

Introduction

This sixth year of the SIP Survey has proven to be extremely popular with **929** professionals responding.

Why this kind of Survey?

The survey's purpose is to take a look at SIP trunking and specifically, to document the most common issues that occur during SIP trunk implementations and what can be done to help mitigate these issues, if at all. Inputs are collected from vendors, service providers, integrators, resellers and also from small to enterprise clients from all around the world.

Yet... as SIP evolves, so does this survey.

A lot of companies are migrating from legacy TDM trunks to SIP trunks - this is abundantly clear and well documented across the industry... Yet some are also adopting cloud services instead of having systems on-Premises – don't fret, SIP is still there for these services, controlling things 'under the bonnet'. Many companies are taking the 'Hybrid' approach where they retain things like Call control on-Premises, utilize SIP trunks for connectivity and then connect to the 'cloud' to add on functionality such as Contact Center, Call Recording, IVR (Interactive Voice Response), virtual Router deployment, and much more. Finally, a lot of companies are 'sitting it out' and watching to see what happens with mergers and acquisitions etc. (most recently the announcement that CenturyLink is acquiring Level3), so that they can be relatively sure that the cloud provider they choose will actually be around in this fast moving arena for the long term.

As the survey has been carried out by The SIP School, all of the opinions in this report are our own unless clearly stated. We have been able to embellish this report with comments from people who work in this area and we believe that their insights can help people understand what is important and actually happening out in the real world.

Following on from the changes introduced to the survey in 2015, we have continued to highlight on the companies that are 'consumers' of SIP services. We have done this to really focus on what the customer is experiencing because when all is said and done, it is *they* who will decide if a service is successful or will fail.

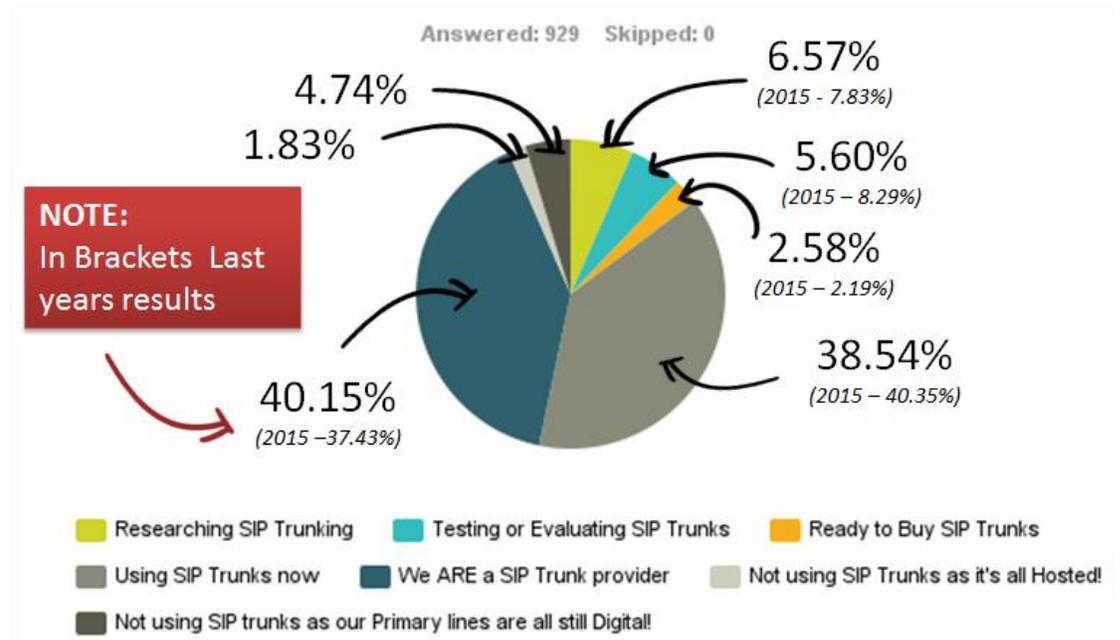
To highlight the questions we've used two colors

Purple = Questions answered by everyone

Green = Questions answered by non-ITSPs (i.e. the Clients)

So, here we go, question number 1....

Q1: SIP trunks are becoming more and more popular, where do you and your organization fit?



"The survey results match what we are seeing in markets around the world. Customers are ready to buy SIP trunks because their provider is forcing them to, or they can no longer ignore the savings, increased reliability and security."

Kevin Pitts. Oracle Communications

The results here show that around 40% of responders (to this Survey) are actual ITSPs (Internet Telephony Service Providers) which means they were subsequently not asked questions from Q2 to Q23. People who told us they are 'not using' SIP trunks were directed to Question 24 which does leave a large percentage of people that *are* using, testing, researching SIP trunks and whose comments should be taken seriously by the providers and dealers/resellers who are reviewing this document.

Last year we had 3.92% say they were not using SIP trunks, this year we gave people two options for why. A: They are still using PRI etc, or B: No SIP trunks but all Hosted.

To get some idea of where the respondents are from, here is a small breakdown of the countries involved here.

- USA 49%
- Canada 8%
- UK 6%
- India 5%
- Mexico 3%
- Others 29%

Note: We use the Term ITSP to cover a 'whole range' of companies that provide connectivity to allow Voice service for customers across public and private networks.

SIP Survey 2016

“With the advent of the following:

*Cloud transition

*Smaller businesses leveraging centralized trunking and virtualized location presence

*Increased focus on resiliency

*Increased interest in Hosted solutions

*Inclusion of real-time communication (RTC) capabilities in Business Productivity application suites and Browsers via HTML5

*Increased use of Virtual Assistants (i.e. Amazon Alexa/Dot, Google Home, Cortana, Siri etc.)

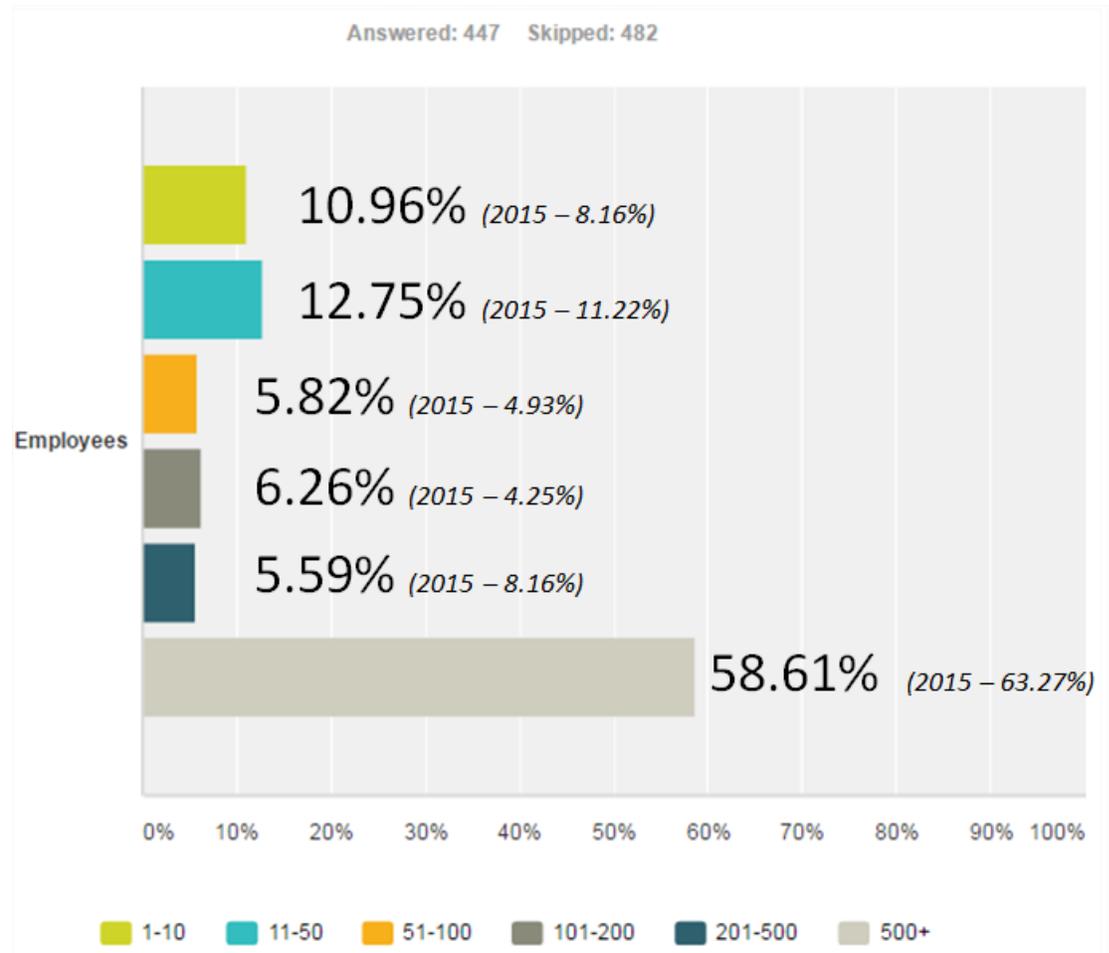
*The potential regulatory changes re: the Wireline incumbents,

– the use of intelligent RTC solutions such as SIP, will only increase in overall demand”

David Leon-Guerrero, Cox Business

Now it’s important to know something about the companies that the respondents work for.

Q2: How many employees are at your company?



It’s interesting to see that the majority of client responses are from large enterprises. This doesn’t take away from the fact that companies of all sizes are benefitting from SIP trunks.

Note: 482 respondents ‘skipped’ this question. This actually means that as they answered that they were a provider or don’t even have SIP trunks (in Question 1) the ‘logic function’ of the survey system skipped this question (and others) for them.

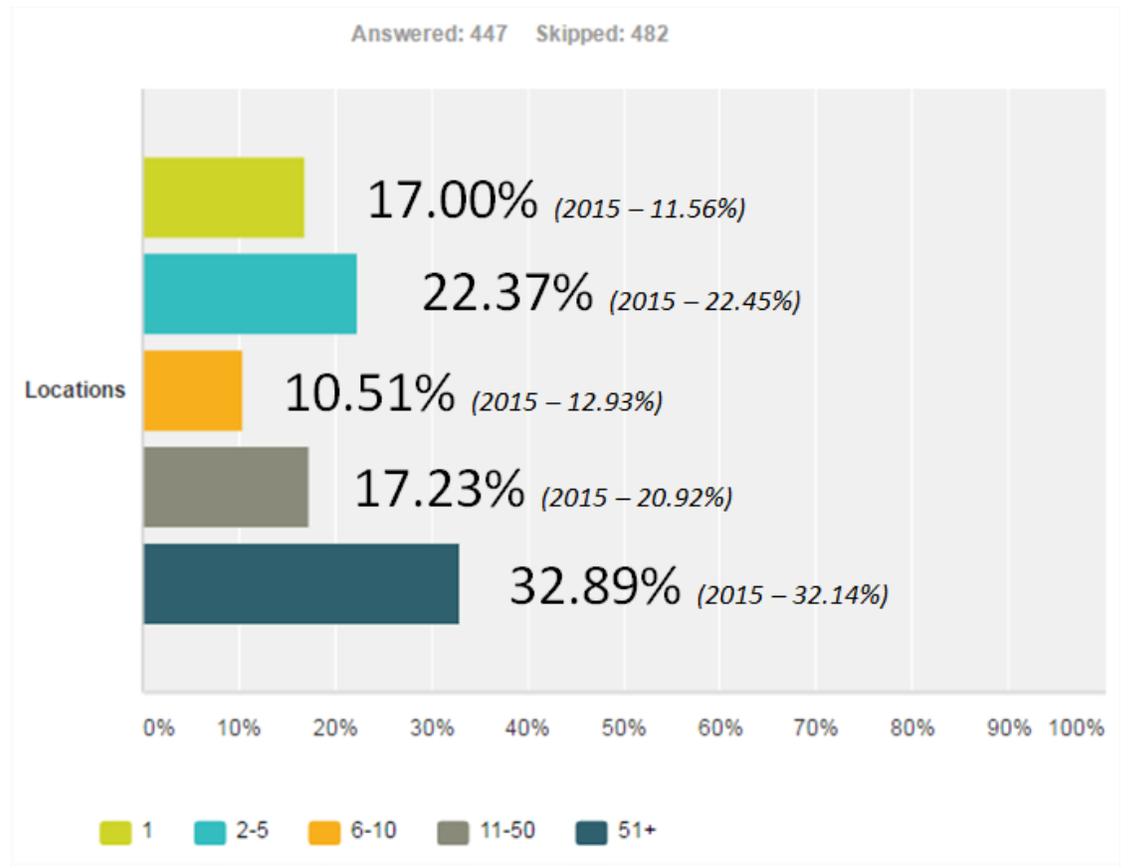
Q3: How many locations or sites does your company have?

"It appears those who have adopted SIP trunking do so in a big way with one third of respondents adopting more than 50 sites which shows confidence in the technology."

Gary Audin, Delphi inc.

"I suspect many will respond to this question within the context of "physical" locations (bricks and mortar) that they (delete "they") have actual people residing in offices vs. other businesses that may have "one" physical location, but actually manage virtual sites (either via remote routers or National DID footprints without physical sites, etc.)."

David Leon-Guerrero, Cox Business



Cost savings can be substantial for a well implemented SIP trunking infrastructure so it's great to see organizations with many locations taking advantage of all that SIP trunking can bring

David does make a good point that that people may be focusing on physical locations where virtual locations could be getting overlooked in the responses.

“The percentage of MPLS users verses internet users was interesting. I would have thought with the availability of MPLS and the advantages more sites would have deployed it by now. I will be interested to see if the percentage increases over the next couple of years.”

Leigh Ann Wolfer,
NEC Corporation of America, Inc.

“Use of broadband Internet does seem to be gaining steady ground vs. MPLS for SIP Trunking, often using SDWAN technologies to mitigate risk and improve reliability.”

Alan Percy,
Dialogic

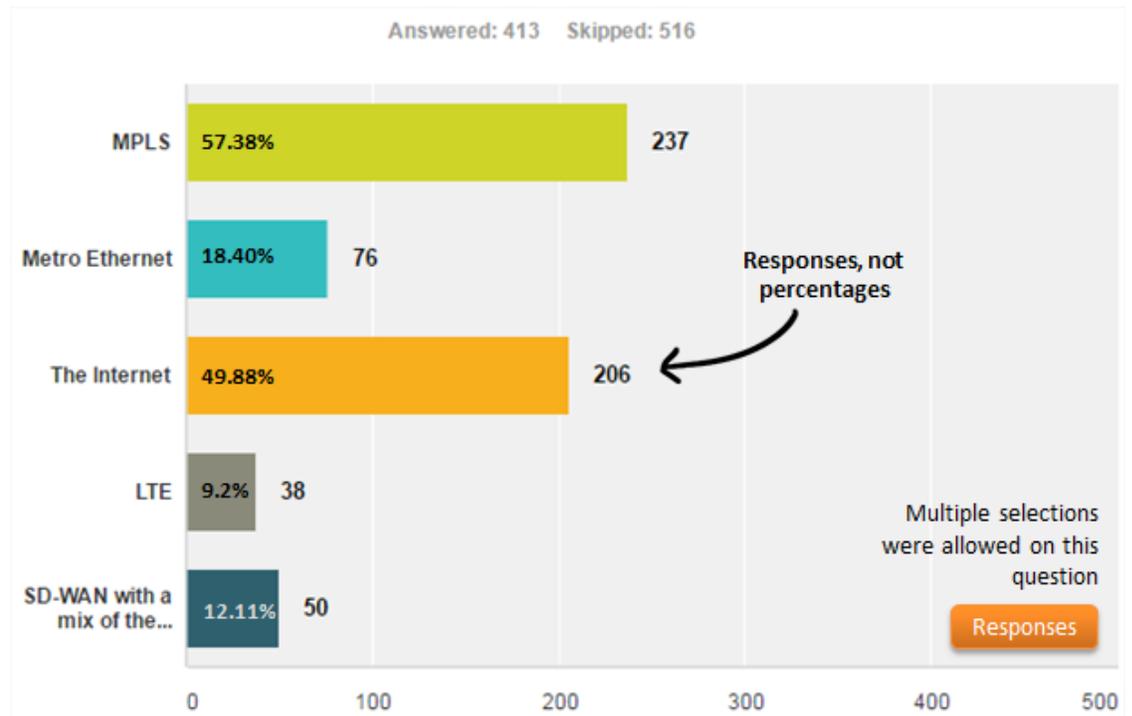
“It’s interesting to see the use of public Internet for SIP Trunking. It is certainly a growing trend enabling new OTT players to offer SIP Trunk service as well as enabling telco service providers to offer SIP Trunk service outside their regions. “

Ashish Jain,
Genband

A New question for 2016 where we wanted to see what underlying technologies were being used to run services across.

