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Divergence and Convergence in Emerging LPWAN Connectivity Protocols: Attitudes and Advantages

OMDIA

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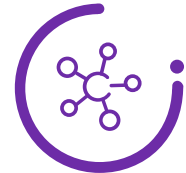


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Executive Summary



In the continuing push for digitalization, IoT may no longer be a new concept but is still at the forefront of the enterprise push to future-proof designs, increase revenue, and decrease cost. Key in that technological decision-making process is connectivity – and yet there is still no single one-size-fits-all solution.

Our Omdia survey proves this out: on average, every enterprise is using 2-3 different technologies today, from cellular to Amazon Sidewalk, and Wi-Fi to Wi-SUN. That's no surprise when every vertical and regional market brings its own unique characteristics, challenges, and types of enterprise to the table. For example, utilities have large deployment sizes but very tight cost control, so easy integration is important. Or that deployments in India saw the biggest disruption from supply chain in recent years, pushing back ROI from investments and therefore heightening focus on quick deployments on future projects.

With so many competing challenges and technologies for connectivity, it's no wonder that 1 in 4 enterprises still worry that they've made the wrong connectivity choice even on their existing deployments.

Sometimes though, that challenge is awareness – particularly as newer solutions come to market. For example, in a new Omdia survey, 39% of enterprises showed they aren't aware of Wi-SUN and 45% not yet aware of Amazon Sidewalk, even despite strong use of Wi-SUN in Smart Cities/Utilities, and huge growth expected for Amazon Sidewalk in the next two years.

However, despite the ever-diverging aspects of IoT needs and solutions, some constants remain. The top two most important factors are performance and security – by a considerable margin, and even higher than cost. And for both the 1 in 4 who remain concerned on making the wrong choice and the 3 in 4 who are still using a changing mix of several technologies, having a trusted partner to support the journey is key in making the most from an enterprise IoT investment.

With so many competing challenges and technologies for connectivity, it's no wonder that 1 in 4 enterprises still worry that they've made the wrong connectivity choice even on their existing deployments.

Introduction



Over the last decade, the number of IoT connectivity protocols and standards has grown continuously, with each standard featuring a different balance of speed, power, range, and capacity. Selecting the right protocol for a given application is one of the most important parts of designing an IoT installation, as a wrong decision early in the process can potentially limit the useable lifespan of an IoT network, or even limit its ultimate usefulness. For example, an industrial campus may have to choose between deploying a low-power standard like Bluetooth Low Energy (LE) in a mesh network, or a longer-range protocol like LoRaWAN. A network based on Bluetooth LE will have advantages in power, but will have a range measured in meters, meaning a mesh installation covering a large space will require a huge array of nodes to get coverage to the edge of the campus. Conversely, a LoRaWAN network will have no difficulty in covering a campus of several square kilometers but will be limited in throughput; if the data needs vary from the initial assumptions, or in the future change even slightly, the network may become unsuitable and require a costly refit.

Consequently, the increase in available protocols, both individually and in various combinations, means both opportunities and potential pitfalls for the network designer. Promising new connectivity standards may fail to gain traction because enterprises are unwilling to take a risk on an untested or unproven technology, choosing a more established standard that is less suited for the task. These decisions can also have long-term effects such as licensing, partnerships, and even engineering hires may be related to a single decision on connectivity. It is thus extremely important for all stakeholders in the process to examine not only what decisions on connectivity are being made, but how those decisions are being made, looking at who the key decision makers are, what influences they are under, and how they view their available set of options. Furthermore, it is important to examine how the effects of industry, geography, and scale might affect these choices, as no single solution at present would be appropriate in all settings, in all regions, and at all scales.

Selecting the right protocol for a given application is one of the most important parts of designing an IoT installation, as a wrong decision early in the process can potentially limit the useable lifespan of an IoT network, or even limit its ultimate usefulness.

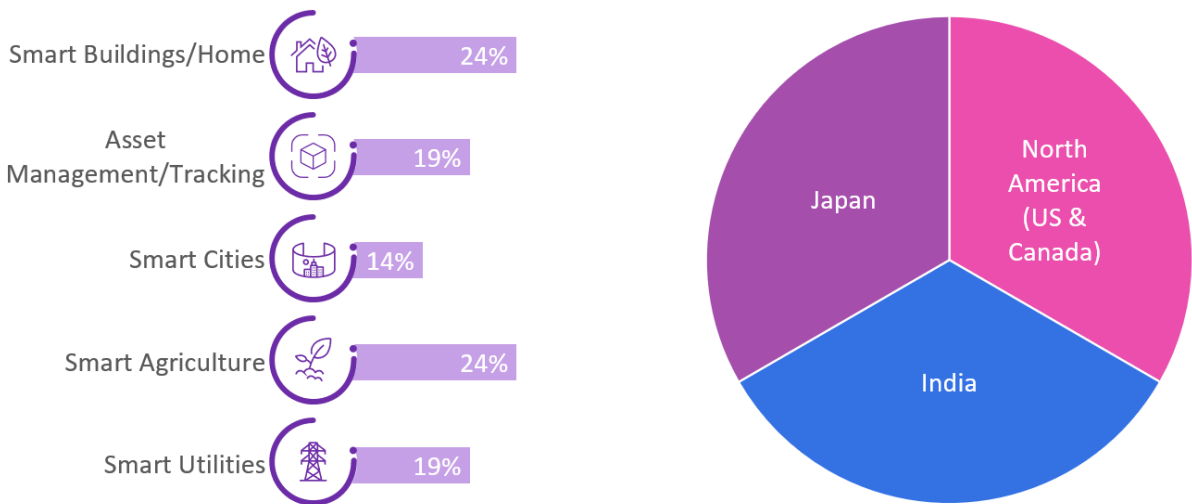
Survey Overview

In January and February 2023, Omdia surveyed 451 respondents in three regions: North America (specifically the US and Canada), India, and Japan. Qualifying questions were asked, including the respondent's role in the organization, their responsibility for decision making, and their organization's revenue and IoT activity. Of the 451 respondents, a third had roles directly involved in or responsible for the selection of IoT connectivity. Specifically, 18% described themselves as 'a decision-maker for IoT connectivity and technology decisions across the company', while 7% said they were 'a regional or divisional decision-maker for IoT connectivity and technology decisions', and

4% each reported themselves as either ‘an implementer of IoT connectivity technology’ or ‘a key stakeholder in evaluating and selecting IoT connectivity technology’.

