WHITE PAPER

Aspect Via™

Perspectives on Bringing Aspect Technology to the Cloud

Our world is abuzz with discussions around what it means to run true cloud solutions. Without question, it is difficult to sort through all the terminology bandied about – hosted, public cloud, SaaS and hybrid. We have various vendors touting various differentiators – multi-tenancy, Service Oriented Architecture vs. MicroServices and so on.

Surely all this matters – but it matters for different reasons to different people. As we went about designing Aspect Via, our customer engagement platform for the cloud, we certainly kept these various and varying perspectives in mind. We wrote this technical brief to provide prospective buyers some guidance and frame of reference in navigating this increasingly complex and confusing technology landscape. Such a bigger picture understanding will aid buyers in recognizing what's really important to them. It is also our hope that you will see how our approach to building Aspect Via reflects our determination to address the concerns of individuals across the enterprise, in whatever role or department. Indeed, that determination was at the heart of our efforts to bring Aspect Via to market.

The SaaS Buyer Spectrum

It's important to root ourselves in what cloud computing or SaaS really is by understanding a simple fact – key stakeholders in the technology acquisition cycle will define these concepts differently – as a result, the desired, anticipated benefits will differ as well.

It might be helpful to examine these considerations in the context of a few unique buyer personas, each providing a separate but equally appropriate answer to the question.

Chris CIO is looking for a comprehensive suite of technology, built around a Service Oriented Architecture (SOA) that enables continuous delivery. He counts on a fast paced feature enhancement model that covers all components from infrastructure to application delivery.

Abby VP Architecture is expecting high-availability and disaster recovery to ensure always on reliability. System enhancements, and security updates that can be done automatically, are assumed in a cloud delivery model. Abby also favors the cloud advantage of having less physical vulnerabilities and, she demands strong data encryption and security protocols.

Frank CFO appreciates that there is no need for capital expenditures when implementing SaaS and he takes full advantage of pay-as-you-go and usage-based pricing models. He also likes the idea of limiting up-front investments and no longer dealing with complex maintenance models.

Mary GM values cloud solutions that de-risk her business by removing the barriers to markets and reducing expenses associated with maintaining necessary security and compliance standards. She also values time to market and market responsiveness so solutions must promote business agility. Finally, the lack of a large up-front investment allows a dynamic go to market strategy while allowing her to control expenditures even as she grows the business.

These differing viewpoints uniquely impact the question of "what is SaaS and why do I care". Cloud – or any other – technology advancements often keep us up at night as we (and our competitors) try to sort out how these technologies can help us do our jobs better and make our companies more successful. Delivering a business process via the cloud can be further complicated by: 1) the level of complexity of the integrated solution and 2) its importance to the business processes it serves. Technology systems like customer service and engagement suites certainly fit both of these criteria. They have interdependence on multiple linked systems: from the connections that provide dial tone and long distance service , to SMS gateways and carrier aggregators, and email providers – not to mention the native engagement offerings such as call recordings, screen captures, reporting platforms, quality systems, and CRM integrations that come into play.

It becomes obvious that evaluating the suitability or benefits of any one vendor's offering cannot be based on just one consideration. Some vendors stress on-demand availability, Microservices architectures or continuous delivery methods. All important considerations, to be sure – but other factors might have greater value depending on the application.

It is impossible to judge what makes one offering materially better than the next if you do not weigh the pros and cons of its SaaS architecture in conjunction with the application type(s) it will be supporting. It is the entirety of a solution that must be considered.

Important Choices

In the previous section, we heard from various decision makers, each having a distinct set of expectations around cloud solutions. We'll keep those personas in mind as we discuss some of the critical design decisions vendors must make in the course of conceiving, building and deploying cloud solutions. Let's also keep in mind the particular architectural subtleties that customer service and engagement solutions, by their very nature, demand.