We asked....

Q4: Which ‘Network’ Technologies are you utilising for your SIP trunk or Hosted Services?

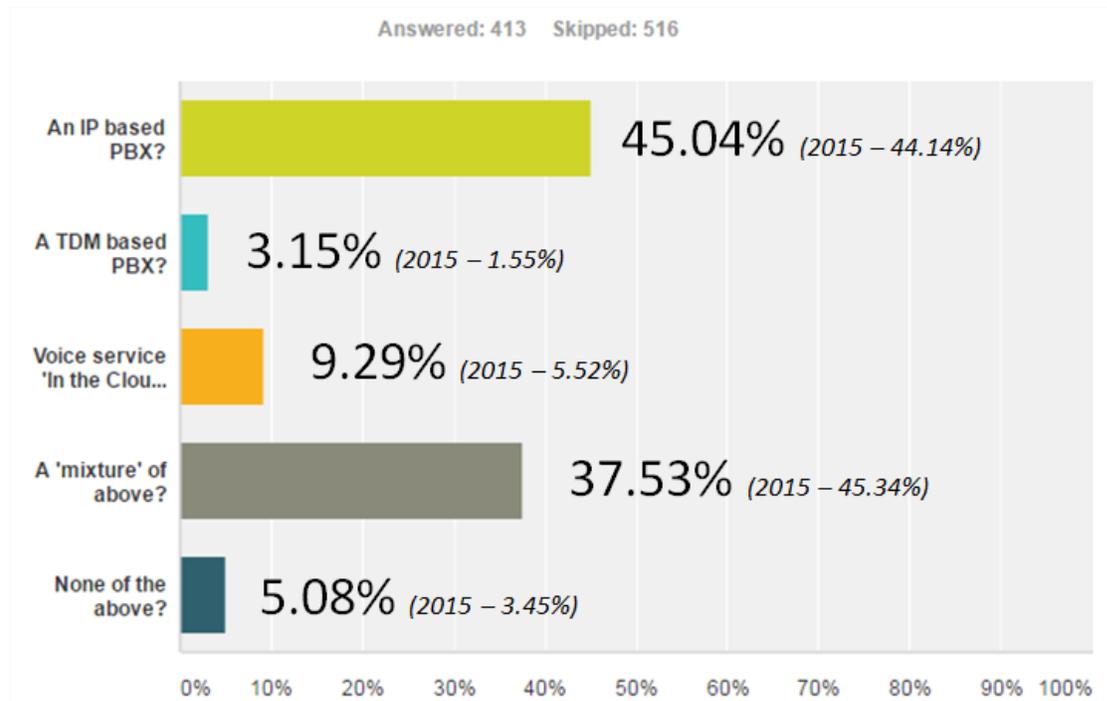


Some points to pick up here include the fact that whilst MPLS is popular, people are running SIP trunks or Hosted services across ‘raw’ internet connections. Of course this begs the question of what ‘quality’ they are experiencing and if in this age of ‘acceptance’ (where we have all experienced some kind of quality issue on a cell call and still use them more and more), people really *are* ok putting up with the occasional issue...

SD-WAN is a specific application of software-defined networking (SDN) technology applied to WAN connections. SD-WAN may accelerate the adoption of these ‘raw’ internet connections (to the demise of MPLS) especially if a company can install a couple of connections (from different providers) and let the ‘intelligent’ edge devices decide on which route packets will take based on a whole number of metrics such as availability, load, delay, jitter and so on.

Let's move on and get some information about what equipment people are using so we'll start with the PBX. We also have some options to reflect how companies may be using multiple systems and possibly even transitioning to the cloud.

Q5: Does your company have for its own 'Internal' communications use?



"I don't think the numbers were surprising. Sites are continuing to upgrade to mixed systems rather than replace just based on cost advantages. I suspect cloud services will increase in the coming years."

Leigh Ann Wolfer,
NEC Corporation of America, Inc.

Interesting to see that voice services in the cloud have nearly doubled from last year, while IP-PBX usage seems to have leveled off. It begs the question as to whether IP-PBX market share has peaked?

Alan Percy,
Dialogic

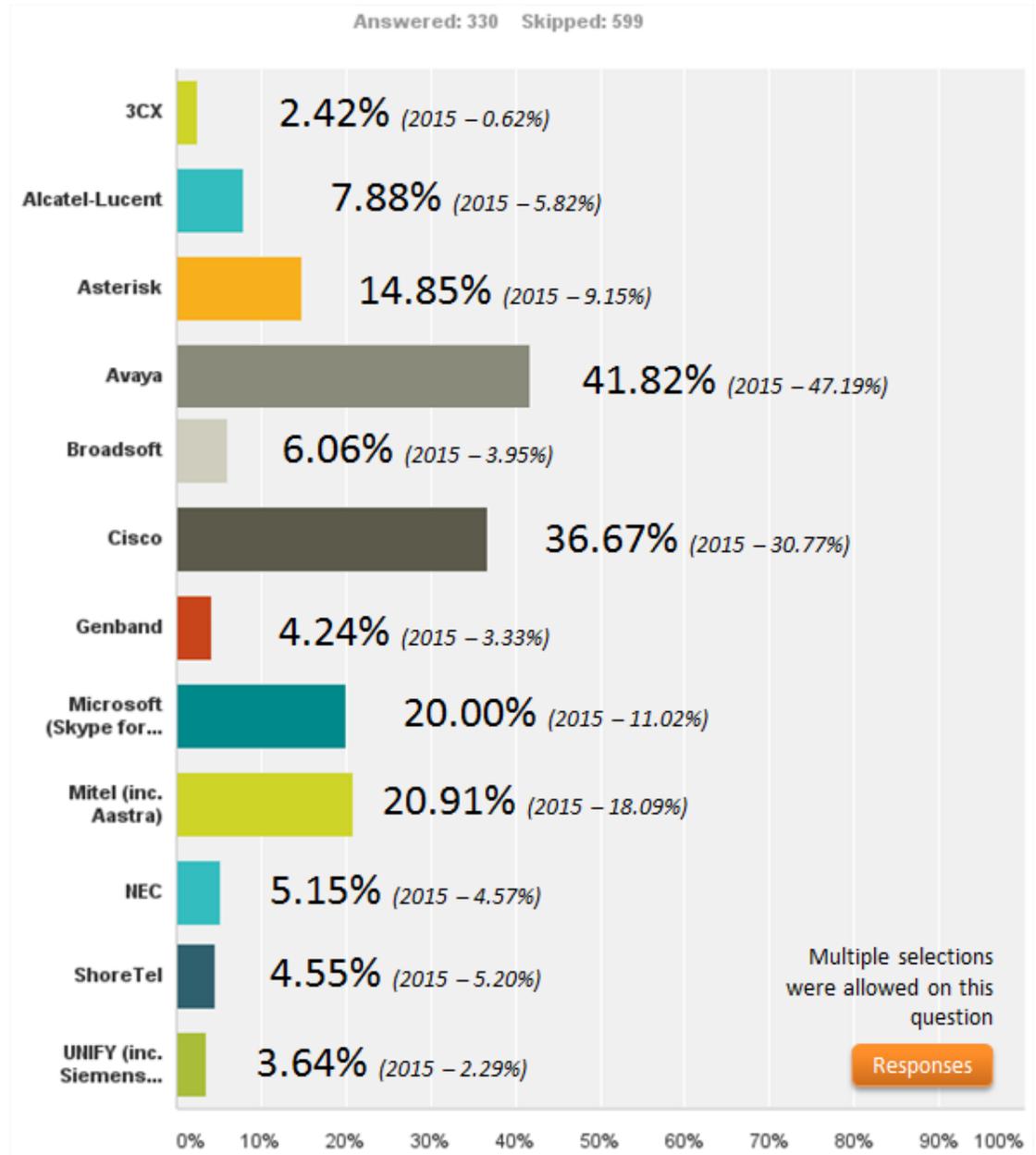
82.57% for IP PBX implementations (including the 'mixture' responses) indicates that companies have come a long way down the path in the migration from 'TDM only' based systems. Of course a mixture *could* mean that companies still have an old TDM system that's taking time to de-commission or that they have a fully-fledged IP based PBX but using the cloud for other services such as Contact Center services, Call Recording etc.

Previously, people have made comments that point to some companies simply waiting until the dust settles on merger / acquisition activity before choosing a Hosting provider and also the simple fact that it would take time to migrate multiple locations around the world to cloud services with the migration possibly being stymied by any 'country specific' rules and/or regulations.

We agree with Leigh on the likelihood that companies may not 'rip and replace' but simply add more services to their existing communications infrastructure by adopting 'cloud services' slowly and carefully.

Our next question relates to the manufacturer of any installed PBX system.

Q6: Who is the manufacturer? (Allowed to select multiples)



“Note that Microsoft Skype for Business has nearly doubled, while others have seen little change or some decline. This shows that desktop UC is now gaining acceptance, often at the expense of IP-PBX or TDM-PBX equipment.”

Alan Percy,
Dialogic

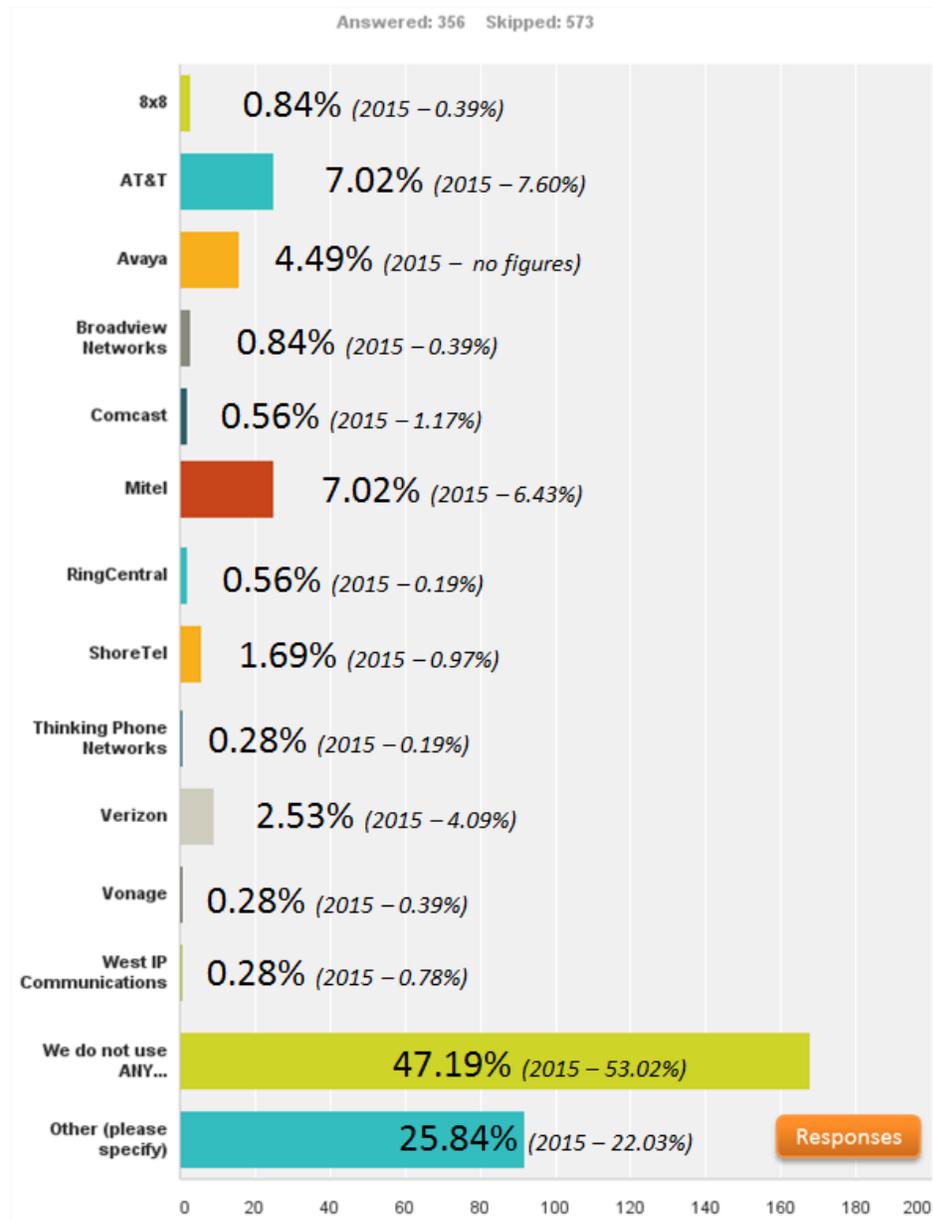
Any options that were made available to Survey responders that dropped under the 1% mark we made the decision not to display them.

We previously asked if a company is using a cloud based service so....

Q7: If you use a 'Hosted/Cloud' provider for your 'Primary' Voice service, who are they? If your prime company location is not in the USA then please use the 'other' option to tell us.

"I am surprised at the high percentage of those not on hosted. Also such a large diverse list with small percentages."

Marguerite Stevens, Comcast Business



It's clear that a lot of people, even though they may be thinking of utilizing the cloud, may not have started that transition. Remember, that a lot of time, effort and money has been invested in Enterprise systems that simply cannot be discarded and migrations are done (sometimes) at glacial speeds.

Marguerite makes a good point in that there are lots of companies offering hosted services making it interesting to see how they can all compete and survive over the next few years.

