Independent market research and competitive analysis of next-generation business and technology solutions for service providers and vendors

HEAVY READING
WHITE PAPER

Heavy Reading's Accelerating Open RAN Platforms Operator Survey

A Heavy Reading white paper produced for Qualcomm, Wind River, WWT, and Xilinx

Qualcomm WNDRVR World Wide Technology XILINX

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INTRODUCTION AND KEY FINDINGS

This report presents the results of the Heavy Reading **Accelerating Open RAN Platforms Operator Survey** conducted in March and April 2021. The focus for this survey is open RAN platform architecture, hardware accelerators, software, and integration within the context of the expected benefits for network operators from deploying open RAN solutions.

Key findings

The three key business justifications highlighted by the survey for network operators deploying open RAN solutions were cost savings, a faster roadmap and the ability to bring new features, and reducing vendor lock-in. There was a significant difference in the leading business justification between the largest operators (>$5bn) and smaller operators. Among the respondents from the largest operators, 39% said that a faster roadmap and the ability to bring new features was the most important justification for open RAN adoption/deployment, while 45% of smaller operators put cost savings as the most important justification for open RAN adoption/deployment.

The survey results suggest that at least 50% of operators will be using a white box/commercial off-the-shelf (COTS) model for a significant part of their RAN deployments by April 2022 and the percentage will be higher for the largest operators (>$5bn). Among respondents from the largest operators, 50% say their organization is already using a white box/COTS model for the centralized unit (CU) and over 40% are using a white box/COTS model for the radio unit (RU) and distributed unit (DU). Meanwhile, 69% of respondents from these operators expect the CU to move to a white box/COTS model within 12 months with the RU and DU close behind at 66% and 65%, respectively. The results for smaller operators suggest they are one to two years behind in adopting white box/COTS solutions, but catching up quickly.

Slim majorities expect savings between 10% and 25% in capex (51%) and opex (56%) from the adoption and deployment of open RAN. Approximately one-fifth (21%) expect a capex savings of less than 10% and a slightly higher percentage (23%) expect savings of 26–50%. Only 6% expect capex savings of more than 50%. The results for opex are very similar with slightly fewer (19%) expecting savings of less than 10% and even fewer (2%) expecting savings of more than 50%.

Among the respondents, 81% believe it is practical to virtualize a 5G baseband DU function for commercial deployment within the next two years. Within this group, approximately one-third each believe this would be with feature and performance parity with hardware baseband, with hardware accelerators, or with performance or feature impacts.

3GPP interfaces with full interoperability are critical for 40% and interoperability with legacy equipment, or open interface between DU/RU are critical for 30% or more. This shows the massive support for open interfaces between the DU and RU, and the even greater demand for interoperability with legacy equipment and 3GPP interfaces with full interoperability. Support for advanced features like carrier aggregation (CA), dynamic spectrum sharing (DSS), massive multiple input, multiple output (MIMO), etc., along with power efficiency and flexibility and scalability in supporting all key 5G functional split options between DU and RU, was seen as critical by approximately 25%.

Among the respondents, 42% believe that server cost savings is the primary driver for open RAN acceleration. This result supports Heavy Reading's analysis that open RAN solutions will need hardware acceleration if they are to achieve the performance and cost savings expected from the deployment of open RAN. Power issues and RU+DU system raw performance were primary drivers for open RAN acceleration for 24% and 23% of respondents, respectively. The remaining 12% say latency is the primary driver for open RAN acceleration.

Among the respondents from the largest operators (>$5bn), 50% said their organizations will most likely implement high-PHY acceleration for high capacity sites using inline accelerators versus 25% for smaller operators. 40% of smaller operators said their organization will most likely implement high-PHY acceleration for high capacity sites using look aside accelerators versus 25% of respondents from the largest operators.

Hardware acceleration for open RAN will use a number of technologies, including field programmable gate arrays (FPGAs), application-specific integrated circuits (ASICs) and graphics processing units (GPUs). 52% say their organization's solution requires an FPGA versus 45% each for an ASIC and a GPU. Many operators will deploy acceleration solutions using a mix of these techniques.

Among the respondents, 63% said they would want accelerators to offload Packet Data Convergence Protocol (PDCP) and security processing. A major advantage of using white box/COTS platforms for open RAN is that these virtualization platforms can be used to support additional processing functions. Complete L1 processing and 5G core user plane function (UPF) offload is wanted by approximately 40%.

For open RAN, expect that most software infrastructure will be built on open source solutions. Among respondents, 48% anticipate that their organization will use a vendor-supported open source software infrastructure solution to run open RAN applications. Another 38% will build their own software infrastructure solution to run open RAN applications starting with an open source solution, while 12% will develop their own software infrastructure solution to run open RAN applications.

Among the respondents, 79% say their organization does have the internal knowledge to understand its open RAN acceleration requirements and options. This is a strategic priority for 26%. Meanwhile, 15% say no, their organization does not have the internal knowledge to understand its open RAN acceleration requirements and options.

Almost half (49%) believe that guidance, support, and/or expertise with interworking best practices will accelerate their organization's open RAN adoption most. Almost a third (29%) believe that a range of "off-the-shelf" open RAN solutions is most important and 19% believe that assistance creating a reference blueprint of disaggregated products will have the biggest impact in accelerating their organization's open RAN adoption.

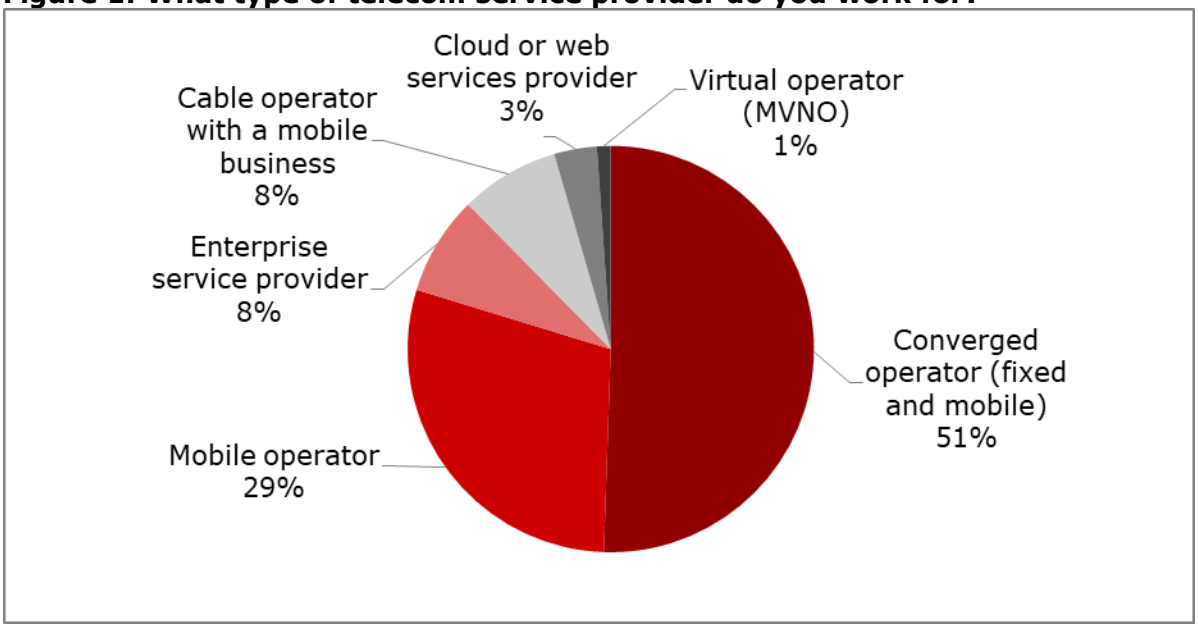
While 44% say that their organization (service provider) will manage and integrate solutions from diverse suppliers, the majority say that they will rely upon external support to build their open RAN. Almost a third (29%) say their organization would prefer to use an integrated open RAN supplier that provides the full solution and 16% say their organization would prefer to use integrated solutions from diverse suppliers managed by a systems integration partner. A further 11% would adopt a solution approved by a trusted body.

SURVEY DEMOGRAPHICS

The Heavy Reading **Accelerating Open RAN Platforms Operator Survey** was conducted online in March and April 2021. The questionnaire was written by Heavy Reading with input from project sponsors Qualcomm, Wind River, WWT, and Xilinx. It was promoted to the Light Reading service provider database and received 89 responses from individuals working for operators with mobile network businesses, after spurious, incomplete, and non-operator responses were removed. All responses are confidential and are only ever presented in aggregate form. Heavy Reading does not share individual names or company names from the survey.

Figure 1 shows the responses by operator type. Half (51%) of respondents work for converged operators with a mobile network, followed by almost one-third (29%) who work for pure-play mobile operators.

Figure 1: What type of telecom service provider do you work for?



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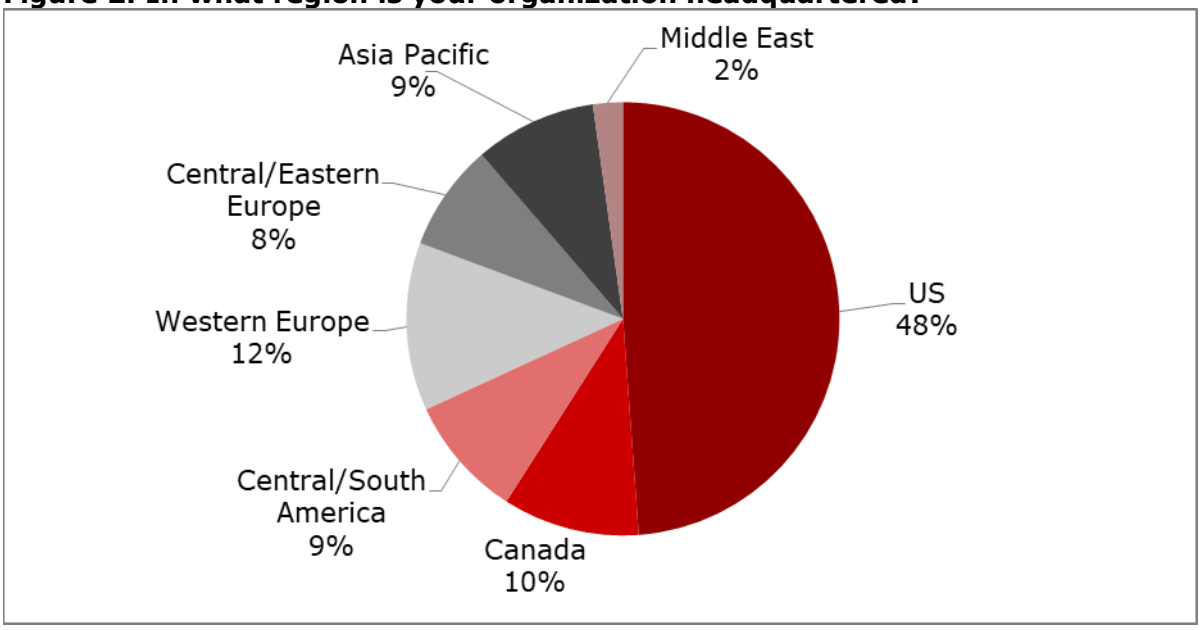
Source: Heavy Reading

Figure 2 shows the response by geography. The US is the largest market represented in the survey with 48% of the response.