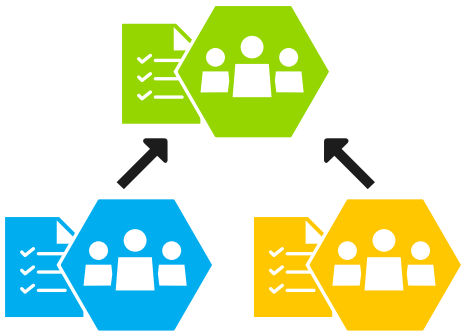
Architecture and System Design Concepts

Over the course of the last 20 years or so, software system design has certainly evolved, leaving us today with basically two methodologies:

- Monolithic Architecture – one large, self-contained application for uniformly processing all server side functions and interactions.
- Services Oriented Architecture (SOA, including a Microservices approach) – server side components broken up into smaller units, each handling a subset of total work with a defined communication channel between the units to exchange information.

We can draw a parallel to the same logical separation of tasks that most likely exist within organizations today. For example, contributors in many corporate startups wear multiple hats, writing code one minute, and then negotiating a vendor contract the next. This is analogous to the Monolithic approach – one person doing just about everything.

The SOA approach surfaces in more mature organizations in which different job functions are precisely defined by job role and divided across multiple teams, with increasing specialization and less dependencies on individual contributors. These teams then collaborate and communicate across departments in order to both accomplish their respective tasks and support the broader organization. There are advantages to both, however, when operating at the scale mandated in today's dynamic world, we think over time, the SOA approach is the only one that will make sense.



Cross functional Teams Organized around Capabilities Are What Services Oriented Architectures are all about

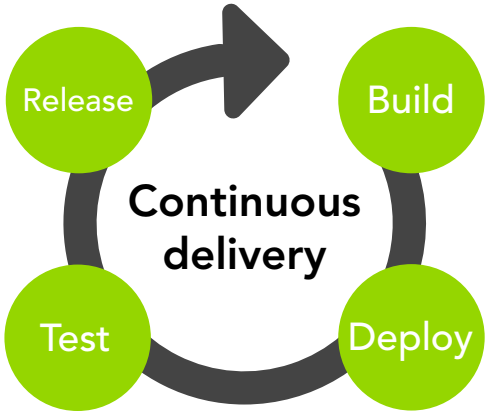
That is not to say that distributed SOA designed applications are not without downside – for example, the planning and synchronization in design and development decisions becomes critical to success. Components must be carefully defined in terms of their set or bucket of capabilities. How many components/buckets are too many – a particular design challenge in MicroServices architectures.

Continuous Delivery

Offsetting these risks are, of course, significant benefits. Specialization around capabilities allows for easier compartmentalization of tasks, allowing software development to occur at a rapid pace. This is what is referred to as continuous delivery (often in combination with an agile development method) and enables vendors to provide customers frequent releases containing great new features while still guaranteeing reliability. Chris our CIO is able to put this to work, driving change within the market, leading with vision and setting a new bar to which his competitors can only aspire. Mary is thrilled that she can adapt to the changes in market conditions, and her dynamic go to market strategy isn't hampered by technology or capability. The market will not wait for Chris or Mary to execute their vision – and continuous delivery ensures they won't have to.

Today's empowered consumer is a demanding one – wanting answers and information delivered immediately, conveniently and accurately, with every interaction personalized to make them feel valued. Add in the advent of new and various communication channels that must be supported and it is

