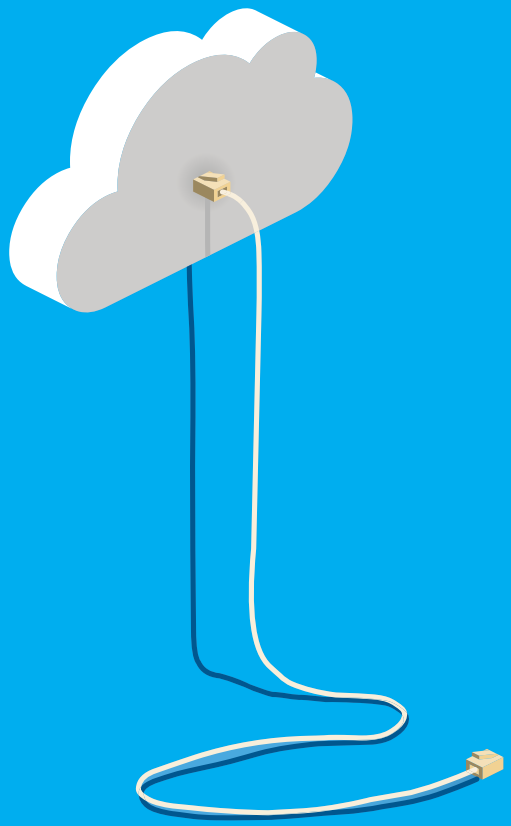


Case Study

THE CONFERENCE QUALITY EFFECT

CASE STUDY INTRODUCTION

spearline™

Arkadin is an NTT Communications Company

HOW IT STARTED

We met with Arkadin at the International Telecoms Week in Chicago in May 2015. Having demonstrated our range of testing services for toll and toll-free numbers (TFN) worldwide we agreed to undertake a proof of concept with them to demonstrate the effectiveness of our proactive monitoring of their conference numbers.

Arkadin is one of the largest and fastest growing collaboration service providers in the world. It offers a wide range of conference-related solutions covering audio, web, video conferencing and unified communications services. It serves approximately 37,000 customers in 32 countries, including France, Germany, the UK, USA, Australia, China, Singapore and Japan. Arkadin is a part of the NTT Communications Group one of the largest telecommunications companies in the world.

26%
ANNUAL GROWTH IN 2010 - 2013

41 BILLION
CONFERENCE MINUTES USED IN 2013

CASE STUDY PROOF OF CONCEPT

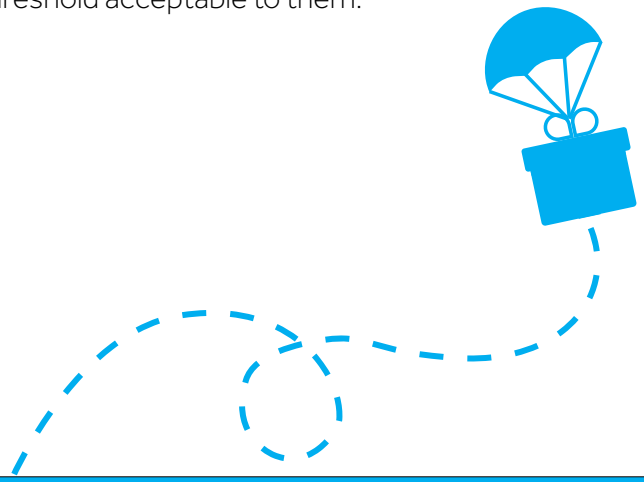
spearline™

WHAT WE DO FOR YOU & HOW IT WORKS

INITIAL SETUP

Arkadin provided us with their initial set of conference numbers intended for testing, which consisted of 16 numbers in 10 countries. Our inbound test works by placing two calls into the conference, one on the number being tested and another on a DDI local to the conference bridge. The inbound call to the TFN always takes place within the country of that TFN thus replicating exactly the customer's experience. The local DDI acts as a control leg where you would expect excellent connectivity and call quality. Once the conference ends, the recorded audio and the input audio are compared using an industry standard full reference algorithm.