Figure 2: In what region is your organization headquartered?



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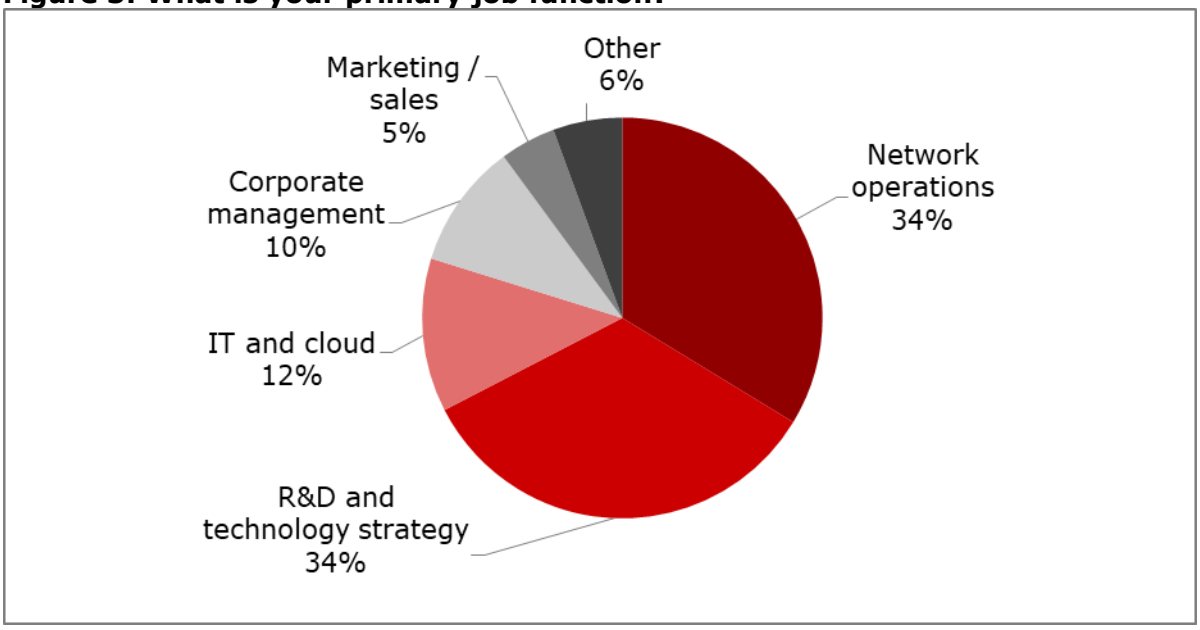
Source: Heavy Reading

Figure 3 shows responses by job title. Network operations and R&D and technical strategy are the largest groups with 34% each.

Figure 3: What is your primary job function?



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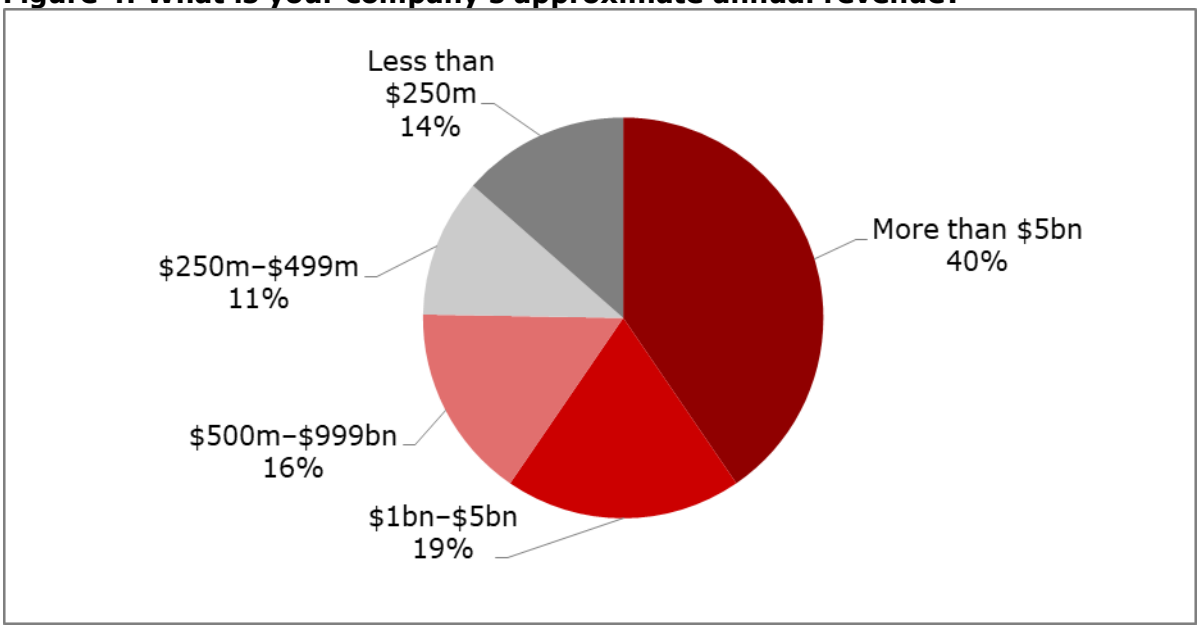
Source: Heavy Reading

Figure 4 shows that responses are dominated by operators with more than $1bn in annual revenue (59%) and 40% have revenue of more than $5bn. This allows Heavy Reading to compare the response from the largest operators (>$5bn) versus the smaller operators with reasonable confidence. Whenever the analysis in this report contrasts the largest and the smaller operators, it is made clear in the text.

Figure 4: What is your company's approximate annual revenue?



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Source: Heavy Reading

OPEN RAN DEPLOYMENT

The Heavy Reading survey highlighted three key business justifications for network operators deploying open RAN solutions. These were cost savings versus closed solutions from a single supplier, a faster roadmap and the ability to bring new features, and reducing vendor lock-in (see **Figure 5**). There was, however, a significant difference in the leading business justifications between the largest operators (>$5bn) and the smaller operators.

Of the respondents from the largest operators, 39% said that faster roadmap and ability to bring new features was the most important justification for open RAN adoption/deployment. Meanwhile, 45% of smaller operators (<$5bn) put cost savings as the most important justification for open RAN adoption/deployment. Both groups put reducing vendor lock-in as the second most important justification, although this came in third when considering the responses from both groups together.

Network operators that are using a closed solution from a single supplier for their RAN deployments have very few options for seeking better pricing from alternative suppliers, other than moving to an alternative comprehensive RAN solution supplier. Network operators are also tied to the roadmaps and product rollouts of their chosen supplier. This can restrict their ability to deploy networks more quickly and introduce new service features.

There are considerable challenges in changing supplier when operators already have a significant mobile network deployed using a closed solution, so this is rarely a realistic option. This gives suppliers the benefit of a significant vendor lock-in that is boosted by the fact that network operators have to choose between a very limited number of telecom manufacturers that have a complete RAN solution.

By using an open RAN network, operators can choose between a growing number of ecosystem vendors that have part or all of the RAN solution. This is expected to deliver significant cost savings, allowing network operators to work with a greater range of vendors and provide an opportunity to deploy networks and new service features more quickly.

Figure 5: What is the most important business justification for open RAN adoption/deployment?

	All respondents	>$5bn	<$5bn
Base:	**89**	**36**	**53**
Cost savings	33%	14%	45%
Faster roadmap and ability to bring new features	28%	39%	21%
Reduce vendor lock-in	22%	22%	23%
Improve performance/power	7%	8%	6%
New service and monetization opportunities	6%	11%	2%
Increase/improve coverage	4%	6%	4%
Sigma	100%	100%	100%