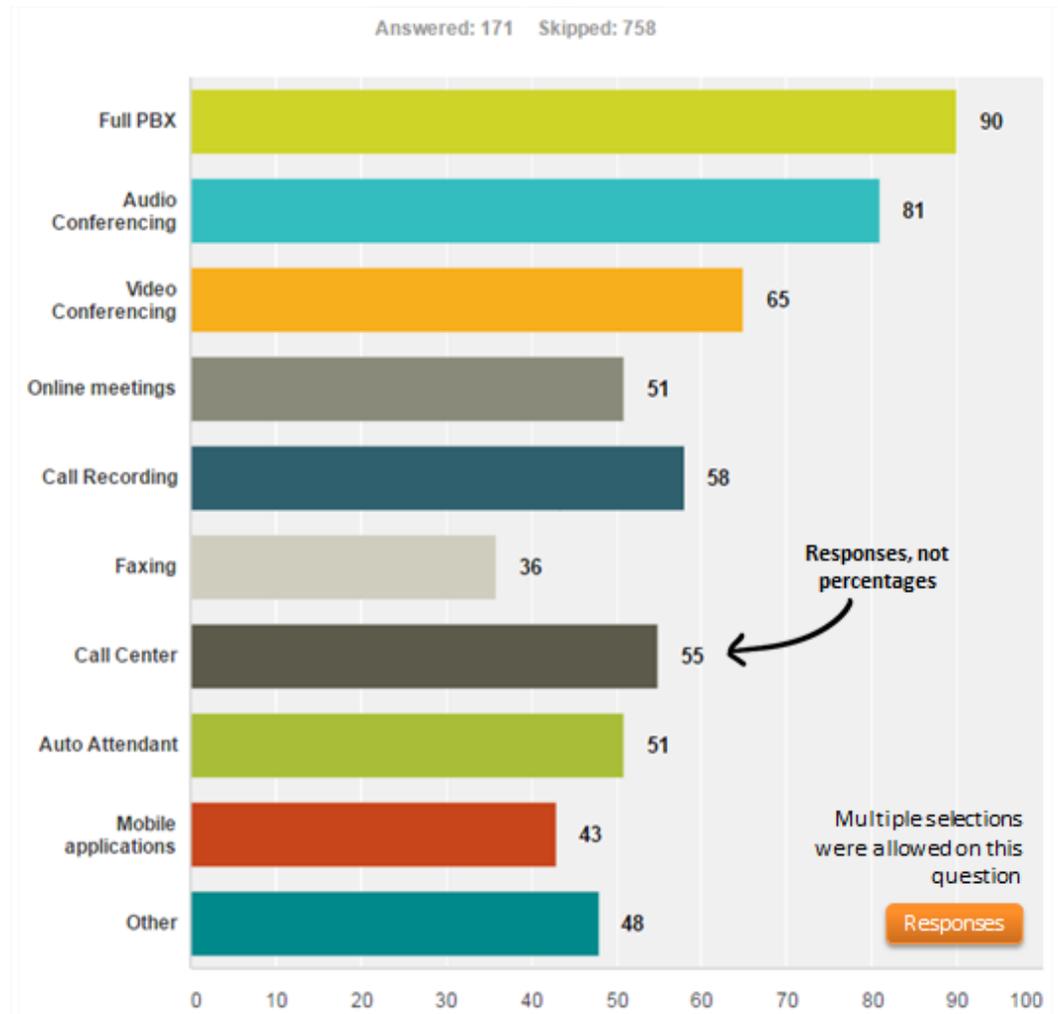
New question for 2016 and we're sticking with 'the Cloud' for a moment.

Q8: What 'services' do you have hosted in the cloud at the moment?

"We're seeing an increased interest in cloud connectivity to advanced applications and systems – i.e. IVR systems with AI capabilities, virtualized routers and decentralized Call Control geographically separated from a customer's actual data layer control environment.

These trends make it increasingly important to plan for resiliency and diagnostic capabilities."

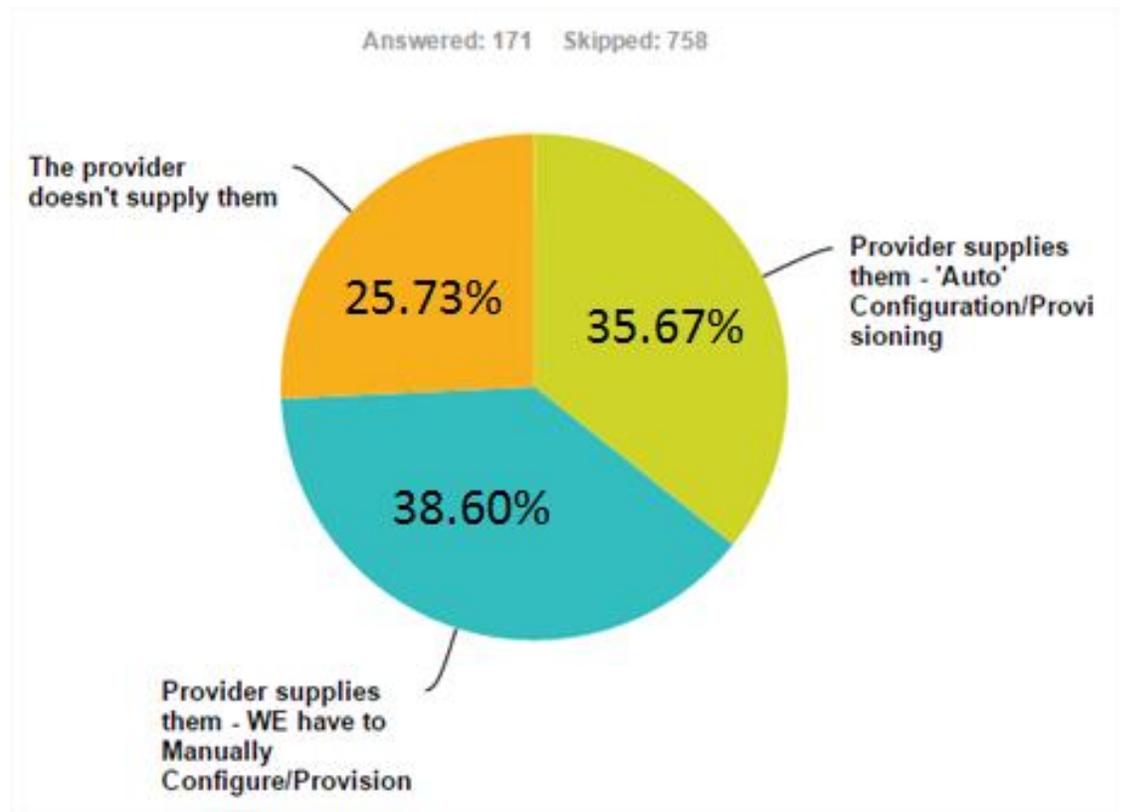
David Leon-Guerrero, Cox Business



Moving to the cloud can mean moving 'everything' or just one or two functions that may be in need of upgrading - thus cloud services may be able to offer a more realistic alternative to an 'onsite' one. Adopting the 'Cloud approach' gives companies the chance to implement a service where before costs such as management, maintenance, time to implement and of course money - would have made it prohibitive. Having services in the cloud that are ready to go and at a price affordable to most means it's easy to see why people are moving services there.

Another New question for 2016 again focused on cloud services.

Q9: What 'happens' with regards to Handsets and Softphones?



"Regardless of who provides/configures the handsets initially, a big issue we see is with updates. Some providers "lock down" updates to handsets (which can come frequently due to the agile product development cycle/staying competitive or due to security patches), others do not which can lead to customers to sometimes allow updates on their own which then causes problems because the seemingly simple update has not been validated end-to-end."

**Israel Hersh, SVP
Business
Development,
tekVizion.**

So you sign up for a Hosted PBX solution and need some handsets and/or softphones – easy yes?

Well some companies may provide them and provision them for you – all you have to do is plug them in and set up some numbers and features.

Some companies will expect expertise on site and simply provide the phones. Remembering that SIP is involved should tell you that sometimes this is not an easy option – you need to make sure you have all the correct SIP parameters set in the phone before it will register and you can make calls.

You are in the same situation if the Hosting provider doesn't provide phones though at least you should be able to choose from a wider range of SIP phones that are on the market - though it may be wise to stick to any 'recommended' lists that the provider has and/or check out their knowledgebase to see what existing customers of the provider recommend.

“Initial Configuration, Issues on the edge and Call Drops.

These 3 areas are consistently the most common ones Verizon sees customers struggling with. While they are identified separately, invariably they are all tied together as issues in one area lead to challenges in the others. This is one reason Verizon believes it is crucial for customers to be fully prepared for any VoIP turn up but especially initial rollouts so as to both avoid finger pointing and ensure the best possible end user experience.”

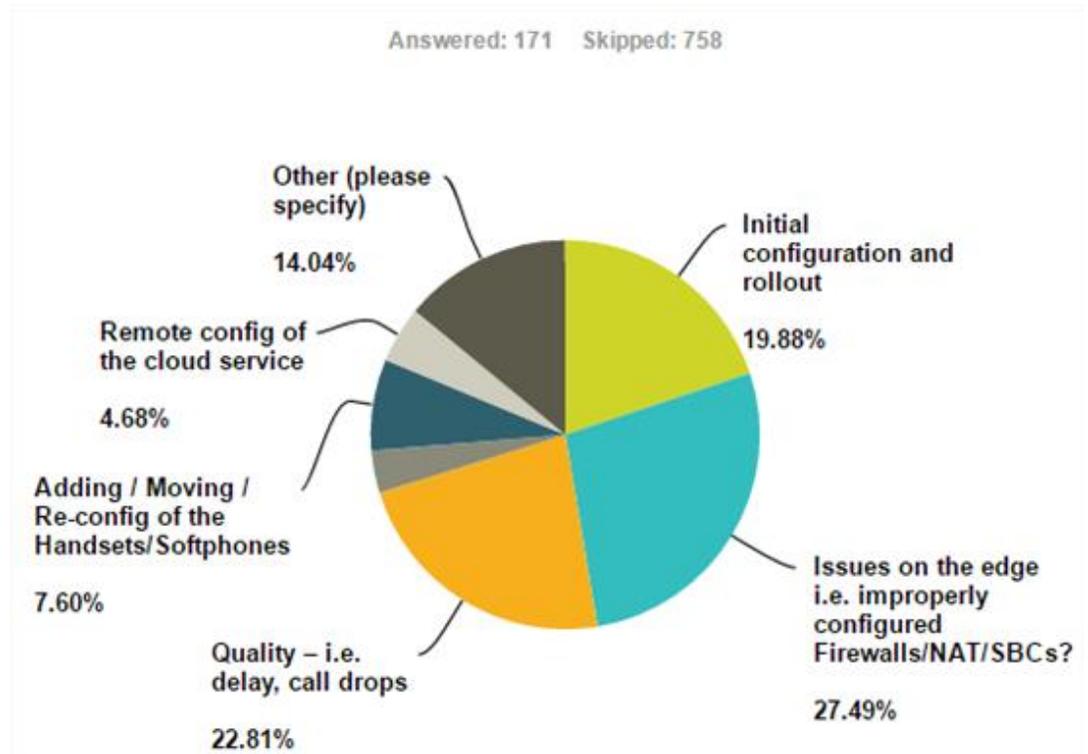
Joe Alice, Verizon

“Initial configuration and roll outs are certainly a big challenge for both enterprises and service providers. The industry is moving towards self-service self-provisioning portals to expedite activation of SIP Trunks.”

**Ashish Jain
Genband**

OK, one more New ‘Cloud’ question for 2016

Q10: Which areas - when adopting a Hosted VoIP solution have caused you the most headaches?

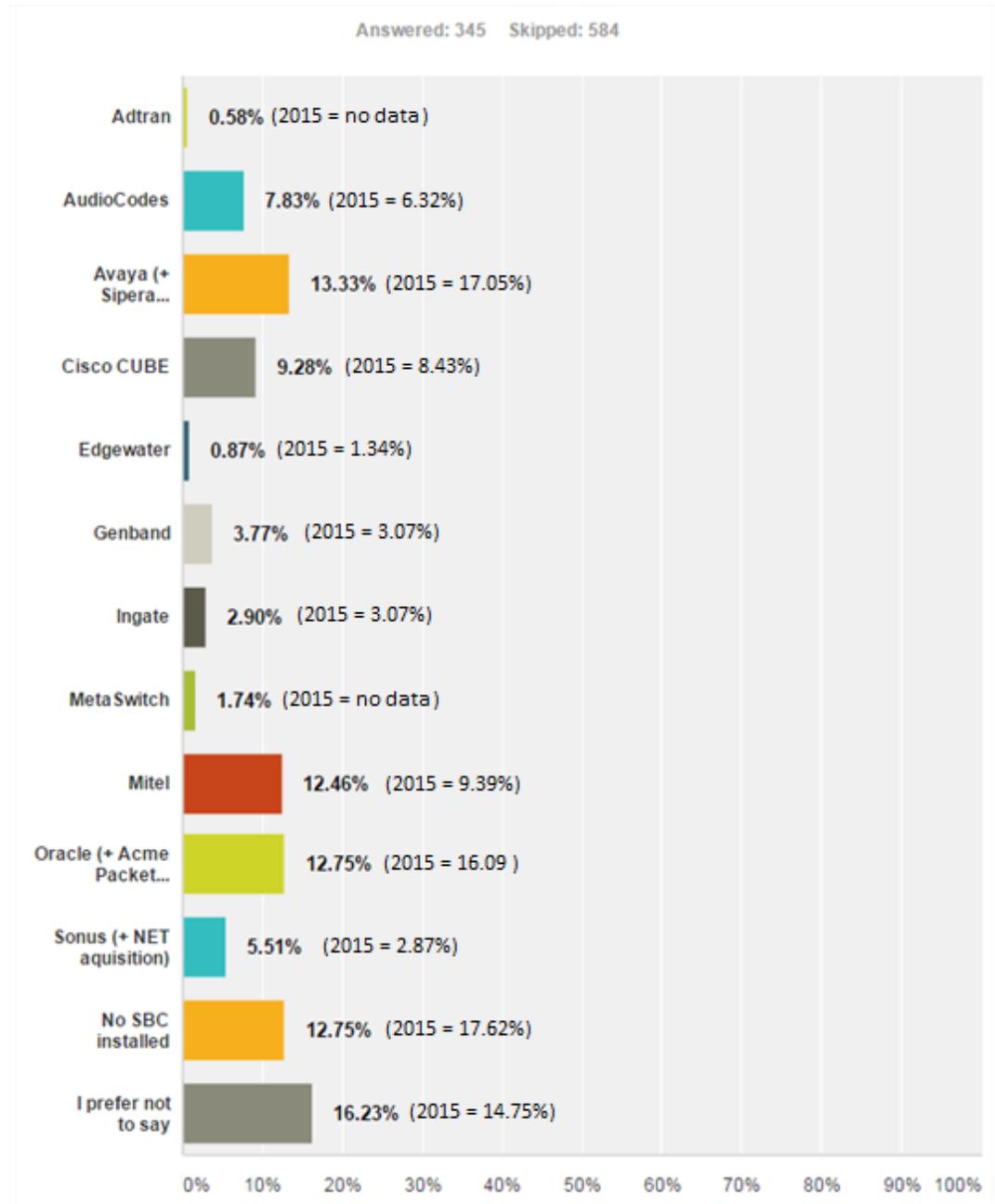


A Hosted VoIP service can be just the right solution for your business yet there are a number of things to consider before you jump in - such as: Is your Internal Network configured to support VoIP (Vlans / L2 QoS etc.) Are you going to use an edge device from the provider or your own? Whichever, is it configured to avoid issues such as one-way audio, voice delay, call drops etc? Who is going to configure it? Who is going to provision all the VoIP phones – you can probably do it yourself if there are just a few but across a campus with 10,000 handsets (for example) – that’s a big job. Also, understanding what happens ‘after’ the installation i.e. what remote configuration options you have along with knowing how phone firmware updates are carried out – manually or automatically pushed, and when does this happen? How long will the phones be offline? Will all 10,000 be downloading software, rebooting, re-registering at the same time – this could bring a lot of headaches if not thought through properly.

One more thought, do you have a business application that you’d like to interface with your hosted system? Find out if it will work before you rush into anything.

Next we asked about the Session Border Controller (if any) people were using.

Q11: If you use a Session Border Controller on the Edge of your network, who is the manufacturer?



“No (installed) SBC is a recipe for trouble. Every installation of SIP Trunking should include an SBC which can provide many functions that resolve the issues identified in some of the questions in this survey later on.”

Steve J Johnson, Ingate

“I agree with the comment about the use of No SBC being “unnerving”.

