Tying Telco Together eZine

Service provider transformation stories based on 2021 interviews

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Foreword

Tying Telco Together is a program where we dive into successful transformation stories from service providers around the world.

We're thrilled to have a diverse set of customers and partners and we're excited to share their transformation stories in this eZine. From to 5G innovation to Open RAN transformation, this eZine highlights a variety of success stories that you can learn from.

Thank you for joining us on this transformation journey!

- Stephen Spellicy, VP Service Provider Marketing .

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Airtel Africa

Airtel Africa Uses Edge and Automation to Meet Diverse Market Needs

Delivering communication services in the continent of Africa presents unique challenges—and exciting opportunities. Airtel Africa is using new edge and automation innovations to navigate both. VMware spoke with Razvan Ungureanu, Group CTO, about how Airtel Africa is brining new services to diverse markets, while reducing operational costs and complexity

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The communication service provider (CSP) market seems to be changing every time you blink your eyes. How does Airtel Africa navigate these shifts as you approach your transformation strategy

Razvan Ungureanu

To answer that, let me first explain why Africa is such a challenging market. Just the size of the territory is huge. For comparison's sake, India is three quarters the size of the DRC [Democratic Republic of Congo]. So, we have to contend with huge distances, along with challenges of electricity grid availability, security issues, extreme weather. It's a very challenging environment to operate in. This makes our mission more complicated but also more exciting. There is a lot of untapped opportunity, starting with mobile data. Mobile handsets are the digital gateway for much of Africa to the world. Africa is a very developed market for mobile money—more so than many other markets. There is a great deal of

demand from enterprises here for secure, highly reliable communications services. And then of course, there are significant mining operations for gold, copper, and other resources.

To position ourselves to address all these opportunities, our transformation strategy involves bringing data centers out to the edge. The efficiencies and agility you gain by moving data

Airtel Africa

processing to the edge, along with the cloud, provides a powerful foundation for transformation.

Of course, we cannot do this in a vacuum. We are enabled by our partners who help us unify the architecture, leveraging virtualization and cloud technologies.

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How is Airtel Africa building that bridge to the edge, and what will it mean for the services you plan to enable in the market?

Razvan Ungureanu

In Africa, business continuity—building a network that is always available—has to be a foundational priority. Why? Because 80% of customers have dual SIMs, and more than 99% of revenues come from prepaid. So, if your network goes offline, you've lost one months' revenue, which is a disaster. So we're building unique edge architectures to address network availability.

In a typical European network, a data center is usually built on two-way directional fiber connections. In Africa, we are building three- or four-way fiber connectivity to secure five-nines availability. We want to place content as close as possible to the customer, as reliably as possible, via microwave, fiber, or satellite. And that is actually what's motivating us to move towards the edge, not necessarily 5G.

Now, in order to do this efficiently, we need to use virtualization and cloud. But that also produces new opportunities, such as offering private networks and mobile edge computing to enterprises.

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As we talk about the importance of that underlying network, one capability that seems to become critically important is automation. What role does automation play in your market and your business?

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Airtel Africa

Razvan Ungureanu

One of the key problems in Africa is a shortage of on-the-ground skills. Take a country like Chad, Niger, even remote areas of the DRC. How can I find people who are highly skilled in NFV, in maintaining network hardware, even IP skills? It's very hard to find those people. So, automation becomes almost imperative.

We are building virtualized data centers with the ability to scale up and down based on consumption, with everything managed in a centralized, automated way. We actually have one of the most sophisticated network operations centers in the world, built with a high level of automation using artificial intelligence and machine learning. If we take some action to solve a problem, such as a software reset, the system learns from that and takes that action automatically next time. So, incidents that in

BT

BT Embraces Multivendor Ecosystems to Spur New Innovation

Like any relationship, partnerships between communication service providers (CSPs) and their vendors evolve over time. VMware spoke with Simon Warner, Director of Business Services and International Government at BT, to talk about how those relationships are changing and what the future holds.

VMware

Today we're seeing CSPs like BT look to new kinds of partnerships to help them bring new services and value to their customers. How is BT's approach to partnerships changing?

Simon Warner

Right now, we're in the midst of a perfect storm of change. Organizations are dealing with digital transformation, the huge shift to work-from-home. These are significant changes, and every organization needs to get more agile and flexible to deal with them. Ultimately, companies need a partner that can bring expertise and experience in these areas, as well as scale. Ideally, that partner can also provide best-of-breed technologies from an ecosystem of vendors.