These respondents were then asked which of five major enterprise and commercial IoT applications their companies were involved in or were considering deploying. The largest share of respondents (27%) reported an interest or focus on smart buildings/smart home, while 25% had efforts in asset management and tracking. Sixteen percent each reported a focus on smart cities, smart agriculture, and smart utilities.

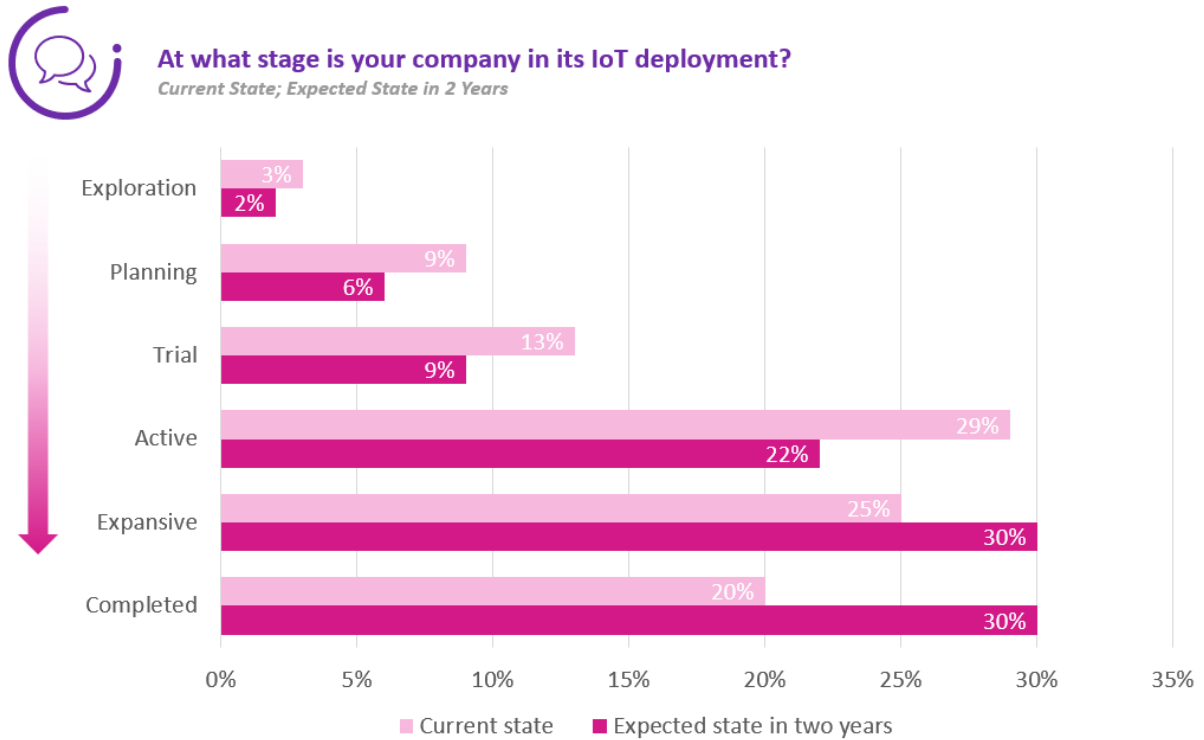
Figure 1. Survey Demographics



Source: Omdia

Respondents were asked to relate at what stage their company’s IoT deployment was currently, and at what stage they expected to be in two years’ time. For responses concerning the current state of IoT deployments, 29% reported their IoT offerings as being in an active state, defined as at least some IoT deployments in place and operational. Overall, nearly three quarters of respondents (74%) reported their companies had at least some active IoT installations, with 25% in an expansive state (leveraging existing IoT projects and infrastructure to address new use cases) and 20% at a completed stage, with all current plans for IoT fully implemented.

Figure 2. IoT Deployment Maturity



Source: Omdia

Looking ahead two years, 87% expect to have at least some active IoT deployments, with 60% of respondents moving into the two highest stages of deployment, an increase of 15 points over the 45% in 2022 who were in either expansive or completed phases. However, it is worth noting that 8% of respondents suggest that even in two years, they will not yet have reached even the trial stage, but rather will still be exploring a trial (2%) or planning a trial (6%).

Respondents were also asked to rank their top three considerations when considering their IoT solutions. The seven criteria from which to select these three prime considerations included performance, security, support, cost (operating expenses), cost (capital expenses), longevity, and scalability. Overall performance and security were the clear priorities, with 69% of respondents ranking performance in their top three considerations (including 29% ranking it their first consideration) while 66% ranked security in their top three, with 25% ranking it their highest priority. Additionally, over half of respondents (54%) ranked either performance or security as their top priority when considering an IoT project.

Overall performance and security were the clear priorities, with 69% of respondents ranking performance in their top three considerations.

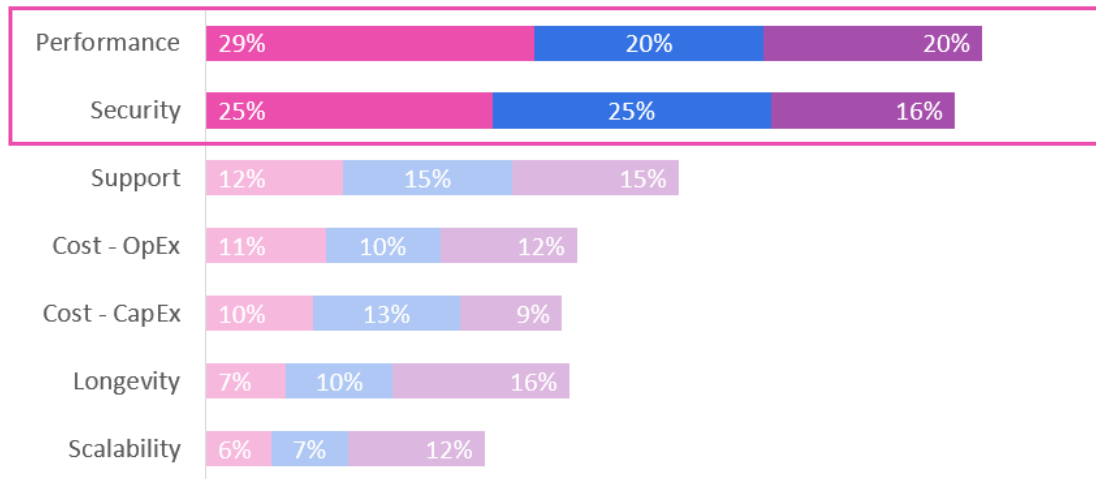
Support was a top-three consideration for 42% of respondents, while OpEx and CapEx costs were roughly even with longevity, with a third of respondents citing each of these as a top-three concern.