Source: Heavy Reading

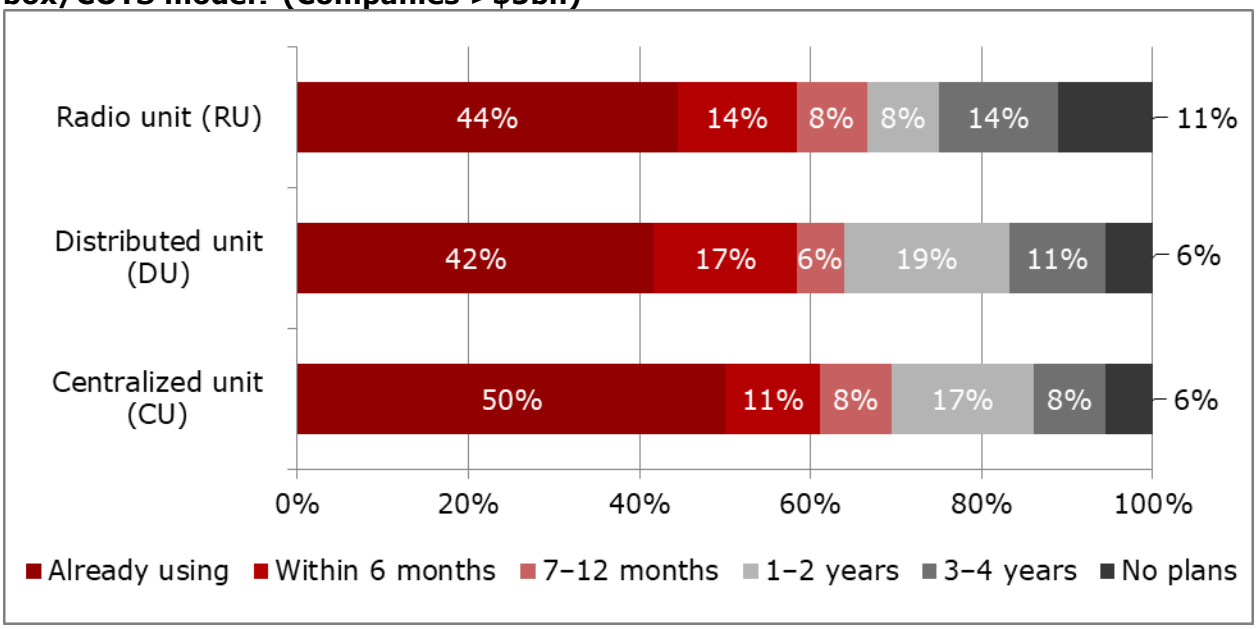
A separate, but related, trend in RAN architectures is the move to virtualized RAN (vRAN) and the use of white box or COTS hardware platforms. In this case, some, or all, of the key functions in the RAN are implemented in software running on general-purpose processors instead of using dedicated hardware systems. The key extension of this approach for open RAN is the definition of standardized interfaces between different functions. Most vendors and network operators are moving toward vRAN architectures for both proprietary (closed) and open RAN solutions.

The key functional units in a vRAN architecture are the CU that handles the radio resource control (RRC) and may also handle much of the higher layer packet processing, the distributed unit (DU) that handles the baseband processing including the lower layer packet processing (low MAC) and the radio unit (RU) that is primarily responsible for the radio frequency (RF) processing. The physical layer (PHY) processing may be handled by the DU, RU, or split between the two. Heavy Reading explores this further in later sections.

Figure 6 and **Figure 7** show how advanced the respondents to the survey believe their organization is in moving parts of the RAN to a white box/COTS model.

Figure 6 shows the results for the largest organizations (>$5bn), with 50% already using a white box/COTS model for the CU and over 40% using a white box/COTS model for the RU and DU. The figure also shows that 69% of respondents expect the CU to move to a white box/COTS model within 12 months, with the RU and DU close behind at 66% and 65%, respectively.

Figure 6: When does your organization expect parts of the RAN to move to a white box/COTS model? (Companies >$5bn)



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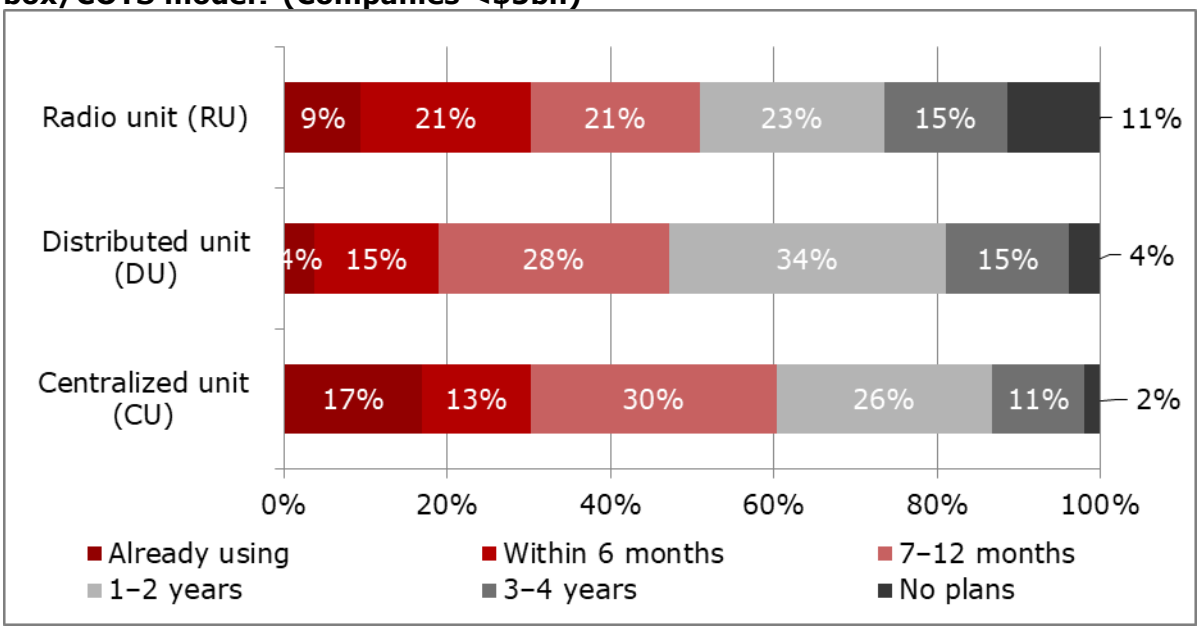
Source: Heavy Reading

The results from respondents in smaller operators (see **Figure 7**) suggest that these sectors are significantly behind the largest operators. Most advanced is the CU with 17% saying that their organization is already using a white box/COTS model. Next is the RU with 9% saying that their organization is already using a white box/COTS model. Last is the DU with just 4% saying that their organization is already using a white box/COTS model.

The figure also shows that the smaller operators are quickly catching up, with 60% expecting the CU to move to a white box/COTS model within 12 months and corresponding numbers of 51% and 47% for RU and DU, respectively.

These results are very significant and suggest that at least 50% of operators will be using a white box/COTS model for a significant part of their RAN deployments by April 2022, and this percentage will be higher for the largest operators (>$5bn).

Figure 7: When does your organization expect parts of the RAN to move to a white box/COTS model? (Companies <$5bn)



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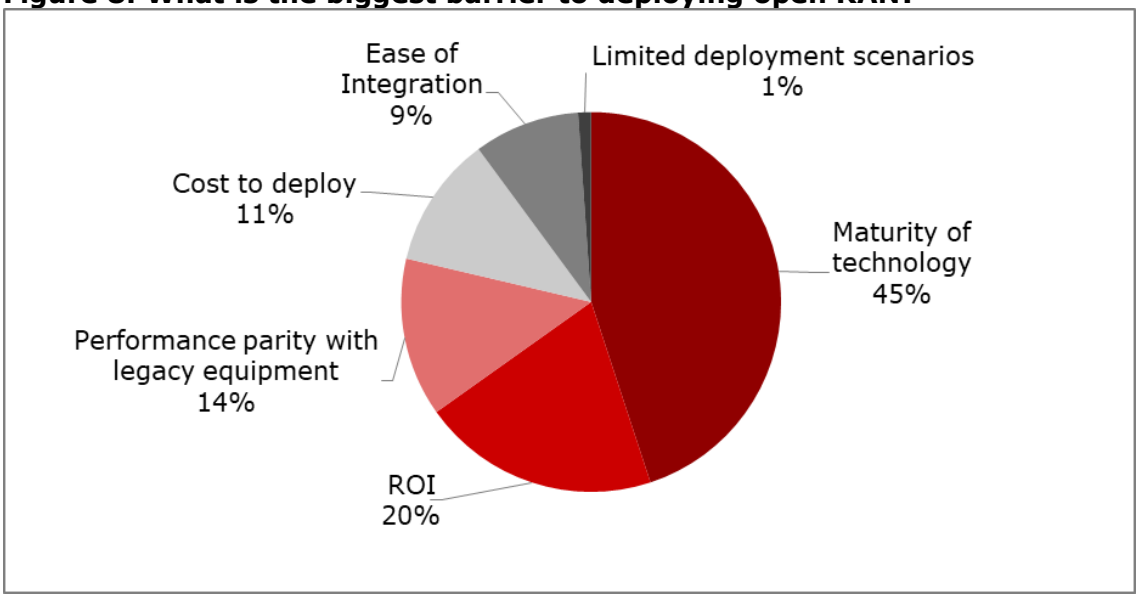
Source: Heavy Reading

The introduction of new technologies always brings challenges to overcome the barriers to deploying them. **Figure 8** shows the biggest barriers to deploying open RAN seen by the respondents to the survey.

Easily the biggest barrier identified for open RAN is maturity of technology. Open RAN is a relatively new approach and is building on the developments for vRAN, again a relatively new technology. As the rollouts of both vRAN and open RAN deployments continue and more vendors start shipping significant numbers of systems, then this barrier should rapidly be reduced.

The other leading barriers highlighted in the survey are achieving the ROI by using open RAN, and achieving performance parity with legacy equipment. The ROI barrier should fall away as deployments accelerate and network operators learn to get the best benefits from deploying open RAN. Achieving performance parity with legacy equipment depends on deploying the right combination of open RAN software, COTS platforms, and hardware acceleration. Both vendors and network operators are working to achieve this.