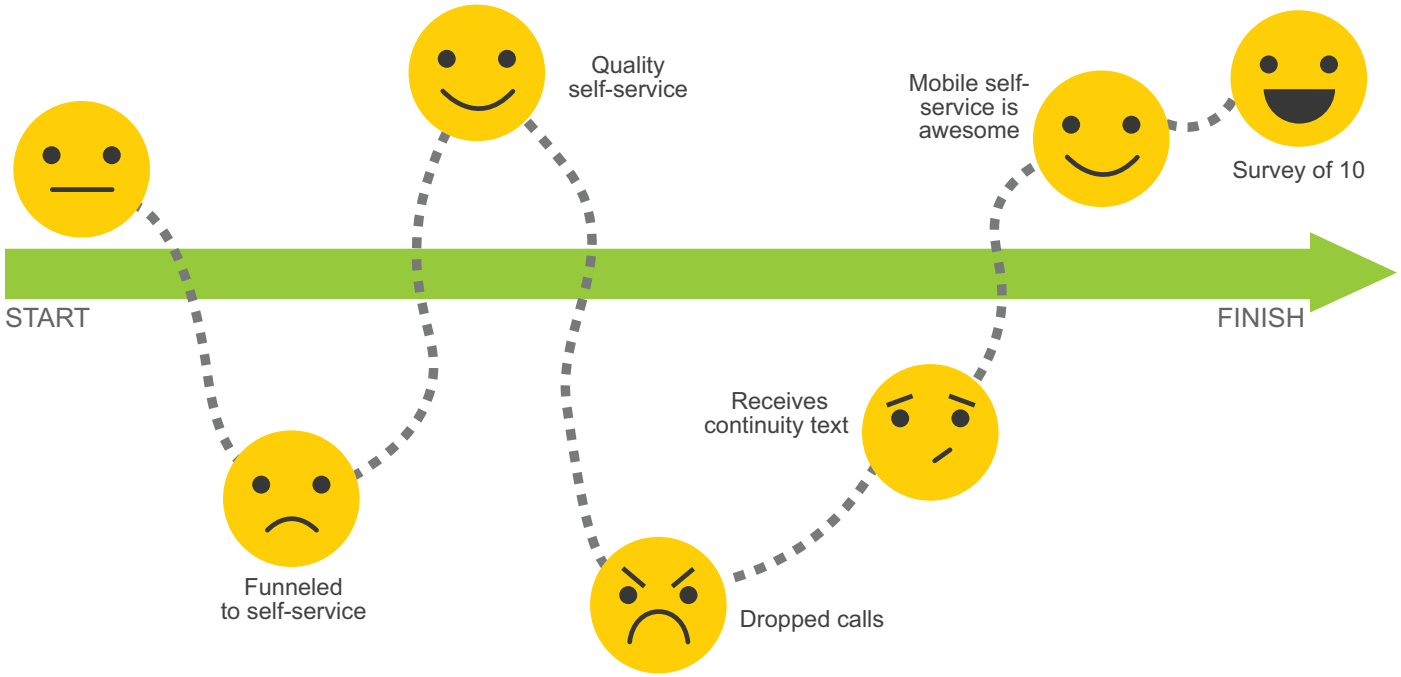
easy to see why customer service and engagements solutions operate at a pace of change that has few contemporaries. We can look back to the general .COM expansion of the 90's and the social media boom we are experiencing today to find similarly explosive change.



Benefits of continuous delivery include low-risk releases, improvement of competitiveness and responsiveness and quality improvement of new software versions

Service oriented architectures and agile development methods provide the foundational building blocks for delivering updates and enhancements rapidly and at scale to keep pace with the fast-changing customer engagement arena. That is a necessary but not sufficient consideration, however. For one, it will not necessarily solve pressing business problems – focus also on the actual features being delivered (and not just how quickly). Do they elegantly solve real world problems critical to market success reliably and at scale?

In validating your vendor selection, focus on the depth and breadth of capabilities and speed of innovation. For example, how are they addressing the growing need for smart self-service solutions? What is their approach to providing automated conversational experiences, leveraging the latest and greatest in natural language understanding? How well do they cover the customers journey, one that pivots between self-service and live agent, and across channels from web to voice to text?

