompetitive effects, there are costly practical effects as well. If patents covering standards continue to be enforced in the manner in which they have been, the result will be to encourage more assertions (many without merit) and more patent filings on standards. Eventually, the standards bodies will not be able to function as collaboration erodes and fewer standards are adopted. This poses a serious risk to the Internet's future.

### **What is Needed**

The anticompetitive effects of these patents assertions underscore the need for patent licensing requirements. Two threshold questions must first be addressed:

1. who should decide those requirements?
2. what should those requirements be?

Since standards bodies in the networking area currently do not impose strict requirements over patents covering standards, the manner in which these patents are licensed is basically dictated by the company with the strongest leverage—the patent owner. That does not make sense. The IETF as well as companies throughout the networking industry almost universally acknowledge the need for “reasonable” and “non-discriminatory” terms for standards compliance.<sup>7</sup> What “reasonable” and “non-discriminatory” mean, however, should not be left to the companies whose interest is maximizing licensing revenue to decide.

Standards setting bodies, such as the IETF, are the logical entity to regulate these matters. Unfortunately, they face some challenges. Diversity in membership (e.g., companies with large patent portfolios versus companies with small patent portfolios) leads to conflicting interests, usually preventing consensus on a single set of requirements. These bodies may also have

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<sup>7</sup> RFC 2026 encourages licensing on “openly-specified, reasonable, non-discriminatory” terms. Further, numerous companies have indicated a willingness to license patents essential to standards on “reasonable” and “non-discriminatory” terms. See IETF's Page of Intellectual Property Notices, <http://www.ietf.org/jpr.html>.

legitimate concerns over potential antitrust liability as well as accountability and cost of enforcement. And finally, any rules adopted by the standards setting bodies would not extend to non-members, giving rise to a genuine concern that such requirements may cause companies with large patent portfolios to stop participating altogether.

In the end, this may require government regulation or adjudication. Ultimately, whatever anticompetitive effects are produced will be borne by the consumers. The regulating or adjudicating entity needs to take that into account as well as what policies should be promoted over others. It is critical that both innovation and competition not be stifled. And while patent owners are quick to point out that innovation is promoted by upholding exclusive patent rights, innovation is also promoted by allowing companies to compete and build products that customers need. Any guidance that the FTC or Department of Justice can provide would be useful to standards setting bodies in setting their own policies.

As for the requirements themselves, whatever they are, they need to be clear. Much of the problem faced today stems from ambiguity in understanding terms such as “reasonable” and “non-discriminatory.” If the companies are left to decide the terms, the end result is that they will be dictated by the companies’ relative strength and leverage and therefore, almost invariably, will not be “reasonable” or “non-discriminatory.”

While a bright-line approach may not be satisfactory to everyone, an ambiguous approach is satisfactory to no one. One bright-line approach would be to require all patent owners to license their patents to the extent essential to practice a standard on a royalty-free basis or for a nominal royalty, such as a one-time fixed fee. In many cases, companies have demonstrated a willingness to do this voluntarily. CableLabs, a cable technology consortium that issues specifications for cable modem interoperability, for example, manages a royalty-free patent pool for each of the three specifications it publishes. Participating companies grant each other royalty-free patent licenses to the extent necessary to comply with the respective specification. All three patent pools are successful, with as many as 50 participating companies.

Finally, it is important that patent owners not be allowed to enjoin products for complying with an industry standard. The threat of injunction poses such an extreme remedy that its mere possibility may force certain networking vendors to accept unreasonably high royalty terms rather than risk an injunction.