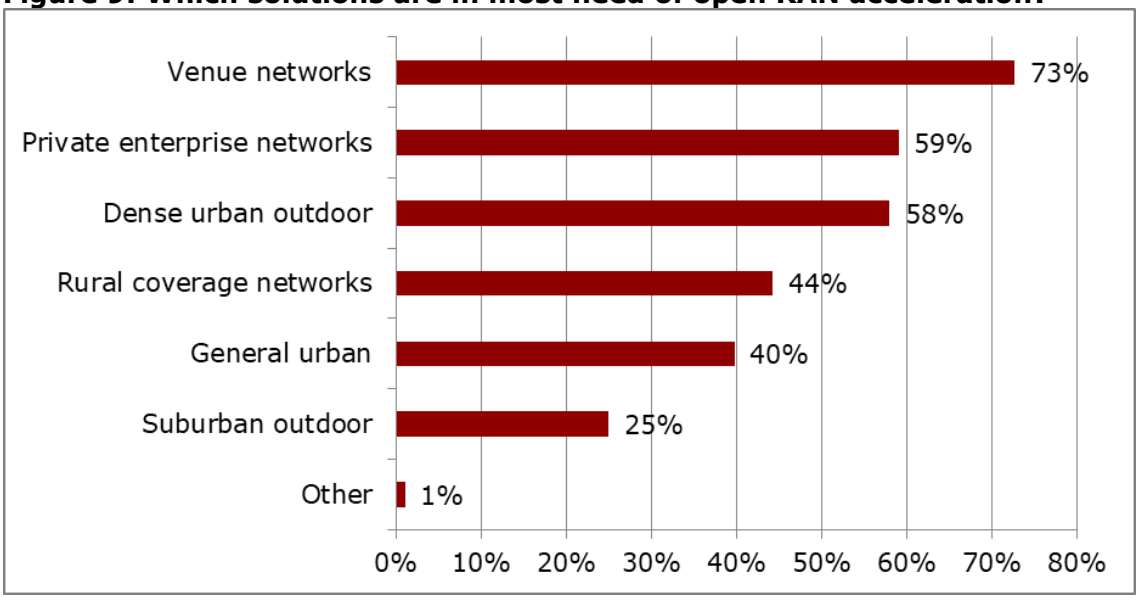
Figure 8: What is the biggest barrier to deploying open RAN?



n=89
Source: Heavy Reading

4G and 5G networks can be deployed in a wide range of locations, so Heavy Reading asked respondents which solutions are most in need of open RAN acceleration. The results shown in **Figure 9** suggest that most open RAN deployments will need acceleration. Venue networks, private enterprise networks, and dense urban outdoor deployments require the highest performance and capacity and, therefore, are most in need of open RAN acceleration.

Figure 9: Which solutions are in most need of open RAN acceleration?



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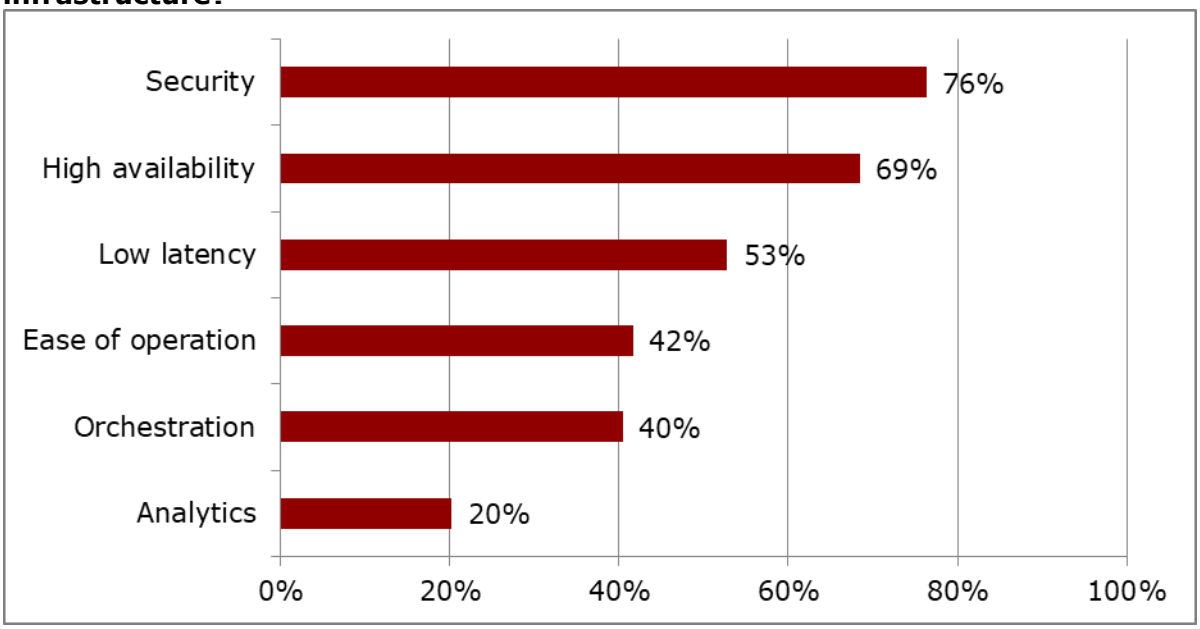
Source: Heavy Reading

Open RAN infrastructures are key elements in wireless networks, no matter where they are deployed. Security and high availability are the most important capabilities in any RAN, as is reflected in **Figure 10**. Also important for an open RAN infrastructure is low latency to support the latest 5G services. Ease of operation, orchestration, and analytics are important for reducing opex and delivering the best service to subscribers.

Figure 10: What are the most important capabilities needed in an open RAN infrastructure?



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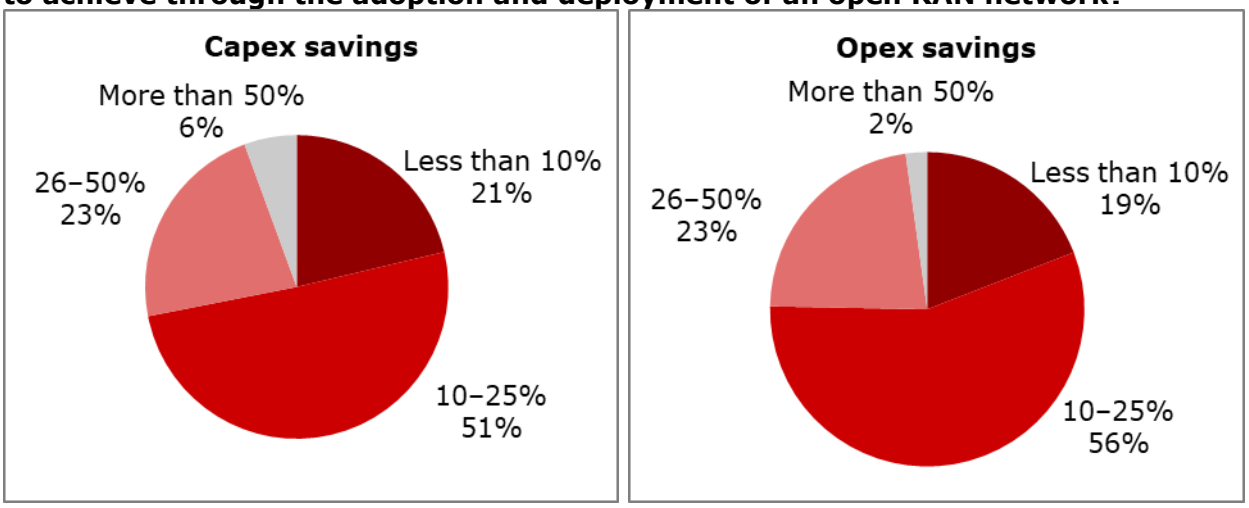
Source: Heavy Reading

Two of the key benefits put forward by the industry for open RAN are reducing capex and opex, so Heavy Reading asked respondents how much cost savings, in terms of both capex and opex, do they expect to achieve through the adoption and deployment of an open RAN network. The results shown in **Figure 11** suggest that the industry is mostly expecting savings in both capex and opex of 10–25% through the adoption and deployment of open RAN networks.

A slim majority (51%) expects savings in capex of between 10% and 25%. Approximately one-fifth (21%) expect savings of less than 10% and a slightly higher percentage (23%) expect capex savings of 26–50%. As for capex savings, 6% expect more than 50%. The results for opex are very similar with slightly fewer (19%) expecting savings of less than 10% and even fewer (2%) expecting savings of more than 50%.

Figure 11: How much cost savings, in terms of both capex and opex, do you expect to achieve through the adoption and deployment of an open RAN network?



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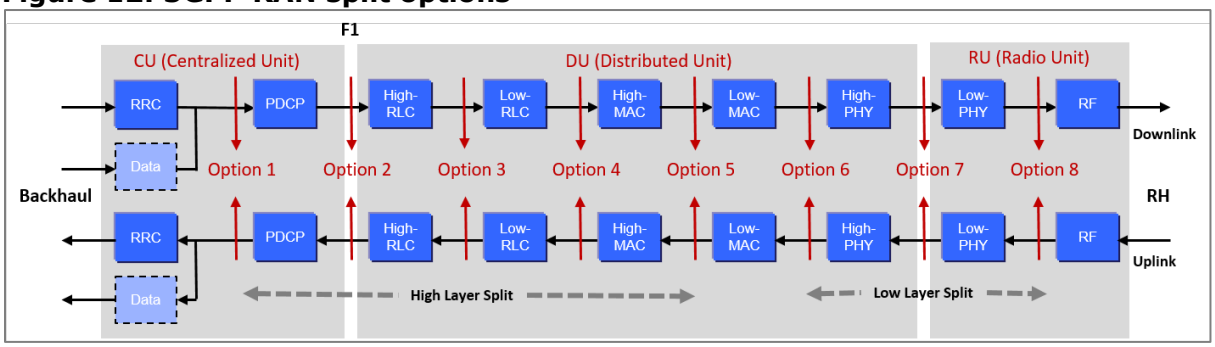
Source: Heavy Reading

OPEN RAN PLATFORM ARCHITECTURE

Figure 12 shows high level options for splitting the wireless RAN across the CU, DU, and RU. There are also more specific options, such as Option 7.2 that defines an exact split between the high-PHY and low-PHY functionality. The splits chosen for any open RAN or vRAN implementations depend on the trade-offs between flexibility, performance, openness, and ecosystem support.

The split between the CU and DU (high layer split) is usually the F1 interface (Option 2). The split between the DU and RU (low layer split) is often Option 7.2, but can also be other Option 7 implementations, Option 6, or Option 8.

