

The logo for Aria, featuring the word "Aria" in a serif font with a blue arc above the letters "i" and "a".

Aria

A blue rectangular box containing the title text in white.

12 Key Considerations When Modernizing Your  
Contact Center Using IP Technology

A close-up photograph of a person's hand, palm up, holding a small, clear, rectangular object. The hand is wearing a blue and white striped sleeve.

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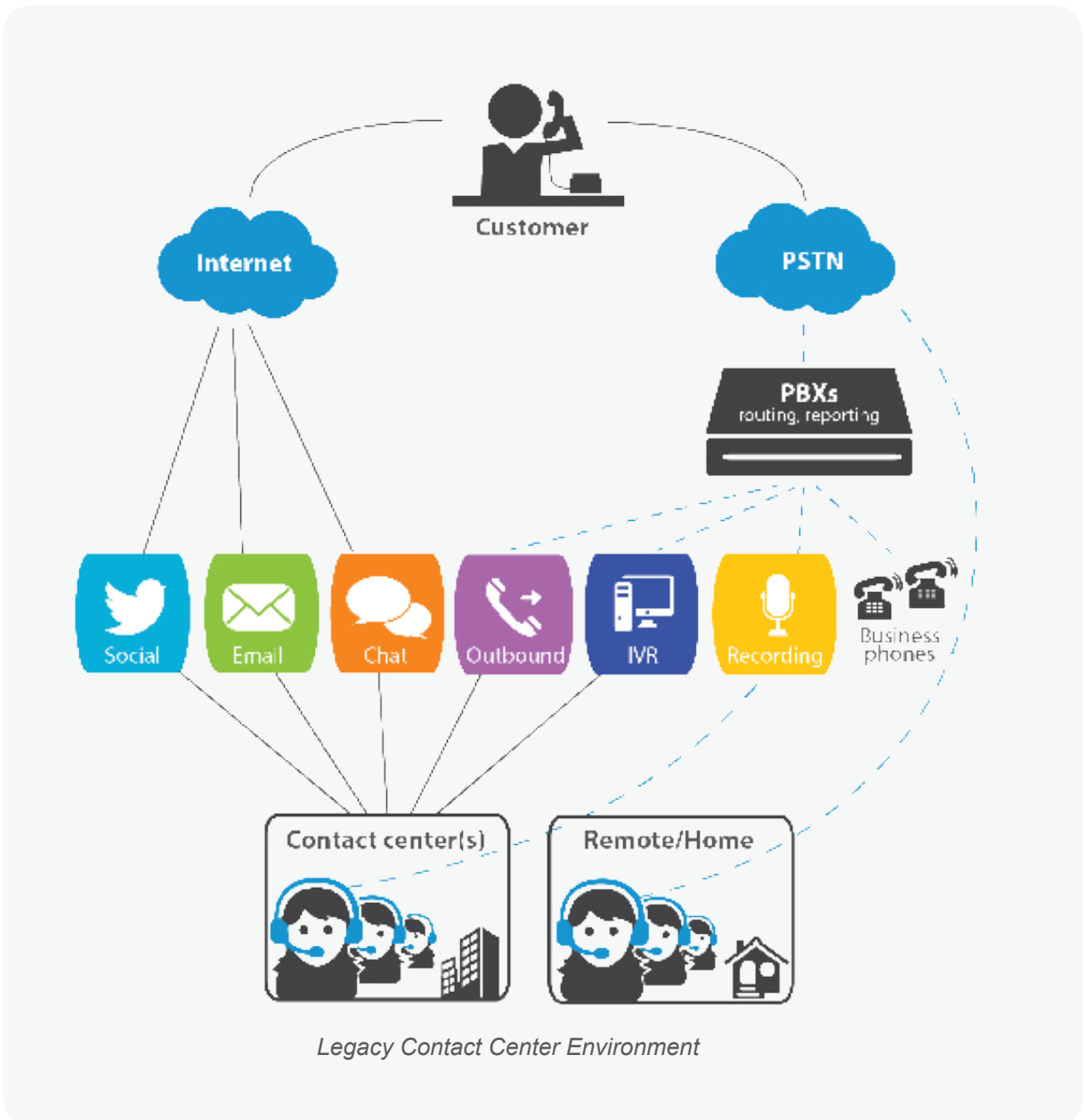
## Contents