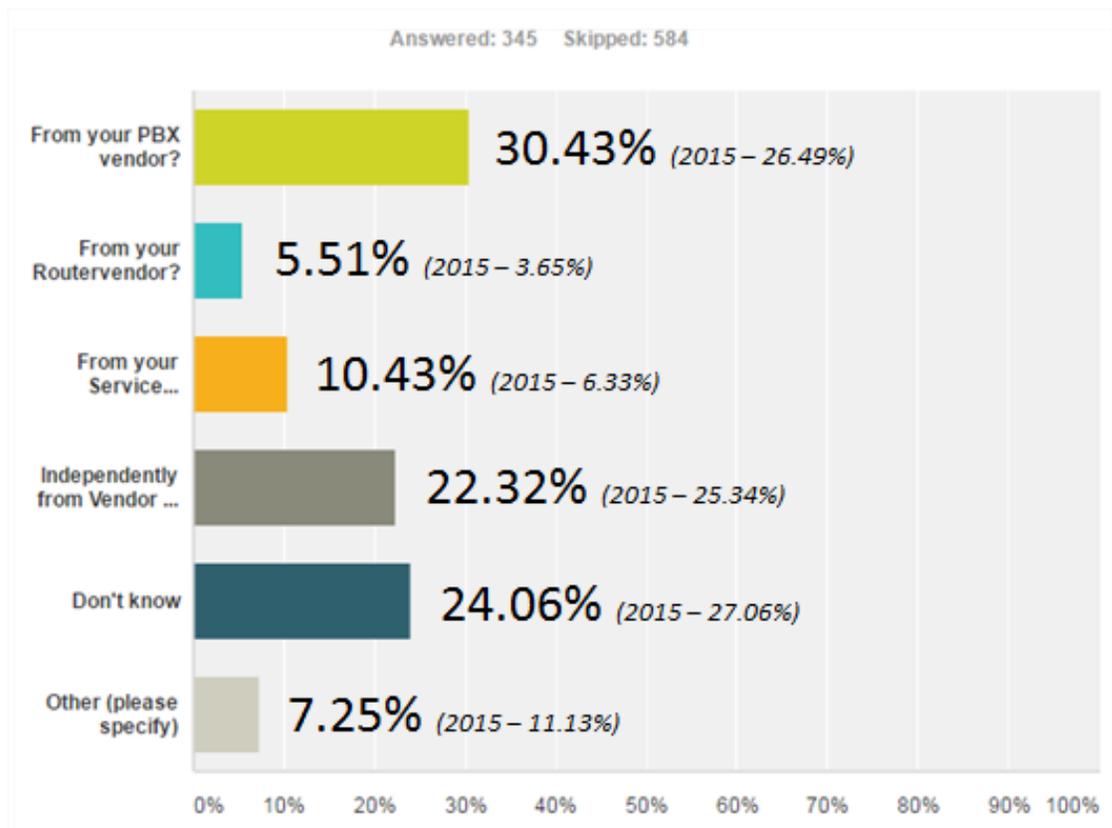
The benefits of an SBC including SIP message fix-up, transcoding, NAT even trans-rating are far outweighed by the costs especially given the numerous vendor offerings from large scale enterprise needs to small scale SMB requirements.”

Joe Alice, Verizon

So we have Avaya at the top closely followed by Oracle and (quite unnervingly) NO SBC in joint second place. Preferring not to say (at 16.23%) is ok as why give people any idea on what your security setup is comprised of?

It’s worth noting that some manufacturers offer a ‘virtual’ version of their SBC solution putting the ‘device’ potentially in the cloud.

Q12: Did you get your SBC....



“Knowing who provided your SBC can make you and your team more effective. Manufacturers and Partners are happy to help you get the most out of your investment and ensure that you are using all of the SBC features and capabilities.”

Kevin Pitts. Oracle Communications

“Bundling enterprise SBC with SIP Trunk offerings is a growing managed services trend. With NFV and virtualization we will also see an evolution towards virtual CPE and SBCaaS for enterprises”.

**Ashish Jain
Genband**

Of course not all respondents would be aware of how things are acquired / purchased but we wanted to try to see how SBCs were obtained by clients.

From the PBX vendor, is this because it was part of a ‘package’? Or does it offer ‘extensions’ to the PBX that other SBCs cannot due to a ‘Vendor specific’ issue or feature?

From the Service provider is a good option as (hopefully) it will be optimized for that particular provider, maybe even remotely managed. It should be noted that some providers can now offer SBC services ‘in the cloud’ as well.

The ‘**Independently**’ response shows that there is a healthy market for 3rd party vendors to offer extra a ‘fuller’ range of features for clients such as SIP normalization, QoS control, Security and more...

SIP Survey 2016

"It appears configuration issues are still the dominant problem with SIP trunking. Is anybody learning from this survey? Voice quality problems should have been reduced years ago."

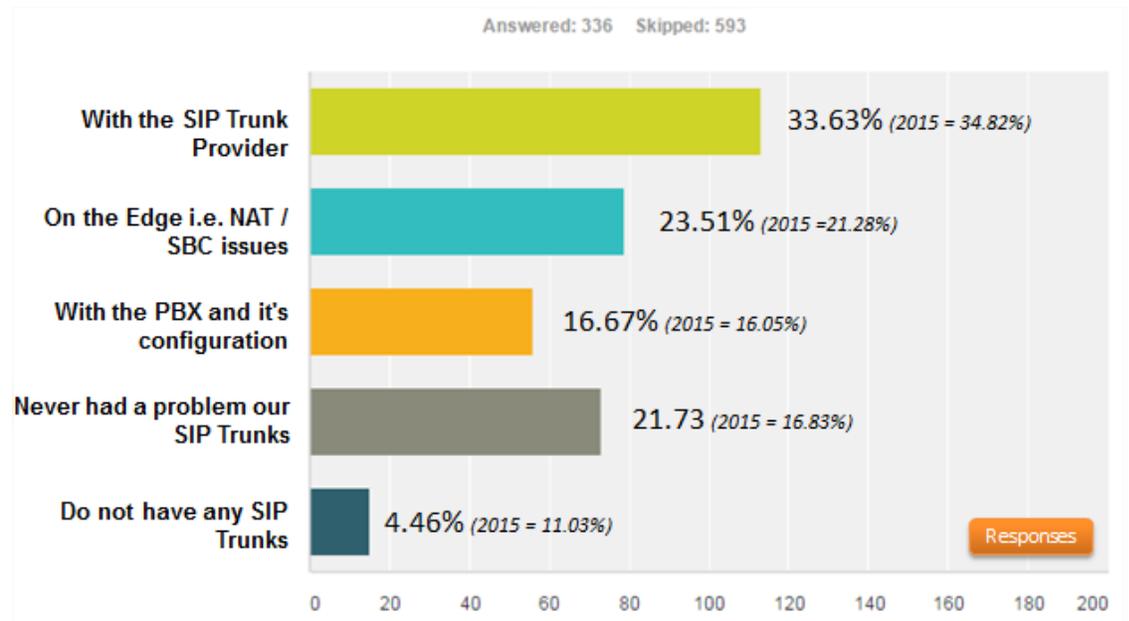
Gary Audin, Delphi inc.

"Although there is a bit of shift in people who have 'never had a problem with SIP trunks', those that have are consistently pointing to the Service Provider, and we agree that ultimately it is the company providing the service that customers see as responsible to make sure the service works as intended. We have continued to see service providers who are committed to an excellent customer experience turn to tekVizion to make sure the interop between their SIP trunk and a particular UC solution are thoroughly tested and documented."

Israel Hersh, tekVizion.

If SIP trunks are installed and all works fine, then that's great and your business is reaping all the rewards promised. But what if things go wrong?

Q13: If you've had problems with SIP trunks (even if you are still trialing them) where have the 'primary' issues been?



Now we can see what happens when we just focus on the **client's** responses to the Survey. For the last few years, it's really encouraging to see 'Never having problems' becoming a more popular response though the 'With the SIP trunk provider' is still looking as where more focus is needed.

Some things people attributed to 'Never having problems' are:

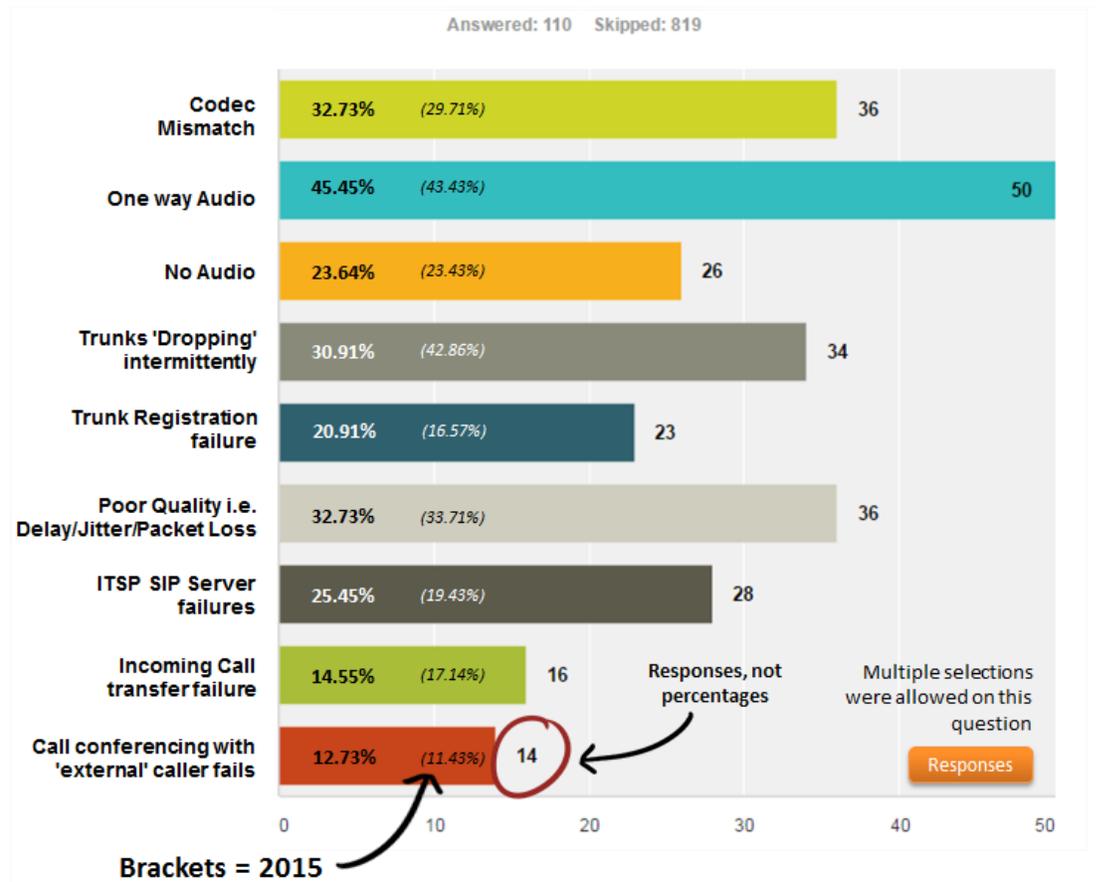
- Good ITSP Planning/Support and Knowledgeable internal staff
- Good planning, support and excellent Engineering team
- Good Planning and very granular testing of all call scenarios and types
- Lots and lots of bandwidth
- You asked for major headaches, we have only had minor headaches, mostly with quality
- Good support, decent testing, SIPconnect based service
- Provider delivers RFC compliant SIP and documentation for hooking it up with our SBCs

as ever; you have to smile at...

- Pure luck

Now, let's look at the PBX, the SBC and the Provider in isolation, starting with the SIP trunk provider

Q14: If you've had problems that were found to be on the SIP Trunk provider side, what were they?



"It is frustrating to see the same problems appear year after year."

Gary Audin, Delphi inc.

"Many of these issues can be minimized if the SIP Trunk providers can provide a detailed Methods and Procedures reference that addresses an Implementation QA Plan that has the customer's experience as its fundamental quality benchmark"

David Leon-Guerrero, Cox Business

"These errors are all things easily avoided with good documentation."

Israel Hersh, tekVizion.

These items all highlight issues that can be avoided. For example 'Codec mismatch'. If the ITSP supplies the client with all the settings it needs for successful service installation/setup then these settings can be put into the PBX/SBC configuration forms to ensure successful setup.

Provision of good documentation for clients to use re: any settings such as Codec, RTP rate, Port numbers, DNS address, Specific IP addresses etc. should ensure a really good chance of getting the service up and running without issue. BUT, even if great documentation is available how can it be guaranteed that it is used and read as sometimes the rush to get service in place can see best practices being left behind.

So, onto the 'Edge' with the next question.

Q15: If your problems were with your SBC / Edge devices, what were they?

"Seeing a significant decline in One-way Audio issues is a good sign that NAT Traversal issues are starting to subside, likely due to better installation and configuration practices."

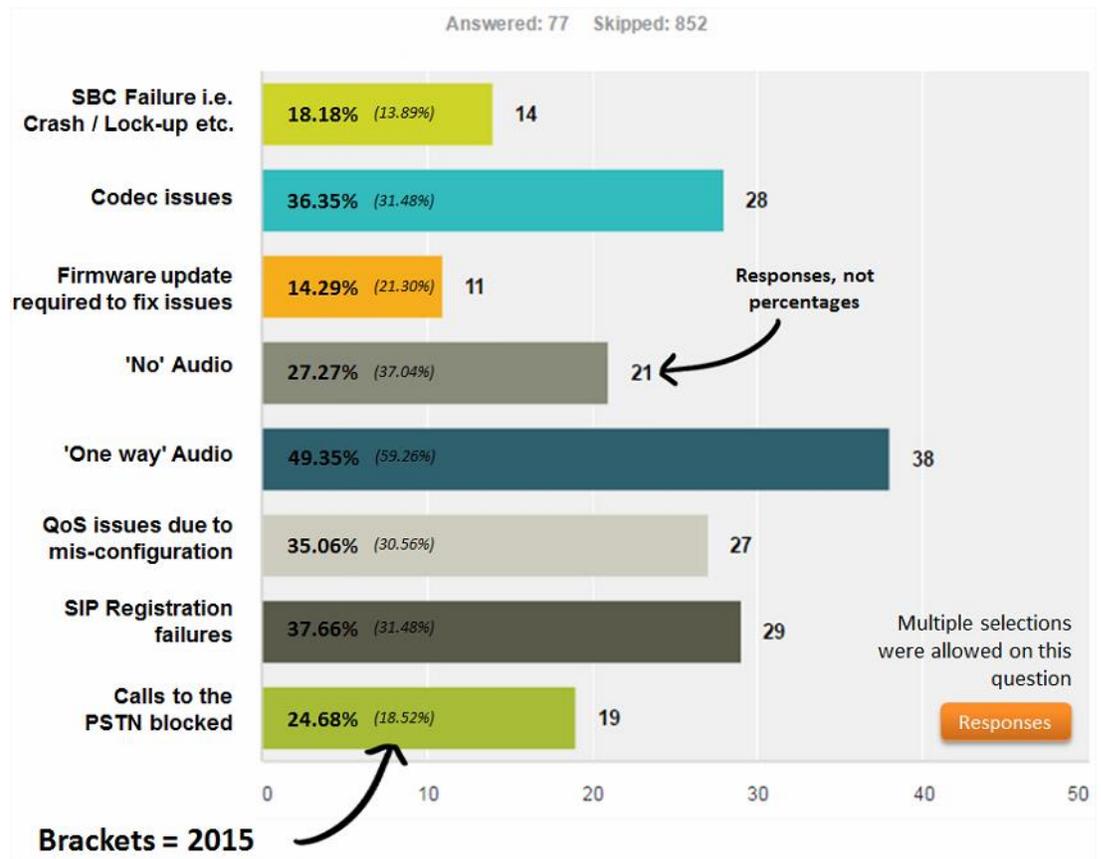
Alan Percy, Dialogic

"A good SBC resolves most of these issues and will not lock up. With proper configuration these issues should be easily resolved."