Finally a quarter said scalability was one of their three main considerations. 12% ranked support as their first consideration, and 27% said it was one of top first two considerations. Combining the two costs categories, 21% cited either OpEx or CapEx as their first consideration, meaning cost as a whole is clearly an important element of IoT installations.

Figure 3. Top IoT Solution Qualities



What are your most important requirements when evaluating an IoT solution?
Rank top three.



Source: Omdia

Detail by IoT Focus

If the responses are examined by main IoT activity, some differences are revealed:

Asset Management and Tracking



Applications: Supply Chain (57%), Logistics (43%).

Summary: Supply chain/logistics applications are increasing adoption quickly, with medium-sized deployments. Only vertical to prioritize security over performance, with long lead times and in-house expertise as the top two challenges.

Scale:

Deployments over 1,000 devices **83%**

With 87% expecting to deploy over 1,000 devices in two years; 44% expect to deploy over 10,000 devices in the same period, compared to 28% currently.

Connectivity (Highlights):

NB-IoT	54%
CAT-M	33%
LoRaWAN	24%
Bluetooth	21%
Matter (via Mesh)	21%

Current usage (select all that apply)

Considerations:

#1 = Security

30% of respondents from asset management and tracking reported security to be their number one concern, while 71% listed it in their top three. Performance was the top consideration for 27%, with 66% including it in their top three.

Concerns:

Long lead time; Expertise

The most commonly cited roadblocks reported by those in the asset management and tracking industry were deployments taking longer than expected and not having enough in-house expertise, with 43% of respondents citing each of these as major concerns.

Smart Agriculture



Applications: Smart agriculture/farming (100%).

Summary: Typically the smallest deployment and business size, with low existing IoT knowledge and a natural cost cautiousness and preference for buying from a single partner/vendor. Expect use of Amazon Sidewalk to almost double in next two years, with awareness by far the biggest barrier.

Scale:

Deployments over 1,000 devices **59%**

59% of respondents have already deployed over 1,000 devices, including 13% of respondents with over 10,000 devices. In two years, the expected figures are 81% with over 1,000 devices, including 31% with over 10,000.

Connectivity (Highlights):

NB-IoT	43%
LoRaWAN	33%
CAT-M	24%

Current usage (select all that apply)

Wi-Fi, MLoTY and Bluetooth were each reported as being used by roughly a third of respondents as well. Use of Amazon Sidewalk expected to double in 2 years.

Considerations:

Security/Performance

Security and performance both feature in the top three priorities for 62% of respondents; 21% named one of the two cost considerations (CapEx or OpEx), while 42% listed support as one of their three main concerns.

Concerns:

Long lead time; Expertise

47% of respondents named deployments taking longer than expected as their main roadblock, while 45% were worried about a lack of in-house expertise (with 34% also expressing fears of a lack of external support). Budgetary concerns were also listed by 42%.

Smart Buildings



Applications: Security/Access (45%), Energy Management (36%), Building Traffic Management (19%).

Summary: Most challenged by supply chain, longer deployment time and being over budget. Strongest need for a developer/community support and an alliance-backed network. Biggest potential growth for Amazon Sidewalk in next two years of any vertical.

Scale:

Deployments 1,000-10,000 devices 44%

Most likely to deploy between 1,000 and 10,000 IoT devices, with 44% responding so; an additional 28% had over 10,000. In two years, 40% of these companies expect to deploy over 10,000 devices, with 3% expecting to feature over 100,000.

Connectivity (Highlights):

CAT-M	40%
NB-IoT	36%
Wi-Fi	33%
LoRaWAN	29%
MIoTY	24%
Wi-SUN	22%

Current usage (select all that apply)

Considerations:

Security/Performance

Security and performance both ranked in the top three for 70% of respondents, with performance slightly ahead on being ranked first. 41% listed support as one of their three most importance considerations, while 22% listed one of the two cost factors as their biggest concern.

Concerns:

Budget; Long lead time; Supply chain challenges

The three largest roadblocks for organizations in smart buildings/home were running overbudget (41%), longer than expected deployments (40%) and supply chain challenges (40%).

Smart Cities



Applications: Traffic Management (30%), Waste Management (30%), Smart Parking (20%), Smart Lighting (20%).

Summary: Still a relatively immature market despite some large deployments – smart cities have a big focus on performance and need longevity, but struggle on being over budget. Wi-SUN already the 3rd most used technology in this vertical.

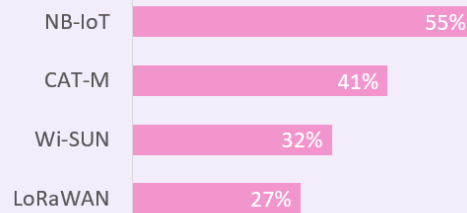
Scale:

Deployments over 1,000 devices **72%**



Currently 72% of companies in the smart city space maintain over 1,000 deployments, with 21% holding over 10,000; in two years, the companies surveyed expect those figures to increase to 83% and 32% respectively.

Connectivity (Highlights):



Current usage (select all that apply)

Considerations:

#1 = Performance

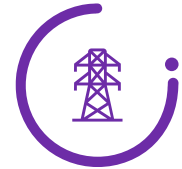
75% name performance as a top-three concern, and 35% ranking it their biggest concern. 65% named security in their top three considerations, followed by support at 51%. Cost was less of a consideration, with only 12% citing either CapEx or OpEx as their main consideration.

Concerns:

Lack of budget

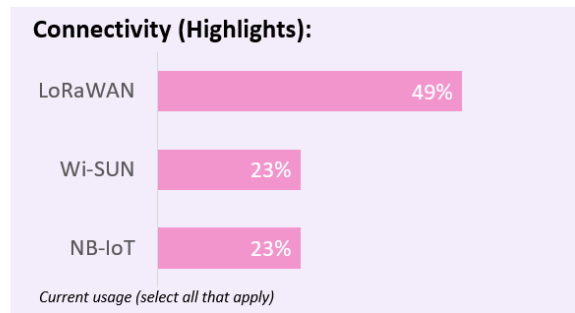
Budgetary concerns were the most cited roadblock, with 45% of respondents worried about going over budget, followed by 38% concerned with a lack of internal support and 35% citing supply chain challenges.

