



Technology Brief...

September, 2022

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Research, Analysis, Strategy, Insight

Arm Sues Qualcomm: Minor Family Squabble or Major Breakup?

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Recently, after a disagreement over just what broad corporate-wide IP licenses mean, Arm filed a lawsuit against Qualcomm. This is a disagreement that stems from Qualcomm acquiring Nuvia, who had a licensing agreement with Arm to produce its new generation of processors. Arm contends that it had separate business and licensing agreements with Nuvia and Qualcomm, and that Qualcomm was required to re-negotiate the agreement after it bought Nuvia and Nuvia's license agreement with Arm expired. Qualcomm did not do so, and Arm says the result is that Nuvia's work is illegally using Arm's intellectual property.

Of course Qualcomm has a different take on this dispute. In a statement Qualcomm said “Arm's lawsuit marks an unfortunate departure from its longstanding, successful relationship with Qualcomm. Arm has no right, contractual or otherwise, to attempt to interfere with Qualcomm's or Nuvia's innovations. Arm's complaint ignores the fact that Qualcomm has broad, well-established license rights covering its custom-designed CPUs, and we are confident those rights will be affirmed.” In essence, Qualcomm believes its broad IP licensing agreement with Arm covers the Nuvia technology and doesn't require a separate agreement now that Nuvia is part of Qualcomm.

Qualcomm is one of ARM's biggest licensees (if not the biggest), so having this type of legal battle hanging over their heads is not good for either party. It's interesting that a major IP licensing company like Qualcomm that generates a good deal of revenues through its own licensing of IP should be sued for not respecting the IP of others. Clearly it's not Qualcomm's first go around with IP lawsuits (they are usually the “Suer” rather than the “Suee”), but one would think you'd want to avoid any legal issues with an unannounced product line (Nuvia) deemed strategic to your company's long term success.

Qualcomm needs a smooth transition to the Nuvia CPU technology to enhance its ability to compete, especially in light of its desire to be a PC processor alternative to Intel. Qualcomm's current products are not really competitive when running Windows, especially for enterprise-class devices that need broad app compatibility. Qualcomm may even have designs on the server market with the Nuvia technology, after trying to compete in and leaving the server market several years ago. The Nuvia technology is already late to market, and this potential interference in the smooth release of products could give OEMs pause to use the processor in their devices.

With its action, Arm is looking to maximize its revenues by enforcing what it sees as a way for Qualcomm to reduce its IP license payments and negatively affect Arm's revenues. If Nuvia is considered a separate technology licensee, then Qualcomm will likely need to pay additional IP royalty fees beyond its current allotment. It's not surprising then that Arm has taken this action, as companies always attempt to maximize revenues. But it is a bit of a gray area given each company's position on this.

Bottom Line: We expect that this will all get settled quietly in the next several months, although Qualcomm certainly is not shy about pursuing legal battles that can go on for years. However Qualcomm does not need to have a pending enforcement action against it that could turn off potential customers as it tries to roll out its new processor architecture. It's also in Softbank's best interest to have this resolved as it pursues a way to divest of Arm most likely through an IPO. There are no guarantees, but we expect this will be amicably resolved fairly quickly, and causing no additional issues on the Qualcomm/Nuvia technology launch, while also allowing Arm to claim some form of victory.

Intel and Broadcom Demonstrate WiFi 7 Interoperability

Intel and Broadcom demonstrated that WiFi 7 chips from 2 different vendors can actually communicate. This is important when an immature new technology like WiFi 7 which will likely not be certified by the WiFi Alliance until next year, has the aggressive goal of being available in end user devices in the second half of 2023. Indeed, WiFi 7 has stated some pretty lofty goals of being able to reach >5GBPS speeds (WiFi 6 is about 1Gbps while WiFi 6E is about 2 Gbps) with substantially improved latency (at least 100 times better worst-case latency than WiFi6, and 15 times better for AR/VR). Both high speed and low latency are necessary for new apps like AR/VR and Metaverse solutions. The speed improvement will enable WiFi to keep up with the fastest speeds available with direct to home multi-gigabit fiber which is becoming much more common and affordable.

WiFi 7 has also increased the potential power output by up to 63 times using Automated Frequency Coordination (in essence a process to minimize any potential interference with other transmissions across multi-use bands and correct automatically as needed). This is important as the increased bandwidth needs of WiFi 7 require additional frequencies which may be co-used by others. These new frequency allocations need to be made for WiFi 7 to achieve its stated performance goals, but not all regions have yet committed to do so which is currently limiting WiFi 7's universality. Still, we expect most geographies will eventually adopt the needed bandwidth requirements for universal use over the next 2-3 years, much as happened with earlier WiFi versions.