Steve J Johnson, Ingate

"I expect the adoption of more wideband and adaptive rate codecs will continue to require engineering to robustly support them. Enterprises should look at OPUS and VP8 to provide rich media while optimizing bandwidth."

David Chavez, Avaya.

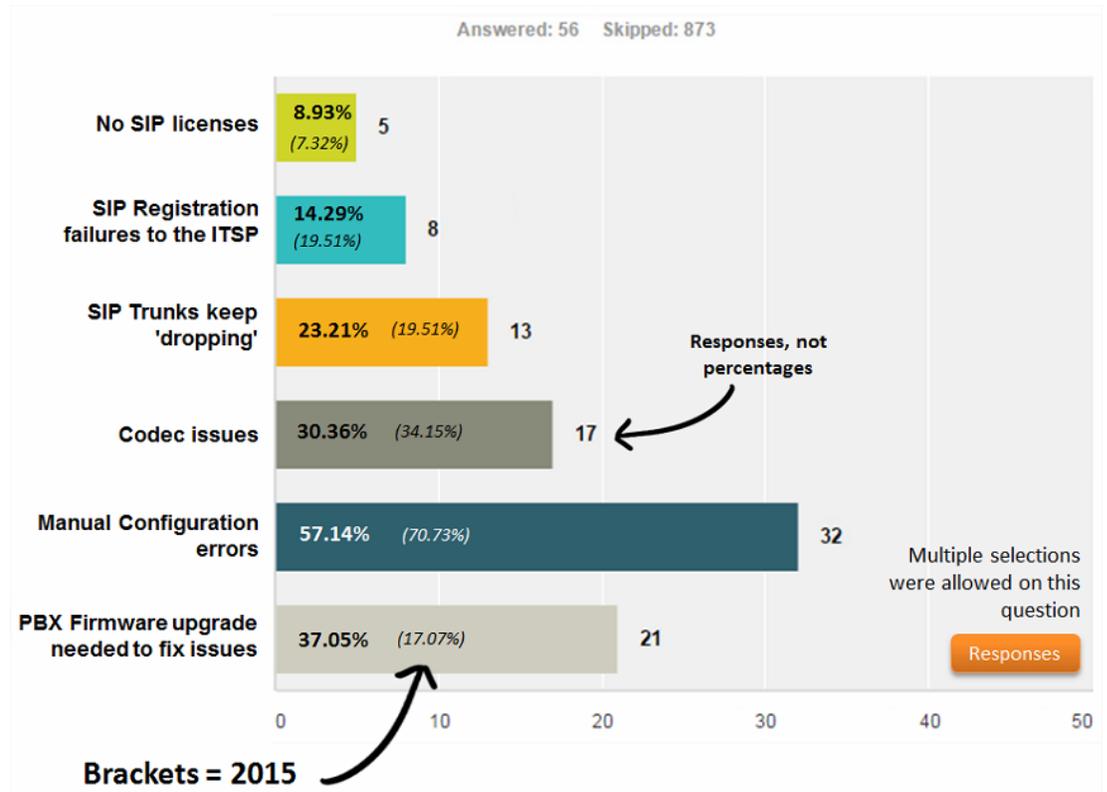


'One way' audio again is still the biggest issue here and fixing 'one way' audio is one of the (many) reasons people actually purchase an SBC, so why the problems? Misconfiguration probably... Why Codec issues? Again, probably due to lack of planning and incorrectly entered config settings. Registration failures are also mostly due to misconfiguration – please take time to configure (the SBC) as that time will be a lot less that the time it takes to troubleshoot and fix issues.

One point to note is that as ITSPs move (potentially) toward a model where they can offer the SBC as a virtual device 'in the cloud' it will then be off the client site and more easy to manage by the ITSP for their service offering. It may be easier to apply a setting to thousands of virtual SBCs in their own environment than try to ensure that thousands of devices on individual client sites get the required change/s made and made correctly.

Let's move onto the PBX.

Q16: If the problems were found to be with your SIP/ VoIP based PBX what were they?



“These problems should not be happening with the knowledge we have about SIP today. These are configuration issues and easily avoided with proper testing and documentation.”

Israel Hersh,
tekVizion.

“The steep decline in manual configuration errors shows that training and documentation is improving, however the increase in software upgrades shows signs of problems in Q/A and testing of software.”

Alan Percy,
Dialogic

“One way audio is the biggest reason we use the SBC option.”

Howard Haynie
Toshiba America
Information
Systems, Inc.

All of these can be fixed by reading the documentation carefully first.

- **‘Manual Configuration errors’** is the biggest reason for issues... it is less than last year but is still the main reason things fail.
- **‘PBX firmware upgrade needed’** is twice the problem over last year. Hard to think of an explanation for this other than as software changes rapidly (especially when new features and security fixes are added). This may result in the reduction of ‘testing’ time, which in itself could result in another upgrade being required to fix bugs caused by the previous upgrade/patch?
- **‘Codec issues’** Check settings early on to avoid this problem. Maybe in the future SIP trunk ‘registration’ could take a leaf out of the WebRTC book and specify (somehow) that there should be auto negotiation of codecs i.e. Opus or G.711 (as 1st choices) and manual override if something else is required i.e. G.729. Difficult to achieve?
- **‘Registration failures’** and **‘SIP trunks dropping’** again can be mainly attributed to misconfiguration or poor documentation – read it carefully first, then take time to complete the config forms.

SIP Survey 2016

"It's refreshing to see the "moved back to TDM" figure continuing to drop and surprising to see the "still testing" number still as high a percentage as it is. The "implemented from the same provider" percentage increase clearly illustrates why first impressions are lasting impressions and why what happens during the initial few rollouts is so important."

Joe Alice, Verizon

"If going out to bid on a SIP trunk provider ask them if their solution has been verified by a third party, and if so is that third party verification guaranteed?"

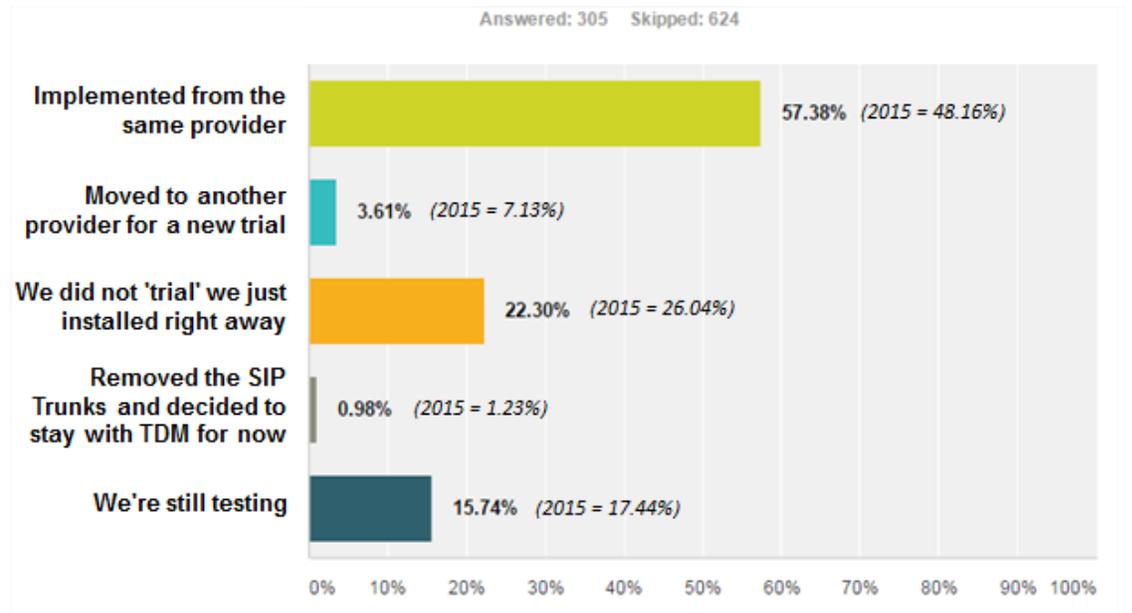
Israel Hersh, tekVizion.

"The fact that 22% did not trial their SIP trunking implementation makes me believe that the salesman was good not necessarily that the provider was good."

Gary Audin, Delphi inc.

This next question explores how people approached SIP trunking installations along with their reactions when things didn't quite work out as planned.

Q17: After your initial SIP trunking 'Trial' period, what did you do?



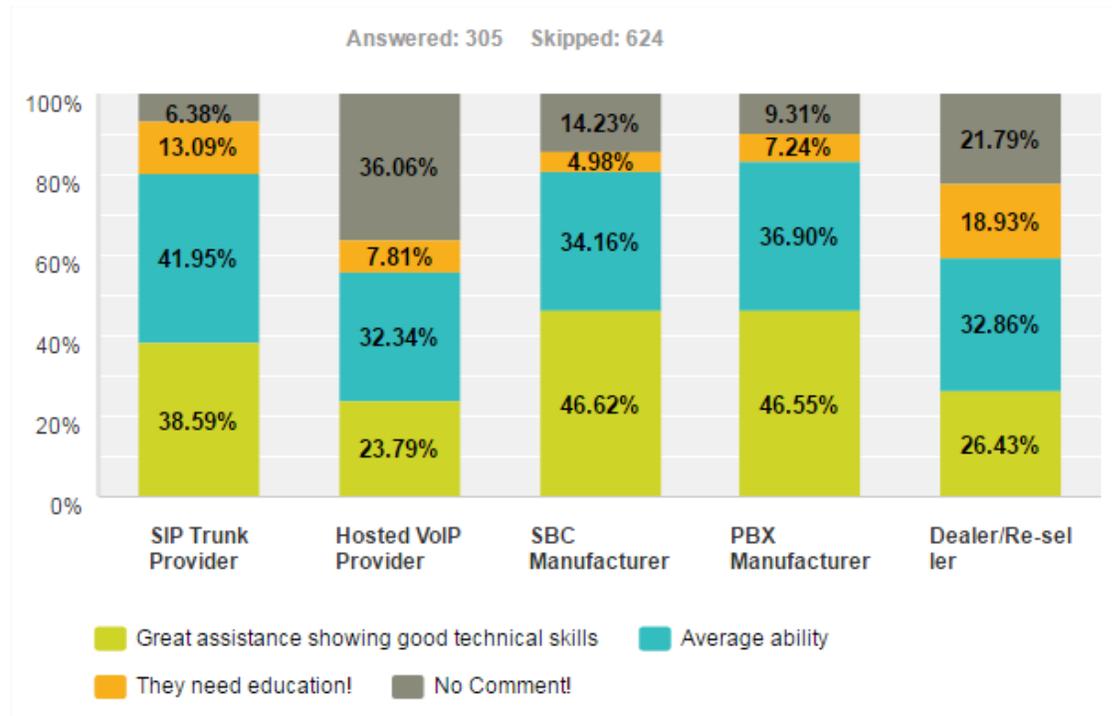
So, it's pretty clear that if things go well a client will (most likely) stick with the solution that they chose for the trial, over 57% here have done so and this supported by Joes' comment. There is no bigger reason than this kind of decision by the client for vendors / providers / dealers etc. to work together to make it work for the client. A happy client will stick with you for years thus making the time, effort and expense of offering a trial to them more than worth it.

I can think of no reasons why not to implement SIP trunks on a 'trial' basis first before committing to any kind of contract and then finding issues later, maybe due to your testing (for whatever reason) not covering all usage scenarios that are important to the way your business works.

In fact, 22.30% jumped in feet first into the world of SIP trunking. Were they sure, being brave or is Gary Audin correct with his comment?

Now let's focus on what happens when things *do* go wrong.

Q18: When things go wrong with the SIP trunks (operationally) and you talk to support staff, how do you rate their ability to fix problems?



“As the product that sits between the service provider and the PBX the SBC support teams do need a lot of knowledge to assist. Happy that this knowledge is reflected in the quality of support that is given.”

Steve J Johnson, Ingate

We didn't ask for specific incidents that support people had to deal with during the implementation. We also didn't seek to qualify if staff were Tier1, 2, or 3 as all we wanted to get from this question was the customer's *view* of their support experience in general. **Remember** - it is customer experiences and perceptions that can win or lose business regardless of where the fault actually lies!

We fully understand that working in support can be a tough job, though if people at both ends of the conversation have a good technical understanding of SIP then it bodes well for a satisfactory and quick resolution but this is not always the case.

This year we added in the option to rate Hosted VoIP providers and overall, not a great report – maybe things are moving quickly. Business is rapidly expanding and they are finding it hard to keep up, who can tell?

"It would be great if all providers would just do SIP the same way. The answer about SIP profiles to match each PBX manufacturer's configuration is exactly the opposite of what we encounter. Every SIP provider configures SIP differently and we must configure our systems to conform to whatever they determine the parameters should be."

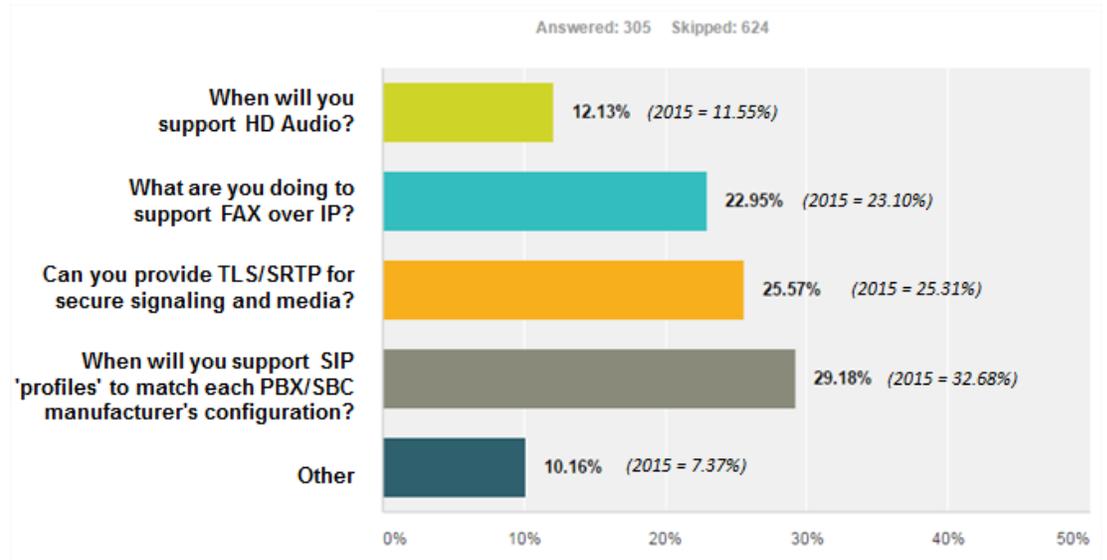
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"SIP Trunk providers should be in a position to advise prospective clients of industry trends in RTC and to provide consultation on various SIP Trunk configurations – i.e. the pros and the cons, various configuration models and call flows."

David Leon-
Guerrero, Cox
Business

Let's take a look at what people are asking for from the ITSP for the (not to distant) future.

Q19: If you could ask one question of your SIP trunk provider what would it be?



For the last few years people have been asking for **Profiles** (or setup guides) that match their own equipment on their site from the ITSP. This may be unrealistic as there are many different 'VoIP systems' available and that's not considering all the variations of software levels and releases they may be running. This is why you sometimes see providers displaying information about their 'supported' VoIP PBX partners.

Security is always high on people's agenda which is not surprising as incidents of 'hacking' are rising. It must be said that securing SIP trunks would be just one element of a corporate wide security policy.

Some of the 'other' suggestions are here...

- QOS Monitoring
- When are you going to move to compressed audio?
- When will you stop authenticating all calls based on FROM/PAI fields?
- How do we get global coverage from one provider?
- Best way to execute end to end testing
- What router do you recommend?

We wanted to see if people have visited the providers in whom they will trust their communications to, so we asked.