Smart Utilities



Applications: Energy/Utilities (44%), Distribution Automation (31%), Smart Metering (25%).

Summary: Smart utilities have some of the largest deployment sizes (by device count), but with tightly controlled costs/ability to spend and a need for integration with existing systems. Show strongest interest for any vertical in Amazon Sidewalk and Wi-SUN, the latter already the 2nd joint most used technology.



Considerations:

#1 = Performance

Performance was a top-three concern for 75% of respondents, although slightly more listed security as their first priority (31% v. 28%). Costs were a significant concern, 22% citing either OpEx or CapEx as the most important quality. Support was less of a concern in this segment, perhaps due to the relative scale of the enterprises involved.

Concerns:

Supply chain challenges

Supply chain challenges were the largest potential roadblock, cited by 39% of respondents, followed closely by prolonged deployment times (38%) and a lack of in-house expertise (37%).

Regional difference

North America (US/Canada)

Top Applications: Agriculture (17%), Supply Chain (13%), Logistics (12%), Energy (11%).

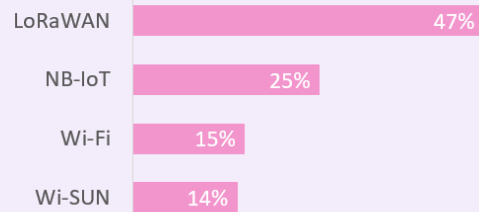
Summary: Performance focus even above security (e.g. ‘guaranteed uptime’), with high growth expected from the large number of smaller deployment projects seen to date. Relatively low awareness for Wi-SUN and higher awareness for Amazon Sidewalk, but strong need to see a developer network for technology.

Scale:



79% of respondents currently support under 10,000 IoT devices, falling to 65% within two years; at that point 11% of respondents expect to have over 50,000 deployments, compared to just 3% at the time of the survey.

Connectivity (Highlights):



Current usage (select all that apply)

Considerations:

#1 = Performance

Performance is a top-three concern for 74% (33% as top concern); 66% named security (including 24% saying it was of primary importance). Only 15% said any cost categories was an important consideration. 43% named support as one of their top three considerations.

Concerns:

Long lead time; Expertise

The largest roadblock cited by respondents from this region was deployments taking longer than expected, with 40% naming it; 39% stated a potential lack of in-house expertise was a major concern, a more significant worry than budgetary issues at 37%.

- **Maturity:** 74% of respondents from North America reported their IoT deployments were active, including 17% claiming all current plans for IoT installations were fully implemented; that figure was predicted to rise to 27% in two years, with 81% of respondents saying they expected at least some IoT deployments to be active at that time.

-
- **Technology Considerations:** When asked what performance or technical features are most needed in an IoT installation, 46% of North American respondents stated Integration/compatibility with current systems was a major concern, followed by 41% for guaranteed uptime.
 - **Support Needs:** When discussing the most important criteria for support, respondents named strong developer networks and support as the most important feature overall, with 28% listing it as the highest priority and 67% listing it in their top three criteria. Availability of tools was the next most important consideration, with 20% citing it as their primary requirement and 62% putting it in their top three.

India

Top Applications: Supply Chain (21%), Security/Access (17%), Energy Management (14%).

Summary: The most bullish region on IoT deployment growth and with a relatively high average project size – also the most likely to buy end-to-end solutions but took a big hit in the supply chain disruption in recent years.

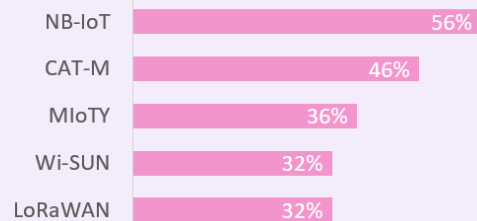
Scale:

Deployments 1,000-10,000 devices



A further 25% have deployments of 10,000-50,000 devices. In two years, 41% of respondents expect to operate over 10,000 units. Notably, deployments under 1,000 units is expected to remain unchanged, at 12% of those surveyed.

Connectivity (Highlights):



Current usage (select all that apply)

Considerations:

#1 = Performance

72% of respondents named performance as a top-three consideration, followed by 67% for security and 46% for support. 31% said performance was the most important consideration (21% for security and 13% for support). CapEx and OpEx combined were the main consideration for 18%.

Concerns:

Supply chain challenges

The most significant roadblock reported was supply chain challenges with almost 50% naming the issue; this is substantially higher than 32% reported by North America and 29% cited in Japan. The next most named roadblock was deployments taking longer than expected at 38%.

- **Maturity:** 87% of IoT installations in India are reported to be in the active through completed phase; in two years that figure is expected to top 90%. A full 45% of IoT projects are predicted to have reached completion in two years.
- **Support Needs:** Strong developer network and community support were top-three considerations for 67% of respondents as support factors, with 27% naming it as their highest priority. 56% cited the availability of tools as one of the three most important considerations, including 21% who said it was their primary concern.
- **Technology Considerations:** Ease of upgrades ranked as the most needed feature for IoT installations, with 49% citing it, followed by integration and compatibility with current systems at 45%.

Japan

Top Applications: Agriculture (24%), Security/Access (11%), Logistics (10%).

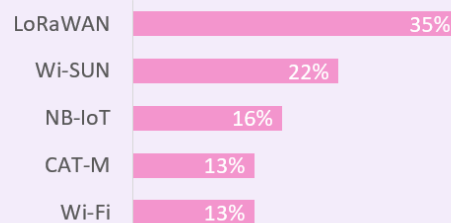
Summary: The most security focused and cost conscious of the surveyed regions, with challenges around deployment integration and a lack of in-house expertise. Lowest current awareness level of any region for Wi-SUN.

Scale:

Deployments under 10,000 devices **74%**

40% expect to have more than 10,000 in two years. One in four companies surveyed expect to continue to deploy < 1,000 devices in two years. This is likely a result of the immature IoT market in many areas (as witnessed by the substantial number of deployments still in a trial phase).