For the initial setup, we had to firstly configure the test numbers once we received the Arkadin passcodes for DTMF testing. This means that we adapt each test for our customer's own particular call sequences, include variable time delays and passcode inputs. We then conducted an initial assessment on each number to determine their functionality and audio quality. After relaying the initial results to Arkadin, they decided they wanted to setup an alert for outages and any results that yielded a PESQ score below a threshold acceptable to them.



31
Countries Tested

2,812
Alerts (PESQ < 3.3)

23,652
Conference Tests Analysed

5.7%
Overall AVG PESQ Increase

OUTCOME

Arkadin has conference call numbers in 31 countries worldwide tested daily, using Spearline's automated in-country toll and toll-free PSTN conference testing. In total, we tested for audio quality 23,652 times! Arkadin's dedicated team is alerted immediately, to any failure or low audio quality below a 3.30 PESQ score. We saw an 85% decrease in testing failures within the first two month's of testing. There was an overall audio quality improvement of 5.7% increase over the first 6 months of testing!

CASE STUDY THE TESTS

WHY IS THE PESQ IMPORTANT

In order to measure audio quality, the test uses an internationally recognised scientific ITU-T standard called Perceptual Evaluation of Speech Quality (PESQ). We are able to analyse the recording comprehensively, evaluating speech, silence, and other noises and the test returns a score for audio quality on a scale from 1 to a maximum of 4.5. On that scale, Spearline would regard audio that achieves a 2.29 score or lower, as bad quality with "no meaning understood with any feasible effort" on the PESQ listening effort scale. Many customers such as Arkadin insist on higher thresholds for audio quality because of their commitment to providing the best possible service for their customers. Each test is recorded so that Arkadin can play back audio of the entire test to hear the results obtained.

The tests are fully automated and can be scheduled by us or the client for the frequency they require or they can be launched manually from our integrated testing platform. The tests can be configured to raise automated alerts either by mobile phone notification for urgent mission critical failures (such as total failures in connection or if the audio quality drops below an acceptable threshold) or by email for failures which require further investigation but are not mission critical. These parameters can be changed and adjusted at any time as Arkadin's needs change.

For all information about our testing platform please don't hesitate to contact us: info@spearline.com

THE BENEFITS

We are able to analyse the recording comprehensively, analysing speech, silence, and other noises

Each test is recorded so that Arkadin can play back audio of the entire test to hear the results obtained.

Tests are fully automated and can be scheduled by us or the client

Tests can be configured to raise automated alerts either by mobile phone notification for urgent mission critical failures