Migration Considerations – Getting Started . . . . .	<a href="#">02</a>
Planning and Running the Modernization Project . . . . .	<a href="#">04</a>
Network Readiness . . . . .	<a href="#">07</a>
Load Testing . . . . .	<a href="#">08</a>
PBX Features . . . . .	<a href="#">09</a>
Call Recording . . . . .	<a href="#">10</a>
Dial Plan . . . . .	<a href="#">11</a>
IP Phones & End Points . . . . .	<a href="#">11</a>
Business Continuity . . . . .	<a href="#">12</a>
Trunks . . . . .	<a href="#">13</a>
Project Team . . . . .	<a href="#">13</a>
Reporting . . . . .	<a href="#">14</a>
Other Technology Changes . . . . .	<a href="#">15</a>

## Migration Considerations – Getting Started

IP based solutions offer great advantages, but they also pose new challenges to modern projects. In this paper, we examine 12 key considerations when migrating to your modern contact center.

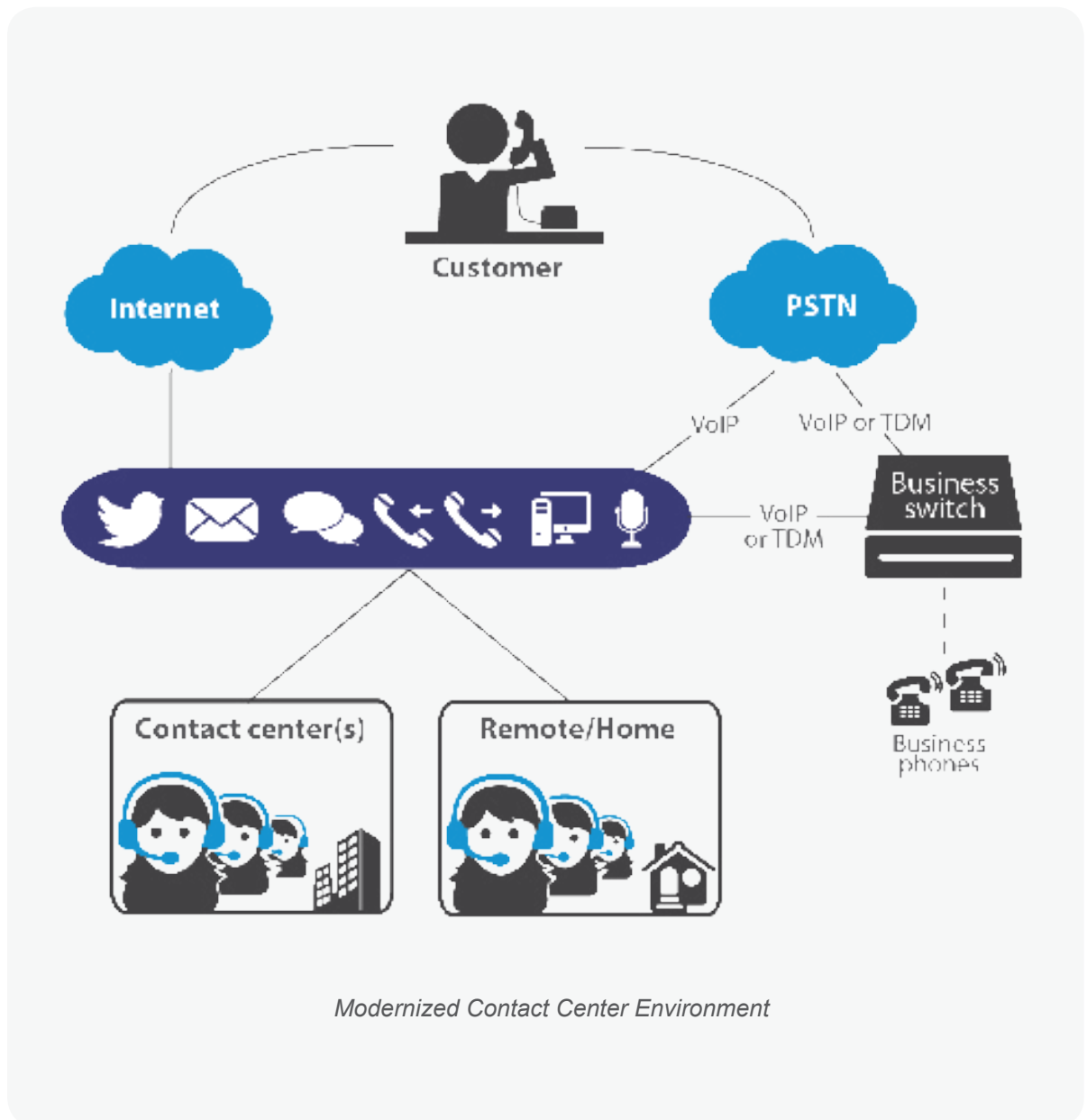
IP infrastructure replaces those old voice circuits and their associated proprietary vendor networks. The circuit-switched networks were easier to configure, but they were uniquely tuned for voice. These were called TDM (Time Division Multiplexing) circuits, which were separated from the IP network (see legacy contact center diagram below-blue lines):