Connectivity (Highlights):



Current usage (select all that apply)

Considerations:

#1 = Security

67% of respondents select security in the top three (31% as their primary consideration). Performance is the next largest concern. The combined cost areas, CapEx and OpEx, together were the primary focus of 28% of respondents, considerably higher than 18% combined in India and 15% in North America.

Concerns:

In-house expertise

A lack of in-house expertise is the largest roadblock, with 47% citing it, followed by delays in deployment and projects running overbudget, both named by 43% of respondents.

- Maturity:** 50% of companies surveyed stated their IoT deployments were active or expansive but not yet completed, although 19% said they expected all their planned IoT deployments to be complete in two years. 36% are currently in the process of planning or deploying a trial, compared to 20% in North America and 12% in India.
- Support Needs:** Strong Developer Network/Community Support was the support criterion with the most naming it as a top-three consideration (63%), although the availability of tools had the largest number citing it as their main consideration, at 30%. 61% named tool availability as a top-three concern, with 58% mentioning ease of device certification.
- Build/Buy/Partner:** The most likely to partner with one or more vendors rather than build their own device hardware or software; respondents in India and North America were more than twice as likely to report building their own hardware and software.

Making the right choice



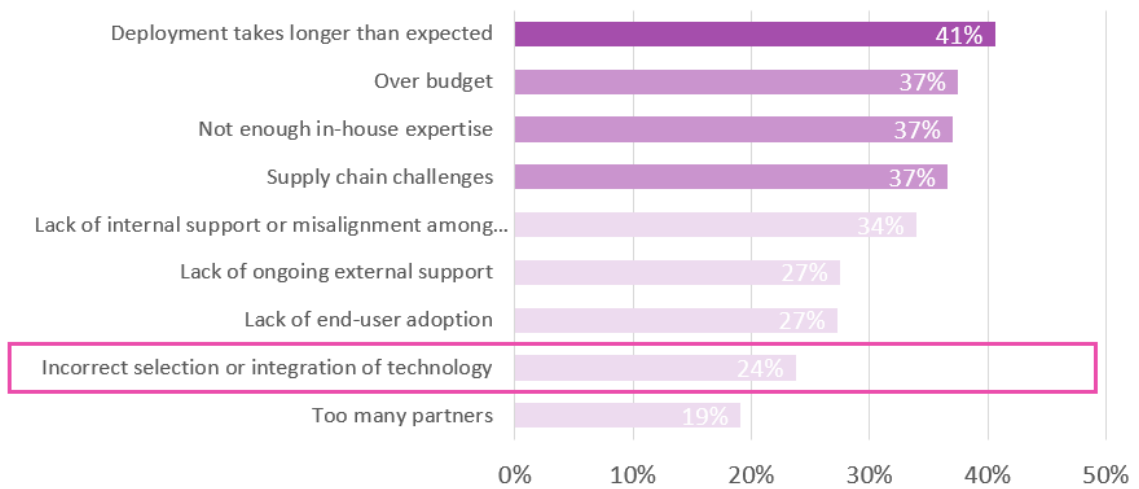
Looking at the responses as a whole, when asked what the biggest roadblocks encountered when scaling IoT deployments, the most commonly cited concerns were in many ways typical and although important fairly unexceptional. For example, deployments running behind schedule (41%) and over budget (37%), or difficulties in getting internal support or alignment behind priorities (34%), or the recently all-too-common supply chain difficulties (37%). However, one smaller area of concern is worth considering in some detail. 24% of respondents, or essentially one in four, has serious concerns about the incorrect selection or integration of technology. Furthermore, 27% worry about a lack of external support and 37% cite a potential lack of in-house expertise.

Figure 4. IoT Deployment Roadblocks



What are the biggest roadblocks your organization encountered in scaling IoT deployments?

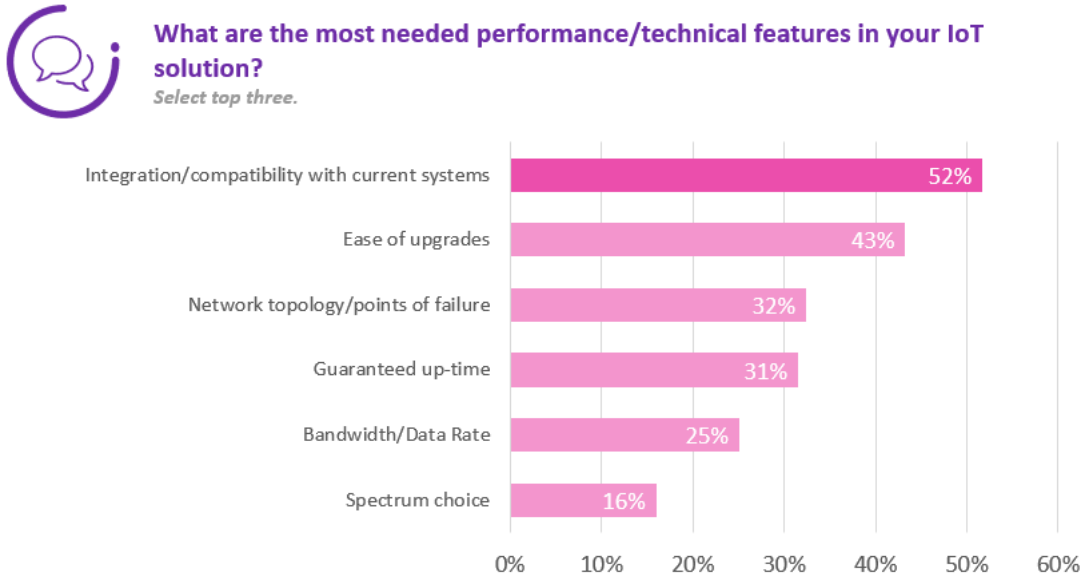
Select top three.



Source: Omdia

Additionally, when asked what performance or technical features were most important in an IoT solution, over half said that integration and compatibility with current systems was essential, significantly more than cited guaranteed uptime (31%) or bandwidth/data rate (25%). Thus, for over half of respondents, an absolutely essential feature, integration and compatibility, relies almost entirely on product or technology selection—an area where 25% are already worried about making the wrong choice.