Figure 12: 3GPP RAN split options

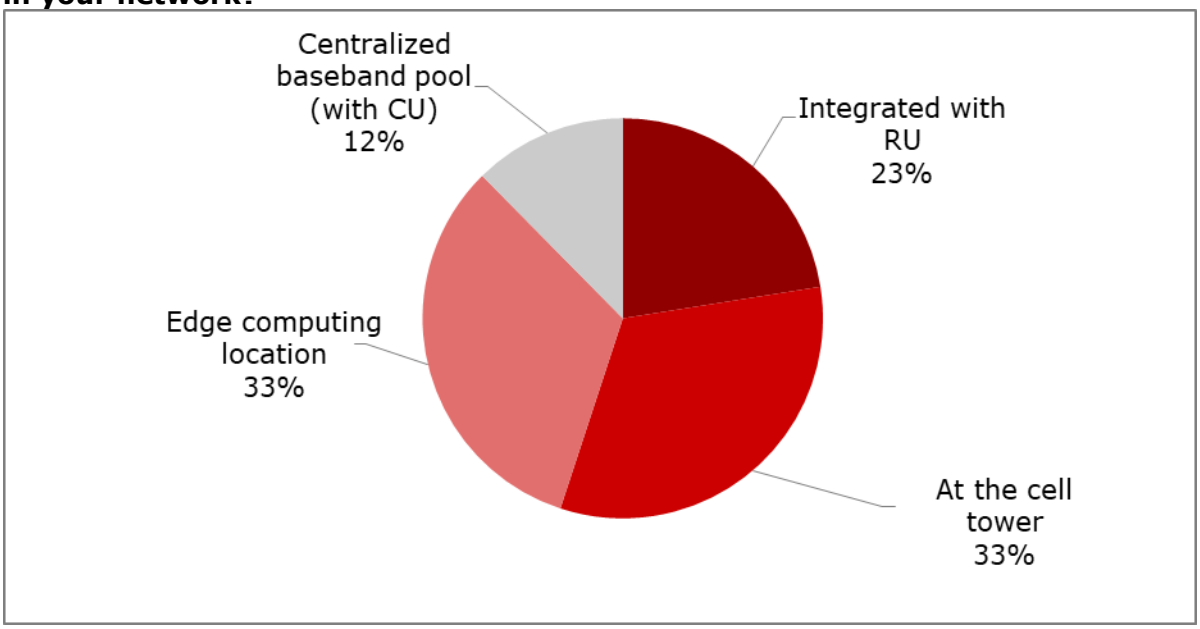


Sources: Earlswood Marketing/3GPP

The flexibility built into open RAN and vRAN implementations also allows for flexibility in the physical location of the DU.

As shown in **Figure 13**, there is very little consensus on the likely deployment scenario for baseband functions. Among the respondents, 23% say the DU will most likely be integrated with the RU, 33% say the DU will be deployed at the cell tower (separate from the RU), and another 33% say the DU will be deployed at an edge computing location. Just 12% say the DU will be deployed with the CU in a centralized baseband pool.

Figure 13: What is the likely deployment scenario for baseband functions (i.e., DU) in your network?



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Source: Heavy Reading

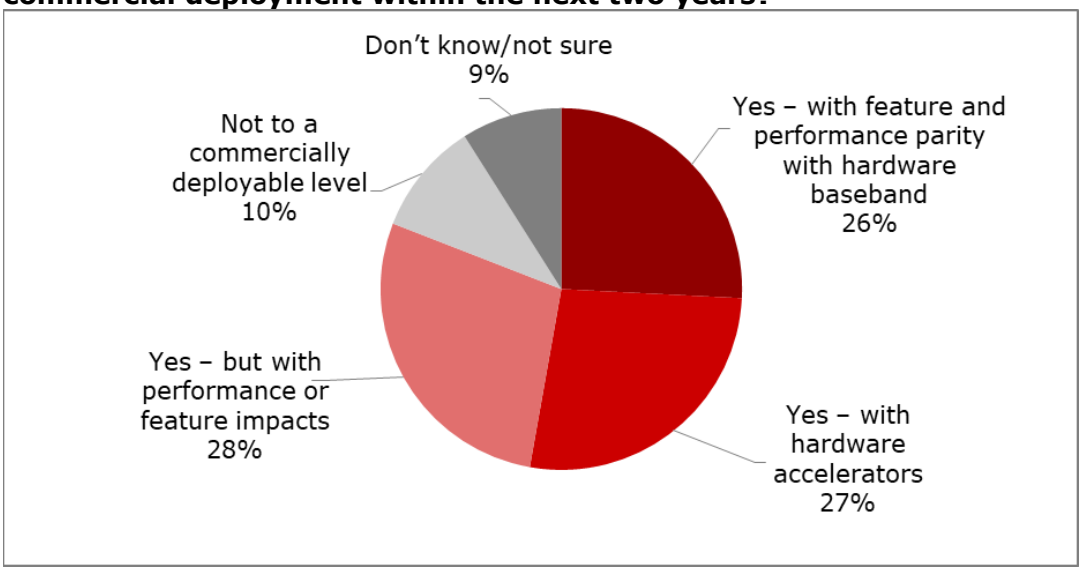
Heavy Reading also asked respondents if they believe it is practical to virtualize a 5G baseband DU function for commercial deployment within the next two years. Most virtualized DU functions deployed, so far, have supported 4G functionality.

Among the respondents, 81% believe it is practical to virtualize a 5G baseband DU function for commercial deployment within the next two years. Within this group, approximately one-third each say:

- Yes – with feature and performance parity with hardware baseband
- Yes – with hardware accelerators
- Yes – but with performance or feature impacts

These results show that, even for the more demanding requirements of a 5G baseband, the overwhelming majority of respondents expect the DU function to be available for commercial deployment within the next two years.

Figure 14: Do you believe it is practical to virtualize a 5G baseband DU function for commercial deployment within the next two years?



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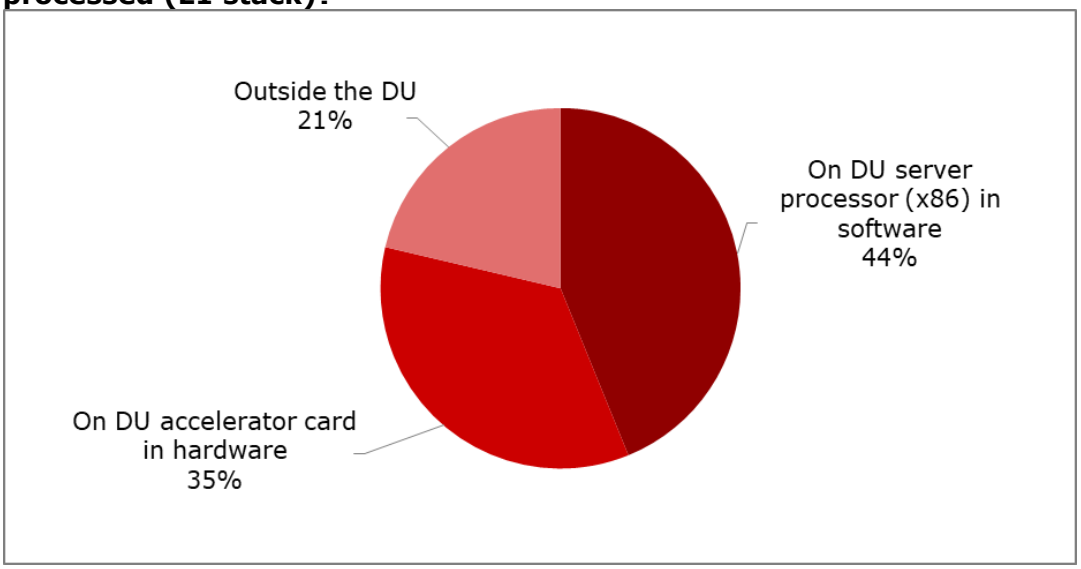
Source: Heavy Reading

As shown in **Figure 12**, the DU functionality includes the baseband high-PHY components. These require low latency processing that can be handled in software on the DU server, on a hardware accelerator card plugged into the DU server platform, or outside the DU. **Figure 15** shows the results of Heavy Reading's survey for this question, with 79% saying the high-PHY processing will be on the DU, divided between 44% saying this processing will be in software and 35% saying this processing will be on a hardware accelerator card plugged into the DU.

Figure 15: Where will your network's high-PHY components most likely be processed (L1 stack)?



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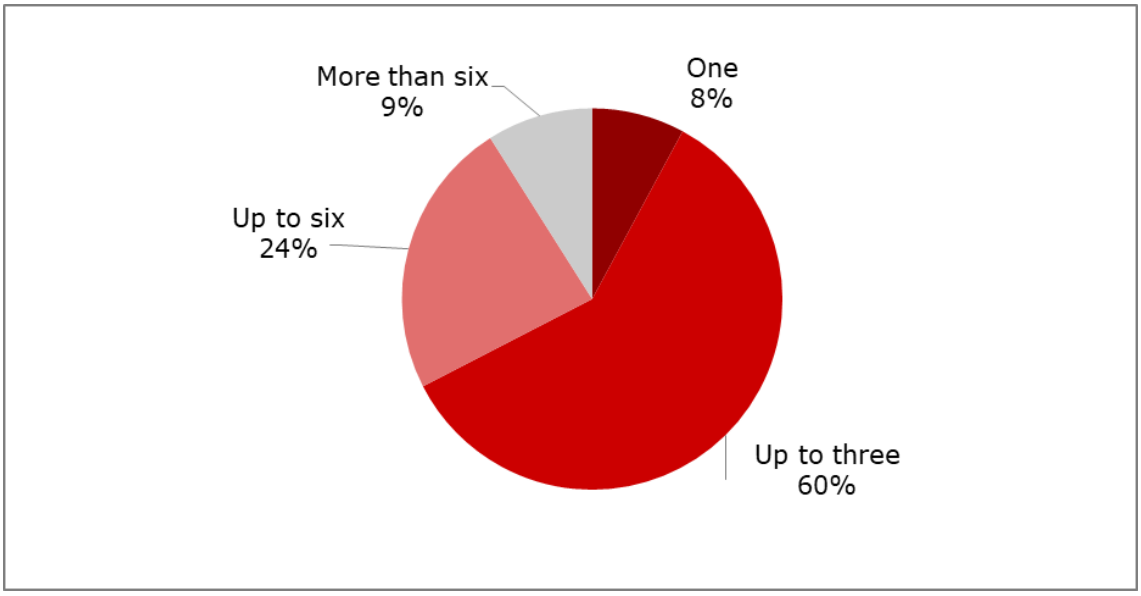
Source: Heavy Reading

As shown in **Figure 16**, a significant majority (60%) of respondents say that within their network, two or three RUs are typically connected to one DU. Meanwhile, 24% of respondents say that within their network, four to six RUs are typically connected to one DU.