In modern projects, IP improves efficiency and flexibility, and uniform network technology facilitates more than just voice communications, such as email and chat. Additionally, it maintains the network that binds all the contact center applications.

However, the addition of Uniform network technology adds complexity to the infrastructure of the modern contact center solution, and it requires changes to projects deployment.

In the diagram below, you can see the common IP network throughout the modern contact center solution.



## Key 1: Planning and Running the Modernization Project



Creating a proper migration plan is vital while transitioning from the old system to the new one; this mitigates the impact to the business users.

There are several things to consider when planning and running a project. This section focuses on a phased rollout and the dependencies with other projects:

### Phased Rollout:

#### Pilot migration

The first migration to production involves one or more small or internal teams, in order to ensure that the cutover processes runs smoothly; it reduces the risk to customers. Teams frequently considered for this phase are the Help Desk, HR center, and a small non-complex customer facing team.

The small customer facing team is often added to this phase, since it is likely to use the customer facing systems. Internal teams likely have their own unique systems. Consequently, it is good to have one customer facing team in this phase.

#### Main migration

Once the Pilot phase is completed, the next migration of the solution is to the largest pool of users. These users:

- Have the most common capabilities
- Have the biggest interdependence on each other
- Usually engage with the same customers

It is best to migrate these teams close together, so that they are using the same customer data systems.

For example, if calls get transferred or specialists are conferenced in with agents from other groups, the agents should be able to see the latest customer information in the same contact center and CRM systems.

### Special groups

Often there are small business groups that have more complex needs than the main groups, making them trickier to deploy. These groups leverage the previous teams' experience. If there are no such groups, it may be best to subdivide the main teams into two rollouts, which eases the load on the team and reduce the risk of deployment issues.

Sometimes, it's prudent to divide these phases further into waves. This can ease the absorption of change, and also provides opportunity for some migrations to be handled by internal teams, giving them experience for future project deployments.

While the rollouts in each phase can be grouped quite close together, there should be some time between the first waves and between each phase. This allows evaluation and adjustment options for the next deployment.

### Project Interdependencies:

The plan should identify and consider other projects that could impact this project or be impacted by this project. Often, these other projects are enterprise-wide and have their own timetable, so they will have a direct effect on the contact center modernization project.

Common projects that may overlap and need to be considered include:

#### Desktop PC modernization

Desktop changes typically involve upgraded or new PC's, operating system and / or Web browser. They may own and control what software will be deployed. So, any new desktop software or upgrade will need to be

coordinated with this project.

Examples include: the agent softphone and screen capture component, as well as the CRM desktop or required supported browser.

#### Data Center project

Creating or updating the data center(s) can necessitate the move of the contact center solutions' product, development and testing equipment.

Negotiate a low risk time or post project time to do it, as this can affect migration of enterprise telephony components that the contact center solution depends on.

#### Data Warehouse project

Often data warehouse projects are created to centralize all the company data, and will want the contact center data centralized as well. Here are there are two key considerations:

- First of all, this project will likely generate additional data requirements, in addition to being a centralized data store. It is likely that there will be a need to participate in the Data warehouse project and understand the data requirements.
- Secondly, data warehouse project's time table is often longer than a contact center project's timetable. So the reporting from the data warehouse is not typically ready on time for use by the contact centers.