Figure 5. Performance and Technical Features



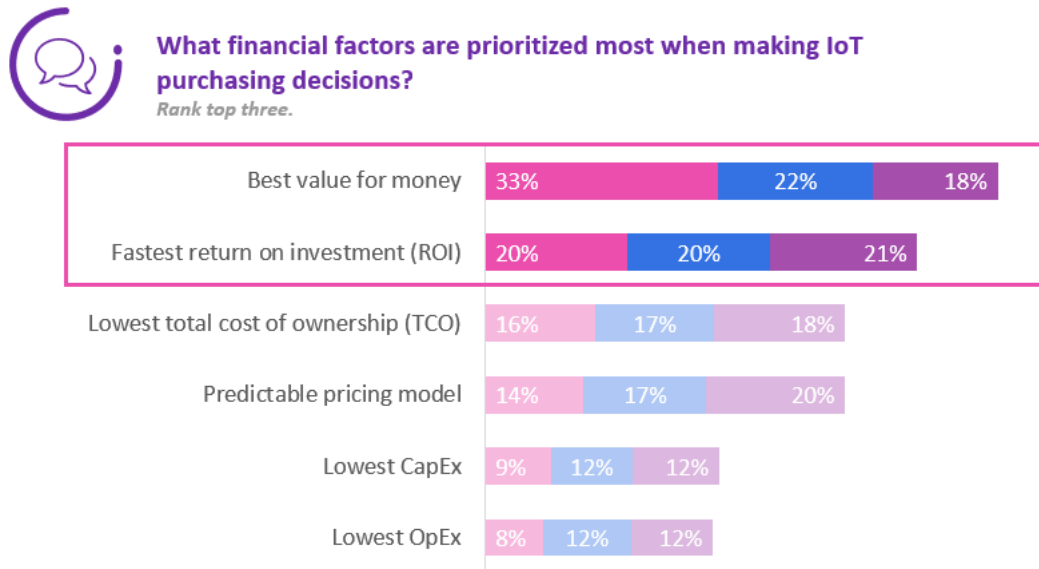
Source: Omdia

The wariness enterprises have over selecting the right technology and the requirement that it be easily integrated and compatible with current systems, is compounded by a need to minimize costs and maximize early returns on investment. When respondents were asked what financial factors were prioritized the most when making IoT purchase decisions, 72% named value for money as one of their top three considerations, while 61% reported fastest return on investment (ROI) as one of their three biggest concerns, with 20% citing it as their biggest consideration. This exacerbates the already significant pressure organizations feel over selecting the right technology and finding adequate support, since a path to ROI is expected quickly.

That is, a significant percentage of respondents, already facing pressure to produce a sufficient ROI, are also worrying about making the wrong choice of technology, in that they won't be able to support themselves or get support to accomplish what they need the technology to do. That concern about making a wrong choice could potentially convince firms to choose what they regard as safe choices, opting for established or well-known solutions, rather than choosing ones best suited for their installation.

It is thus incumbent on vendors at every level to make sure there is overlapping support and advice available, so customers feel supported and understood in this process. It is also essential for new and emerging technologies to show the ways they enrich and expand the landscape. New does not need to mean risky or unproven, but customers need to know that the support they need and value they require is available. In fact, 65% of respondents, the largest number overall, list strong developer, network, and community support as a top-three consideration when considering the most important support criteria for IoT purchasing decisions, with 24% listing it as their highest priority.

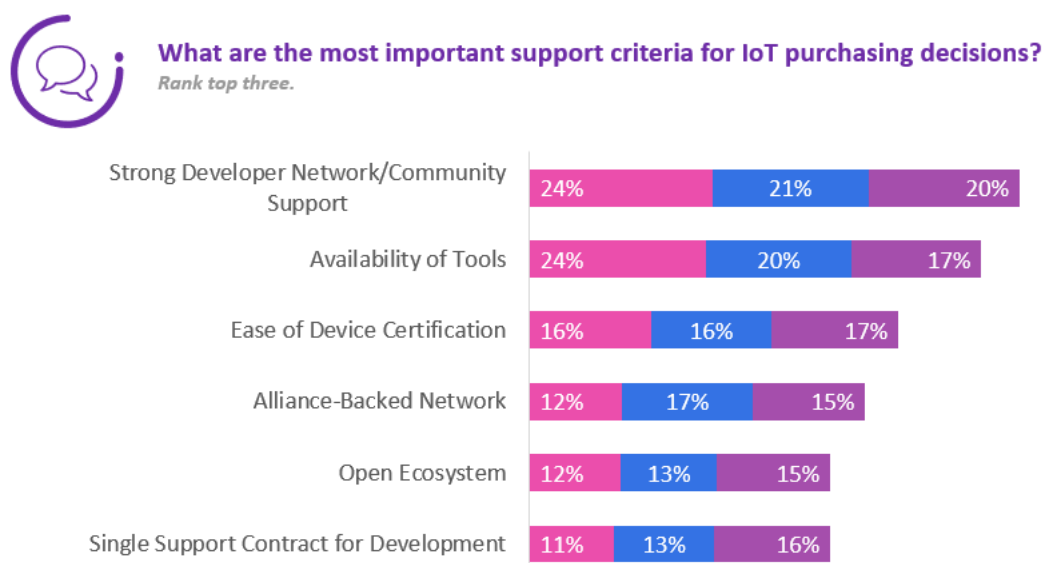
Figure 6. Financial Factors in IoT



Source: Omdia

As such addressing and alleviating these concerns must be seen as a critical part of the sales and delivery process by any vendor working in the IoT.

Figure 7. Support Criteria for IoT Solutions



Source: Omdia

Examining Two Emerging Disruptors to IoT Connectivity



Looking more closely at attitudes to technologies in the IoT, attitudes toward and capabilities of two comparatively new forms of connectivity, Wi-SUN and Amazon Sidewalk, will be examined.

Wi-SUN

Wi-SUN, which originally stood for "Wireless Smart Utility Network" but has now been updated to "Wireless Smart Ubiquitous Network," is an ultra-low-power and long-range sub-GHz mesh network designed primarily for smart city, smart utilities, and industrial IoT deployments. It is an open standard governed by the Wi-SUN Alliance. Wi-SUN offers higher throughput than both LoRaWAN and NB-IoT, as well as lower power consumption when in sleep mode; this means under the right circumstances, it can be more power-efficient than those two more commonly known long-range standards, as it can spend less time in transmit mode. With support for both IPv6 and its public key infrastructure (PKI), Wi-SUN also has some advantages in security, which as has been demonstrated is a consideration as important as performance for the great majority of respondents. The maximum transmission unit (MTU) of Wi-SUN is just over 1200 bytes, with a transition rate of 50 kbps to 2.4 Mbps. This is notably lower latency than LoRaWAN, which has an upper limit of roughly 60 kbps, while NB-IoT tops out at 140 kbps (uplink). As such Wi-SUN is optimised for short bursts of information, sent with minimal latency and with high security.