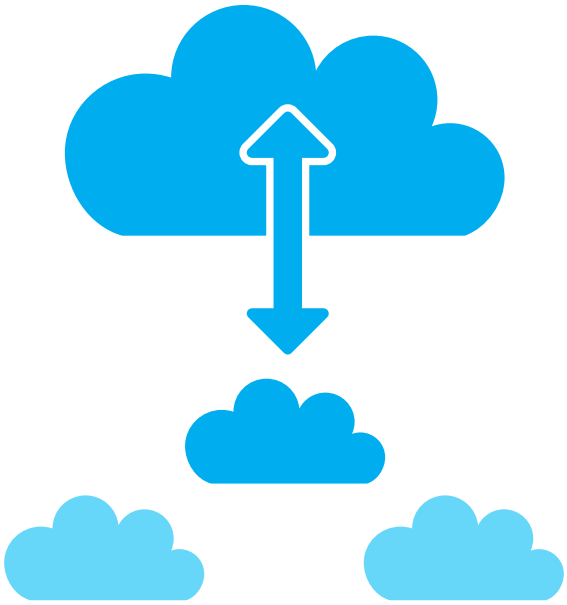


Customer engagement solutions have to pave the way for a smooth customer journey, no matter the route taken.

Reliability

Another clearly discernable, noteworthy difference in "how vendors build it" is the impact this has on reliability. We can once again compare the significant architectural benefits of a distributed services SOA approach to the activities and dynamics of an organizational team. In a distributed approach people are trained and positioned around knowledge or capabilities, so a sick day (failure of a task) or PTO (maintenance event) allows for someone else to quickly fill in and pick up the slack without having to know each functional area across the entire organization.

As we distribute work, we balance that distribution of tasks across skilled resources on a team. If we receive a declined invitation to do the work, or an out of office due to sick leave we just route the task to another team member and the corporate machine keeps moving. This is the organizational equivalent of a software system that is designed with fault tolerance in mind, distributed processes operating in an active/active distribution and load balancers distributing tasks evenly amongst peers. At the hint of failure, the load-balancer removes the failed node from routing and all the work is diverted to the surviving, equally capable resource.

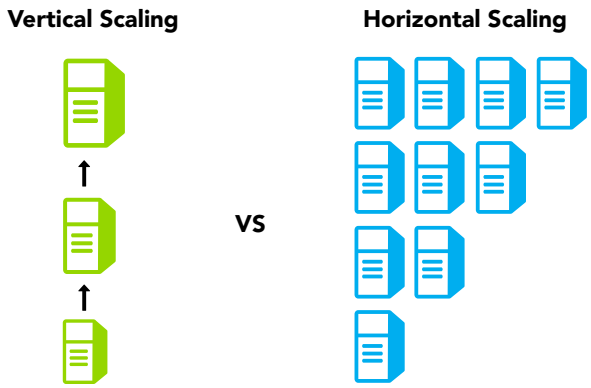


Reliability: Designed to Fail and Designed to Survive

For decades Services Oriented Architectures, which includes the relatively new Microservices approach, have been the de-facto standard for application development, signaling a movement away from monolithic applications to distributed systems decoupled from potentially harmful centralization.

Scalability and Elasticity

The world of today's business is a dynamic one. And the tightly integrated systems on which the world relies for commerce (and increasingly just about every facet of day to day life) must scale accordingly. When we talk about scale, we look at in two ways, the traditional view of "how big can it get", answering the question of whether some upper limit of capacity exists. The second and in some cases more critical is the concept of "elasticity", which answers the question of does it "flex" or "burst" when we need it to, or is it rigid because of technology or contract. Elasticity refers to having the necessary headroom for immediate and ongoing expansion and is a key buying criteria today. In fact, it is a key distinguisher of a cloud system vs. the more traditional approach of "on premise" software. You will also hear discussions around vertical vs horizontal scaling. Generally speaking, outdated monolithic applications scale vertically (think slowly), that is; when you need your car to go faster you take the whole engine out and replace it with a bigger one. It does the trick but is not the most practical course of action and one you would not want to repeat on an ongoing basis. True cloud applications scale horizontally, because, as mentioned earlier, the underlying components are logically segmented into roles and tasks. For that reason, you can be more thoughtful and precise in how you increase engine performance – while not common in the world of automotive performance, this type of scalability would be akin to adding more cylinders to the engine as these are the predominant component of performance. Simply stated, more of them means more power. Mary and Chris, can rest assured that the systems she entrusts to growing and sustaining her business are nimble, flexible, and are built to meet her growth demands today and well into the future.