As a result, it is still best to deploy a contact center reporting solution within the contact center's timeframes, for day to day operational use.

### CRM Implementation

Often, the CRM and billing system are the most important agent applications for the contact center, because they contain all the customer data and invoke the customer related processes internally.

Together with the contact center solution, they are interdependent. Process and technology changes in one system likely cause changes in the other.

Therefore the changes to business systems used by agents, (such as CRM and billing systems) need to be closely coordinated with the new contact center project.

### Enterprise telephony replacement project

The old legacy PBX may be replaced with a new telephony platform. The new platform could be a new PBX or Unified Communications (UC) solution that includes telephony.

Contact center solutions often depend on the enterprise telephony platform, so changes or updates to it can have a direct impact to the contact center solution.

With the potential interdependence of the various existing systems or simultaneous projects, the internal teams need to have good communication and coordination (which should exist at different levels within the organization):

- **Program Manager / Program Management Office (PMO)**

This team can help keep the individual project managers informed and linked, enabling cooperation and reducing the change of surprises. Often, there will be mechanisms to decide on priorities and how to handle conflicts between projects.

- **Project Manager**

The PM for the contact center modernization project should have direct contact with PMs of any projects that might be tightly linked to their success and time table.

- **Steering Committee**

The members of the Steering Committee are often senior executive sponsors and are likely to be on the Steering Committees of other projects as well.



## Key 2: Network Readiness

The new solution will use VoIP, which means voice runs through the data network. Therefore, an inadequately prepared network is a key risk to the transformation project.



There are three key steps to ensuring an adequate network for the new solution:

### 1. Network Assessment

A network assessment should be undertaken to test the data network for VoIP readiness ahead of the project. The assessment will examine the network, and test the throughput.

This needs to be compared to the estimated bandwidth required by the new solution. In that estimate, make sure to include all components that will use the network.

Call Recording / Quality Monitoring and screen recording comprise a particularly large amount of consumer data, but other digital channels and technologies should be included too.

Include an understanding of QoS prioritization.

VoIP monitoring solutions should provide a MOS (Mean Opinion Score) that can be used to gauge the network ability. This supports the required voice quality.

MOS measures subjective call quality and scores range from 1 for unacceptable to 5 for excellent. VOIP calls often are in the 3.5 to 4.2 range.

### 2. Load Test Network Monitoring

Load testing itself is discussed separately. While load testing ensures that network monitoring is happening in parallel. Call, screen recording, and other technologies need to be enabled with production level settings.

This is the first real chance to validate the estimate of the Network Assessment. It is also the first end-to-end verification, including load on PC's, applications, and VoIP phones or soft voice endpoints.

### 3. Ongoing Monitoring

Ongoing monitoring is important (at least until the contact center teams settle and are at ease with the new technology). Often, they feel at ease within the first 60-90 days. After that, ongoing monitoring of voice quality and network resources should be part of the regular IT processes.

Include periodic reviews to determine actual versus forecast traffic growth to determine when adjustments may be needed.



## Key 3: Load Testing

There are a number of variables, assumptions and estimates that go into designing a contact center solution. The right level of verification is required before rolling it out to the users. This minimizes production issues.

Otherwise, production issues are not seen until well into the migration, as the number of users increase. To address this issue, plan a load test to avoid rollout delays.

### The load testing should include these key steps:

1. **Set the acceptance levels at an attainable level.** But they need to be reasonable and include current targets (e.g. current interaction volume), so anticipate some growth in volume and team size (say of over the next 3 years), and also factor in your business continuity mechanism. For example, if there are two data center sites, there might be a disaster recovery (DR) requirement that stipulates that one site needs to handle all the volume.
2. **Make sure that the tested environment matches closely with the planned production solution.** Some examples miss configurations:
  - Log capture levels maybe at higher verbosity levels for the project than they will be in production.
  - Call generators may do batches of calls at once, with breaks in between, that is not like the expected real-world behavior.
  - Look-ups to backend systems may be “faked” to make the testing easier. It is best to stress these backend connections, and not ignore them. Sometimes, these backend system lookups are not actually tested. This is a critical component that could in break in production. These lookups are often newly built methods.
  - Production network equipment – Test

using the production network equipment that will be used in production.