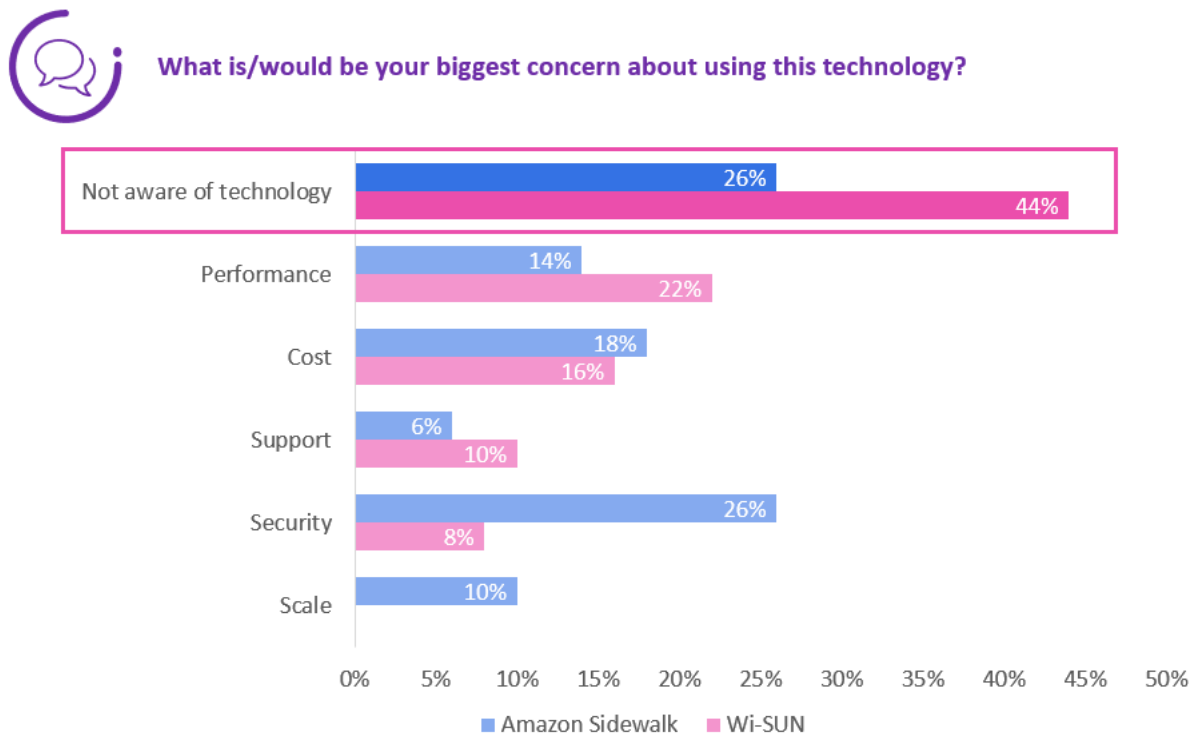
Amazon Sidewalk

Amazon Sidewalk is a low-bandwidth, long-range protocol which uses the existing array of Amazon smart home devices to provide an extended IoT network, with some Ring devices and Echo speakers acting as access points, thus creating an ad-hoc network. Amazon Sidewalk uses a combination of Bluetooth LE for short-range connectivity in the home, and sub-GHz, including FSK and CSS modulations for long-range, area neighborhood networks. Amazon device owners agree by default to share a small portion of their internet bandwidth with the network, up to pre-set limits, with the understanding that they will also benefit from this sharing. Amazon device owners share some of their internet bandwidth with the network, up to pre-set limits, with the understanding that they will also benefit from this sharing. For example, in the event of a power loss, a Ring camera will still be able to upload notifications by making use of an online Amazon Sidewalk connection, while device trackers such as Tile can also use the network, which makes finding devices equipped with the tags easier. Amazon Sidewalk is also integrated with AWS's IoT Core service, meaning developers have access to the network as part of their IoT Core subscription.

Lack of Awareness is the Biggest Concern

Overall respondents were less aware of Wi-SUN and Amazon Sidewalk than they were of more established protocols. 39% said they were not aware of Wi-SUN and 45% said they were not aware of Amazon Sidewalk. That lack of awareness is clearly the most significant concern about both technologies.

Figure 8. Biggest Concerns on Wi-SUN and Amazon Sidewalk



Source: Omdia

Respondents show that the more aware they are both of Wi-SUN and Amazon Sidewalk, the more likely they are to feel positively towards both technologies. When respondents were asked to give detail of their awareness of Wi-SUN, the 39% awareness was segmented into 11% who were not aware at all and 27% who were aware but did not know enough to make a decision (with 1% lost due to rounding). Of the remaining 62%, 10% said they were aware and using the standard, while 29% said they were aware and would consider using it. That translates to a positive attitude towards Wi-SUN from 63% of those aware of the protocol. Similarly, for Amazon Sidewalk, 65% of those with enough awareness of the protocol shared a positive attitude toward the

Respondents show that the more aware they are both of Wi-SUN and Amazon Sidewalk, the more likely they are to feel positively towards both technologies.

protocol. As such, cutting through the lack of awareness is an obvious but still important step in fostering its growth.

For example, among respondents focused on Smart Utilities, Wi-SUN is the second most commonly used technology, tied with NB-IoT at 35% and behind LoRaWAN with 40%. Clearly as Wi-SUN was designed for and is most used in the utilities segment, it has more recognition and consequently more use. Wi-SUN has also become a significant technology in the Smart City space, with 32% of respondents focused on that segment reporting using Wi-SUN, behind NB-IoT (55%) and CAT-M (41%) but ahead of LoRaWAN (27%).