Horizontal Scaling vs Vertical Scaling Grows Resources With More Machines not Bigger Machines

Frank is comforted by the ability to handle the cyclical demands typical of today's economy. He also enjoys a true op-ex model that makes managing the finances of his organization predictable.

We all know Amazon Web Services (AWS) has made computing power available quickly and in mass quantity. Indeed, they have lead a revolution in the commoditization of compute and storage infrastructure. An amazing feat. Vendors will tout their reliance on AWS – and why not? It's a vast, impressive system, with nearly limitless capabilities that make it possible to deliver truly world class cloud solutions. This world class solution set is not given, however – it must be earned through proper implementation and design choices. The marketing promise of unlimited scale, by way of Microservices designs, or the broader Services Oriented Architecture, might not be fully realized if the vendor does not leverage the endless infrastructure and services that AWS affords due to poor implementation or directives to keep costs low and margins high. One simple validation is whether the vendor deploys their solution in multiple availability zones or regions. This adds costs to the vendors' bottom-line, but greatly increases the solutions survivability. Also, look carefully at what your guarantees are contractually and understand the full scope of the architectural foot print before making a decision. Abby needs assurances that the systems are built to survive, not designed for cost considerations.

Is the System Really "Cloud"?

It is important to understand whether an entire solution is built from the top down – from the edge to the core – in accordance with the design principles discussed in this paper. If 'cloud' solutions still carry legacy technical debt, you will see components of their solutions referred to as 'appliances'. These appliances will not – indeed, cannot – be deployed in a public cloud like AWS. Instead, they must be deployed in a traditional brick and mortar data-center managed by the vendor – or, sometimes the vendor might even ask you to deploy these black boxes in your own network because of a perceived benefit to survivability.

These appliances often handle critical components of the solution such as all telephony facilities including SIP and Media handling, call recording, and more. Question vendors on why such appliances exist in solutions touted as 100% cloud solutions. Probe on how these devices wll deliver on the fundamental mission of elasticity discussed earlier. In today's world, you need solutions that are built to scale for the cloud, in all areas – a chain is only as strong as its weakest link.

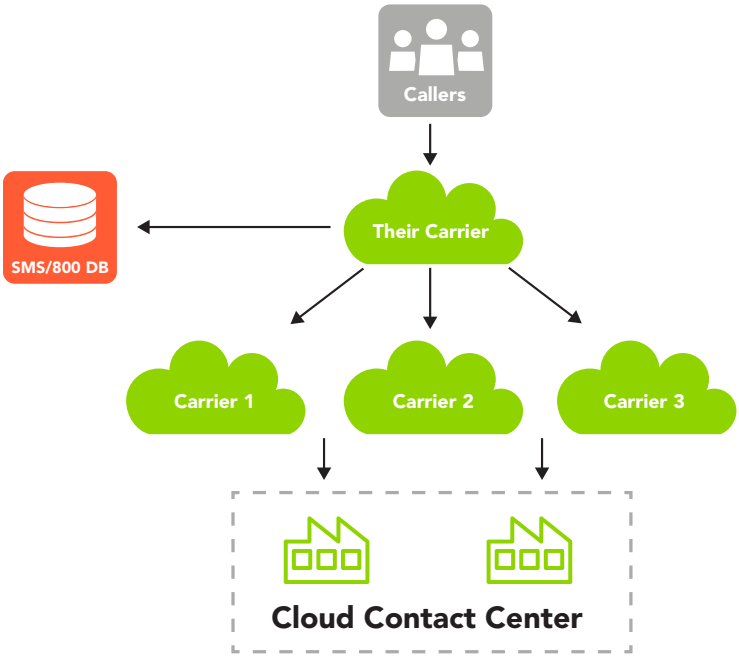
We talked earlier about the dynamic pace of customer engagement, and how the adoption of capabilities at rapid pace is critically important to meeting the 'now consumer' on their playing field. To Chris and Mary, this is the life blood of their business. Failing to innovate in today's market place is a sure fire way to find your organization left behind in market scrambles. This makes it critical that we question if appliances are in use and how they might prevent meeting your business needs, putting you at a disadvantage in the marketplace. When we hear vendor's touting sophisticated designs and "truly" cloud based systems we need to vet all components of the platform, understanding how each can impact your agility in the marketplace.