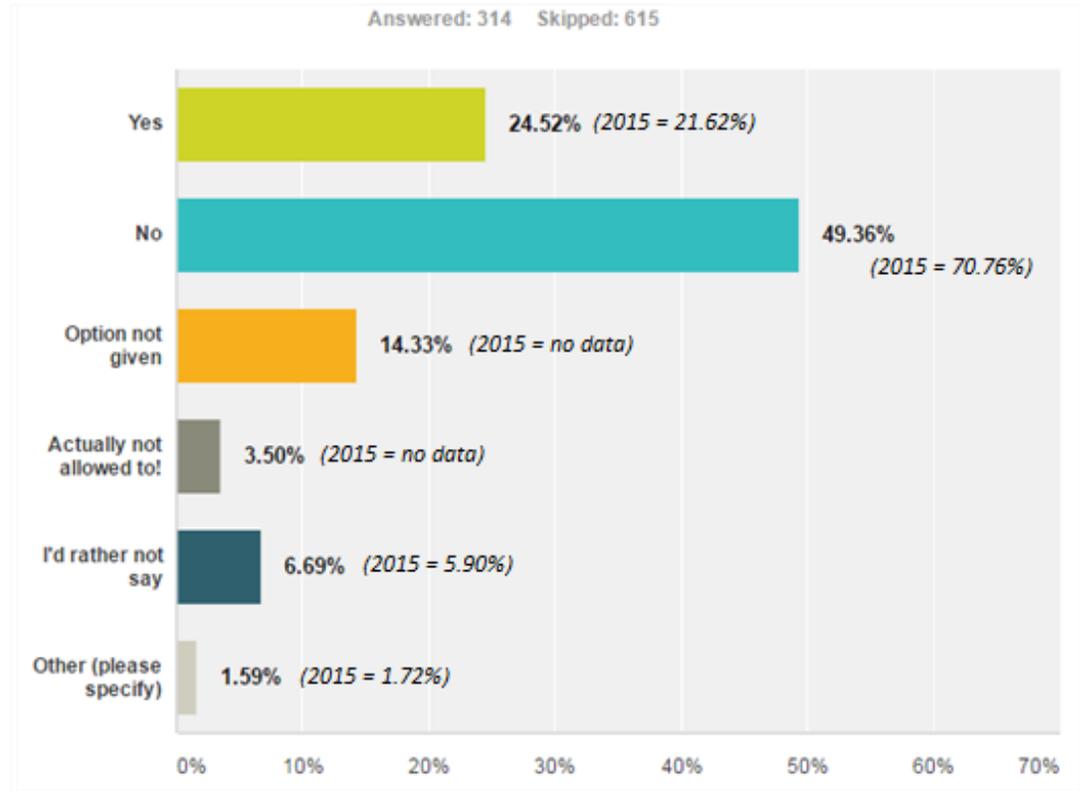
Q20: Have you ever taken the time to visit your service provider's Premises to take a look at their data center / network topology / fail-over / business continuity capabilities etc?

I agree with about 50% of the respondents that visiting someone's site isn't worth it. It may help me develop confidence in the provider but it does not really demonstrate competence in the provider.

Gary Audin, Delphi inc.

One other observation when visiting the Provider is to validate if they're actually leveraging the technology solutions they are proposing (i.e. SIP Trunking).

David Leon-Guerrero, Cox Business



The **No** response has fallen dramatically from last year and this is because we added two other options that are a bit more detailed than simply No! Adding things up though shows that for whatever reason, only 24% of people managed to visit the provider's Premises.

In general it's hard to read much into these results as one person may be responsible for visiting the ITSP yet another 50 people from the same company didn't visit the ITSP yet still completed this Survey. One thing we will say is to make sure someone **does** make the visit and asks all the right questions about the service you are buying i.e. Support, Disaster Recovery, Re-routing to carrier partners and lots more...

SIP Survey 2016

"I think this question is a great addition for 2016. While I find the 48% Yes response reassuring the 26% No response is concerning. As an SP, Verizon engineers work closely and actively with both existing and potential customers to ensure that when adding new or additional VoIP services to their WAN that adequate bandwidth is available and that proper QoS marking per IETF standards is being observed."

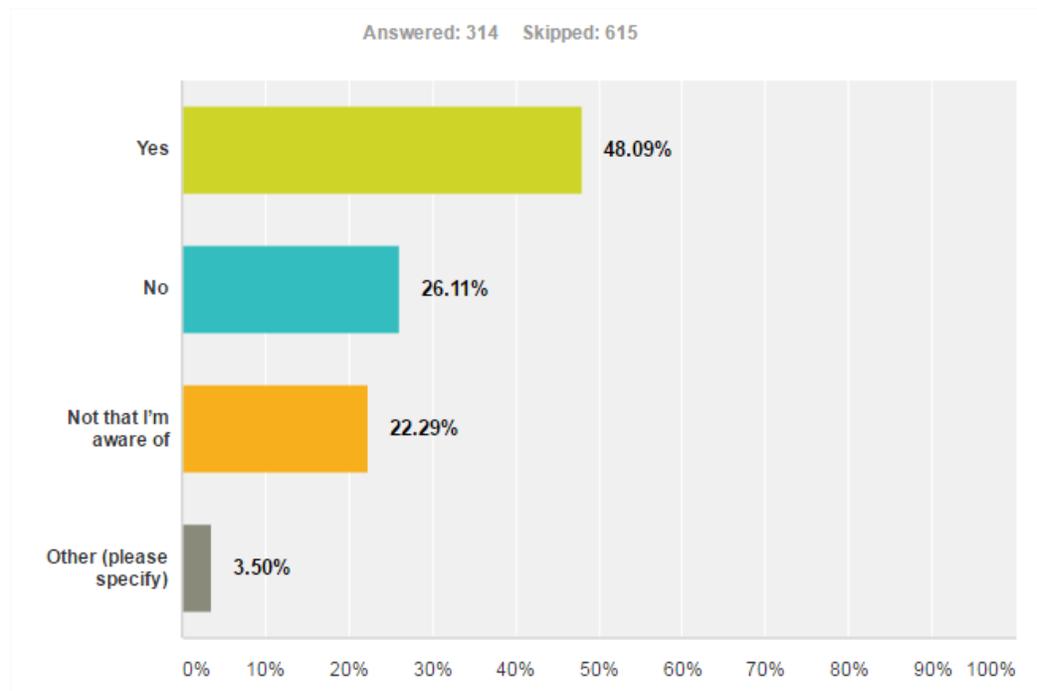
Joe Alice, Verizon

"In my experience, data from the providers is generally not what I'm looking for. I prefer a neutral reporting environment. I believe it offers greater accuracy and more information points. When a provider averages data over 24 or just one hour it does not really tell me about the service fluctuations that cause temporary problems."

Gary Audin, Delphi inc.

Another New question for 2016

Q21: Did you (or the provider) run any evaluation tests on your WAN link before you configured your SIP trunks or adopted Hosted VoIP?

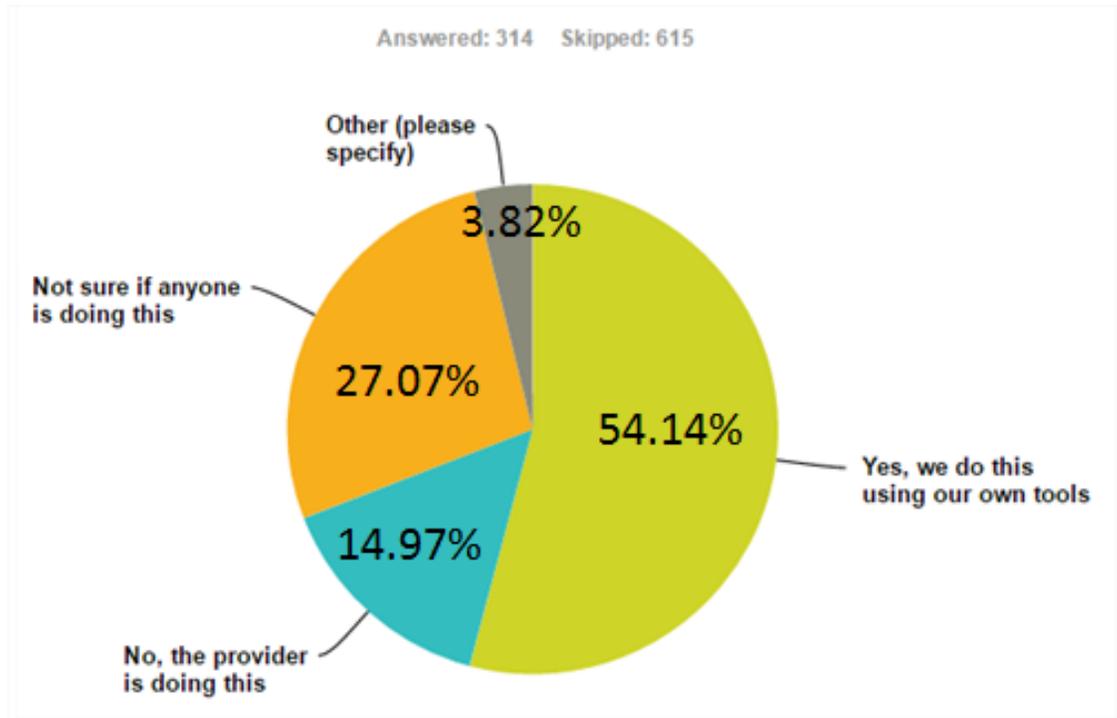


It's pretty important to know that the road you are going to drive on doesn't have big holes in it, isn't uneven to the point of being dangerous and of course when congestion is going to occur. If you know a route is 'bad', you'd take a different one if possible. If you are on a poor road like this you will suffer from Delay, Jitter and Temper loss!

The same principles apply for testing a link that you are hoping to put voice across. You need to first make sure that it is capable of carrying Voice over IP traffic because if not, you will fail regardless of what else you do.

The provider is the one with all the tools to check out the link for suitability and if they have not offered to do this, then ask them to.

Q22: Do you continually monitor your WAN to ensure 'great' quality of service?



"Some SBCs can report on call quality on a per call basis to assist in monitoring."

Steve J Johnson,
Ingate

"Implementing Network wide analytic tool to manage QoS is very important for both enterprises and service providers."

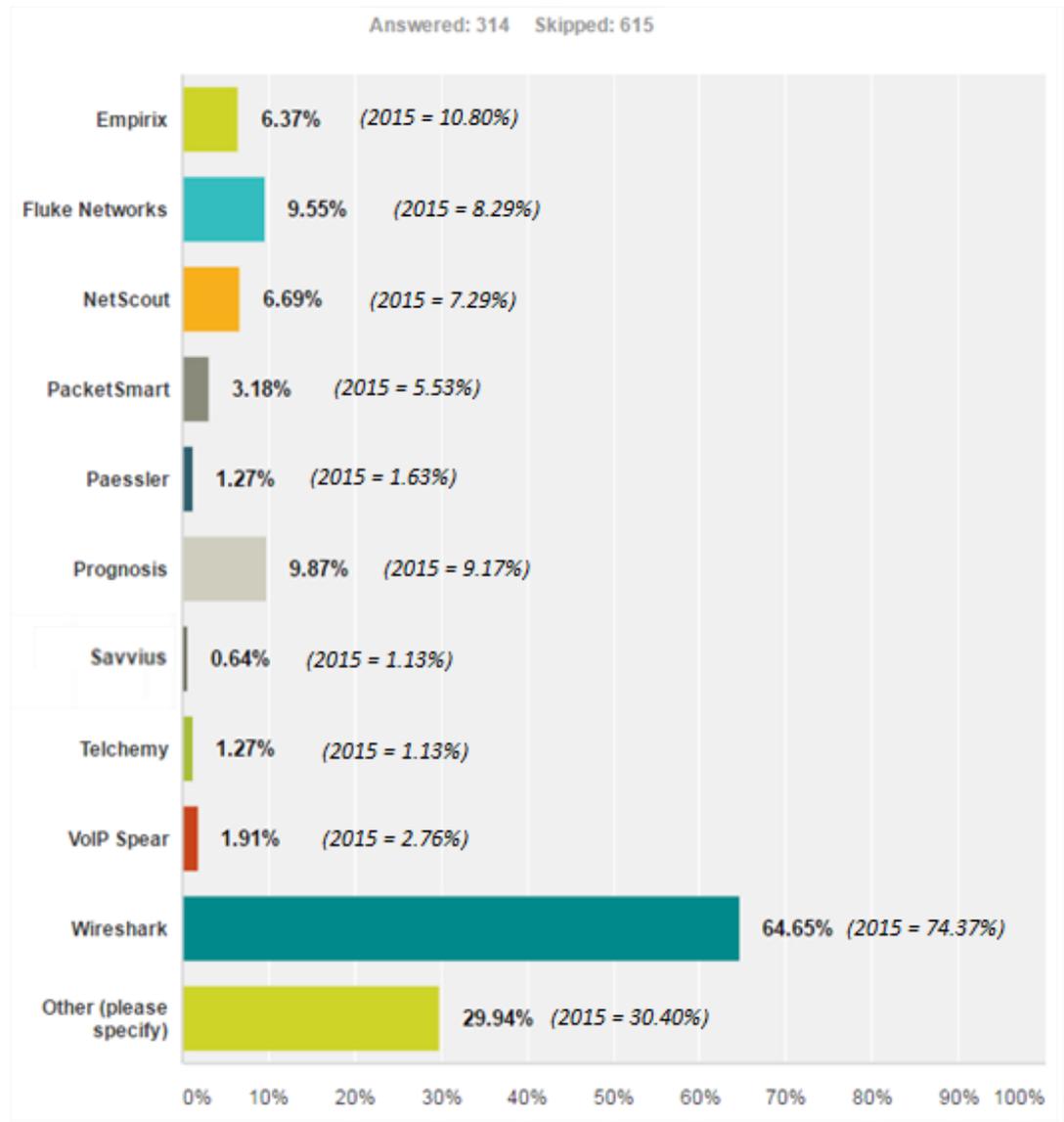
Ashish Jain
Genband

Analogy time again. Just because a road is clear on Monday and Tuesday, it does not necessarily mean Wednesday will be the same, things change – accidents happen, local events cause more traffic and so on – that's why before you drive you may find yourself checking the route first – or you can leave it to your app on your smartphone or your GPS to work it out for you in real time.

The same applies to the link you are using for VoIP. You need to continually monitor in order to spot trends that point to issues further down the road. Are packet drops increasing, is your average MOS rating falling and so on? Also, you may not have the resources or the inclination to do this all the time so maybe it's worth setting threshold levels on edge devices to send you alerts if problems arise? Of course, with the ongoing development of WAN technologies such as SD-WAN it may be that the intelligent devices deployed will spot problems and adjust traffic flow automatically – whilst alerting you of any link issues so that you can report them. Real time analysis is going to be of the utmost importance as links *will* have to carry more packets for a growing diversity of communications services; this means that you should investigate what you have and what you may need.

We wanted to find out what tools people used to test / troubleshoot their communications services.

Q23: If you actively monitor your 'Voice services network', what tool/s do you use?



“Some SBCs also capture traffic that can be easily analyzed by Wireshark to determine the root cause of any quality issues.”

Steve J Johnson,
Ingate

“While probe based approaches are typically used by the industry to monitor QoS, enterprises and service providers should also look at a VoIP service oriented analytics solution that provides a richer set of capabilities to manage quality both at the network level (such as MOS scores packet loss, etc.) as well as at the service level to assure the overall quality of experience.”