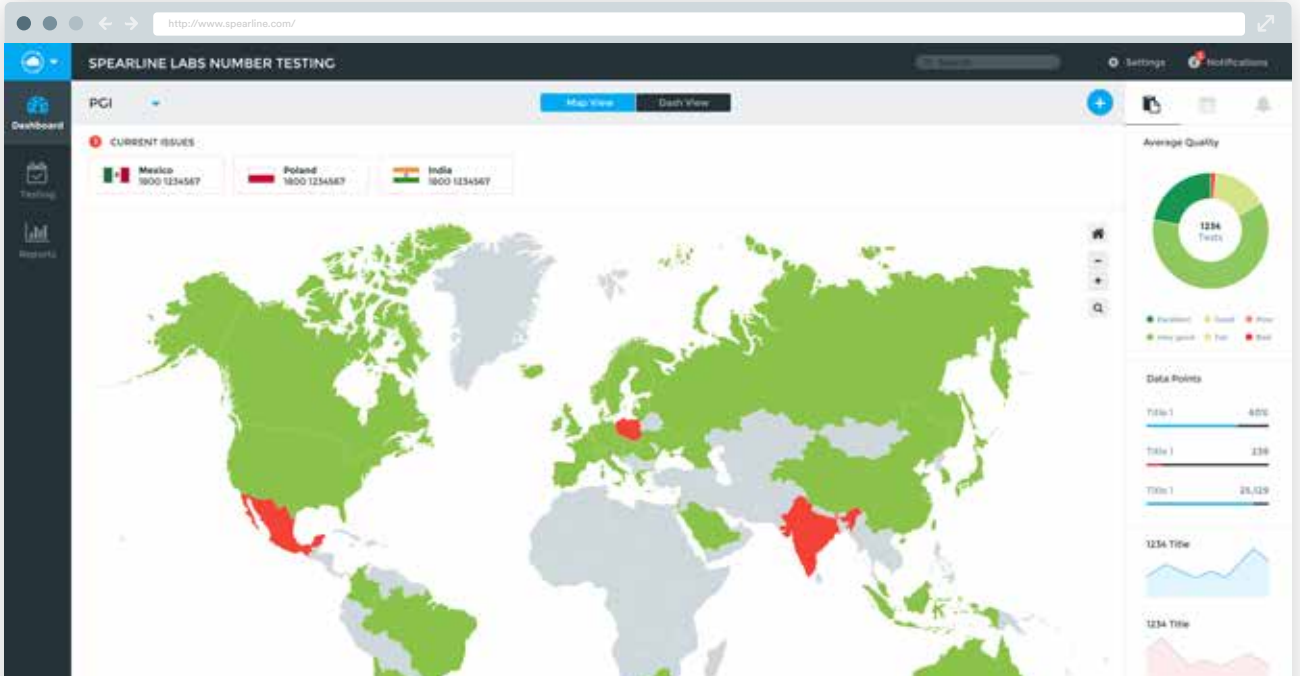
CASE STUDY THE SOLUTION

The Solution for Arkadin

It is important for our customers like Arkadin to know in real time any problems affecting their TFNs whether it's because they don't connect or that the audio quality is poor or any other failure which as they are committed to delivering quality and reliability to their customers at all times. We devised a strategy to run an automated batch of "sticky jobs", which consists of 10 consecutive tests to run upon detection of a number outage, so as to provide more information on the number tested for Arkadin to present to their carriers. Spearline assist our clients on daily basis to manage their issues with our dedicated Client Account Management and 24/7 Testing Support team structures in place.

Our testing platform also includes easy to use reporting software which can be used to drill into data at any time. In addition, Arkadin's dedicated account manager in Spearline reports monthly on the performance of their numbers highlighting issues and trends and illustrating performance improvements across their range of numbers.

Spearline also discovered some of Arkadin's numbers were achieving low PESQ results, when compared to our benchmarks for the particular countries tested, based on data we capture from millions of previous customer tests. Arkadin took this information in the form of reports and CDR recordings to their carriers with whom they had these poor performing numbers and insisted they adhere to their contractual obligations by providing G711 codecs for those numbers. Carriers are known to reduce line bandwith by converting encoding, in order to facilitate more traffic on their lines. The best possible codec is G711, but carriers often reduce this to G729 or even worse to GSM codecs. This form of compression is known as transcoding. At network interfaces, it adds complexity, degrades quality, and increases latency, all of which directly impact the quality and cost of voice communications. This results in poor user experience.



CASE STUDY THE RESULTS

We currently test 63 numbers in 31 countries with an average increase in PESQ of 5.7%. Dennis Loh, Regional VP of Service & Customer Operations APAC in Arkadin, regards Spearline's proactive monitoring as "...a quality confidence metric" they and their customers can rely on. We can think of no finer recommendation from one of our customers and we continue to innovate our unique testing solutions and to work closely with valued customers like Arkadin to ensure we continue to improve our service and to remain a quality confidence metric that our clients can rely on.

Arkadin have experienced the value our testing platform and have seen a measurable ROI, so much so that they have extended their contract with Spearline and have increased testing volumes by 93% since last October. We provide Arkadin with monthly reports, highlighting, problematic numbers with failure reasons.

Within the first two months of testing we saw a massive 85% decrease in call failure issues. However because of the ever changing and dynamic nature of international telecoms infrastructure ongoing testing is required to monitor quality and outages.