- Agent Phones – Do manual calls (and other interactions) during the load test to spot check for voice quality and delay.
- Look at the solution architecture to ensure any other dependent systems are captured in the load test process.

### 3. Monitor Solution Components.

The typical solution items that should be monitored and measured include:

- Server CPU use
- Server RAM usage
- Network performance under load
- Application uptime and number of major and minor alarms generated
- System response time (measured by the load testing system and manual calls)

While there are benchmarks, typically each client’s environment is unique in terms of the hardware, software and related network bandwidth. Many organizations may have determined their own benchmarks for many of the things to monitor, based on prior experience, and these are a good starting point.

**4. Load test partner.** While some large organizations may have purchased their own test automation systems, most organizations use partners.

When looking for a partner, make sure they are a load testing provider. The partner helps you create the right number and types of test cases. It is common for a client to overthink and produce load test scenarios that will not be achievable; this does not add value. Focus on the high level system load goals and details. Experts will help you navigate issues, such as building test cases that will fill up a queue.

## Key 4: PBX Features



Some organizations were reluctant to transition to a separate and dedicated IP contact center solution, due to the lack of some PBX capabilities in the new technology.

Auto-attendant and voicemail, conferencing and call transfers with (non-contact center enterprise teams) are some examples of those PBX type features.

Also, there often was an increase in integration complexity. This happened while adding the IP contact center solution as a separate technology platform, because of the additional voice integration.

The landscape has changed though, providing three different high level technology options to connect voice to the contact center. Since the telephony infrastructure is typically an enterprise wide IT decision, coordination with the IT team is crucial. IT likely has a strategic direction for voice, which could be one of:

- Voice is part of a broader unified communications (UC) strategy, involving other channels and collaboration tools
- Voice remains on a dedicated platform without UC, or non-voice channels implement UC

- The Voice strategy is for non-contact center users, and the contact center can choose its own solution including the voice platform

**The contact center options can be described at a high level in the following ways:**

- Still connect agent phones to the enterprise PBX, to keep PBX features consistent for all employees. This is while the routing is done by the new contact center system.
- Move agents to the new solution and focus on contact center features, including the phones. These are sometimes called all-in-one contact center solutions.
- Move agents to a new Unified Communications platform with telephony capability, such as Microsoft Lync

Different vendors are better at supporting some of those options than others, and some vendors may not support all the previous PBX-like features.

As a result, involve the vendor or implementation partner in the requirements process, architecture and design of the proposed solution.

## Key 5: Call Recording

Call recording is typically used as part of Quality Assurance monitoring. It's part of Workforce Optimization (WFO) and it is a common contact center component.

There are several specialized WFO vendors, such as Verint, NICE, Aspect, Teleopti and Monet. Contact center system manufacturers may provide their own WFO components, but they also often allow integration to those from specialized vendors.

Integration challenges involving VoIP still exists, since integrating over an IP network (shared with many applications) is more complicated than integrating with the old dedicated voice-only circuits.

### Integration with these solutions usually occurs at several levels:

#### Data integration

There needs to be a data feed between the contact center solution and the WFO system, regarding interaction activity. WFO vendors typically have data standards for their systems to work, and these needs to be included in the project. A certified adapter between the two is best, since it reduces the risk of miscalculated resource costs, which is the most expensive element of any contact center.

#### Voice Media Capture

Capturing voice was easier in the old circuit switched PBX days, by simply tapping into the various voice lines. In the IP world, this is more complex, as the WFO systems need to tap into the network and capture the voice traffic (mixed in with all the other traffic).

#### Screen Capture

Most contact centers want to capture the screen activity performed by agents. This can be used for quality control and troubleshooting. Screen capture is resource

intensive, depending on the percentage of interactions being captured.

### Considerations:

#### Network & Servers

Call and screen capture can be hardware and network intensive. The architecture may require servers to be close to servers handling the call traffic. Contact center projects often overlook the number of servers required. The number of servers and traffic can also increase as the contact center grows. If you anticipate a change in the percentage of calls captured, this needs to be included in the plan.

#### Formal compatibility

When using a 3rd party WFO solution, make sure that both the vendor and the contact center solution manufacturer declare support for each other. This will be important for integration success during the project, vendor support, and for compatibility of future upgrades.