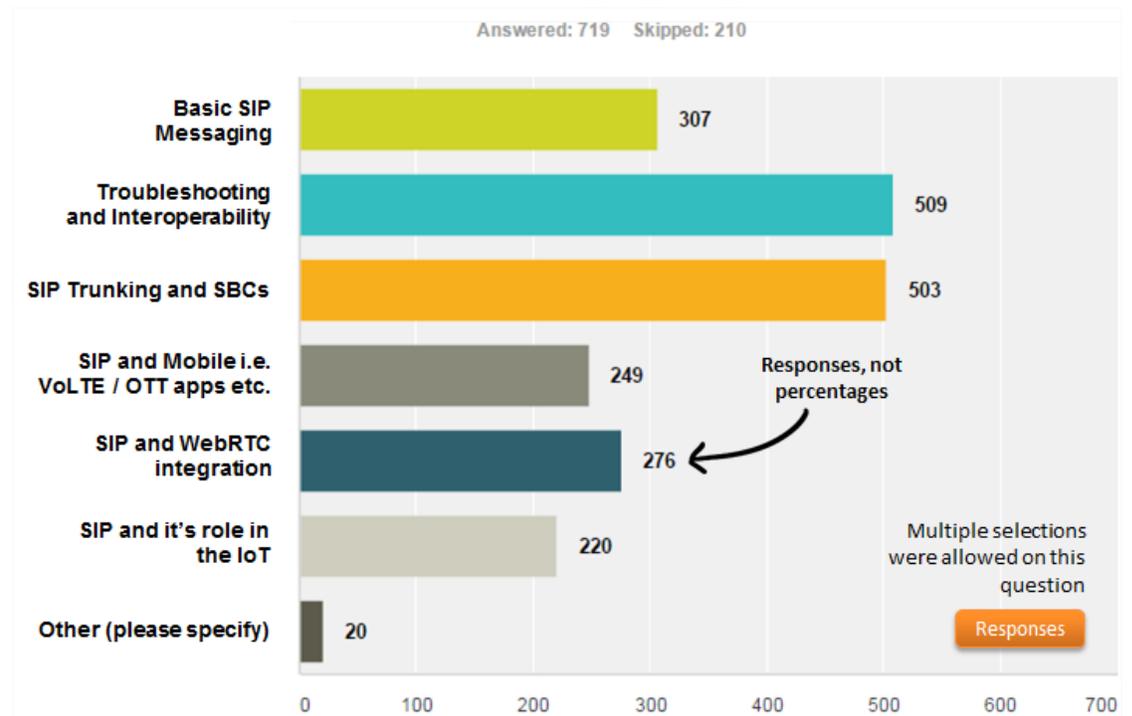
Ashish Jain
Genband

People could select multiple options here and it’s no surprise that **Wireshark** is the clear leader. It’s a great protocol analyzer and being free it is hard to compete against. Of course other tools provide specific services that Wireshark can’t with regards to Real-time VoIP traffic such as analysis, Monitoring, Alerting, Report generation etc. etc.

Remember, VoIP lives and dies by the WAN. If your WAN goes down, so does your VoIP!

So now onto SIP and what you know

Q24: Understanding SIP is important, which most interests you?



“One of the reasons we maintain our relationship with The SIP School is because no one provides more up to date courseware than The SIP School. We know that the courseware reflects new innovations in the industry and can rely on The SIP School for the latest advances in this area.”

Leigh Ann Wolfer,
NEC Corporation of
America, Inc.

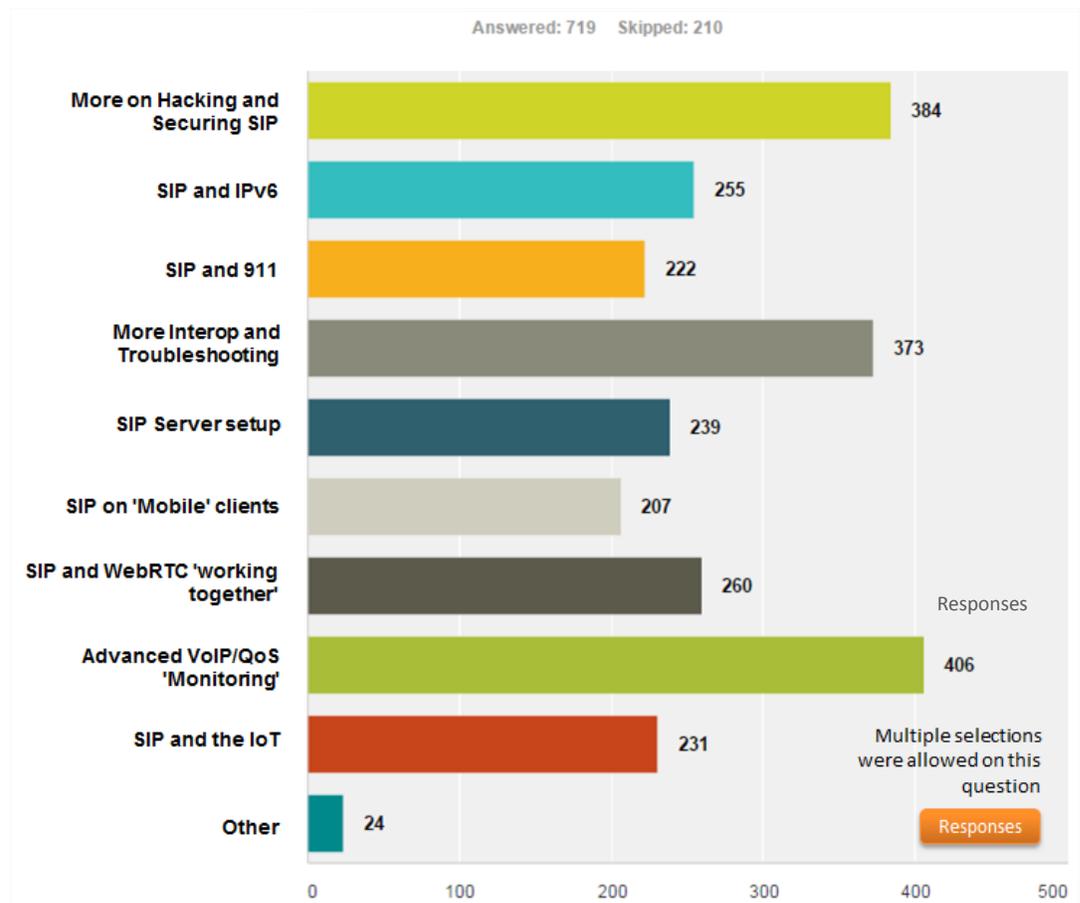
Again **Troubleshooting, Interop** and with (we think) a focus on getting the Edge to work with the ITSP providing the SIP trunks are the most important areas. Of course, you want to get the SIP trunks up and running and be able to fix things if there are issues.

SIP combined with Mobile is a growing area of interest that will only become more important as the IoT continues developing. We believe that people will need to understand technologies such as VoLTE, 4G and its development toward to 5G along with how OTT communications applications fit in.

As is always the case with this survey, we look at what people are interested in and work towards improving and complementing our existing training programs.

We even went a step further and asked about what people feel they need to see more of in The SIP School’s own training program.

Q25: What would you like to see in our SIP training program?



“The catalog provides exactly what we need. The SIP School is intuitive in anticipating the needs of the industry and remains current with today’s advances in the technology.”

Leigh Ann Wolfer,
NEC Corporation of America, Inc.

Advanced VoIP/QoS monitoring is a great request as we always say that it’s best to watch what’s happening on your network and spot potential issues early on. We have a WAN Assessment network available to all students so that they can set up SIP trunk call scenarios and run them for real. Students can analyze the results on screen and via a downloadable report. We intend to extend on this area with even more monitoring, testing and alerting features during Q1 2017.

Security is always high on the request list and we do cover a lot in the program. During our next update cycle we will be including even more on SIP trunk security and IETF initiatives.

There are a number of ‘protocols’ used in the IoT and SIP is one of them. There is already a huge amount of traffic generated by IoT devices and as a lot of this traffic will be traversing 4/5G networks then by default, SIP will be involved. This is something that we will be working on..

SIP Survey 2016

"Official certification is very important"

Howard Haynie
Toshiba America
Information
Systems, Inc.

"One key question for prospective clients to ask of their vendors, is if the Sales and/or Technical Sales people they are interacting with, are actually certified in the technologies they are proposing?"

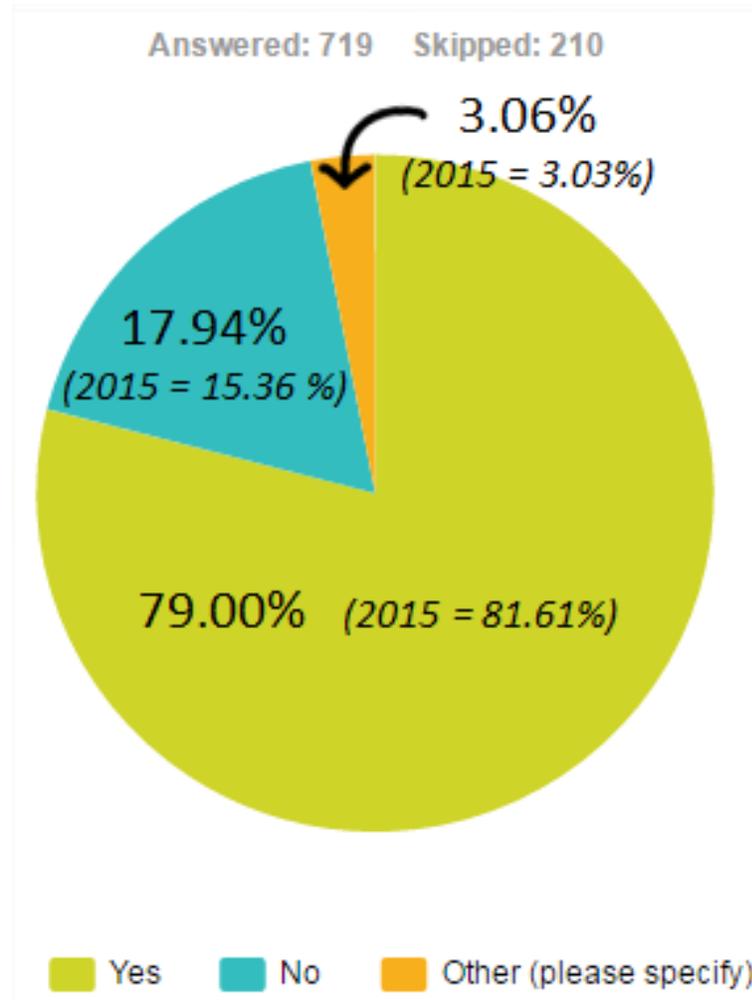
David Leon-Guerrero, Cox Business

"We have used The SIP School in developing our SIP knowledge and skills since 2010. We've had well over 400+ students partake in the various courses and found each one to be an excellent source of information. They provide the knowledge and confidence to our students to perform their roles and interact with our customers as a leading provider of SIP services."

Mike Uttley, Level3

The SIP School™ is the issuing authority for the SSCA® Certification with over 5600 certified engineers around the world, an increase of 30% since last year's survey. We know that this survey presents a good opportunity to see if people want or even need a SIP Certification. So, we asked:

Q26: Is an 'official' SIP Certification important to you?



Small changes from last year but still with over 79% of people saying yes, it indicates that having a standard certification to aim for encourages students to study hard as passing the examination gives them a qualification that industry recognises. The comments from Joe, David and Mike support this completely.

“Clearly the concepts of WebRTC are now generally understood across the market. There is a low level of correlation between telephony experts responding to SIP and web developers who would develop with WebRTC. This would appear to be a huge opportunity for new developers and frameworks.”

Phil Edholm
PKE Consulting LLC.

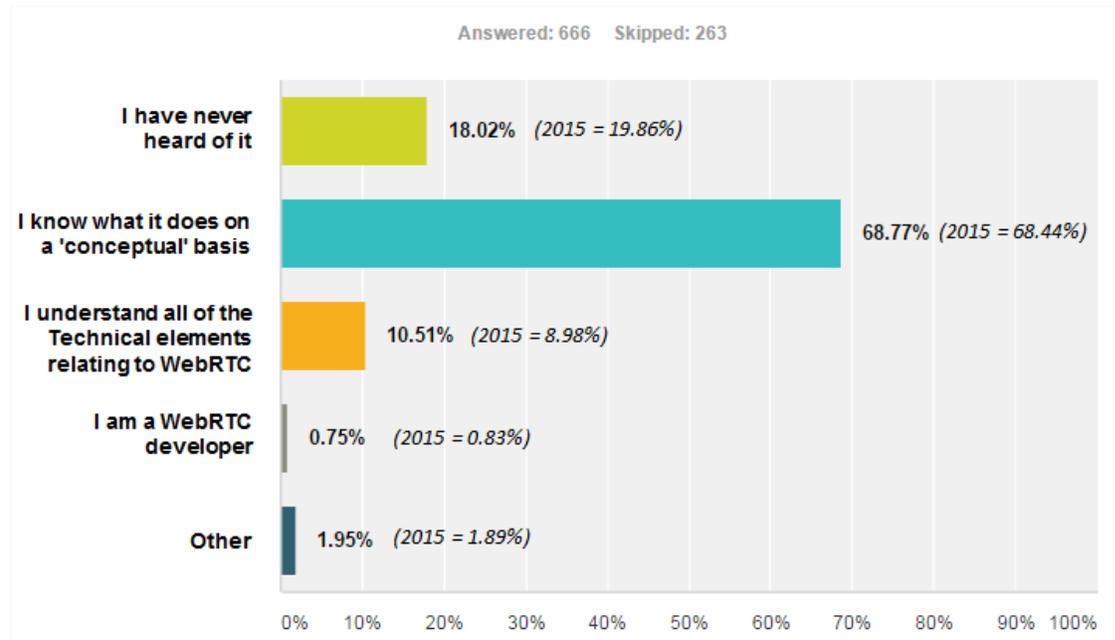
“WebRTC has come more important with the latest versions of our software. We are using WebRTC for desktop conferencing. I think this is an important enhancement that we must learn more about as it will become a bigger player in our systems.”

Howard Haynie
Toshiba America Information Systems, Inc.

But hang on, this is not over yet!

WebRTC has been making a lot of noise in the world of communications and web technologies and it’s set to get noisier. Of course, we wanted to ask a couple of questions to get a general ‘feel’ for what people are thinking.

Q27: What do you know about WebRTC?



It’s now clear that a lot of people are aware of WebRTC, what it is and to some point – what it’s capable of. With the exclusion of the 18% that have never heard of it – a total of 82% of respondents have been exposed to WebRTC and that bodes well for its adoption not only within browsers such as Chrome, Firefox and Microsoft Edge but also in the fast growing number of applications that utilize it.