Telephony is Such a Critical Component of the Contact Center

Finally, let's focus on a few design principles that are particularly important to customer service and engagement centers. Despite the boon in popularity of digital self-service, voice is still a fundamental customer care channel, whether it be agent-assisted or self-service. Our smartphones allow us to answer almost any question on our own but when that is not possible, you need to talk to an agent who has the skill and knowledge to help. Telephony is a challenging business – figuring out carriers, integrations and connectivity among other factors. So take care to choose a provider who has been running telephony services for a long time and has the experience needed to provide stability and availability of services.

When it comes to North American toll-free numbers, make sure your provider is an Independent RespOrg and not a carrier RespOrg. Simply defined, a carrier RespOrg routes traffic only for their network – and when it fails, everything goes down with no quick or ready fix. Independent RespOrg's are carrier agnostic and are free to establish relationships with many providers, routing their toll-free numbers across multiple providers at the same time. So, from one call to the next, they will traverse more optimal paths over carrier A or carrier B, and as well as make them far more bullet proof. Any interruption in the carrier network can lead to some failed calls but never complete interruption. Within the same context Independent RespOrg's can re-route traffic from one carrier to the next for additional reliability and add new ones

to bolster diversity. Make sure your cloud provider addresses your telephony needs globally. If they rely on points of presence instead of direct peering relationships with carriers, it may not be cost effective for them to deploy in every region in which they operate.



North America Toll-Free-Routing Done Right.

Make sure your providers check these really important boxes. After all, telephony is a critical component of the cloud customer service center – if the phones go down, but the software stays up, it does not make the outage any less painful.

Service Level Agreements Matter

We have talked about all the decisions vendors of cloud solutions need to make if they want to address today's – and tomorrow's – customer engagement challenges. Many of these choices come down to how reliable the systems are for mission- critical business processes. During the evaluation/ buying process it is key to understand the details of the architecture, and how it meets your service level expectations.