Looking ahead, both Wi-SUN and Amazon Sidewalk are technologies enterprises are demonstrating active plans for the near future. When asked what technologies they plan on actively incorporating into their IoT solutions within the next two years, 23% plan on using Wi-SUN and 19% of respondents name Amazon Sidewalk—this would represent tremendous growth for Amazon Sidewalk, especially considering it was only opened to developers in 2023. 29% of respondents in Smart Agriculture plan on using Wi-SUN, while 21% of those surveyed with a focus on asset management and tracking plan on using Amazon Sidewalk. However, while that was the highest response from a vertical, it is notable that there was enthusiasm for Amazon Sidewalk in all five verticals surveyed, with no vertical expecting to see use below 15% for Amazon Sidewalk in two years. Considering the previously noted lack of awareness of Amazon Sidewalk, reaching 45%, this indicated that Amazon Sidewalk is rapidly becoming a preferred solution among those with substantial awareness of the technology.

Case Study: Wi-SUN

At the International Institute of Information Technology in Hyderabad, India (IIIT-H), and funded by the government of India, the Center of Excellence on IoT for Smart Cities has established a [Smart City Living Lab](#) on campus which duplicates a typical urban environment to allow for research and experimentation in technologies that can promote social, economic, and environmental quality of life. A campus-wide network of Wi-SUN nodes offers control over individual streetlights based on weather conditions, with light poles fitted with router nodes acting as the network's control and backbone. An array of sensors, both line-powered and battery-powered, are connected as end nodes, forming a robust Wi-SUN mesh. This dense network of stationary nodes is essential to enable the deployment and demonstration of Wi-SUN beyond simple applications like streetlights. The capability of Wi-SUN to deploy in this mesh pattern, as opposed to the star topology typically used by LoRaWAN and NB-IoT as well as CAT-M, is a particular point in Wi-SUN's favour in the Smart City space.

Case Study: Amazon Sidewalk

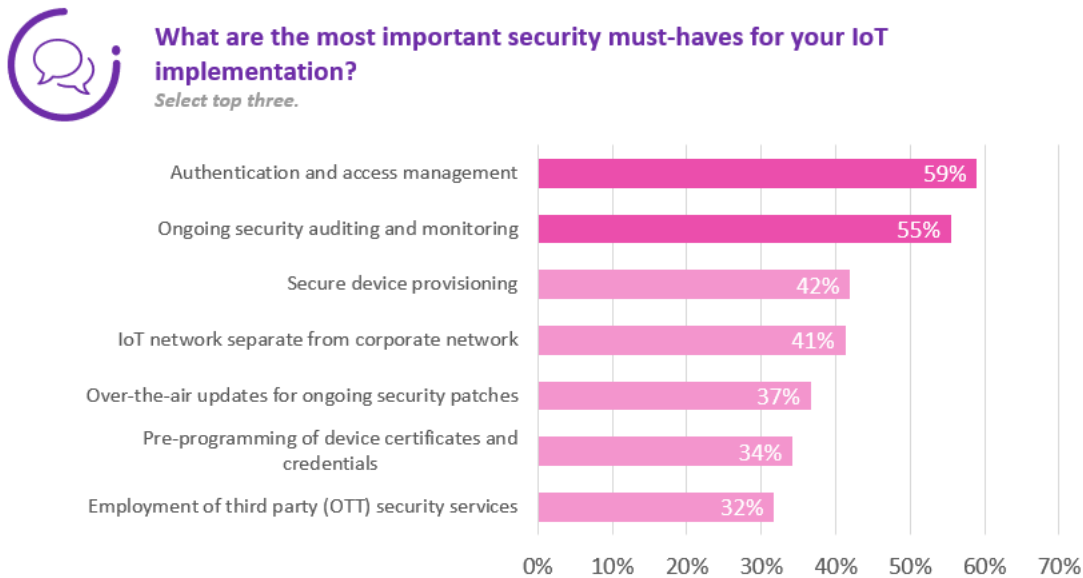
New Cosmos, a long-established maker of residential natural gas alarms, used Amazon Sidewalk as their connectivity choice for their line of [DeNova Detect wireless alarms](#). The design uses micro-electromechanical system (MEMS) sensors for gas leak detection as well as Amazon Sidewalk, using its combination of Bluetooth LE and LoRaWAN to minimize power consumption and maximize battery life, as well as using the de facto mesh network created in residential neighborhoods to ensure always-on connectivity. This means the device can operate independently for a number of years without requiring a battery change. The technology supports security features regarded as essential for the application, such as multilayer encryption. A partnership with Silicon Labs ensured access to all tools and support necessary.

Conclusions



While other aspects are certainly increasing in importance, technology performance and security are without question the most important considerations by those surveyed. This means every firm engaged in designing, manufacturing, and supplying connectivity hardware should make it transparent how their security is offered, how it works, how it scales, and how it integrates. As we have seen with the lack of awareness affecting newer technologies, it is especially incumbent on those promoting these newer technologies to lay out their security proposition for the world.

Figure 9. Security Must-Haves for IoT Implementation



Source: Omdia

For example, Amazon Sidewalk and Wi-SUN both tick virtually every box of security requirements, with robust authentication, secure access management, multiple secure layers of encryption, secured provisioning and OTA updates. Those supplying these devices should go further in allaying any lingering concerns about security, as the lack of awareness could potentially breed mistrust.

It is clear that performance and security are and will likely remain the most significant considerations for those deploying IoT technology, although it is important to consider support as well. The one in four respondents who worry about making the wrong choice in connectivity are a minority of respondents but a significant number nonetheless. Firms seeking their business should not just offer support but make that support an integral part of their proposition. This support will go some way in helping those installing new IoT networks to minimize costs, both capital and operating, as few things can derail planned expenditures as quickly and as severely as getting the connectivity technology wrong at the outset—a customer could be left with an unmanageably inefficient system or worse, have to return to square one and refit their network. Support then is fundamentally an efficiency for the customer.

Amazon Sidewalk and Wi-SUN both tick virtually every box of security ...Those supplying these devices should go further in allaying any lingering concerns about security, as the lack of awareness could potentially breed mistrust.

Appendix

About Silicon Labs

Silicon Labs (NASDAQ: SLAB) is a leader in secure, intelligent wireless technology for a more connected world. Our integrated hardware and software platform, intuitive development tools, unmatched ecosystem, and robust support make us an ideal long-term partner in building advanced industrial, commercial, home, and life applications. We make it easy for developers to solve complex wireless challenges throughout the product lifecycle and get to market quickly with innovative solutions that transform industries, grow economies, and improve lives. [Silabs.com](https://silabs.com)

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