#### Support for multiple call legs

Not all vendors or architectures will support the recording of all call legs of a call. For example, if you only need to call components between the customer and agents, all solutions can set to handle that. However, not all components can capture the agent to agent call leg of a consult call, or certain other situations. Review and define those needs during the WFO vendor selection, as well as the architecture definition stages.

#### Multimedia support

While almost all vendor products can capture voice, capturing non-voice interactions is a new technology. Currently, not all solutions can capture non-voice, so ensure that the vendor has, or is planning to add, digital channels capture capability.

## Key 6: Dial Plan

Maintaining the dial plan in the organization was simpler when there was only one telephony platform.



Complication arises due to more components in delivering voice; these components are IP-based or a hybrid of traditional PBXs and new IP systems.

The addition of adding a separate contact center platform (or UC platform) means that the dial plan now needs to be configured in

multiple voice platforms.

An additional component, either a gateway or a session border controller (SBC), will also be required to interface with voice trunks from the service provider.

Recommended steps are:

- Ensure that the right IT resources are available. These resources should have the experience or training with the new technology
- Work collaboratively with those responsible for non-contact center telephony components, such as enterprise wide PBX's or the team deploying the unified communications solution
- Involve the vendors or implementers in verifying the dial plan

## Key 7: IP Phones & End Points

Transitioning to an IP solution offers the opportunity to choose between retaining a physical phone, moving to an agent desktop only (with a soft endpoint), or using a combination of both.

Several factors play into this decision, such as cost, ease of administration and maintenance, reliability, redundancy and user experience. To get the right solution for your contact center, compare the pros and cons of each option.

### Soft endpoints

These reduce the cost, and remove an extra component from the desk. It also works well in remote agent scenarios and business continuity situations (e.g. if the core contact center is offline). It is more difficult to upgrade and troubleshoot, since the PC

hardware, OS and software are in the mix.

Ensure that software upgrades can fit the company's PC software upgrade procedures, so that future upgrades can be tested reliably before being deployed to all computers.

### Hard phones

These allow agents to keep that phone familiarity, and provide some ease in maintaining voice quality. They cost more, but also are seen as more robust; the PC can fail and take out the phone.

Some solutions offer a central administration to allow batch changes to the phones, such as firmware upgrades. Ensure that capability is enabled, the process defined and the role responsible is identified.

## Key 8: Business Continuity

A contact center solution is a mission critical application. There are very high expectations for voice service availability (often 99.999%), and no room before outages begin to affect customer experience.

Lack of complete testing of the business continuity plan (specifically the level of redundancy) is a common weakness. At Aria, we have seen cases of excessive test cases, as well as a lack of test cases miss key components completely.

To reduce the chance of missing components, consider looking at the architecture diagram for the solution. Cover different components (one at a time), and ask “what if this component goes offline?” Try and do the sequence in order (from smallest outage point to largest).

A possible sequence could be:

1. Individual phone, PC or PC application or component
2. Network components (e.g. router) between PC's or phones and the solution's servers
3. Single server application (e.g. routing engine)
4. Whole server (e.g. power off)
5. Virtual Machine host (hosting multiple virtual machines on one physical server)
6. Single Data Center
7. Single Carrier or Internet Service Provider (if using more than one)

Run through the disaster recovery process. If there are voice alerts for callers calling in, or automated email responses indicating the situation, ensure they work properly while the outages are happens. It is best if the processes can be activated from anywhere, particularly from a different location than the one affected by an outage.

For example, shortly after deployment, our client's fire alarm went off, and the building had to be evacuated. Their old system required activation from inside, BEFORE exiting the building. But the new system was activated in one phone call from the muster station outside the building.

The availability of employees (and their accessibility to the company's systems) also need to be considered. The SARS crisis in the 1990's revealed that technology is not the only point of failure. Sometimes, people may not be allowed to travel to central locations, due to quarantine or other restrictions.

Many large enterprises changed their business continuity approach, which allows home-based or other distributed ways for agents to connect and continue working.

What happens if the Business Continuity plan is invoked? Ensure that the plan has been executed and verify that it runs smoothly. If agents need to travel to a different site, or connect from home, try these processes while the test outages are in place.