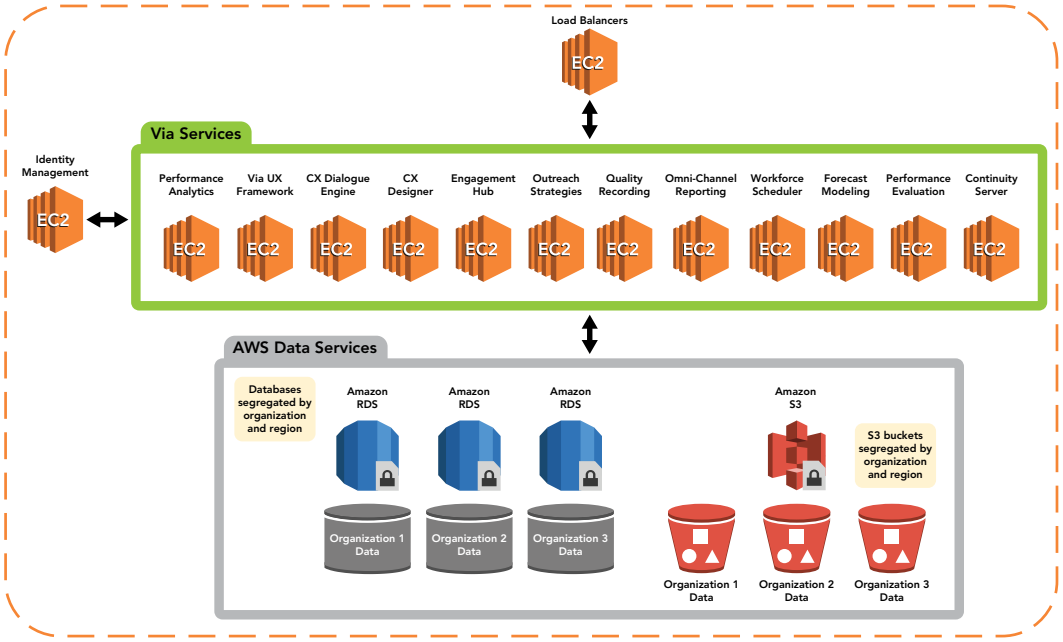
Just about all cloud providers offer an SLA, but is critical you understand the details. How many '9's' of reliability is being guaranteed – words like "best effort to provide xx% reliability" are not guarantees, they are aspirations. Look at what the SLA will guarantee with respect to monetary compensation – do they credit your account if they only hit, say, 99.99? What percentage do you get back? What's the next tier – is it a really low number like 99% (that's 7 hours a month!). Read the details, make sure you know what's covered and what your SLA's – and the vendor – stand for.

Conclusion

We hope this document will be a useful guide as you go about asking the tough questions when evaluating vendors.

- Understand the benefits you gain from the differentiators defined by the various vendors and their architectures
- Look broadly at the entire solution, the strength of a truly cloud system should extend from the edge to the core
- Make sure the business value is being delivered in the terms of elasticity and the speed and vision of new capabilities. Does your vendor keep you on the cutting edge of omni-channel customer engagement, including advanced self-service capabilities powered by natural language understanding? Is your end of year or holiday season usage peaks addressed through system capability and contractual guarantees?
- Get a firm handle on a vendor's telephony strategy – is it truly global? How much carrier diversity do they offer, does their experience in managing a global telephony platform shine through in your discussions and evidenced through a proven architecture.
- Focus on the contract as the definitive definition of what the vendor is promising, separating hype from reality.
- Ensure that vendors SLA's are thoughtful, meaningful commitments to your success.

Aspect Via™ Customer Engagement Platform™ in the Cloud



consideration that unites them all when evaluating a Customer Engagement Center. It is how well a vendor's offering promotes and facilitates a seamless customer journey – across digital and voice channels, self-service and agent-assisted.

Also, how seamlessly can the enterprise itself operate – across departments, business workflows and systems? The Customer Engagement Center serves to rally the enterprise around the customer experience while the cloud gives the enterprise the agility to swiftly respond to market changes. Aspect Via was purpose-built to make the most of this formidable union of the Cloud and the Customer Engagement Center. Let Aspect Via unite your organization in reimaging the customer experience. Let us help you get started.

Customer Engagement Centers in the Cloud – Make Sure You Get the Big Picture

We started this paper by cautioning that various key stakeholders within the enterprise (Chris CIO, Abby VP Architecture, Frank CFO and Mary GM) will weigh the various SaaS architectural considerations differently based on where they sit in the organization. There is, however, one over-riding

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About Aspect

Aspect helps enterprises break down the walls between people, processes, systems and data sources, empowering organizations to unite around the customer journey. Our customer engagement center offers native interaction management, workforce optimization and self-service capabilities that drive dynamic, conversational interactions and create a truly frictionless omni-channel customer experience. Leveraging all the benefits of the cloud and over 40 years of industry ingenuity, Aspect conveniently and easily connects questions to answers while helping enterprises keep service levels high and operational costs contained. For more information, visit **www.aspect.com**.