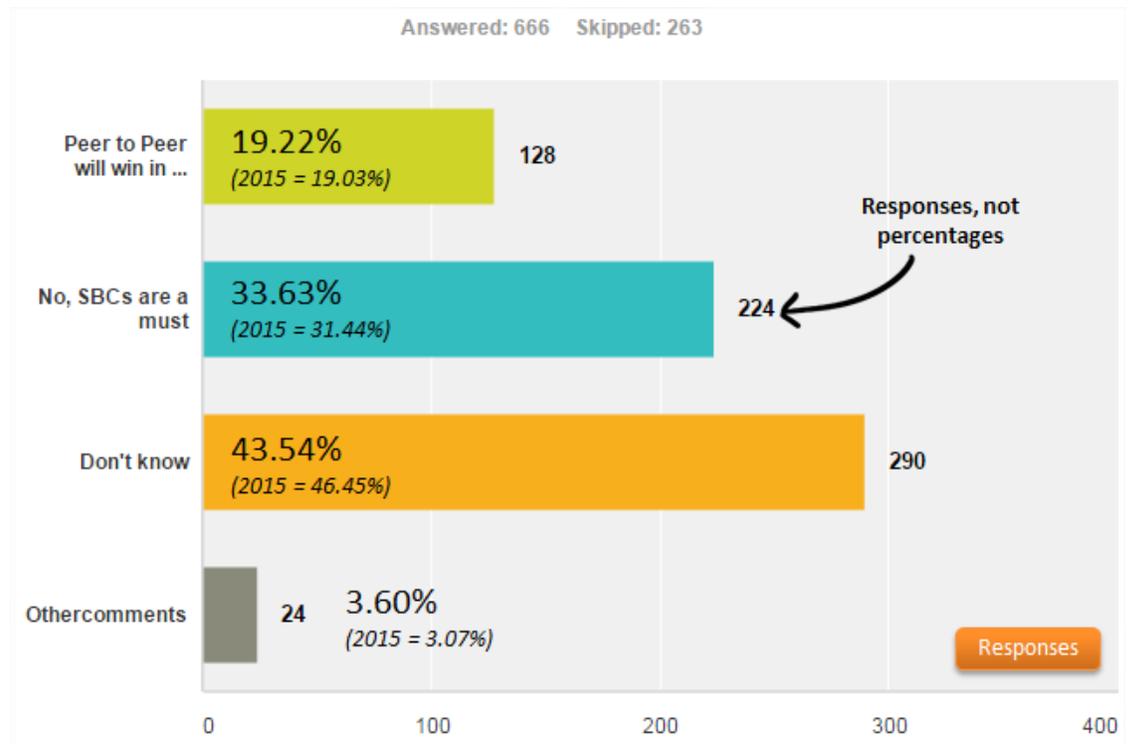
“When 68% understand the concepts and 12% who know it even better (Q27) - how come we have 33% who can't envision WebRTC working successfully without an SBC and marking security, lack of solutions and browsers support as the biggest challenges of WebRTC? As far as I can tell, FUD around security, lack of solutions and browsers support is part of the problem that is hindering understanding of WebRTC.”

Tsahi Levent-Levi,
bloggeek.me

“This survey shows the emerging divide, the SIP telephony community sees WebRTC and the Mobile web as just another media type connected to the traditional world. The web world sees WebRTC and Mobile real time as both a replacement for telephony, but also a new way to transform applications. In the end there are two clear models and they do not actually touch.”

Phil Edholm
PKE Consulting LLC.

Q28: Do you think WebRTC will be 'allowed' to flourish as a Peer to Peer technology or do you think it will follow the same path as SIP and require multiple intermediary devices such as Session Border Controllers to work?



WebRTC can be a 'pure' Peer to Peer play that the existing Telco world needs to understand doesn't need any intermediary devices. SBCs will come into play (providing lots of Gateway functionality) when WebRTC sessions need to include services / devices running other protocols such as SIP, Jingle, XMPP as well as non-WebRTC (recommended) codecs. WebRTC utilizes Opus for Audio and VP8/H.264 for Video (at the moment!)...

With so many people expecting to have to use an SBC, will this hamper WebRTC's Peer to Peer model or will the sheer volume of WebRTC implementations over the web start to bypass the need for SBCs as all communications move to the Web over time?

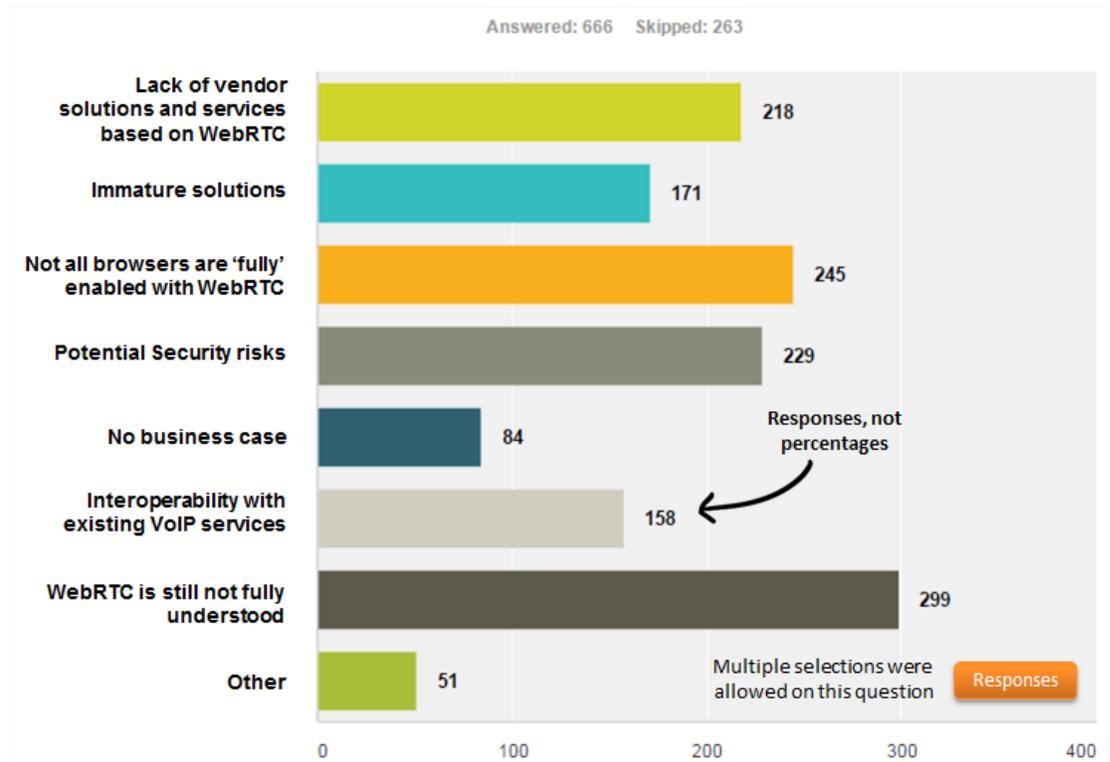
Q29: What do you see are the biggest challenges with using WebRTC?

"In a group of 900+ respondents, no barrier is over 30%. Clearly the barriers are falling rapidly, and some of the problems are falling fast. Vendors are rolling out WebRTC based solutions in 2016 at a high rate (Cisco, Microsoft, Avaya, Facebook, etc.) and the browsers vendors appear to be coming together. It will be interesting to see how these percentages change in a year."

Phil Edholm
PKE Consulting LLC.

"It's interesting to see a high response for "Lack of WebRTC applications". The biggest challenge we see in the industry is lack of understanding of WebRTC use cases. Typically it is viewed as a browser based dialer, which is a most basic application of WebRTC. The enterprises need some serious education on the potential of WebRTC. "

Ashish Jain
Genband



Here we wanted to see what people thought may be holding back / hindering the adoption of WebRTC and even though there seems to be plenty of stumbling blocks. A lot of the above concerns can be addressed easily. As Phil Edholm mentions, some of the biggest and most influential companies have adopted WebRTC and this is certain to have an impact how their services develop and are used with it being a big consideration on how the use of these services will impact existing and established telecoms services. For a growing number of people, it's far easier to start a Facebook Video chat session that they know will get through to their friend regardless of the device than use traditional communications methods/devices. Interesting times indeed.

This new question wasn't meant to be a trick question, just simply a question to see what people's answers were with regards to how WebRTC is perceived with relation to SIP.

Q30: Last question - let's get inventive.... If a company has an on-Premises PBX utilising SIP trunks for voice service, how can WebRTC embellish / improve this scenario?

Wow, lots of responses, including lots of 'Not Sure' and 'Don't know'

Here are some interesting ones....

"While integrating to the platforms of today is interesting, the more valid question is how communications can move out of the current PSTN paradigm into something completely different. The danger in linear thought is that it often misses the disruption."

Phil Edholm
PKE Consulting LLC.

- Allow a customer to establish a call to the company via clicking a link on their website.
- Allow the use of multiple channels of secure communications across the WAN
- It can be integrated with the PBX for the Voice, via the SIP Trunks after the WebRTC Proxy is properly configured. No need for duplicated SIP Clients if the PBX can use SIP trunks. Or can replace the PBX and use mobile or web clients instead.
- WebRTC can't improve the scenario. Unless WebRTC can provide the same feature / functionality as WebEx, Skype for Business, adoption will not occur on a large scale and WebRTC will be limited to the very small enterprise (<100) market segment
- WebRTC can be used as failover or backup when the on-Premises PBX fails and calls will flow or be delivered via the Cloud. The WebRTC agents can handle the calls either from a Web or mobile app.
- Web page based access to call center/sales/whoever! (Want to chat about this product? [Yes/No]. Yes fires off a WebRTC call to sales/support/etc.)
- Use WebRTC to facilitate access to Call Centers with a more effective and real time screen pop capability. Also enable proactive citizen outreach for government agencies using web site activity as a driver.
- Trunks can still be used to deliver reliable voice, while web RTC can offer real-time document editing and sharing, as well as video feeds
- This is where understanding business needs come into play - hence I believe the following could prove of value for WebRTC given an existing PBX and SIP Trunking scenario: 1) Web based Resiliency option 2) Browser support for a distributed workforce 3) Great option for businesses that have no formal plan for pandemic outbreaks or other lock-down scenarios
- Best case - great DR/fallback option as long as the WebRTC is not leveraging the same Internet connection as the SIP Trunks (could be the case for some providers) or the WebRTC app is leveraging a diverse Internet connection
- I am not sure how WebRTC and SIP Trunking collaboratively run or what is the purpose of it.

The Final Analysis

As mentioned at the start of this document, we wanted to find out what people's experiences are with SIP trunking services yet we also decided to expand the survey to cover Hosted services along with WebRTC. We all know that this industry is moving quickly with companies either installing SIP trunks or transitioning to a fully (or Hybrid) cloud based solution along with the potential of using WebRTC based services – it can be mind boggling and all the customer wants to do is to get a system in place that meets their business needs and that is the crux of it. The **business need** and not technology for technologies sake. So this survey aims to use experiences of others to educate people on how to approach implementation of SIP based services, watch for the pitfalls and how to engage vendors and providers alike to help them progress to their next generation communications service.

Recommendations

After taking a long hard look at the results of the survey this year, the recommendations we have are pretty much the same as last year though with a few updates. This is because the basic principles still very much apply.

This survey shows clearly that issues occur (in the main) during the installation and initial configuration of SIP trunks and Hosted services and in order to make things as painless as possible for all parties involved, there are some simple things that can be done and most of these can be done relatively quickly.

[talk]

Firstly, it's always wise to talk to all parties involved before moving forward. Get case studies from ITSPs and the vendors you are working with. Talk to their people about their own installation experiences along with discussing the issues they have come across and how they overcame them. Talk to people about interoperability testing and conformance to standards and recommendations such as SIPconnect from the SIP Forum. In essence, good research and talking to people early on will help you decide which companies to work with.

[assess]

Before committing to a SIP trunk installation (or even a trial) it's recommended that you assess your own network for suitability i.e. VLANs and L2 QoS configuration. WAN assessment tools are available on the market for you to test your existing links (maybe your prospective provider has some) and these tools should highlight any potential issues such as link instability, router problems, bandwidth issues etc. MPLS networks can deliver on Quality of Service (QoS) but can also be expensive. New 'developments' such as SD-WAN may be able to 'beat' MPLS for cost but needs to deliver an 'assured' service to be taken seriously.

If you are using your own PBX, is it an old TDM based one, a Hybrid or Fully VoIP enabled one? Ensure it can support SIP connectivity or you'll need gateway services.

[ask a lot]

If you are an enterprise looking for a SIP trunking solution to suit your needs then ask ITSPs to respond to your business requests and see if they can cover *everything* you need, from Service Level Agreements (SLAs) to full support for the smallest of sites in the remotest of locations, even international locations. You must ensure that everything can be covered by the ITSP and that they understand all you need before things move closer to provisioning SIP trunks. You may also want to consider if the provider can offer the following as if not now, you may need these in the future.

- Security for all communications.
- Support for Mobility i.e. Remote workers and a Single Number for multiple devices with handover support.
- A 'forward looking' plan on how their services will integrate with others i.e. CRM, Support, Marketing, and other business services that (should) allow API connectivity.
- If you are sticking with an on-Premise solution for now, does the ITSP have a migration route to the cloud if you decided to do this in the future?

[trial]

ITSPs should be willing to let you trial SIP trunking (and Hosted Services) for free for a reasonable period of time (30 days is good). Survey responses clearly display that a successful trial will normally result in a full implementation. If so, then do it and test the Trunks using all the call scenarios you can think of such as call transfers, conferencing and so on. Also *test* the ITSP's support people at various times of the day to see how well they perform to what they promise.

[move or wait?]

The industry landscape is changing quickly with smaller companies merging and/or being 'absorbed' along with the 'giants' of industry offering their own SIP and Hosted services both countrywide and even internationally.

If you are 'looking' for SIP trunking services then you need to decide who can deliver exactly what you need today as well as being around in the short/long term to continue to deliver these services – not an easy thing to predict with such market activity at the moment.

[documentation]

When it actually comes to installation of the SIP trunks, the one thing that really stands out is the need for correct documentation that supports the configuration of the PBX and the SBC/Edge device in order to get SIP trunks to register and

work. In our own experiences we've found that installations go way more smoothly if educated and experienced people use documentation that is clear and easy to understand and also based on settings that have been proven to work in the 'combinations' of equipment being configured. For example, if you are installing SIP trunks from COX, connecting to a Dialogic SBC and then into a Mitel PBX it's important to check that these all interoperate and if so, get the configuration documentation into the hands of the installers. Again, make it easy for people to get it right the first time.

[monitor]

Once SIP trunks are in and working it's not the end of the story. To ensure they continue to operate and function at their best it's wise to continually monitor their performance. Whose responsibility is it to run monitoring/alerting software to check for Mean Opinion Score (MOS) values falling, increasing packet loss, increasing Jitter values and so on, YOU or the provider? Someone needs to do this.

Also ensure that whenever any software upgrades are to be carried out on the PBX or SBC that these upgrades do not affect service. Again it's wise to talk to vendors first before making any changes that may affect operation of the SIP trunks.

Conclusion

The move to 'the cloud' is the direction that (a lot of) industry is taking yet I have a cautionary tale. There is a company (I read about recently, no names of course) providing software applications that are transitioning away from having to be installed on computers and into to the cloud 'as a service'. The cloud service stopped working completely leaving clients with no access to critical documents and messaging systems. Resiliency you may be thinking... Well yes, they had a failover system but when that was called into action – it also failed and with older Disk Backups being unreadable, the situation was as you can imagine!

What can be learned from this?

Providers should provision a well-tested and reliable service, train support staff to be effective in their roles and ensure that backup systems not only are in place but also tested on a regular basis. This certainly applies to SIP trunking as well as any Hosted communications service.

For clients, it's clearly best to start by getting your own house (network) in order then trialing services before deploying them for good. The trial not only can help find issues in the services but also those in the provider of the service.

We all know that SIP, VoIP and Video over IP services whether on-Premises, in the cloud or a Hybrid of both are the future with TDM one day becoming a distant memory. Clients see the benefits of moving, it's up to the providers of the systems and services to show these clients that a successful transition is possible.

About The SIP School

The SIP School does not formally recommend any one provider, service or product as we are a friend and supporter of all who are involved in the world of SIP, Voice and Video over IP and now, WebRTC.

The SIP School™ is owned by Vocale Ltd which was founded in April 2000 (Vocale Ltd is also the owner of the WebRTC School). It's SSCA® SIP training and Certification program has become recognized as the globally accepted Certification for VoIP professionals to strive for. Organizations such as the Telecommunications Industry Association officially endorse the program and BICSI value the program at 21 CEC credits towards their own certifications.

Details of more industry supporting companies can be found at <http://www.thesipschool.com/industry.html>

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