We don't expect to see low end mass market consumer devices at bargain prices quickly. WiFi 7 will likely follow a similar cadence to the WiFi 6/6E devices. We expect endpoints (PCs, phones) to lead in deployments as the cost of updating to WiFi 7 is relatively modest, and many new devices will support WiFi 7 by second half of 2023. Indeed, leading mobile modem makers like Qualcomm have already stated their support for WiFi 7. But Access Points will be different, with high end premium devices coming to market first followed in a couple of quarters by lower end consumer-friendly priced access points. In an environment where many consumers and some companies still haven't upgraded to WiFi 6, it's likely we'll

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see a “skip ahead” to WiFi 7 once the prices become reasonable and consumers see the advantage in doing so. We do expect enterprise users to upgrade fairly early in the cycle given the benefits of increased speeds, higher capacity connects and lowered latency, as enterprises are less price sensitive and more performance oriented.

Bottom Line: Even with increasingly available 5G cellular connectivity and suggestions from some that it will supersede other connection options, WiFi will not be going away anytime soon. Intel has the device/endpoint wireless technology and market not quite to itself, but certainly in the PC market it has a huge share. Broadcom, for its part has a major share of the access point marketplace where its chips run a large portion of both commercial and consumer access points. So having these two major market players demonstrate interoperability and meeting WiFi 7 goals is not a small thing. Showing what WiFi 7 can do in a real world scenario will quiet skepticism of whether it can be done in the short term. We expect many enterprises to be the first to upgrade, as capacity, and importantly for many applications, latency is a key determining factor of usability, but the consumer market should be significant by end of 2023/beginning of 2024 as well. WiFi 7 alone won't stimulate more AR/VR adoption, but it a strong enabler of the technology for a variety of use cases and likely a prerequisite for many.

Ericsson Targets the Enterprise

Long known for its networking infrastructure capabilities, particularly with its cellular market-leading position as an infrastructure and services provider, Ericsson is looking to expand and become a major enterprise communications infrastructure and services player. It wants to achieve this by focusing on private networks, particularly built on 5G, as well as becoming a communications API leader. To this end, it recently acquired Vonage, better known as a VoIP service provider, but in recent years creating a large number of communications APIs to enable a wide range of enterprise communications services. This is in addition to its previous Cradlepoint acquisition to enable wide ranging IoT and industrial applications using private networks. Putting these capabilities together into a new group leaves Ericsson poised to compete with stalwart enterprise networking companies like Cisco, Juniper, HP/Aruba etc.

Cradlepoint has more than 33K customers that have adopted its wireless WAN technology. It is a major provider of private networking access over LTE and recently 5G standards, as well as cloud based management and security capability. Cradlepoint supports a broad range of industries, from manufacturing and mining to public sector and public venues. It is a strong player in the expanding market for WAN connected IoT solutions.

Ericsson expects to leverage the Cradlepoint installed base as a way to increase its services and install its technology in enterprise oriented private networks. This is in addition to its already leading position in public network installations. However, enterprise is different than the needs of cellular operators, and the technology requirements, equipment needs, sell cycle and support requirements are different as well. It will need to adapt to this new model in order to succeed.

Ericsson is focused on providing primarily mid-band connectivity where private networks are most appropriate, as well as in both the licensed and unlicensed CBRS spectrum. It will be adopting a more standardized service and support role targeted at the needs of this market. It now has a dedicated focus on providing business oriented enterprise wireless solutions and has combined Cradlepoint's

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products for software-based end to end WAN and security products, with Ericsson's dedicated networks solutions and go-to-market capabilities. To this end Ericsson created a new dedicated enterprise focused organization as of June, 2022.

The Vonage technology enabled portion of the new enterprise business within Ericsson is currently less well defined, primarily because the finalization of the acquisition is so recent. As primarily a communications provider for VoIP and related services, the Vonage business represents a potential to offer competing products to the network-based communications players like Cisco, Mitel, etc. This is a natural extension to the enterprise space enabled by Cradlepoint as the customer base for its technology to power "things" will also have a significant need to add voice and collaboration capabilities over their private networks. This represents an opportunity for Ericsson, but it will face competition in this area more broadly than it does in the Cradlepoint area.

Bottom Line: Moving beyond its traditional roots as a leading provider of large scale infrastructure equipment for network operators, Ericsson sees a major opportunity to focus on the growing multi-billion dollar enterprise space. It will certainly face competition from a variety of vendors and will have to build an installed base beyond its Cradlepoint and Vonage customers, and we expect that Ericsson will be adding to its enterprise portfolio by acquiring other technology over the next several years. As a major company with a recognizable brand name, Ericsson will be noticed by organizations looking for enterprise wireless connectivity and collaboration. However, time will tell if enterprises will deploy Ericsson technology when its major competitors (e.g. Cisco) are already widely installed, and other network infrastructure companies (e.g., Samsung) similarly want to have a major stake in enterprise connectivity, not to mention the hyperscalers and network operators who are targeting the enterprise 5G private networks space. We expect it to take at least 2-3 years before we can determine how successful this strategy is.



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