Figure 16: Within your network, how many radio units/sectors are typically connected to one DU?



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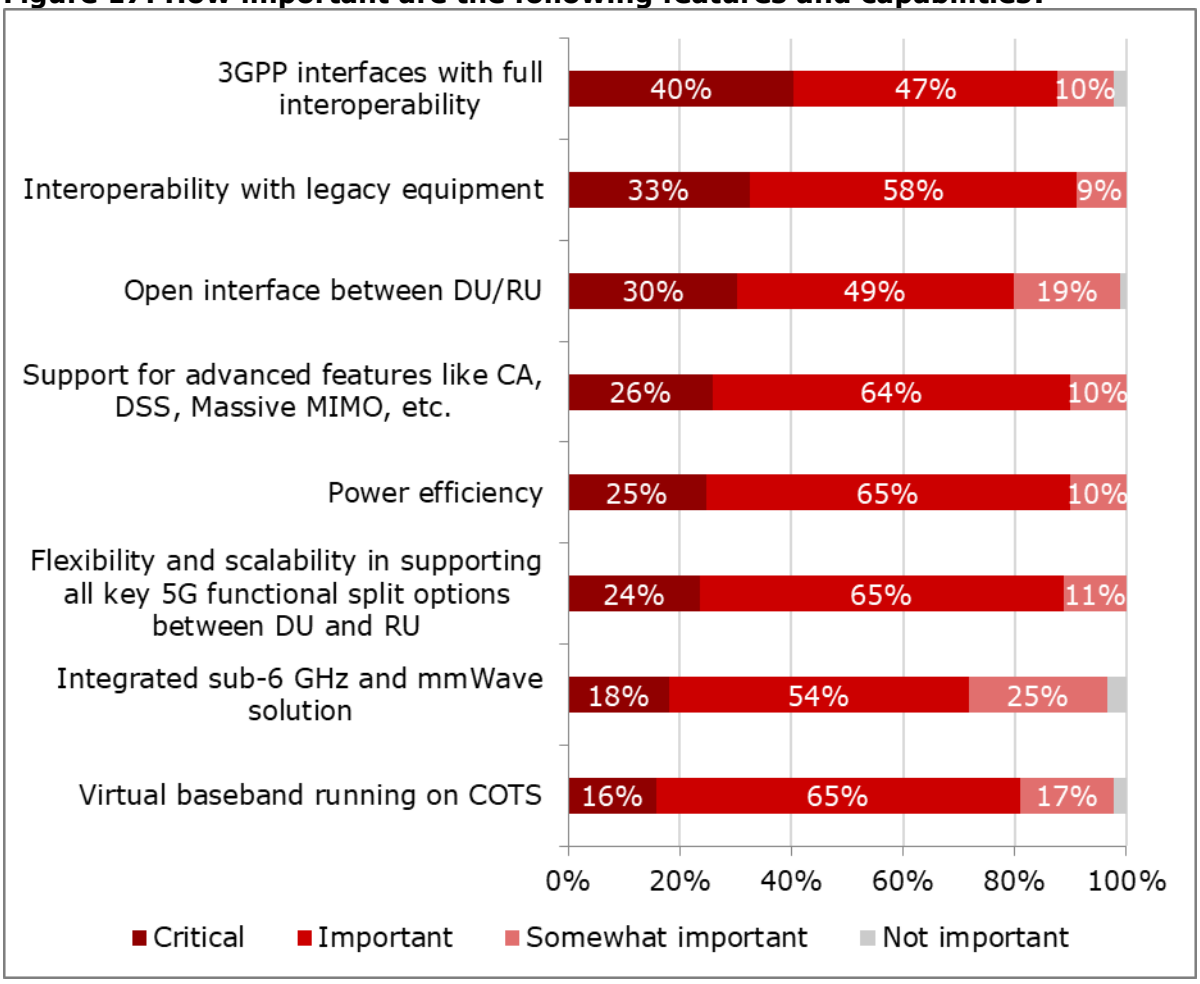
Source: Heavy Reading

When asked how important the features and capabilities shown in **Figure 17** are, 72% or more of respondents said they were each critical or important. 3GPP interfaces with full interoperability are critical for 40% and interoperability with legacy equipment, or open interface between DU/RU are critical for 30% or more. This shows the massive support for open interfaces between the DU and RU, and the even greater demand for interoperability with legacy equipment and 3GPP interfaces with full interoperability.

Support for advanced features like CA, DSS, massive MIMO, etc., along with power efficiency and flexibility and scalability in supporting all key 5G functional split options between DU and RU, was seen as critical by approximately 25%. Integrated sub-6 GHz and millimeter wave (mmWave) solutions were seen as critical by fewer respondents, but important or critical by a significant majority (72% and 81%, respectively).

Figure 17: How important are the following features and capabilities?



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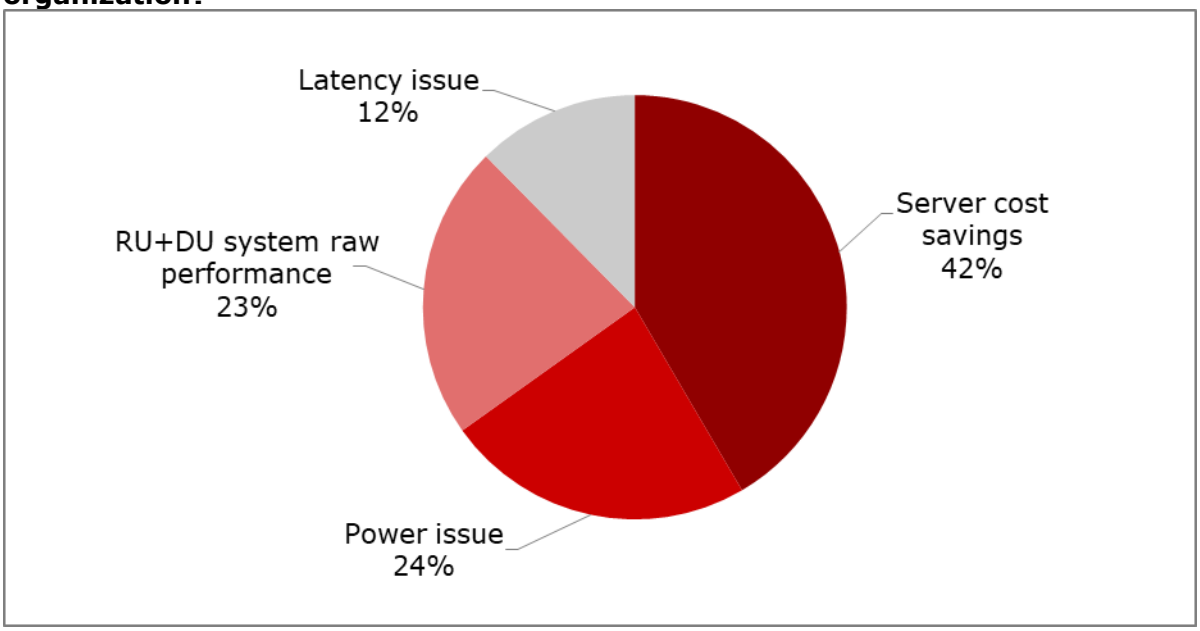
Source: Heavy Reading

OPEN RAN PLATFORM ACCELERATORS

This next section covers the use of platform accelerators in open RAN solutions. As shown in **Figure 18**, 42% believe that server cost savings is the primary driver for open RAN acceleration. Power issues and RU+DU system raw performance are primary drivers for open RAN acceleration according to 23% and 24% of respondents, respectively. The remaining 12% say latency is primary driver for open RAN acceleration.

This result supports Heavy Reading's analysis that open RAN solutions will need hardware acceleration if they are to achieve the performance and cost savings expected from the deployment of open RAN.

Figure 18: What is the primary driver for open RAN acceleration within your organization?



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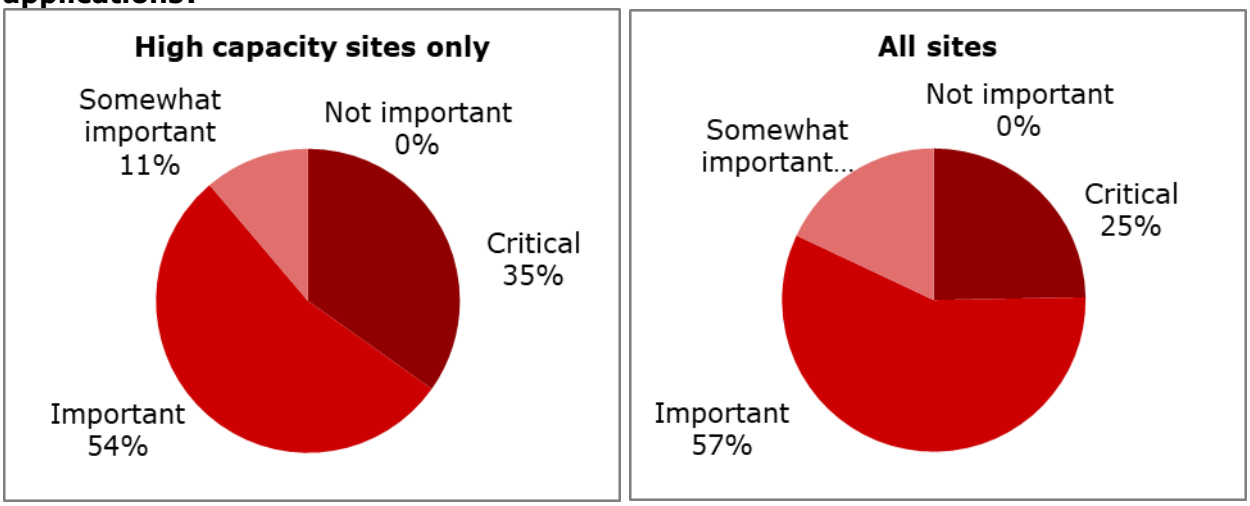
Source: Heavy Reading

Heavy Reading then asked how important hardware accelerators are in x86 servers for vRAN applications. The results are shown in **Figure 19**, with 35% saying that hardware accelerators are critical for high capacity sites and 25% saying that hardware accelerators are critical for all sites. The importance of accelerators in x86 servers for vRAN is underlined by the result showing that a significant majority (82%) say they are critical or important for all sites and an even higher majority (89%) say they are critical or important for high capacity sites.