## Key 9: Trunks

An IP Contact Center Solution can be deployed with PSTN or IP trunks, or both.

This allows you to choose when and how you want to transition from your legacy system, to the new environment.

Open standard SIP IP trunks are the best

option and are available in most tier 1 and tier 2 cities.

The key project preparation and deployment includes properly skilled or trained resources in this technology. It is often overlooked, which can cause risks and delays.

## Key 10: Project Team



For any contact center project that is migrating to new technology, the team is critical. More than anything, its members will determine if the project is successful or not.

Typically large contact centers require the organization to have internal IT teams. The internal teams can deliver projects without much outside help, but this is much rarer with newer technologies.

Usually the project team will be comprised of people from different parts of the organization, such as IT and the business groups, as well as from an external solution integration partner, and possibly the manufacturer.

Plan to have personnel who are experienced with networking, backend IT systems, servers and databases, gathering application business requirements, and business change management.

Some manufacturers have implementation teams for their software, but it is often secondary to their product focus. They can lack experience when integrating technology from different vendors. Implementation teams may work well for simpler deployments or as an extension to the internal team.

Contact center system integration companies usually have the broadest experience and should have pre-built tools and techniques to help deliver sophisticated solutions with low

## When choosing a systems integration partner, consider the following:

### 1. Depth of knowledge and focus in contact centers

### 2. Completeness of project coverage (don't just look at the hourly rate).

Often in bid situations, areas might be minimized or omitted in order to make the price look lower than competitors. Good questions include:

- Is there a warranty after the deployment? Usually there's a 30 day warranty
- Is the rollout approach realistic? Often one or few rollouts can reduce cost, but can also increase risks of issues going wrong and with the ability to support the business users.
- Is there coverage during the rollout period(s)? Make sure "done" for the implementer is just handing over the proverbial keys
- Is there adequate testing, including load testing?
- Is there knowledge transfer to the internal team?

### 3. Good cultural fit.

Things work smoother if the cultures of the organizations are aligned. Then, trust occurs naturally.

## Key 11: Reporting

Reporting takes some adjustment with any new system. It can be a sensitive topic, since this is the dashboard or cockpit instrumentation for running and managing the whole contact center.

Time and care is required to ensure the operations team can ramp up properly.

A new reporting system might seem like its speaking a different dialect. Some standard ways of collecting and labeling the data will be different.

For example, some familiar statistics, such as the number of calls in an interval can be different if the one systems reports the call in the interval where the call started, instead of where it ended. Also, some of the data labels have changed to be more non-voice channel friendly.

During the project, make sure there is time

allocated with the operations team.

### Here are some action items to cover:

- Consider out-of-box reports and stick to them as much as possible in the beginning, in order to get familiar with baseline items of the new reporting. This can make upgrades easier.
- Don't try to rebuild the reports from the old system into the new. This is rarely successful.
- Start with the report descriptions and review the documentation and demo with operations team. This could be a session or even a work shop.
- Involve the operations team in the testing and validating of the requirements
- Ensure there's adequate training to use the tool and to change / schedule reports
- Spend some time with the team once they are live

## Key 12: Other Technology Changes

Implementing a new contact center solution can impact other IT technology platforms and business systems. The contact center modernization project needs to include changes required to these other technologies.

If there are separate projects centered on these technologies, then the requirements need to be communicated to those projects.

### The following is a list of commonly affected items:

#### CRM and other business systems

Contact Center solutions need to integrate into these technologies to best enable agents

to do the actual handling of calls or other interactions

#### Desktop personal computers (PC's)

May require hardware, components, such as RAM, or software such as the OS or Web browser updates

#### Network

MPLS, LAN, and WAN networks and components may require updating

#### Data Center(s)

Required changes may involve servers, racks, power, and air conditioning. For DR, connectivity and throughput between sites.



Any plan to transform contact centers should consider the previous twelve points to help reduce the risks and ensure a smoother implementation.

### Options to move forward include:

- Do the project yourself
- Buy a solution through an implementation partner or directly from a vendor.

Aria is an implementation firm, and we have done numerous deployments over our nearly 20 years in business. We have the expertise to guide you through your [modernization](#) process, as well as solution packages, technologies, integrations, tools and templates to help speed up projects and reduce risks.





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