At BT, it's our job to create those solutions, to bring multivendor technologies together in a way that's focused on our customers' business outcomes. We need to deliver the experience that end-users need, secure it, and monitor and manage it for them so our customers can thrive. To do that, we're drawing on insights we gain from securing governments, countries, and many of the largest companies in the world.

BT

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The lines between infrastructure, services, and applications continue to blur, putting more pressure on a service provider's vendor relationships. How is the dynamic changing with your ecosystem partners?

Simon Warner

It's a very unique moment in time right now, as the industry shifts away from transactional relationships to ones that are much more strategic. Customers are asking for something different from their service providers and technology vendors. We need to give our customers choice and flexibility to create business outcomes, but our approach needs to be different.

As part of that, we're working with a broad variety of partners anywhere we believe they can add value. For example, for network underlay, we now work with 225 ISPs throughout the world.

At the same time, when we look to create new solutions, we're leaning on a more select group of the very best technology providers. By working with companies like VMware, we can work more collaboratively to deliver innovative, exciting ideas that differentiate our offering.

BT

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Part of the beauty of building dynamic partnerships is the ability to imagine new visions and rapidly deliver what customers want in a changing market. What kinds of services are on BT's radar right now, and how do you expect you'll stand out from the pack?

Simon Warner

We absolutely do have to differentiate, and we plan to do that in a couple ways.

First, we're building all our new solutions on a brand-new, cloud-based digital platform. That allows us to give our customers choice of management, commercial flexibility, and the ability to link their own systems, such as ServiceNow, directly into BT.

We'll also stand out through our security portfolio. We offer inherently secure solutions and a choice of managed security solutions, such as next-generation firewalls, that are needed to make any solution secure. Finally, we're using a new security platform that allows us to see farther and deeper into our customer environments, and we use the data and insight from that to help protect them even more.

VMware

Evolution is no small task; there are costs and complexities involved in moving to a multivendor approach and multivendor cloud networks. How is BT working with the vendor community to navigate this transformation?

Simon Warner

It's always a question of balance, but ultimately, our aim is to always put the customer first.

We need to launch enough products to offer choice and cover different use cases across the many different industries and geographies we serve.

BT

Simon Warner

At the same time, we don't want to make things too complex for our customers, because that blocks our ability to develop and innovate together. So, it's really important that our technology partners share that same customer-first vision.

That's what's made our successes with VMware so exciting. Working together in the R&D process, for example, they've brought experience and expertise to help us expand choice and flexibility, while making sure our customers' interests are at the center of everything we do together.

VMware

What comes next for BT on this journey?

Simon Warner

I see three things. First, as we all return to the office, things are going to be different than before the pandemic. How we work together and collaborate will take a variety of forms, and our customers will be looking to us to help support that. Many companies will continue to staff both home- and office-based workers, which means the security has to be great and the user experience fantastic. People need to be able to collaborate with the rest of the organization from anywhere, and we need to get that right.

The next big priority is, how can we better integrate software-defined services? Most of our customers still have a "DIY" approach. They're still buying digital solutions as separate, standalone silos. They're not taking advantage of software-defined integration, such as with LAN, WAN, cloud, and collaboration.

BT

Finally and most importantly is security. It's hugely important for our customers. Anything we do for them, security needs to be at the

heart of their transformation journey

In all these areas, we're excited to work with partners like VMware to bring new agility, flexibility, and choice to our customers. We've had some great wins with VMware recently, and it's because we really have differentiated together. Those aren't just words. And the great news is, we have a very strong pipeline moving into the future

KDDI

KDDI Fuels Transformation with New Edge and 5G Capabilities

We've heard for years about the power of 5G to enable innovative new enterprise services. But what will that actually look like in practice? Ask KDDI, one of Japan's premier mobile operators, who is already doing it. VMware spoke with Toru Maruta, Vice President and Head of Product Management, Solution Business Sector, about network transformation and what it takes to deliver 5G cloud services at scale.

VMware

We're seeing all sorts of ideas percolating to use 5G and edge innovations, along with things like artificial intelligence (AI), machine learning, and augmented reality (AR) to create new services. What are you hearing from your customers about their expectations for a 5G world?

Toru Maruta

We do talk with customers about new 5G and AI technologies, and they are very excited about the possibilities. But the reality is, we don't yet know exactly how new innovations will work or what benefits they will offer. So, instead of just talking to customers, we go one step farther.