Figure 19: How important are hardware accelerators in x86 servers for vRAN applications?



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Source: Heavy Reading

Accelerators can either be inline, receiving packet data from one functional unit and passing it on to the next functional unit, or look aside, receiving data from a functional unit and processing it before passing it back to the same functional unit.

The results shown in **Figure 20** suggests a significant difference in approach between the largest operators (>$5bn) and the smaller operators. Among the respondents from the largest operators, 50% said their organization will most likely implement high-PHY acceleration for high capacity sites using inline accelerators versus 25% for look aside accelerators. As for smaller operators, only 25% said their organization will most likely implement high-PHY acceleration for high capacity sites using inline accelerators versus 40% for look aside accelerators.

While Heavy Reading did not ask the question in this survey, we would expect look aside accelerators to be used more in lower capacity sites and smaller operators may be less inclined to invest in an alternative solution for the small number of high capacity sites that they are deploying. In contrast, large operators may operate a significant number of high capacity sites and, therefore, see significant value in investing in inline accelerators for these deployments.

Figure 20: How will your organization most likely implement high-PHY acceleration for high capacity sites?

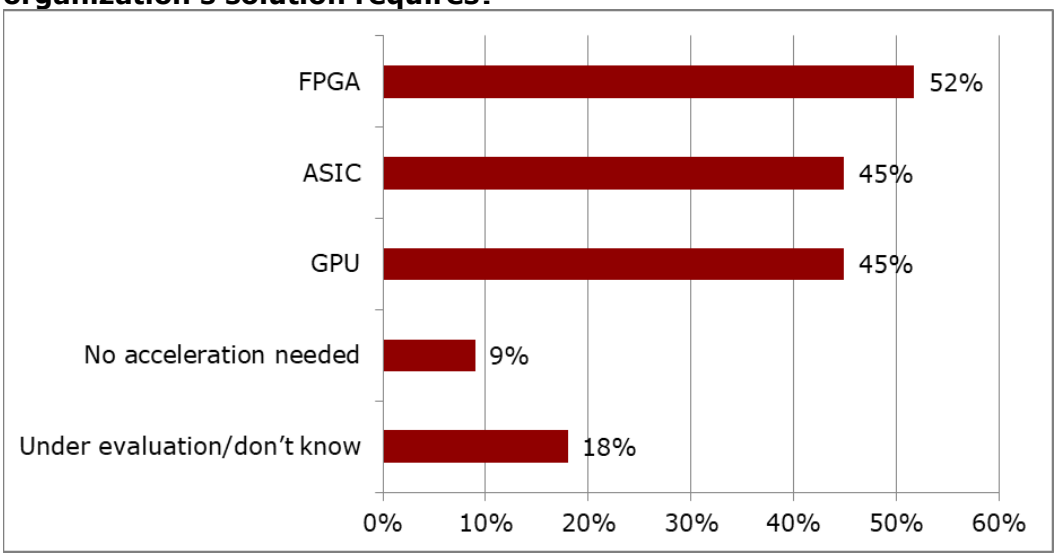
	All respondents	>$5bn	<$5bn
Base:	**89**	**36**	**53**
Inline accelerators	35%	50%	25%
Look aside accelerators	34%	25%	40%
Under evaluation/don't know	31%	25%	36%
Sigma	100%	100%	100%

Source: Heavy Reading

Hardware acceleration for open RAN can use a number of technologies, including FPGAs, ASICs, and GPUs. Many operators will deploy acceleration solutions using a mix of these techniques. Both FPGAs and GPUs are easily programmed using standard development tools. ASICs are developed to implement specific acceleration functions and may also include general-purpose processor or FPGA blocks.

As shown in **Figure 21**, there is no clear winner: 52% say their organization's solution requires an FPGA versus 45% each for an ASIC and a GPU.

Figure 21: What open RAN acceleration techniques do you believe your organization's solution requires?

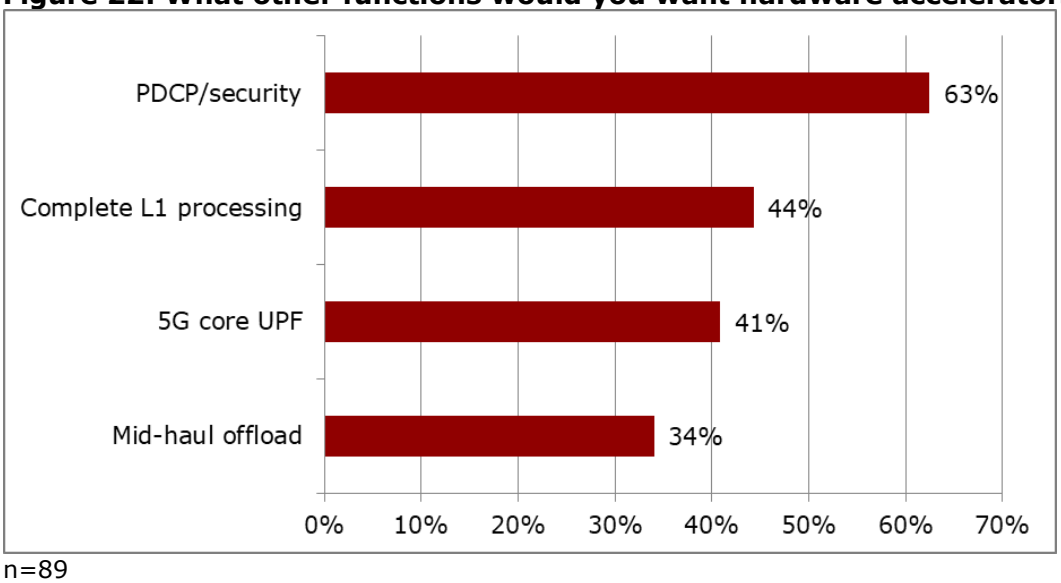


n=89
Source: Heavy Reading

A major advantage of using white box/COTS platforms for open RAN is that these virtualization platforms can be used to support additional processing functions. In this case, additional hardware accelerators would be required to ensure the correct system performance without overloading processor cores.

With this in mind, Heavy Reading asked respondents what other functions they would want hardware accelerators to offload: 63% said they would want accelerators to offload PDCP and security processing. Complete L1 processing and 5G core UPF offload is wanted by approximately 40%.

Figure 22: What other functions would you want hardware accelerators to offload?

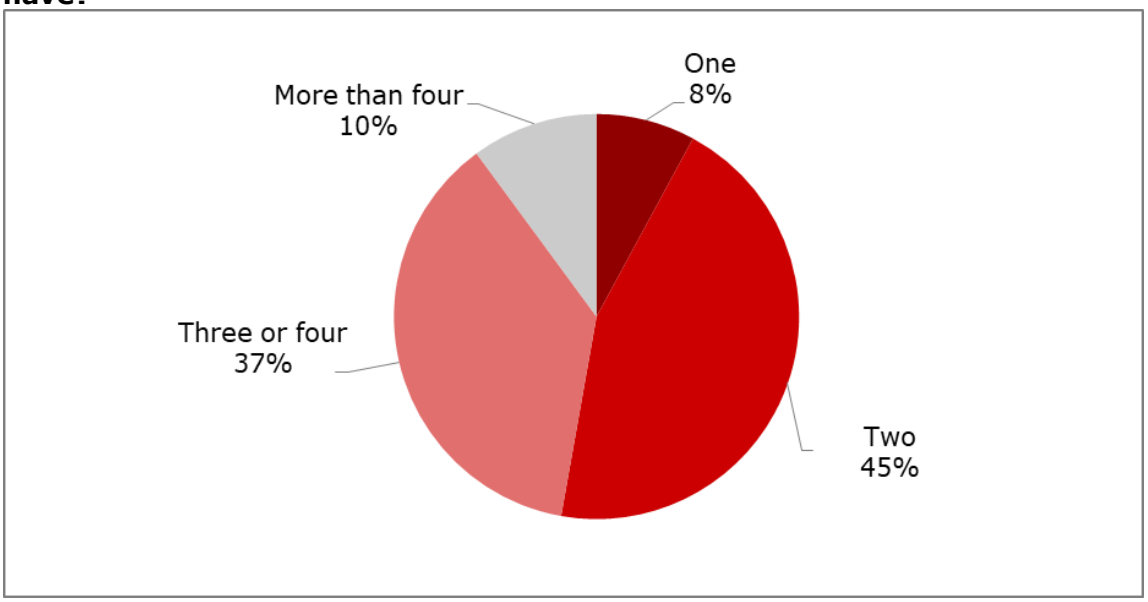


n=89
Source: Heavy Reading

Most look aside and many inline hardware accelerators are implemented on Peripheral Component Interconnect Express (PCIe) cards. The number of hardware accelerators that can be used on any white box/COTS system depends on the number of PCIe slots available.

As shown in **Figure 23**, most respondents said that the COTS servers selected by their organization have either two slots (45%) or three or four slots (37%). Two PCIe slots are likely adequate for most open RAN acceleration solutions, but would restrict additional application acceleration on the same white box/COTS platforms. 10% of respondents said that the COTS servers selected by their organization have more than four PCIe slots.

Figure 23: How many PCIe slots do the COTS servers selected by your organization have?