We have established the KDDI 5G Business Co-Creation Alliance. We invite partners developing new 5G technologies, as well as enterprise customers who want to use those technologies, to work together to advance their digital transformation. Ideally, those efforts result in developing new services together that create new value with 5G.

To cite one example, we worked with a manufacturing customer using automatic guided vehicle technology, or

KDDI

or AGV, that they want to be able to control cost-effectively. Initially, they were looking into a local 5G* network to support that control. But as we talked with them, we realized that public 5G is sufficient, and that our telco edge cloud could help them reduce their costs. So instead of having the compute on top of the vehicle, they can position it at the edge, and still have the low latency needed to guide their vehicles.

This is a great example of a customer coming in and actually using new technologies to see what fits best. We can't do those kinds of things just by thinking about them. We need to actually work together with the customer using these technologies.

VMware

Many of the new services on the horizon require much more agility at the edge. What is KDDI doing at the edge to enable the new services you expect to create and deliver into the market?

KDDI

Toru Maruta

We are employing multiple strategies. For example, we started providing AWS Wavelength, where we partner with AWS to offer a cloud edge compute service. Our concept here is, just provide it to customers, let them use it, and they will figure out how to make the best use of edge compute. We are seeing a lot of customers jumping on, trying out proof of concepts, and seeing exciting early results.

At the same time, we are trying to stimulate the market by showing examples of how edge compute can be used. So, we are employing machine learning, AI, and augmented reality and virtual reality at the edge. For example, we built a free smartphone application for viewing soccer games, where you can pinch the screen to see the action from different viewpoints. We developed an augmented reality application that uses edge compute to create a virtual human guide. And we created a virtual Shibuya—the neighborhood in Tokyo where young people come to have fun. You can see an augmented reality overlay of Shibuya on your smartphone, and we hosted Halloween events through that.

I believe those kinds of applications will stimulate developers' minds, so they see what kinds of things are possible.

VMware.

Everything you've been talking about will certainly make our world more exciting. Can you share some of the other capabilities that KDDI is looking to enable in tomorrow's 5G world?

Toru Maruta

The industry is still just at the starting point for 5G. In the future, when we move to 5G standalone architectures, we will be able to do things like network slicing, which we plan to provide.

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KDDI

The major implication there is not just about reserving part of the network. We believe it's that merger of the network with cloud computing. With edge compute and virtualization, we envision the ability to make combined network/compute services available anywhere.

* Local 5G is one of the forms of 5G in Japan, in which companies and municipality other than telecommunications carrier, take the initiative to build and use their own 5G networks in specific areas such as their own buildings and premises according to the needs of the area or industry.

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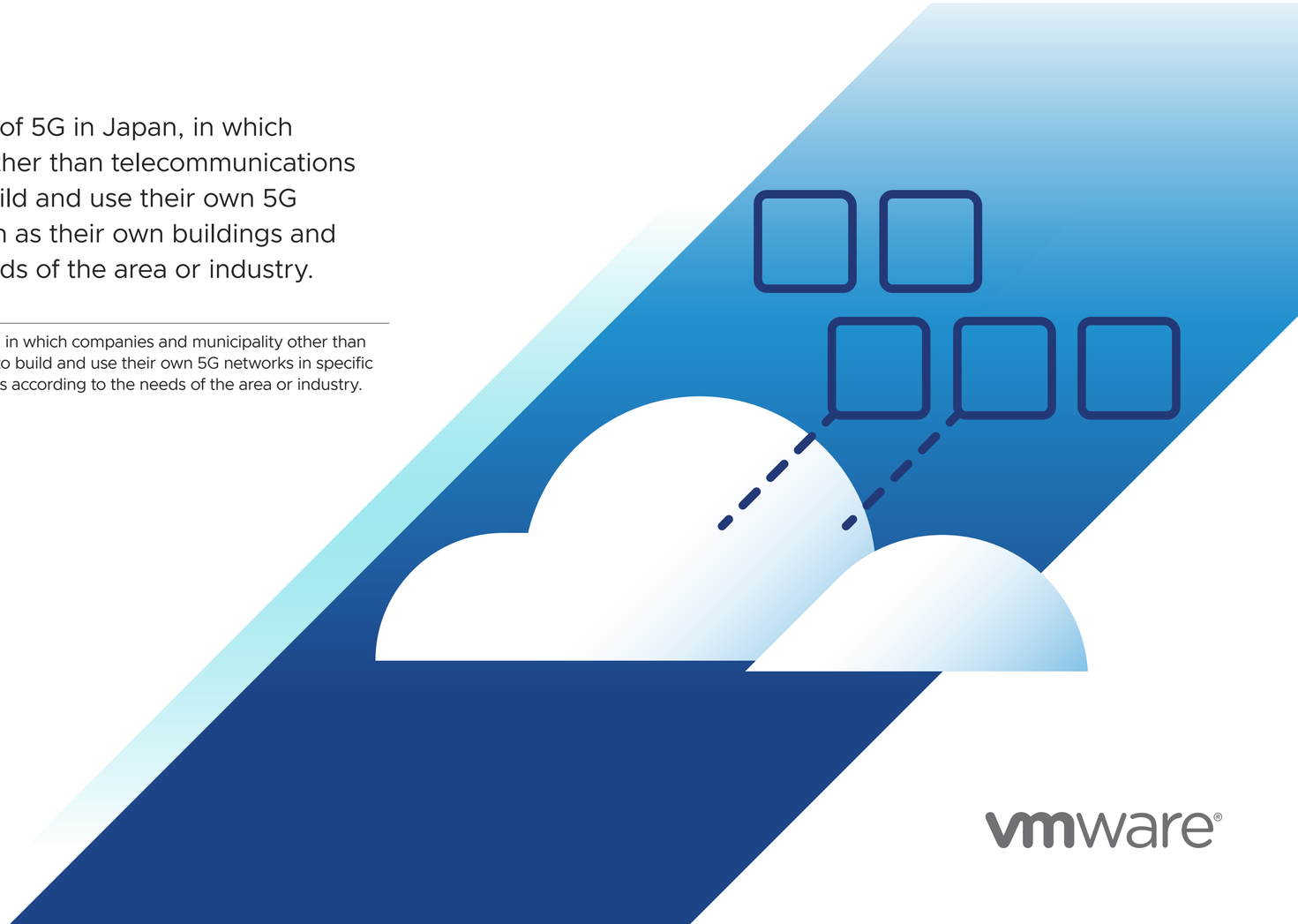

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NTT DOCOMO

NTT DOCOMO Builds 5G Ecosystem and Multivendor Testing Service to Advance Open RAN

When it comes to Open RAN (O-RAN) innovation, no operator is doing more exciting work today than NTT DOCOMO. VMware spoke with Dr. Sadayuki Abeta, NTT DOCOMO's Vice President and Head of RAN, about the ways NTT DOCOMO is driving innovation with its 5G Open RAN Ecosystem. Through this ecosystem and its Open RAN test lab, NTT DOCOMO aims to help operators of all sizes advance commercial O-RAN deployments.

VMware

VMware is proud to be part of NTT DOCOMO's 5G Open RAN Ecosystem, and in particular, the multivendor test lab you've created for the program. Can you explain the purpose of the lab and what NTT DOCOMO hopes to accomplish with it?

NTT DOCOMO

Dr. Sadayuki Abeta

NTT DOCOMO launched our 5G service in 2020 with a multivendor-interoperable RAN, using the O-RAN interface, with different vendors' O-RU and O-DU [O-RAN radio units and distributed units] running in the same environment. Now, we are ready to introduce new technologies such as vRAN [virtualized RAN] to provide compelling new 5G services.

vRAN holds enormous potential to enhance and improve the network, but there are challenges in introducing it into commercial networks, such as ensuring high performance, multi-vendor interoperability, and cost-effectiveness. We established the 5G Open RAN Ecosystem to solve those challenges.

The purpose of this ecosystem is not just to deploy new technologies like vRAN into our own network, but into any operator's network. To that end, we have created a 5G test bed that can be remotely controlled by other operators. By sharing this test bed with other operators and industry partners, we can drastically reduce testing costs and timelines.

VMware

This is a great example of the broader trends we're seeing, as what was once a very closed, siloed industry becomes much more interactive and open. What kinds of things will you and your partners be doing in the lab?

Dr. Sadayuki Abeta

At the time of 2020, we were the first operator to introduce a multi-vendor Open RAN, with an O-RAN interface that was only defined the year before. So of course, you encounter the issues that come with a brand-new interface, such as different vendors interpreting the specification differently.

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NTT DOCOMO

We needed a bit of time to work through those issues. But now, we have two years of experience. The specification itself is stable, and we are no longer seeing as many gaps between vendors.