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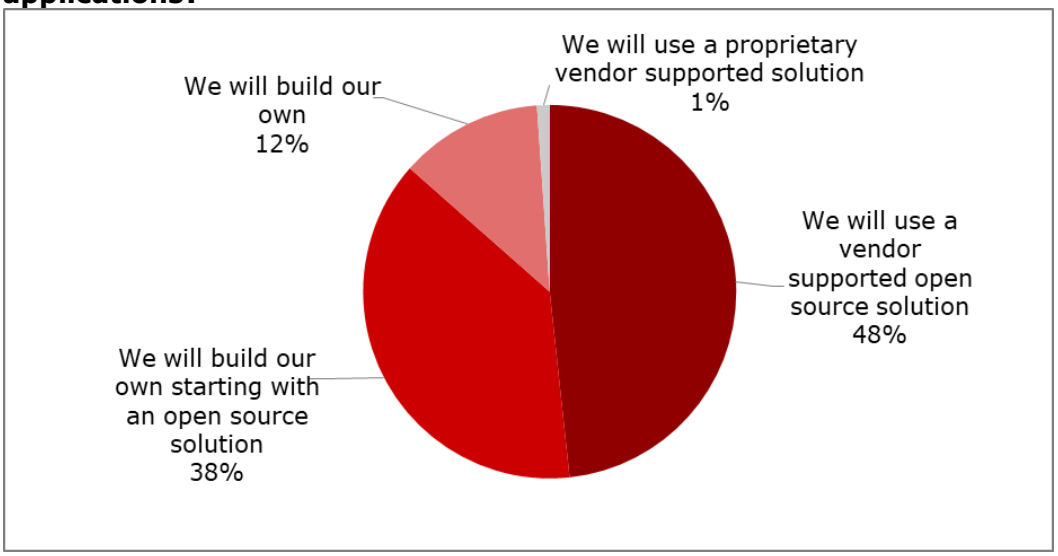
Source: Heavy Reading

OPEN RAN SOFTWARE AND INTEGRATION

Software selection and integration are key challenges in deploying open RAN networks and open RAN acceleration solutions. In this section, Heavy Reading explores the use of open source software infrastructure, the understanding that organizations have of open RAN acceleration requirements and options, and preferences for open RAN solution integration.

As shown in **Figure 24**, almost half (48%) anticipate that their organization will use a vendor-supported open source software infrastructure solution to run open RAN applications. Another 38% will build their own software infrastructure solution to run RAN applications starting with an open source solution, and 12% will develop their own software infrastructure solution to run RAN applications. Just one respondent said their organization will use a proprietary vendor-supported solution.

Figure 24: As open RAN-based systems are designed and built, what does your organization anticipate using as the software infrastructure to run RAN applications?



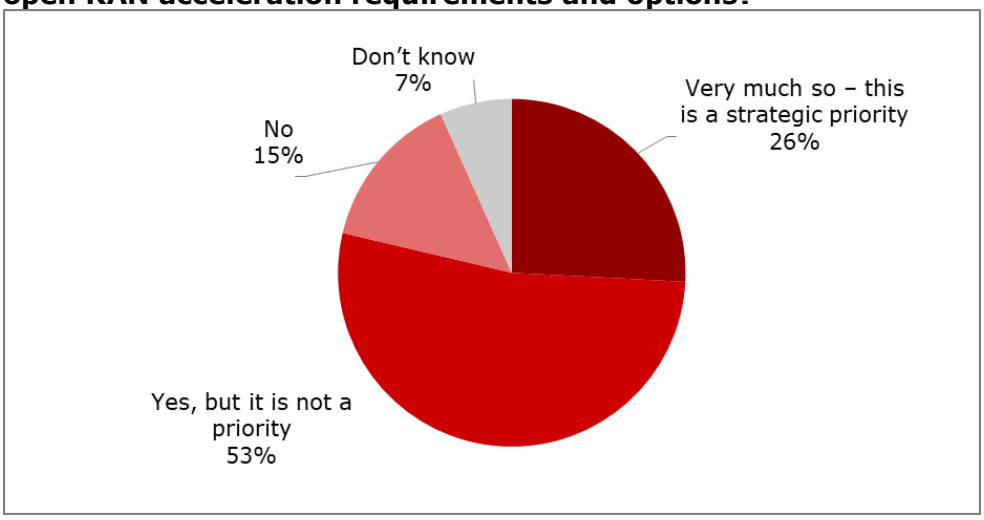
n=89
Source: Heavy Reading

There are many options for accelerating open RAN. For this next question, Heavy Reading asked "Does your organization have the internal knowledge to understand its open RAN acceleration requirements and options?"

As shown in **Figure 25**, 79% say yes, their organization does have the internal knowledge to understand its open RAN acceleration requirements and options. Of these, 26% say this is a strategic priority. Meanwhile, 15% say no, their organization does not have the internal knowledge to understand its open RAN acceleration requirements and options.

The ecosystem for open RAN is growing all the time. This result shows there is a significant minority of operators that will need assistance in deploying the right acceleration solutions for open RAN deployments.

Figure 25: Does your organization have the internal knowledge to understand its open RAN acceleration requirements and options?



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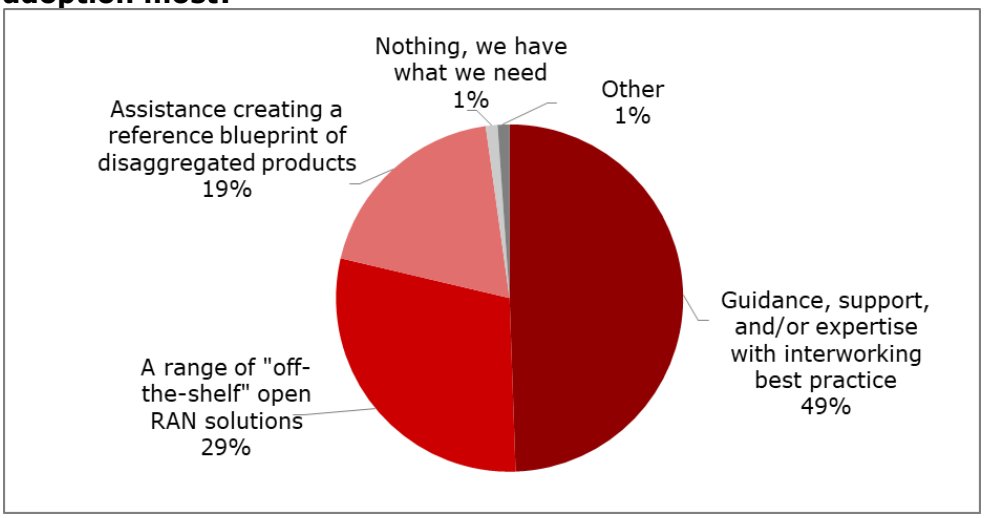
Source: Heavy Reading

In addition to deploying hardware acceleration solutions, operators can accelerate the adoption of open RAN for their network deployments by accessing support available through open RAN ecosystem partners. Heavy Reading asked respondents what they believe will accelerate their organization's open RAN adoption most.

Almost half (49%) believe that guidance, support, and/or expertise with interworking best practice will accelerate their organization's open RAN adoption the most (see **Figure 26**). One-third (29%) believe that a range of "off-the-shelf" open RAN solutions is most important, and 19% believe that assistance creating a reference blueprint of disaggregated products will have the biggest impact.

Figure 26: What do you believe will accelerate your organization's open RAN adoption most?



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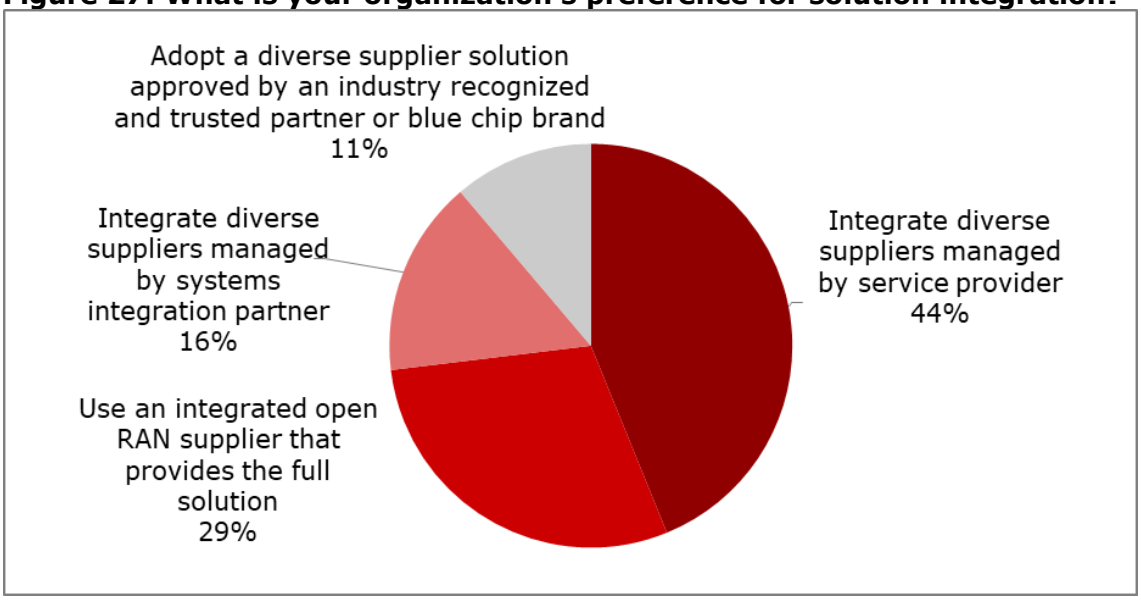
Source: Heavy Reading

For the final question in this survey (see **Figure 27**), Heavy Reading asked respondents what their organization's preference is for solution integration. Nearly half (44%) say that their organization (service provider) will manage and integrate solutions from diverse suppliers, and a total of 56% said they will rely upon external support to build their open RAN. Among the respondents, 29% say their organization would prefer to use an integrated open RAN supplier that provides the full solution and 16% say their organization would prefer to use integrated solutions from diverse suppliers managed by a systems integration partner. A further 11% said their organization would adopt a diverse supplier solution approved by an industry-recognized and trusted partner or blue chip brand.

These results suggest that the market is split with a significant number of operators trusting third-party suppliers to deliver integrated open RAN solutions and other operators planning to integrate open RAN products from multiple suppliers themselves.

Figure 27: What is your organization's preference for solution integration?



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Source: Heavy Reading