In fact, we selected new RU vendors February 2021 to support the new frequency bands. Thanks to the common, open interface, we were able to choose the best vendors for each deployment scenario. Now, we can extend that same approach to vRAN.

VMware

O-RAN is just one piece of the broader network transformation that NTT DOCOMO is undertaking. Can you give us a glimpse of what's next?

Dr. Sadayuki Abeta

In addition to the 5G Open RAN Ecosystem, we are also involved in the 5G Open Partnership Program, which began in 2018. Already, more than 4,200[1] partners have joined this program, representing a wide range of vertical industries such as information services, wholesale, manufacturing, media, construction, local government, transportation, medical, and others.

We are working with these partners to try to solve some of our enduring social challenges, using new open networks to provide new services. We firmly believe that openness and open innovation are key to create a new world.

1. Count of partners in Open Partnership Program as of July 2021.

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Telefonica

Telefonica Lays the Foundation for New Opportunities at the Edge

Every major service provider is talking about their plans to transform the edge. Telefonica, one of the world's largest mobile operators, is already doing it. VMware spoke with Juan Carlos Garcia, Global Senior Vice President for Technology Innovation and Ecosystems, about the company's plans to modernize and monetize the edge.

VMware

Distributed computing capabilities are creating a huge opportunity for CSPs around the world. How is Telefonica approaching this opportunity to build and monetize at the edge?

Telefonica

Juan Carlos Garcia.

We have multi-stage technology strategy for the edge, which fits within our overall strategy for the business. The first step is to enable an initial edge cloud for our new 5G standalone core between now and 2023. This will be the first cloud-native network we deploy, starting with an initial set of edge nodes in core network locations.

Our second wave of edge deployments will roll out around 2025, introducing a scalable, Open RAN cloud environment. These new edge nodes will deliver more capacity and much lower latency to support the real-time requirements of baseband processing. At that point, we will be able to support some private 5G network deployments, with on-demand implementation at the far edge or the customer premises.

These initial “network edge node” deployments are for internal demand, but they are a perfect starting point for deploying external edge nodes. We are launching an edge computing business, based both on our own platform, and on partnerships with public cloud providers, combining both in a multicloud offer.

All of this aligns with our broader business strategy, which is focused on building value on top of our current assets, including our ultra-open networks, 5G and fiber, our facilities, and our cloud expertise. As an initial target, we are extending our VDC [virtual data center] service, which we offer now in the cloud using VMware technology, to the edge. We have launched the service in May 2020 and is already available in 4 major cities.

Telefonica

We are working with our customers and partners, leveraging our 5G public and private networks and edge computing, to cocreate diverse, high-value use cases for different markets. That includes working with third parties and hyperscalers to jointly deploy new edge services on our platform.

VMware

Enabling these kinds of capabilities will require much more than just building out new edge infrastructure. What role do you see for core networks, public clouds, and even the RAN in enabling a truly powerful and intelligent edge?

Juan Carlos Garcia

We will, of course, need to deploy many more edge nodes close to user plane functions to perform local traffic breakout. As those nodes multiply, the capabilities of the core network will need to grow as well. The user plane functions will also have to scale up and down dynamically as the capacity of the service edge node grows. And, as the number of edge nodes multiplies, orchestration and automation will be essential to manage services at scale. This is the primary task and challenge that operators have at this moment.

VMware

There are so many use cases that a more agile, unified edge can enable. Which ones is Telefonica starting with?

Juan Carlos Garcia

We are already working with numerous partners to explore different use cases for both 5G and edge.

For example, we demonstrated a use case for augmented reality for tourism in Barcelona, using our 5G network and compute capacity at the edge. .

Telefonica

We delivered a digital twins use case for a smart factory, where an application collects information from sensors and cameras on the factory floor to produce a real-time digital model that can be used to improve performance and productivity in the factory processes. More recently, we launched an industrial traffic management use case for the Port of Barcelona, where our edge technology manages cranes, trucks, and other machinery.

We are also working with customers to explore edge use cases spanning the manufacturing sector, live gaming, healthcare, dynamic warehouse management, autonomous vehicles, AI-driven video processing and facial recognition, private 5G networks, and more.

All of these use cases were deployed on our VDC edge infrastructure, using our commercial 5G mobile network. With these efforts, we are developing a knowledge base that will enable us to help our customers adopt these innovative new technologies at scale.

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